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Commission of the European Communities (Eds.)

European Solar Radiation Atlas

Solar Radiation on Horizontal and Inclined Surfaces

Third Improved and Revised Edition



Springer

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Avant-Propos by the Editor

The second edition of the European Solar Radiation Atlas published in 1984 has been received very positively by the scientific community. This has led us to the situation that this edition, published in three languages, has been completely distributed much earlier than we had foreseen. This has led the Commission of the European Communities to prepare a new edition of the Atlas based on the second edition with relatively minor changes. These changes respect the political developments within the European Union Member States and within neighbouring countries. Certain material in the two original Atlases has been left out to achieve a more compact presentation within a single volume.

No new observed data has been introduced. However the opportunity has been taken to improve some of the estimated values of maximum and minimum global radiation, and to expand the tables to include more information like the estimates of diffuse radiation used. Methods for estimating hourly irradiance and illuminance have been introduced. The data are also being provided on disk to assist their use in microcomputer applications. There is only an English language edition.

We hope that this third edition will be received as positively among the scientific community as it was the case for the second edition.

Wolfgang Palz,

Commission of the European Communities,
Editor

Brussels, December 1995.

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General Overview

The Commission of the European Communities through its Directorate General XII for Science, Research and Development has had in operation, since 1975, a solar energy R&D programme with the aim of initiating, stimulating and strengthening solar energy research and development activities in the Community.

It includes the following fields of research:

- A. Solar energy applications to dwellings.
- B. Thermomechanical solar power plants.
- C. Photovoltaic power generation.
- D. Photochemical, photoelectrochemical and photobiological conversion processes.
- E. Energy from biomass.
- F. Solar radiation data.
- G. Wind energy.
- H. Solar energy in agriculture and industry.

The second European Solar Radiation Atlas was a published resource that resulted from the 2nd European Community Solar Energy Programme: Project F: "Solar Radiation Data".

It was presented in two separate volumes, one for horizontal surfaces, the other for inclined surfaces under the titles:

1. Commission of the European Communities, *Solar Radiation Atlas, Volume I : Horizontal surfaces*, edited by W. Palz, Verlag TUV Rheinland, 1984. ISBN 3-88585-194-6. Report No EUR 9344, and
2. Commission of the European Communities, *Solar Radiation Atlas, Volume II: Global and diffuse radiation on vertical and inclined surfaces*, edited by W. Palz, Verlag TUV Rheinland, 1984. ISBN 3-88585-194-6. Report No EUR 9345.

These two volumes have been out of print for some time. This third edition of the European Solar Radiation Atlas is a shortened and revised version of the second Atlas. It has been prepared to meet interim demands for the data in the two volumes of the earlier Atlas, pending the production and publication of the new European Solar Radiation Atlas, now in preparation under the Joule II programme, Project JOU2-CT-94-0305/P06-93. This next Atlas will be supported by a user friendly computer based radiation tool box package linked to a CD ROM data disk.

This single volume Atlas has been prepared with certain revisions and improvements on the previous Atlas. No new observed data has been added. Much of the earlier material has been retained in the original form in which it was published. The estimated values of G_{max} , the monthly mean values of the maximum global radiation and G_{min} , the monthly mean values of minimum global radiation, for sites with observed sunshine data only have been more carefully assessed. The presentation of the tables has been enhanced. Information about diffuse radiation has been added. Simple methods for breaking down the tabulated daily data into hourly data have been included. A process for estimating hourly illuminance data has been included to support the growing interest in systematic daylighting design. Finally the opportunity has been taken to put the original data base behind the Atlas onto a computer disk to facilitate data use in microcomputer applications. The data on disk is provided in an easily readable ASCII format. The maps of inclined surface irradiation which appeared in the second European Solar Radiation Atlas have not been republished, nor the window transmission tables, both of which appeared in Volume II. Certain statistical data from Volume I have also been omitted.

1. Introduction.

This revised edition of the European Solar Radiation Atlas uses exactly the same observed input data as the earlier version, but it combines the information in the original Atlas (1) (2) into a single volume. However opportunity has been taken to improve presentation and to print additional useful estimated data that was implicitly used in the development of the earlier edition, but not printed in the tables, for example the estimated diffuse radiation on horizontal surfaces. Some of the less widely used data in the earlier edition has been left out, for example the maps of estimated inclined surface radiation, and the window transmission tables. All the data has been structured on a site by site basis into site specific tables to facilitate practical use instead of being spread in different sections of the publication. Opportunity has also been taken to put the data into a data disk in ASCII format to facilitate its use in microcomputer applications.

A revision of all estimated values of maximum and minimum global radiation has also been undertaken. This was done because it became clear in the processes of quality control of the new data disk that the underlying radiation climatology had not been given adequate consideration in the earlier version. All observed data however remain unaltered from the previous Atlas.

The structure of presentation used is to discuss the horizontal surface radiation issues first. The discussion on inclined surface data, and the methodology behind the inclined surface tables then follows. The new computer disk facility is discussed in the final section. Appendix 1 sets out agreed units and symbols used. It also acts as a glossary for readers of the publication. The more technical material is placed in further appendices that follow. The tables and maps are placed at the end. The radiation tables are now arranged in alphabetical order of country name. The horizontal tables are presented first. The series of inclined surface tables follows.

2. Global radiation on horizontal surfaces.

2.1. General comments.

Five doubled sided horizontal surface radiation maps are presented in this third European Solar Radiation Atlas together with the maps showing the site locations. These have been reprinted from the Second Atlas without revision. They give an overall view of the distribution of mean daily global solar irradiation (expressed as energy per unit area per day) in the region of the European Community and the adjacent countries. The maps are not intended to present exact insolation patterns of any particular area, although mesoscale features and local peculiarities were taken into account as far as possible in drawing the contours. Nevertheless microclimates are not evaluated in this Atlas, hence local features impacting on global radiation should be evaluated, when using the Atlas, especially in mountainous

areas and on the sea coast. In such situations, data taken directly from the maps should be handled with caution.

The maps are based on ten-year averages for the period 1966-1975. It should be borne in mind that large deviations may occur in any particular year.

In the first edition of the European Solar Radiation Atlas (3), preliminary maps of monthly means of daily global solar irradiation were restricted to the region of the European Community as it existed then. The isopyrs (isolines of daily irradiation) shown on those maps were drawn on the basis of ten-year (1966 - 1975) records at only 56 radiometric stations. Owing to the low density of the network, the maps derived from these data gave only a rather general impression on a large scale. Furthermore, the isopyrs terminated abruptly at the borders of the member states of the European Community at that time.

In view of the above limitations, an improvement and extension of the first Atlas was initiated in 1979. In order to fill the gaps between the available *Radiometric* stations which provide the desired energy values directly, use was also made of sunshine duration data from *Heliographic* stations which are much more numerous. Monthly means of daily global solar irradiation for such sites were derived from the daily sunshine duration using the method of Angström (4) and Black et al. (5).

Maps of the Arabian peninsula were also prepared to permit the irradiation data for Europe to be compared with those of Saudi Arabia, which reach the highest values on earth. These maps were printed as inserts in the maps for the near Middle East. Consequently, the second Solar Radiation Atlas described the mean daily solar radiation energy in a continuous pattern from Scotland to Saudi Arabia. This third Atlas reprints five of the 13 maps from the second European Solar Radiation Atlas without alteration.

Since the solar radiation received at the earth's surface is subject, not only to pronounced seasonal variations but also to major year-to-year fluctuations, many-year means of data for the same time period for all stations are mandatory if one is to draw a satisfactory picture of the distribution of global solar radiation in Europe. The ten-year period 1966 - 1975 was agreed upon from the outset.

These improvements and extensions to the earlier work eventually led to:-

- a more homogeneous and detailed picture of the distribution of mean daily global solar radiation in Europe and the neighbouring part of the Mediterranean Basin;
- the integration of the distributions previously published for several European countries (6-20) into a uniform presentation based on a common time period for all countries.

3. Sources of raw data.

Data were provided by the national meteorological offices and in exceptional cases by universities. A list of organisations providing the original data is given in the section on acknowledgements at the end of this publication.

In order to improve the contours of the isopyrs at the borders of the regions covered by the Atlas, data from stations outside the area have been taken from the Solar Radiation and Radiation Balance Data (The World Network) published by the USSR Chief Administration of the Hydro-meteorological Service, A.I. Voeikov, St. Petersburg, and sponsored by the World Meteorological Organisation (21).

Table 1, fronting the detailed section containing the sets of tables for specific sites, shows, on a country-by-country basis, the number of stations and the types of data that were used. In Table 2, the stations selected for this Atlas are listed in order from north to south within each country. The countries themselves are arranged in alphabetical order. The serial numbers in the first column identify the stations on the station map (refer Section 11 and especially the first map in Section 22, "Horizontal Surface Maps"). The precise positions of the sites are plotted by site number on the first pair of maps.

4. Quality control and data processing.

Daily sunshine duration, S_d , was recorded in most cases by Campbell-Stokes heliographs.

Daily global radiation, G_d , was, as a general rule, measured by electrical pyranometers for which the calibration factors were regularly checked against the National Standard Radiometers, themselves compared and eventually recalibrated during the international or regional comparisons of the national pyrhemeters organised by the World Meteorological Organisation or the Commission of the European Communities.

In accordance with a recommendation of the World Meteorological Organisation (22) which came into force on 1 January 1981, the radiation data are expressed with respect to the World Radiometric Reference (WRR). Therefore, those data which were originally provided, calibrated to the International Pyrhemetric Scale 1956, were increased by 2.2 per cent.

All daily global irradiation data, G_d , and all daily sunshine duration data, S_d , were checked by comparing them with the corresponding daily extraterrestrial solar irradiation, G_{od} , and the astronomical sunshine duration, S_{od} . The algorithm for computing G_{od} and S_{od} is described in Appendix 2. The solar constant used to calculate G_{od} was taken as equal to $1.37 \text{ kW} \cdot \text{m}^{-2}$ (23). (This is

slightly above the current recommended value of $1.367 \text{ kW} \cdot \text{m}^{-2}$). Values of S_d greater than S_{od} and of G_d greater than $f \cdot G_{od}$ were discarded. The factor f was determined from maximum values published by Collman (24) for Hamburg and Lisbon. f was given the following values depending on geographical latitude ϕ .

ϕ	35°- 39°	39° - 47°	47°- 60°	> 60°
f	0.93	0.91	0.87	0.85

A special investigation was necessary for data produced from Robitzsch bimetallic pyranographs. As noted in the first edition of the Atlas, the global radiation data measured by Robitzsch pyranographs in Italy seemed too high. In preparing the second Atlas, note was taken of the further quantitative evidence on this problem that had been recently published at that time by three independent investigations by different authors (25, 26, 27). On the basis of these findings, a careful analysis was carried out by the authors of both volumes of the second European Solar Radiation Atlas. This led to the conclusion that the original Italian G_m data should be reduced by 12 % for the months of May, June, July; by 4 % for November, December, January; and by 8 % for the six other months.

In some other countries also, such as Jordan, Saudi Arabia, Syria and Turkey, the networks were equipped with Robitzsch bimetallic pyranographs for which no information could be obtained regarding the calibration factors of the instruments, the reliability during the period of records, possible shifts of sensitivity and replacement of instruments. Different statistical tests were applied to check the quality over long periods of records. Test for homogeneity were used also for detecting possible biases or drifts over various periods of time (Mann's test, normality test, χ^2 - test, etc. (28)).

In the case of aberrant values (resulting for example from obstructions of the horizon at the observation site or from insufficient care in instrument calibration and checking), and, in the absence of information permitting correction of such values, preference was given to irradiation data calculated from sunshine duration (this, for example, was the case for the Turkish data).

After quality control of the individual daily values of daily global irradiation, G_d , and/or sunshine duration, S_d , had been performed, ten-year mean monthly means of G_m and/or S_m were computed.

5. Estimation procedures for sites with only heliographic data.

The following procedure was applied to derive G_m values for the heliographic stations which had records of sunshine duration S_m only.

For all 114 radiometric stations with simultaneous records of daily global irradiation, G_d and daily sunshine duration, S_d , the monthly coefficients, a_m and b_m , in the so-called Angström regression relationship (4) as modified by Black et al. (5) were established, using equation 1:-

$$G_d/G_{od} = a_m + b_m S_d/S_{od} \quad (1)$$

This provided for each observing site, sets of 12 monthly values of the regression coefficients, a_m and b_m . These were then applied at the monthly mean level to estimate global radiation from heliometric records. This linear relationship between monthly mean relative global irradiation, G_m/G_{om} , and monthly mean relative sunshine duration, S_m/S_{om} , has proved to be a good approximation to reality when it is applied to many-year means of monthly means of daily totals of G_d and S_d , as demonstrated by the high correlation coefficients found.

The coefficients a_m and b_m were determined, month by month, by regression analysis of all the individual pairs of G_d/G_{od} and S_d/S_{od} values over the ten-year period 1966 - 1975 in that month. Details on how G_{od} and S_{od} were calculated can be found in Appendix 2.

Each heliographic station was associated as a "satellite" to an appropriate radiometric station, taking into account the topographic and climatic conditions of the particular area. The links were suggested by the National Meteorological Services who had supplied the data. For meteorological reasons, a few heliographic stations were associated with radiometric stations located in an adjacent country. The "satellite" links used in the earlier edition of this Atlas were not stated explicitly. The new tables in this edition indicate the reference sites explicitly, as discussed later.

By applying the monthly regression coefficients a_m and b_m determined at the radiometric stations, the ten-year means of monthly means of daily sunshine duration S_m of the "satellite" heliographic stations were converted to the corresponding means of daily global irradiation G_m , using equation 1 at the monthly mean level.

6. Areas with missing data.

In the case of Spain, lack of radiometric stations other than Madrid precluded the use of the method just described for defining "satellite" stations. Instead, the coefficients a_m and b_m for each heliographic station in Spain were determined by the method of Dogniaux and Lemoine (29) who proposed a linear dependence of a_m and b_m on geographical latitude ϕ , corrected by a site-specific index for the atmospheric transparency. Similar procedures were adopted in certain other countries where the observational record was inadequate, for example Turkey.

7. Gmax and Gmin values in the European Solar Radiation Atlas, second edition (1984).

Observed values Gmax and Gmin in the European Solar Radiation Atlas, second edition (1984) were obtained in the following way. For instance, taking June, the minimum values were produced by selecting the day with the minimum energy received for the month of June in each year. 10 days were selected in this way over the ten-year period. The mean value appearing in the tables was obtained by totalling the 10 values and dividing them by 10. *All the Gmax and Gmin values obtained in this way in the previous Atlas have been retained unaltered.*

At those sites where no observed irradiation data were available, Gmax and Gmin values were estimated in the previous Atlas, using equation (1) as follows:-

$$\begin{aligned} G_{\max} &= G_o(a + b) \\ G_{\min} &= G_o \cdot a \end{aligned}$$

These equations followed from equation 1, setting for all-day clear sky conditions, $S_d/S_{od} = 1$, or for all day overcast sky conditions, $S_d/S_{od} = 0$, respectively. These assumptions have proved on more detailed investigation to be unsatisfactory. New estimation procedures described below have been adopted for this edition.

8. Changes introduced in estimated Gmax and Gmin values in this edition of the Atlas.

The changes were introduced with the aim of achieving greater consistency between the observed Gmax and Gmin data from radiation observing sites and the estimated Gmax and Gmin values for the nearby sites which had only daily sunshine duration observations available. It became clear, as the result of quality control checks applied, that somewhat unsatisfactory methods had been adopted for making such estimates of Gmax and Gmin, especially Gmin, in the second European Solar Radiation Atlas. The prediction errors in Gmin in certain sunny regions were found sometimes to be as large as 300%. Unfortunately the method previously used did not respect properly the underlying radiation climatology for days of minimum radiation. The new adjustment method used in this revision is explained in detail in Appendix 3, where the associated climatology of monthly mean minimum daily radiation is also developed. In this revision, satellited sites are assumed to have the same Gmax/Gomax and Gmin/Go values as the sites, to which they are satellited.

9. Other changes introduced in this revision.

9.1. The decision was made to introduce no new observational material, but to use experience gained over recent years to put in train some important improvements in the provision of *estimated* values in the tables. These changes are outlined in the following paragraphs. Appendix 3 provides full details.

9.2 Provision of additional estimated data in the tables.

The decision was made to print some additional data of interest to solar design used implicitly in the compilation of the earlier version of the Atlas, but not explicitly published in that edition.

9.2.1. Diffuse radiation data. The estimated diffuse horizontal surface data were not included in the published horizontal surfaces tables in the earlier edition of the Atlas. These diffuse data have now been included in the revised tables for this edition. The monthly mean values of the ratio (Diffuse to Global radiation), D_m/G_m , have been included as well. These ratios should help users appreciate better the relative importance of diffuse radiation in different regions. The standard methodology adopted to develop the original slope tables was used to estimate this data (30).

9.2.2. Extraterrestrial dimensionless ratios. Monthly mean values of the ratio, G_m/G_{om} , were included in the previous Atlas. This value is often referred to in the solar energy research literature as the monthly mean K_t value, or the Clearness Index. In this edition, both measured and estimated values of $K_{tmax} = G_{max}/G_{omax}$ and $K_{tmin} = G_{min}/G_o$ have been included in the site tables as well. K_{tmax} values reflect the relative transmittance of the atmosphere at different sites on cloudless days. The values are influenced by atmospheric pollution, and also the noon elevation of the sun. Site obstruction reduces the values. This is particularly true in winter, when the noon solar altitude is low. Examination of the site table values of K_{tmax} for Bergen reveals this influence very clearly. The value of K_{tmin} reflects the radiation climatology of different months of the year in different parts of Europe. In some areas covered by the Atlas, there are never whole overcast days in certain months of summer. The consequence, which is very favourable to solar energy applications, is that the observed values of G_{min} in the sunnier regions are often substantially greater, by a factor of 3 to 4 or more in summer, than the estimated values put forward for sites without radiation observations in the previous Atlas. These issues are discussed in detail in the Appendix 3.

9.2.3. S_{omax} Two different monthly calculation dates are used in the preparation of the slope tables. Values of S_o , the monthly mean astronomical daylength, are used for making monthly mean estimates. Values of S_{omax} , computed for a specific day, are used for making monthly clear day radiation estimates. The monthly mean maximum sunshine tends to be biased towards that part of the month when the noon sun is highest in the sky. Earlier work on the inclined surface Atlas helped select appropriate computational dates for handling the interlinking of G_{max} values and S_{max} values (30). The precise dates used for this purpose, and the associated declination values are adopted given in Appendix 2 in Table A.2.1. The S_{omax} values presented in the tables are the astronomical daylengths used in the estimation of clear day values of beam and diffuse radiation in the slope tables.

Combining the tabulated observed values of $S_{\max}$ with the tabulated S_{omax} values, one can calculate the ratio $S_{\max} / S_{\text{omax}}$ for the sites with observed $S_{\max}$ values. The values found are significantly less than 1, especially at higher latitudes in winter. The assumption S/S_0 can reach 1 when applying the Angström formula, as in the previous Atlas, causes a systematic overestimation of $G_{\max}$ for sites with only observed sunshine duration.

9.2.4. Estimated sunshine data for sites with no observed sunshine. There is value in having some estimate of S and S/S_0 for radiation observing sites for which such sunshine data are missing. This was achieved in this edition by using the Angström equation in reverse for such sites, referencing each radiation observing site without sunshine observations to a nearby observing site of similar atmospheric clarity with both radiation and sunshine observations available, from which to obtain suitable values of Angström a_m & b_m . Such estimated sunshine data are marked with +++.

9.2.5. Angström regression coefficients. The Angström regression coefficient data have been brought into the individual site tables. The values used in the previous Atlas for sites without observation were implicit in the previously published tables of estimated $G_{\max}$ and $G_{\min}$ values, but were not explicit. For non radiation observing sites, the reference site used to estimate G mean, (and usually $G_{\max}$ and $G_{\min}$ as well) is indicated in the new tables above the numerical Angström coefficients. The same reference site is normally used to estimate $G_{\max}$ and $G_{\min}$, but there are some exceptions set down in Appendix 3. The inclusion of the name of a reference site on any horizontal table automatically means that the Angström coefficients a_m and b_m are estimated values.

As all the observed values of Angström a_m and b_m now appear in the horizontal site tables, the assembled values of a_m and b_m for the 101 stations that appeared in a separate section of the Second European Solar Radiation Atlas were no longer needed.

The availability of these Angström coefficients on a site by site basis makes it more convenient for estimating year by year variations in monthly mean global irradiation from observed values of monthly mean daily sunshine for any tabulated site. The tables give the monthly values of S_0 , the relative sunshine duration, so the value of S_m/S_0 in any specific year is easily estimated. The evaluation of G_m in a specific year becomes very simple, using the tabulated value of G_0 and the annual observed value of S_m/S_0 in equation 1.

10. Horizontal surface radiation tables.

10.1 The structure of the improved tables

The computer based outputs for horizontal surfaces, based on the observed and estimated data, consist of 340 tables, one for each station. The format of these tables has been substantially changed for this revised edition of the Atlas.

One aim in revision has been to provide more readable tables containing all the data for each specific site in a single place. The new tables for horizontal surfaces now present the radiation data in kilowatt hours per square metre per day to 2 decimal places, instead of in watt hours per square metre per day, as in the second European Solar Radiation Atlas. This change gives more compact readable horizontal surface tables with a detail of presentation more in line with achievable observational accuracy. The sunshine data are now presented in hours, in place of 1/10's of hours used in the earlier Atlas. This reduces the risk of errors in using the Tables.

Adjustments have been made for the re-drawn political boundaries in the region covered. The tables now are arranged in alphabetical order of basic country name, using the country names and the borders as existing in November 1995. Full names of states like "Republic of X.... " have not been used in order to provide a simple alphabetic list of countries compatible with simple computer access.

Within each country, the sites are arranged in order of descending latitude, the most northerly site in each country being set first.

No accents or umlauts are used to simplify computer use. There are also no superscripts or subscripts in the tables.

Each table is headed first by the country name followed by the site map reference number. The site reference number enables the location of any site to be located on the basic site reference map. The site number is also the basis of Table 2 which lists the site details of the 340 stations. It is also a key number used to access files on the computer disk. The horizontal surface computer file name is then printed. The site name, right justified, completes the first header line.

The geographical location data, latitude, longitude and the site height above sea level are given in the second header line. The third header line provides the record description, the status of the data and the period of the record. If daily sunshine data were available, S is entered, if monthly sunshine data only, then Sm. If daily radiation data were available, then G is entered, if only monthly radiation data, then Gm.

In the main body of table, the ten-year means, month by month, and for the year, of the following quantities are given:-

(For convenience, the subscript *m* for monthly mean has been omitted throughout).

Daily global radiation. Units kWh/m^2 . (Note ++++ indicates an estimated value).
(Note CCCC indicates an Italian adjusted value).

G mean	Monthly mean	)	
Gmax	Monthly mean maximum	)	of daily global irradiation.
Gmin	Monthly mean minimum	)	
Go	Monthly mean of daily extraterrestrial solar irradiation on a horizontal plane.		

Ratios to extraterrestrial irradiation. Units Dimensionless.

(Note ++++ indicates an estimated value, CCCC indicates an Italian adjusted value).

G/Go	Relative daily global irradiation, often called Kt mean or Clearness Index.
Ktmax	(= $G_{\text{max}}/G_{\text{omax}}$) The relative maximum monthly daily global irradiation.
Ktmin	(= G_{min}/G_o) The relative minimum monthly daily global irradiation.

Estimated diffuse solar radiation. Units kWh/m^2 .

(Note All values are estimated and preceded by ++++).

D mean est.	Estimated monthly mean daily diffuse radiation.
D/G mean	Ratio of estimated monthly mean diffuse irradiation to monthly mean global radiation.

Daily sunshine duration. Units hours. (Note +++ indicates an estimated value).

S	Monthly mean of daily sunshine duration.
So	Monthly mean astronomical sunshine duration.
S/So	Monthly mean relative sunshine duration.
Somax	Estimated astronomical duration on days of maximum radiation.

Angström coefficients. Units Dimensionless.

First line in this section of the tables indicates whether the table represents a radiation observing site, or a site which has been referenced to the indicated "satellite" site for radiation estimation purposes. If the statement "Site referenced for estimating sunshine:- " appears with a site name following, it is a radiation observing site but with no sunshine record, and the Angström formula has been used in reverse to estimate S_m from G_m .using the coefficients from the referenced site.

The next two lines give monthly and annual values of

- Angström a) either derived from actual data or estimated from a nearby
 Angström b) reference site. Refer above.

11. Introduction to the horizontal surface maps.

Two geographical maps are used. One covers the main European area from 62°N to 36°N and from 10°W to 28°E. The other map covers the eastern Mediterranean area with a map of Saudi- Arabia as an insert. The main maps are plotted using Lambert's conical projection.

The first map shows the location of some 310 radiometric and heliometric stations in Europe, from which data have been drawn for this Atlas. Each station is identified by a site number. The site names are listed against site number in Table 2. The map on the back of the first map shows the location of 30 stations used in the eastern Mediterranean area. These sites are also listed in Table 2 under site numbers 311 - 340. 5 double sided horizontal surface maps follow providing isolines of daily solar radiation. One map provides annual mean data, the other four maps daily mean global radiation for March, June, September and December respectively. The values of mean monthly and annual means of daily global irradiation from the tables were entered on the maps and then interpolated by isolines (isopyrs). Purely mathematical interpolation might have led to gross errors in certain cases. Instead, due account was taken of the geographical and climatic conditions, such as coastlines, river valleys, mountains, etc.

Values shown on the isopyrs are in kWh.m⁻² per day. The step width is 0.2 kWh.m⁻², which was held constant throughout the whole area for all four months despite the weak gradients in northern Europe in December. This was done to avoid any bias in comparing the global irradiation patterns in different locations and seasons. As irradiation data were not available from ship-borne stations, the isopyrs are shown as dashed lines over the sea areas.

12. Geographical analysis of the different radiation climates of Europe

(Note the climatology of minimum radiation is discussed in Appendix 3)

12.1. General features.

Since solar radiation is the primary factor influencing all other climatic parameters, the geographical distribution of monthly mean global solar radiation has a strong influence on the definition of the different climatic zones of Europe. The variations from month to month are caused mainly by changes in the general circulation of the atmosphere over Europe and the adjacent part of the Atlantic Ocean. Different cloudiness and turbidity characteristic of various types of air masses of maritime or

continental origin determine the amount of global radiation received at the earth's surface. Additionally, the isopyr patterns are influenced by:

- coastlines,
- topography of the ground,
- astronomical factors determining the solar altitude pattern across the day.

In most months, the isopyrs tend to follow the shape of the coastlines. This feature is a consequence of the corresponding cloud distribution patterns. These patterns are shown up by cloud pictures taken from meteorological satellites. The different roughness of the sea and the ground produce an uplift of the air masses moving landwards. In the raised air, formation of clouds takes place at some distance from the coast. Consequently the western seashores and offshore islands of Denmark, Germany, the Netherlands, Belgium and France are favoured by relatively high irradiation.

Additionally the predominantly westerly air flow produces a marked lee effect of reduced cloudiness along the eastern coasts of Jutland, northern Germany and Sweden.

Another major factor influencing the global radiation distribution is the topography of the ground. Cyclones from the Atlantic crossing Europe are subject to an orographic uplift which is superimposed on the frontal glide-up. Increased condensation, cloud formation and precipitation on the western slopes of the mountain chains are the consequence, resulting in steeper gradients of the isopyrs at the Scandinavian mountains, the German Midlands, the Vosges, Jura, Pyrenees, Alps and the Balkans. Drawing isoline patterns over mountains is difficult, consequently the isopyrs were drawn in more general terms in those areas. Local shielding by nearby peaks as well as upslope and lee effects on cloud formation, or local peculiarities like fog or mist in the valleys may significantly reduce the incoming radiation at certain sites. On the other hand, high altitude stations and especially mountain peaks are often above the clouds and therefore favoured by high global irradiation. Moreover, snow-covered slopes may increase the global radiation by multiple reflection between ground and sky. Wherever possible, such peculiar conditions were marked as singularities on the maps.

The astronomical parameters combined with the geographical latitude define solar elevation and length of daylight and thereby influence the daily global irradiation (refer Appendix 2). The isopyr patterns show a strong dependence on latitude especially in the winter months when daily global irradiation decreases with increasing latitude. In the summer months, sunny days in northern Europe show high radiation totals due to the long daylength. However, this greater length of day in northern Europe is partly counteracted by greater cloudiness compared with southern Europe, so a gradient of mean solar radiation persists.

The variable cloudiness means the standard deviations of the day by day data about the monthly mean values for the individual stations are considerable. There is also an appreciable year-to-year variability of monthly mean daily global irradiation for each particular month. In central and northern Europe, the daily variation is typically 30 - 40 % in summer and 55 - 75 % in winter, while the corresponding variations in the Mediterranean area are smaller, amounting to 10 - 20 % and 30 - 40 % respectively in summer and winter. In this region the high amounts of summer sunshine mean a high insolation is sustained day after day. (Editorial note. The second European Solar Radiation Atlas contained a range of graphs setting down day by day variability as statistical plots of monthly standard deviations from monthly means. These plots have not been reproduced in this revised version of the Atlas) The large variability of daily global irradiation in northern Europe, particularly in the winter months, is mainly caused by the high frequency of days with overcast skies.

12.2. Month by month analysis.

A month-by-month analysis of the tabulated and mapped data brings out the following characteristic features:-

In **January** in Europe very low mean values of daily global irradiation of less than 1.0 kWh.m^{-2} per day are observed as far south as 48° N . The gradients over Scandinavia, the British Isles, the Benelux countries, France, the German lowlands and Poland are very flat. The horizontal radiation available more or less follow the parallels of latitude. In the mountain regions, there is an increase of global irradiation with altitude, sometimes up to 1.6 kWh.m^{-2} per day and more. Relative minima are observed in the Po valley and the Ljubljana basin which is attributed to a large number of foggy days in both those areas (31).

In **February** there are not marked changes in the radiation pattern, as compared with January, apart from a generally higher level of daily global irradiation. Again, some mountain areas and highlands are favoured by mean irradiation levels greater than 2.4 kWh.m^{-2} per day in this month. The range of irradiation in Europe extends from 0.8 kWh.m^{-2} per day in the north to 3.4 kWh.m^{-2} per day in southern Spain. Relative minima are again found in the Po valley and in the Ljubljana basin.

In **March**, the global irradiation distribution begins to change. The map for March shows a coastline effect develops along the west coasts against the latitudinal distribution pattern. March is the first month of the year when global irradiation contributes considerably to warming north of 50° N .

Footnote The mapped radiation pattern over the central plateau of Spain must be regarded with caution because of the lack of measured data from Spain available to the project in 1983.

The global irradiation distribution in **April** also exhibits a well-pronounced coastline effect, which is confined to a relatively narrow coastal strip. Most favoured are the Welsh coast around Aberporth, the area leewards of the north Wales mountains, and the southern part of Ireland while over large cities and industrial areas the incoming radiation is less due to air pollution (32). In Scandinavia, global irradiation increases in southern Sweden, particularly at the east coast and the offshore islands, Gotland and Oland, where foehn winds on the lee side of the Scandinavian mountain chain lead to cloud dissolution (33). On the northern sides of the Alps and other central European mountains, the barrage effect enhances cloudiness and precipitation, thereby decreasing the global irradiation whereas extremely high altitudes are favoured by daily irradiances above 5.2 kWh.m^{-2} per day.

The northern part of the Iberian peninsula is influenced by the Atlantic cyclones. High irradiation values are observed in Portugal. In Italy, the global irradiation distribution is influenced by the Alps in the north and by the Appenines. A maximum of 5.6 kWh.m^{-2} per day is attained in Sicily.

In Balkan region, the radiation elements are oriented along the Dinaric Alps with a steep increase of irradiation towards the Adriatic coast. Reduced global irradiation is noticed in the Ljubljana basin. Regions of appreciable irradiation are the Hungarian plains and the Wallachia south of the Carpathian Mountains, but relatively low values are observed at Sofia. More information is given in reference (34). In Greece, the irradiation distribution shows high values over the Ionian and Aegean coasts and over Crete, whereas, in the mountainous mainland, the irradiation is reduced.

This global irradiation distribution in April is the starting point of the typical summer pattern. This pattern is fully established in May. The daily irradiation ranges from 4.0 kWh.m^{-2} per day at 60° N to 6.8 kWh.m^{-2} per day in Sicily. This general north-south gradient is modified by barrage effects at the mountain chains and by high turbidity in industrial areas and large cities. Moreover the coastline effect remains pronounced.

The irradiation pattern in **June**, which is mapped, is similar to May but there are stronger negative orographic effects. The highlands and mountain regions receive reduced irradiation, typically less than 5.2 kWh.m^{-2} per day due to enhanced convective cloudiness. Furthermore, the barrage at the northern slope of the Alps is well marked; at Salzburg, for instance, only 4.6 kWh.m^{-2} per day are received. On the other hand, at latitudes north of 50° N , June is the month with maximum irradiation during the year. Favourable meteorological conditions and the long daylength lead to high daily irradiation values. The Baltic Sea, the German Bight and the Irish Sea are particularly favoured. Strong gradients are observed in the northern mountains of the Iberian peninsula. Insolation is high in the whole Mediterranean area.

July is the month with maximum irradiation in Europe south of 50 °N, but there is a depression in the north in most years. A change in the large-scale atmospheric circulation initiates the so-called North-West European monsoon, a bad weather situation bringing relatively cool maritime air masses and high precipitation to that area.

The irradiation distribution in **August** is similar to that of July but levels are reduced.

In **September**, the map shows the isopyr pattern begins to form again along the parallels of latitude. Daily irradiation decreases from 5.4 kWh.m⁻² per day in the south to 1.8 kWh.m⁻² per day in the far north. The gradients at the coast-lines become weaker, but the high altitude mountains receive relatively high irradiation.

In **October**, the irradiation distribution tends to move back to the typical winter pattern. The coastline effect has almost disappeared. Large parts of central Europe have almost uniform irradiation of less than 1.6 kWh.m⁻² per day. South of the Alps, the well-known winter reduction of irradiation in the Po valley takes place. However southern Spain, Sicily and Crete still receive about 4.0 kWh.m⁻² per day.

A largely latitudinally based pattern of daily mean global irradiation and a relative uniformity is characteristic of the early winter months of **November** and **December**. North of the Pyrenees, the Alps and the Balkans, global irradiation is too low now to counter-balance the outgoing net terrestrial radiation of the ground and the land surface begins to cool. In December the radiation map shows that the 2.0 kWh.m⁻² per day isopyr moves down to about 38° N in the Mediterranean area. The sun again starts to climb from December 22 nd.

13. Solar radiation on overcast days.

The solar irradiance on overcast days on horizontal surfaces, G_b , in northern Europe may be estimated from the very simple formula proposed by Krochmann (35):

$$G_b = D_b = (r/r_j)^2 (2.6 + 182.6 \sin \gamma_s) \text{ W.m}^{-2} \quad (2)$$

where $(r/r_j)^2$ is the correction for solar distance, (refer Appendix 2, Table A.2.1) , and γ_s is the solar altitude.

The formula specifically relates to days with no observed sunshine all day. This function may be numerically evaluated, month by month, to provide estimates of representative daily totals of the overcast-day horizontal-surface irradiation for a site at any latitude.

Table 3 Predicted monthly mean daily global radiation on horizontal surfaces on overcast days.
Latitudes 30 N to 70 N. Units kWh/m² per day

Latitude Deg. N.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
70	0.00	0.11	0.43	0.91	1.39	1.69	1.58	1.13	0.63	0.23	0.02	0.00	0.68
69	0.00	0.14	0.45	0.93	1.39	1.68	1.57	1.14	0.65	0.25	0.03	0.00	0.69
68	0.01	0.16	0.48	0.94	1.39	1.67	1.55	1.15	0.67	0.28	0.05	0.00	0.70
67	0.02	0.18	0.50	0.96	1.39	1.66	1.55	1.16	0.69	0.30	0.06	0.00	0.71
66	0.04	0.20	0.52	0.98	1.40	1.64	1.54	1.17	0.71	0.32	0.08	0.01	0.72
65	0.05	0.22	0.55	0.99	1.40	1.63	1.54	1.18	0.73	0.35	0.10	0.02	0.73
64	0.06	0.24	0.57	1.01	1.41	1.63	1.54	1.20	0.75	0.37	0.12	0.03	0.75
63	0.08	0.26	0.59	1.02	1.42	1.63	1.54	1.21	0.77	0.39	0.13	0.05	0.76
62	0.10	0.28	0.61	1.04	1.42	1.63	1.54	1.22	0.79	0.42	0.15	0.06	0.77
61	0.12	0.30	0.63	1.06	1.43	1.63	1.55	1.23	0.81	0.44	0.17	0.08	0.79
60	0.13	0.32	0.66	1.08	1.43	1.63	1.55	1.25	0.83	0.46	0.19	0.10	0.81
59	0.15	0.34	0.68	1.09	1.44	1.63	1.56	1.26	0.85	0.49	0.22	0.11	0.82
58	0.17	0.37	0.70	1.11	1.45	1.63	1.56	1.27	0.87	0.51	0.24	0.13	0.84
57	0.19	0.40	0.72	1.12	1.46	1.63	1.56	1.28	0.89	0.53	0.26	0.15	0.85
56	0.22	0.42	0.74	1.14	1.46	1.63	1.56	1.29	0.91	0.55	0.28	0.17	0.87
55	0.24	0.44	0.76	1.15	1.47	1.63	1.57	1.30	0.93	0.57	0.30	0.18	0.88
54	0.26	0.47	0.79	1.17	1.48	1.63	1.57	1.31	0.95	0.60	0.32	0.21	0.90
53	0.28	0.49	0.81	1.18	1.48	1.63	1.58	1.32	0.97	0.62	0.34	0.23	0.91
52	0.30	0.51	0.83	1.20	1.49	1.64	1.58	1.33	0.99	0.64	0.36	0.25	0.93
51	0.32	0.53	0.85	1.21	1.50	1.64	1.59	1.35	1.00	0.66	0.38	0.27	0.94
50	0.34	0.56	0.87	1.22	1.50	1.64	1.59	1.36	1.02	0.68	0.41	0.29	0.96
49	0.36	0.58	0.88	1.24	1.50	1.64	1.59	1.37	1.04	0.70	0.43	0.32	0.97
48	0.38	0.60	0.90	1.25	1.50	1.64	1.59	1.38	1.05	0.72	0.45	0.34	0.99
47	0.41	0.62	0.92	1.26	1.51	1.65	1.60	1.39	1.07	0.74	0.48	0.36	1.00
46	0.43	0.64	0.94	1.27	1.52	1.65	1.60	1.39	1.09	0.76	0.50	0.38	1.02
45	0.45	0.66	0.96	1.28	1.52	1.65	1.60	1.40	1.10	0.78	0.52	0.40	1.03
44	0.47	0.69	0.98	1.29	1.53	1.64	1.59	1.41	1.12	0.80	0.55	0.42	1.04
43	0.50	0.71	1.00	1.30	1.53	1.64	1.60	1.42	1.13	0.82	0.57	0.44	1.06
42	0.52	0.73	1.01	1.31	1.54	1.64	1.60	1.43	1.15	0.84	0.59	0.46	1.07
41	0.55	0.75	1.03	1.32	1.54	1.64	1.60	1.43	1.16	0.87	0.62	0.49	1.09
40	0.57	0.77	1.05	1.33	1.55	1.64	1.60	1.44	1.18	0.88	0.64	0.51	1.10
39	0.59	0.79	1.07	1.34	1.55	1.64	1.61	1.45	1.19	0.90	0.66	0.54	1.11
38	0.61	0.81	1.08	1.35	1.55	1.64	1.61	1.45	1.21	0.92	0.68	0.56	1.12
37	0.64	0.83	1.10	1.36	1.55	1.64	1.61	1.46	1.22	0.94	0.70	0.58	1.14
36	0.66	0.85	1.11	1.36	1.56	1.63	1.61	1.46	1.23	0.96	0.72	0.61	1.15
35	0.68	0.87	1.13	1.37	1.56	1.63	1.61	1.47	1.24	0.98	0.75	0.63	1.16
34	0.70	0.89	1.14	1.38	1.56	1.63	1.60	1.47	1.26	1.00	0.77	0.65	1.17
33	0.72	0.90	1.16	1.39	1.56	1.63	1.60	1.48	1.27	1.02	0.79	0.68	1.18
32	0.75	0.92	1.17	1.40	1.56	1.63	1.60	1.48	1.28	1.03	0.81	0.70	1.19
31	0.77	0.94	1.19	1.40	1.56	1.62	1.60	1.48	1.29	1.05	0.83	0.72	1.21
30	0.79	0.96	1.20	1.41	1.56	1.62	1.60	1.48	1.30	1.07	0.85	0.74	1.22

Note by definition the diffuse overcast day radiation = global overcast day radiation.

Table 3 provides values of these daily estimates for horizontal surfaces for overcast days for latitudes 30° N to 70° N. It should be recognised that the formula only provides statistically representative values. The variance from one overcast day to another can be considerable due to the varying nature of cloud covers. Factors like cloud type, cloud thickness, and number of layers of cloud influence the transmittance strongly. As Sections 7 & 8 and Appendix 3 explain, G_{min} values are not necessarily associated with overcast days, and in the sunnier regions of Europe, and the near East, whole overcast days may never occur in certain months. It is therefore inadvisable to use equation 2 in Southern Europe. In Northern Europe the formula normally yields values significantly above the measured G_{min} values in winter. The formula is specifically developed for typical overcast conditions and not minimum conditions, i.e. it provides estimates for representative overcast days rather than for days of extremely low radiation, G_{min} values.

Table 4 Ratio of inclined surface diffuse sky irradiation to horizontal surface diffuse sky irradiation under overcast sky conditions for slopes of different inclination.

Angle of slope β	Ratio	Angle of slope β	Ratio	Angle of slope β	Ratio
2	1.000	32	0.891	62	0.652
4	0.999	34	0.878	64	0.633
6	0.996	36	0.865	66	0.615
8	0.993	38	0.851	68	0.597
10	0.989	40	0.836	70	0.578
12	0.984	42	0.821	72	0.560
14	0.978	44	0.806	74	0.541
16	0.971	46	0.790	76	0.523
18	0.964	48	0.774	78	0.504
20	0.956	50	0.757	80	0.486
22	0.947	52	0.740	82	0.468
24	0.937	54	0.723	84	0.450
26	0.927	56	0.705	86	0.432
28	0.915	58	0.688	88	0.414
30	0.904	60	0.670	90	0.396

The energy reflected from the ground must be added (refer Section 17 below to estimate the global slope irradiation under overcast conditions.

The conversion to slopes for overcast conditions is achieved assuming a Moon and Spencer radiance distribution for the overcast sky, as adopted by the Commission International de l'Eclairage (C.I.E.) for daylighting design. Estimates of the monthly mean daily irradiation on slopes for overcast days using Table 3 are easily made using Table 4 to provide the correct numerical correction factor for the slope in question. The statistical validity of the above formulae were extensively checked by the group at Berlin, as part of the work carried out in connection with the second European Solar Radiation Atlas project (36). Further details may be found in Solar Radiation Data, Vol. 3 (30).

14. Introductory comments on global and diffuse radiation on vertical and inclined surfaces.

The sections that follow deal with the irradiation of vertical and inclined surfaces. The work has been developed from the Volume II of the Second European Solar Radiation Atlas (2), but the changes that have been made are relatively few, as only sites with actual radiation observations were used in preparing the original slope irradiation tables. The values of G_{max} and G_{mean} used are therefore observed values, which have not been subjected to revision. It is mainly the tabular presentation that has changed.

A new set of 101 inclined surface tables have been prepared to a slightly different format. These tables now include the observed monthly mean global radiation on horizontal surfaces, G_{mean} and the associated estimated diffuse radiation, $D_{mean\ est}$. In addition they include values of G_{max} on horizontal surfaces and the estimated associated values of horizontal diffuse radiation associated with the G_{max} days, D_{clear} (note the tabulated diffuse values are not D_{max} values. No studies of D_{max} values are available. The maximum diffuse radiation tends to be associated with a thin cover of high alto stratus cloud and not with clear sky conditions, as discussed later).

The second European Solar Radiation Atlas provided detailed maps and tables of inclined surface solar radiation. However for economy, these inclined surface maps have been omitted in this third edition. However this omission is compensated by improved tables for inclined surface irradiation which provide radiation values for sloping surfaces expressed as ratios to horizontal values, as well as providing computed values of global and diffuse radiation on slopes.

In the original Atlas there were additionally 101 tables for the monthly mean global radiation transmitted through vertical single and double clear glazing for a wide range of orientations. Advances in glazing practice has made them less relevant, so they have been omitted in this more compact edition of the Atlas.

Because inclined surface data are not currently measured by meteorological networks, they had to be calculated from other data. The basic input data used for computation are all found in the horizontal

surface tables, with the exception of the monthly mean maximum sunshine, S_{max} . These data were a supplementary input for the clear sky inclined surface table estimates. The monthly values of S_{max} used at each site are printed at the bottom of the slope tables.

Unlike the earlier sections dealing the irradiation of horizontal surfaces covering 33 countries, the studies of inclined surface radiation are restricted to 13 EU countries and 5 immediately neighbouring countries plus the countries that have evolved out of the original 1984 Yugoslavian state. Tables for Finland are not included, because the appropriate sunshine data was not available. Neighbouring non member countries covered are Norway, Poland, Czech Republic, Slovakia, and Switzerland. There are also tables for sites in Croatia, Bosnia Hercegovina, Slovenia and Yugoslavia. These were the countries in project area for which a suitable starting data base was available in 1983. *All the inclined surface tables in the Atlas are based on observed horizontal radiation data and observed values of the monthly mean maximum sunshine hours.* In 1983 this data was available for 101 sites located in the countries indicated. No estimated data sets of global horizontal radiation were used.

15. Outline of the slope prediction process.

For obvious reasons, the introduction to the sections that follow has had to be limited to a short discussion of the methodologies which were employed for the computation of the tables.

15.1. The key components.

Only the key features of the estimation process are set down here. The prediction process used to estimate the values of global and diffuse solar radiation on inclined surfaces from the data in the horizontal surface tables is reported in a complete form in Solar Energy R & D in the European Community, Series F, Solar Radiation Data, Volume 3. *Prediction of solar radiation on inclined surfaces*, (30). This book includes instructions for the manual calculation of data for other sites. Computer programmes for carrying out the computations are available (refer end of reference 37).

There are three components of the global solar radiation falling on an inclined plane:

- the direct-beam component;
- the sky-diffuse component;
- the ground-reflected diffuse component.

The ground-reflected component depends on the albedo of the ground in front of the inclined plane. The albedo is the reflectance for radiation across the whole solar spectrum, visible and infra red. The term "ground albedo" thus describes the proportion of the incident solar radiation reflected from the ground. A standard ground albedo of 0.20 has been adopted throughout in the preparation of this Atlas.

15.2. Direct beam irradiation from clear skies.

The direct-beam component for clear skies is derived from the extraterrestrial radiation which can be precisely calculated from the astronomical data. The direct beam is decreased due to:

- scattering by the air molecules in the dry and clean atmosphere in the solar path;
- scattering and absorption due to water vapour, other gases and aerosols in the solar path.

The elevation above sea level affects scattering due to first factor. This influence can be assessed by means of the site atmospheric pressure, which depends on the height of the site. The second influence may be described by the *Linke Turbidity Factor*, T_L . This is derived from a comparison of actual beam strength with the beam strength expected through a perfectly clean atmosphere. (refer Appendix 1 for definitions). T_L at air mass 2 was the key parameter used in the calculation of clear-day and monthly mean solar radiation on inclined surfaces for different sites in this Atlas.

There are several methods for determining T_L for any particular site (please refer to Solar Radiation Data, Vol. 3 (30) for details). Once T_L is known, the beam irradiance perpendicular to the beam can be estimated for cloudless conditions, and the daily beam irradiation on any slope calculated numerically from the solar geometry.

The most convenient method found to derive the monthly representative Linke Turbidity Factor at any specific site was to use equation 1, the sum of the regression coefficients ($a_m + b_m$) in the Angström equation for that site. As already discussed in Section 5,

$$G_d/G_{od} = a_m + b_m S_d/S_{od}$$

where G_{od} is the daily global extraterrestrial irradiation, S_{od} the astronomical day length, G_d the daily global irradiation and S_d the daily sunshine duration, all in a specific month.

Under clear-sky conditions, S_d/S_{od} tends towards 1 and so ($a_m + b_m$) provides a reasonable measure of the mean transmittance of global irradiation through the cloudless atmosphere in month m . A simple formula enabled T_L to be estimated on a monthly basis, both for clear days and for monthly mean conditions from ($a_m + b_m$). (Refer Appendix 4, equations A.4.6, A.4.7 and Table A.4.2.) Stations used for the preparation of slope tables for the Atlas were mainly selected on the availability of these ($a_m + b_m$) values. However estimates of ($a_m + b_m$) had to be used in Spain and Portugal due to lack of observed radiation data at that time. The observed and estimated values of a_m and b_m used to estimate T_L are tabulated for each site in the horizontal tables.

15.3. Diffuse radiation from the clear sky.

The next component to be calculated to obtain the clear sky solar global radiation is the clear sky diffuse radiation. Clear sky diffuse radiation results from the scattering effect of the atmosphere and all its constituents. The sky diffuse radiation on horizontal surfaces under cloudless conditions, D_c , is enhanced when conditions of high turbidity occur, and the beam contribution falls, so the balance between the horizontal beam radiation, B_c , and the sky radiation, D_c changes with decreases in sky clarity (37). As the global radiation, G_c , is equal to $B_c + D_c$, the ratio D_c/G_c also rises.

The estimated cloudless sky diffuse radiation values in the Atlas have been derived using the air mass 2 Linke turbidity factor T_L . The tabulated values of D_{dc} , set in the inclined surface tables as D Clear, therefore are also linked to the values of the sum of the Angström coefficients.

While the conversion of the horizontal-surface direct beam irradiances to slope irradiances is a simple trigonometric process, the conversion of the horizontal-surface diffuse sky irradiance to slope irradiances is more difficult because the sky is not uniformly bright. Under clear-sky conditions the zone of the sky around the sun tends to be brighter than the rest of the sky. The zone of the sky close to the horizon is also relatively bright. A special diffuse model had to be developed to deal with the prediction of diffuse solar radiation on slopes from clear skies (30).

15.4. Radiation reflected from the ground.

Finally the ground reflected contribution has to be added. Here a ground albedo of 0.20 was used. A method to correct the reflected irradiation to other values of the albedo is set down below.

15.5. Partially cloudy conditions.

The beam radiation is reduced due the clouds. This is an intermittant interruption. Averaging over the month, the clear sky beam solar radiation is reduced in proportion to the the relative duration of bright sunshine of adequate strength to burn the sunshine recorder card. Daylength was calculated assuming the sunshine recorder did not burn until the elevation of the sun was four degrees. The ratio used was therefore S/S_{04deg} , where S is the monthly mean sunshine. For G_{max} days, the ratio S_{max}/S_{04deg} was found using the declination for clear days to calculate the 4 degree sunrise daylength (refer Appendix 2, Table A.2.1 for the key declination values used).

As discussed in Section 13, the representative diffuse irradiation from overcast skies on sunless days can be expressed as a simple function of the solar altitude (refer Table 3). Corrections are necessary, however, to take into account the brightness distribution of the overcast sky when making slope estimates (refer Table 4).

The calculation however becomes more complicated for monthly means, i.e. when the consequences of a combination of cloudy, partially-cloudy and sunny weather conditions have to be considered. Under partially-clouded conditions, diffuse radiation on horizontal surfaces for a given solar altitude is normally higher than under either clear or overcast conditions. Hence linear interpolation between the two, using relative sunshine duration is invalid. A pragmatic method had therefore to be developed which is based on the consequences of climatic observations. For details, the reader should refer to "Solar Radiation Data", Vol. 3 (30). The essential inputs into this part of the calculation process are the measured values of S_m , the monthly mean observed hours of bright sunshine, as well as the monthly values of the sum of the Angström coefficients, $(a_m + b_m)$. These are needed to estimate the monthly mean representative values of the Linke Turbidity Factor T_L .

15.6. The final estimation model.

The final model that emerged for calculating monthly means of global and diffuse slope irradiation uses, as the basic inputs, the latitude of the station, its height and the monthly mean observed hours of bright sunshine, S , the derived monthly values of the sum of Angström coefficients, i.e. $(a_m + b_m)$, and the observed monthly mean daily global radiation on the horizontal surface, G_m , at the site.

The monthly mean model used was first developed from detailed observed data in Hamburg. The model was then adjusted against observed data for 15 high-grade radiation stations in Western Europe, so as to cover a wider range of atmospheric conditions. Observed diffuse radiation data were available for all these study sites, but some difficulties emerged over the different shade-ring correction techniques applied at different sites in Europe. Unfortunately there was very little useable observation data concerning diffuse radiation at that time from Southern Europe. The assumption was made the diffuse model would still be valid at lower solar altitudes

The final irradiance prediction models were checked at the hourly level for *horizontal surfaces* for several stations. Where suitable observed slope data were available, the model was also checked for accuracy in the prediction of hourly and daily *slope irradiation*, again with very satisfactory results.

The inclined surface tables presented here include a set of estimated data for clear-sky conditions for the 101 stations, in addition to the estimated monthly mean values. It should be noted that the two parts of each slope table were deliberately calculated using different dates in the month. (Refer Appendix 2, Table A.2.1 for the declination values used).

In order to give proper weight to actual radiation observations, all the horizontal modelled predictions were normalized first, thus the predicted daily totals, obtained by summing the hourly predicted mean hourly values of G_{hm} and G_{hc} were adjusted to match their sum precisely to the observed monthly

G mean, and observed monthly Gmax radiation values on the horizontal surface. This was done before proceeding to the computation of slope irradiation values from the normalised hourly horizontal surface values.

16. Introduction to the tables for daily global and diffuse radiation incident on slopes.

Computed incident solar radiation tables for 101 sites in Europe are provided at the end of the Atlas. Table 2 provides an index of sites. A site is marked with an asterisk if a slope table has been computed. Each inclined surface table header contains, in addition to the site name, the country name and the site reference number needed to locate the site on the site reference map. The computer file name for the clear sky slope data file then follows. The header then gives the latitude, longitude and station height and the period of the record in the lines that immediately follow.

Each inclined surface table has two parts. *The radiation units in both parts are kWh.m⁻² per day.* The top part of each table provides estimated values of the monthly mean daily global and diffuse solar radiation falling on planes facing south with tilts of 10°, 30°, tilt = latitude, 60° and 90°, i.e. vertical South, together with values for additional vertical surfaces facing SE/SW, East/West, NE/NW and North. These data are preceded by the monthly mean daily horizontal surface observed global and estimated diffuse irradiation data. The input values used can be found in the corresponding horizontal tables for the site. The ratios of the monthly mean slope global radiation values to the monthly mean daily horizontal global radiation values are set immediately below. Their inclusion of represents an enhancement to the tables published earlier in the second European Solar Radiation Atlas.

No allowance has been made in the tables for effects of snow in increasing the energy available on slopes. However an explanation as to how to make such corrections is included below.

In the bottom part of each table there are estimates, for the same slopes as above, of the monthly values of the global and diffuse radiation that are associated with clear-sky conditions. It should be noted that the maximum radiation on surfaces facing away from the sun does not occur under such clear-day (near cloudless) conditions, but instead under partially-clouded conditions, or with thin high cirrus cloud. With partially clouded skies, the higher irradiation on surfaces facing away from the sun is due to the impacts of back reflections from bright clouds. In the case of high cirrus clouds, the beam is strongly weakened but the sky becomes very bright. For this reason, the lower tables are headed as *clear day means* and are not designated as maximum values, even though for many surfaces they are representative of maximum monthly values. A key input was of course Gmax. A clear day ratio table has been included. The sunshine data used are printed at the bottom.

Table 5. Albedo values for typical ground surfaces.

Type of surface	Albedo r_g	Source of data
Natural ground surfaces		
Grass (July/ August)	approx. 0.25	Monteith (1961)
Lawns	0.18-0.23	Dogniaux (1973)
Dry grass	0.28-0.32	Dogniaux (1973)
Uncultivated fields	0.26	Dogniaux (1973)
Bare soil	0.17	Monteith (1961)
Snow		
Fresh snow	0.80 - 0.90	Dogniaux (1973)
Old snow	0.45 - 0.70	Dogniaux (1973)
Water surfaces		
Water surfaces	0.05	Deacon (1969)
Solar altitude > 45°		
Water surfaces	0.08	Deacon (1969)
Solar altitude 30°		
Water surfaces	0.12	Deacon (1969)
Solar altitude 20°		
Water surfaces	0.22	Deacon (1969)
Solar altitude 10°		
Constructed ground surfaces		
Macadam	approx. 0.18	Dogniaux (1973)
Asphalt	approx. 0.15	Holder & Greenland (1951)
Concrete, clean	approx. 0.30	Teneluis (1960)
Concrete, weathered, urban polluted area	approx. 0.20	Page (1960)
Clean cement	approx. 0.22	Dogniaux (1973)

The clear-day values were computed for the dates shown in the tables to take account of the fact that, during the period January to June 21st, the sun's noon altitude is increasing during the course of the month, so statistically the days of maximum horizontal-surface radiation tend to occur towards the end of the month in that period. During the period June 21st to December 23rd, the sun's altitude is steadily

decreasing, so statistically the days of maximum horizontal-surface radiation tend to occur towards the beginning of the month in this second period. In June, the annual maxima tend to occur around June 21st. The computational dates used for the clear-day values are given at the head of each monthly column in the inclined surface tables (refer Appendix 2, Table A.2.1 for the detailed declinations used).

Values of G_{max} , essential for normalisation were available for the majority of stations in the horizontal surface tables. Where values of G_{max} were not available, normalisation was not possible, i.e. no adjustment to observation after computation could be made, for example West Berlin. The input data used to prepare the bottom section of each table is representative of conditions of relatively little cloud. However, in many parts of Northern Europe, the data are not for completely cloudless days. A typical value of the clear-day relative duration of card burning bright sunshine is around 90%.

17. Corrections for changes in ground albedo.

As mentioned before, the radiation tables for the 101 sites have been computed assuming a ground albedo (reflectance for solar radiation) of 0.20. If it is desired to estimate the effects of a change in ground albedo in any particular month, say to allow for effects of snow, the relevant monthly horizontal-surface global radiation data, G mean and G_{max} , have first to be extracted from the tables or published maps. The change in the ground reflected contribution can then be estimated as:-

For monthly mean conditions:-

$$\text{Change in reflected energy per day} = 0.5 (r_g - 0.20) (1 - \cos \beta) G \text{ mean} \quad \text{kWh.m}^{-2} \text{ per day.}$$

For clear sky conditions:-

$$\text{Change in reflected energy per day} = 0.5 (r_g - 0.20) (1 - \cos \beta) G_{max} \quad \text{kWh.m}^{-2} \text{ per day.}$$

where r_g is the ground albedo and β is the angle of inclination of the plane.

Table 5 contains representative values of the ground albedo for various surfaces.

18. Comments on slope tables.

A better understanding of the effects of slope and orientation on solar energy availability emerges if the data are plotted graphically. It is not always appreciated that the monthly variation of the vertical irradiation for certain inclined surfaces in certain months may proceed in the opposite direction to the monthly variation of the horizontal irradiation. Figure 1 shows, as an example, the horizontal and vertical south data for Trier plotted graphically for clear days and for monthly mean conditions. The observed horizontal values, plotted from the printed tables, rise from a minimum in December to a maximum at the summer solstice in June. In contrast, the estimated vertical south values on *clear days* reach a maximum value on Feb. 26th and fall to a summer minimum in June, then rise to a secondary

peak in early October, finally dropping back to a winter minimum in January. The mean values, being more dominated by diffuse radiation do not reveal the same strong dip.

It is also instructive from the design point of view to plot out the ratios D_m/G_m from the horizontal and inclined surface radiation tables. This helps bring out the relative importance of the contribution of diffuse radiation to the incident solar radiation on differently inclined surfaces at various times of the year. Figure 2 provides such data plotted from the basic radiation tables for Valentia in Ireland and Figure 3 for Carpentras in France. Valentia has a relative cloudy maritime climate. Carpentras has a much more sunny climate.

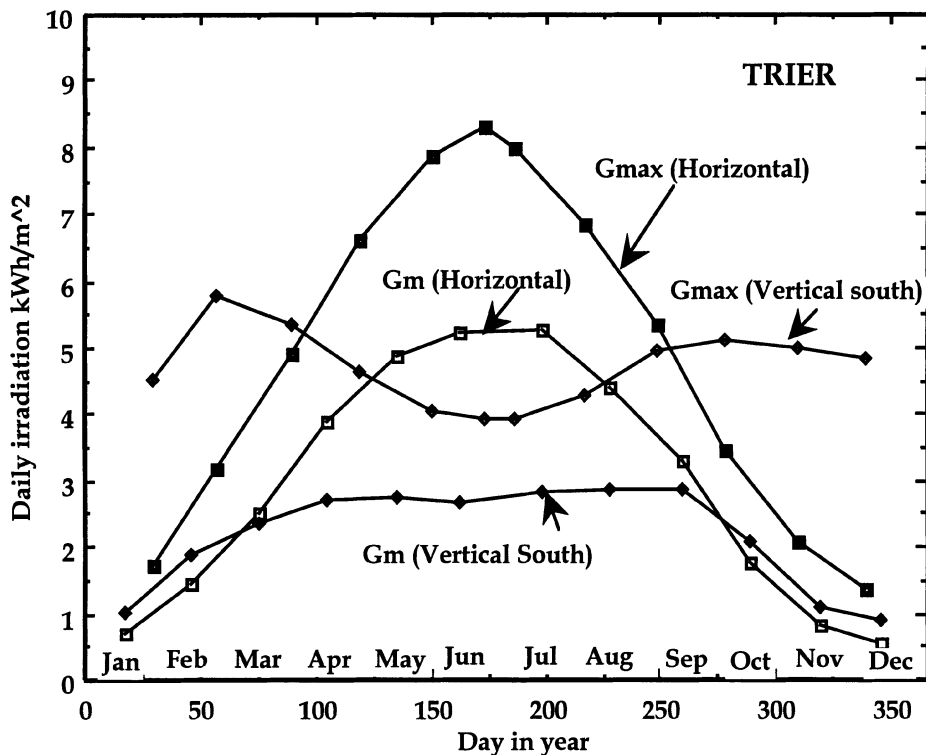


Fig. 1. Plotted values of clear day and monthly mean daily irradiation on horizontal and vertical south surfaces at Trier. The horizontal values are observed. The vertical south values are predicted.

The following salient features in Figures 2 and 3 should be noted:-

1. The annual proportion of diffuse radiation on inclined surfaces is considerable. The proportion is greater in the cloudier climate on all surfaces. It is advantageous to plan to harness the diffuse radiation as well as the beam radiation.
2. The annual proportion of diffuse radiation is least on surfaces with a tilt equal to the latitude. This tilt optimises the annual input of direct-beam energy.

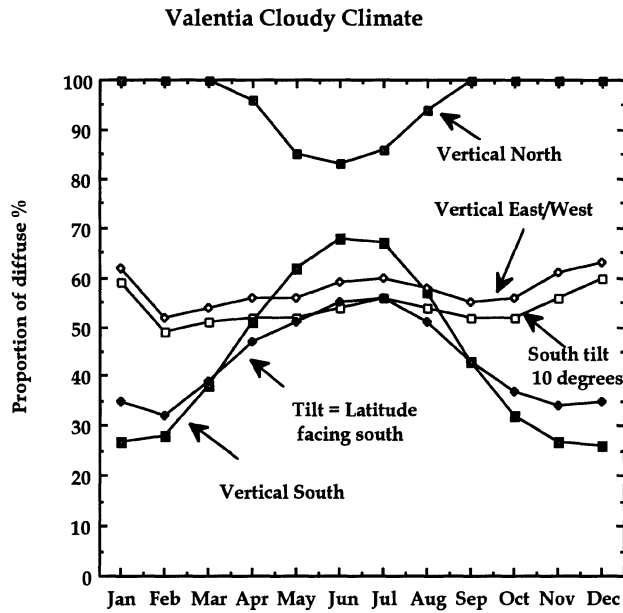


Figure 2. Estimated monthly mean % ratio of daily diffuse irradiation to daily global irradiation on slopes of different orientations in different months in the relatively cloudy climate of Valentia on the west coast of Ireland.

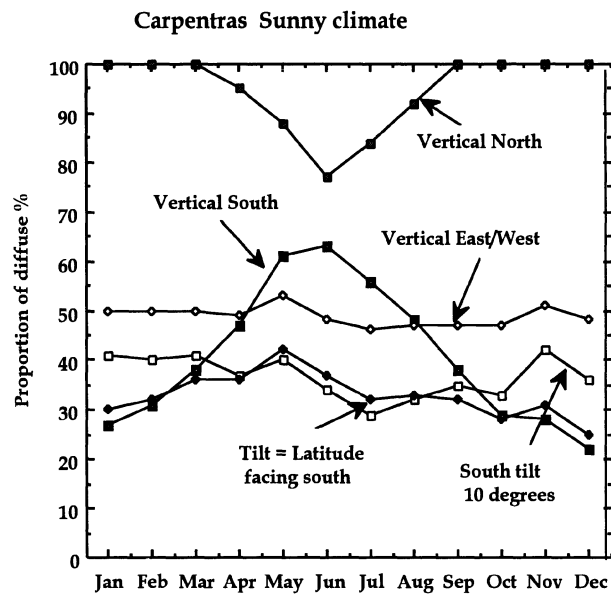


Figure 3. Estimated monthly mean % ratio of daily diffuse irradiation to daily global irradiation on slopes of different orientations in different months in the relatively sunny climate of Carpentras in southern France.

3. The lowest monthly proportion of diffuse radiation is found on vertical south surfaces in the middle of winter. At high latitudes this tilt especially increases the mid-winter direct beam gains.
4. The proportion of diffuse radiation on vertical-south surfaces is relatively high in summer. This is the consequence firstly of the relatively high solar elevation, so the sun's rays strike at an oblique angle, and secondly of the fact the sun spends some time on the north side of the building. Shading the direct beam only on a vertical south surface will only remove less than half the average incident energy at mid-summer.

19. Slope ratios.

A designer of a solar system cannot alter the horizontal radiation budget. S/he can however select the geometry of the system so as to optimize energy collection when it is useful, and to minimize energy collection when it is likely to have an adverse effect, for example an overheated building heavily insulated during a heat wave. The ratio tables enable the nature of the geometric orientation decisions to be more clearly perceived in their seasonal context. It is useful to plot out the ratio data graphically. Figure 4 shows the effect of slope tilt on energy availability on due south facing surfaces of different slope at different seasons in Cambridge on clear days. Figure 5 plots the same data for monthly means.

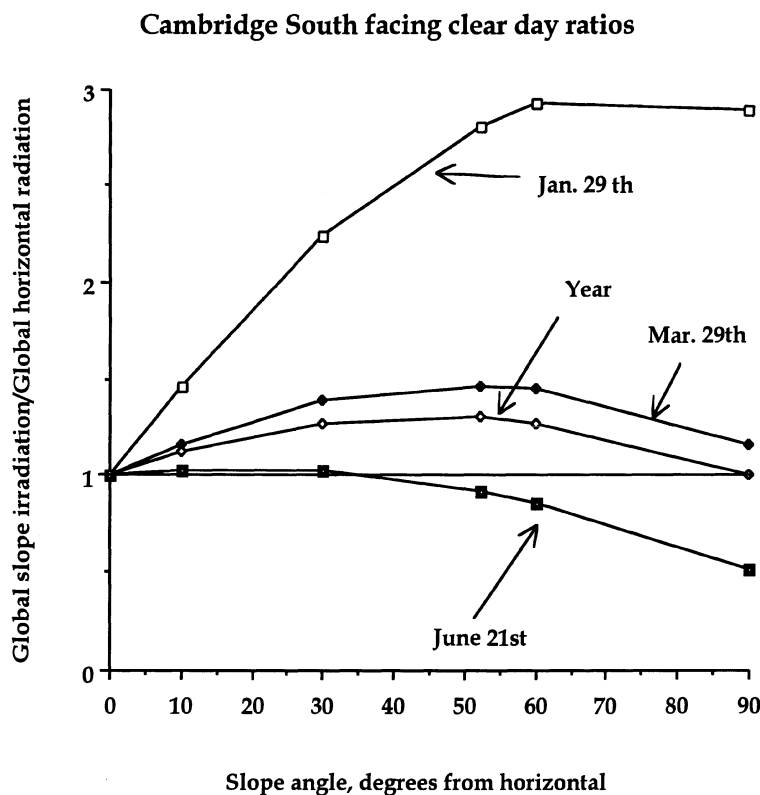


Figure 4 Ratio global irradiation on slope to global radiation on an horizontal surface at Cambridge, plotted from the ratio table for clear days at different seasons.

Figure 4 shows the large increase that occurs in energy density on south facing vertical surfaces in January at high latitudes on cloudless days. On January 29th the sun is very low. In summer when the sun is high, the vertical surface irradiation on a south facing surface is only about half the horizontal surface irradiation. The shape of the curve for the annual ratio is very close to the shape for March 29th. Figure 5 shows that, if one considers monthly mean values, the relative increase in winter irradiation on a vertical south slope is very much less than on clear days. The relatively high number of cloudy days tips the balance downwards, because the zenith part of the overcast sky is much brighter than the horizon zone. This favours a horizontal surface for the collection of diffuse radiation. On an annual basis, a south facing slope of about 30 degrees receives the most energy at this site. This is a flatter slope than the commonly stated rule of thumb, tilt = latitude for maximum incident energy on an annual basis.

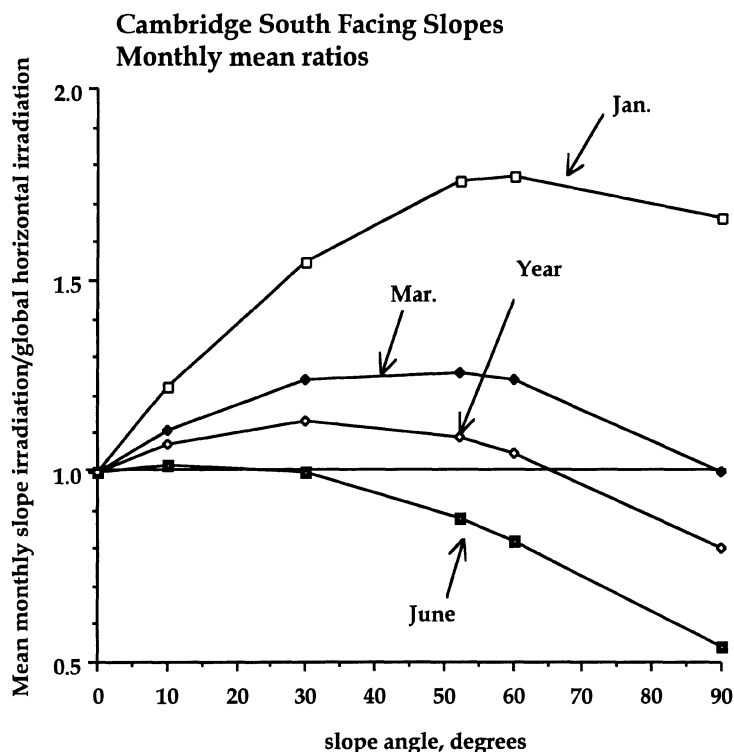


Figure 5 Ratio global irradiation on slope to global radiation on an horizontal surface at Cambridge, plotted from the ratio table for monthly mean conditions at different seasons.

Figure 6 presents the effects of orientation on the mean irradiation of vertical surfaces, while Figure 7 presents the clear sky information in ratio terms. Figure 6 shows that in mid summer the highest irradiation on vertical surfaces does not occur on south facing surfaces. In Southern Europe this summer fall off is even more pronounced, as the noon sun in summer is so much higher. The advantage of a true south orientation in achieving a satisfactory balance between summer overheating control and winter contributions to building heating thus becomes even greater. Figure 7 brings out very clearly the strong sensitivity of clear sky solar irradiation on vertical surfaces in winter to orientation.

20. The computer disk.

This Atlas is supported by two sets of data on computer disk. One set of data are the horizontal data for the 340 sites, for which horizontal surface tables have been prepared. Each site has a separate ASCII file. The other sets of data are the inclined surface data for the sites for which inclined surface irradiation values have been calculated. There are two inclined surface files for each site, one computed for clear days, the other for monthly mean conditions. The horizontal data file structure used is described in Appendix 6 and the inclined surface data file structure in Appendix 7. Certain calculation methodologies suitable for use with this data in conjunction with spreadsheets are given in Appendices 4 and 5. Appendix 4 is dedicated to discussion of how hourly values of irradiance on horizontal surfaces can be easily estimated from the daily data on the disk and in the tables. This Appendix also considers the issues of the effects of site obstruction on the direct beam availability on horizontal surfaces. Appendix 5 explains how to convert the hourly irradiance values derived from Appendix 4 into daylight illuminance values on horizontal surfaces using the concept of luminous efficacy to convert from irradiance to illuminance. This approach is designed to provide support for daylighting studies in the European region. A European Daylight Atlas initiated by the European Commission is currently in the process of production. Appendix 5 thus interrelates the two projects through the radiation data base. A list of one or two interlinking computer programmes that can be harnessed to the data on the disk is given at the end of the list of references. The horizontal files are designed to read direct to screen in the format in which they appear in the printed tables. The inclined surface files are not formatted. It is envisaged that many users will find it valuable to be able to access the data to spreadsheets, graph plotting routines and word processing, so an open ASCII easily readable linear data format has been selected for the inclined surface files. The data stored in linear form includes important horizontal surface data.

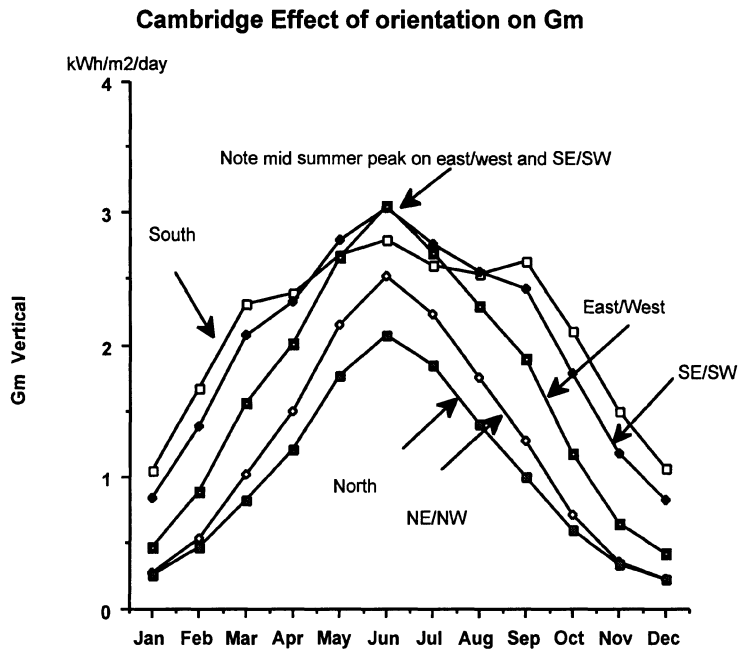


Figure 6. The effect of orientation on the monthly mean irradiation of vertical surfaces at Cambridge expressed in terms of daily irradiation.

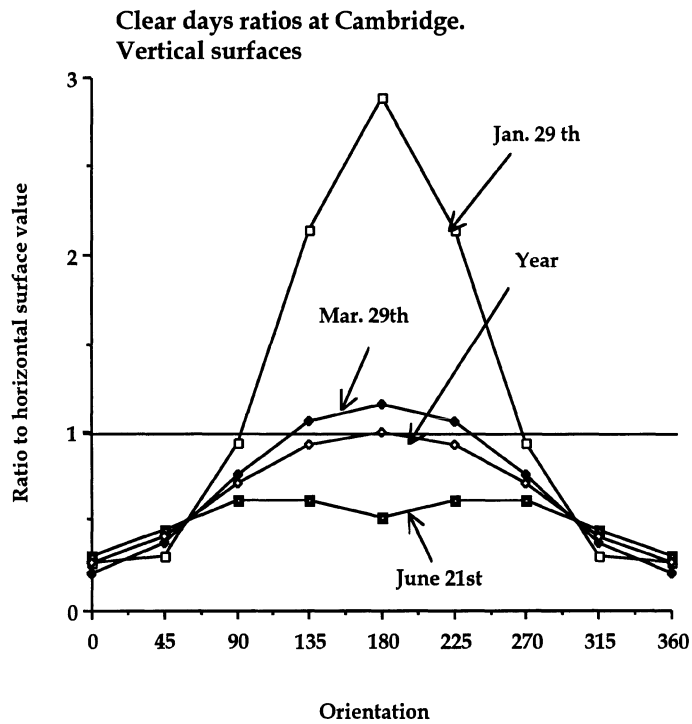


Figure 7. The effect of orientation on the ratio of slope global irradiation on vertical surfaces to horizontal global irradiation for stated clear days at Cambridge.

21. Conclusion.

As an overall conclusion, we may state that the methods developed for this Atlas have proved themselves satisfactory to solve the problems addressed. The lack of systematic measured data on diffuse solar radiation, properly corrected for shading-ring effects, has presented problems which are gradually being resolved as better European standardisation in this area is being achieved. An important weakness of the modelling process appears to be that it does not allow for inter-reflections between snow-covered surfaces and the sky above, so diffuse radiation estimates in places where winter snow prevails are too low. However a more systematic approach to this problem would have demanded knowledge of frequency of snow cover in different months at different places, knowledge that simply was not available to the project. There is also a lack of systematic data concerning the precise degree of obstruction at various measuring sites. Better knowledge of site obstruction would enable a more critical analysis to be made of the accuracy of the modelling process against observation. The structure of the modelling process adopted is flexible enough to allow adaptations to be made as further progress in observations is achieved. As the quality of the observed European solar radiation data base improves, so the accuracy of slope predictions will increase.

The monthly mean modelling and clear sky processes used in producing the Atlas estimates have stood up well to the test of time. The current European Solar Radiation Atlas project now in progress has found the monthly mean and clear sky estimation procedures developed 15 years ago test well against more recent methods, and so the 1984 Atlas estimates of slope irradiation retain their validity. It is hoped that the improvements made to the tables and the availability of a data disk will make this third version of the European Solar Radiation Atlas of even greater practical use to all persons interested in solar radiation issues than the very successful second European Solar Radiation Atlas now out of print.

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Linked computer programmes for solar energy applications.

While there are a large number of organisations known to have evolved computer programmes concerned with solar energy, few of these programmes are closely linked into the specific algorithmic approaches to the detailed handling of observed solar radiation data for practical applications described in this publication. Persons interested in computing programmes specifically linked to the data disk in this publication should contact the following organisation:

Energy Design Advice Scheme, EDAS-North, University of Sheffield, Floor 13, Arts Tower, Sheffield, S10 2TN. United Kingdom. Contact Person Emeritus Professor John Page, FAX UK 114 272 0676.

Intellectual Property Rights

The intellectual property rights concerning this publication rest with the Commission of the European Communities.

The basic data disk was prepared using the tables of solar radiation and sunshine data published in Volume 1 of the European Solar Radiation Atlas (1984 edition).

The data was entered by hand from the tables published in that Atlas by Deutscher Wetterdienst (DWE), Seewetteramt, Hamburg, Germany.

The data provided by DWE, Hamburg, was then subjected to a systematic set of quality control procedures.

These checking procedures enabled a small number of data input errors to be corrected.

Additional data on Angstrom regression coefficients from Volume 1 of the European Solar Radiation Atlas (1984 edition) were then added with suitable interpolation where observed data were not available.

The computing programmes used to develop the original solar radiation atlas tables for inclined surfaces were then applied to the basic horizontal surface data base to prepare the inclined surface data disk.

While responsible checks have been applied in the development of the disk files, neither the authors nor the European Commission of the European Community can accept any liability arising from potential defects in the data given in this publication or on the disks.

Users must therefore make their own judgements on the reliability of any data provided in this publication. Users should bear in mind that the paucity of instrumentally observed data for the southern part of Europe, available at the time of preparation of the original data base, has severely limited the possibilities for detailed site based verification of the estimated data in this geographic area.

The purchase of this European Solar Radiation Atlas only confers the right on the purchaser to use the data on disk within the purchaser's own organisation.

It is a breach of intellectual property rights by purchasers to copy this publication or the disk contained with it to other outside organisations or individuals, or to republish any of the data for commercial gain.

If the data is used within any published document, the source should be acknowledged as the European Solar Radiation Atlas (1995), third revised edition, sponsored by DGXII of the Commission of the European Communities.

Acknowledgements of key contributions

The task of text & table revision of the second European Solar Atlas to provide this third revised version of the European Solar Radiation Atlas combining the original Volumes I and II within a single volume has been undertaken by **Emeritus Professor J.K.Page** of the University of Sheffield, United Kingdom.

The Commission would like to again acknowledge key contributions to the original second CEC European Solar Radiation Atlas project. This second Atlas provided the successful basis for this new version. The data and maps were first published in 1984 in two volumes.

1. Commission of the European Communities (1984) *European Solar Radiation Atlas Volume I: Global Radiation on Horizontal Surfaces*. Report No. EUR 9344. ISBN 3-88585-194-6 Verlag TUV, Rheinland, GmbH.
2. Commission of the European Communities (1984) *European Solar Radiation Atlas Volume II: Global radiation on vertical and inclined surfaces*. Report No. EUR 9345. ISBN 3-88585-196-4 Verlag TUV, Rheinland, GmbH.

Key contributors to the original Volume I.

The material was originally compiled by **F.Kasten**, and **H.J.Golchert**, Deutscher Wetterdienst, Meteorologisches Observatorium, Hamburg, and **R. Dogniaux** and **M. Lemoine**, Institut Royal Météorologique de Belgique, Bruxelles, under the editorial direction of **W. Palz** of DGXII of the Commission of European Communities.

Key contributors to the original Volume II.

Volume II of the European Solar Radiation Atlas provided estimated global and diffuse radiation data on vertical and inclined surfaces for monthly mean, clear-sky and overcast sky conditions. Inclined surface radiation maps were included. Volume II of the Atlas was compiled by **J.K.Page**, & **R.J.Flynn** of the University of Sheffield and **R. Dogniaux** & **G. Preuveneers** of the Institut Royale Météorologique de Belgique. The editor was **W. Palz** of DGXII of the Commission. The basic input data used for computation were taken from the European Solar Radiation Atlas, Vol. I.

The detailed methodology of the prediction process was developed systematically under the leadership of the Commission's staff in Brussels. The detailed calculation methods were finalised in the Department of Building Science in the University of Sheffield, UK, under the direction of **Professor J.K. Page**. In the final stages of the project very close liaison was maintained with the **late Professor**

Krochmann and **Dr. Aydinli** of the Technical University in Berlin. The basic methodology for estimating monthly-mean slope irradiances was first devised by the Berlin team and subsequently improved at the hourly prediction level by **J.K.Page** & **R.J.Flynn** in Sheffield University.

The clear-sky prediction method which is based on the adoption of a sky of non-uniform brightness was first introduced by **R. Dogniaux** and **M. Lemoine**. This model was then further developed in the **University of Sheffield**, drawing heavily on the observational work of **Dr. P. Valko** of Schweizerische Meteorologische Zentralanstalt, Zurich, who had carried out field measurements of sky radiance in several European countries.

The work of **R. Dogniaux** of the Institut Royal Météorologique de Belgique on variations in Linke Turbidity Factor across a wide range of latitudes in Europe and elsewhere provided an important stimulus for the development of an objective method for the assessment of atmospheric clarity. **R. Dogniaux** was also the action leader of Action 3.2 of Project F of the Commission of the European Communities' R&D programme. This action was specifically concerned with global irradiance on tilted planes, direct irradiation on horizontal and tilted planes, and calculation of turbidity factors. The other members of this group were Mr. **Rawlins** (UK), Mr. **Murphy** (IRL), Mr. **Slob** (NL), Mr. **Kasten**, late Prof. **Krochmann** (D), Mr. **Bedel**,(F) & Mr. **Tricaud** (F). They provided helpful support and guidance to these research studies.

Very close liaison was maintained with **Dr. F. Kasten** of the Meteorological Observatory, Hamburg of the Deutscher Wetterdienst in the preparation of Volume II in order to achieve satisfactory integration of the work for the two Volumes of the European Solar Radiation Atlas, which were then separate. The final computation and checking of the data was carried out in the University of Sheffield by **J.K.Page** and **R.J.Flynn**. The development of the maps was carried out under the direction of **R. Dogniaux** at the Institut Royal Météorologique de Belgique.

Volumes I & II.

The basic geographical maps were provided by **Deutscher Wetterdienst, Zentralamt Offenbach**. They were produced by the **Institut für Angewandte Geodäsie**, Frankfurt. Valuable advice on drawing the isopyrs was obtained among others from Messrs. **Bedel** (France), **Frydendahl** (Denmark), **Gburcik** (Yugoslavia), **Josefsson** (Sweden), **Karalis** (Greece), **Rawlins** (UK), and **Schirmer** (Germany).

Contributed radiation and sunshine data .

Data of daily global irradiation (G_d) and/or daily sunshine duration (S_d) for the period 1966 - 1975 were supplied by institutions of the following countries, whose support is greatly appreciated.

Countries are described by their names at the time of the original compilation of the Second European Solar Radiation Atlas. Countries are set down in order of descending latitude of their northern-most site, following the layout sequence of the original Atlas. The names of institutions are the appropriate names at the time of the original compilation of the Atlas in 1984.

Norway	:	Universitetet i Bergen
Sweden	:	Sveriges Meteorologiska och Hydrologiska Institut
United Kingdom	:	Meteorological Office, Bracknell
Ireland	:	Meteorological Service, Dublin
Denmark	:	Meteorologisk Institut, Kobenhavn
Netherlands	:	Koninklijk Nederlands Meteorologisch Instituut, De Bilt
Luxembourg	:	Administration des Services Techniques de l'Agriculture
Belgium	:	Institut Royal Météorologique de Belgique, Bruxelles
Germany	:	Deutscher Wetterdienst, Offenbach, and Freie Universität Berlin
Poland	:	Instytut Meteorologii i Gospodarki Wodnej, Warszawa
France	:	Direction de la Météorologie, Boulogne-Billancourt
Switzerland	:	Schweizerische Meteorologische Anstalt, Zürich
Austria	:	Zentralanstalt für Meteorologie und Geodynamik, Wien
Czechoslovakia	:	Hydrometeorologický Ústav, Praha
Yugoslavia	:	Savezni Hidrometeoroloski Zavod, Beograd
Italy	:	Servizio Meteorologico dell'Aeronautica, Roma
Greece	:	National Meteorological Service, Athens, and Aristotelian University of Thessaloniki
Spain	:	Instituto Nacional de Meteorologia, Madrid
Portugal	:	Institut National de Meteorologie et de Geophysique, Lisbon
Malta	:	Meteorological Office, Luqa Airport
Cyprus	:	Meteorological Service, Nicosia
Turkey	:	State Meteorological Service, Ankara
Syria	:	Meteorological Department, Damascus
Lebanon	:	Service Météorologique National, Beirut
Jordan	:	Jordanian Meteorological Department, Amman
Israel	:	Meteorological Service, Bet Dagan

The information on solar radiation in **Saudia Arabia** was taken from the *Saudi Arabian Solar Radiation Atlas* (The Saudi Arabian Center for Science and Technology, SANCST, Riyadh 1983) with the authorization of SANCST.

Appendix 1. Units and symbols (*).

(*) first published in the International Journal of Solar Energy, 1984, Vol. 2, pp. 249 - 255.

A.1.1. Introduction.

Within the framework of the European Communities' Solar Energy R&D Programme, an expert group was established to prepare recommendations for units and symbols in solar energy. These recommendations are drawn from that work. The list is not intended to be comprehensive. In particular, symbols for highly specialised terms have been omitted.

The numerous practical uses of the sun's radiation, many of which have become really important only in the last few years, make it desirable to reach general agreement on the units and symbols associated with solar energy.

The establishment and general acceptance of symbols and a terminology is a lengthy process. The recommendations were introduced with the main purpose of achieving the simplest possible list of symbols. For example, global irradiance (*power per unit area*) should be represented by G , and not the complex symbols like E_G or E_{glob} as proposed by others.

The symbol for global irradiation, the corresponding *energy per unit area*, is always accompanied by a subscript indicating the time period over which the irradiation is incident, for instance, G_h for an hourly value. H_G for irradiation which was proposed before, would have made it necessary to use a new symbol and was rejected. Dots and dashes are also avoided throughout the list.

A.1.2. Solar radiation, terrestrial radiation, irradiance, irradiation, WRR.

On average, 99 % of the sun's radiation reaching the earth falls in the spectral range between $0.29\ \mu\text{m}$ and $4\ \mu\text{m}$. Hence, in meteorology, the radiation occurring between $0.29\ \mu\text{m}$ and $4\ \mu\text{m}$ is referred to as *Solar Radiation*. Radiation in the spectral range longer than $4\ \mu\text{m}$ is defined as *Terrestrial Radiation* (sometimes called long wave radiation in contrast to short wave radiation).

Irradiance is defined as a *power* per unit area, irradiation is the *energy* per unit area.

Measuring instruments are calibrated internationally. Since 1981, the official scale has been the World Radiometric Reference (WRR). Before then the International Pyrheliometric Scale (IPS 1956) was in use. IPS 1956 values are converted to WRR values by multiplying them by 1.022.

A.1.3. General rules on symbol terminology.

Irradiance and irradiation values stand for area densities i.e. no subscripts are used to indicate the surface area. In general, symbols refer to horizontal planes; for a tilted plane, the slope β and the plane's azimuth α are added in brackets. For example $G_{hc}(\beta, \alpha)$ is the clear sky hourly global irradiation on a slope. The exception is beam radiation normal to the beam. Beam radiation on a horizontal surface can be indicated as $I(0,0)$ or as B , for example clear sky beam radiation on a horizontal surface, B_c .

Subscript o stands for extraterrestrial or astronomical

Subscript h stands for hourly

Subscript d stands for daily

Subscript m stands for monthly

Subscript g stands for ground

Subscript c stands for clear sky

Subscript b stands for overcast sky

A.1.4. Dimensionless terms.

Greek letters are used for angles and also, as a rule, for dimensionless quantities e.g. reflectance ρ .

The dimensionless terms are summarised in Table A.1.1 below.

A.1.5. Radiation and other relevant physical quantities having dimensions.

Table A.1.2 gives the list of symbols for physical quantities used having a dimension.

Table A.1.1 Dimensionless terms and angles

Symbol	Definition
Angles :- Greek letters	
α	Azimuth angle of a plane, i.e. the angle between the projection of the normal on the horizontal plane and true south in northern hemisphere, or true north in southern hemisphere.
β	Inclination angle of a plane with respect to the horizontal plane.
ϕ	Latitude, North positive.
λ	Longitude, East of Greenwich positive.
γ_s	Solar elevation, i.e. altitude angle above horizon.
ψ	Solar azimuth, measured from due south in northern hemisphere: west of south positive, east of south negative.
δ	Solar declination, i.e. the angle between the sun's rays and the equatorial plane.
ω	Solar hour angle, measured from solar noon: p.m. is positive.
ζ	Solar zenith angle, i.e. angle between the centre of the sun's disc and the vertical. $\zeta = \pi/2 - \gamma$
$v(\beta, \alpha)$	Angle of incidence between the sun's rays and an inclined plane.
Dimensionless radiation quantities	
ρ_g	Albedo, i.e. reflectance of the ground: i.e. ratio R_g/G , reflected over incident global radiation (dependent on solar spectrum, diffuse/direct ratio, sun's elevation).
δ_R	Rayleigh optical thickness (of a dry and clean atmosphere when only Rayleigh scattering occurs). Note the optical thickness is defined as the integral of the extinction coefficient (dimension m^{-1}). Its value depends on air mass, m (refer below) and is given by $\delta_R = 1/(0.9m+9.4)$.
m or AM	Air Mass. The length of path through the atmosphere traversed by the direct solar beam, expressed as a multiple of the vertical path to a point at sea level (the latter is called AM 1, extraterrestrial is called AM 0). Equals cosecant of the solar elevation for $\gamma > 10^\circ$ and $m_{s.l.} < 5.6$ for sea level stations. $m = p/p_0 \cdot m_{s.l.}$ for stations above sea level. $p/p_0 = 1 - z/10000$ where z is height metres.
T_L	Linke Turbidity Factor. Optical thickness of the atmosphere (by scattering and absorption) due to water vapour, other gases and aerosol particles relative to optical thickness of a dry and clean atmosphere. Here Kasten values were always used. $I = I_0 \exp(-\delta_R m T_L)$ Refer also Table A.1.2, Direct beam section.
β_A	Angström turbidity coefficient, i.e. the extinction coefficient of the atmosphere due to aerosol particles. $E_\lambda = E_{0\lambda} \exp(-\delta_R \lambda + \beta_A(\lambda)^{-1.3} + f(\text{water, gas in atm.}))$ λ in μm .
a_m, b_m	Angström regression coefficients (month by month daily basis) in formula:- $G_d/G_{od} = a_m + b_m S_d/S_{od}$

Table A.1.2 Quantities having a dimension

Term	Symbol	Definition	Unit
Direct beam			
Direct irradiance	I	Direct solar irradiance normal to beam	W.m^{-2}
	$I(\beta, \alpha)$	Direct irradiance on plane of slope β and azimuth α	W.m^{-2}
Extraterrestrial irradiance	I_{oj}	Extraterrestrial solar irradiance normal to beam on day j	W.m^{-2}
Solar constant	I_o	Annual mean value of the extraterrestrial normal irradiance	Value used 1370 W.m^{-2}
Hourly direct irradiation	I_h	Hourly integral of direct irradiance normal to beam	Wh.m^{-2}
Daily direct irradiation	I_d	Daily integral of direct irradiance normal to beam	Wh.m^{-2}
Monthly mean direct irradiation	I_m	Monthly mean of daily direct irradiation normal to beam	Wh.m^{-2}
Diffuse radiation			
Diffuse irradiance	D	Irradiance from the sky	W.m^{-2}
	$D(\beta, \alpha)$	Irradiance from the sky and from the ground (for tilted planes)	W.m^{-2}
Clear sky diffuse irradiance	D_c	Irradiance from clear sky	W.m^{-2}
Overcast sky diffuse irradiance	D_b	Irradiance from overcast sky	W.m^{-2}
Hourly diffuse irradiation	D_h	Hourly integral of irradiance from the sky	Wh.m^{-2}
Daily diffuse irradiation	D_d	Daily integral of irradiance from the sky	Wh.m^{-2}
Monthly mean diffuse irradiation	D_m	Monthly mean of daily irradiation from the sky	Wh.m^{-2}
Diffuse from ground			
Diffuse irradiance from the ground on an inclined plane	R_g	Reflected diffuse irradiance from the ground reaching an inclined surface $R_g = \rho_g G$, where ρ_g = albedo Note: as a rule this term does not exist for horizontal surfaces facing upward	W.m^{-2}
Clear sky diffuse irradiance from the ground	R_{gc}	Reflected diffuse irradiance from the ground under clear sky, on a non-horizontal plane	W.m^{-2}
Global radiation			
Global irradiance	G	Global irradiance: sum of diffuse and direct irradiance on any receiving plane	W.m^{-2}
	$G(\beta, \alpha)$	Global irradiance on a plane of slope β and azimuth α (sum of irradiance from the sun, the sky and the ground)	W.m^{-2}
continued over			

Table A.1.2 Quantities having a dimension (continued)

Sheet 2

Term	Symbol	Definition	Unit
Global radiation (continued)			
Clear sky global irradiance	G_c	Global irradiance under clear sky	$W.m^{-2}$
Overcast sky global irradiance	G_b	Global irradiance under overcast sky ($G_b = D_b$)	$W.m^{-2}$
Hourly global irradiation	G_h	Hourly integral of global irradiance	$Wh.m^{-2}$
Daily global irradiation	G_d	Daily integral of global irradiance	$Wh.m^{-2}$
Monthly mean global irradiation	G_m	Monthly mean of daily global irradiation	$Wh.m^{-2}$
Monthly mean extraterrestrial global irradiation	G_{om}	Monthly mean of daily extraterrestrial global irradiation	$Wh.m^{-2}$
Spectral irradiance	E_λ	Irradiance (direct, diffuse or global) per unit bandwidth at particular wavelength λ	$W.m^{-2}.\mu m^{-1}$
Sunshine			
Sunshine duration	S	Measured daily sunshine duration for which direct irradiance exceeds a certain threshold. WMO-CIMO has recommended 120 $W.m^{-2}$ as threshold value (WMO-CIMO VIII, Recom. no. 10, WMO-no 590, Geneva, 1982)	h
Astronomical sunshine duration	S_o	Length of time on a specific day during which the solar elevation is positive (no correction for refraction)	h
Terrestrial radiation			
Terrestrial irradiance	$L(\beta, \alpha)$	Long-wave radiation of terrestrial origin (sky and ground) on a plane of slope β and azimuth α	$W.m^{-2}$
Terrestrial irradiance from the sky	$L_a(\beta, \alpha)$	Long-wave radiation from the sky alone	$W.m^{-2}$
Terrestrial irradiance from the ground	$L_g(\beta, \alpha)$	Long-wave radiation from the ground alone falling on a specific surface $L(\beta, \alpha) = L_a(\beta, \alpha) + L_g(\beta, \alpha)$ Note the difference between the value of L_a on the upward facing horizontal surface and L_g on the downward facing surface is known as the "net long-wave radiation")	$W.m^{-2}$
Miscellaneous			
Station height above sea level	z	Height of instrument above sea level	m
Water vapour content	w	Precipitable water content of the atmosphere, mass of the water vapour column of 1 m^2 base area	mm ppw $= kg m^{-2}$

Appendix 2. Calculation of extraterrestrial daily irradiation G_{od} and astronomical daylength S_{od} .

G_{od} is the daily extraterrestrial global irradiation, i.e. the solar radiation which would be measured during one day on a fixed horizontal surface of 1 m^2 at the upper limit of the atmosphere.

S_{od} represents the astronomically possible duration of sunshine, given in hours.

The irradiance (kW.m^{-2}) of extraterrestrial solar radiation on a horizontal surface is given by

$$G_o = I_{oj} \sin \gamma_s \quad \text{kW.m}^{-2} \quad (\text{A.2.1})$$

where I_{oj} = irradiance of extraterrestrial solar radiation on a plane perpendicular to the beam on day j, kW.m^{-2}

γ_s = elevation of the sun above the horizon.

I_{oj} is derived from the solar constant I_o by :-

$$I_{oj} = I_o (r/r_j)^2 \quad \text{kW.m}^{-2} \quad (\text{A.2.2})$$

where r_j = actual distance earth-sun at the time of observation,

r = mean distance earth-sun.

The Atlas was prepared using a solar constant of value of 1.37 kW. m^{-2} , which is slightly higher than the currently accepted value of 1.367 kW. m^{-2} .

$\sin \gamma_s$ is given by:-

$$\sin \gamma_s = \sin \phi \sin \delta + \cos \phi \cos \delta \cos \omega \quad (\text{A.2.3})$$

where ϕ = geographical latitude of the point of observation (station)

δ = declination of the sun (= elevation of the sun above the equator plane at the time of observation).

ω = hour angle of the sun = angle between the hour circle (through the North pole and the sun) and the meridian (through North pole and geographical south direction) at the time of observation; $\omega = 0$ at 1200 hours solar time. This time system is usually called Local Apparent Time(LAT).

The variations of r_j and δ during one day are so small that, for most practical purposes, r_j and δ are considered to be independent of ω . Tables of $(r/r_j)^2$ and δ , computed for true noon of each day of the year 1974, a year in the middle of a leap year period, were used.

Inserting equations A.2.2 and A.2.3 into equation A.2.1 gives:-

$$G_o = I_o(r/r_j)^2 (\sin \phi \sin \delta + \cos \phi \cos \delta \cos \omega) \quad (\text{A.2.4})$$

Integration of the irradiance G_o over the day from sunrise (S.R.) to sunset (S.S.) yields the daily irradiation ($\text{kWh} \cdot \text{m}^{-2}$) or daily sum of extraterrestrial solar radiation:-

$$G_{od} = \int_{\text{S.R.}}^{\text{S.S.}} G_o dt = 2 \int_{\text{Noon}}^{\text{S.S.}} G_o dt \quad (\text{A.2.5})$$

Time t , in hours, is measured in LAT (Local Apparent Time, also called true Solar Time) and converted to an hour angle ω in radians by:-

$$t - 12 = (D/2\pi) \omega \quad \text{hours} \quad (\text{A.2.6})$$

$$dt = (D/2\pi) d\omega \quad \text{hours} \quad (\text{A.2.7})$$

with $D = 24$ hours. With equations A.2.4 and A.2.7, equation A.2.5 becomes:-

$$G_{od} = (D/\pi) I_o(r/r_j)^2 \int_{\omega=0}^{\omega_o} (\sin \phi \sin \delta + \cos \phi \cos \delta \cos \omega) d\omega \quad (\text{A.2.8})$$

where ω_o is the hour angle at sunset given by:-

$$\cos \omega_o = -\tan \phi \tan \delta \quad (\text{A.2.9})$$

Performing the integration in equation A.2.8 finally leads to:-

$$G_{od} = (D/\pi) I_o(r/r_j)^2 (\sin \phi \sin \delta \cdot \omega_o + \cos \phi \cos \delta \sin \omega_o) \quad (\text{A.2.10})$$

By means of equation A.2.10, daily totals of extraterrestrial solar radiation on a horizontal plane, in $\text{kWh} \cdot \text{m}^{-2}$, were computed for each station.

The corresponding daily totals of astronomical sunshine duration, $S_{od} = S.S.-S.R.$, were computed by:-

$$S_{od} = (D/\pi)\omega_o \quad (A.2.11)$$

with ω_o in radians given by equation A.2.9. Atmospheric refraction has been neglected.

The monthly mean values G_{om} and S_{om} were obtained by taking the monthly mean of the individual daily values G_{od} and S_{od} over each month.

Table A.2.1 gives the assumed dates and the associated declinations used to establish the hourly solar geometry for clear day slope irradiation estimates and for monthly mean slope irradiation estimates. It also provides the correction factor $(r/r_j)^2$ used to adjust the extraterrestrial irradiance to allow for changes in sun earth distance, used in preparing these slope tables.

Table A.2.1. Computation dates used for slope irradiation estimates together with associated declination values in degrees and decimal degrees, also correction factors to adjust for mean solar distance, $(r/r_j)^2$.

Computing dates, declinations & $(r/r_j)^2$ values used in estimating clear day values of G_c and D_c

Month	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Date	29th	26th	29th	28th	29th	21st	4th	4th	4th	4th	4th	4th
$(r/r_j)^2$	1.030	1.020	1.003	0.986	0.973	0.967	0.967	0.971	0.984	1.001	1.018	1.029
Decl. deg.	-18.16	-9.04	3.43	14.19	21.64	23.43	22.87	17.22	7.15	-4.39	-15.42	-22.25

Computing dates, declinations & $(r/r_j)^2$ values used in estimating monthly mean values of G_m and D_m

Month	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Date	17th	15th	16th	15th	15th	11th	17th	16th	16th	16th	15th	11th
$(r/r_j)^2$	1.032	1.025	1.011	0.994	0.978	0.969	0.967	0.975	0.990	1.007	1.022	1.031
Decl. deg.	-20.71	-12.81	-1.80	9.77	18.83	23.07	21.16	13.65	2.89	-8.72	-18.37	-22.99

Appendix 3. The methodologies adopted to estimate $G_{\max}$ and $G_{\min}$ values and Angström a & b coefficients in this edition of the Atlas.

A.3.1. Introduction.

The data in the original horizontal surface tables in the earlier edition of this Atlas (A.3.1) were first typed by hand on to a data disc by the Deutscher Wetterdienst, Hamburg.

Various quality control studies on the data set were then carried out by Emeritus Professor John Page, mainly using dimensionless ratios. One key check was to examine monthly values of $K_{t_{\max}}$ & $K_{t_{\min}}$ calculated for each of the 340 sites. These values are obtained by dividing the values of $G_{\max}$ and $G_{\min}$ by the appropriate values of the extraterrestrial irradiation. These checks revealed among other things that a few of the sites used were seriously obstructed in winter. Data from such sites must be used with caution as regional radiation indicators for nearby unobstructed sites. *Bergen*, *Davos* and *Bolzano* were identified as lying in this significantly obstructed category. Data from certain other sites seemed unreasonably high, for example *Prodhromos*, in Cyprus and *Ksara* in the Lebanon. The data for *Sophia* seemed surprisingly low, in comparison with neighbouring sites. The most important finding was that the estimated data sets of $G_{\max}$ and $G_{\min}$ in the previous version of this Atlas were not consistent with the observed data sets of $G_{\max}$ and $G_{\min}$. It was therefore decided to reprocess the estimated radiation data to achieve greater inter-site consistency of values of $G_{\max}$ and $G_{\min}$. The G_{mean} values were left unaltered. This Appendix describes the revision processes used. It also sets out the underlying radiation climatology of $G_{\min}$ values. The revision involved reassessing the Angström coefficient data used first.

A.3.2. The derivation of the Angström coefficient data set in the new horizontal surface tables.

The values of Angström a_m and b_m assumed in the estimation of $G_{\max}$ and $G_{\min}$ for specific sites without radiation observations were not published in the previous version of the Atlas. The data from the earlier Tables however fortunately could be processed to extract the precise monthly values of the Angström regression coefficients that had been used in the estimation of solar radiation for sites lacking radiation observations. The precise reference sites used could then be identified from the annual pattern of the monthly a_m and b_m values. This checking process high-lighted a number of underlying problems and also some inconsistencies requiring rectification.

The original Angström coefficient data set fell into two parts, the core data set, and a less detailed data set for the eastern part of the Mediterranean and Turkey. The observed data detail was much greater north of the Alps & Pyrenees. For example there were only observed radiation data for one site in Spain. In such locations the Angström coefficients had had to be estimated without the benefit of a

reference site. The method of Dogniaux & Lemoine (A.3.2) was used for estimating Angström a_m and b_m for such areas.

At a few sites in the East Mediterranean group, there were monthly mean observations available of G_m and S_m instead of the daily data sets of G_d and S_d normally used for the regression analysis. The coefficients of Angström a_m and b_m for these sites have now been derived on an annual mean basis from the monthly ratios of G_m/G_{om} and S_m/S_{om} . This was considered preferable for sites where such observed radiation data were available to using the Dogniaux & Lemoine method. Regression coefficients were obtained in this way for *Prodhromos* in Cyprus, *Messelmiyeh*, *Raqqa* and *Kharabo* in Syria, *Ksara* and *Beirut* in Lebanon and finally *Bet Dagan* in Israel.

The lack of observed data in Southern Europe in the Atlas means the Angström coefficients are much more speculative in Southern and Eastern Europe than in Northern Europe. This is especially true in the Eastern Mediterranean region.

In Northern Europe few problems generally arose in this reassessment. However there were three groups of neighbouring sites in Germany, where no specific observing reference site could be identified. It was assumed the Angström a_m and b_m data sets in these cases had been achieved by interpolation. The three groups were identified and named as Germany Region 1, Germany Region 2 and Germany Region 3. The sites in each group are given in Table A.3.1. In certain other countries, the Angström coefficient values for some sites could be identified as being based on data specifically interpolated between two observing sites with Angström data available. One example is *Brno* where the values were interpolated between *Hradec Kralove* in the Czech Republic and *Bratislava* in Slovakia.

A small number of sites had only radiation observations. The associated values of S_m and S_m/S_{om} for these sites were estimated using the Angström formula in reverse. The Angström coefficients needed to do this were estimated by referencing the sites concerned to a selected nearby site with observed data. The sites *Jokioinen* and *Helsinki* in Finland were referenced to *Stockholm* in Sweden. *Karup* in Denmark was referenced to *Jyndevad*, and *Stevens* to *Hojbakkegard* in the same country. The four Hungarian sites, *Sopron*, *Debrecen*, *Budapest* and *Kecskemet* were referenced to *Bratislava* in Slovakia. The three Romanian sites, *Cluj*, *Timosoara* and *Bucharesti* were referenced to *Beograd* in Yugoslavia. *Sophia* in Bulgaria was referenced to *Pristina* in Yugoslavia. The five sites in Jordan, *Baqura*, *Irbid*, *Nursery*, *Deir Alla*, *Wadi Dhuliel* and *Shoubak* were referenced to *Kharabo* in Syria.

Proceeding in this systematic way a complete set of Angström a_m and b_m coefficients was established for the entire data set, site by site. These have been incorporated in the revised horizontal site tables. The horizontal tables provided in this edition now also specifically indicate the reference site adopted

from which the estimated Angström coefficients have been drawn. This information is printed immediately above the tabulated Angström a_m and b_m values in the revised horizontal surface tables.

A.3.3. $G_{\max}$ and $G_{\min}$ values in the earlier version of this Atlas.

$G_{\max}$ is the monthly mean maximum daily global radiation. $G_{\min}$ is the monthly mean minimum daily global radiation. The previous edition of this CEC European Solar Radiation Atlas contained two types of values for $G_{\max}$, observed values and derived values. The same was true for the data of $G_{\min}$.

For sites where there were actual radiation observations, the $G_{\max}$ and $G_{\min}$ values were derived directly from the daily observational record. The highest and lowest observed values in each month were extracted and the means taken over the period of the record, which was normally 10 years. No changes were needed for these sites in this edition of the Atlas.

A second set of $G_{\max}$ and $G_{\min}$ values had emerged for sites where only sunshine data were available. Here use had been made of the Angström regression equation to estimate $G_{\max}$ and $G_{\min}$.

$$G_m/G_{om} = a_m + b_m S_m/S_{om} \quad (\text{A.3.1})$$

where G_m is the monthly mean daily global radiation.

G_{om} is the monthly mean daily value of the extraterrestrial radiation.

S_m is the monthly mean daily bright sunshine in hours.

S_{om} is the monthly mean daily astronomical daylength in hours.

a_m and b_m are site dependant linear regression coefficients for the different months.

It was reasoned in the previous edition of this Atlas that $G_{\max}$ would occur when $S_m/S_{om} = 1$, hence $G_{\max}$ should equal $(a_m + b_m) G_o$. It was also reasoned that $G_{\min}$ could be found by setting $S_m/S_{om} = 0$, hence $G_{\min} = a_m G_o$.

When the observed data sets were compared with the estimated data sets for nearby sites, substantial systematic differences between the observed data sets and the estimated data sets were found, both in $G_{\max}$ values and in $G_{\min}$ values. These differences were found to depend on climatic region within Europe. It emerged that the annual patterns of $G_{\min}$ are very different in Northern and Southern Europe. In case of $G_{\min}$ values, the published estimates in summer in the sunnier regions of Europe were found to be too low by a factor as much as 2 to 3 in the previous edition of the Atlas.

In contrast in Northern Europe, it was found that both $G_{\max}$ and $G_{\min}$ were over-estimated for the "sunshine only" sites by the procedures previously used. Figure A.3.1 presents the relevant data graphically for the UK. One may note that the G_{mean} values for the "sunshine only" sites agree very reasonably with the data from the radiation observing sites, but not the $G_{\max}$ and $G_{\min}$ values. The estimated observed $G_{\max}$ difference increases with increasing latitude.

There are several reasons for these differences. One must comment for a start that the daily value S_d/S_{od} should never reach 1, because classical type sunshine recorders need a certain minimum amount of energy to burn the card. Indeed those parts of the Atlas which dealt with inclined surface radiation (A.3 3) specifically assumed that "*card burning sunrise*" did not occur until the altitude of the sun was above 4 degrees. The actual observed values of $S_{\max}/S_{omax}$ typically stand lower than this at about 90% of the calculated 4 degree sunrise card burning daylength. A second cause of the over-estimation of $G_{\max}$ in cloudy climates is linked with the large number of days with no sunshine. This causes low values of Angström a_m to occur in the statistical regressions, and consequently a regression slope emerges that is too steep to give reliable calculations for the few cloudless days that do occur.

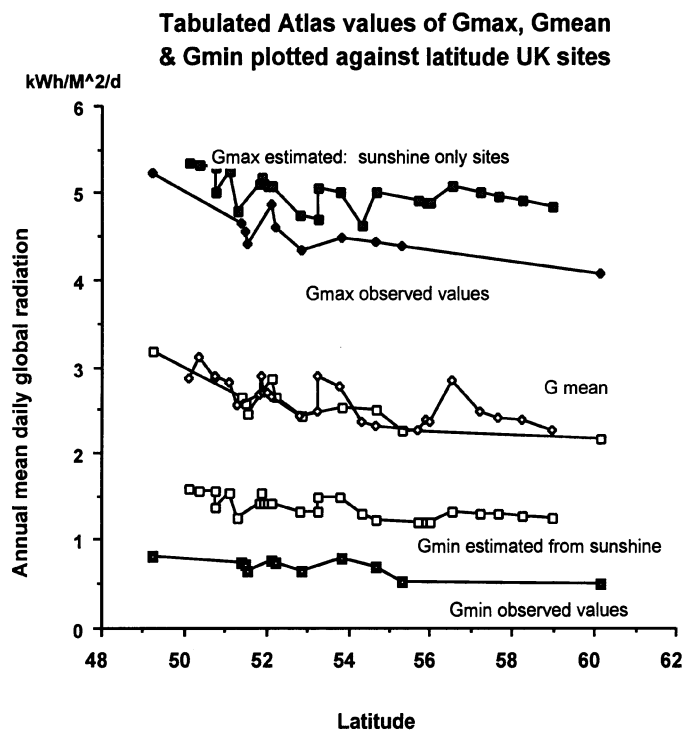


Figure A.3.1. Annual mean values for $G_{\max}$, G_{mean} and $G_{\min}$ for the UK radiation observing sites and the radiation estimated sites taken from the original CEC Solar Radiation Atlas, Vol. 1 (A.3.1).

It was decided that improved procedures to estimate $G_{\max}$ and $G_{\min}$ for sites without radiation observations should be adopted in this revision of the Atlas.

A.3.4. Improving $G_{\max}$ estimates for sites with sunshine data only.

The estimation method used to get $G_{\max}$ in the previous edition of the Atlas was rejected. The new procedure adopted to obtain $G_{\max}$ was to set the $K_{t\max}$ value at the non observing site to have the same value as that found at nearby the reference site with actual radiation observations. Hence the ratio ($G_{\max}$ at sunshine site/ G_{omax} extraterrestrial for the sunshine only site) is set equal to ($G_{\max}$ at reference site/ G_{omax} extraterrestrial reference site). G_{omax} for the site in any given month may be estimated from the standard formulae given in Appendix 2. One has to use the appropriate declination for the $G_{\max}$ days. (Refer Table A.2.1 in Appendix 2). In this way estimates of $G_{\max}$ were obtained. Figure A.3.2 shows the consequences of applying this modified $G_{\max}$ methodology to the UK annual mean $G_{\max}$ data set.

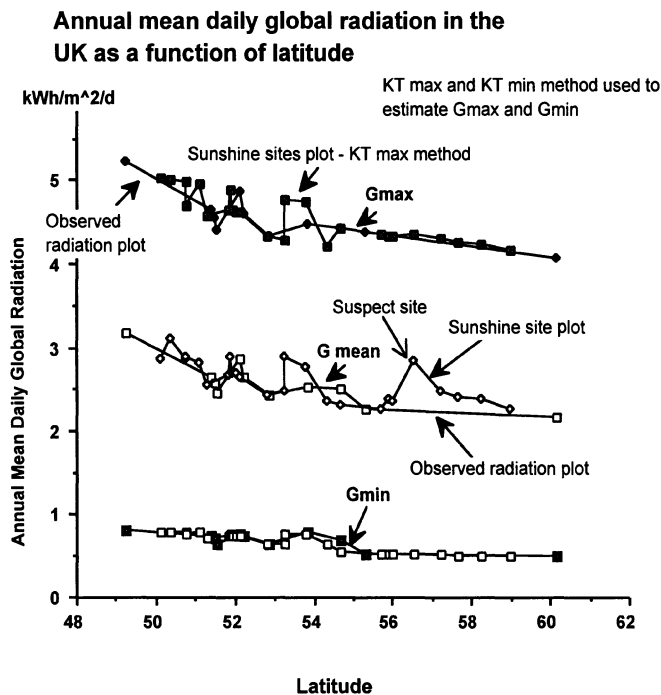


Figure A.3.2. The consequences of substituting the new $G_{\max}$ and $G_{\min}$ methodology in the UK. Compare these values with Figure A.3.1 based on the data as originally presented in the previous edition of the Atlas.

A.3.5. Improving $G_{\min}$ estimates for sites with sunshine data only.

In the earlier version of this Atlas the estimated value of $G_{\min}$ was set as $a_m G_0$ for $S/S_0 = 0$, i.e. no sunshine. Figure A.3.1 showed that in a country in Northern Europe like the UK, the actual observed

values of $G_{\min}/G_o$ are substantially less than the Angström a_m estimates. In these climates, cloudy days are common throughout the year.

The same however is not true for the more southerly sites covered by the Atlas. Figures A.3.3, A.3.4, A.3.5 & A.3.6 reveal that climatology of $G_{\min}$ values is more complex than had been realized at the time the previous version of this Atlas was prepared. The most extreme differences between $G_{\min}$ observations and $G_{\min}$ predictions occur in the Near East inland sites, refer Figure A.3.3. In summer, the minimum Kt values are relatively very close to the maximum Kt values. Effectively every day is nearly cloudless in June, July and August in this region. Figure A.3.4 shows the corresponding data obtained for the coastal sites in the Eastern Mediterranean, while Figure A.3.5 presents the results for coastal sites in Portugal. The increase above the typical Angström a_m estimation level of about 0.25 is still substantial in summer.

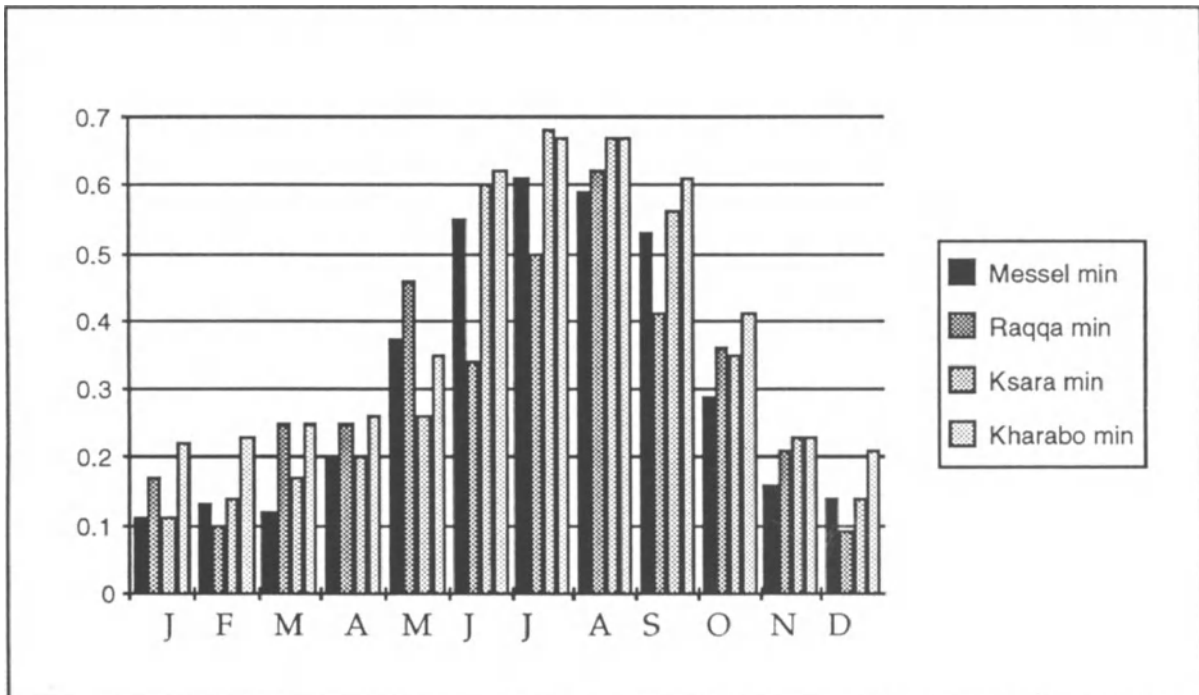


Figure A.3.3. The annual variation in the ratio $G_{\min}/G_o$ for inland sites in the Syrian Arab Republic and in Lebanon. The Angström method previously used would have yielded typical values around 0.25 for the ratio for each month in the year.

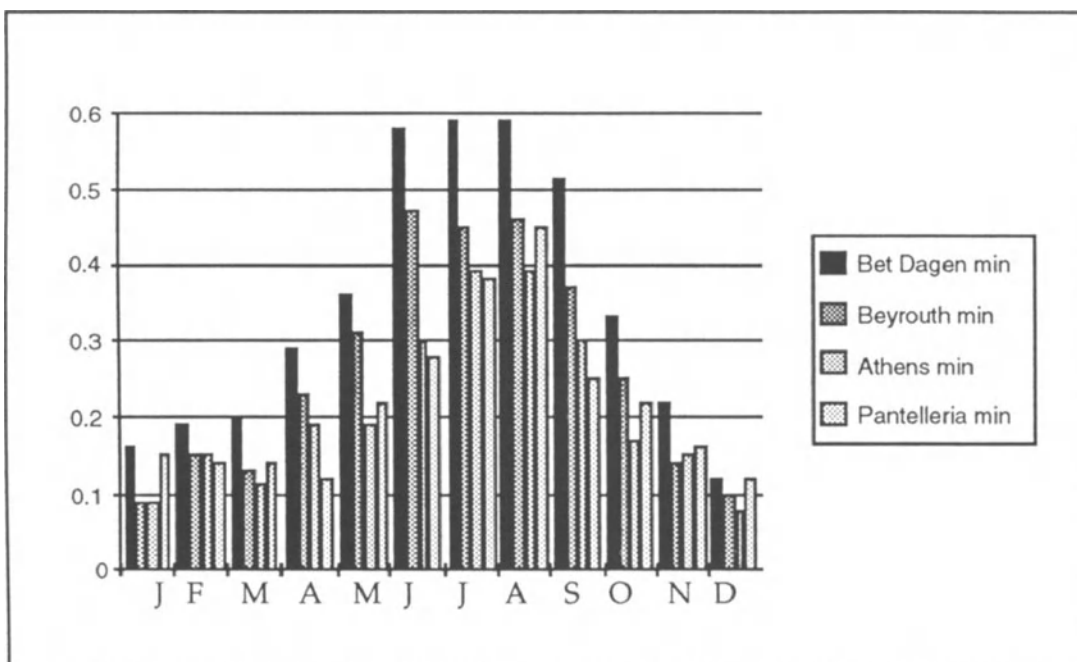


Figure A.3.4. Annual pattern of values of ratios $G_{\min}/G_0$ for coastal and near coastal eastern Mediterranean sites. Note the increase from west to east, and from north to south on the eastern coast of the Mediterranean.

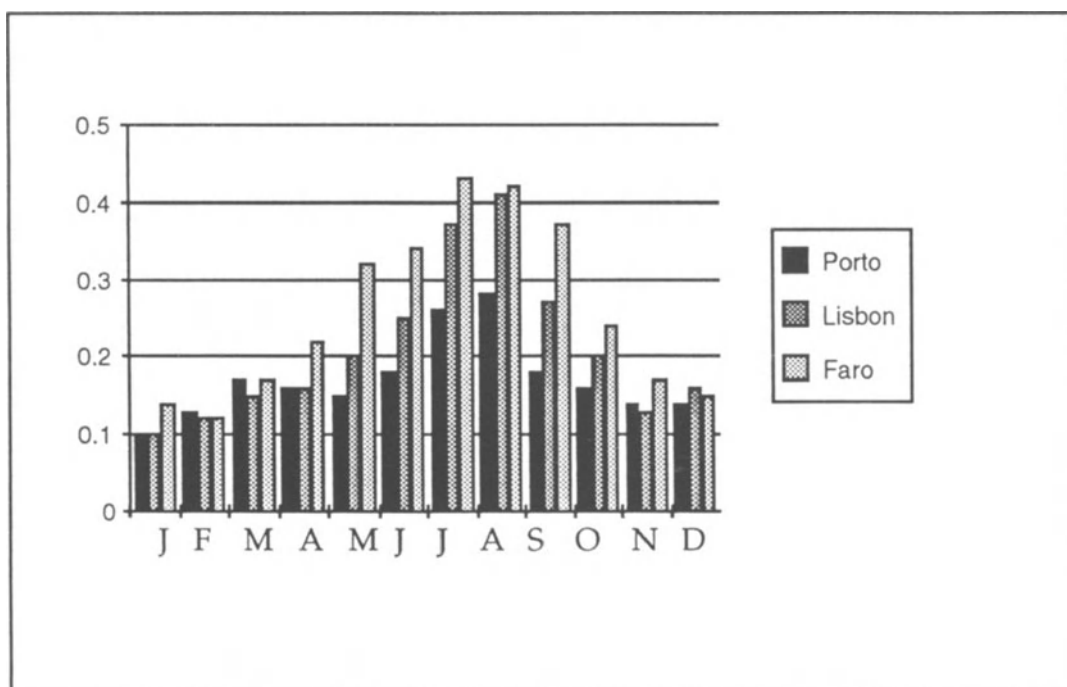


Figure A.3.5 . Annual pattern of values of ratio $G_{\min}/G_0$ for coastal sites in Portugal. Note the North South variation.

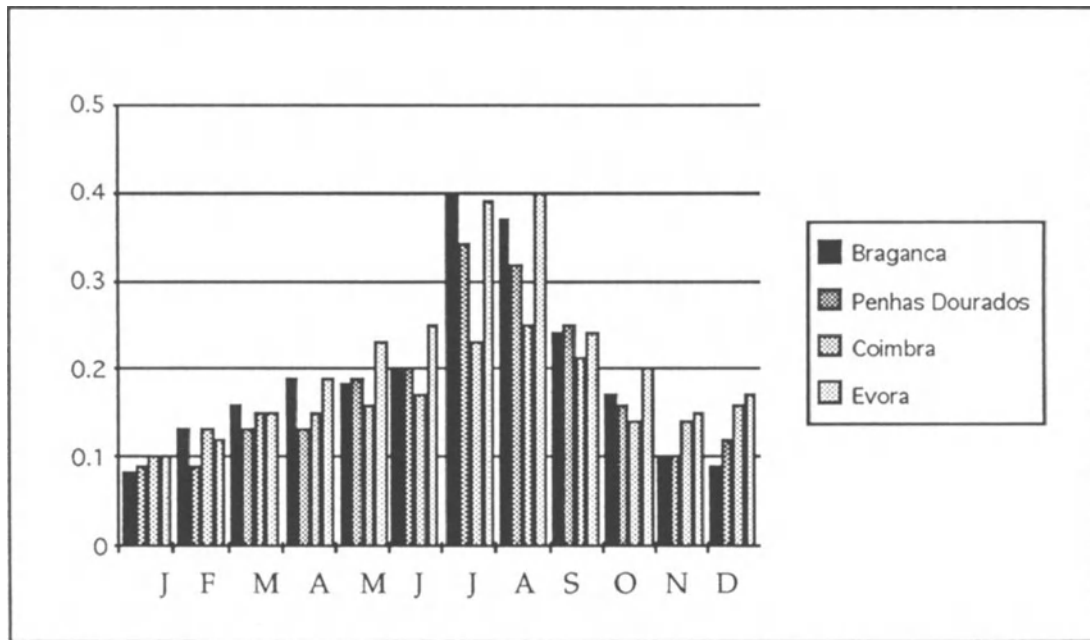


Figure A.3. 6. Annual pattern of values of ratio G_{min}/G_o for inland sites in Portugal.

The data for Portuguese inland sites are plotted in Figure A.3.6. The summer "break out" is again evident. Southern Italy shows similar results. Clearly an estimation method for G_{min} is needed that reflects the true climatology of G_{min} values.

The method adopted in this new edition of the Atlas to achieve climatologically consistent estimated values for G_{min} was to use the same K_t ratio adjustment concept as was used for G_{max} values. The improved practical procedure to obtain G_{min} values thus sets the $K_{t,min}$ values at the site without radiation observations to take the same value as that found at the reference site. Hence (G_{min} at sunshine site/ G_{om} extraterrestrial sunshine site) is set equal to (G_{min} at reference site/ G_{om} extraterrestrial reference site). Here the mean monthly value of G_{om} is used, which is tabulated monthly in each site table as G_o . Figure A.3.2 demonstrated the consequence of using this procedure to estimate G_{min} values for the UK.

A.3.6. Decisions made concerning specific sites and specific regions.

Each site without observations has to be specifically referenced to another site with observations of G_{max} and G_{min} . In Northern Europe few problems arose, except in Germany.

Germany. The key difficulty was the existence of three groups of sites which were not referenced to any specific site, as discussed earlier. The original Angström coefficients were retained unaltered, but

each site was linked to a selected nearby site to obtain values of $G_{\max}$ and $G_{\min}$. Table A.3.1 sets down the reference sites used.

Spain. The only site with observations was *Madrid*, inland and quite high. It was decided on the west side of Spain to link to Portugal. The same decision was made for the coastal sites in the south of Spain. Some eastern mainland coastal and Mediterranean island sites were linked to *Alghero* in Sardinia. Table A.3.1 again sets down the reference sites used.

Greece. The key observing site in Greece was *Athens*. The Observatory site in Athens is central and the atmosphere is relatively polluted. It was decided to link Greek sites well away from Athens to two sites outside Greece, one in Yugoslavia and one in Italy to obtain $G_{\max}$ estimates less affected by pollution. Athens was retained as the site used to estimate $G_{\min}$ on the basis that $G_{\min}$ strongly reflects the cloud climatology of the region rather than the atmospheric clarity. Table A.3.1 again sets down the reference sites used.

Malta *Qrendi* was referenced to *Trapani* in Sicily for these estimates.

Turkey. The previous $G_{\max}$ values were reduced by 5% to allow for the shortcomings of the Angström equation in the estimation of $G_{\max}$. As information on which to establish $G_{\min}$ was missing, the previously tabulated $G_{\min}$ values were removed and replaced with -999 s. The $G_{\min}$ climatology simply could not be established for Turkey from the very limited data available.

Lebanon *Abse* and *Ksara* were referenced to *Kharabo* for $G_{\max}$ values and to *Beirut* for $G_{\min}$ values

Jordan The five sites in Jordan were referenced to *Kharabo* to the north.

Table A.3.1 sets down the reference sites selected for $G_{\max}$ and $G_{\min}$ for all those cases where a different reference site has been used to that adopted for estimating Angström a_m and b_m . In all other cases the reference site used to estimate $G_{\max}$ and $G_{\min}$ values are the same as the reference site used for the Angström coefficients printed in the Tables.

A suitable programme has been written to substitute the revised values of $G_{\max}$ and $G_{\min}$ for the sites with sunshine observations only. The method produces the same values of G_{mean} in the Tables as before but supported by a more consistent set of estimated $G_{\max}$ and $G_{\min}$ values. Observed values of $G_{\max}$ and $G_{\min}$ values are unaltered from the previous edition.

Table A.3.1. A list of reference sites used to estimate $G_{\max}$ and $G_{\min}$ for sites without observed radiation.

If a site without radiation observations is not listed in this Table, the reference sites for Angström coefficients and for $G_{\max}$ and $G_{\min}$ estimates are identical. This reference site is printed on the site tables.

Site	Reference site for $G_{\max}$	Reference site for $G_{\min}$	Comments
Germany Region 1			
Muenster	Maastricht/Beek	Maastricht/Beek	In the Netherlands
Essen	Maastricht/Beek	Maastricht/Beek	In the Netherlands
Duesseldorf	Maastricht/Beek	Maastricht/Beek	In the Netherlands
Koeln/Wahn	Maastricht/Beek	Maastricht/Beek	In the Netherlands
Germany Region 2			
Wiesbaden	Wuerzburg	Wuerzburg	
Frankfurt/M.	Wuerzburg	Wuerzburg	
Darmstadt	Trier	Trier	
Mannheim	Trier	Trier	
Neustadt/Wstr.	Wuerzburg	Wuerzburg	
Karlsruhe	Trier	Trier	
Germany Region 3			
Stuttgart	Trier	Trier	
Freiburg	Trier	Trier	
Denmark			
Tylstrup	Karup	Karup	
Odum	Karup	Karup	
Czech Republic			
Brno	Hradec Kralove	Hradec Kralove	
Spain			
Oviedo	Braganca	Braganca	In Portugal
Logrono	Madrid	Madrid	
Zaragoza	Madrid	Madrid	
Barcelona	Madrid	Madrid	

Table A.3.1 (cont.)

Site	Reference site $G_{\max}$	for Reference site $G_{\min}$	Comments
Salamanca	Penhas Dourados	Penhas Dourados	In Portugal
Tortosa	Madrid	Madrid	
Palma	Alghero	Alghero	In Sardinia
Valencia	Alghero	Alghero	In Sardinia
Badajoz	Evora	Evora	In Portugal
Murcia	Faro	Faro	In Portugal
Sevilla	Faro	Faro	In Portugal
Almeria	Faro	Faro	In Portugal
Malaga	Faro	Faro	In Portugal
Greece			
Thessalonika	Bitola	Athens	$G_{\max}$ Yugoslavia
Konitsa	Bitola	Athens	$G_{\max}$ Yugoslavia
Ioannina	Bitola	Athens	$G_{\max}$ Yugoslavia
Larissa	Crotone	Athens	$G_{\max}$ Italy
Lamia	Crotone	Athens	$G_{\max}$ Italy
Aliartos	Athens	Athens	
Patra	Crotone	Athens	$G_{\max}$ Italy
Korinthos	Athens	Athens	
Malta			
Qrendi	Trapani	Trapani	In Italy
Lebanon			
Abde	Kharabo	Beirut	$G_{\max}$ from Syria &
Ksara	Kharabo	Beirut	$G_{\min}$ from Lebanon
Jordan			
Baqura	Kharabo	Kharabo	In Syria
Irbid Nursery	Kharabo	Kharabo	In Syria
Deir Alla	Kharabo	Kharabo	In Syria
Wadi Dhuliei	Kharabo	Kharabo	In Syria
Shoubak	Kharabo	Kharabo	In Syria

References Appendix 3.

- (A.3.1) Commission of the European Communities: *European Solar Radiation Atlas, Vol. 1, Global Radiation on Horizontal Surfaces*, Ed. W.Palz, Verlag TUV, Rheinland, (1984).
- (A.3.2) R.Dogniaux & M.Lemoine: *Classification of radiation sites in terms of different indices of atmospheric transparency*, Solar Energy R & D in the European Community, Series F, 2, ed. W.Palz, D.Reidel Publ. Co., Dordrecht, NL, pp 94-107, (1983).
- (A.3.3) Commission of the European Communities: *European Solar Radiation Atlas, Vol. 2, Inclined Surfaces*, Ed. W.Palz, Verlag TUV, Rheinland, (1984).

Appendix 4 Estimating monthly mean hourly values of global, diffuse and beam radiation from monthly mean values of daily global and diffuse radiation.

A.4.1. Introduction.

There are many solar energy applications, where it is useful to have detailed knowledge of the monthly mean hourly profiles of solar radiation. Reasonably accurate estimates can be made of hourly mean global, beam and diffuse irradiation using the daily tabulated data, provided there is not a great asymmetry between mean morning and mean evening sunshine at the site. As it has been a basic assumption in preparing this Atlas that radiation inputs to horizontal surfaces are symmetrical about solar noon, the methods that follow are applicable to all the data in the horizontal tables in this Atlas.

A.4.2. Converting daily mean global radiation to hourly mean global irradiances.

The key inputs required to estimate hourly mean global irradiance on horizontal surfaces in any specific month are the daylength and the monthly mean values of the daily global solar radiation. These inputs are contained in the site specific horizontal surface tables. Proceed as follows:-

Stage 1. Set up time system . The time system used here is solar time. The sun is due south at solar noon. It is also assumed here that estimates of horizontal irradiance at hourly intervals are required. The solar time system adopted runs from hour to hour, 0800 to 0900, 0900 to 1000, and so on. The calculations produce estimates of mid hour irradiances at 0830, 0930 etc. The conversion between solar time and local time is discussed at the end of this Appendix.

Solar time in hours is first converted to an hour angle, ω . The hour angle is measured from solar noon. Each hour of the 24 hour day represents a 15 degree rotation of earth ($360^\circ/24$). By convention values of ω before solar noon are negative. So the hour angle at 0900 hours is $-(12-9)*15 = -45$ degrees. As the horizontal radiation pattern is assumed symmetrical about noon, horizontal values for only half each day need be calculated. The afternoon value at any given positive hour angle is identical with the morning value at the corresponding negative hour angle. Table A.4.1 provides values of the mid hour hour angles, and their cosines.

A key input time variable is the sunset hour angle, ω_o , the hour angle at sunset. It is easily calculated by extracting the mean daylength in hours for the month being processed from the selected site table, then dividing this value by 2 to get the half day length and multiplying it by 15 to convert the time of sunset into the sunset hour angle in degrees, ω_o . Then ω_o is converted into radians by multiplying by $\pi/180$. For example for a daylength of 10.2 hours, the sunset hour angle is 5.1×15 degrees = 76.5 degrees = 1.3372 radians. Sunrise will be at $(12.0-5.1)$ hours solar time, i.e. at 6.9 hours. The first

calculation is therefore performed at 0730 solar time (7.5 hours). It is assumed the global irradiance is negligibly low at sunrise, and so the irradiance is set to zero at 6.9 hours

Table A.4.1. Conversion of solar time to a mid hour hour angle $\omega(t)$ and its cosine, $\cos\omega(t)$.

Hour period	4-5	5-6	6-7	7-8	8-9	9- 10	10-11	11-12
Mid hour time, t	0430	0530	0630	0730	0830	0930	1030	1130
Hour angle $\omega(t)$	- 112.5°	-97.5°	-82.5°	-67.5°	-52.5°	-37.5°	-22.5°	-7.5°
Cos ($\omega(t)$)	-0.3827	-0.1305	0.1305	0.3827	0.6088	0.7934	0.9239	0.9914

Stage 2. Estimate the monthly mean hourly values of the extraterrestrial horizontal irradiation as a ratio to the incident daily extraterrestrial horizontal radiation for each hour.

Set $r(t)$ as the required extraterrestrial ratio, i.e. the monthly mean mid hourly value of the extraterrestrial horizontal irradiation at time t as a proportion of the incident daily extraterrestrial radiation. Then apply the method of Liu & Jordan(A.4.1) to estimate the value of the fraction $r(t)$ at hour angle ω :-

$$r(t) = (\pi/24) (\cos\omega(t) - \cos\omega_0) / (\sin\omega_0 - \omega_0 \cos\omega_0) \quad (\text{A.4.1})$$

The value of $\cos(\omega(t))$ may be found from Table A.4.1. ω_0 , expressed in radians, is of course constant over the whole day.

Stage 3. Estimate the monthly mean hourly global irradiance.

The method of Collares Pereira & Rabl is used to do this (A.4.2). Extract the monthly mean value of G mean in kWh/m² per day, i.e. G_{dm} , from the site table, and express it in watt hours/m² per day. Then, denoting the mean global horizontal irradiance at time t as $G_{hm}(t)$, $G_{hm}(t)$ is given by :-

$$G_{hm}(t) = r(t).G_{dm} \{ a + b \cos\omega(t) \} \quad \text{W/m}^2 \quad (\text{A.4.2})$$

$$\text{where } a = 0.4090 + 0.5016(\sin(\omega_0 - \pi/3))$$

$$b = 0.6609 - 0.4767(\sin(\omega_0 - \pi/3))$$

It is a simple process to set up on a spread sheet, but care must be taken to set ω_0 in *radians*. in A.4.1.

A.4.3. Hourly global irradiance on clear (G_{max}) days.

The computations of $G_{hc}(t)$ for G_{max} days are similar, only in this case the daylength has a different value. The required daylength values are given in the horizontal site tables as S_{omax} . One obviously uses G_{max} instead of G mean.

A.4.4. Overcast days.

For regions and months where the G_{min} values are clearly indicative of overcast conditions, then the conversion is simply:-

$$G_{min_h}(t) = r(t) G_{min_d} \quad (A.4.3)$$

When G_{min} values are clearly not representative of overcast conditions, proceed as for monthly means above. Appendix 3 provides climatological guidance on this point. One uses the mid month declination values.

A.4.5. Estimating the hourly values of the diffuse irradiance on horizontal surfaces.

The estimation of hourly diffuse radiation $D_h(t)$ from the daily diffuse radiation, D_d , also makes use of the extraterrestrial hourly fraction $r(t)$ calculated above. So stages 1 and 2 of the calculation under A.4.2 do not have to be repeated. The only additional inputs needed are the values of D_{dm} or D_{dc} . The required monthly mean daily values of D_{dm} for monthly mean conditions are found in the horizontal surface site tables as D mean est. For clear sky conditions, the required monthly values of D_{dc} are found in the inclined surface tables. The horizontal surface values for clear days are extracted from the bottom table for the required site. The diffuse data should be converted from kWh/m^2 per day to Wh/m^2 .

The method suggested is based on a modification of the methodology set down by Satyamurty & Lahiri (A.4.3). A study by Page showed a modification in the original formula is needed to cover clear sky conditions (A.4.4), when D_d/G_d is less than 0.25.

The calculation proceeds as follows, using coefficients a' and b' :-

For monthly mean conditions,

$$D_{hm}(t) = r(t) D_{dm} [a' + b' \cos(\omega(t))] \quad W/m^2 \quad (A.4.4a)$$

For clear sky conditions

$$D_{hc}(t) = r(t) D_{dc} [a' + b' \cos(\omega(t))] \quad W/m^2 \quad (A.4.4b)$$

$r(t)$ is the Liu & Jordan fraction determined from equation A.4.1.

There are two coefficients, a' and b' . These are calculated on a daily basis from the daily ratio D_d/G_d which of course has two types of values, D_{dm}/G_{dm} & D_{dc}/G_{dc} for mean and clear sky conditions respectively.

a' is calculated as follows:-

$$\text{for } D_d/G_d \leq 0.25, \quad a' = 1.752 - 0.720 D_d/G_d$$

(This is a modification to the formulae in reference A.4.3 to prevent a dip occurring around noon in summer under very clear conditions).

$$\text{for } D_d/G_d > 0.25 \text{ and } D_d/G_d < 0.70, \quad a' = 0.4922 + 0.2700 G_d/D_d$$

$$\text{for } D_d/G_d \geq 0.70 \text{ and } D_d/G_d \leq 0.90, \quad a' = 0.7600 + 0.1130 G_d/D_d$$

b' is calculated as:-

$$b' = 2(1-a')[(\sin \omega_o - \omega_o \cos \omega_o)/(\omega_o - 0.5 \sin(2\omega_o))]$$

It was found at some sites in northern Europe that the monthly mean value of D_d/G_d could rise above 0.90 in winter. A researched position to cover this eventuality in the range was needed, but was not available. It is suggested that a constant value of a' of 0.886 should be assumed in this range.

A.4.6. Estimating the hourly distribution of direct beam radiation on horizontal surfaces.

A.4.6.1. Rapid estimation of mid hour direct beam irradiance.

The beam irradiance on a horizontal surface at time t , $B_h(t)$, may be estimated by difference as:-

$$B_{hm}(t) = G_{hm}(t) - D_{hm}(t) \quad \text{W/m}^2 \quad \text{for monthly mean values} \quad (\text{A.4.5a})$$

or as

$$B_{hc}(t) = G_{hc}(t) - D_{hc}(t) \quad \text{W/m}^2 \quad \text{for clear day values} \quad (\text{A.4.5b})$$

As the beam irradiance in this method is obtained by difference, the first values after sunrise and the last values before sunset, being the difference of two small numbers, are, in percentage terms, not very reliable, and should be viewed with caution in converting to inclined surface values. As the global hourly split down formula and the diffuse hourly split down formula are both empirical and do not share a common scientific basis, it was found that the hourly diffuse estimates at the beginning and the end of the day could exceed the hourly global estimates, implying negative beam radiation at these times. While this can be countered by setting the diffuse equal to the global, this procedure eliminates all the beam contribution at the beginning and the end of the day. While this adjustment makes little impact on the irradiation of south facing surfaces, it makes a considerable impact on the irradiation of east and west facing surfaces. A more reliable but more complex way of estimating beam irradiances follows, which avoids this difficulty follows.

A.4.6.2 More accurate estimation of mid hour direct beam irradiances.

The monthly mean daily beam radiation on a horizontal surface, B_{dm} , and corresponding clear day values, B_{dc} , are given by the values of (G mean-D mean estimate) and (Gmax - D clear). The two required values for each month are printed in the site tables. The clear sky values of D clear are taken

from the inclined surface tables and $G_{\max}$ from either the horizontal tables or the vertical tables. The latitude of the site, ϕ , is also needed. This is given in the table header.

The methodology that follows has been developed by Page (A.4.5). The more conventional beam analysis approaches have been converted into analytically more convenient approaches. There are several stages in the breakdown process. B_{dm} & B_{dc} can be proportioned across the day in the following way.

Stage 1. Find Linke Turbidity Factor.

The breakdown across the day depends on the atmospheric turbidity. A suitable Linke Turbidity Factor has to be estimated first, to use the method. The monthly Linke Turbidity Factor may be estimated from the sum of the Angstrom regression coefficients ($a_m + b_m$). These monthly coefficients are given in the horizontal surface site tables for each site.

The very simple formulae used are:- $T_{Lm} = f_m - f_m(a_m + b_m)$ for monthly mean values. (A.4.6a)

and $T_{Lc} = f_c - f_c(a_m + b_m)$ for clear day values. (A.4.6b)

The research programme carried out around 1980 for a limited range of European sites yielded the values of f_m and f_c given in Table A.4.2. Current on-going research in the European Community European Solar Atlas Programme could lead to suggestions for improved values.

Table A.4.2. Values of f_m and f_c month by month for use in equations A.4.6 & A.4.7.

	Jan.	Feb.	Mar	Apr	May	Jun.	Jul.	Aug.	Sep	Oct.	Nov.	Dec
f_m	10.7	13.2	15.4	17.1	18.5	16.9	18.2	17.0	14.9	12.8	11.3	9.5
f_c	13.5	13.9	13.4	15.4	15.4	15.4	14.9	16.3	14.6	13.2	12.8	11.6

Stage 2. Evaluate the coefficients in the clear sky beam solar elevation function.

The clear sky beam elevation function describes how the clear sky beam irradiance on a horizontal surface varies with solar elevation. It has a value of 1 when the sun is overhead, and 0 at sunrise. The precise form of the function depends on the Linke Turbidity Factor, T_L .

$$\text{Clear sky beam elevation function} = A(0) + A(1) \sin \gamma_s + A(2) \sin^2 \gamma_s \quad (\text{A.4.7})$$

where γ_s is the solar elevation angle.

$A(0)$ $A(1)$ and $A(2)$ are coefficients which depend on the Linke Turbidity Factor. Figure A.4.1 plots the function described by equation A.4.7 for a range of Linke Turbidity Factors. Increasing curvature as the turbidity increases, implies a greater proportion of the daily beam energy is associated with the

middle of the day when the elevation of the sun is highest. A dirty atmosphere absorbs proportionally more energy at low solar elevations.

In this formulation, the clear sky horizontal beam irradiance, B_c at any instant is given by:-

$$B_c = \epsilon \text{Tr}(n) [A(0) + A(1) \sin \gamma_s + A(2) \sin^2 \gamma_s] \quad (\text{A.4.8})$$

$\text{Tr}(n)$ is the irradiance of the beam with the sun vertically overhead, and ϵ is the correction to mean solar distance. The expression $\epsilon \text{Tr}(n)$ depends on the Linke Turbidity Factor, and on site height, but is not evaluated here, as it cancels out of the calculation as shown later. Appendix 2 explains how to calculate the solar altitude at any instant, and provides the necessary table of declination values. (For the first calculation after sunrise, it is more satisfactory to calculate the solar altitude using the hour

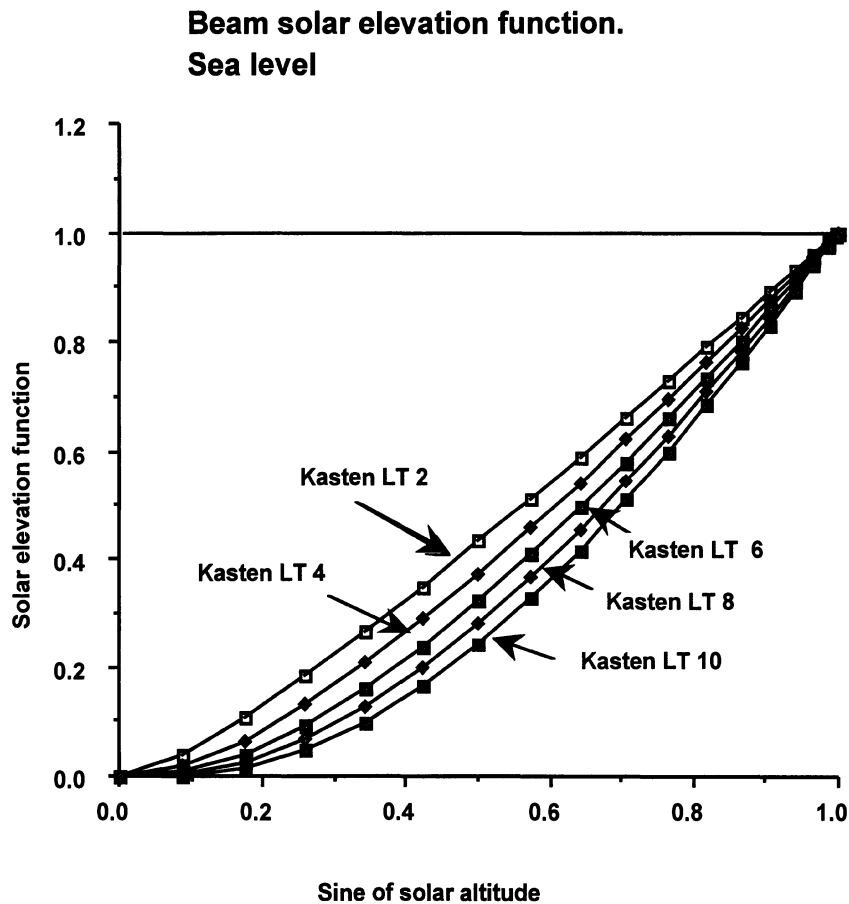


Figure A.4.1. The clear sky beam solar elevation function for the improved ESRA clear sky model plotted against sine of the solar altitude for Kasten Air Mass 2 Linke Turbidity Factors ranging from 2 to 10. Note the increasing curvature as the Linke Turbidity Factor increases. This biases the beam energy proportionally more towards the middle of the day, as T_L rises.

angle midway between the sunrise hour angle and the end of the first computing period, i.e. sunrise at 7.4 hours, calculate solar altitude at $(7.4+8.0)/2$ hours, i.e. 7.7 and not 7.5 hours. This will give a more realistic value of the mean solar altitude during the period.)

Using the estimated monthly value of the Linke Turbidity Factor, T_L , the values of the $A(0)$, $A(1)$ and $A(2)$ coefficients in the beam transmittance function have next to be determined using the formula below. In order to achieve adequate fitting accuracy, there are fitting coefficients for three ranges of noon solar altitude :-

1. Noon solar altitude less than 15 degrees.
2. Noon solar altitude between 15 degrees and 30 degrees.
3. Noon solar altitude greater than 30 degrees.

The noon solar altitude is easily found as $(90^\circ - \text{latitude} + \text{declination})$ degrees. The two sets of values of the declination required, one for monthly mean calculations, the other for clear day calculations, may be found in Appendix 2, Table A.2.1. This simple calculation settles which case to use for any specific month. The coefficients are calculated as follows, using the values of the coefficients given in Table A.4.3, which follows:-

Case 1. Noon solar altitude less than 15 degrees.

$$\begin{aligned} A(0) &= L(1,1) + L(1,2). T_L + L(1,3). T_L^2 \\ A(1) &= L(2,1) + L(2,2). T_L + L(2,3). T_L^2 \\ A(2) &= L(3,1) + L(3,2). T_L + L(3,3). T_L^2 + L(3,4). T_L^3 \end{aligned}$$

Case 2. Noon solar altitude between 15 and 30 degrees.

$$\begin{aligned} A(0) &= L(4,1) + L(4,2). T_L + L(4,3). T_L^2 \\ A(1) &= L(5,1) + L(5,2). T_L + L(5,3). T_L^2 \\ A(2) &= L(6,1) + L(6,2). T_L + L(6,3). T_L^2 \end{aligned}$$

Case 3. Noon solar altitude greater than 30 degrees.

$$\begin{aligned} A(0) &= L(7,1) + L(7,2). T_L + L(7,3). T_L^2 \\ A(1) &= L(8,1) + L(8,2). T_L + L(8,3). T_L^2 \\ A(2) &= L(9,1) + L(9,2). T_L + L(9,3). T_L^2 \end{aligned}$$

Note :It is important never to work outside the correct fitting range as determined by noon solar altitude.

Stage 3. Form the daily integration coefficients. and take out ratios.

The integration across the day is achieved by analytic integration. Three coefficients, B(0), B(1) and B(2) are used to do this. The coefficients are formed using the declination, δ , and latitude ϕ , in conjunction with the coefficients, A(0), A(1) and A(2) determined above, as follows:-

$$B(0) = A(0) + A(1) \sin \phi \sin \delta + A(2) \sin^2 \phi \sin^2 \delta + A(2) (\cos^2 \phi \cos^2 \delta) / 2 \quad (\text{A.4.9a})$$

$$B(1) = A(1) \cos \phi \cos \delta + 2 A(2) \sin \phi \sin \delta \cos \phi \cos \delta \quad (\text{A.4.9b})$$

$$B(2) = A(2) (\cos^2 \phi \cos^2 \delta) / 4 \quad (\text{A.4.9c})$$

Then, using the sunset hour angle, ω_o , the daily clear sky beam irradiation is given by:-

$$B_{dc} (\text{sunrise to sunset.}) = (24/\pi) \varepsilon \text{Tr}(n) [B(0) \omega_o + B(1) \sin \omega_o + B(2) \sin (2\omega_o)] \quad (\text{A.4.10})$$

The required ratio of the mid hour beam irradiance to the daily global irradiation is found by dividing equation A.4.8 by equation A.4.10. Note the term $\varepsilon \text{Tr}(n)$ cancels out.

Thus

$$r_b(t) = \frac{\pi/24 [A(0) + A(1) \sin \gamma_s + A(2) \sin^2 \gamma_s]}{[B(0) \omega_o + B(1) \sin \omega_o + B(2) \sin (2\omega_o)]} \quad (\text{A.4.11})$$

It follows that $B_{hc}(t) = r_{bm}(t) B_{dc}$ and $B_{hm}(t) = r_{bc}(t) B_{dm}$

Table A.4.3. Coefficients in beam solar elevation function for three bands of noon solar altitude.

Band 0 to 15 deg.					
L(1,1)	-0.0011656	L(2,1)	+0.74095	L(3,1)	+0.34959
L(1,2)	+0.00018408	L(2,2)	-0.22427	L(3,2)	+0.72313
L(1,3)	+4.8754 E-07	L(2,3)	+0.015314	L(3,3)	-0.12305
				L(3,4)	+0.0059194
Band 15 to 30 deg.					
L(4,1)	-0.0082193	L(5,1)	+0.89233	L(6,1)	+0.25428
L(4,2)	+0.00045643	L(5,2)	-0.19991	L(6,2)	+0.2614
L(4,3)	+6.7916 E-05	L(5,3)	+0.0099741	L(6,3)	-0.01702
Band Above 30 deg.					
L(7,1)	-0.017349	L(8,1)	+1.0258	L(9,1)	-0.0072178
L(7,2)	-0.0058985	L(8,2)	-0.12196	L(9,2)	+0.13086
L(7,3)	+0.00068868	L(8,3)	+0.0019229	L(9,3)	-0.0028405

Table A.4.4. Comparison of accuracy achieved in the breakdown from daily data to hourly data using the different methods discussed in this Appendix. Observed hourly mean data. Source Bracknell UK, 1966-1975, Month June. Observed daily irradiation global 18.80 MJ/m² per day , diffuse 9.85 MJ/m² per day. From Solar Radiation data for the United Kingdom, 1951-75. Met Office Publication 0.912.

Time of check	Component of radiation	Method	Observed in MJ/m ²	Predicted in MJ/m ²	Error ratio
0730	Global	Collares Pereira	1.06	1.073	1.01
	Diffuse	Satyamurty improved	0.60	0.597	0.99
	Beam by difference		0.46	0.476	1.03
	Beam directly estimated	Page	0.46	0.490	1.06
	Global estimated as sum of B & D	Page plus Satymurty	1.06	1.087	1.03
0930	Global	Collares Pereira	1.71	1.716	1.00
	Diffuse	Satyamurty improved	0.87	0.861	0.99
	Beam by difference		0.84	0.855	1.02
	Beam directly estimated	Page	0.84	0.838	1.00
	Global estimated as sum of B & D	Page plus Satymurty	1.71	1.699	0.99
1130	Global	Collares Pereira	2.06	2.061	1.00
	Diffuse	Satyamurty improved	1.00	0.987	0.99
	Beam by difference		1.06	1.074	1.01
	Beam directly estimated	Page	1.06	1.030	0.97
	Global estimated as sum of B & D	Page plus Satymurty	2.06	2.017	0.98

While it appears complicated, it is relatively easy to programme, because one is handling perfect integrals. Table A.4.4 compares the accuracy of the two approaches to direct beam estimation.

The diffuse irradiation can then be found by difference as:-

$$D_{hm}(t) = G_{hm}(t) - B_{hm}(t) \quad W/m^2 \quad \text{for monthly mean values} \quad (A.4.12a)$$

or as

$$D_{hc}(t) = G_{hc}(t) - B_{hc}(t) \quad W/m^2 \quad \text{for clear day values} \quad (A.4.12b)$$

An alternative that eliminates any risk of estimated $D_{hc}(t)$ exceeding estimated $G_{hc}(t)$, or achieving unrealistically high values of $B_{hc}(t)$, is to form $G_{hc}(t)$ as the sum:-

$$G_{hm}(t) = B_{hm}(t) + D_{hm}(t) \quad W/m^2 \quad \text{for monthly mean values} \quad (A.4.13a)$$

or as

$$G_{hc}(t) = B_{hc}(t) + D_{hc}(t) \quad W/m^2 \quad \text{for clear day values} \quad (A.4.13b)$$

A.4.7. Daily beam radiation availability on obstructed sites.

Another advantage of this direct beam model is that it can be used to estimate the proportion of the daily direct beam radiation available after site obstructions have been taken into account. The function may be integrated over any required pair of hour angles, ω_1 and ω_2 .

$$\begin{aligned} B_h(t1..t2) &= (12/\pi) \varepsilon \text{Tr}(n) \int_{\omega_1}^{\omega_2} (B(0) + B(1) \cos \omega + (2 B(2)) \cos(2\omega)) d\omega \\ &= (12/\pi) \varepsilon \text{Tr}(n) [B(0) \omega + B(1) \sin \omega + B(2) \sin (2\omega)] \int_{\omega_1}^{\omega_2} \end{aligned} \quad (A.4.14)$$

The daily proportion of horizontal direct beam received is $B_{dc}(t1..t2)/B_{dc}(\text{sunrise to sunset})$.

Equation A.4.10 gives $B_{dc}(\text{sunrise to sunset}) = (24/\pi) \varepsilon \text{Tr}(n) [B(0) \omega_o + B(1) \sin \omega_o + B(2) \sin (2\omega_o)]$

Hence the available daily fraction is given by-

$$\{[B(0) \omega_2 + B(1) \sin \omega_2 + B(2) \sin (2\omega_2)] - [B(0) \omega_1 + B(1) \sin \omega_1 + B(2) \sin (2\omega_1)]\} / 2.[B(0) \omega_o + B(1) \sin \omega_o + B(2) \sin (2\omega_o)]$$

One simply, by some suitable means, has to establish the sunrise and sunset times over the obstruction, and convert these times into hour angles. Figure A.4.2 shows a computer generated sun plot for a hypothetical obstructed site located at Lerwick in the north of Scotland. The projection is cylindrical and covers 360 degrees. Three sun paths are plotted at mid hourly intervals in solar time, January 17th when the sun is very low, March 16th close to the equinox and June 11th, when the day is very long at this latitude. The obstruction sunrise and sunset angles are easily estimated from such

sunpath diagrams. On this site obstructed sunrise is at 0715 in June and sunset at 1750. In January obstructed sunrise is at 1020 and sunset at 1325. i.e. sunshine daylength only about three hours.

If a number of obstructed situations are to be linked to one specific tabulated site, it is worth remembering the same monthly coefficients $A(0)$, $A(1)$, $A(2)$, $B(0)$, $B(1)$ and $B(2)$ are applicable to all the different obstruction cases, linked to radiation data from that site. They can be held on file or in a spreadsheet to avoid the need for their recalculation each time.

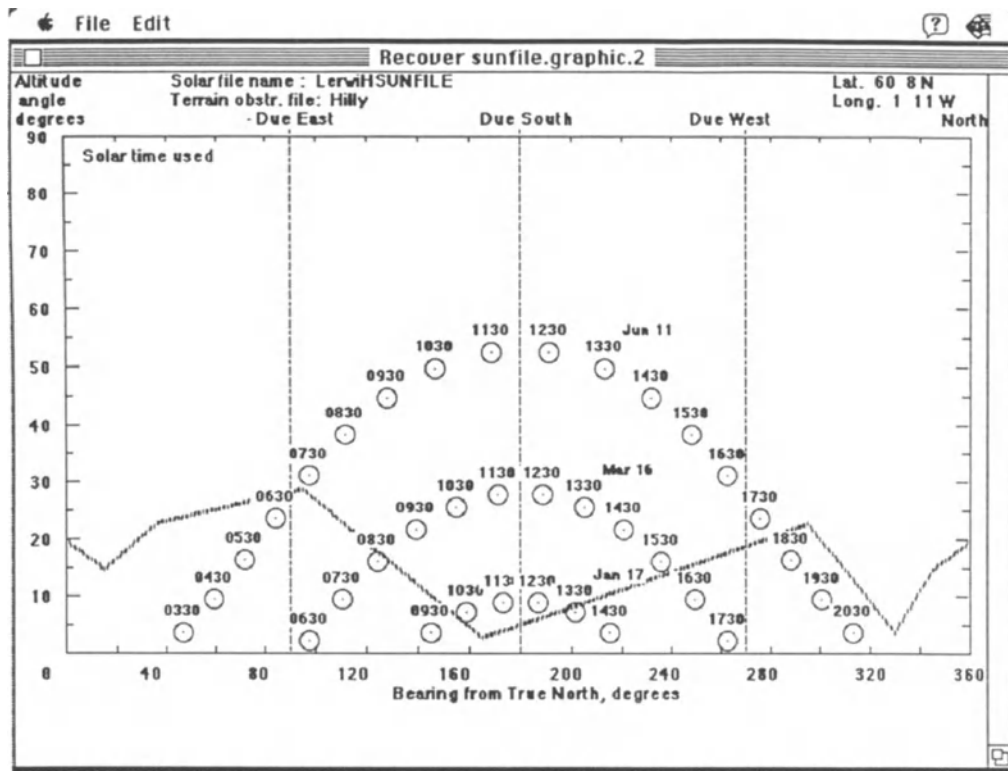


Figure A.4.2 A cylindrical sunplot for Lerwick generated from the data base with an arbitrary pattern of site obstructions around the site. The sunpaths are plotted at mid hour intervals for Jan. 17th, Mar. 16th and June 11th. The obstructed sunrise and sunset hours are easily estimated for each sun path and converted to hour angles measured from solar noon. (Source: Generated by Programme EU SEESUN developed by Page (A.4.6))

A.4.8. Converting solar time to local mean time.

Solar time is often called Local Apparent Time, abbreviated as LAT. There are four factors that influence the relationship between solar time and local mean time, abbreviated as LMT:-

- 1 Site longitude, λ in degrees, which is given in the site table headers.
- 2 The longitude of the time zone, λ_R .
3. The equation of time ET, given here in minutes.
- 4 The correction for summer time, c , given here in hours.

The conversion formula to convert LMT to LAT is:-

$$\text{LAT} = \text{LMT} + \text{ET}/60 + [(\lambda - \lambda_R)/15] - c \quad \text{hours} \quad (\text{A.4.15})$$

Time zones One needs first to know the reference longitude of the time zone, λ_R . The values of λ_R for the area covered by the Atlas (currently in November 1995) are:-

Ireland & UK

λ_R 0° degrees

Albania, Austria, Belgium, Bosnia Hercegovina, Croatia, Czech Republic, Denmark, France, Germany, Gibraltar, Hungary, Italy, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Slovakia, Slovenia, Yugoslavia

λ_R $+15^\circ$ degrees

Bulgaria, Cyprus, Finland, Greece, Israel, Jordan, Lebanon, Romania, Syria, Turkey λ_R $+30^\circ$ degrees

Values of ET in minutes are given in Table A.4.4. The value of c in summer is normally + one hour. The dates of change are being standardised within the European Union.

Table A.4.4. Equation of time in minutes for monthly mean days and Gmax calculation days

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Mean days	-9.76	-14.44	-9.38	-0.34	3.66	0.53	-5.93	-4.22	5.63	14.99	15.09	6.38
Gmax days	-12.95	-13.48	-5.37	2.39	2.68	-1.54	-4.14	-6.01	1.24	11.95	16.45	9.32

Example: Convert 0830 hours Local Mean Time on Jan. 15th in Lisbon to Solar Time (LAT).

Longitude of Lisbon is $9^\circ 09'$ W., i.e. - 9.15 degrees. Time zone λ_R = + 15 degrees.

Longitude correction = $[-9.15 - 15] / 15 = -1.61$ hours

Equation of time correction = $-9.76 / 60$ hours = - 0.163 hours. $c = 0$

LAT = LMT + ET + $[(\lambda - \lambda_R) / 15] - c = 8.50 - 0.163 - 1.61 = 6.727$ hours.

Daylength from table for Lisbon in January, 9.6 hours, sunrise at $(12 - 9.6 / 2)$ hours = 7.20 hours LAT.

Another 0.47 hours to go to sunrise.

A.4.9. References Appendix 4.

A.4.1. B.Y.H. Liu & R.C. Jordan: *The interrelationship and characteristic distribution of direct, diffuse and total solar radiation*, Solar Energy, **4**, pp 1-19, 1960.

A.4.2. M. Collares Pereira & A. Rabl: *The average distribution of solar radiation- correlations between diffuse and hemispherical and between daily and hourly insolation values*, Solar Energy, **22**, pp 155-164, 1979.

A.4.3 V.V. Satyamurty, and P.K. Lahiri: *Estimation of symmetric and asymmetric hourly global and diffuse radiation from daily values*, Solar Energy, **48**, pp 7-14, 1992.

A.4.4. J.K.Page: *Improvements in the Satymurty and Lahiri model for estimating the apportionment of diffuse solar radiation on cloudless days*, Task II Coordinator's Technical Report No 10, Internal Note, European Solar Radiation Project, Project No JOU2-CT-94-03505/P0603, 1995.

A.4.5. J.K.Page: *The estimation of diffuse and beam irradiance and diffuse and beam illuminance from daily global irradiation, a key process in the evolution of microcomputer packages for the new European Solar Radiation & Daylighting Atlases*, Task II Coordinator's Technical Report No 8, Internal Note, European Solar Radiation Atlas Project, Project No JOU2-CT-94-03505/P0603, 1995.

A.4.6. J.K.Page: *Generated by Programme EU SEESUN, a Quickbasic Apple Macintosh based Programme now redesigned to link with the European Solar Radiation Atlas Data Disk*, , Sheffield, 1995.

(This programme has been adapted to read the third European Solar Radiation Atlas data file disk and generate relevant hourly radiation and illumination data for slopes in the 340 European Union region, and present them graphically in the context of site obstruction in ways that combine numeric and geometric information. It also treats the transmission of radiation through clear single and double glazing. For information enquire J.K.Page, c/o EDAS unit, Arts Tower, University of Sheffield, Western Bank, SheffieldS10 2TN, United Kingdom).

Appendix 5. The estimation of hourly values of illuminance.

The conversion is achieved using the concept of luminous efficacy, the conversion factor from solar irradiance to solar illuminance. The luminous efficacy of the beam irradiation is different to the luminous efficacy of the diffuse sky irradiation, so a two component conversion system must be used. It is necessary to first estimate hourly beam and diffuse irradiances on the horizontal surface, before converting to illuminance, using the methods set out in Appendix 4 to carry out these initial calculations.

The luminous efficacy is stated in lumens per watt. One lux is one lumen per square metre. The irradiance is stated in watts per square metre. It is convenient to work in units of kilolux for solar illuminance. The horizontal surface solar illuminance can exceed 100 kilolux with a high sun and a clear sky.

The luminous efficacy of the beam irradiance depends on solar altitude and so varies from hour to hour. It does not depend on relative sunshine duration.

The luminous efficacy of sky diffuse irradiance depends on the relative sunshine duration. It is treated as being constant across the day.

The detailed calculation proceeds as follows:-

Stage 1. Calculate mid-hourly values of the solar altitude and estimate beam luminous efficacy.

It is necessary to calculate the hourly values of the solar altitude, to estimate the beam luminous efficacy. The declination data needed to estimate the mid hour solar altitudes, γ_s , for monthly mean and clear day conditions are given in Appendix 2, Table A.2.1.

Estimate the beam luminous efficacy, K_b , as follows:-

If $\gamma_s \leq 50^\circ$ then

$$K_b = 62.134 - 0.75885\gamma_s + 0.27749\gamma_s^2 - 0.012108\gamma_s^3 + 0.0002052\gamma_s^4 - 1.2278 \cdot 10^{-6}\gamma_s^5 \text{ lm/W} \quad (\text{A.5.1a})$$

If $50^\circ < \gamma_s < 60^\circ$ then

$$K_b = 103 + (\gamma_s - 50)/10 \text{ lm/W} \quad (\text{A.5.1b})$$

If $\gamma_s \geq 60^\circ$ then

$$K_b = 105 \text{ lm/W} \quad (\text{A.5.1c})$$

Stage 2. Estimate diffuse luminous efficacy, K_d , for day.

Clear days $K_d = 144 \text{ lm/W}$ (A.5.2)

Monthly mean values, diffuse.

The following procedure emerged for estimating the luminous efficacy on a continuous observation basis within the European Commissions Joule 1 & Joule 2 daylighting projects.

Estimate the value of the relative sunshine duration, S/S_o , from the tables & then estimate the instantaneous cloudiness, $CI8$, in oktas, using the following formula:-

$$CI8 = 1 - 0.55(S/S_o) + 1.22(S/S_o)^2 - 1.68(S/S_o)^3 \quad (A.5.3)$$

Then $K_d = 144 - 29.CI8 \text{ lm/W}$ (A.5.4)

Full checks have not yet been completed on the applicability of equation A(5.4) to monthly mean conditions. However from preliminary checks it appears that it may be better to substitute the relative sunshine duration for $CI8$ and set $K_d = 144 - 29(1 - S/S_o)$ for monthly mean conditions. One must note the very non linear character of the cloud conversion formula. This appears to make it of less value as a luminous efficacy indicator, when working with monthly mean radiation data. Preliminary studies indicate that underestimates in monthly mean diffuse luminous efficacy of about 10% seem to result from the use of equation A(5.4). The matter is under further investigation.

Stage 3. Compute the hourly beam and diffuse illuminances.

These values are obtained from the product of the luminous efficacy and the corresponding irradiance values assumed computed in W/m^2

Beam illuminances, $B_{vhm}(t)$ & $B_{vhc}(t)$

Monthly means $B_{vhm}(t) = K_b B_{hm}(t)/1000 \text{ kilolux}$

Clear days $B_{vhc}(t) = K_b B_{hc}(t)/1000 \text{ kilolux}$

Diffuse illuminances, $D_{vhm}(t)$ & $D_{vhc}(t)$

Monthly means $D_{vhm}(t) = K_d D_{hm}(t)/1000 \text{ kilolux}$

Clear days $D_{vhc}(t) = K_d D_{hc}(t)/1000 \text{ kilolux}$

The global horizontal illuminances are estimated by simple addition of the beam and diffuse values.

Monthly means	$G_{vhm}(t)$	=	$B_{vhm}(t) + D_{vhm}(t)$	kilolux
Clear days	$G_{vhc}(t)$	=	$B_{vhc}(t) + D_{vhc}(t)$	kilolux

Source : European Commission Directorate General XII, Daylight II, JOU2-CT92-0144, Final Report, Vol. 1, *Availability of daylighting in Europe and design of a daylighting Atlas*, National Observatory of Athens, Institute of Meteorology and Physics of the Atmospheric Environment, Athens (1995). In this publication, the findings of the field observations of diffuse luminous efficacies obtained from simultaneous illuminance & irradiation measurements at 5 European centres were summarised by P. Littlefair in a paper entitled "*The relationship between cloud cover, nebulousity index and diffuse luminous efficacy*". The CEC measurement programme confirmed the validity of the beam luminous efficacies values first suggested by L Cavalho of LNEC, Lisbon Portugal. They were subsequently parametrized algorithmically by J.K.Page.

Appendix 6. Description of computer files for horizontal surfaces with an explanation on how to extract numeric data from the files for computation.

Note: If you wish to display tables from the disk on a computer screen or to print them out, it is important to select a type face that provides an equi-spaced font, such as Courier, or Courier New or Monaco (each character in such fonts has identical horizontal spacing, including blank spaces). Otherwise the tables will not align vertically. Choose an appropriate type size to see the whole display. Reduce printer output to an appropriate scale to print whole table. A reduction of about 70% is typically needed on a vertical A4 format.

A.6.1. File types.

There are two types of horizontal data files available on disk, word processor files and ASCII numeric data files. The ASCII files are provided to enable those with programming skills to use the data appropriately within any structured programmes they may wish to write. In contrast, the direct entry of data into reports is easily achieved by using the word processor files for horizontal surfaces. Most of the horizontal surface data may also be found within the inclined surface files discussed in Appendix 7. These files enable users to read both horizontal and inclined surface data into spreadsheet formats and thus produce graphs including horizontal data. However there are only 101 files in this second format. Readers only interested in the word processor files should now skip to that section, A.6.11.

A.6.2 ASCII Files, Disk 2.

Filing naming system.

All the horizontal numeric files are kept in one directory folder called ALLCEC.HOR on disk 2. There are 340 site files in the folder. There is an independent statement about intellectual property rights set outside the folder. This includes a disclaimer statement. The word processor files of the same data are stored on disk 1 and are discussed later.

There is also a "Read.Me" file, which provides information on any up-dates on the material on the disks since their preparation.

Each site has its own separate horizontal data file with its own specific name within the folder. This computer file reference number appears in the first header line of each horizontal surface table in the published text. The horizontal surface computer file names are normally classified by the first five letters of the country name, entered as capitals, i.e. Netherlands "NETHE" followed by "HOR." followed by the site map reference number. The exception is the United Kingdom. In the case of the United Kingdom the first five letters are set as "UKING". The map reference number is padded with

zeros where necessary to be exactly 3 characters long, i.e. site number 3 "003", site number 30 "030", site number 300 "300". Maastricht/Beek is plotted on the reference map as site no 76. Being in the Netherlands, the file name is therefore NETHEHOR.076.

A.6.3. Units used on the disk.

Units: Radiation quantities. The data are given in kilowatt hours per square metre per day, (abbreviated to kWh m⁻² d⁻¹). Radiation is always given to 2 decimal places with trailing zeroes always filled i.e. as 5.00 & not as 5.0 or 5, or as 5.10 and not as 5.1.

Units: Ratios. These, which all lie below 1, always appear with any trailing zero entered, i.e. as 0.10 and not as 0.1. Ratios are stated to 2 decimal places.

A.6.4. Numeric file format.

The data are stored on a 3.5 inch/8.89cm High Density disk in standard IBM PC compatible format. The data are stored in standard ASCII format. No special characters are used e.g. no accents or umlauts. The file line sequence exactly reproduces the data in each of the published site tables for horizontal surfaces in this Atlas. In fact the tables were printed from these files, using a standard word processor package.

There are 32 lines in each file. The sequence followed is identical with that in the published tables for horizontal surfaces. There are four types of line, header strings, descriptor strings describing the contents of the batch of numeric data files to follow, blank spacer lines and, most important, numeric strings containing the actual numeric data. The standard line length for quantitative data is 94 characters. This is the maximum line length. This line length exceeds the 80 characters often used in PC systems.

Each numeric line contains a line descriptor. The first 16 character spaces are allocated for this purpose. The line descriptors are left justified. The sub string of 13 numeric values which follows, gives the 12 monthly values plus the annual mean. Each monthly numeric sub-string is exactly 6 characters long. (Numeric line length = 16 line descriptor characters + 78 numeric characters = 94 characters). Printing the first 16 characters with a carriage return, leaves 78 characters then to print.

A.6.5. File type face and size.

The ASCII files are designed to be viewed in an equispaced font to sustain true vertical column alignment. The type-face Courier has been used for the printed tables. Monaco is an alternative. Courier New Point Size 8 is appropriate on IBM Compatible PC s.

A.6.6. Printed tables.

The tables in the Atlas are printed in Courier Bold. The tables were printed to standard A4 format. The files were first assembled three files to each page. Each page was set to a 20 cm width. The pages were set up at 10 point type size on screen and reduced to 70% when printing on a laser printer using Microsoft Word on an Apple Macintosh. Left and right margins of 4.5 cms were used, with a top margin of 3.5cms and a bottom margin of 2.54 cms.

A.6.7. Detailed description of numeric files line by line.

In the detailed description that follows each line string is identified by its line number, i.e. X\$(1) X\$(2) to X\$(32).

Line 1. Table Header.

The *country name* is left justified and printed in capitals. The first 20 characters in this line are reserved for the country name. In Basic, it can be recovered as Left\$(X\$(1),20). The country name can then be right trimmed to eliminate the trailing blank spaces.

The *site name* is right justified and printed in capitals. The character spaces 69 to 94 are reserved for the site name. In Basic, it can be recovered as Mid\$(X\$(1),69,26). The name can then be left trimmed to eliminate the leading blank spaces.

Line 2. Numerical site details.

First the latitude then the longitude and finally site height above sea level in metres are given.

The numerical value of the *latitude* in degrees is located at character spaces 11 and 12, and the minute component in minutes at character spaces 14 & 15. Character 18 may be N or S, but, as in this Atlas all sites are north of the equator, it is always N here.

The numerical value of the *longitude* in degrees is located at character spaces 48 and 49, and the minute component in minutes at character spaces 51 & 52. Character 55 may be E or W, according to whether the site is east or west of the longitude of Greenwich.

The station *height* is given in integral metres. It reaches 3106 metres at Sonnblick, Austria, i.e. 4 digits. The station height value is given by character spaces 84, 85, 86, & 87. The numbers are right justified, so spaces 84, 85, and 86 may be empty. It may also be negative, i.e. below sea level, for example Baqura in Jordan. The negative sign is the first entered character in the sub-string in this case.

The following procedures, in **Basic**, will extract the numeric values.

Latitude in degrees $\text{VAL}(\text{MID}\$(X\$(2),11,2)) + \text{VAL}(\text{MID}\$(X\$(2),14,2))/60$

In this Atlas latitude is always North and therefore latitude is always positive by convention.

Longitude in degrees $\text{VAL}(\text{MID}\$(X\$(2),48,2)) + \text{VAL}(\text{MID}\$(X\$(2),51,2))/60$

Sign of longitude. Set S\$ = (MID\$(X\$(2),55,1))

If S\$ = "E", then longitude, by the convention used in this project, is positive.

If S\$ = "W ", then longitude is negative.

Height in metres $\text{VAL}(\text{MID}\$(X\$(2),84,4))$

Line 3 Provides description of period of record and type of data available.

This line varies in length but never exceeds 94 characters.

Line 4. Month line header.

Line 5. Radiation units header.

Lines 6 through to 9 and lines 12 through to 14. Global radiation quantities, including ratios to extraterrestrial values. The file follows exactly the same sequence as the printed tables, i.e. G, G_{max}, G_{min} and G_o in lines 6 to 9. The ratios, G/G_o, K_{t_{max}} and K_{t_{min}} are in lines 12 to 14.

The contents of each line are:

Line descriptor. Characters 1 to 16. Left justified. ++++ indicates estimated values, entered as characters spaced at 13, 14, 15 and 16. For Italian data, which were adjusted, the inclusion of CCCC indicates adjusted. It is entered as characters spaced 13, 14, 15, and 16.

In Basic IF MID\$(X\$(n),13,4) = "++++" THEN Status\$ = "estimated"
 IF MID\$(X\$(n),13,4) = "CCCC" THEN Status\$ = "adjusted"

The *radiation* for month number M in line n is given by VAL(MID\$(X\$(n), 11 + 6*M,6)). The annual mean values are found by setting M = 13. The format is right justified, i.e. 0.73 is set as ".0.73", and 1.73 as ".1.73", and 11.73 as ".11.73" i.e. always 6 characters, including at least one leading blank space. Note "." in this summary of line structure indicates a blank character.

Line 10. Blank spacer line.

Line 11. Extraterrestrial radiation ratios header line.

Lines 12 to 14. Radiation ratios, G/G_o , $K_{t_{max}}$ and $K_{t_{min}}$. Refer to entry on Lines 6 through to 9 and lines 12 through 14 above.

Line 15. Blank spacer line.

Line 16 Daily diffuse radiation header line.

Line 17 Daily diffuse radiation, D_m .

The values are always estimated. The layout and units are the same as for global radiation quantities given above. The "++++" for estimated values always appears in the line descriptor.

In Basic IF MID\$(X\$(n),13,4) = "++++" THEN Diffusestatus\$ = "estimated"

Read diffuse radiation data for line 17 as above under Global Radiation, above.

Line 18 Ratio of monthly mean diffuse radiation to monthly mean global radiation.

The values are always estimated. The layout is as for global radiation ratios above. The "++++" for estimated values always appears in the line descriptor.

In Basic IF MID\$(X\$(n),13,4) = "++++" THEN Diffuseratiostatus\$ = "estimated".

Read diffuse radiation data for line 18 as above under Global Radiation ratios above.

Line 19. Blank spacer line.

Line 20. Daily sunshine duration header line.

Lines 21 , 22 & 24. Sunshine data.

The sunshine data are given in hours per day. They are always displayed only to one decimal place.

Line descriptor. Characters 1 to 16, left justified. "+++" indicates estimated using the Angstrom formula in reverse, entered as characters spaced 14, 15, & 16.

In Basic IF MID\$(X\$(21),14,3) = "+++" THEN Sunstatus\$ = "estimated".

Lines 21 & 22. Numeric sunshine data.

The first trailing zero is always entered, i.e. 12 hours as 12.0, which is 4 characters long. There is always at least one leading blank space. If the figure is below 10, then an additional leading blank space is added at the beginning. As the sunshine is only given to one decimal place, there finally has to be a trailing blank space in each six character string of numeric sunshine data to keep vertical alignment with the rest of the tabulations to 2 decimal places, i.e. 12.1 hours is set as ".12.1", where "."

in this summary again indicates a blank character. In using the table to extract values for numerical calculation, it is perhaps easiest to extract the sunshine hours in the right justified form.

Thus, in Basic, the sunshine hours for month number M in right justified format are given in line 21 numerically by VAL(MID\$(X\$(21), 10+ 6*M,6)). The annual mean values are found by setting M = 13. The reading format suggested produces right justified values, i.e. 0.7 is set as "...0.7", 1.7 as "...1.7", 11.7 as "...11.7", always 6 characters, including at least two leading blank spaces. "." again indicates a blank character. Line 22 provides the values of the astronomical daylength in hours in the same format.

Line 23. Relative duration of bright sunshine, S/So.

This is given as a ratio to 2 decimal places. It is read numerically following the principles set out under lines 12 to 14 above.

Line 24. Values of daylength for Gmax days in hours, Somax.

Refer to lines 21, & 22 above to read data.

Line 25. Blank spacer line.

Line 26. Header line for Angstrom coefficients with reference site stated for satellited stations.

Line 27. Angstrom a_m coefficients

These are given as ratios to 2 decimal places. The line is read numerically following the principles set out under lines 12 to 14 above.

Line 28. Angstrom b_m coefficients

These are given as ratios to 2 decimal places. The line is read numerically following the principles set out under lines 12 to 14 above.

(For numeric calculation, one can stop read file after line 28)

Line 29. Underline 94 characters long

Included to underline printed table.

Line 30. Blank spacer line.

Used to space away following tables when paginated.

Line 31. Blank spacer line.

Used to space away following tables when paginated.

End of Word Processor file for tables.

Line 32. Observed values of monthly maximum sunshine hours.

While these data were not printed in the horizontal tables the data were used in generating the clear day slope tables, so it is convenient to have these data on within one file for any subsequent calculations. Monthly values of $S_{\max}$ are given in hours. In computation it was assumed that these values occurred on days coincident in time with $G_{\max}$. Follow instructions against line 21 to read the line. An annual mean value is not provided. There are only observed data for some 102 sites. For other sites, the monthly values are set as -999.

End of this file of 32 lines.

6.8. Reading files from disk.

One may choose to work from a selection of files to save space on disk, e.g. those for a specific country. The required site file names can be found either from the Table Headers in the Atlas tables, or from Table 2, which immediately precedes the detailed site tables. The appropriate files can then be transferred to hard disk. *Always make a back up copy of the disk, and work from that.*

A.6.9. IBM PC compatible systems.

While files can be read to screen with the "Edit " instruction, this will produce a horizontal linear layout of data needing considerable editing to format on screen. It is rather better to read the files by incorporation into a simple programme. The standard screen line length of 80 characters imposes some limitations in screen presentation as the standard file line length is 94 characters, and line wrap around will occur on screen, for the December and annual data if no precautions are taken. This can be simply overcome by stripping the first 16 characters in numeric and date name strings, using for example, in QuickBasic, `Left$(X$(n),16)`, and printing these on a separate line, before printing the numeric string as `TAB(2) Right$(X$(n),78)`. The number of rows on screen then has to be adjusted to 50 to allow for the 17 extra lines making 49 lines in total. (In some versions of Quick Basic this control in the PC system is easily achieved through the `Width [ Columns] [Rows]` statement). For printing purposes in isolation, it is easier to use the word processor files, refer below.

A.6.10. Apple Mackintosh compatible systems.

The disk can be converted back for use on Apple Mackintosh systems using the Apple File Exchange Facility. Files can then be read using "Teach Text" or read by incorporation into a programme. A suitable equispaced type face like Courier point size 9 has to be specified to achieve appropriate formatting.

A.6.11. Word Processor Facilities, Disk 1.

The word processor files were first produced using Microsoft WORD Word Processing Program for the Macintosh, Version 5.0. The files were then converted to be read in the IBM PC system using the Apple File Exchange Program. Disk 1 is in PC format. The files can be converted back to an Apple Macintosh format by using the Apple File Exchange Programme, if the user wishes to operate in the Apple Macintosh environment. The PC conversion on the disk should make the files accessible to word processor programs whose file structures are compatible with Microsoft Word environment. The files presented can be easily handled using Microsoft Windows. The horizontal surface tables printed in this Atlas were produced from the Macintosh version of Word 5.0.

The 340 files occupy a lot of disk space. They have been broken down into 6 subsets for convenience in handling. The 6 word processor files are stored under the names Paget1 to Paget6. The six files are all on disk 1. The Paget files contents for each site follow the precise sequence of the published horizontal tables, starting with Austria, and finishing with Yugoslavia. They are normally arranged in blocks of 60 sites (i.e. 20 pages at three sites to the page). The last block has only 40 sites.

Paget1 runs from **Austria**, *Wien* to **France**, *La Rochelle*.

Paget2 runs from **France**, *Amberieu* to **Germany**, *Edeln/Wahn*.

Paget3 runs from **Germany**, *Aachen* to **Ireland**, *Claremorris*.

Paget4 runs from **Ireland**, *Mullingar* to **Portugal**, *Edeln/Porto*.

Paget5 runs from **Portugal**, *Penhas Dourades* to **United Kingdom**, *Lerwick*.

Paget6 runs from **United Kingdom**, *Kirkwall* to **Yugoslavia**, *Bitola*.

Once loaded the files can be cut and pasted to form any suitable combination of sites. The acknowledgements statement given below should be attached before pasting into reports. Users must experiment to find the right reductions and margins for their particular set up, but must continue to take care to use an equispaced font in associated reports to achieve vertical alignment of figures in tables.

A.6.12. Readme file.

Users should read the "Read.Me" file for any up dates, corrections, descriptions of new facilities etc.

A.6.13. Conditions of use.

It is a condition of use of the disk that users should acknowledge the source of the data, as "The European Solar Radiation Atlas, 3rd revised edition, (1995), sponsored and financed by the European Commission, DGXII, Science, Research and Development.", if the data are incorporated numerically into any printed reports. Users should also read the intellectual property rights statement set in a different file on this disk. The copyright rests with the European Commission, and it is illegal to sell or pass on the data to others for commercial gain.

Appendix 7. Description of computer files for inclined surfaces with an explanation on how to extract numeric data from the files for computation.

The inclined surface files are kept on *disk 2* together with the horizontal surface ASCII data files described in Appendix 6. The data files are kept in folders arranged by country. The first five letters of the countryname are used as the name together with the word SL.OPE. The United Kingdom is entered as UKINGSL.OPE. Denmark, Norway and Sweden are grouped in one folder as SCANDSL.OPE. The four countries that have emerged from the formerly united Yugoslavia are stored for convenience as YUGOSSL.OPE (i.e. BOSNIA, CROATIA, SLOVENIA and YUGOSLAVIA).

The folders are therefore:

AUSTRSL.OPE	NETHERSL.OPE
BELGISL.OPE	POLANSL.OPE
CZECHSL.OPE	PORTUSL.OPE
FRANCSL.OPE	SCANDSL.OPE (i.e. NORWAY, DENMARK and SWEDEN)
GERMASL.OPE	SLOVASL.OPE
GREECSL.OPE	SPAINSL.OPE
IRELASL.OPE	SWITZSL.OPE
ITALYSL.OPE	UKINGSL.OPE.
	YUGOSSL.OPE

Site File naming system.

Each site has its own separate *pair* of inclined surface data files, each with its own specific file name. There is a clear day data file and a monthly mean data file for each site computed. Only 101 sites were computed out of the 340 in the data base. Observed values of the monthly mean maximum sunshine had to be available. The computer file names are normally classified by the first five letters of the country name, entered as capitals, i.e. Netherlands "NETHE" followed by the site map reference number. The exception is the United Kingdom. In the case of the United Kingdom the first five letters are set as "UKING". The site map reference number is then added padded with zeros where necessary to be exactly 3 characters long, i.e. site number 3 "003", site number 30 "030", site number 300 "300". There is then a full stop. The file names end with the letters INC in the case of monthly clear day inclined surface files, or with the letters INM in the case of monthly mean inclined surface files. Maastricht/Beek is plotted on the reference map as site no 76. Being in the Netherlands, the clear sky slope irradiation file name is *NETHE076.INC*. The corresponding monthly mean inclined surface file is *NETHE076.INM*. The clear day computer file reference name appears in the header line of each inclined surface radiation table. The last character is changed from a C to a M for the mean data file. The data in the files corresponds exactly to the data in the inclined surface tables published in the Atlas. The inclined surface ratios to the horizontal values are not stored, but can be easily generated in

a spreadsheet. There are no slope word processor files on disk, as the tables for the Atlas were generated directly by a Microsoft QuickBasic programme on an Apple Macintosh computer.

Structure of the individual site files.

The ASCII computer files for inclined surfaces form a linear array of 27 by 15 elements, i.e. each file provides a sequence of 405 words and alphanumeric numbers. Unlike the horizontal surface files discussed in Appendix 6, no compaction of data into lines of monthly data was undertaken. The data are therefore directly readable in numeric terms as numeric values. The files are a simple linear assembly of their elements. The files therefore can be read and pasted directly into spreadsheet or graphic plotting programmes. The data can then be recut and repasted in any pattern as required within such programmes for further data manipulation and plotting. For example, daily slope irradiation/horizontal surface irradiation ratios can be extracted by simple arithmetic manipulation within the spreadsheet for subsequent graphical plotting.

Units.

The units for solar radiation are kilowatt hours per square metre per day ($\text{kWh m}^{-2} \text{d}^{-1}$). The units of sunshine hours are hours, expressed to one decimal place. The file name indicates whether the values are monthly mean values or clear day values. The internal symbols, G_c and D_c also distinguish a G_{max} day from monthly mean values, G_m and D_m in data subsets.

Latitudes and longitudes in the data files are given in degrees and minutes. The latitude is always positive, as all sites are in the northern hemisphere. Sites may have longitudes east or west of Greenwich. The symbol "E" or "W" appears in the file. In converting the character string to decimal degrees, the sign of the longitude must be changed if the symbol is "W" to match the convention used of longitude east of Greenwich positive, west negative.

Elements of the array.

Dimensioning the array as $G\$(27,15)$, with 15 numbers to the line, the elements are as follows:-

Header data. Line 0 (Numbers 0 to 15).

Fixed word	$G\$(0,1)$	"Country"
	$G\$(0,2)$	Actual country name
Fixed word	$G\$(0,3)$	"Place"
	$G\$(0,4)$	Actual site name
Fixed word	$G\$(0,5)$	"Latitude"
	$G\$(0,6)$	Latitude degree component
	$G\$(0,7)$	Latitude minute component
Fixed word	$G\$(0,8)$	"Longitude"

	G\$(0,9)	Longitude degree component
	G\$(0,10)	Longitude minute component plus "E" or "W"
Fixed word	G\$(0,11)	"Height in metres"
	G\$(0,12)	Actual height in metres
Fixed word	G\$(0,13)	"Hour angle of reference time system at site with respect to Greenwich on 1/1/96 This is stated in degrees with east positive." For example 15 means the time system is one hour ahead of GMT.
	G\$(0,14)	Date of start of record) Non standard records, month followed by year.
	G\$(0,15)	Date of end of record) otherwise (1966-1975) standard records.

Horizontal global and diffuse radiation, lines 1 & 2.

Global horizontal radiation, (Numbers 16 to 30).

Fixed word	G\$(1,1)	"Horizontal"
Fixed word	G\$(1,2)	"Gm kWh/m ² /d" or "Gc kWh/m ² /d".
Followed by 13 Numeric values	G\$(1,3) to G\$(1,15)	
These are daily horizontal global irradiation values, starting with January , found in G\$(1,3) to December in G\$(1,14). Annual mean in G\$(1,15).		

Diffuse horizontal radiation, (Numbers 31 to 45) .

	G\$(2,1)	"Horizontal"
Fixed word	G\$(2,2)	"Dm kWh/m ² /d" or "Dc kWh/m ² /d".
Followed by 13 Numeric values	G\$(2,3) to G\$(2,15)	
These are daily horizontal diffuse irradiation values, starting January found in G\$(2,3) to December in G\$(2,14). Annual mean in G\$(2,15).		

Slope daily irradiation, lines 3 to 20.

(Numbers 46 to 75)

Fixed word	G\$(3,1)	"10 Deg South"
Fixed word	G\$(3,2)	"Gm kWh/m ² /d" or "Gc kWh/m ² /d".
Followed by 13 Numeric values	G\$(3,3) to G\$(3,15)	
These are daily slope global irradiation values, starting with January in G\$(3,3) to December in G\$(3,14). Annual mean in G\$(3,15).		
	G\$(4,1)	"Horizontal"
Fixed word	G\$(4,2)	"Dm kWh/m ² /d" or "Dc kWh/m ² /d".
Followed by 13 Numeric values	G\$(4,3) to G\$(4,15)	

Other quantities, lines 21 to 26.**Sunshine.**

(Numbers 316 to 330)

Fixed word	G\$(21,1)	"Daily sunshine"

Fixed word	G\$(21,2)	"Hours"

Sunshine values in G\$(21,3) to G\$(21,15)

These are daily sunshine hours values, starting with January in G\$(21,3) to December in G\$(21,14).

Annual mean in G\$(21,15).

Angstrom (a + b).

(Numbers 331 to 345)

Fixed word	G\$(22,1)	"Angstrom (a+b)"

	G\$(22,2)	Null value

Values in G\$(22,3) to G\$(22,15)

These are the sum of the Angstrom $a_m + b_m$ values, starting with January in G\$(22,3) to December in G\$(22,14). Annual mean in G\$(22,15).**Normalisation Factor.**

(Numbers 346 to 360)

Fixed word	G\$(23,1)	"Normalisation"

Fixed word	G\$(23,2)	"Factor"

Values in G\$(23,3) to G\$(23,15)

These are the normalisation factors that were used to adjust modelled global horizontal irradiation to observed global horizontal irradiation values, starting with January in G\$(23,3) to December in G\$(23,14). Annual mean in G\$(23,15).

Month name.

(Numbers 361 to 375)

Fixed word	G\$(24,1)	"Month"

	G\$(24,2)	Null value

Values in G\$(24,3) to G\$(24,15)

Abbreviated month names starting with "Jan" in G\$(24,3) to "Dec" in G\$(24,14). "Mean" in G\$(24,15).

Date in month.

(Numbers 376 to 390)

Fixed word	G\$(25,1)	"Date in month"

	G\$(25,2)	Null value

Values in G\$(25,3) to G\$(25,15)

These are the computation dates, starting with the January date in G\$(25,3) to the December date in G\$(25,14). There is no entry in G\$(25,15).

Section 22 Tables of horizontal and inclined surface radiation

Table 1. Classification of sites providing horizontal data in 33 countries used.

Table 2. List of locations arranged by country in order of site latitude.

Countries are arranged in alphabetical order of country name.

Within each country the sites are arranged in order of descending latitude.

The site number refers to the number of the site as plotted on the reference map.

* against the site number means an inclined surface table is available for the site.

Data Tables

All radiation values are given in kWh. m⁻² per day .

All sunshine values are given in hours and tenths of hours.

Horizontal Surfaces

The horizontal surface tables for the 340 sites covered are placed first.

They are printed three sites to the page in alphabetic sequence of country.

Inclined Surfaces

The tables for the 101 sites for which inclined surface tables have been prepared follow.

They are printed one site to the page in alphabetic sequence of country.

Notes:-

1. The tables contain no superscripts and no subscripts.
2. Where the umlaut would normally have been used, the spelling used here inserts the e in the place of the umlaut.
3. There are no accents entered deliberately to present the tables in the form that accords exactly with the computer file structure used.
4. The subscript m for monthly has been omitted to simplify presentation.

Table 1. Classification of sites providing horizontal data in the 33 countries used.

Number of observing sites, the data from which were processed to produce monthly means of daily global radiation on horizontal surfaces. Standard Period 1966-1975.

This data was then used to produce the maps.

Key: G and S: both global irradiation and sunshine duration available.

G only : only global irradiation available.

S only : only sunshine duration available.

Country	G and S	G only	S only	Total	Pages
Austria	5			5	
Belgium	4			4	
Bosnia Hercegovina	3			3	
Bulgaria		1		1	
Croatia	2			2	
Cyprus	1			1	
Czech Republic	1		4	5	
Denmark	2	2	5	9	
Finland		2		2	
France	7		44	51	
Germany	8	5	67	80	
Greece	1		8	9	
Hungary		4		4	
Ireland	3		11	14	
Israel	1			1	
Italy	28			28	
Jordan	5			5	
Lebanon	3			3	
Malta	1			1	
Netherlands	5			5	
Norway	1			1	
Poland	4			4	
Portugal		7		7	
Romania		3		3	
Slovakia	1		4	5	
Slovenia	1			1	
Spain		1	13	14	
Sweden	5		4	9	
Switzerland	3			3	
Syria	3			3	
Turkey			16	16	
United Kingdom	11		25	36	
Yugoslavia	5			5	
All countries	114	25	201	340	

Table 2 Sheet 1. List of the 340 locations arranged by country in order of site number.
 * indicates inclined surface table available.

Daily totals of both global radiation G and sunshine duration S for the full 10 year period 1966-1975 were available, unless otherwise indicated.

	Location	Latitude	Longitude	Ht above sea level	Data available.
Norway					
Site No. 1 *	Bergen	60 24' N	5 19' E	45 m	G, S
Sweden					
Site No. 2 *	Karlstad	59 22' N	13 28' E	46 m	G, S
Site No. 3 *	Stockholm	59 21' N	17 57' E	12 m	G, S
Site No. 4	Joenköping	57 46' N	14 05' E	226 m	S
Site No. 5 *	Torslanda	57 43' N	11 47' E	5 m	G, S
Site No. 6 *	Visby	57 40' N	18 21' E	28 m	G, S
Site No. 7	Vinga	57 38' N	11 37' E	19 m	S
Site No. 8	Oelands Soedra Udde	56 12' N	16 24' E	4 m	S
Site No. 9 *	Svaloev	55 55' N	13 07' E	72 m	G, S
Site No. 10	Trelleborg	55 23' N	13 09' E	5 m	S
Finland					
Site No. 11	Jokioinen	60 49' N	23 30' E	134 m	G
Site No. 12	Helsinki	60 19' N	24 58' E	48 m	G
United Kingdom					
Site No. 13 *	Lerwick	60 08' N	1 11' W	82 m	G, S
Site No. 14	Kirkwall	58 57' N	2 54' W	29 m	S
Site No. 15	Stornoway	58 13' N	6 19' W	9 m	S
Site No. 16	Kinloss	57 39' N	3 34' W	8 m	S
Site No. 17	Aberdeen	57 12' N	2 12' W	54 m	S
Site No. 18	Tiree	56 30' N	6 53' W	17 m	S
Site No. 19	Edinburgh	55 58' N	3 12' W	39 m	S
Site No. 20	Glasgow	55 52' N	4 26' W	131 m	S
Site No. 21	Blythe Bridge	55 42' N	3 22' W	255 m	S
Site No. 22 *	Eskdalemuir	55 19' N	3 12' W	242 m	G, S
Site No. 23	Moorhouse	54 41' N	2 23' W	556 m	S
Site No. 24 *	Aldergrove	54 39' N	6 13' W	68 m	G & S (68-75)
Site No. 25	Leeming	54 18' N	1 32' W	32 m	S
Site No. 26 *	Cawood	53 50' N	1 08' W	6 m	G & S (7/68-75)
Site No. 27	Fairfield	53 48' N	2 53' W	24 m	S
Site No. 28	Valley	53 15' N	4 32' W	18 m	S
Site No. 29	Lincoln	53 14' N	0 34' W	9 m	S
Site No. 30 *	Sutton Bonnington	52 50' N	1 15' W	118 m	G & S (9/68-75)
Site No. 31	Shawbury	52 48' N	2 40' W	82 m	S
Site No. 32 *	Cambridge	52 13' N	0 06' E	23 m	G, S
Site No. 33 *	Aberporth	52 08' N	4 34' W	133 m	G, S
Site No. 34	Malvern	52 06' N	2 18' W	63 m	S
Site No. 35	Silsoe	52 01' N	0 25' W	59 m	S
Site No. 36	Grendon Underwood	51 54' N	1 01' W	70 m	S
Site No. 37	Carmarthen	51 51' N	4 18' W	17 m	S
Site No. 38	Rothamstead	51 48' N	0 21' W	128 m	S
Site No. 39 *	London	51 31' N	0 07' W	77 m	G, S
Site No. 40 *	Kew	51 28' N	0 19' W	5 m	G, S

Table 2, Sheet 2 List of 340 locations arranged by country in order of site number.

* indicates inclined surface table available

	Location	Latitude	Longitude	Ht above sea level	Data available
United Kingdom (continued)					
Site No. 41 *	Bracknell	51 23' N	0 47' W	73 m	G, S
Site No. 42	East Malling	51 17' N	0 27' E	37 m	S
Site No. 43	Hawkrigde	51 05' N	3 36' W	315 m	S
Site No. 44	Efford	50 44' N	1 34' W	16 m	S
Site No. 45	Exeter	50 44' N	3 25' W	41 m	S
Site No. 46	Plymouth	50 21' N	4 07' W	34 m	S
Site No. 47	Penzance	50 07' N	5 32' W	33 m	S
Site No. 48 *	Jersey	49 13' N	2 12' W	83 m	G & S (68-75)
Ireland					
Site No. 49	Malin Head	55 22' N	7 20' W	30 m	S
Site No. 50	Belmullet	54 14' N	10 00' W	13 m	S
Site No. 51	Clones	54 11' N	7 14' W	89 m	S
Site No. 52	Claremorris	53 43' N	8 59' W	70 m	S
Site No. 53	Mullingar	53 32' N	7 22' W	105 m	S
Site No. 54	Dublin	53 26' N	6 15' W	80 m	S
Site No. 55	Casement	53 18' N	6 26' W	92 m	S
Site No. 56 *	Birr	53 05' N	7 54' W	72 m	G(71-75), S
Site No. 57	Shannon	52 41' N	8 55' W	3 m	S
Site No. 58 *	Kilkenny	52 40' N	7 16' W	64 m	G(69-75), S
Site No. 59	Rosslare	52 15' N	6 20' W	29 m	S
Site No. 60 *	Valentia	51 56' N	10 15' W	20 m	G, S
Site No. 61	Cork	51 51' N	8 29' W	153 m	S
Site No. 62	Roches Point	51 48' N	8 15' W	45 m	S
Denmark					
Site No. 63	Tylstrup	57 11' N	9 57' E	13 m	S
Site No. 64	Odum	56 18' N	10 08' E	61 m	S
Site No. 65	Karup	56 15' N	9 09' E	58 m	G(4/68-75)
Site No. 66 *	Højbakkegard	55 40' N	12 19' E	30 m	G, S
Site No. 67	Askov	55 28' N	9 07' E	64 m	S
Site No. 68	Stevns	55 21' N	12 12' E	15 m	G(4/68-75)
Site No. 69	Arslev	55 18' N	10 27' E	48 m	S
Site No. 70 *	Jyndevad	54 54' N	9 08' E	15 m	G(6/68-75), S
Site No. 71	Naesgard	54 52' N	12 07' E	17 m	S
Netherlands					
Site No. 72 *	Groningen/Eelde	53 08' N	6 35' E	5 m	G, S
Site No. 73 *	Den Helder/De Koog	52 55' N	4 47' E	2 m	G, S
Site No. 74 *	De Bilt	52 06' N	5 11' E	40 m	G, S
Site No. 75 *	Vlissingen	51 27' N	3 36' E	22 m	G, S
Site No. 76 *	Maastricht/Beek	50 55' N	5 46' E	116 m	G, S
Belgium					
Site No. 77 *	Oostende	51 12' N	2 52' E	4 m	G(2/68-75), S
Site No. 78 *	Melle	50 59' N	3 50' E	15 m	G(6/67-75), S
Site No. 79 *	Uccle	50 48' N	4 21' E	105 m	G, S
Site No. 80 *	Saint-Hubert	50 02' N	5 24' E	563 m	G, S

Table 2, Sheet 3 List of 340 locations arranged by country in order of site number.

* indicates inclined surface table available

	Location	Latitude	Longitude	Ht above sea level	Data available
Germany					
Site No. 81	List/Sylt	55 01' N	8 25' E	31 m	S
Site No. 82	Schleswig	54 32' N	9 33' E	43 m	S
Site No. 83	St.Peter-Ording	54 18' N	8 39' E	4 m	S
Site No. 84	Helgoland	54 11' N	7 54' E	4 m	S
Site No.157 *	Heiligendamm	54 09' N	11 51' E	21 m	Gd & S monthly
Site No. 85	Luebeck	53 53' N	10 42' E	8 m	S
Site No. 86	Cuxhaven	53 52' N	8 42' E	5 m	S
Site No. 87	Glueckstadt	53 47' N	9 27' E	1 m	S
Site No. 88	Langeoog	53 45' N	7 29' E	5 m	S
Site No. 89 *	Norderney	53 43' N	7 09' E	13 m	G(67-75), S
Site No. 90 *	Hamburg	53 38' N	10 00' E	14 m	G, S
Site No. 91	Borkum	53 34' N	6 45' E	5 m	S
Site No. 92	Jever	53 32' N	7 54' E	7 m	S
Site No. 93	Bremerhaven	53 32' N	8 35' E	7 m	S
Site No. 94	Aurich	53 27' N	7 28' E	4 m	S
Site No. 95	Zeven	53 19' N	9 18' E	17 m	S
Site No. 96	Lueneburg	53 16' N	10 26' E	11 m	S
Site No. 97	Oldenburg	53 08' N	8 13' E	5 m	S
Site No. 98	Bremen	53 03' N	8 48' E	4 m	S
Site No. 99	Soltau	53 00' N	9 50' E	77 m	S
Site No.100	Luechow	52 58' N	11 10' E	17 m	S
Site No.101	Hannover	52 28' N	9 42' E	53 m	S
Site No.102 *	Berlin	52 28' N	13 18' E	51 m	G & S monthly
Site No.158 *	Potsdam	52 23' N	13 06' E	33 m	Gd & S monthly
Site No.103 *	Braunschweig	52 18' N	10 27' E	81 m	G, S
Site No.104	Osnabrueck	52 15' N	8 03' E	95 m	S
Site No.105	Muenster	51 57' N	7 35' E	60 m	S
Site No.106	Einbeck	51 49' N	9 53' E	105 m	S
Site No.107	Bad Lippspringe	51 47' N	8 50' E	157 m	S
Site No.108 *	Braunlage	51 43' N	10 37' E	601 m	G, S
Site No.109	Goettingen	51 33' N	9 57' E	176 m	S
Site No.110	Essen	51 24' N	6 58' E	154 m	S
Site No.111	Kassel	51 18' N	9 27' E	231 m	S
Site No.112	Duesseldorf	51 12' N	6 45' E	37 m	S
Site No.113	Kahler Asten	51 11' N	8 29' E	841 m	S
Site No.159 *	Dresden	51 07' N	13 41' E	271 m	Gd & S monthly
Site No.114	Koeln/Wahn	50 52' N	7 08' E	73 m	S
Site No.115	Aachen	50 47' N	6 06' E	202 m	S
Site No.116	Wasserkuppe	50 30' N	9 57' E	921 m	S
Site No.160 *	Fichtelberg	50 26' N	12 57' E	1214 m	Gd & S monthly
Site No.117	Koblenz	50 21' N	7 36' E	70 m	S
Site No.118	Borler	50 19' N	6 50' E	440 m	S
Site No.119	Coburg	50 16' N	10 57' E	337 m	S
Site No.120	Kl.Feldberg/Ts.	50 13' N	8 27' E	805 m	S
Site No.121	Bad Kissingen	50 12' N	10 05' E	262 m	S
Site No.122	Wiesbaden	50 04' N	8 16' E	142 m	S
Site No.123	Frankfurt/M.	50 03' N	8 35' E	111 m	S
Site No.124	Ochsenkopf	50 02' N	11 48' E	1019 m	S

Footnote:- the site number order has some values out of sequence, as the result of reunification

Table 2, Sheet 4 List of 340 locations arranged by country in order of site number.
 * indicates inclined surface table available

	Location	Latitude	Longitude	Ht above sea level	Data available
Germany (continued)					
Site No.125	Bernkastel	49 55' N	7 04' E	120 m	S
Site No.126	Bamberg	49 53' N	10 55' E	239 m	S
Site No.127	Bad Kreuznach	49 51' N	7 51' E	159 m	S
Site No.128	Darmstadt	49 51' N	8 35' E	108 m	S
Site No.129 *	Wuerzburg	49 48' N	9 54' E	259 m	G, S
Site No.130	Deuselbach	49 46' N	7 03' E	480 m	S
Site No.131 *	Trier	49 45' N	6 40' E	265 m	G, S
Site No.132	Mannheim	49 31' N	8 33' E	96 m	S
Site No.133	Buchen	49 31' N	9 20' E	350 m	S
Site No.134	Nuernburg	49 30' N	11 05' E	310 m	S
Site No.135	Neustadt/Wstr.	49 22' N	8 08' E	163 m	S
Site No.136	Berus	49 17' N	6 41' E	363 m	S
Site No.137	Ansbach	49 17' N	10 34' E	413 m	S
Site No.138	Cham	49 14' N	12 40' E	423 m	S
Site No.139	Saarbruecken	49 13' N	7 01' E	191 m	S
Site No.140	Ohringen	49 12' N	9 31' E	276 m	S
Site No.141	Karlsruhe	49 02' N	8 22' E	112 m	S
Site No.142	Regensburg	49 03' N	12 06' E	366 m	S
Site No.143	Stuttgart	48 46' N	9 11' E	286 m	S
Site No.144	Passau	48 35' N	13 29' E	409 m	S
Site No.145 *	Weihenstephan	48 24' N	11 44' E	467 m	G, S
Site No.146	Augsburg	48 26' N	10 56' E	461 m	S
Site No.147	Muehldorf	48 15' N	12 32' E	401 m	S
Site No.148	Puch	48 11' N	11 13' E	550 m	S
Site No.149	Freiburg	48 00' N	7 51' E	269 m	S
Site No.150	Feldberg/Schw.	47 53' N	8 00' E	1486 m	S
Site No.151	Rosenheim	47 52' N	12 07' E	446 m	S
Site No.152 *	Hohenpeissenberg	47 48' N	11 01' E	975 m	G, S
Site No.153	Bad Toelz	47 47' N	11 33' E	640 m	S
Site No.154	Kempten	47 43' N	10 20' E	705 m	S
Site No.155	Wendelstein	47 42' N	12 01' E	1838 m	S
Site No.156	Zugspitze	47 25' N	10 59' E	2960 m	S
Poland					
Site No.161 *	Kolobrzeg	54 11' N	15 35' E	16 m	G, S
Site No.162 *	Suwalki	54 08' N	22 57' E	184 m	G, S
Site No.163 *	Warszawa	52 16' N	20 59' E	130 m	G, S
Site No.164 *	Zakopane	49 18' N	19 57' E	857 m	G, S
France					
Site No.165	Lille	50 34' N	3 06' E	52 m	S
Site No.166	Abbeville	50 08' N	1 50' E	77 m	S
Site No.167	Beauvais	49 27' N	2 07' E	111 m	S
Site No.168	Reims	49 18' N	4 02' E	99 m	S
Site No.169	Caen	49 11' N	0 27' W	67 m	S
Site No.170	Metz	49 05' N	6 08' E	191 m	S
Site No.171	Le Bourget	48 58' N	2 27' E	65 m	S
Site No.172	Ile de Brehat	48 51' N	3 00' W	36 m	S
Site No.173 *	Trappes	48 46' N	2 01' E	168 m	G, S
Site No.174	Ile de Bats	48 45' N	4 00' W	36 m	S

Table 2, Sheet 5 List of 340 locations arranged by country in order of site number.

* indicates inclined surface table available

Location	Latitude	Longitude	Ht above sea level	Data available
France (continued)				
Site No.175 * Nancy	48 41' N	6 13' E	217 m	G, S
Site No.176 Strasbourg	48 33' N	7 38' E	154 m	S
Site No.177 Brest	48 27' N	4 25' W	103 m	S
Site No.178 Rennes	48 04' N	1 44' W	37 m	S
Site No.179 Orleans	47 59' N	1 45' E	125 m	S
Site No.180 Le Mans	47 56' N	0 12' E	52 m	S
Site No.181 Colmar	47 55' N	7 24' E	217 m	S
Site No.182 Auxerre	47 48' N	3 33' E	212 m	S
Site No.183 Tours	47 27' N	0 43' E	112 m	S
Site No.184 Dijon	47 16' N	5 05' E	227 m	S
Site No.185 Besancon	47 15' N	5 59' E	309 m	S
Site No.186 Nantes	47 10' N	1 36' W	27 m	S
Site No.187 Bourges	47 04' N	2 22' E	166 m	S
Site No.188 Nevers	47 00' N	3 06' E	181 m	S
Site No.189 Poitiers	46 35' N	0 19' E	120 m	S
Site No.190 * Macon	46 18' N	4 48' E	217 m	G, S
Site No.191 Vichy	46 10' N	3 24' E	251 m	S
Site No.192 La Rochelle	46 09' N	1 09' W	10 m	S
Site No.193 Amberieu	45 59' N	5 20' E	257 m	S
Site No.194 * Limoges	45 52' N	1 11' E	402 m	G, S
Site No.195 Clermont Ferrand	45 48' N	3 10' E	332 m	S
Site No.196 Lyon	45 43' N	4 57' E	201 m	S
Site No.197 Le Puy	45 03' N	3 54' E	715 m	S
Site No.198 Bordeaux	44 50' N	0 41' W	51 m	S
Site No.199 Montelimar	44 35' N	4 44' E	74 m	S
Site No.200 Embrun	44 34' N	6 30' E	876 m	S
Site No.201 Cazaux	44 32' N	1 08' W	33 m	S
Site No.202 Agen	44 11' N	0 36' E	60 m	S
Site No.203 * Millau	44 07' N	3 01' E	720 m	G, S
Site No.204 * Carpentras	44 05' N	5 03' E	105 m	G & S (2/68-75)
Site No.205 Mont de Marsan	43 55' N	0 30' W	63 m	S
Site No.206 Nimes	43 52' N	4 24' E	62 m	S
Site No.207 * Nice	43 39' N	7 12' E	10 m	G, S
Site No.208 Toulouse	43 38' N	1 22' E	153 m	S
Site No.209 Montpellier	43 35' N	3 58' E	6 m	S
Site No.210 Marignane	43 27' N	5 13' E	3 m	S
Site No.211 Pau	43 23' N	0 25' W	185 m	S
Site No.212 Toulon	43 06' N	5 56' E	27 m	S
Site No.213 Perpignan	42 44' N	2 52' E	48 m	S
Site No.214 Bastia	42 33' N	9 29' E	12 m	S
Site No.215 Ajaccio	41 55' N	8 48' E	9 m	S
Switzerland				
Site No.216 * Zuerich	47 27' N	8 33' E	440 m	G, S
Site No.217 * Davos	46 48' N	9 49' E	1590 m	G, S
Site No.218 * Locarno Monti	46 10' N	8 47' E	380 m	G, S
Austria				
Site No.219 * Wien	48 15' N	16 22' E	202 m	G, S
Site No.220 * Salzburg	47 48' N	13 00' E	435 m	G, S

Table 2, Sheet 6 List of 340 locations arranged by country in order of site number.
 * indicates inclined surface table available

Location	Latitude	Longitude	Ht above sea level	Data available
Austria (continued)				
Site No.221 * Innsbruck	47 16' N	11 24' E	582 m	G, S
Site No.222 * Sonnblick	47 03' N	12 57' E	3106 m	G, S
Site No.223 * Klagenfurt	46 39' N	14 20' E	452 m	G, S
Czech Republic				
Site No.224 Liberec	50 46' N	15 01' E	399 m	S
Site No.225 * Hradec Kralove	50 11' N	15 50' E	288 m	G, S
Site No.226 Praha	50 04' N	14 26' E	262 m	S
Site No.227 Ondrejov	49 55' N	14 47' E	526 m	S
Site No.228 Brno	49 09' N	16 42' E	241 m	S
Slovakia				
Site No.229 Piestany	48 37' N	17 50' E	162 m	S
Site No.230 Jasovske Bohunice	48 29' N	17 40' E	170 m	S
Site No.231 Kuchyna	48 24' N	17 08' E	210 m	S
Site No.232 Nitra	48 19' N	18 05' E	145 m	S
Site No.233 * Bratislava	48 10' N	17 06' E	288 m	G, S
Hungary				
Site No.234 Sopron	47 43' N	16 35' E	427 m	G
Site No.235 Debrecen	47 30' N	21 38' E	123 m	G
Site No.236 Budapest	47 26' N	19 11' E	130 m	G
Site No.237 Kecskemet	46 54' N	19 46' E	113 m	G
Romania				
Site No.238 Cluj	46 47' N	23 34' E	410 m	G
Site No.239 Timisoara	45 46' N	21 15' E	86 m	G
Site No.240 Bucharest	44 30' N	26 13' E	91 m	G
Slovenia				
Site No.241 * Ljubljana	46 04' N	14 31' E	299 m	G, S
Yugoslavia				
Site No.244 * Beograd	44 47' N	20 32' E	243 m	G, S
Site No.245 * Negotin	44 14' N	22 33' E	42 m	G, S
Site No.249 * Pristina	42 39' N	21 09' E	573 m	G(68-75), S
Site No.250 * Bar	42 06' N	19 06' E	6 m	G, S
Site No.251 * Bitola	41 03' N	21 22' E	157 m	G, S
Croatia				
Site No.242 * Zagreb	45 49' N	15 59' E	157 m	G, S
Site No.248 * Split	43 31' N	16 26' E	122 m	G, S

Table 2, Sheet 7 List of 340 locations arranged by country in order of site number.
 * indicates inclined surface table available

	Location	Latitude	Longitude	Ht above sea level	Data available
Bosnia Hercegovina					
Site No.243 *	Banja Luka	44 47' N	17 13' E	153 m	G, S
Site No.246 *	Sarajevo	43 50' N	18 20' E	503 m	G, S
Site No.247 *	Zlatibor	43 44' N	19 43' E	1029 m	G, S
Bulgaria					
Site No.252	Sofia	42 41' N	23 20' E	588 m	G
Portugal					
Site No.253	Braganca	41 49' N	6 46' W	725 m	G
Site No.254 *	Porto	41 08' N	8 36' W	93 m	Gd & S monthly
Site No.255	Penhas Douradas	40 25' N	7 33' W	1383 m	G
Site No.256 *	Coimbra	40 12' N	8 25' W	141 m	Gd & S monthly
Site No.257 *	Lisboa	38 43' N	9 09' W	77 m	Gd & S monthly
Site No.258	Evora	38 34' N	7 54' W	309 m	G
Site No.259 *	Faro	37 01' N	7 55' W	14 m	Gd & S monthly
Spain					
Site No.260	Oviedo	43 21' N	5 52' W	335 m	monthly mean S
Site No.261 *	Logrono	42 27' N	2 20' W	353 m	monthly mean S
Site No.262 *	Zaragoza	41 40' N	1 01' W	258 m	monthly mean S
Site No.263	Barcelona	41 25' N	2 09' E	177 m	monthly mean S
Site No.264 *	Salamanca	40 57' N	5 30' W	793 m	monthly mean S
Site No.265 *	Tortosa	40 49' N	0 30' E	44 m	monthly mean S
Site No.266 *	Madrid	40 27' N	3 43' W	669 m	Gd & S monthly
Site No.267	Palma	39 34' N	2 39' E	32 m	monthly mean S
Site No.268	Valencia	39 29' N	0 23' W	13 m	monthly mean S
Site No.269	Badajoz	38 53' N	6 49' W	185 m	monthly mean S
Site No.270	Murcia	37 59' N	1 07' W	57 m	monthly mean S
Site No.271	Sevilla	37 25' N	5 54' W	34 m	monthly mean S
Site No.272	Almeria	36 51' N	2 23' W	15 m	monthly mean S
Site No.273	Malaga	36 40' N	4 29' W	16 m	monthly mean S
Italy					
Site No.274 *	Bolzano	46 28' N	11 20' E	241 m	G, S
Site No.275	Udine	46 02' N	13 11' E	92 m	G, S
Site No.276 *	Trieste	45 39' N	13 45' E	20 m	G, S
Site No.277 *	Venezia	45 30' N	12 20' E	6 m	G, S
Site No.278 *	Milano	45 26' N	9 17' E	103 m	G, S
Site No.279	Torino	45 13' N	7 39' E	287 m	G, S
Site No.280	Bologna	44 32' N	11 18' E	49 m	G, S
Site No.281 *	Genova	44 25' N	8 51' E	3 m	G, S
Site No.282	Capo Mele	43 57' N	8 10' E	221 m	G, S
Site No.283	Pisa	43 40' N	10 23' E	1 m	G, S
Site No.284 *	Ancona	43 37' N	13 31' E	104 m	G, S

Table 2, Sheet 8 List of 340 locations arranged by country in order of site number

* indicates inclined surface table available

	Location	Latitude	Longitude	Ht above sea level	Data available
Italy (continued)					
Site No.285 *	Pianosa	42 35' N	10 06' E	27 m	G, S
Site No.286	Pescara	42 26' N	14 12' E	16 m	G, S
Site No.287	Vigna di Valle	42 05' N	12 13' E	270 m	G, S
Site No.288 *	Roma	41 48' N	12 35' E	131 m	G, S
Site No.289	Amendola	41 32' N	15 43' E	56 m	G, S
Site No.290	Olbia	40 54' N	9 31' E	13 m	G, S
Site No.291 *	Napoli	40 51' N	14 18' E	72 m	G, S
Site No.292 *	Brindisi	40 39' N	17 57' E	10 m	G, S
Site No.293 *	Alghero	40 38' N	8 17' E	40 m	G, S
Site No.294	Capo Palinuro	40 01' N	15 17' E	185 m	G, S
Site No.295	Cagliari	39 15' N	9 03' E	18 m	G, S
Site No.296	Crotone	39 00' N	17 04' E	158 m	G, S
Site No.297	Ustica	38 42' N	13 11' E	251 m	G, S
Site No.298 *	Messina	38 12' N	15 33' E	50 m	G, S
Site No.299 *	Trapani	37 55' N	12 30' E	14 m	G, S
Site No.300	Gela	37 05' N	14 13' E	33 m	G, S
Site No.301 *	Pantelleria	36 49' N	11 58' E	170 m	G, S
Greece					
Site No.302	Thessaloniki	40 31' N	22 58' E	4 m	S
Site No.303	Konitsa	40 03' N	20 45' E	542 m	S(71-75)
Site No.304	Ioannina	39 42' N	20 48' E	483 m	S
Site No.305	Larissa	39 38' N	22 25' E	72 m	S
Site No.306	Lamia	38 51' N	22 24' E	143 m	S(71-75)
Site No.307 *	Aliartos	38 23' N	23 06' E	110 m	S(68-75)
Site No.308	Patrai	38 15' N	21 44' E	3 m	S(71-75)
Site No.309 *	Athens	37 58' N	23 43' E	107 m	G, S
Site No.310	Korinthos	37 56' N	22 57' E	2 m	S(71-75)
Malta					
Site No.311	Qrendi	35 50' N	14 26' E	135 m	G & S Monthly means
Cyprus					
Site No.312	Prodhromos	34 34' N	32 30' E	1380 m	G,S(68-78)
Turkey					
Site No.313	Bozkurt	41 58' N	34 06' E	167 m	M'thly mean S, 69-78
Site No.314	Trabzon	41 00' N	39 43' E	30 m	M'thly mean S, 69-78
Site No.315	Florya	40 59' N	28 48' E	36 m	M'thly mean S, 67-78
Site No.316	Cankiri	40 36' N	33 37' E	751 m	M'thly mean S, 69-78
Site No.317	Kars	40 36' N	43 05' E	1775 m	M'thly mean S, 69-78
Site No.318	Canakkale	40 08' N	26 24' E	3 m	M'thly mean S, 68-78
Site No.319	Ankara	39 57' N	32 53' E	902 m	M'thly mean S, 68-78
Site No.320	Igdir	39 56' N	44 02' E	858 m	M'thly mean S, 68-78
Site No.321	Keban	38 48' N	38 45' E	808 m	M'thly mean S, 68-78
Site No.322	Bornova	38 28' N	27 15' E	27 m	M'thly mean S, 68-78
Site No.323	Konya	37 52' N	32 30' E	1028 m	M'thly mean S, 68-78
Site No.324	Adiyaman	37 45' N	38 17' E	678 m	M'thly mean S, 68-78

Table 2, Sheet 9 List of 340 locations arranged by country in order of site number

* indicates inclined surface table available

	Location	Latitude	Longitude	Ht above sea level	Data available
Turkey (continued)					
Site No.325	Hakkari	37 34' N	43 46' E	1720 m	M'thly mean S, 68-78
Site No.326	Mugla	37 15' N	28 22' E	646 m	M'thly mean S, 69-78
Site No.327	Finike	36 18' N	30 09' E	3 m	M'thly mean S, 69-78
Site No.328	Anamur	36 06' N	32 50' E	5 m	M'thly mean S, 69-78
Syria					
Site No.329	Messelmiyeh	36 20' N	37 13' E	425 m	G, S Monthly, 70-75
Site No.330	Raqqa	35 57' N	39 00' E	250 m	G, S Monthly, 70-75
Site No.331	Kharabo	33 30' N	36 28' E	620 m	G, S Monthly, 71-74
Lebanon					
Site No.332	Abde	34 32' N	36 01' E	10 m	G, S (68-70)
Site No.333	Ksara	33 49' N	36 00' E	425 m	G, S (56-65)
Site No.334	Beyrouth	33 49' N	35 29' E	18 m	G, S
Jordan					
Site No.335	Baqura	32 38' N	35 37' E	-170 m	G & S Monthly, 73-76
Site No.336	Irbid Nursery	32 33' N	35 51' E	616 m	G & S Monthly, 72-76
Site No.337	Deir Alla	32 13' N	35 37' E	-224 m	G & S Monthly, 73-76
Site No.338	Wadi Dhuliel	32 09' N	36 17' E	580 m	G & S Monthly, 71-76
Site No.339	Shoubak	30 31' N	35 32' E	1365 m	G & S Monthly, 75-76
Israel					
Site No.340	Bet Dagan	32 00' N	34 49' E	30 m	G, S

Site tables for horizontal surfaces.
Tables of horizontal surface data for 304 sites,
arranged in alphabetic order of country name.
Sites within each country arranged in
descending order of latitude.

AUSTRIA Map site No.219 Computer file AUSTRHOR.219 WIEN
 Latitude 48 15' N Longitude 16 22' E Height a.s.l. 202 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.76 1.42 2.64 3.95 5.10 5.33 5.44 4.52 3.30 2.05 1.01 0.69 3.03
 Gmax 1.73 2.90 4.78 6.46 7.55 7.96 8.07 6.76 5.21 3.75 2.35 1.41 4.92
 Gmin 0.15 0.29 0.59 0.96 1.36 1.38 1.13 0.99 0.80 0.57 0.16 0.16 0.71
 Go 2.88 4.42 6.66 9.02 10.80 11.59 11.18 9.67 7.50 5.16 3.29 2.44 7.06

Ratios to extraterrestrial radiation
 G/Go 0.26 0.32 0.40 0.44 0.47 0.46 0.49 0.47 0.44 0.40 0.31 0.28 0.39
 Ktmax 0.52 0.56 0.62 0.65 0.67 0.68 0.70 0.65 0.62 0.62 0.61 0.55 0.62
 Ktmin 0.05 0.06 0.09 0.11 0.13 0.12 0.10 0.10 0.11 0.11 0.05 0.06 0.10

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.53 0.94 1.54 2.20 2.64 2.72 2.65 2.29 1.73 1.17 0.65 0.48 1.64
 D/G mean +++ 0.70 0.66 0.58 0.56 0.52 0.51 0.49 0.51 0.53 0.57 0.65 0.69 0.54

Daily sunshine duration: hours.
 S 1.6 2.6 3.9 5.7 7.3 7.4 8.1 7.2 5.8 4.4 2.4 1.8 4.9
 So 8.7 10.0 11.7 13.5 15.0 15.8 15.4 14.1 12.4 10.7 9.1 8.2 12.1
 S/So 0.18 0.26 0.33 0.42 0.49 0.47 0.53 0.51 0.47 0.41 0.26 0.22 0.38
 Somax 9.1 10.6 12.5 14.1 15.5 15.8 15.7 14.7 13.0 11.3 9.6 8.3

Angstrom coefficients: Radiation observing site
 Angstrom a 0.17 0.18 0.22 0.21 0.21 0.21 0.20 0.20 0.20 0.19 0.16 0.18 0.19
 Angstrom b 0.53 0.51 0.54 0.53 0.54 0.54 0.55 0.53 0.52 0.49 0.53 0.47 0.52

AUSTRIA Map site No.220 Computer file AUSTRHOR.220 SALZBURG
 Latitude 47 48' N Longitude 13 0' E Height a.s.l. 435 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 1.03 1.70 2.81 3.76 4.57 4.63 4.91 4.25 3.31 2.19 1.08 0.79 2.93
 Gmax 2.03 3.24 5.10 6.77 7.67 7.98 7.76 6.86 5.58 3.89 2.38 1.55 5.08
 Gmin 0.19 0.37 0.61 0.65 0.74 0.75 0.84 0.77 0.63 0.27 0.21 0.16 0.52
 Go 2.95 4.49 6.72 9.06 10.82 11.60 11.19 9.70 7.55 5.23 3.36 2.52 7.11

Ratios to extraterrestrial radiation
 G/Go 0.35 0.37 0.42 0.41 0.42 0.40 0.44 0.44 0.44 0.42 0.32 0.31 0.40
 Ktmax 0.59 0.62 0.66 0.68 0.68 0.69 0.67 0.66 0.66 0.64 0.61 0.59 0.65
 Ktmin 0.06 0.08 0.09 0.07 0.07 0.06 0.07 0.08 0.08 0.05 0.06 0.06 0.07

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.63 1.01 1.56 2.10 2.48 2.52 2.68 2.26 1.72 1.13 0.69 0.53 1.62
 D/G mean +++ 0.61 0.60 0.55 0.56 0.54 0.54 0.55 0.53 0.52 0.52 0.64 0.66 0.55

Daily sunshine duration: hours.
 S 2.4 3.1 4.4 5.2 6.4 6.5 7.2 6.7 5.8 4.7 2.7 2.1 4.8
 So 8.7 10.1 11.7 13.5 15.0 15.7 15.4 14.1 12.4 10.7 9.1 8.3 12.1
 S/So 0.28 0.31 0.38 0.39 0.43 0.41 0.47 0.48 0.47 0.44 0.30 0.25 0.38
 Somax 9.1 10.6 12.5 14.1 15.4 15.8 15.7 14.6 13.0 11.3 9.6 8.4

Angstrom coefficients: Radiation observing site
 Angstrom a 0.21 0.21 0.21 0.18 0.16 0.15 0.16 0.17 0.18 0.15 0.17 0.20 0.18
 Angstrom b 0.51 0.54 0.56 0.59 0.61 0.61 0.57 0.56 0.55 0.58 0.51 0.45 0.55

AUSTRIA Map site No.221 Computer file AUSTRHOR.221 INNSBRUCK
 Latitude 47 16' N Longitude 11 24' E Height a.s.l. 582 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 1.31 2.17 3.38 4.47 5.30 5.42 5.42 4.67 3.95 2.62 1.44 1.12 3.45
 Gmax 2.20 3.69 5.39 7.01 8.05 8.36 8.05 7.10 5.75 4.07 2.58 1.68 5.33
 Gmin 0.33 0.60 0.84 1.24 1.32 1.30 1.47 1.12 0.83 0.41 0.29 0.29 0.84
 Go 3.04 4.58 6.80 9.11 10.84 11.60 11.20 9.74 7.62 5.32 3.45 2.60 7.17

Ratios to extraterrestrial radiation
 G/Go 0.43 0.47 0.50 0.49 0.49 0.47 0.48 0.48 0.52 0.49 0.42 0.43 0.47
 Ktmax 0.63 0.69 0.69 0.70 0.71 0.72 0.70 0.68 0.68 0.66 0.64 0.61 0.68
 Ktmin 0.11 0.13 0.12 0.14 0.12 0.11 0.13 0.11 0.11 0.08 0.08 0.11 0.12

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.71 1.15 1.76 2.28 2.73 2.80 2.74 2.40 1.81 1.26 0.77 0.60 1.76
 D/G mean +++ 0.54 0.53 0.52 0.51 0.52 0.52 0.51 0.51 0.46 0.48 0.53 0.54 0.51

Daily sunshine duration: hours.
 S 2.8 3.8 4.7 5.5 6.2 6.1 6.9 6.5 6.4 5.5 3.2 2.7 5.0
 So 8.8 10.1 11.7 13.4 14.9 15.7 15.3 14.0 12.4 10.7 9.2 8.4 12.1
 S/So 0.32 0.38 0.40 0.41 0.42 0.39 0.45 0.46 0.52 0.51 0.35 0.32 0.41
 Somax 9.2 10.6 12.5 14.1 15.3 15.7 15.6 14.6 13.0 11.3 9.6 8.5

Angstrom coefficients: Radiation observing site
 Angstrom a 0.26 0.28 0.28 0.26 0.24 0.23 0.22 0.22 0.24 0.23 0.22 0.27 0.25
 Angstrom b 0.53 0.51 0.53 0.57 0.59 0.61 0.59 0.56 0.54 0.50 0.56 0.50 0.55

AUSTRIA Map site No.222 Computer file AUSTRHOR.222 SONNBLICK
 Latitude 47 3' N Longitude 12 57' E Height a.s.l. 3106 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 1.69 2.58 4.09 5.38 5.99 5.75 5.45 4.49 3.87 3.08 1.83 1.46 3.81
 Gmax 2.70 3.96 6.06 7.86 9.02 9.39 9.03 7.78 6.18 4.71 3.00 2.06 5.99
 Gmin 0.67 1.10 1.90 2.66 2.38 2.28 2.45 1.72 1.42 1.17 0.64 0.60 1.59
 Go 3.08 4.62 6.83 9.13 10.85 11.60 11.20 9.75 7.64 5.35 3.49 2.64 7.20

Ratios to extraterrestrial radiation

G/Go 0.55 0.55 0.60 0.59 0.55 0.50 0.49 0.46 0.51 0.57 0.52 0.55 0.54
 Ktmax 0.76 0.74 0.77 0.79 0.79 0.81 0.78 0.74 0.73 0.76 0.74 0.74 0.77
 Ktmin 0.22 0.24 0.28 0.29 0.22 0.20 0.22 0.18 0.19 0.22 0.18 0.23 0.22

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.74 1.27 1.97 2.83 3.18 3.27 3.03 2.47 1.88 1.17 0.83 0.61 1.95
 D/G mean +++ 0.44 0.49 0.48 0.53 0.53 0.57 0.56 0.55 0.48 0.38 0.45 0.42 0.51

Daily sunshine duration: hours.

S 3.7 3.7 4.4 4.6 4.9 4.4 5.5 5.0 5.2 5.7 3.8 3.8 4.6
 So 8.8 10.1 11.7 13.4 14.9 15.6 15.3 14.0 12.4 10.7 9.2 8.4 12.1
 S/So 0.42 0.37 0.38 0.34 0.33 0.28 0.36 0.36 0.42 0.53 0.41 0.45 0.39
 Somax 9.2 10.6 12.4 14.1 15.3 15.7 15.5 14.5 13.0 11.3 9.7 8.5

Angstrom coefficients: Radiation observing site

Angstrom a 0.40 0.43 0.46 0.47 0.41 0.37 0.33 0.30 0.32 0.38 0.36 0.41 0.39
 Angstrom b 0.35 0.36 0.37 0.35 0.43 0.45 0.43 0.46 0.45 0.38 0.40 0.30 0.39

AUSTRIA Map site No.223 Computer file AUSTRHOR.223 KLAGENFURT
 Latitude 46 39' N Longitude 14 20' E Height a.s.l. 452 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 1.14 2.14 3.30 4.34 5.58 5.72 5.73 4.86 3.72 2.47 1.22 0.91 3.43
 Gmax 2.12 3.65 5.37 6.85 8.01 8.30 7.95 7.06 5.65 3.94 2.42 1.73 5.26
 Gmin 0.35 0.72 0.88 0.97 1.57 1.39 1.60 0.96 1.16 0.54 0.29 0.28 0.89
 Go 3.15 4.69 6.88 9.16 10.87 11.61 11.21 9.78 7.69 5.41 3.56 2.71 7.24

Ratios to extraterrestrial radiation

G/Go 0.36 0.45 0.48 0.47 0.51 0.49 0.51 0.50 0.48 0.46 0.34 0.34 0.45
 Ktmax 0.58 0.67 0.68 0.68 0.70 0.71 0.69 0.67 0.66 0.63 0.59 0.61 0.66
 Ktmin 0.11 0.15 0.13 0.11 0.14 0.12 0.14 0.10 0.15 0.10 0.08 0.10 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.74 1.22 1.77 2.33 2.67 2.80 2.72 2.30 1.73 1.24 0.78 0.61 1.75
 D/G mean +++ 0.65 0.57 0.54 0.54 0.48 0.49 0.47 0.47 0.46 0.50 0.64 0.67 0.51

Daily sunshine duration: hours.

S 2.0 3.8 5.0 6.1 7.8 7.4 8.2 7.2 5.9 4.7 2.4 1.7 5.2
 So 8.9 10.1 11.7 13.4 14.8 15.6 15.2 14.0 12.4 10.7 9.2 8.4 12.0
 S/So 0.22 0.37 0.43 0.46 0.53 0.47 0.54 0.51 0.48 0.44 0.26 0.20 0.41
 Somax 9.2 10.7 12.4 14.0 15.3 15.6 15.5 14.5 13.0 11.3 9.7 8.5

Angstrom coefficients: Radiation observing site

Angstrom a 0.25 0.28 0.26 0.23 0.22 0.21 0.22 0.19 0.19 0.21 0.20 0.23 0.23
 Angstrom b 0.48 0.46 0.51 0.53 0.56 0.58 0.55 0.59 0.61 0.55 0.52 0.50 0.54

BELGIUM Map site No.77 Computer file BELGIHOR.077 OOSTENDE
 Latitude 51 12' N Longitude 2 52' E Height a.s.l. 4 metres
 Horizontal planes: - monthly means. Data used & period: G (2/68-12/75) & S
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.62 1.37 2.62 3.97 4.99 5.80 5.12 4.37 3.27 1.89 0.85 0.53 2.96
 Gmax 1.50 2.94 4.79 6.81 7.90 8.36 8.16 6.90 5.31 3.37 1.77 1.16 4.92
 Gmin 0.18 0.29 0.54 1.09 1.59 1.54 1.51 1.35 0.83 0.44 0.23 0.12 0.81
 Go 2.38 3.92 6.23 8.73 10.68 11.55 11.09 9.45 7.12 4.69 2.79 1.96 6.73

Ratios to extraterrestrial radiation

G/Go 0.26 0.35 0.42 0.45 0.47 0.50 0.46 0.46 0.46 0.40 0.30 0.27 0.40
 Ktmax 0.53 0.63 0.65 0.70 0.70 0.72 0.71 0.67 0.66 0.60 0.53 0.56 0.64
 Ktmin 0.07 0.07 0.09 0.12 0.15 0.13 0.14 0.14 0.12 0.09 0.08 0.06 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.46 0.88 1.57 2.25 2.82 2.91 2.79 2.47 1.76 1.17 0.58 0.39 1.68
 D/G mean +++ 0.74 0.64 0.60 0.57 0.57 0.50 0.55 0.57 0.54 0.62 0.69 0.73 0.57

Daily sunshine duration: hours.

S 1.4 2.6 4.1 5.2 6.1 7.4 6.5 6.6 5.6 3.6 1.9 1.4 4.4
 So 8.3 9.8 11.7 13.7 15.4 16.3 15.8 14.4 12.5 10.5 8.7 7.8 12.1
 S/So 0.17 0.27 0.35 0.38 0.40 0.45 0.41 0.46 0.45 0.34 0.22 0.18 0.34
 Somax 8.7 10.4 12.5 14.4 15.9 16.3 16.2 15.0 13.2 11.2 9.3 7.9

Angstrom coefficients: Radiation observing site

Angstrom a 0.18 0.19 0.23 0.25 0.27 0.25 0.24 0.24 0.22 0.22 0.19 0.18 0.22
 Angstrom b 0.52 0.56 0.52 0.53 0.51 0.54 0.55 0.48 0.52 0.48 0.53 0.50 0.52

BELGIUM			Map site No.78		Computer file BELGIHOR.078										MELLE	
Latitude 50 59' N					Longitude 3 50' E		Height a.s.l.								15 metres	
Horizontal planes: - monthly means.					Data used & period:		G (6/67-12/75) & S									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean			
Daily global radiation: kWh/m ² .																
G mean	0.61	1.24	2.15	3.33	4.36	4.90	4.51	3.95	2.89	1.67	0.80	0.49	2.58			
Gmax	1.38	2.67	4.05	6.00	7.02	7.49	7.41	6.16	4.75	3.00	1.70	1.11	4.40			
Gmin	0.15	0.29	0.49	0.96	1.34	1.46	1.46	1.36	0.76	0.47	0.21	0.12	0.76			
Go	2.42	3.96	6.26	8.75	10.69	11.56	11.10	9.46	7.15	4.72	2.83	1.99	6.75			

Ratios to extraterrestrial radiation

G/Go	0.25	0.31	0.34	0.38	0.41	0.42	0.41	0.42	0.40	0.35	0.28	0.24	0.35
Ktmax	0.48	0.57	0.55	0.62	0.62	0.64	0.65	0.60	0.59	0.53	0.50	0.52	0.58
Ktmin	0.06	0.07	0.08	0.11	0.13	0.13	0.13	0.14	0.11	0.10	0.07	0.06	0.11

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.44	0.82	1.41	2.04	2.59	2.75	2.73	2.29	1.70	1.07	0.57	0.36	1.57
D/G mean ++++	0.73	0.66	0.66	0.61	0.59	0.56	0.61	0.58	0.59	0.64	0.71	0.74	0.61

Daily sunshine duration: hours.

S	1.5	2.5	3.5	4.9	6.1	6.8	6.0	6.4	5.2	3.6	2.0	1.3	4.2
So	8.3	9.8	11.7	13.6	15.3	16.2	15.8	14.3	12.5	10.5	8.8	7.8	12.1
S/So	0.18	0.25	0.30	0.36	0.40	0.42	0.38	0.45	0.42	0.34	0.23	0.17	0.32
Somax	8.8	10.4	12.5	14.4	15.9	16.3	16.1	15.0	13.1	11.2	9.3	7.9	

Angstrom coefficients: Radiation observing site

Angstrom a	0.17	0.17	0.19	0.19	0.22	0.22	0.22	0.22	0.21	0.20	0.17	0.16	0.20
Angstrom b	0.50	0.53	0.48	0.51	0.49	0.49	0.48	0.46	0.46	0.43	0.46	0.49	0.48

BELGIUM			Map site No.79			Computer file BELGIHOR.079										UCCLE	
Latitude 50 48' N						Longitude 4 21' E			Height a.s.l.							105 metres	
Horizontal planes: - monthly means.						Data used & period: G & S (1966 -1975)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean				
Daily global radiation: kWh/m ² .																	
G mean	0.64	1.26	2.20	3.44	4.57	4.93	4.64	4.09	3.02	1.74	0.83	0.49	2.66				
Gmax	1.54	2.80	4.52	6.56	7.38	7.70	7.71	6.42	5.04	3.33	1.87	1.20	4.68				
Gmin	0.12	0.24	0.50	0.83	1.38	1.29	1.27	1.27	0.68	0.38	0.15	0.10	0.69				
Go	2.45	3.99	6.29	8.77	10.69	11.56	11.11	9.48	7.17	4.75	2.86	2.02	6.78				

Ratios to extraterrestrial radiation

G/Go	0.26	0.31	0.35	0.39	0.43	0.43	0.42	0.43	0.42	0.37	0.29	0.24	0.36
Ktmax	0.53	0.59	0.61	0.68	0.65	0.66	0.67	0.63	0.62	0.59	0.55	0.56	0.61
Ktmin	0.05	0.06	0.08	0.09	0.13	0.11	0.11	0.13	0.10	0.08	0.05	0.05	0.10

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.46	0.82	1.39	2.03	2.63	2.76	2.74	2.39	1.70	1.06	0.56	0.36	1.58
D/G mean ++++	0.72	0.65	0.63	0.59	0.58	0.56	0.59	0.58	0.56	0.61	0.67	0.74	0.59

Daily sunshine duration: hours.

S	1.5	2.5	3.5	5.0	6.0	6.5	6.1	6.1	5.2	3.5	2.0	1.4	4.1
So	8.3	9.8	11.7	13.6	15.3	16.2	15.8	14.3	12.5	10.5	8.8	7.8	12.1
S/So	0.18	0.25	0.30	0.37	0.39	0.40	0.39	0.43	0.42	0.33	0.23	0.18	0.32
Somax	8.8	10.5	12.5	14.4	15.8	16.2	16.1	14.9	13.1	11.2	9.3	7.9	

Angstrom coefficients: Radiation observing site

Angstrom a	0.16	0.17	0.18	0.19	0.21	0.21	0.22	0.22	0.21	0.19	0.17	0.15	0.19
Angstrom b	0.54	0.56	0.55	0.56	0.55	0.54	0.52	0.49	0.51	0.51	0.54	0.51	0.53

BELGIUM			Map site No.80			Computer file BELGIHOR.080								SAINT-HUBERT	
Latitude 50 2' N			Longitude 5 24' E			Height a.s.l.								563 metres	
Horizontal planes: - monthly means.			Data used & period:			G & S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m ² .															
G mean	0.66	1.46	2.43	3.70	4.64	5.07	5.01	4.30	3.26	1.81	0.85	0.55	2.82		
Gmax	1.69	3.15	5.18	7.05	8.02	8.51	8.47	7.17	5.60	3.61	2.15	1.57	5.19		
Gmin	0.13	0.30	0.56	0.77	1.09	1.09	1.66	1.03	0.76	0.33	0.14	0.12	0.67		
Go	2.58	4.12	6.40	8.85	10.73	11.57	11.13	9.54	7.27	4.88	2.99	2.15	6.86		

Ratios to extraterrestrial radiation

G/Go	0.26	0.35	0.38	0.42	0.43	0.44	0.45	0.45	0.45	0.37	0.28	0.26	0.38
Ktmax	0.55	0.65	0.69	0.72	0.71	0.73	0.74	0.70	0.68	0.63	0.61	0.69	0.68
Ktmin	0.05	0.07	0.09	0.09	0.10	0.09	0.15	0.11	0.10	0.07	0.05	0.05	0.10

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.47	0.94	1.44	2.09	2.58	2.77	2.73	2.35	1.67	1.03	0.58	0.38	1.59
D/G mean ++++	0.71	0.64	0.59	0.56	0.56	0.55	0.54	0.55	0.51	0.57	0.68	0.69	0.56

Daily sunshine duration: hours.

S	1.4	2.6	3.3	4.9	5.9	6.5	6.7	6.2	5.3	3.5	1.9	1.4	4.1
So	8.4	9.9	11.7	13.6	15.2	16.1	15.7	14.3	12.5	10.6	8.9	7.9	12.1
S/So	0.17	0.26	0.28	0.36	0.39	0.40	0.43	0.43	0.42	0.33	0.21	0.18	0.32
Somax	8.9	10.5	12.5	14.3	15.7	16.1	16.0	14.8	13.1	11.3	9.4	8.1	

Angstrom coefficients: Radiation observing site

Angstrom a	0.16	0.19	0.20	0.19	0.20	0.21	0.20	0.21	0.19	0.18	0.16	0.16	0.19
Angstrom b	0.59	0.56	0.61	0.61	0.60	0.57	0.58	0.55	0.60	0.59	0.56	0.61	0.59

BOSNIA HERCEGOVINA				Map site No.243				Computer file BOSNIHOR.243				BANJA LUKA			
Latitude 44 47' N				Longitude 17 13' E				Height a.s.l.				153 metres			
Horizontal planes: - monthly means.				Data used & period:				G & S (1966 -1975)							
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m^2.															
G mean	1.18	2.02	3.14	4.29	5.48	5.76	6.06	5.21	3.87	2.48	1.46	0.92	3.50		
Gmax	2.50	4.05	6.13	7.37	8.32	8.59	8.47	7.49	6.06	4.58	3.15	1.98	5.73		
Gmin	0.22	0.36	0.62	0.94	1.02	1.32	1.30	1.44	0.72	0.34	0.20	0.19	0.73		
Go	3.47	4.99	7.14	9.33	10.93	11.62	11.25	9.90	7.91	5.70	3.87	3.02	7.44		
Ratios to extraterrestrial radiation															
G/Go	0.34	0.40	0.44	0.46	0.50	0.50	0.54	0.53	0.49	0.43	0.38	0.30	0.44		
Ktmax	0.63	0.71	0.75	0.73	0.73	0.74	0.73	0.71	0.69	0.70	0.71	0.63	0.71		
Ktmin	0.06	0.07	0.09	0.10	0.09	0.11	0.12	0.15	0.09	0.06	0.05	0.06	0.10		
Daily diffuse radiation: kWh/m^2.															
D mean est. ++++	0.75	1.14	1.77	2.26	2.85	3.04	2.75	2.63	1.88	1.31	0.84	0.60	1.83		
D/G mean ++++	0.64	0.56	0.56	0.53	0.52	0.53	0.45	0.50	0.49	0.53	0.57	0.66	0.52		
Daily sunshine duration: hours.															
S	1.6	2.8	3.7	5.1	6.7	6.9	8.5	7.1	5.7	4.5	2.7	1.5	4.7		
So	9.1	10.3	11.8	13.3	14.6	15.3	15.0	13.9	12.4	10.8	9.4	8.7	12.1		
S/So	0.18	0.27	0.31	0.38	0.46	0.45	0.57	0.51	0.46	0.42	0.29	0.17	0.37		
Somax	9.4	10.7	12.4	13.9	15.0	15.4	15.3	14.3	12.9	11.4	9.8	8.8			
Angstrom coefficients: Radiation observing site															
Angstrom a	0.22	0.23	0.24	0.24	0.25	0.26	0.22	0.28	0.22	0.20	0.20	0.20	0.23		
Angstrom b	0.64	0.62	0.59	0.60	0.55	0.52	0.56	0.48	0.58	0.56	0.60	0.62	0.58		

BOSNIA HERCEGOVINA				Map site No.246				Computer file BOSNIHOR.246				SARAJEVO			
Latitude 43 50' N				Longitude 18 20' E				Height a.s.l.				503 metres			
Horizontal planes: - monthly means.				Data used & period:				G & S (1966 -1975)							
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m*2.															
G mean	1.29	2.20	3.17	4.20	5.20	5.55	5.83	5.05	3.73	2.59	1.58	0.94	3.45		
Gmax	2.54	4.00	5.75	7.15	8.03	8.40	8.30	7.40	5.88	4.45	3.08	1.96	5.58		
Gmin	0.35	0.58	0.74	1.04	0.95	1.66	1.71	1.59	0.79	0.49	0.37	0.20	0.87		
Go	3.63	5.15	7.27	9.41	10.96	11.62	11.27	9.96	8.02	5.85	4.03	3.19	7.54		
Ratios to extraterrestrial radiation															
G/Go	0.36	0.42	0.44	0.45	0.47	0.48	0.52	0.51	0.46	0.44	0.39	0.29	0.44		
Ktmax	0.62	0.68	0.70	0.70	0.70	0.72	0.72	0.70	0.67	0.67	0.67	0.59	0.68		
Ktmin	0.10	0.11	0.10	0.11	0.09	0.14	0.15	0.16	0.10	0.08	0.09	0.06	0.12		
Daily diffuse radiation: kWh/m*2.															
D mean est. ++++	0.82	1.19	1.73	2.25	2.72	2.83	2.73	2.35	1.76	1.24	0.85	0.66	1.77		
D/G mean ++++	0.64	0.54	0.55	0.54	0.52	0.51	0.47	0.47	0.47	0.48	0.54	0.70	0.51		
Daily sunshine duration: hours.															
S	1.4	2.8	3.7	5.1	6.3	6.6	7.5	6.8	4.9	4.0	2.7	1.0	4.4		
So	9.2	10.3	11.8	13.3	14.6	15.2	14.9	13.8	12.4	10.9	9.5	8.8	12.1		
S/So	0.15	0.27	0.31	0.38	0.43	0.43	0.50	0.49	0.40	0.37	0.28	0.11	0.35		
Somax	9.5	10.8	12.4	13.8	14.9	15.2	15.1	14.3	12.9	11.4	9.9	8.9			
Angstrom coefficients:Radiation observing site															
Angstrom a	0.26	0.26	0.25	0.22	0.22	0.23	0.23	0.21	0.19	0.19	0.21	0.22	0.22		
Angstrom b	0.65	0.62	0.60	0.60	0.59	0.58	0.58	0.60	0.68	0.67	0.64	0.68	0.62		

BOSNIA HERCEGOVINA				Map site No.247				Computer file BOSNIHOR.247				ZLATIBOR			
Latitude 43 44' N				Longitude 19 43' E				Height a.s.l.				1029 metres			
Horizontal planes: - monthly means.				Data used & period:				G & S (1966 -1975)							
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m^2.															
G mean	1.53	2.35	3.36	4.37	5.31	5.58	5.80	5.34	4.08	2.98	1.98	1.34	3.68		
Gmax	3.32	4.21	6.01	7.48	8.36	8.49	8.38	7.72	6.23	4.89	3.54	2.60	5.94		
Gmin	0.34	0.47	0.71	0.80	0.81	1.15	1.46	1.72	0.90	0.54	0.29	0.33	0.80		
Go	3.65	5.17	7.28	9.42	10.97	11.63	11.27	9.97	8.03	5.86	4.05	3.20	7.55		
Ratios to extraterrestrial radiation															
G/Go	0.42	0.45	0.46	0.46	0.48	0.48	0.51	0.54	0.51	0.51	0.49	0.42	0.48		
Ktmax	0.81	0.72	0.73	0.73	0.73	0.73	0.72	0.73	0.71	0.73	0.77	0.78	0.74		
Ktmin	0.09	0.09	0.10	0.09	0.07	0.10	0.13	0.17	0.11	0.09	0.07	0.10	0.11		
Daily diffuse radiation: kWh/m^2.															
D mean est. ++++	0.79	1.14	1.79	2.28	2.61	2.77	2.77	2.34	1.75	1.19	0.84	0.74	1.76		
D/G mean ++++	0.52	0.48	0.53	0.52	0.49	0.50	0.48	0.44	0.43	0.40	0.42	0.55	0.48		
Daily sunshine duration: hours.															
S	2.2	3.3	4.0	5.4	6.6	7.2	8.0	7.6	6.1	5.1	3.9	2.1	5.1		
So	9.2	10.3	11.8	13.3	14.5	15.2	14.9	13.8	12.4	10.9	9.5	8.8	12.1		
S/So	0.24	0.32	0.34	0.41	0.46	0.47	0.54	0.55	0.49	0.47	0.41	0.24	0.41		
Somax	9.5	10.8	12.4	13.8	14.9	15.2	15.1	14.3	12.9	11.4	9.9	8.9			
Angstrom coefficients: Radiation observing site															
Angstrom a	0.26	0.26	0.26	0.22	0.21	0.22	0.21	0.21	0.21	0.21	0.24	0.29	0.23		
Angstrom b	0.69	0.64	0.58	0.59	0.61	0.56	0.55	0.57	0.61	0.64	0.62	0.59	0.60		

BULGARIA		Map site No.252			Computer file BULGAHOR.252								SOFIA	
Latitude	42 41' N	Longitude			23 20' E			Height a.s.l.			588 metres			
Horizontal planes: - monthly means.		Data used & period:			G			(1966 -1975)						
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.														
G mean	1.29	1.97	2.97	3.69	4.63	5.00	5.29	4.83	3.89	2.62	1.48	1.00	3.23	
Gmax	2.62	3.63	5.40	6.33	7.35	7.71	7.54	6.92	5.82	4.44	2.86	2.10	5.23	
Gmin	0.34	0.52	0.67	1.20	1.34	1.76	1.65	1.67	1.21	0.65	0.40	0.27	0.97	
Go	3.83	5.34	7.42	9.50	11.00	11.63	11.28	10.03	8.15	6.02	4.23	3.38	7.66	

Ratios to extraterrestrial radiation

G/Go	0.34	0.37	0.40	0.39	0.42	0.43	0.47	0.48	0.48	0.44	0.35	0.30	0.40
Ktmax	0.61	0.60	0.64	0.62	0.64	0.66	0.65	0.65	0.65	0.65	0.60	0.60	0.63
Ktmin	0.09	0.10	0.09	0.13	0.12	0.15	0.15	0.17	0.15	0.11	0.09	0.08	0.13

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.97	1.30	1.85	2.32	2.87	3.13	2.94	2.55	1.98	1.35	0.97	0.95	1.94
D/G mean ++++	0.75	0.66	0.62	0.63	0.62	0.63	0.56	0.53	0.51	0.51	0.66	0.95	0.60

Daily sunshine duration: hours.

S +++	0.7	1.5	2.3	3.0	4.1	4.0	5.6	5.9	4.9	3.6	1.4	0.1	3.1
So	9.3	10.4	11.8	13.2	14.5	15.1	14.8	13.7	12.4	10.9	9.6	8.9	12.1
S/So +++	0.08	0.14	0.20	0.23	0.28	0.27	0.38	0.43	0.40	0.33	0.15	0.01	0.24
Somax	9.6	10.8	12.4	13.8	14.8	15.1	15.0	14.2	12.8	11.4	10.0	9.0	

Angstrom coefficients:Site referenced for estimating sunshine: Pristina

Angstrom a	0.29	0.29	0.29	0.26	0.27	0.30	0.26	0.25	0.25	0.23	0.26	0.29	0.27
Angstrom b	0.61	0.56	0.56	0.56	0.53	0.49	0.55	0.54	0.57	0.62	0.61	0.57	0.56

CROATIA		Map site No.242			Computer file CROATHOR.242								ZAGREB	
Latitude	45 49' N	Longitude			15 59' E			Height a.s.l.			157 metres			
Horizontal planes: - monthly means.					Data used & period: G & S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	0.94	1.76	2.83	4.17	5.42	5.62	5.92	4.88	3.75	2.40	1.23	0.78	3.32	
Gmax	2.08	3.61	5.43	7.04	8.17	8.52	8.30	7.14	5.89	4.19	2.57	1.88	5.41	
Gmin	0.19	0.31	0.69	0.88	1.26	1.59	1.31	0.97	0.69	0.50	0.21	0.13	0.73	
Go	3.29	4.82	7.00	9.24	10.90	11.61	11.23	9.84	7.79	5.54	3.70	2.85	7.33	

Ratios to extraterrestrial radiation

G/Go	0.29	0.36	0.40	0.45	0.50	0.48	0.53	0.50	0.48	0.43	0.33	0.27	0.42
Ktmax	0.55	0.65	0.68	0.70	0.72	0.73	0.72	0.68	0.68	0.65	0.60	0.63	0.67
Ktmin	0.06	0.06	0.10	0.09	0.12	0.14	0.12	0.10	0.09	0.09	0.06	0.04	0.10

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.65	1.05	1.70	2.27	2.70	2.99	2.74	2.37	1.82	1.25	0.76	0.53	1.74
D/G mean ++++	0.69	0.60	0.60	0.54	0.50	0.53	0.46	0.48	0.48	0.52	0.62	0.68	0.52

Daily sunshine duration: hours.

S	1.5	2.9	3.6	5.5	6.9	6.9	8.5	7.4	5.8	4.6	2.4	1.5	4.8
So	8.9	10.2	11.8	13.4	14.7	15.5	15.1	13.9	12.4	10.8	9.3	8.5	12.1
S/So	0.17	0.28	0.31	0.41	0.47	0.45	0.56	0.53	0.47	0.43	0.26	0.18	0.38
Somax	9.3	10.7	12.4	14.0	15.2	15.5	15.4	14.4	12.9	11.4	9.8	8.6	

Angstrom coefficients:Radiation observing site

Angstrom a	0.19	0.20	0.23	0.21	0.23	0.25	0.21	0.20	0.21	0.20	0.18	0.17	0.21
Angstrom b	0.56	0.58	0.55	0.58	0.58	0.52	0.56	0.56	0.58	0.55	0.58	0.58	0.56

CROATIA		Map site No.248				Computer file CROATHOR.248						SPLIT	
Latitude	43 31' N	Longitude				16 26' E		Height a.s.l.				122 metres	
Horizontal planes: - monthly means.		Data used & period:				G & S		(1966 -1975)					
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean	1.90	2.70	4.04	5.25	6.64	7.31	7.19	6.37	4.93	3.59	2.15	1.64	4.48
Gmax	3.22	4.68	6.38	7.71	8.78	9.09	8.71	7.89	6.66	5.14	3.54	2.60	6.21
Gmin	0.32	0.62	0.96	1.27	1.92	2.71	3.02	2.73	1.17	1.09	0.49	0.26	1.39
Go	3.68	5.20	7.31	9.43	10.97	11.63	11.27	9.98	8.06	5.89	4.09	3.24	7.57

Ratios to extraterrestrial radiation

G/Go	0.52	0.52	0.55	0.56	0.60	0.63	0.64	0.64	0.61	0.61	0.53	0.50	0.58
Ktmax	0.77	0.79	0.77	0.76	0.77	0.78	0.75	0.74	0.75	0.76	0.76	0.77	0.77
Ktmin	0.09	0.12	0.13	0.13	0.17	0.23	0.27	0.27	0.15	0.19	0.12	0.08	0.18

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.78	1.20	1.65	2.24	2.53	2.50	2.36	2.11	1.67	1.13	0.89	0.66	1.65
D/G mean ++++	0.41	0.45	0.41	0.43	0.38	0.34	0.33	0.33	0.34	0.31	0.42	0.40	0.37

Daily sunshine duration: hours.

S	4.1	4.8	5.7	7.0	8.7	9.9	11.2	9.9	7.9	6.8	4.4	3.9	7.0
So	9.2	10.3	11.8	13.3	14.5	15.2	14.9	13.8	12.4	10.9	9.5	8.8	12.1
S/So	0.45	0.46	0.48	0.53	0.60	0.65	0.75	0.72	0.64	0.62	0.46	0.44	0.57
Somax	9.5	10.8	12.4	13.8	14.9	15.2	15.1	14.2	12.9	11.4	9.9	8.9	

Angstrom coefficients:Radiation observing site

Angstrom a	0.24	0.24	0.25	0.24	0.27	0.28	0.25	0.27	0.28	0.26	0.25	0.24	0.26
Angstrom b	0.60	0.58	0.62	0.59	0.56	0.53	0.52	0.51	0.53	0.56	0.58	0.59	0.56

CYPRUS Map site No.312 Computer file CYPRUHOR.312 PRODHROMOS
 Latitude 34 34' N Longitude 32 30' E Height a.s.l. 1380 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1968 -1978)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 2.37 3.24 4.42 5.91 7.24 7.92 7.99 7.57 6.19 4.42 3.17 2.26 5.23
 Gmax 4.08 5.32 6.82 8.17 8.85 9.03 8.92 8.54 7.53 5.98 4.64 3.62 6.80
 Gmin 0.44 0.72 0.87 1.45 3.33 4.82 5.43 5.06 4.32 1.85 0.78 0.48 2.47
 Go 5.18 6.56 8.36 10.03 11.13 11.56 11.32 10.43 8.98 7.20 5.58 4.78 8.43

Ratios to extraterrestrial radiation

G/Go 0.46 0.49 0.53 0.59 0.65 0.69 0.71 0.73 0.69 0.61 0.57 0.47 0.60
 Ktmax 0.72 0.74 0.74 0.77 0.77 0.78 0.77 0.79 0.79 0.76 0.76 0.74 0.76
 Ktmin 0.09 0.11 0.10 0.14 0.30 0.42 0.48 0.48 0.48 0.26 0.14 0.10 0.29

Daily diffuse radiation: kWh/m².

D mean est. +++ 1.07 1.44 1.79 2.02 2.04 1.57 1.58 1.41 1.31 1.16 0.92 0.95 1.44
 D/G mean +++ 0.45 0.45 0.40 0.34 0.28 0.20 0.20 0.19 0.21 0.26 0.29 0.42 0.28

Daily sunshine duration: hours.

S 3.9 4.7 6.1 7.8 9.6 11.3 11.4 10.8 9.2 7.3 6.1 4.0 7.7
 So 10.0 10.8 11.8 12.9 13.8 14.3 14.1 13.3 12.3 11.2 10.2 9.7 12.0
 S/So 0.39 0.44 0.52 0.60 0.70 0.79 0.81 0.81 0.75 0.65 0.60 0.41 0.62
 Somax 10.2 11.1 12.3 13.3 14.1 14.3 14.2 13.6 12.6 11.6 10.5 9.8

Angstrom coefficients:Derived from Gm and Sm at Prodhromos

Angstrom a 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21
 Angstrom b 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62

CZECH REPUBLIC Map site No.224 Computer file CZECHHOR.224 LIBEREC
 Latitude 50 46' N Longitude 15 1' E Height a.s.l. 399 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.61 1.12 2.37 3.59 4.54 4.97 4.90 4.29 3.02 1.67 0.71 0.44 2.69
 Gmax +++ 1.51 2.76 4.64 6.56 8.03 8.47 8.10 7.05 5.27 3.40 1.83 1.12 4.91
 Gmin +++ 0.16 0.29 0.67 0.97 1.20 1.48 1.24 1.06 0.79 0.37 0.18 0.11 0.71
 Go 2.45 4.00 6.30 8.77 10.69 11.56 11.11 9.48 7.18 4.76 2.86 2.03 6.78

Ratios to extraterrestrial radiation

G/Go +++ 0.25 0.28 0.38 0.41 0.42 0.43 0.44 0.45 0.42 0.35 0.25 0.21 0.36
 Ktmax +++ 0.52 0.58 0.63 0.68 0.71 0.73 0.70 0.69 0.65 0.60 0.53 0.52 0.63
 Ktmin +++ 0.07 0.07 0.11 0.11 0.11 0.13 0.11 0.11 0.11 0.08 0.06 0.05 0.11

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.49 0.79 1.48 2.06 2.53 2.72 2.68 2.30 1.71 1.02 0.52 0.36 1.56
 D/G mean +++ 0.80 0.70 0.62 0.57 0.56 0.55 0.55 0.54 0.56 0.61 0.73 0.83 0.58

Daily sunshine duration: hours.

S 1.0 1.8 3.4 4.5 5.5 5.8 6.1 6.1 4.9 3.2 1.3 0.7 3.7
 So 8.3 9.8 11.7 13.6 15.3 16.2 15.8 14.3 12.5 10.5 8.8 7.8 12.1
 S/So 0.12 0.18 0.29 0.33 0.36 0.36 0.39 0.42 0.39 0.31 0.15 0.08 0.28
 Somax 8.8 10.5 12.5 14.4 15.8 16.2 16.1 14.9 13.1 11.2 9.3 7.9

Angstrom coefficients:Reference site: Hradec Kralove

Angstrom a 0.19 0.18 0.22 0.21 0.20 0.21 0.21 0.21 0.21 0.18 0.16 0.17 0.20
 Angstrom b 0.50 0.56 0.54 0.60 0.62 0.61 0.60 0.57 0.54 0.56 0.58 0.53 0.57

CZECH REPUBLIC Map site No.225 Computer file CZECHHOR.225 HRADEC KRALOVE
 Latitude 50 11' N Longitude 15 50' E Height a.s.l. 288 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.70 1.29 2.58 3.95 4.99 5.53 5.33 4.60 3.28 1.78 0.78 0.54 2.96
 Gmax 1.56 2.82 4.69 6.59 8.03 8.47 8.10 7.07 5.31 3.46 1.89 1.17 4.94
 Gmin 0.17 0.30 0.68 0.98 1.21 1.48 1.25 1.07 0.80 0.38 0.19 0.11 0.72
 Go 2.55 4.10 6.38 8.83 10.72 11.57 11.12 9.52 7.25 4.85 2.96 2.12 6.85

Ratios to extraterrestrial radiation

G/Go 0.27 0.31 0.40 0.45 0.47 0.48 0.48 0.48 0.45 0.37 0.26 0.25 0.39
 Ktmax 0.52 0.58 0.63 0.68 0.71 0.73 0.70 0.69 0.65 0.60 0.54 0.52 0.63
 Ktmin 0.07 0.07 0.11 0.11 0.11 0.13 0.11 0.11 0.11 0.08 0.06 0.05 0.11

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.52 0.87 1.54 2.11 2.60 2.72 2.69 2.32 1.76 1.06 0.55 0.40 1.60
 D/G mean +++ 0.75 0.68 0.60 0.53 0.52 0.49 0.50 0.50 0.54 0.59 0.70 0.75 0.54

Daily sunshine duration: hours.

S 1.4 2.2 4.0 5.4 6.4 7.1 7.1 6.8 5.5 3.5 1.6 1.2 4.4
 So 8.4 9.9 11.7 13.6 15.2 16.1 15.7 14.3 12.5 10.6 8.9 7.9 12.1
 S/So 0.17 0.22 0.34 0.40 0.42 0.44 0.45 0.48 0.44 0.33 0.18 0.15 0.34
 Somax 8.9 10.5 12.5 14.3 15.7 16.1 16.0 14.9 13.1 11.3 9.4 8.0

Angstrom coefficients:Radiation observing site

Angstrom a 0.19 0.18 0.22 0.21 0.20 0.21 0.21 0.21 0.21 0.18 0.16 0.17 0.20
 Angstrom b 0.50 0.56 0.54 0.60 0.62 0.61 0.60 0.57 0.54 0.56 0.58 0.53 0.57

CZECH REPUBLIC		Map site No.226		Computer file CZECHHOR.226								PRAHA			
Latitude 50 4' N				Longitude 14 26' E				Height a.s.l.		262 metres					
Horizontal planes: - monthly means.				Data used & period:		S		(1966 -1975)							
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.65	1.24	2.62	3.94	4.91	5.44	5.44	4.63	3.27	1.76	0.83	0.55	2.95	
Gmax	++++	1.57	2.83	4.70	6.60	8.04	8.48	8.11	7.08	5.33	3.47	1.89	1.18	4.95	
Gmin	++++	0.17	0.30	0.68	0.98	1.20	1.48	1.25	1.07	0.80	0.37	0.19	0.11	0.72	
Go		2.57	4.12	6.40	8.84	10.73	11.57	11.13	9.53	7.27	4.87	2.98	2.14	6.86	

Ratios to extraterrestrial radiation

G/Go	++++	0.25	0.30	0.41	0.45	0.46	0.47	0.49	0.49	0.45	0.36	0.28	0.26	0.39	
Ktmax	++++	0.52	0.58	0.63	0.68	0.71	0.73	0.71	0.69	0.65	0.60	0.53	0.52	0.63	
Ktmin	++++	0.07	0.07	0.11	0.11	0.11	0.13	0.11	0.11	0.11	0.08	0.06	0.05	0.11	

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.51	0.85	1.56	2.13	2.58	2.72	2.69	2.32	1.76	1.06	0.57	0.40	1.60	
D/G mean	++++	0.78	0.68	0.59	0.54	0.52	0.50	0.49	0.50	0.54	0.60	0.68	0.74	0.54	

Daily sunshine duration: hours.

S		1.1	2.1	4.1	5.3	6.3	6.9	7.3	6.9	5.5	3.4	1.8	1.3	4.4	
So		8.4	9.9	11.7	13.6	15.2	16.1	15.7	14.3	12.5	10.6	8.9	7.9	12.1	
S/So		0.13	0.22	0.35	0.39	0.42	0.43	0.47	0.48	0.44	0.32	0.21	0.17	0.34	
Somax		8.9	10.5	12.5	14.3	15.7	16.1	16.0	14.9	13.1	11.3	9.4	8.1		

Angstrom coefficients:Reference site: Hradec Kralove

Angstrom a		0.19	0.18	0.22	0.21	0.20	0.21	0.21	0.21	0.21	0.18	0.16	0.17	0.20	
Angstrom b		0.50	0.56	0.54	0.60	0.62	0.61	0.60	0.57	0.54	0.56	0.58	0.53	0.57	

CZECH REPUBLIC		Map site No.227		Computer file CZECHHOR.227								ONDREJOV			
Latitude 49 55' N				Longitude 14 47' E				Height a.s.l.		526 metres					
Horizontal planes: - monthly means.				Data used & period:		S		(1966 -1975)							
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.69	1.24	2.63	3.92	4.96	5.48	5.50	4.65	3.33	1.88	0.85	0.56	2.99	
Gmax	++++	1.59	2.85	4.71	6.60	8.05	8.48	8.11	7.09	5.33	3.48	1.91	1.19	4.97	
Gmin	++++	0.17	0.30	0.69	0.98	1.20	1.48	1.25	1.07	0.80	0.38	0.19	0.11	0.72	
Go		2.60	4.14	6.42	8.86	10.73	11.57	11.13	9.55	7.29	4.89	3.01	2.17	6.88	

Ratios to extraterrestrial radiation

G/Go	++++	0.27	0.30	0.41	0.44	0.46	0.47	0.49	0.49	0.46	0.38	0.28	0.26	0.39	
Ktmax	++++	0.52	0.58	0.63	0.68	0.71	0.73	0.70	0.69	0.65	0.60	0.54	0.52	0.63	
Ktmin	++++	0.07	0.07	0.11	0.11	0.11	0.13	0.11	0.11	0.11	0.08	0.06	0.05	0.11	

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.52	0.84	1.55	2.10	2.56	2.72	2.67	2.30	1.74	1.06	0.57	0.41	1.60	
D/G mean	++++	0.75	0.68	0.59	0.54	0.52	0.50	0.49	0.49	0.52	0.57	0.67	0.73	0.54	

Daily sunshine duration: hours.

S		1.3	2.1	4.1	5.3	6.4	6.9	7.4	6.9	5.7	3.9	1.9	1.3	4.5	
So		8.4	9.9	11.7	13.6	15.2	16.1	15.7	14.2	12.5	10.6	8.9	8.0	12.1	
S/So		0.15	0.21	0.35	0.39	0.42	0.43	0.47	0.49	0.46	0.36	0.21	0.17	0.34	
Somax		8.9	10.5	12.5	14.3	15.7	16.1	16.0	14.8	13.1	11.3	9.4	8.1		

Angstrom coefficients:Reference site: Hradec Kralove

Angstrom a		0.19	0.18	0.22	0.21	0.20	0.21	0.21	0.21	0.21	0.18	0.16	0.17	0.20	
Angstrom b		0.50	0.56	0.54	0.60	0.62	0.61	0.60	0.57	0.54	0.56	0.58	0.53	0.57	

CZECH REPUBLIC		Map site No.228		Computer file CZECHHOR.228								BRNO			
Latitude 49 9' N				Longitude 16 42' E				Height a.s.l.		241 metres					
Horizontal planes: - monthly means.				Data used & period:		S		(1966 -1975)							
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.68	1.35	2.63	4.07	5.27	5.62	5.53	4.74	3.39	1.93	0.87	0.57	3.06	
Gmax	++++	1.65	2.92	4.77	6.65	8.06	8.49	8.11	7.11	5.39	3.55	1.98	1.26	5.01	
Gmin	++++	0.18	0.31	0.70	0.99	1.21	1.48	1.25	1.08	0.81	0.39	0.20	0.12	0.73	
Go		2.72	4.27	6.53	8.93	10.77	11.58	11.15	9.60	7.39	5.02	3.14	2.29	6.96	

Ratios to extraterrestrial radiation

G/Go	++++	0.25	0.32	0.40	0.46	0.49	0.49	0.50	0.49	0.46	0.38	0.28	0.25	0.40	
Ktmax	++++	0.52	0.58	0.63	0.68	0.71	0.73	0.70	0.69	0.65	0.60	0.54	0.52	0.63	
Ktmin	++++	0.07	0.07	0.11	0.11	0.11	0.13	0.11	0.11	0.11	0.08	0.06	0.05	0.11	

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.50	0.88	1.56	2.17	2.63	2.72	2.72	2.34	1.78	1.12	0.59	0.42	1.63	
D/G mean	++++	0.74	0.65	0.59	0.53	0.50	0.48	0.49	0.49	0.52	0.58	0.67	0.74	0.53	

Daily sunshine duration: hours.

S		1.2	2.3	4.0	5.5	6.9	7.1	7.4	6.9	5.5	3.8	1.7	1.2	4.5	
So		8.5	10.0	11.7	13.5	15.1	15.9	15.5	14.2	12.4	10.6	9.0	8.1	12.1	
S/So		0.14	0.23	0.34	0.41	0.46	0.44	0.48	0.49	0.44	0.35	0.19	0.14	0.34	
Somax		9.0	10.5	12.5	14.2	15.6	16.0	15.8	14.8	13.1	11.3	9.5	8.2		

Angstrom coefficients: Angstrom coefficients interpolated between Hradec Kralove & Bratislava

Angstrom a		0.17	0.18	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.19	0.16	0.17	0.20	
Angstrom b		0.58	0.59	0.56	0.60	0.61	0.62	0.60	0.58	0.56	0.55	0.61	0.55	0.59	

DENMARK Map site No.66 Computer file DENMAHOR.066 HOJBAKKEGARD
 Latitude 55 40' N Longitude 12 19' E Height a.s.l. 30 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.39 1.06 2.33 3.91 5.04 6.06 5.28 4.45 2.85 1.47 0.63 0.34 2.83
 Gmax 1.06 2.61 4.52 6.71 7.95 8.57 8.11 6.81 5.01 3.15 1.49 0.85 4.75
 Gmin 0.08 0.23 0.50 1.09 1.13 1.66 1.72 1.11 0.73 0.25 0.08 0.07 0.72
 Go 1.66 3.17 5.55 8.26 10.45 11.48 10.95 9.08 6.52 3.95 2.05 1.26 6.21

Ratios to extraterrestrial radiation

G/Go 0.24 0.33 0.42 0.47 0.48 0.53 0.48 0.49 0.44 0.37 0.30 0.27 0.40
 Ktmax 0.50 0.66 0.67 0.72 0.71 0.74 0.71 0.68 0.67 0.64 0.57 0.62 0.66
 Ktmin 0.05 0.07 0.09 0.13 0.11 0.14 0.16 0.12 0.11 0.06 0.04 0.05 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.31 0.68 1.32 2.15 2.66 2.64 2.81 2.33 1.61 0.87 0.41 0.25 1.51
 D/G mean +++ 0.79 0.64 0.57 0.55 0.53 0.44 0.53 0.52 0.56 0.60 0.66 0.72 0.53

Daily sunshine duration: hours.

S 0.9 2.2 4.1 6.2 7.6 9.5 8.1 8.1 5.4 3.2 1.9 1.2 4.9
 So 7.5 9.4 11.7 14.0 16.0 17.1 16.6 14.8 12.6 10.3 8.1 6.9 12.1
 S/So 0.12 0.23 0.35 0.44 0.48 0.56 0.49 0.55 0.43 0.31 0.23 0.17 0.36
 Somax 8.1 10.2 12.6 14.9 16.7 17.2 17.0 15.6 13.4 11.1 8.8 7.0

Angstrom coefficients: Radiation observing site

Angstrom a 0.17 0.19 0.21 0.23 0.22 0.22 0.21 0.20 0.20 0.18 0.17 0.18 0.20
 Angstrom b 0.60 0.61 0.59 0.54 0.56 0.57 0.55 0.52 0.54 0.59 0.60 0.57 0.57

DENMARK Map site No.67 Computer file DENMAHOR.067 ASKOV
 Latitude 55 28' N Longitude 9 7' E Height a.s.l. 64 metres
 Horizontal planes: - monthly means. Data used & period: S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.41 1.06 2.26 3.65 4.93 5.75 4.99 4.47 2.70 1.42 0.61 0.35 2.72
 Gmax +++ 1.10 2.85 4.27 6.45 7.93 8.36 7.64 6.76 5.01 3.14 1.62 0.96 4.69
 Gmin +++ 0.08 0.20 0.45 1.04 1.65 1.75 1.49 1.29 0.78 0.28 0.08 0.07 0.76
 Go 1.69 3.20 5.58 8.28 10.47 11.48 10.96 9.09 6.55 3.99 2.09 1.29 6.24

Ratios to extraterrestrial radiation

G/Go +++ 0.24 0.33 0.40 0.44 0.47 0.50 0.46 0.49 0.41 0.35 0.29 0.27 0.39
 Ktmax +++ 0.52 0.72 0.63 0.69 0.71 0.72 0.67 0.68 0.66 0.64 0.62 0.68 0.66
 Ktmin +++ 0.05 0.06 0.08 0.13 0.16 0.15 0.14 0.14 0.12 0.07 0.04 0.05 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.33 0.66 1.28 1.93 2.67 2.80 2.79 2.29 1.54 0.89 0.41 0.25 1.50
 D/G mean +++ 0.79 0.63 0.57 0.53 0.54 0.49 0.56 0.51 0.57 0.63 0.67 0.73 0.55

Daily sunshine duration: hours.

S 0.9 2.1 3.8 5.6 7.3 8.6 7.4 7.7 4.7 3.0 1.7 1.2 4.5
 So 7.6 9.4 11.7 14.0 16.0 17.1 16.6 14.8 12.6 10.3 8.1 6.9 12.1
 S/So 0.12 0.22 0.33 0.40 0.46 0.50 0.45 0.52 0.37 0.29 0.20 0.18 0.34
 Somax 8.2 10.2 12.6 14.8 16.6 17.2 17.0 15.5 13.4 11.1 8.8 7.1

Angstrom coefficients: Reference site: Jyndevad

Angstrom a 0.17 0.19 0.20 0.19 0.21 0.22 0.21 0.21 0.20 0.19 0.16 0.17 0.19
 Angstrom b 0.60 0.65 0.62 0.63 0.57 0.56 0.55 0.54 0.57 0.56 0.64 0.58 0.59

DENMARK Map site No.68 Computer file DENMAHOR.068 STEVNS
 Latitude 55 21' N Longitude 12 12' E Height a.s.l. 15 metres
 Horizontal planes: - monthly means. Data used & period: G (4/68-12/75)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.41 1.10 2.43 4.03 5.15 6.32 5.40 4.79 2.99 1.56 0.65 0.37 2.94
 Gmax 1.10 2.74 4.62 6.75 8.12 8.62 8.12 6.93 5.22 3.30 1.60 0.91 4.64
 Gmin 0.10 0.22 0.54 1.22 1.15 1.76 1.94 1.17 0.81 0.24 0.09 0.08 0.78
 Go 1.71 3.22 5.60 8.30 10.47 11.48 10.96 9.10 6.57 4.01 2.11 1.31 6.25

Ratios to extraterrestrial radiation

G/Go 0.24 0.34 0.43 0.49 0.49 0.55 0.49 0.53 0.46 0.39 0.31 0.28 0.42
 Ktmax 0.51 0.69 0.68 0.72 0.73 0.75 0.71 0.69 0.69 0.67 0.60 0.64 0.68
 Ktmin 0.06 0.07 0.10 0.15 0.11 0.15 0.18 0.13 0.12 0.06 0.04 0.06 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.32 0.70 1.34 2.14 2.67 2.63 2.78 2.25 1.60 0.89 0.43 0.27 1.51
 D/G mean +++ 0.79 0.63 0.55 0.53 0.52 0.42 0.51 0.47 0.53 0.57 0.66 0.73 0.51

Daily sunshine duration: hours.

S +++ 0.9 2.3 4.4 6.6 7.8 9.9 8.5 9.3 6.0 3.6 1.9 1.2 5.2
 So 7.6 9.4 11.7 13.9 16.0 17.1 16.5 14.8 12.6 10.3 8.2 6.9 12.1
 S/So +++ 0.12 0.25 0.38 0.47 0.49 0.58 0.51 0.63 0.47 0.35 0.23 0.18 0.39
 Somax 8.2 10.2 12.6 14.8 16.6 17.1 17.0 15.5 13.3 11.1 8.8 7.1

Angstrom coefficients: Site referenced for estimating sunshine: Hojbakkegard

Angstrom a 0.17 0.19 0.21 0.23 0.22 0.22 0.21 0.20 0.20 0.18 0.17 0.18 0.20
 Angstrom b 0.60 0.61 0.59 0.54 0.56 0.57 0.55 0.52 0.54 0.59 0.60 0.57 0.57

DENMARK		Map site No.69			Computer file DENMAHOR.069										ARSLEV	
Latitude	55 18' N				Longitude 10 27' E			Height a.s.l.				48 metres				
Horizontal planes: - monthly means.																
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m^2.																
G mean	++++	0.41	1.06	2.29	3.77	5.09	5.99	5.22	4.52	2.86	1.46	0.64	0.35	2.81		
Gmax	++++	1.12	2.86	4.28	6.46	7.94	8.36	7.64	6.77	5.03	3.16	1.64	0.98	4.70		
Gmin	++++	0.08	0.21	0.45	1.04	1.65	1.75	1.49	1.29	0.78	0.29	0.08	0.07	0.76		
Go		1.71	3.23	5.61	8.30	10.47	11.48	10.96	9.11	6.57	4.02	2.11	1.31	6.26		
Ratios to extraterrestrial radiation																
G/Go	++++	0.24	0.33	0.41	0.45	0.49	0.52	0.48	0.50	0.43	0.36	0.30	0.26	0.40		
Ktmax	++++	0.52	0.72	0.63	0.69	0.71	0.72	0.67	0.68	0.66	0.64	0.62	0.68	0.67		
Ktmin	++++	0.05	0.06	0.08	0.13	0.16	0.15	0.14	0.14	0.12	0.07	0.04	0.05	0.12		
Daily diffuse radiation: kWh/m^2.																
D mean est.	++++	0.33	0.67	1.28	1.96	2.67	2.75	2.80	2.30	1.57	0.90	0.42	0.26	1.50		
D/G mean	++++	0.79	0.64	0.56	0.52	0.52	0.46	0.54	0.51	0.55	0.61	0.65	0.75	0.53		
Daily sunshine duration: hours.																
S		0.9	2.0	3.9	5.8	7.7	9.2	8.0	7.8	5.2	3.2	1.8	1.1	4.7		
So		7.6	9.4	11.7	13.9	16.0	17.1	16.5	14.7	12.6	10.3	8.2	7.0	12.1		
S/So		0.12	0.21	0.34	0.42	0.48	0.54	0.48	0.53	0.41	0.31	0.22	0.16	0.35		
Somax		8.2	10.2	12.6	14.8	16.6	17.1	17.0	15.5	13.3	11.1	8.8	7.1			
Angstrom coefficients:Reference site: Jyndevad																
Angstrom a		0.17	0.19	0.20	0.19	0.21	0.22	0.21	0.21	0.20	0.19	0.16	0.17	0.19		
Angstrom b		0.60	0.65	0.62	0.63	0.57	0.56	0.55	0.54	0.57	0.56	0.64	0.58	0.59		

DENMARK	Map site No.70				Computer file DENMAHOR.070								JYNDEVAD			
Latitude	54 54' N				Longitude	9 8' E				Height a.s.l. <td colspan="2">15 metres</td>				15 metres		
Horizontal planes: - monthly means.																
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean			
Daily global radiation: kWh/m ² .																
G mean	0.43	1.11	2.45	3.54	5.13	5.81	5.09	4.59	2.84	1.53	0.62	0.38	2.80			
Gmax	1.15	2.92	4.32	6.49	7.95	8.36	7.65	6.79	5.06	3.20	1.68	1.02	4.72			
Gmin	0.08	0.21	0.46	1.05	1.66	1.75	1.50	1.30	0.79	0.29	0.08	0.07	0.77			
Go	1.78	3.30	5.67	8.34	10.49	11.49	10.98	9.14	6.63	4.08	2.18	1.37	6.30			
Ratios to extraterrestrial radiation																
G/Go	0.24	0.33	0.43	0.42	0.49	0.51	0.46	0.50	0.43	0.38	0.28	0.27	0.40			
Ktmax	0.52	0.72	0.63	0.69	0.71	0.72	0.67	0.68	0.66	0.64	0.62	0.68	0.67			
Ktmin	0.05	0.06	0.08	0.13	0.16	0.15	0.14	0.14	0.12	0.07	0.04	0.05	0.12			
Daily diffuse radiation: kWh/m ² .																
D mean est.	++++	0.33	0.69	1.37	1.87	2.73	2.81	2.37	1.60	0.96	0.42	0.28	1.53			
D/G mean	++++	0.78	0.63	0.56	0.53	0.53	0.48	0.55	0.52	0.56	0.63	0.68	0.73	0.55		
Daily sunshine duration: hours.																
S	1.0	2.1	3.9	5.6	7.5	8.6	7.6	7.6	4.9	3.0	1.6	1.2	4.6			
So	7.7	9.5	11.7	13.9	15.9	17.0	16.5	14.7	12.5	10.3	8.2	7.0	12.1			
S/So	0.13	0.22	0.33	0.40	0.47	0.51	0.46	0.52	0.39	0.29	0.20	0.17	0.34			
Somax	8.2	10.2	12.6	14.8	16.5	17.0	16.9	15.4	13.3	11.1	8.9	7.2				
Angstrom coefficients:Radiation observing site																
Angstrom a	0.17	0.19	0.20	0.19	0.21	0.22	0.21	0.21	0.20	0.19	0.16	0.17	0.19			
Angstrom b	0.60	0.65	0.62	0.63	0.57	0.56	0.55	0.54	0.57	0.56	0.64	0.58	0.59			

DENMARK		Map site No.71				Computer file DENMAHOR.071								NAESGARD	
Latitude	54 52' N					Longitude 12 7' E				Height a.s.l. 17 metres					
Horizontal planes: - monthly means.															
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.42	1.05	2.33	3.76	4.96	6.04	5.21	4.40	2.80	1.47	0.65	0.39	2.80	
Gmax	++++	1.12	2.71	4.60	6.75	7.96	8.58	8.12	6.85	5.07	3.23	1.57	0.92	4.80	
Gmin	++++	0.09	0.23	0.52	1.09	1.13	1.65	1.72	1.12	0.74	0.26	0.09	0.08	0.73	
Go		1.78	3.30	5.68	8.35	10.50	11.49	10.98	9.15	6.63	4.09	2.18	1.38	6.31	
Ratios to extraterrestrial radiation															
G/Go	++++	0.24	0.32	0.41	0.45	0.47	0.53	0.47	0.48	0.42	0.36	0.30	0.28	0.39	
Ktmax	++++	0.50	0.67	0.67	0.72	0.71	0.74	0.71	0.68	0.67	0.64	0.57	0.61	0.66	
Ktmin	++++	0.05	0.07	0.09	0.13	0.11	0.14	0.16	0.12	0.11	0.06	0.04	0.05	0.12	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.34	0.69	1.33	2.14	2.68	2.72	2.80	2.33	1.60	0.88	0.44	0.28	1.53	
D/G mean	++++	0.81	0.66	0.57	0.57	0.54	0.45	0.54	0.53	0.57	0.60	0.67	0.73	0.55	
Daily sunshine duration: hours.															
S		0.8	2.0	4.0	5.7	7.2	9.1	7.9	7.9	5.2	3.1	1.8	1.2	4.7	
So		7.7	9.5	11.7	13.9	15.9	17.0	16.5	14.7	12.5	10.3	8.2	7.1	12.1	
S/So		0.11	0.21	0.34	0.41	0.45	0.54	0.48	0.54	0.41	0.30	0.22	0.18	0.35	
Somax		8.3	10.2	12.6	14.8	16.5	17.0	16.9	15.4	13.3	11.1	8.9	7.2		
Angstrom coefficients:Reference site: Højbakkegard															
Angstrom a		0.17	0.19	0.21	0.23	0.22	0.22	0.21	0.20	0.20	0.18	0.17	0.18	0.20	
Angstrom b		0.60	0.61	0.59	0.54	0.56	0.57	0.55	0.52	0.54	0.59	0.60	0.57	0.57	

FINLAND			Map site No.11			Computer file FINLAHOR.011								JOKIOINEN	
Latitude 60 49' N						Longitude 23 30' E			Height a.s.l.					134 metres	
Horizontal planes: - monthly means.						Data used & period: G (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m ² .															
G mean	0.24	0.81	2.09	3.56	4.98	6.20	5.42	4.06	2.25	0.97	0.29	0.14	2.59		
Gmax	0.58	1.84	3.99	6.32	7.90	8.64	8.25	6.51	4.43	2.33	0.84	0.31	4.34		
Gmin	0.07	0.20	0.52	0.96	1.12	1.46	1.77	0.93	0.40	0.15	0.06	0.03	0.64		
Go	0.89	2.30	4.73	7.67	10.18	11.40	10.78	8.61	5.78	3.09	1.25	0.55	5.62		

Ratios to extraterrestrial radiation

G/Go	0.27	0.35	0.44	0.46	0.49	0.54	0.50	0.47	0.39	0.31	0.23	0.25	0.39
Ktmax	0.45	0.60	0.67	0.71	0.72	0.75	0.73	0.68	0.65	0.58	0.48	0.48	0.63
Ktmin	0.08	0.09	0.11	0.13	0.11	0.13	0.16	0.11	0.07	0.05	0.05	0.06	0.11

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.20	0.52	1.16	1.88	2.57	2.71	2.74	2.17	1.50	0.73	0.25	0.13	1.39
D/G mean ++++	0.82	0.64	0.55	0.53	0.52	0.44	0.51	0.53	0.67	0.75	0.85	0.92	0.54

Daily sunshine duration: hours.

S +++	0.7	2.2	4.4	6.2	8.1	10.5	9.4	7.4	3.2	1.6	0.7	0.3	4.6
So	6.3	8.8	11.6	14.4	17.1	18.6	17.9	15.5	12.7	9.8	7.1	5.4	12.1
S/So +++	0.10	0.25	0.38	0.43	0.47	0.56	0.52	0.48	0.25	0.17	0.09	0.05	0.31
Somax	7.2	9.7	12.8	15.5	18.0	18.7	18.5	16.4	13.7	10.9	8.0	5.7	

Angstrom coefficients:Site referenced for estimating sunshine: Stockholm

Angstrom a	0.21	0.20	0.22	0.21	0.22	0.24	0.22	0.21	0.27	0.23	0.18	0.23	0.22
Angstrom b	0.58	0.60	0.58	0.59	0.57	0.54	0.54	0.55	0.47	0.50	0.56	0.53	0.55

FINLAND		Map site No.12			Computer file FINLAHOR.012								HELSINKI	
Latitude 60 19' N					Longitude 24 58' E			Height a.s.l.					48 metres	
Horizontal planes: - monthly means.					Data used & period:			G (1966 -1975)						
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	0.28	0.82	2.08	3.52	5.23	6.39	5.81	4.43	2.45	1.06	0.32	0.15	2.72	
Gmax	0.70	1.89	4.04	6.25	8.05	8.61	8.25	6.80	4.56	2.40	0.92	0.34	4.41	
Gmin	0.06	0.18	0.51	0.81	1.30	1.90	1.74	1.18	0.48	0.15	0.06	0.03	0.70	
Go	0.96	2.38	4.81	7.73	10.21	11.41	10.80	8.66	5.86	3.18	1.32	0.61	5.68	

Ratios to extraterrestrial radiation

G/Go	0.29	0.34	0.43	0.46	0.51	0.56	0.54	0.51	0.42	0.33	0.24	0.24	0.41
Ktmax	0.52	0.60	0.67	0.70	0.73	0.75	0.73	0.71	0.66	0.58	0.50	0.48	0.64
Ktmin	0.06	0.07	0.11	0.10	0.13	0.17	0.16	0.14	0.08	0.05	0.04	0.04	0.12

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.22	0.53	1.18	1.90	2.57	2.67	2.70	2.15	1.55	0.76	0.27	0.14	1.40
D/G mean ++++	0.77	0.64	0.57	0.54	0.49	0.42	0.47	0.49	0.63	0.72	0.84	0.96	0.51

Daily sunshine duration: hours.

S +++	0.9	2.2	4.2	6.0	8.7	10.9	10.4	8.5	4.0	2.0	0.8	0.2	4.9
So	6.4	8.9	11.6	14.4	16.9	18.4	17.7	15.4	12.7	9.9	7.2	5.6	12.1
S/So +++	0.14	0.24	0.37	0.42	0.51	0.59	0.59	0.55	0.31	0.21	0.11	0.03	0.34
Somax	7.3	9.8	12.8	15.5	17.8	18.6	18.3	16.3	13.6	10.9	8.1	5.8	

Angstrom coefficients:Site referenced for estimating sunshine: Stockholm

Angstrom a	0.21	0.20	0.22	0.21	0.22	0.24	0.22	0.21	0.27	0.23	0.18	0.23	0.22
Angstrom b	0.58	0.60	0.58	0.59	0.57	0.54	0.54	0.55	0.47	0.50	0.56	0.53	0.55

FRANCE				Map site No.165				Computer file FRANCHOR.165								LILLE	
Latitude 50 34' N				Longitude 3 6' E				Height a.s.l.								52 metres	
Horizontal planes: - monthly means.				Data used & period: S (1966 -1975)													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean				
Daily global radiation: kWh/m ² .																	
G mean	++++	0.64	1.29	2.25	3.61	4.63	5.25	4.87	4.18	3.07	1.74	0.86	0.49	2.75			
Gmax	++++	1.56	2.82	4.55	6.57	7.38	7.70	7.71	6.43	5.06	3.35	1.90	1.22	4.70			
Gmin	++++	0.12	0.24	0.50	0.84	1.38	1.29	1.27	1.26	0.68	0.38	0.15	0.10	0.69			
Go		2.49	4.03	6.32	8.79	10.70	11.56	11.11	9.50	7.20	4.79	2.90	2.06	6.80			

Ratios to extraterrestrial radiation

G/Go ++++	0.26	0.32	0.36	0.41	0.43	0.45	0.44	0.44	0.43	0.36	0.30	0.24	0.37
Ktmax ++++	0.53	0.59	0.61	0.68	0.65	0.66	0.67	0.63	0.62	0.59	0.55	0.56	0.61
Ktmin ++++	0.05	0.06	0.08	0.09	0.13	0.11	0.11	0.13	0.10	0.08	0.05	0.05	0.10

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.46	0.83	1.39	2.07	2.63	2.78	2.79	2.39	1.72	1.06	0.57	0.36	1.60
D/G mean ++++	0.72	0.64	0.62	0.57	0.57	0.53	0.57	0.57	0.56	0.61	0.67	0.74	0.58

Daily sunshine duration: hours.

S	1.5	2.7	3.8	5.4	6.2	7.3	6.6	6.4	5.3	3.6	2.1	1.4	4.3
So	8.3	9.9	11.7	13.6	15.3	16.2	15.7	14.3	12.5	10.6	8.8	7.9	12.1
S/So	0.18	0.27	0.32	0.39	0.40	0.45	0.42	0.45	0.42	0.34	0.23	0.17	0.34
Somax	8.8	10.5	12.5	14.3	15.8	16.2	16.1	14.9	13.1	11.2	9.3	8.0	

Angstrom coefficients:Reference site: Uccle

Angstrom a	0.16	0.17	0.18	0.19	0.21	0.21	0.22	0.22	0.21	0.19	0.17	0.15	0.19
Angstrom b	0.54	0.56	0.55	0.56	0.55	0.54	0.52	0.49	0.51	0.51	0.54	0.51	0.53

FRANCE		Map site No.166			Computer file FRANCHOR.166								ABBEVILLE	
Latitude	50 8' N				Longitude	1 50' E			Height a.s.l.				77 metres	
Horizontal planes: - monthly means.														
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.														
G mean	++++	0.71	1.44	2.65	4.07	5.10	5.83	5.24	4.43	3.21	1.91	0.97	0.58	3.02
Gmax	++++	1.60	3.05	4.88	6.87	7.91	8.37	8.17	6.94	5.38	3.47	1.86	1.26	4.99
Gmin	++++	0.19	0.30	0.56	1.10	1.60	1.54	1.51	1.36	0.84	0.46	0.24	0.13	0.83
Go		2.56	4.10	6.39	8.84	10.72	11.57	11.13	9.53	7.26	4.86	2.97	2.13	6.85
Ratios to extraterrestrial radiation														
G/Go	++++	0.28	0.35	0.41	0.46	0.48	0.50	0.47	0.46	0.44	0.39	0.33	0.27	0.40
Ktmax	++++	0.53	0.63	0.65	0.70	0.70	0.72	0.71	0.67	0.66	0.60	0.53	0.56	0.64
Ktmin	++++	0.07	0.07	0.09	0.12	0.15	0.13	0.14	0.14	0.12	0.09	0.08	0.06	0.12
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.51	0.89	1.57	2.26	2.86	2.85	2.82	2.47	1.77	1.15	0.63	0.42	1.69
D/G mean	++++	0.72	0.62	0.59	0.56	0.56	0.49	0.54	0.56	0.55	0.60	0.65	0.72	0.56
Daily sunshine duration: hours.														
S		1.6	2.9	4.2	5.4	6.1	7.6	6.6	6.7	5.3	3.8	2.3	1.5	4.5
So		8.4	9.9	11.7	13.6	15.2	16.1	15.7	14.3	12.5	10.6	8.9	7.9	12.1
S/So		0.18	0.29	0.35	0.40	0.40	0.47	0.42	0.47	0.43	0.36	0.26	0.19	0.35
Somax		8.9	10.5	12.5	14.3	15.7	16.1	16.0	14.9	13.1	11.3	9.4	8.0	
Angstrom coefficients:Reference site: Oostende														
Angstrom a		0.18	0.19	0.23	0.25	0.27	0.25	0.24	0.24	0.22	0.22	0.19	0.18	0.22
Angstrom b		0.52	0.56	0.52	0.53	0.51	0.54	0.55	0.48	0.52	0.48	0.53	0.50	0.52

FRANCE		Map site No.167				Computer file FRANCHOR.167								BEAUVAIS	
Latitude	49 27' N					Longitude	2 7' E					Height a.s.l.	111 metres		
Horizontal planes: - monthly means.						Data used & period:				S	(1966 -1975)				
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.77	1.54	2.60	3.94	4.81	5.52	5.40	4.49	3.34	1.95	0.99	0.66	3.01	
Gmax	++++	1.88	3.23	4.98	6.71	7.75	8.08	8.18	6.86	5.38	3.59	2.15	1.49	5.03	
Gmin	++++	0.22	0.38	0.70	1.33	1.30	1.52	1.94	1.44	0.87	0.57	0.25	0.19	0.89	
Go		2.67	4.22	6.49	8.90	10.75	11.58	11.14	9.58	7.35	4.97	3.09	2.24	6.93	
Ratios to extraterrestrial radiation															
G/Go	++++	0.29	0.37	0.40	0.44	0.45	0.48	0.48	0.47	0.45	0.39	0.32	0.29	0.40	
Ktmax	++++	0.60	0.65	0.66	0.68	0.69	0.69	0.71	0.66	0.65	0.61	0.59	0.63	0.66	
Ktmin	++++	0.08	0.09	0.11	0.15	0.12	0.13	0.17	0.15	0.12	0.12	0.08	0.09	0.13	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.51	0.95	1.52	2.21	2.73	2.89	2.89	2.45	1.79	1.14	0.64	0.45	1.69	
D/G mean	++++	0.67	0.61	0.59	0.56	0.57	0.52	0.54	0.55	0.54	0.59	0.65	0.69	0.56	
Daily sunshine duration: hours.															
S		1.6	3.0	4.2	5.5	6.2	7.4	7.3	6.8	5.6	3.7	2.1	1.4	4.6	
So		8.5	9.9	11.7	13.6	15.1	16.0	15.6	14.2	12.4	10.6	8.9	8.0	12.1	
S/So		0.18	0.30	0.36	0.40	0.41	0.47	0.47	0.48	0.45	0.35	0.24	0.18	0.36	
Somax		9.0	10.5	12.5	14.2	15.6	16.0	15.9	14.8	13.1	11.3	9.4	8.1		
Angstrom coefficients:Reference site: Trappes															
Angstrom a		0.18	0.20	0.20	0.22	0.22	0.23	0.24	0.23	0.22	0.21	0.19	0.19	0.21	
Angstrom b		0.60	0.55	0.56	0.55	0.55	0.53	0.52	0.50	0.52	0.52	0.55	0.58	0.54	

FRANCE		Map site No.168				Computer file FRANCHOR.168								REIMS	
Latitude	49 18' N					Longitude	4 2' E					Height a.s.l.		99 metres	
Horizontal planes: - monthly means.						Data used & period:				S (1966 -1975)					
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.															
G mean	++++	0.83	1.60	2.74	4.11	5.15	5.58	5.47	4.71	3.55	1.99	1.05	0.67	3.13	
Gmax	++++	1.83	3.24	4.88	6.66	7.85	8.21	8.20	7.10	5.45	3.66	2.19	1.46	5.07	
Gmin	++++	0.21	0.36	0.70	1.03	1.52	1.81	2.29	1.52	1.20	0.45	0.21	0.14	0.95	
Go		2.70	4.24	6.51	8.92	10.76	11.58	11.15	9.59	7.37	4.99	3.11	2.27	6.95	
Ratios to extraterrestrial radiation															
G/Go	++++	0.31	0.38	0.42	0.46	0.48	0.48	0.49	0.49	0.48	0.40	0.34	0.29	0.42	
Ktmax	++++	0.58	0.65	0.64	0.68	0.69	0.71	0.71	0.69	0.66	0.62	0.60	0.61	0.66	
Ktmin	++++	0.08	0.09	0.11	0.12	0.14	0.16	0.21	0.16	0.16	0.09	0.07	0.06	0.14	
Daily diffuse radiation: kWh/m^2.															
D mean est.	++++	0.55	0.95	1.55	2.24	2.72	2.82	2.82	2.44	1.81	1.11	0.65	0.46	1.69	
D/G mean	++++	0.66	0.60	0.56	0.55	0.53	0.51	0.52	0.52	0.51	0.56	0.62	0.68	0.54	
Daily sunshine duration: hours.															
S		1.6	3.0	4.3	5.8	6.7	7.6	7.7	7.0	5.8	3.8	2.2	1.6	4.8	
So		8.5	10.0	11.7	13.6	15.1	16.0	15.6	14.2	12.4	10.6	9.0	8.1	12.1	
S/So		0.19	0.31	0.36	0.43	0.45	0.48	0.49	0.49	0.47	0.36	0.25	0.20	0.37	
Somax		9.0	10.5	12.5	14.2	15.6	16.0	15.9	14.8	13.1	11.3	9.5	8.2		
Angstrom coefficients:Reference site: Nancy															
Angstrom a		0.19	0.20	0.21	0.22	0.22	0.21	0.22	0.23	0.23	0.19	0.19	0.18	0.21	
Angstrom b		0.62	0.58	0.58	0.56	0.58	0.57	0.55	0.53	0.54	0.58	0.59	0.56	0.57	

FRANCE		Map site No.169			Computer file FRANCHOR.169								CAEN	
Latitude 49 11' N					Longitude 0 27' W			Height a.s.l.			67 metres			
Horizontal planes: - monthly means.					Data used & period: S			(1966 -1975)						
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	0.89	1.59	2.83	3.98	4.87	5.57	5.41	4.43	3.36	2.07	1.09	0.71	3.08
Gmax	++++	1.91	3.26	5.00	6.72	7.75	8.09	8.18	6.87	5.40	3.62	2.17	1.51	5.05
Gmin	++++	0.23	0.38	0.70	1.33	1.30	1.52	1.94	1.44	0.88	0.58	0.25	0.20	0.90
Go		2.72	4.26	6.53	8.93	10.76	11.58	11.15	9.60	7.38	5.01	3.13	2.29	6.96
Ratios to extraterrestrial radiation														
G/Go	++++	0.33	0.37	0.43	0.45	0.45	0.48	0.49	0.46	0.46	0.41	0.35	0.31	0.42
Ktmax	++++	0.60	0.65	0.66	0.68	0.68	0.70	0.71	0.66	0.65	0.61	0.59	0.63	0.66
Ktmin	++++	0.08	0.09	0.11	0.15	0.12	0.13	0.17	0.15	0.12	0.12	0.08	0.09	0.13
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.55	0.97	1.56	2.22	2.73	2.87	2.90	2.46	1.81	1.17	0.66	0.46	1.71
D/G mean	++++	0.61	0.61	0.55	0.56	0.56	0.51	0.54	0.55	0.54	0.57	0.61	0.65	0.56
Daily sunshine duration: hours.														
S		2.1	3.1	4.9	5.6	6.4	7.6	7.3	6.6	5.6	4.1	2.6	1.7	4.8
So		8.5	10.0	11.7	13.5	15.1	15.9	15.6	14.2	12.4	10.6	9.0	8.1	12.1
S/So		0.25	0.32	0.42	0.41	0.42	0.47	0.47	0.46	0.45	0.39	0.29	0.21	0.38
Somax		9.0	10.5	12.5	14.2	15.6	16.0	15.9	14.8	13.1	11.3	9.5	8.2	
Angstrom coefficients:Reference site: Trappes														
Angstrom a		0.18	0.20	0.20	0.22	0.22	0.23	0.24	0.23	0.22	0.21	0.19	0.19	0.21
Angstrom b		0.60	0.55	0.56	0.55	0.55	0.53	0.52	0.50	0.52	0.52	0.55	0.58	0.54

FRANCE		Map site No.170			Computer file FRANCHOR.170								METZ	
Latitude 49 5' N					Longitude 6 8' E			Height a.s.l.			191 metres			
Horizontal planes: - monthly means.					Data used & period:			S (1966 -1975)						
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.														
G mean	++++	0.80	1.59	2.60	4.00	4.99	5.34	5.51	4.64	3.50	1.88	0.95	0.63	3.04
Gmax	++++	1.85	3.26	4.89	6.67	7.86	8.22	8.20	7.10	5.46	3.69	2.21	1.48	5.08
Gmin	++++	0.21	0.36	0.71	1.03	1.52	1.81	2.29	1.52	1.21	0.45	0.21	0.14	0.95
Go		2.74	4.28	6.54	8.94	10.77	11.58	11.15	9.61	7.39	5.03	3.15	2.30	6.97
Ratios to extraterrestrial radiation														
G/Go	++++	0.29	0.37	0.40	0.45	0.46	0.46	0.49	0.48	0.47	0.37	0.30	0.28	0.40
Ktmax	++++	0.58	0.65	0.64	0.68	0.69	0.71	0.71	0.69	0.66	0.62	0.60	0.61	0.66
Ktmin	++++	0.08	0.09	0.11	0.12	0.14	0.16	0.21	0.16	0.16	0.09	0.07	0.06	0.14
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.55	0.96	1.53	2.23	2.71	2.83	2.83	2.43	1.81	1.09	0.64	0.44	1.68
D/G mean	++++	0.68	0.60	0.59	0.56	0.54	0.53	0.51	0.52	0.52	0.58	0.67	0.71	0.55
Daily sunshine duration: hours.														
S		1.4	2.9	3.8	5.5	6.3	7.0	7.7	6.8	5.6	3.4	1.7	1.4	4.5
So		8.6	10.0	11.7	13.5	15.1	15.9	15.5	14.2	12.4	10.6	9.0	8.1	12.1
S/So		0.16	0.29	0.32	0.41	0.42	0.44	0.50	0.48	0.45	0.32	0.19	0.17	0.35
Somax		9.0	10.5	12.5	14.2	15.6	16.0	15.8	14.7	13.1	11.3	9.5	8.2	
Angstrom coefficients:Reference site: Nancy														
Angstrom a		0.19	0.20	0.21	0.22	0.22	0.21	0.22	0.23	0.23	0.19	0.19	0.18	0.21
Angstrom b		0.62	0.58	0.58	0.56	0.58	0.57	0.55	0.53	0.54	0.58	0.59	0.56	0.57

FRANCE		Map site No.171				Computer file FRANCHOR.171								LE BOURGET	
Latitude 48 58' N						Longitude 2 27' E				Height a.s.l.				65 metres	
Horizontal planes: - monthly means.						Data used & period: S				(1966 -1975)					
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.															
G mean	++++	0.82	1.63	2.69	4.12	4.93	5.69	5.67	4.60	3.46	2.05	1.04	0.71	3.12	
Gmax	++++	1.93	3.28	5.02	6.73	7.75	8.09	8.19	6.88	5.42	3.64	2.19	1.54	5.06	
Gmin	++++	0.23	0.38	0.71	1.33	1.30	1.52	1.94	1.44	0.88	0.58	0.25	0.20	0.90	
Go		2.76	4.30	6.56	8.95	10.77	11.58	11.16	9.62	7.41	5.05	3.17	2.32	6.98	
Ratios to extraterrestrial radiation															
G/Go	++++	0.30	0.38	0.41	0.46	0.46	0.49	0.51	0.48	0.47	0.41	0.33	0.30	0.42	
Ktmax	++++	0.60	0.65	0.66	0.68	0.68	0.70	0.71	0.66	0.65	0.61	0.59	0.63	0.66	
Ktmin	++++	0.08	0.09	0.11	0.15	0.12	0.13	0.17	0.15	0.12	0.12	0.08	0.09	0.13	
Daily diffuse radiation: kWh/m^2.															
D mean est.	++++	0.54	0.97	1.55	2.24	2.74	2.87	2.86	2.47	1.81	1.17	0.66	0.47	1.70	
D/G mean	++++	0.66	0.60	0.58	0.54	0.56	0.50	0.50	0.54	0.52	0.57	0.63	0.66	0.54	
Daily sunshine duration: hours.															
S		1.7	3.3	4.4	5.9	6.5	7.8	8.0	7.0	5.9	4.0	2.3	1.6	4.9	
So		8.6	10.0	11.7	13.5	15.1	15.9	15.5	14.2	12.4	10.6	9.0	8.1	12.1	
S/So		0.20	0.33	0.38	0.44	0.43	0.49	0.52	0.50	0.47	0.38	0.25	0.20	0.38	
Somax		9.0	10.6	12.5	14.2	15.6	15.9	15.8	14.7	13.1	11.3	9.5	8.2		
Angstrom coefficients:Reference site: Trappes															
Angstrom a		0.18	0.20	0.20	0.22	0.22	0.23	0.24	0.23	0.22	0.21	0.19	0.19	0.21	
Angstrom b		0.60	0.55	0.56	0.55	0.55	0.53	0.52	0.50	0.52	0.52	0.55	0.58	0.54	

FRANCE Map site No.172 Computer file FRANCHOR.172 ILE DE BREHAT
 Latitude 48 51' N Longitude 3 0' W Height a.s.l. 36 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.85 1.64 2.76 4.04 5.08 5.46 5.47 4.47 3.34 2.05 1.00 0.70 3.08
 Gmax +++ 1.94 3.30 5.03 6.74 7.75 8.09 8.19 6.88 5.43 3.65 2.21 1.55 5.07
 Gmin +++ 0.23 0.38 0.71 1.34 1.30 1.52 1.94 1.44 0.88 0.58 0.25 0.20 0.90
 Go 2.78 4.32 6.57 8.96 10.78 11.59 11.16 9.62 7.42 5.06 3.19 2.34 7.00

Ratios to extraterrestrial radiation

G/Go +++ 0.31 0.38 0.42 0.45 0.47 0.47 0.49 0.46 0.45 0.40 0.31 0.30 0.41
 Ktmax +++ 0.60 0.65 0.66 0.68 0.68 0.70 0.71 0.66 0.65 0.61 0.59 0.63 0.66
 Ktmin +++ 0.08 0.09 0.11 0.15 0.12 0.13 0.17 0.15 0.12 0.12 0.08 0.09 0.13

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.55 0.98 1.57 2.23 2.74 2.90 2.88 2.48 1.81 1.17 0.66 0.47 1.71
 D/G mean +++ 0.65 0.60 0.57 0.55 0.54 0.53 0.53 0.55 0.54 0.57 0.66 0.67 0.56

Daily sunshine duration: hours.

S 1.8 3.3 4.6 5.7 6.9 7.2 7.5 6.6 5.5 4.0 2.0 1.5 4.7
 So 8.6 10.0 11.7 13.5 15.1 15.9 15.5 14.2 12.4 10.6 9.0 8.1 12.1
 S/So 0.21 0.33 0.39 0.42 0.46 0.46 0.48 0.47 0.44 0.37 0.22 0.18 0.37
 Somax 9.0 10.6 12.5 14.2 15.6 15.9 15.8 14.7 13.1 11.3 9.5 8.2

Angstrom coefficients:Reference site: Trappes

Angstrom a 0.18 0.20 0.20 0.22 0.22 0.23 0.24 0.23 0.22 0.21 0.19 0.19 0.21
 Angstrom b 0.60 0.55 0.56 0.55 0.55 0.53 0.52 0.50 0.52 0.52 0.55 0.58 0.54

FRANCE Map site No.173 Computer file FRANCHOR.173 TRAPPES
 Latitude 48 46' N Longitude 2 1' E Height a.s.l. 168 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.82 1.59 2.70 4.01 4.82 5.57 5.58 4.56 3.48 2.11 1.05 0.66 3.09
 Gmax 1.95 3.30 5.04 6.75 7.75 8.09 8.19 6.89 5.43 3.66 2.21 1.56 5.08
 Gmin 0.23 0.39 0.71 1.34 1.30 1.51 1.95 1.45 0.89 0.58 0.26 0.20 0.90
 Go 2.79 4.33 6.59 8.97 10.78 11.59 11.16 9.63 7.43 5.08 3.20 2.35 7.01

Ratios to extraterrestrial radiation

G/Go 0.30 0.36 0.41 0.45 0.45 0.48 0.50 0.47 0.47 0.42 0.33 0.28 0.41
 Ktmax 0.60 0.65 0.66 0.68 0.68 0.70 0.71 0.67 0.65 0.61 0.59 0.63 0.66
 Ktmin 0.08 0.09 0.11 0.15 0.12 0.13 0.17 0.15 0.12 0.12 0.08 0.09 0.13

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.55 0.96 1.57 2.22 2.74 2.90 2.87 2.45 1.81 1.19 0.67 0.46 1.71
 D/G mean +++ 0.67 0.61 0.58 0.55 0.57 0.52 0.51 0.54 0.52 0.56 0.64 0.70 0.55

Daily sunshine duration: hours.

S 1.6 3.1 4.3 5.6 6.1 7.4 7.7 6.9 5.9 4.1 2.2 1.3 4.7
 So 8.6 10.0 11.7 13.5 15.1 15.9 15.5 14.1 12.4 10.6 9.0 8.1 12.1
 S/So 0.19 0.31 0.37 0.41 0.40 0.47 0.50 0.49 0.48 0.39 0.24 0.16 0.37
 Somax 9.0 10.6 12.5 14.2 15.5 15.9 15.8 14.7 13.1 11.3 9.5 8.2

Angstrom coefficients:Radiation observing site

Angstrom a 0.18 0.20 0.20 0.22 0.22 0.23 0.24 0.23 0.22 0.21 0.19 0.19 0.21
 Angstrom b 0.60 0.55 0.56 0.55 0.55 0.53 0.52 0.50 0.52 0.52 0.55 0.58 0.54

FRANCE Map site No.174 Computer file FRANCHOR.174 ILE DE BATS
 Latitude 48 45' N Longitude 4 0' W Height a.s.l. 36 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.86 1.61 2.68 3.98 5.02 5.42 5.50 4.40 3.35 2.07 1.05 0.71 3.06
 Gmax +++ 1.95 3.30 5.04 6.74 7.76 8.09 8.19 6.89 5.43 3.66 2.21 1.56 5.08
 Gmin +++ 0.23 0.39 0.71 1.34 1.30 1.52 1.94 1.44 0.88 0.58 0.26 0.20 0.90
 Go 2.79 4.34 6.59 8.97 10.78 11.59 11.16 9.63 7.44 5.08 3.20 2.36 7.01

Ratios to extraterrestrial radiation

G/Go +++ 0.31 0.37 0.41 0.44 0.47 0.47 0.49 0.46 0.45 0.41 0.33 0.30 0.41
 Ktmax +++ 0.60 0.65 0.66 0.68 0.69 0.70 0.71 0.67 0.65 0.61 0.59 0.63 0.66
 Ktmin +++ 0.08 0.09 0.11 0.15 0.12 0.13 0.17 0.15 0.12 0.12 0.08 0.09 0.13

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.56 0.98 1.56 2.23 2.74 2.90 2.89 2.48 1.82 1.17 0.67 0.47 1.71
 D/G mean +++ 0.65 0.61 0.58 0.56 0.55 0.54 0.53 0.56 0.54 0.57 0.63 0.66 0.56

Daily sunshine duration: hours.

S 1.8 3.1 4.3 5.5 6.7 7.1 7.5 6.4 5.5 4.1 2.3 1.6 4.7
 So 8.6 10.0 11.7 13.5 15.1 15.9 15.5 14.1 12.4 10.6 9.0 8.1 12.1
 S/So 0.21 0.31 0.37 0.41 0.45 0.45 0.49 0.45 0.44 0.38 0.25 0.19 0.37
 Somax 9.0 10.6 12.5 14.2 15.5 15.9 15.8 14.7 13.1 11.3 9.5 8.2

Angstrom coefficients:Reference site: Trappes

Angstrom a 0.18 0.20 0.20 0.22 0.22 0.23 0.24 0.23 0.22 0.21 0.19 0.19 0.21
 Angstrom b 0.60 0.55 0.56 0.55 0.55 0.53 0.52 0.50 0.52 0.52 0.55 0.58 0.54

FRANCE	Map site No.175				Computer file FRANCHOR.175								NANCY	
Latitude 48 41' N					Longitude 6 13' E				Height a.s.l.				217 metres	
Horizontal planes: - monthly means.					Data used & period: G & S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	0.84	1.63	2.66	4.03	4.98	5.52	5.64	4.62	3.53	1.97	0.97	0.66	3.10	
Gmax	1.89	3.31	4.93	6.69	7.87	8.21	8.20	7.12	5.50	3.72	2.25	1.53	5.11	
Gmin	0.22	0.37	0.72	1.03	1.52	1.80	2.29	1.52	1.21	0.46	0.21	0.15	0.96	
Go	2.80	4.35	6.60	8.98	10.79	11.59	11.16	9.64	7.44	5.09	3.21	2.37	7.01	

Ratios to extraterrestrial radiation

G/Go	0.30	0.37	0.40	0.45	0.46	0.48	0.51	0.48	0.47	0.39	0.30	0.28	0.41	
Ktmax	0.58	0.65	0.64	0.68	0.69	0.71	0.71	0.69	0.66	0.62	0.60	0.61	0.66	
Ktmin	0.08	0.09	0.11	0.12	0.14	0.16	0.21	0.16	0.16	0.09	0.07	0.06	0.14	

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.56	0.98	1.56	2.23	2.70	2.87	2.86	2.44	1.84	1.13	0.64	0.46	1.70	
D/G mean ++++	0.67	0.60	0.59	0.55	0.54	0.52	0.51	0.53	0.52	0.57	0.66	0.70	0.55	

Daily sunshine duration: hours.

S	1.5	2.9	3.8	5.6	6.3	7.2	7.8	6.7	5.5	3.5	1.8	1.4	4.5	
So	8.6	10.0	11.7	13.5	15.1	15.9	15.5	14.1	12.4	10.6	9.0	8.2	12.1	
S/So	0.17	0.29	0.32	0.41	0.42	0.45	0.50	0.48	0.44	0.33	0.20	0.17	0.35	
Somax	9.0	10.6	12.5	14.2	15.5	15.9	15.8	14.7	13.0	11.3	9.5	8.3		

Angstrom coefficients: Radiation observing site

Angstrom a	0.19	0.20	0.21	0.22	0.22	0.21	0.22	0.23	0.23	0.19	0.19	0.18	0.21	
Angstrom b	0.62	0.58	0.58	0.56	0.58	0.57	0.55	0.53	0.54	0.58	0.59	0.56	0.57	

FRANCE	Map site No.176				Computer file FRANCHOR.176								STRASBOURG	
Latitude 48 33' N					Longitude 7 38' E				Height a.s.l.				154 metres	
Horizontal planes: - monthly means.				Data used & period: S (1966 -1975)										
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	+++	0.78	1.58	2.68	4.10	5.05	5.44	5.62	4.68	3.55	1.94	0.98	0.67	3.10
Gmax	+++	1.90	3.32	4.94	6.69	7.86	8.22	8.20	7.12	5.50	3.74	2.27	1.54	5.12
Gmin	+++	0.22	0.37	0.71	1.03	1.52	1.81	2.29	1.52	1.22	0.46	0.22	0.15	0.96
Go		2.83	4.37	6.62	8.99	10.79	11.59	11.17	9.65	7.46	5.11	3.24	2.39	7.03

Ratios to extraterrestrial radiation

G/Go ++++	0.28	0.36	0.41	0.46	0.47	0.47	0.50	0.49	0.48	0.38	0.30	0.28	0.41	
Ktmax ++++	0.58	0.65	0.64	0.68	0.69	0.71	0.71	0.69	0.66	0.62	0.60	0.61	0.66	
Ktmin ++++	0.08	0.09	0.11	0.12	0.14	0.16	0.21	0.16	0.16	0.09	0.07	0.06	0.14	

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.55	0.96	1.55	2.25	2.72	2.83	2.80	2.45	1.82	1.11	0.66	0.46	1.69	
D/G mean ++++	0.71	0.61	0.58	0.55	0.54	0.52	0.50	0.52	0.51	0.57	0.67	0.69	0.55	

Daily sunshine duration: hours.

S	1.2	2.8	4.0	5.7	6.4	7.2	8.0	6.8	5.7	3.5	1.7	1.5	4.5	
So	8.6	10.0	11.7	13.5	15.0	15.8	15.5	14.1	12.4	10.7	9.0	8.2	12.1	
S/So	0.14	0.28	0.34	0.42	0.43	0.46	0.51	0.48	0.46	0.33	0.19	0.18	0.35	
Somax	9.0	10.6	12.5	14.2	15.5	15.9	15.8	14.7	13.0	11.3	9.5	8.3		

Angstrom coefficients: Reference site: Nancy

Angstrom a	0.19	0.20	0.21	0.22	0.22	0.21	0.22	0.23	0.23	0.19	0.19	0.18	0.21	
Angstrom b	0.62	0.58	0.58	0.56	0.58	0.57	0.55	0.53	0.54	0.58	0.59	0.56	0.57	

FRANCE	Map site No.177				Computer file FRANCHOR.177								BREST	
Latitude 48 27' N					Longitude 4 25' W				Height a.s.l.				103 metres	
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	++++	0.86	1.64	2.71	4.01	4.99	5.55	5.52	4.44	3.36	2.09	1.09	0.77	3.09
Gmax	++++	1.99	3.33	5.06	6.76	7.76	8.09	8.19	6.90	5.45	3.68	2.25	1.59	5.10
Gmin	++++	0.24	0.39	0.72	1.34	1.31	1.52	1.94	1.45	0.89	0.59	0.26	0.21	0.91
Go		2.84	4.39	6.63	9.00	10.80	11.59	11.17	9.65	7.47	5.13	3.25	2.41	7.04

Ratios to extraterrestrial radiation

G/Go ++++	0.30	0.37	0.41	0.45	0.46	0.48	0.49	0.46	0.45	0.41	0.33	0.32	0.41	
Ktmax ++++	0.60	0.65	0.66	0.68	0.68	0.69	0.71	0.67	0.65	0.61	0.59	0.63	0.66	
Ktmin ++++	0.08	0.09	0.11	0.15	0.12	0.13	0.17	0.15	0.12	0.12	0.08	0.09	0.13	

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.56	0.99	1.56	2.24	2.74	2.89	2.87	2.47	1.82	1.19	0.68	0.49	1.72	
D/G mean ++++	0.66	0.60	0.58	0.56	0.55	0.52	0.52	0.56	0.54	0.57	0.63	0.63	0.56	

Daily sunshine duration: hours.

S	1.7	3.2	4.4	5.5	6.6	7.4	7.6	6.5	5.5	4.0	2.4	1.8	4.7	
So	8.6	10.0	11.7	13.5	15.0	15.8	15.5	14.1	12.4	10.7	9.1	8.2	12.1	
S/So	0.20	0.32	0.37	0.41	0.44	0.47	0.49	0.46	0.44	0.38	0.26	0.22	0.37	
Somax	9.1	10.6	12.5	14.2	15.5	15.9	15.7	14.7	13.0	11.3	9.5	8.3		

Angstrom coefficients: Reference site: Trappes

Angstrom a	0.18	0.20	0.20	0.22	0.22	0.23	0.24	0.23	0.22	0.21	0.19	0.19	0.21	
Angstrom b	0.60	0.55	0.56	0.55	0.55	0.53	0.52	0.50	0.52	0.52	0.55	0.58	0.54	

FRANCE		Map site No.178		Computer file FRANCHOR.178								RENNES			
Latitude 48 4' N				Longitude 1 44' W				Height a.s.l.		37 metres					
Horizontal planes: - monthly means.				Data used & period: S		(1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.93	1.71	2.91	4.22	5.09	5.70	5.76	4.62	3.47	2.17	1.15	0.79	3.22	
Gmax	++++	2.02	3.38	5.09	6.78	7.77	8.10	8.20	6.91	5.48	3.72	2.28	1.63	5.12	
Gmin	++++	0.24	0.40	0.72	1.35	1.31	1.52	1.95	1.45	0.89	0.60	0.27	0.21	0.91	
Go		2.91	4.45	6.69	9.03	10.81	11.59	11.18	9.68	7.52	5.19	3.32	2.47	7.08	
Ratios to extraterrestrial radiation															
G/Go	++++	0.32	0.38	0.43	0.47	0.47	0.49	0.52	0.48	0.46	0.42	0.35	0.32	0.43	
Ktmax	++++	0.60	0.65	0.66	0.68	0.69	0.70	0.71	0.66	0.65	0.61	0.59	0.63	0.66	
Ktmin	++++	0.08	0.09	0.11	0.15	0.12	0.13	0.17	0.15	0.12	0.12	0.08	0.09	0.13	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.58	1.01	1.61	2.27	2.75	2.86	2.83	2.47	1.83	1.20	0.70	0.49	1.73	
D/G mean	++++	0.62	0.59	0.55	0.54	0.54	0.50	0.49	0.53	0.53	0.55	0.61	0.62	0.54	
Daily sunshine duration: hours.															
S		2.0	3.4	4.9	6.0	6.8	7.8	8.2	7.0	5.8	4.3	2.6	1.9	5.1	
So		8.7	10.0	11.7	13.5	15.0	15.8	15.4	14.1	12.4	10.7	9.1	8.2	12.1	
S/So		0.23	0.34	0.42	0.45	0.46	0.49	0.53	0.49	0.46	0.40	0.28	0.23	0.40	
Somax		9.1	10.6	12.5	14.1	15.4	15.8	15.7	14.6	13.0	11.3	9.6	8.3		
Angstrom coefficients:Reference site: Trappes															
Angstrom a		0.18	0.20	0.20	0.22	0.22	0.23	0.24	0.23	0.22	0.21	0.19	0.19	0.21	
Angstrom b		0.60	0.55	0.56	0.55	0.55	0.53	0.52	0.50	0.52	0.52	0.55	0.58	0.54	

FRANCE		Map site No.179		Computer file FRANCHOR.179								ORLEANS			
Latitude 47 59' N				Longitude 1 45' E				Height a.s.l.		125 metres					
Horizontal planes: - monthly means.				Data used & period: S		(1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.88	1.65	2.73	4.18	5.01	5.69	5.74	4.63	3.51	2.14	1.09	0.72	3.17	
Gmax	++++	2.03	3.39	5.10	6.78	7.77	8.10	8.20	6.92	5.49	3.73	2.29	1.64	5.13	
Gmin	++++	0.25	0.40	0.72	1.35	1.31	1.52	1.95	1.45	0.90	0.60	0.27	0.21	0.91	
Go		2.92	4.46	6.70	9.04	10.81	11.60	11.18	9.69	7.53	5.20	3.33	2.48	7.09	
Ratios to extraterrestrial radiation															
G/Go	++++	0.30	0.37	0.41	0.46	0.46	0.49	0.51	0.48	0.47	0.41	0.33	0.29	0.41	
Ktmax	++++	0.60	0.65	0.66	0.68	0.69	0.70	0.71	0.67	0.65	0.61	0.59	0.63	0.66	
Ktmin	++++	0.08	0.09	0.11	0.15	0.12	0.13	0.17	0.15	0.12	0.12	0.08	0.09	0.13	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.58	1.00	1.58	2.26	2.74	2.85	2.84	2.47	1.82	1.21	0.69	0.49	1.72	
D/G mean	++++	0.66	0.61	0.58	0.54	0.55	0.50	0.49	0.53	0.52	0.56	0.63	0.68	0.54	
Daily sunshine duration: hours.															
S		1.7	3.1	4.3	5.9	6.6	7.8	8.1	7.0	5.9	4.1	2.3	1.4	4.9	
So		8.7	10.1	11.7	13.5	15.0	15.8	15.4	14.1	12.4	10.7	9.1	8.3	12.1	
S/So		0.20	0.31	0.37	0.44	0.44	0.49	0.53	0.50	0.47	0.39	0.25	0.17	0.38	
Somax		9.1	10.6	12.5	14.1	15.4	15.8	15.7	14.6	13.0	11.3	9.6	8.4		
Angstrom coefficients:Reference site: Trappes															
Angstrom a		0.18	0.20	0.20	0.22	0.22	0.23	0.24	0.23	0.22	0.21	0.19	0.19	0.21	
Angstrom b		0.60	0.55	0.56	0.55	0.55	0.53	0.52	0.50	0.52	0.52	0.55	0.58	0.54	

FRANCE		Map site No.180		Computer file FRANCHOR.180								LE MANS			
Latitude 47 56' N				Longitude 0 12' E				Height a.s.l.		52 metres					
Horizontal planes: - monthly means.				Data used & period: S		(1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.92	1.68	2.93	4.28	5.05	5.76	5.93	4.70	3.58	2.21	1.15	0.76	3.25	
Gmax	++++	2.03	3.39	5.10	6.79	7.77	8.10	8.20	6.92	5.49	3.73	2.29	1.64	5.14	
Gmin	++++	0.25	0.40	0.72	1.35	1.31	1.52	1.95	1.45	0.90	0.60	0.27	0.21	0.92	
Go		2.93	4.47	6.70	9.05	10.82	11.60	11.18	9.69	7.54	5.21	3.34	2.49	7.10	
Ratios to extraterrestrial radiation															
G/Go	++++	0.31	0.38	0.44	0.47	0.47	0.50	0.53	0.49	0.47	0.42	0.35	0.31	0.43	
Ktmax	++++	0.60	0.65	0.66	0.68	0.69	0.70	0.71	0.67	0.65	0.61	0.59	0.63	0.66	
Ktmin	++++	0.08	0.09	0.11	0.15	0.12	0.13	0.17	0.15	0.12	0.12	0.08	0.09	0.13	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.58	1.01	1.60	2.25	2.75	2.86	2.80	2.46	1.83	1.21	0.70	0.50	1.72	
D/G mean	++++	0.63	0.60	0.55	0.53	0.54	0.50	0.47	0.52	0.51	0.55	0.61	0.66	0.53	
Daily sunshine duration: hours.															
S		1.9	3.2	5.0	6.2	6.7	7.9	8.6	7.2	6.1	4.4	2.6	1.6	5.1	
So		8.7	10.1	11.7	13.5	15.0	15.8	15.4	14.1	12.4	10.7	9.1	8.3	12.1	
S/So		0.22	0.32	0.42	0.46	0.45	0.50	0.56	0.51	0.49	0.41	0.28	0.20	0.40	
Somax		9.1	10.6	12.5	14.1	15.4	15.8	15.7	14.6	13.0	11.3	9.6	8.4		
Angstrom coefficients:Reference site: Trappes															
Angstrom a		0.18	0.20	0.20	0.22	0.22	0.23	0.24	0.23	0.22	0.21	0.19	0.19	0.21	
Angstrom b		0.60	0.55	0.56	0.55	0.55	0.53	0.52	0.50	0.52	0.52	0.55	0.58	0.54	

FRANCE Map site No.181 Computer file FRANCHOR.181 COLMAR
 Latitude 47 55' N Longitude 7 24' E Height a.s.l. 217 metres
 Horizontal planes: - monthly means. Data used & period: S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++++ 0.91 1.66 2.75 4.18 5.12 5.50 5.63 4.70 3.66 2.12 1.12 0.74 3.18
 Gmax +++++ 1.96 3.39 4.99 6.73 7.87 8.22 8.21 7.14 5.55 3.79 2.33 1.60 5.16
 Gmin +++++ 0.23 0.38 0.72 1.04 1.53 1.81 2.29 1.53 1.23 0.47 0.22 0.15 0.97
 Go 2.93 4.48 6.71 9.05 10.82 11.60 11.18 9.69 7.54 5.21 3.34 2.50 7.10

Ratios to extraterrestrial radiation

G/Go +++++ 0.31 0.37 0.41 0.46 0.47 0.47 0.50 0.49 0.49 0.41 0.34 0.30 0.42
 Ktmax +++++ 0.58 0.65 0.64 0.68 0.69 0.71 0.71 0.69 0.66 0.62 0.60 0.61 0.66
 Ktmin +++++ 0.08 0.09 0.11 0.12 0.14 0.16 0.21 0.16 0.16 0.09 0.07 0.06 0.14

Daily diffuse radiation: kWh/m².

D mean est. +++++ 0.59 0.99 1.59 2.26 2.72 2.82 2.81 2.45 1.83 1.15 0.70 0.49 1.71
 D/G mean +++++ 0.65 0.59 0.58 0.54 0.53 0.51 0.50 0.52 0.50 0.54 0.62 0.67 0.54

Daily sunshine duration: hours.

S 1.7 3.0 4.0 5.8 6.5 7.3 7.9 6.8 5.9 4.0 2.2 1.7 4.7
 So 8.7 10.1 11.7 13.5 15.0 15.8 15.4 14.1 12.4 10.7 9.1 8.3 12.1
 S/So 0.19 0.29 0.34 0.43 0.44 0.46 0.52 0.48 0.47 0.37 0.25 0.21 0.37
 Somax 9.1 10.6 12.5 14.1 15.4 15.8 15.7 14.6 13.0 11.3 9.6 8.4

Angstrom coefficients:Reference site: Nancy

Angstrom a 0.19 0.20 0.21 0.22 0.22 0.21 0.22 0.23 0.23 0.19 0.19 0.18 0.21
 Angstrom b 0.62 0.58 0.58 0.56 0.58 0.57 0.55 0.53 0.54 0.58 0.59 0.56 0.57

FRANCE Map site No.182 Computer file FRANCHOR.182 AUXERRE
 Latitude 47 48' N Longitude 3 33' E Height a.s.l. 212 metres
 Horizontal planes: - monthly means. Data used & period: S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++++ 0.87 1.67 2.61 4.08 4.81 5.61 5.80 4.56 3.49 2.13 1.10 0.77 3.13
 Gmax +++++ 2.05 3.41 5.11 6.79 7.77 8.10 8.20 6.92 5.50 3.75 2.31 1.66 5.14
 Gmin +++++ 0.25 0.40 0.73 1.35 1.31 1.52 1.95 1.46 0.90 0.60 0.27 0.22 0.92
 Go 2.95 4.49 6.72 9.06 10.82 11.60 11.19 9.70 7.55 5.23 3.36 2.52 7.11

Ratios to extraterrestrial radiation

G/Go +++++ 0.29 0.37 0.39 0.45 0.44 0.48 0.52 0.47 0.46 0.41 0.33 0.31 0.41
 Ktmax +++++ 0.60 0.65 0.66 0.68 0.68 0.70 0.71 0.67 0.65 0.61 0.59 0.63 0.66
 Ktmin +++++ 0.08 0.09 0.11 0.15 0.12 0.13 0.17 0.15 0.12 0.12 0.08 0.09 0.13

Daily diffuse radiation: kWh/m².

D mean est. +++++ 0.58 1.00 1.55 2.25 2.72 2.87 2.82 2.46 1.83 1.21 0.70 0.50 1.72
 D/G mean +++++ 0.67 0.60 0.59 0.55 0.57 0.51 0.49 0.54 0.52 0.57 0.63 0.65 0.55

Daily sunshine duration: hours.

S 1.6 3.2 4.0 5.6 6.1 7.5 8.2 6.8 5.8 4.0 2.3 1.7 4.7
 So 8.7 10.1 11.7 13.5 15.0 15.7 15.4 14.1 12.4 10.7 9.1 8.3 12.1
 S/So 0.19 0.31 0.34 0.42 0.41 0.48 0.54 0.48 0.46 0.38 0.25 0.20 0.37
 Somax 9.1 10.6 12.5 14.1 15.4 15.8 15.7 14.6 13.0 11.3 9.6 8.4

Angstrom coefficients:Reference site: Trappes

Angstrom a 0.18 0.20 0.20 0.22 0.22 0.23 0.24 0.23 0.22 0.21 0.19 0.19 0.21
 Angstrom b 0.60 0.55 0.56 0.55 0.55 0.53 0.52 0.50 0.52 0.52 0.55 0.58 0.54

FRANCE Map site No.183 Computer file FRANCHOR.183 TOURS
 Latitude 47 27' N Longitude 0 43' E Height a.s.l. 112 metres
 Horizontal planes: - monthly means. Data used & period: S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++++ 0.94 1.72 2.87 4.22 5.05 5.76 5.93 4.76 3.61 2.20 1.13 0.77 3.25
 Gmax +++++ 2.09 3.45 5.14 6.81 7.77 8.10 8.20 6.93 5.52 3.78 2.34 1.69 5.17
 Gmin +++++ 0.25 0.41 0.73 1.35 1.31 1.52 1.95 1.46 0.90 0.61 0.27 0.22 0.92
 Go 3.01 4.55 6.77 9.09 10.84 11.60 11.19 9.73 7.60 5.29 3.42 2.57 7.15

Ratios to extraterrestrial radiation

G/Go +++++ 0.31 0.38 0.42 0.46 0.47 0.50 0.53 0.49 0.48 0.42 0.33 0.30 0.42
 Ktmax +++++ 0.60 0.65 0.66 0.68 0.68 0.70 0.71 0.66 0.65 0.61 0.59 0.63 0.66
 Ktmin +++++ 0.08 0.09 0.11 0.15 0.12 0.13 0.17 0.15 0.12 0.12 0.08 0.09 0.13

Daily diffuse radiation: kWh/m².

D mean est. +++++ 0.60 1.02 1.61 2.25 2.74 2.85 2.81 2.46 1.84 1.23 0.72 0.51 1.73
 D/G mean +++++ 0.63 0.59 0.56 0.53 0.54 0.49 0.47 0.52 0.51 0.56 0.63 0.66 0.53

Daily sunshine duration: hours.

S 1.9 3.3 4.7 6.0 6.7 7.9 8.5 7.3 6.1 4.2 2.3 1.6 5.0
 So 8.8 10.1 11.7 13.5 14.9 15.7 15.3 14.0 12.4 10.7 9.2 8.3 12.1
 S/So 0.22 0.32 0.40 0.44 0.45 0.50 0.56 0.52 0.49 0.40 0.26 0.19 0.40
 Somax 9.2 10.6 12.5 14.1 15.4 15.7 15.6 14.6 13.0 11.3 9.6 8.4

Angstrom coefficients:Reference site: Trappes

Angstrom a 0.18 0.20 0.20 0.22 0.22 0.23 0.24 0.23 0.22 0.21 0.19 0.19 0.21
 Angstrom b 0.60 0.55 0.56 0.55 0.55 0.53 0.52 0.50 0.52 0.52 0.55 0.58 0.54

FRANCE		Map site No.184		Computer file FRANCHOR.184								DIJON		
Latitude	47 16' N			Longitude	5 5' E							Height a.s.l.	227 metres	
Horizontal planes: - monthly means.		Data used & period: S (1966 -1975)												
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	0.92	1.72	2.82	4.23	4.98	5.64	5.82	4.74	3.72	2.15	1.06	0.73	3.22
Gmax	++++	2.14	3.51	5.38	7.01	8.41	8.61	8.44	7.50	5.87	4.05	2.41	1.67	5.42
Gmin	++++	0.22	0.42	0.73	1.09	1.51	2.00	2.49	1.69	1.36	0.50	0.22	0.18	1.03
Go		3.04	4.58	6.80	9.11	10.84	11.60	11.20	9.74	7.62	5.32	3.45	2.60	7.17
Ratios to extraterrestrial radiation														
G/Go	++++	0.30	0.38	0.41	0.46	0.46	0.49	0.52	0.49	0.49	0.40	0.31	0.28	0.42
Ktmax	++++	0.61	0.66	0.69	0.70	0.74	0.74	0.73	0.72	0.69	0.65	0.60	0.61	0.68
Ktmin	++++	0.07	0.09	0.11	0.12	0.14	0.17	0.22	0.17	0.18	0.09	0.07	0.07	0.14
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.60	1.03	1.61	2.19	2.67	2.81	2.74	2.38	1.77	1.19	0.68	0.48	1.69
D/G mean	++++	0.65	0.60	0.57	0.52	0.54	0.50	0.47	0.50	0.48	0.55	0.64	0.66	0.52
Daily sunshine duration: hours.														
S		1.7	3.3	4.4	6.4	6.7	7.7	8.6	7.1	6.4	3.8	2.1	1.6	5.0
So		8.8	10.1	11.7	13.4	14.9	15.7	15.3	14.0	12.4	10.7	9.2	8.4	12.1
S/So		0.20	0.33	0.38	0.47	0.45	0.49	0.56	0.50	0.52	0.36	0.23	0.19	0.39
Somax		9.2	10.6	12.5	14.1	15.3	15.7	15.6	14.6	13.0	11.3	9.6	8.5	
Angstrom coefficients:Reference site: Macon														
Angstrom a		0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.21	0.20	0.20	0.17	0.17	0.20
Angstrom b		0.62	0.56	0.57	0.58	0.58	0.56	0.55	0.55	0.56	0.57	0.59	0.60	0.57

FRANCE		Map site No.185		Computer file FRANCHOR.185								BESANCON		
Latitude	47 15' N			Longitude	5 59' E							Height a.s.l.	309 metres	
Horizontal planes: - monthly means.		Data used & period: S (1966 -1975)												
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	1.00	1.68	2.67	4.11	4.84	5.60	5.84	4.78	3.74	2.31	1.12	0.82	3.22
Gmax	++++	2.14	3.52	5.38	7.01	8.41	8.61	8.44	7.50	5.87	4.05	2.42	1.67	5.42
Gmin	++++	0.22	0.42	0.65	1.09	1.51	2.00	2.49	1.69	1.36	0.51	0.22	0.18	1.03
Go		3.05	4.59	6.80	9.11	10.84	11.60	11.20	9.74	7.62	5.32	3.46	2.61	7.17
Ratios to extraterrestrial radiation														
G/Go	++++	0.33	0.37	0.39	0.45	0.45	0.48	0.52	0.49	0.49	0.43	0.33	0.31	0.42
Ktmax	++++	0.61	0.66	0.69	0.70	0.74	0.74	0.73	0.72	0.69	0.65	0.60	0.61	0.68
Ktmin	++++	0.07	0.09	0.11	0.12	0.14	0.17	0.22	0.17	0.18	0.09	0.07	0.07	0.14
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.60	1.01	1.57	2.20	2.67	2.81	2.71	2.37	1.76	1.19	0.69	0.50	1.68
D/G mean	++++	0.60	0.60	0.59	0.54	0.55	0.50	0.46	0.50	0.47	0.51	0.61	0.61	0.52
Daily sunshine duration: hours.														
S		2.1	3.2	4.0	6.0	6.3	7.6	8.7	7.2	6.5	4.4	2.4	2.0	5.0
So		8.8	10.1	11.7	13.4	14.9	15.7	15.3	14.0	12.4	10.7	9.2	8.4	12.1
S/So		0.24	0.32	0.34	0.45	0.43	0.49	0.57	0.51	0.52	0.41	0.26	0.24	0.40
Somax		9.2	10.6	12.5	14.1	15.3	15.7	15.6	14.6	13.0	11.3	9.6	8.5	
Angstrom coefficients:Reference site: Macon														
Angstrom a		0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.21	0.20	0.20	0.17	0.17	0.20
Angstrom b		0.62	0.56	0.57	0.58	0.58	0.56	0.55	0.55	0.56	0.57	0.59	0.60	0.57

FRANCE		Map site No.186		Computer file FRANCHOR.186								NANTES		
Latitude	47 10' N			Longitude	1 36' W							Height a.s.l.	27 metres	
Horizontal planes: - monthly means.		Data used & period: S (1966 -1975)												
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	0.98	1.85	3.04	4.34	5.16	5.92	6.13	4.90	3.61	2.35	1.26	0.87	3.37
Gmax	++++	2.12	3.47	5.16	6.82	7.78	8.10	8.20	6.94	5.54	3.80	2.37	1.72	5.18
Gmin	++++	0.26	0.41	0.74	1.36	1.31	1.52	1.95	1.46	0.91	0.61	0.28	0.23	0.93
Go		3.06	4.60	6.81	9.12	10.85	11.60	11.20	9.75	7.63	5.33	3.47	2.62	7.18
Ratios to extraterrestrial radiation														
G/Go	++++	0.32	0.40	0.45	0.48	0.48	0.51	0.55	0.50	0.47	0.44	0.36	0.33	0.44
Ktmax	++++	0.60	0.65	0.66	0.68	0.68	0.70	0.71	0.66	0.65	0.61	0.59	0.63	0.66
Ktmin	++++	0.08	0.09	0.11	0.15	0.12	0.13	0.17	0.15	0.12	0.12	0.08	0.09	0.13
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.60	1.06	1.63	2.28	2.76	2.82	2.76	2.47	1.86	1.25	0.74	0.53	1.74
D/G mean	++++	0.61	0.57	0.54	0.53	0.53	0.48	0.45	0.50	0.52	0.53	0.59	0.61	0.52
Daily sunshine duration: hours.														
S		2.1	3.7	5.2	6.2	6.9	8.3	9.0	7.6	6.0	4.7	2.9	2.0	5.4
So		8.8	10.1	11.7	13.4	14.9	15.6	15.3	14.0	12.4	10.7	9.2	8.4	12.1
S/So		0.24	0.37	0.44	0.47	0.46	0.53	0.59	0.54	0.49	0.44	0.31	0.24	0.43
Somax		9.2	10.6	12.4	14.1	15.3	15.7	15.6	14.6	13.0	11.3	9.6	8.5	
Angstrom coefficients:Reference site: Trappes														
Angstrom a		0.18	0.20	0.20	0.22	0.22	0.23	0.24	0.23	0.22	0.21	0.19	0.19	0.21
Angstrom b		0.60	0.55	0.56	0.55	0.55	0.53	0.52	0.50	0.52	0.52	0.55	0.58	0.54

FRANCE		Map site No.187			Computer file FRANCHOR.187							BOURGES		
Latitude	47 4' N				Longitude	2 22' E					Height a.s.l.	166 metres		
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	+++	0.94	1.70	2.80	4.23	4.98	5.72	5.91	4.71	3.63	2.22	1.16	0.83	3.24
Gmax	+++	2.12	3.48	5.17	6.83	7.78	8.10	8.20	6.94	5.55	3.81	2.38	1.74	5.19
Gmin	+++	0.26	0.41	0.74	1.36	1.31	1.52	1.95	1.46	0.91	0.61	0.28	0.23	0.93
Go		3.08	4.62	6.83	9.13	10.85	11.60	11.20	9.75	7.64	5.35	3.49	2.64	7.19

Ratios to extraterrestrial radiation

G/Go	++++	0.31	0.37	0.41	0.46	0.46	0.49	0.53	0.48	0.47	0.41	0.33	0.31	0.42
Ktmax	++++	0.60	0.65	0.66	0.68	0.68	0.70	0.71	0.66	0.65	0.61	0.59	0.63	0.66
Ktmin	++++	0.08	0.09	0.11	0.15	0.12	0.13	0.17	0.15	0.12	0.12	0.08	0.09	0.13

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.59	1.03	1.61	2.25	2.73	2.84	2.81	2.47	1.84	1.24	0.72	0.53	1.73
D/G mean	++++	0.63	0.61	0.57	0.53	0.55	0.50	0.48	0.52	0.51	0.56	0.62	0.63	0.53

Daily sunshine duration: hours.

S		1.9	3.1	4.4	6.0	6.5	7.8	8.4	7.1	6.1	4.2	2.4	1.8	5.0
So		8.8	10.1	11.7	13.4	14.9	15.6	15.3	14.0	12.4	10.7	9.2	8.4	12.1
S/So		0.21	0.31	0.37	0.44	0.44	0.50	0.55	0.51	0.49	0.39	0.26	0.21	0.39
Somax		9.2	10.6	12.4	14.1	15.3	15.7	15.6	14.5	13.0	11.3	9.7	8.5	

Angstrom coefficients:Reference site: Trappes

Angstrom a		0.18	0.20	0.20	0.22	0.22	0.23	0.24	0.23	0.22	0.21	0.19	0.19	0.21
Angstrom b		0.60	0.55	0.56	0.55	0.55	0.53	0.52	0.50	0.52	0.52	0.55	0.58	0.54

FRANCE		Map site No.188			Computer file FRANCHOR.188								NEVERS		
Latitude	47 0' N				Longitude	3 6' E	Height a.s.l.								181 metres
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)										
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m ² .															
G mean	++++	0.95	1.69	2.82	4.12	4.90	5.70	5.84	4.78	3.68	2.28	1.12	0.82	3.23	
Gmax	++++	2.16	3.54	5.40	7.03	8.41	8.61	8.44	7.51	5.88	4.07	2.44	1.70	5.44	
Gmin	++++	0.22	0.43	0.74	1.10	1.51	2.00	2.49	1.70	1.37	0.51	0.23	0.18	1.04	
Go		3.09	4.63	6.84	9.13	10.85	11.60	11.20	9.76	7.65	5.36	3.50	2.65	7.20	

Ratios to extraterrestrial radiation

G/Go	++++	0.31	0.36	0.41	0.45	0.45	0.49	0.52	0.49	0.48	0.43	0.32	0.31	0.42
Ktmax	++++	0.61	0.66	0.69	0.70	0.74	0.74	0.73	0.72	0.69	0.65	0.60	0.61	0.68
Ktmin	++++	0.07	0.09	0.11	0.12	0.14	0.17	0.22	0.17	0.18	0.09	0.07	0.07	0.14

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.61	1.02	1.61	2.22	2.67	2.79	2.72	2.40	1.80	1.19	0.70	0.50	1.69
D/G mean	++++	0.64	0.60	0.57	0.54	0.55	0.49	0.47	0.50	0.49	0.52	0.62	0.62	0.52

Daily sunshine duration: hours.

S		1.8	3.2	4.4	6.0	6.5	7.9	8.7	7.1	6.2	4.3	2.3	2.0	5.0
So		8.8	10.1	11.7	13.4	14.9	15.6	15.3	14.0	12.4	10.7	9.2	8.4	12.1
S/So		0.21	0.31	0.37	0.45	0.43	0.50	0.57	0.51	0.50	0.40	0.25	0.23	0.40
Somax		9.2	10.6	12.4	14.1	15.3	15.6	15.5	14.5	13.0	11.3	9.7	8.5	

Angstrom coefficients:Reference site: Macon

Angstrom a		0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.21	0.20	0.20	0.17	0.17	0.20
Angstrom b		0.62	0.56	0.57	0.58	0.58	0.56	0.55	0.55	0.56	0.57	0.59	0.60	0.57

FRANCE		Map site No.189			Computer file FRANCHOR.189								POITIERS	
Latitude	46 35' N				Longitude	0 19' E			Height a.s.l.			120 metres		
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	+++	1.11	1.93	3.31	4.50	5.37	6.25	6.31	5.09	3.85	2.56	1.26	0.89	3.55
Gmax	+++	2.28	3.75	5.57	7.31	8.32	8.77	8.49	7.39	5.94	4.26	2.79	2.02	5.58
Gmin	+++	0.25	0.39	0.81	1.17	1.50	1.81	1.93	1.50	1.09	0.65	0.28	0.20	0.97
Go		3.16	4.70	6.89	9.17	10.87	11.61	11.21	9.79	7.70	5.42	3.57	2.72	7.25

Ratios to extraterrestrial radiation

G/Go	++++	0.35	0.41	0.48	0.49	0.49	0.54	0.56	0.52	0.50	0.47	0.35	0.33	0.46
Ktmax	++++	0.63	0.69	0.70	0.73	0.73	0.75	0.74	0.71	0.69	0.68	0.68	0.71	0.71
Ktmin	++++	0.08	0.08	0.12	0.13	0.14	0.16	0.17	0.15	0.14	0.12	0.08	0.08	0.13

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.66	1.03	1.59	2.21	2.71	2.79	2.62	2.35	1.80	1.25	0.75	0.55	1.70
D/G mean	++++	0.59	0.54	0.48	0.49	0.51	0.45	0.41	0.46	0.47	0.49	0.60	0.62	0.48

Daily sunshine duration: hours.

S		2.1	3.7	5.0	6.3	6.9	8.3	9.2	7.8	6.2	4.8	2.6	2.0	5.4
So		8.9	10.1	11.7	13.4	14.8	15.6	15.2	14.0	12.4	10.7	9.3	8.4	12.1
S/So		0.24	0.36	0.43	0.47	0.47	0.53	0.60	0.55	0.50	0.45	0.28	0.23	0.43
Somax		9.3	10.7	12.4	14.0	15.3	15.6	15.5	14.5	13.0	11.3	9.7	8.5	

Angstrom coefficients:Reference site: Limoges

Angstrom a		0.20	0.19	0.21	0.21	0.22	0.24	0.22	0.21	0.21	0.22	0.19	0.19	0.21
Angstrom b		0.63	0.61	0.63	0.60	0.59	0.56	0.57	0.56	0.58	0.56	0.58	0.59	0.59

FRANCE	Map site No.190			Computer file FRANCHOR.190										MACON
Latitude	46 18' N			Longitude	4 48' E									217 metres
Horizontal planes:	- monthly means.			Data used & period: G & S (1966 -1975)										
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	1.03	1.79	3.01	4.43	5.27	5.96	6.27	5.04	3.94	2.30	1.17	0.77	3.42	
Gmax	2.24	3.62	5.46	7.06	8.42	8.62	8.44	7.54	5.94	4.14	2.51	1.77	5.49	
Gmin	0.23	0.44	0.75	1.11	1.51	2.00	2.49	1.70	1.38	0.52	0.24	0.19	1.05	
Go	3.21	4.74	6.93	9.20	10.88	11.61	11.22	9.80	7.73	5.47	3.62	2.77	7.28	
Ratios to extraterrestrial radiation														
G/Go	0.32	0.38	0.43	0.48	0.48	0.51	0.56	0.51	0.51	0.42	0.32	0.28	0.43	
Ktmax	0.61	0.66	0.69	0.70	0.74	0.74	0.73	0.72	0.69	0.65	0.60	0.61	0.68	
Ktmin	0.07	0.09	0.11	0.12	0.14	0.17	0.22	0.17	0.18	0.09	0.07	0.07	0.14	
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.63	1.06	1.66	2.24	2.69	2.78	2.62	2.36	1.81	1.22	0.73	0.52	1.70
D/G mean	++++	0.62	0.59	0.55	0.51	0.51	0.47	0.42	0.47	0.46	0.53	0.62	0.67	0.50
Daily sunshine duration: hours.														
S	2.0	3.4	4.8	6.6	7.2	8.3	9.6	7.7	6.7	4.2	2.3	1.5	5.4	
So	8.9	10.2	11.8	13.4	14.8	15.5	15.2	14.0	12.4	10.8	9.3	8.5	12.1	
S/So	0.22	0.33	0.41	0.49	0.49	0.54	0.63	0.55	0.54	0.39	0.25	0.18	0.42	
Somax	9.3	10.7	12.4	14.0	15.2	15.6	15.4	14.5	13.0	11.3	9.7	8.6		
Angstrom coefficients: Radiation observing site														
Angstrom a	0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.21	0.20	0.20	0.17	0.17	0.20	
Angstrom b	0.62	0.56	0.57	0.58	0.58	0.56	0.55	0.55	0.56	0.57	0.59	0.60	0.57	

FRANCE	Map site No.191			Computer file FRANCHOR.191										VICHY
Latitude	46 10' N			Longitude	3 24' E									251 metres
Horizontal planes:	- monthly means.			Data used & period: S (1966 -1975)										
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	++++	1.08	1.71	2.77	4.04	4.90	5.61	5.87	4.81	3.74	2.36	1.23	0.82	3.25
Gmax	++++	2.26	3.63	5.47	7.07	8.42	8.62	8.44	7.54	5.94	4.15	2.53	1.78	5.49
Gmin	++++	0.23	0.44	0.75	1.10	1.51	2.00	2.49	1.71	1.39	0.52	0.24	0.19	1.05
Go		3.23	4.77	6.95	9.21	10.88	11.61	11.22	9.81	7.75	5.49	3.64	2.79	7.29
Ratios to extraterrestrial radiation														
G/Go	++++	0.33	0.36	0.40	0.44	0.45	0.48	0.52	0.49	0.48	0.43	0.34	0.29	0.42
Ktmax	++++	0.61	0.66	0.69	0.70	0.74	0.74	0.73	0.72	0.69	0.65	0.60	0.61	0.68
Ktmin	++++	0.07	0.09	0.11	0.12	0.14	0.17	0.22	0.17	0.18	0.09	0.07	0.07	0.14
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.64	1.04	1.62	2.20	2.68	2.80	2.74	2.40	1.82	1.23	0.74	0.52	1.71
D/G mean	++++	0.60	0.61	0.58	0.54	0.55	0.50	0.47	0.50	0.49	0.52	0.60	0.64	0.53
Daily sunshine duration: hours.														
S	2.2	3.1	4.1	5.8	6.4	7.6	8.6	7.1	6.2	4.3	2.6	1.8	5.0	
So	8.9	10.2	11.8	13.4	14.8	15.5	15.2	14.0	12.4	10.8	9.3	8.5	12.1	
S/So	0.25	0.30	0.35	0.43	0.43	0.49	0.57	0.51	0.50	0.40	0.28	0.21	0.39	
Somax	9.3	10.7	12.4	14.0	15.2	15.5	15.4	14.5	13.0	11.3	9.7	8.6		
Angstrom coefficients: Reference site: Macon														
Angstrom a	0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.21	0.20	0.20	0.17	0.17	0.20	
Angstrom b	0.62	0.56	0.57	0.58	0.58	0.56	0.55	0.55	0.56	0.57	0.59	0.60	0.57	

FRANCE	Map site No.192			Computer file FRANCHOR.192										LA ROCHELLE
Latitude	46 9' N			Longitude	1 9' W									10 metres
Horizontal planes:	- monthly means.			Data used & period: S (1966 -1975)										
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	++++	1.21	2.10	3.64	4.83	5.81	6.58	6.72	5.55	4.10	2.83	1.46	1.02	3.83
Gmax	++++	2.33	3.80	5.61	7.33	8.33	8.77	8.49	7.41	5.97	4.31	2.84	2.07	5.61
Gmin	++++	0.26	0.40	0.82	1.18	1.50	1.81	1.93	1.50	1.10	0.65	0.29	0.21	0.98
Go		3.23	4.77	6.95	9.21	10.88	11.61	11.22	9.81	7.75	5.49	3.64	2.79	7.29
Ratios to extraterrestrial radiation														
G/Go	++++	0.38	0.44	0.52	0.52	0.53	0.57	0.60	0.57	0.53	0.52	0.40	0.36	0.50
Ktmax	++++	0.63	0.69	0.70	0.73	0.73	0.75	0.74	0.71	0.69	0.68	0.68	0.71	0.71
Ktmin	++++	0.08	0.08	0.12	0.13	0.14	0.16	0.17	0.15	0.14	0.12	0.08	0.08	0.13
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.67	1.06	1.57	2.19	2.64	2.70	2.49	2.24	1.77	1.22	0.78	0.58	1.67
D/G mean	++++	0.55	0.50	0.43	0.45	0.45	0.41	0.37	0.40	0.43	0.43	0.54	0.56	0.44
Daily sunshine duration: hours.														
S	2.5	4.2	5.8	7.0	7.9	9.0	10.1	8.9	6.8	5.7	3.4	2.5	6.2	
So	8.9	10.2	11.8	13.4	14.8	15.5	15.2	14.0	12.4	10.8	9.3	8.5	12.1	
S/So	0.28	0.41	0.50	0.52	0.53	0.58	0.66	0.63	0.55	0.53	0.36	0.29	0.49	
Somax	9.3	10.7	12.4	14.0	15.2	15.5	15.4	14.5	13.0	11.3	9.7	8.6		
Angstrom coefficients: Reference site: Limoges														
Angstrom a	0.20	0.19	0.21	0.21	0.21	0.22	0.24	0.22	0.21	0.21	0.22	0.19	0.19	0.21
Angstrom b	0.63	0.61	0.63	0.60	0.59	0.56	0.57	0.56	0.58	0.56	0.58	0.59	0.59	

FRANCE	Map site No.193				Computer file FRANCHOR.193								AMBERIEU			
Latitude	45 59' N				Longitude	5 20' E							Height a.s.l.	257 metres		
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean			
Daily global radiation: kWh/m ² .																
G mean	++++	1.01	1.68	2.78	4.08	5.01	5.62	6.05	4.85	3.65	2.30	1.14	0.75	3.25		
Gmax	++++	2.27	3.65	5.48	7.08	8.42	8.62	8.44	7.54	5.96	4.17	2.55	1.80	5.51		
Gmin	++++	0.23	0.44	0.75	1.11	1.51	2.00	2.49	1.71	1.39	0.52	0.24	0.19	1.05		
Go		3.26	4.80	6.98	9.22	10.89	11.61	11.23	9.83	7.77	5.52	3.67	2.82	7.31		

Ratios to extraterrestrial radiation

G/Go	++++	0.31	0.35	0.40	0.44	0.46	0.48	0.54	0.49	0.47	0.42	0.31	0.27	0.41		
Ktmax	++++	0.61	0.66	0.68	0.70	0.74	0.74	0.73	0.72	0.69	0.65	0.60	0.61	0.68		
Ktmin	++++	0.07	0.09	0.11	0.12	0.14	0.17	0.22	0.17	0.18	0.09	0.07	0.07	0.14		

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.63	1.04	1.62	2.22	2.69	2.80	2.70	2.39	1.82	1.23	0.72	0.51	1.71		
D/G mean	++++	0.63	0.62	0.58	0.54	0.54	0.50	0.45	0.49	0.50	0.53	0.63	0.69	0.53		

Daily sunshine duration: hours.

S		1.9	2.9	4.1	5.8	6.6	7.6	9.0	7.2	6.0	4.1	2.2	1.4	4.9		
So		8.9	10.2	11.8	13.4	14.8	15.5	15.1	13.9	12.4	10.8	9.3	8.5	12.1		
S/So		0.21	0.29	0.35	0.44	0.45	0.49	0.60	0.52	0.48	0.38	0.24	0.16	0.38		
Somax		9.3	10.7	12.4	14.0	15.2	15.5	15.4	14.4	12.9	11.3	9.7	8.6			

Angstrom coefficients:Reference site: Macon

Angstrom a		0.18	0.19	0.20	0.19	0.20	0.19	0.21	0.21	0.20	0.20	0.17	0.17	0.20		
Angstrom b		0.62	0.56	0.57	0.58	0.58	0.56	0.55	0.55	0.56	0.57	0.59	0.60	0.57		

FRANCE	Map site No.194				Computer file FRANCHOR.194								LIMOGES			
Latitude	45 52' N				Longitude	1 11' E							Height a.s.l.	402 metres		
Horizontal planes: - monthly means.					Data used & period: G & S (1966 -1975)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean			
Daily global radiation: kWh/m ² .																
G mean		1.19	1.94	3.07	4.39	5.19	5.90	5.96	4.86	3.86	2.60	1.39	1.01	3.45		
Gmax		2.37	3.83	5.64	7.34	8.33	8.77	8.49	7.41	5.99	4.34	2.87	2.11	5.63		
Gmin		0.26	0.41	0.83	1.18	1.50	1.81	1.94	1.51	1.10	0.66	0.29	0.21	0.98		
Go		3.28	4.82	6.99	9.23	10.89	11.61	11.23	9.83	7.79	5.53	3.69	2.84	7.32		

Ratios to extraterrestrial radiation

G/Go		0.36	0.40	0.44	0.48	0.48	0.51	0.53	0.49	0.50	0.47	0.38	0.36	0.45		
Ktmax		0.63	0.69	0.70	0.73	0.73	0.75	0.73	0.71	0.69	0.68	0.68	0.71	0.71		
Ktmin		0.08	0.08	0.12	0.13	0.14	0.16	0.17	0.15	0.14	0.12	0.08	0.08	0.13		

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.66	1.06	1.58	2.23	2.74	2.80	2.64	2.39	1.78	1.24	0.80	0.57	1.72		
D/G mean	++++	0.55	0.55	0.51	0.51	0.53	0.48	0.44	0.49	0.46	0.48	0.57	0.56	0.50		

Daily sunshine duration: hours.

S		2.5	3.5	4.4	5.9	6.3	7.6	8.5	7.1	6.2	4.9	2.9	2.5	5.2		
So		8.9	10.2	11.8	13.4	14.8	15.5	15.1	13.9	12.4	10.8	9.3	8.5	12.1		
S/So		0.28	0.34	0.37	0.44	0.43	0.49	0.56	0.51	0.50	0.45	0.31	0.29	0.42		
Somax		9.3	10.7	12.4	14.0	15.2	15.5	15.4	14.4	12.9	11.4	9.8	8.6			

Angstrom coefficients:Radiation observing site

Angstrom a		0.20	0.19	0.21	0.21	0.22	0.24	0.22	0.21	0.21	0.22	0.19	0.19	0.21		
Angstrom b		0.63	0.61	0.63	0.60	0.59	0.56	0.57	0.56	0.58	0.56	0.58	0.59	0.59		

FRANCE	Map site No.195				Computer file FRANCHOR.195								CLERMONT FERRAND			
Latitude	45 48' N				Longitude	3 10' E							Height a.s.l.	332 metres		
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean			
Daily global radiation: kWh/m ² .																
G mean	++++	1.19	1.86	2.90	4.09	4.94	5.57	5.96	4.80	3.85	2.53	1.36	0.92	3.34		
Gmax	++++	2.29	3.67	5.50	7.08	8.42	8.62	8.44	7.55	5.97	4.19	2.56	1.82	5.52		
Gmin	++++	0.23	0.44	0.76	1.11	1.51	2.00	2.49	1.71	1.39	0.53	0.24	0.19	1.06		
Go		3.29	4.83	7.00	9.24	10.90	11.61	11.23	9.84	7.79	5.54	3.70	2.85	7.33		

Ratios to extraterrestrial radiation

G/Go	++++	0.36	0.39	0.41	0.44	0.45	0.48	0.53	0.49	0.49	0.46	0.37	0.32	0.43		
Ktmax	++++	0.61	0.66	0.69	0.70	0.74	0.74	0.73	0.72	0.69	0.65	0.60	0.61	0.68		
Ktmin	++++	0.07	0.09	0.11	0.12	0.14	0.17	0.22	0.17	0.18	0.09	0.07	0.07	0.14		

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.66	1.08	1.65	2.22	2.69	2.82	2.70	2.41	1.80	1.24	0.76	0.55	1.72		
D/G mean	++++	0.56	0.58	0.57	0.54	0.54	0.51	0.45	0.50	0.47	0.49	0.56	0.59	0.51		

Daily sunshine duration: hours.

S		2.6	3.6	4.4	5.8	6.4	7.4	8.8	7.0	6.5	4.8	3.1	2.2	5.2		
So		8.9	10.2	11.8	13.4	14.7	15.5	15.1	13.9	12.4	10.8	9.3	8.5	12.1		
S/So		0.29	0.35	0.38	0.44	0.44	0.48	0.58	0.51	0.53	0.45	0.33	0.25	0.42		
Somax		9.3	10.7	12.4	14.0	15.2	15.5	15.4	14.4	12.9	11.4	9.8	8.6			

Angstrom coefficients:Reference site: Macon

Angstrom a		0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.21	0.20	0.20	0.17	0.17	0.20		
Angstrom b		0.62	0.56	0.57	0.58	0.58	0.56	0.55	0.55	0.56	0.57	0.59	0.60	0.57		

FRANCE		Map site No.196				Computer file FRANCHOR.196								LYON	
Latitude 45 43' N						Longitude 4 57' E				Height a.s.l.				201 metres	
Horizontal planes: - monthly means.															
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.															
G mean	++++	1.08	1.78	3.00	4.32	5.24	5.90	6.27	5.10	3.98	2.45	1.24	0.81	3.44	
Gmax	++++	2.30	3.68	5.51	7.09	8.43	8.62	8.44	7.56	5.97	4.19	2.58	1.83	5.53	
Gmin	++++	0.23	0.45	0.76	1.11	1.51	2.00	2.49	1.71	1.40	0.53	0.24	0.19	1.06	
Go		3.31	4.84	7.01	9.25	10.90	11.62	11.23	9.84	7.80	5.56	3.72	2.87	7.34	
Ratios to extraterrestrial radiation															
G/Go	++++	0.33	0.37	0.43	0.47	0.48	0.51	0.56	0.52	0.51	0.44	0.33	0.28	0.44	
Ktmax	++++	0.61	0.66	0.69	0.70	0.74	0.74	0.73	0.72	0.69	0.65	0.60	0.61	0.68	
Ktmin	++++	0.07	0.09	0.11	0.12	0.14	0.17	0.22	0.17	0.18	0.09	0.07	0.07	0.14	
Daily diffuse radiation: kWh/m^2.															
D mean est.	++++	0.65	1.06	1.67	2.23	2.70	2.77	2.61	2.36	1.78	1.24	0.74	0.54	1.70	
D/G mean	++++	0.61	0.60	0.56	0.52	0.51	0.47	0.42	0.46	0.45	0.50	0.60	0.66	0.49	
Daily sunshine duration: hours.															
S		2.1	3.3	4.7	6.4	7.1	8.2	9.6	7.8	6.9	4.6	2.6	1.6	5.4	
So		9.0	10.2	11.8	13.4	14.7	15.5	15.1	13.9	12.4	10.8	9.3	8.6	12.1	
S/So		0.24	0.32	0.40	0.48	0.48	0.53	0.63	0.56	0.55	0.42	0.28	0.19	0.42	
Somax		9.3	10.7	12.4	14.0	15.2	15.5	15.4	14.4	12.9	11.4	9.8	8.6		
Angstrom coefficients:Reference site: Macon															
Angstrom a		0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.21	0.20	0.20	0.17	0.17	0.20	
Angstrom b		0.62	0.56	0.57	0.58	0.58	0.56	0.55	0.55	0.56	0.57	0.59	0.60	0.57	

FRANCE		Map site No.197				Computer file FRANCHOR.197								LE PUY	
Latitude 45 3' N						Longitude 3 54' E		Height a.s.l. 715 metres							
Horizontal planes: - monthly means.															
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	1.35	1.98	3.08	4.41	5.25	5.92	6.48	5.22	4.09	2.68	1.46	1.07	3.59	
Gmax	++++	2.82	4.33	5.89	7.55	8.56	8.86	8.92	8.01	6.55	4.80	3.24	2.35	5.99	
Gmin	++++	0.18	0.43	0.72	0.88	1.21	1.92	2.35	1.80	1.13	0.58	0.24	0.24	0.97	
Go		3.42	4.95	7.10	9.30	10.92	11.62	11.25	9.89	7.88	5.66	3.83	2.98	7.41	
Ratios to extraterrestrial radiation															
G/Go	++++	0.39	0.40	0.43	0.47	0.48	0.51	0.58	0.53	0.52	0.47	0.38	0.36	0.46	
Ktmax	++++	0.72	0.76	0.73	0.75	0.75	0.76	0.77	0.76	0.75	0.74	0.74	0.76	0.75	
Ktmin	++++	0.05	0.09	0.10	0.10	0.11	0.16	0.21	0.18	0.14	0.10	0.06	0.08	0.13	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.71	1.06	1.59	2.15	2.53	2.74	2.55	2.34	1.73	1.22	0.79	0.62	1.68	
D/G mean	++++	0.53	0.54	0.52	0.49	0.48	0.46	0.39	0.45	0.42	0.46	0.54	0.58	0.47	
Daily sunshine duration: hours.															
S		2.7	3.2	4.2	5.7	6.6	7.4	8.9	7.1	6.3	4.8	2.9	2.2	5.2	
So		9.0	10.2	11.8	13.3	14.7	15.4	15.0	13.9	12.4	10.8	9.4	8.6	12.1	
S/So		0.30	0.31	0.36	0.43	0.45	0.48	0.59	0.51	0.51	0.45	0.31	0.25	0.41	
Somax		9.4	10.7	12.4	13.9	15.1	15.4	15.3	14.4	12.9	11.4	9.8	8.7		
Angstrom coefficients:Reference site: Millau															
Angstrom a		0.20	0.20	0.20	0.20	0.19	0.22	0.24	0.23	0.21	0.20	0.19	0.21	0.21	
Angstrom b		0.64	0.64	0.65	0.64	0.65	0.60	0.57	0.58	0.61	0.61	0.62	0.60	0.62	

FRANCE		Map site No.198				Computer file FRANCHOR.198								BORDEAUX	
Latitude 44 50' N						Longitude 0 41' W		Height a.s.l.		51 metres					
Horizontal planes: - monthly means.						Data used & period: S		(1966 -1975)							
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.															
G mean	++++	1.34	2.11	3.53	4.68	5.47	6.15	6.42	5.13	4.06	2.87	1.48	1.01	3.70	
Gmax	++++	2.47	3.95	5.72	7.39	8.34	8.77	8.50	7.45	6.06	4.43	2.99	2.24	5.70	
Gmin	++++	0.28	0.42	0.84	1.19	1.51	1.81	1.93	1.51	1.12	0.68	0.31	0.23	1.00	
Go		3.46	4.99	7.13	9.32	10.93	11.62	11.25	9.90	7.91	5.69	3.86	3.02	7.44	
Ratios to extraterrestrial radiation															
G/Go	++++	0.39	0.42	0.50	0.50	0.50	0.53	0.57	0.52	0.51	0.50	0.38	0.33	0.47	
Ktmax	++++	0.63	0.69	0.70	0.73	0.73	0.75	0.74	0.71	0.69	0.68	0.68	0.71	0.71	
Ktmin	++++	0.08	0.08	0.12	0.13	0.14	0.16	0.17	0.15	0.14	0.12	0.08	0.08	0.13	
Daily diffuse radiation: kWh/m^2.															
D mean est.	++++	0.72	1.11	1.64	2.24	2.72	2.84	2.62	2.41	1.82	1.28	0.83	0.61	1.74	
D/G mean	++++	0.54	0.52	0.46	0.48	0.50	0.46	0.41	0.47	0.45	0.44	0.56	0.61	0.47	
Daily sunshine duration: hours.															
S		2.7	3.9	5.3	6.5	7.0	7.9	9.2	7.6	6.5	5.5	3.1	2.1	5.6	
So		9.1	10.3	11.8	13.3	14.7	15.3	15.0	13.9	12.4	10.8	9.4	8.7	12.1	
S/So		0.30	0.38	0.45	0.49	0.47	0.52	0.62	0.55	0.52	0.51	0.33	0.25	0.45	
Somax		9.4	10.7	12.4	13.9	15.1	15.4	15.3	14.3	12.9	11.4	9.8	8.8		
Angstrom coefficients:Reference site: Limoges															
Angstrom a		0.20	0.19	0.21	0.21	0.22	0.24	0.22	0.21	0.21	0.22	0.19	0.19	0.21	
Angstrom b		0.63	0.61	0.63	0.60	0.59	0.56	0.57	0.56	0.58	0.56	0.58	0.59	0.59	

FRANCE Map site No.199 Computer file FRANCHOR.199 MONTEILIMAR
 Latitude 44 35' N Longitude 4 44' E Height a.s.l. 74 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 1.40 2.20 3.58 5.20 6.10 6.98 7.34 5.92 4.53 2.98 1.68 1.22 4.10
 Gmax ++++ 2.69 4.05 5.82 7.44 8.55 8.88 8.77 7.78 6.36 4.68 3.01 2.11 5.85
 Gmin ++++ 0.28 0.61 0.59 1.22 1.42 1.86 4.22 2.05 0.94 0.50 0.45 0.26 1.19
 Go 3.50 5.03 7.17 9.34 10.94 11.62 11.25 9.92 7.94 5.73 3.91 3.06 7.46

Ratios to extraterrestrial radiation

G/Go ++++ 0.40 0.44 0.50 0.56 0.56 0.60 0.65 0.60 0.57 0.52 0.43 0.40 0.52
 Ktmax ++++ 0.68 0.70 0.71 0.73 0.75 0.76 0.76 0.74 0.73 0.71 0.67 0.66 0.72
 Ktmin ++++ 0.08 0.12 0.08 0.13 0.13 0.16 0.37 0.21 0.12 0.09 0.11 0.08 0.16

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.76 1.14 1.64 2.09 2.55 2.45 2.31 2.14 1.66 1.25 0.89 0.65 1.63
 D/G mean ++++ 0.54 0.52 0.46 0.40 0.42 0.35 0.31 0.36 0.37 0.42 0.53 0.53 0.40

Daily sunshine duration: hours.

S 3.7 4.7 6.2 7.8 8.7 10.0 11.4 9.6 8.0 6.3 4.3 3.5 7.0
 So 9.1 10.3 11.8 13.3 14.6 15.3 15.0 13.8 12.4 10.8 9.4 8.7 12.0
 S/So 0.41 0.46 0.52 0.59 0.59 0.66 0.76 0.69 0.65 0.58 0.45 0.41 0.56
 Somax 9.4 10.8 12.4 13.9 15.0 15.3 15.2 14.3 12.9 11.4 9.9 8.8

Angstrom coefficients:Reference site: Carpentras

Angstrom a 0.19 0.18 0.19 0.21 0.22 0.24 0.28 0.23 0.21 0.21 0.21 0.20 0.21
 Angstrom b 0.51 0.56 0.59 0.59 0.57 0.55 0.49 0.53 0.56 0.53 0.49 0.49 0.54

FRANCE Map site No.200 Computer file FRANCHOR.200 EMBRUN
 Latitude 44 34' N Longitude 6 30' E Height a.s.l. 876 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 1.58 2.36 3.68 5.00 5.45 6.40 6.77 5.48 4.39 3.19 1.78 1.46 3.97
 Gmax ++++ 2.69 4.05 5.82 7.44 8.55 8.88 8.77 7.78 6.36 4.68 3.02 2.11 5.85
 Gmin ++++ 0.28 0.61 0.60 1.22 1.42 1.86 4.22 2.05 0.94 0.50 0.45 0.26 1.19
 Go 3.50 5.03 7.17 9.35 10.94 11.62 11.25 9.92 7.94 5.73 3.91 3.06 7.46

Ratios to extraterrestrial radiation

G/Go ++++ 0.45 0.47 0.51 0.54 0.50 0.55 0.60 0.55 0.55 0.56 0.46 0.48 0.52
 Ktmax ++++ 0.68 0.70 0.71 0.73 0.75 0.76 0.76 0.74 0.73 0.71 0.68 0.66 0.72
 Ktmin ++++ 0.08 0.12 0.08 0.13 0.13 0.16 0.37 0.21 0.12 0.09 0.11 0.08 0.16

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.73 1.09 1.55 2.08 2.64 2.62 2.50 2.23 1.64 1.12 0.86 0.59 1.64
 D/G mean ++++ 0.46 0.46 0.42 0.42 0.48 0.41 0.37 0.41 0.37 0.35 0.48 0.40 0.41

Daily sunshine duration: hours.

S 4.6 5.3 6.5 7.3 7.1 8.6 9.8 8.4 7.6 7.1 4.7 4.9 6.9
 So 9.1 10.3 11.8 13.3 14.6 15.3 15.0 13.8 12.4 10.8 9.4 8.7 12.0
 S/So 0.51 0.52 0.55 0.55 0.49 0.56 0.66 0.61 0.61 0.65 0.50 0.56 0.57
 Somax 9.4 10.8 12.4 13.9 15.0 15.3 15.2 14.3 12.9 11.4 9.9 8.8

Angstrom coefficients:Reference site: Carpentras

Angstrom a 0.19 0.18 0.19 0.21 0.22 0.24 0.28 0.23 0.21 0.21 0.21 0.20 0.21
 Angstrom b 0.51 0.56 0.59 0.59 0.57 0.55 0.49 0.53 0.56 0.53 0.49 0.49 0.54

FRANCE Map site No.201 Computer file FRANCHOR.201 CAZAUX
 Latitude 44 32' N Longitude 1 8' W Height a.s.l. 33 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 1.38 2.16 3.68 4.70 5.73 6.21 6.48 5.22 4.15 2.92 1.50 1.05 3.77
 Gmax ++++ 2.50 3.98 5.74 7.40 8.34 8.77 8.50 7.46 6.08 4.46 3.02 2.27 5.73
 Gmin ++++ 0.28 0.42 0.85 1.20 1.51 1.81 1.94 1.52 1.13 0.68 0.31 0.23 1.00
 Go 3.51 5.03 7.17 9.35 10.94 11.62 11.25 9.92 7.94 5.74 3.92 3.07 7.47

Ratios to extraterrestrial radiation

G/Go ++++ 0.39 0.43 0.51 0.50 0.52 0.53 0.58 0.53 0.52 0.51 0.38 0.34 0.48
 Ktmax ++++ 0.63 0.69 0.70 0.73 0.73 0.75 0.74 0.71 0.69 0.68 0.68 0.71 0.71
 Ktmin ++++ 0.08 0.08 0.12 0.13 0.14 0.16 0.17 0.15 0.14 0.12 0.08 0.08 0.13

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.73 1.12 1.61 2.25 2.70 2.84 2.58 2.39 1.81 1.28 0.83 0.63 1.74
 D/G mean ++++ 0.53 0.52 0.44 0.48 0.47 0.46 0.40 0.46 0.44 0.44 0.56 0.60 0.46

Daily sunshine duration: hours.

S 2.8 4.0 5.7 6.5 7.5 8.0 9.4 7.8 6.7 5.6 3.2 2.2 5.8
 So 9.1 10.3 11.8 13.3 14.6 15.3 15.0 13.8 12.4 10.8 9.5 8.7 12.1
 S/So 0.30 0.39 0.48 0.49 0.51 0.53 0.62 0.57 0.54 0.51 0.33 0.26 0.46
 Somax 9.4 10.8 12.4 13.9 15.0 15.3 15.2 14.3 12.9 11.4 9.9 8.8

Angstrom coefficients:Reference site: Limoges

Angstrom a 0.20 0.19 0.21 0.21 0.22 0.24 0.22 0.21 0.21 0.22 0.19 0.19 0.21
 Angstrom b 0.63 0.61 0.63 0.60 0.59 0.56 0.57 0.56 0.58 0.56 0.58 0.59 0.59

FRANCE Map site No.202 Computer file FRANCHOR.202 AGEN
 Latitude 44 11' N Longitude 0 36' E Height a.s.l. 60 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 1.31 2.07 3.57 4.59 5.54 6.18 6.50 5.11 4.11 2.76 1.45 0.96 3.69
 Gmax +++ 2.54 4.01 5.77 7.42 8.35 8.78 8.50 7.46 6.11 4.50 3.06 2.31 5.75
 Gmin +++ 0.29 0.43 0.85 1.20 1.51 1.81 1.94 1.52 1.13 0.69 0.31 0.23 1.01
 Go 3.57 5.09 7.22 9.38 10.95 11.62 11.26 9.94 7.98 5.79 3.97 3.13 7.50

Ratios to extraterrestrial radiation

G/Go +++ 0.37 0.41 0.49 0.49 0.51 0.53 0.58 0.51 0.51 0.48 0.37 0.31 0.46
 Ktmax +++ 0.63 0.69 0.70 0.73 0.73 0.75 0.74 0.71 0.70 0.68 0.68 0.71 0.71
 Ktmin +++ 0.08 0.08 0.12 0.13 0.14 0.16 0.17 0.15 0.14 0.12 0.08 0.08 0.13

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.74 1.13 1.66 2.27 2.72 2.81 2.57 2.42 1.84 1.32 0.84 0.62 1.75
 D/G mean +++ 0.57 0.55 0.46 0.49 0.49 0.46 0.40 0.47 0.45 0.48 0.58 0.65 0.47

Daily sunshine duration: hours.

S 2.4 3.6 5.3 6.2 7.1 8.0 9.4 7.5 6.5 5.0 2.9 1.7 5.5
 So 9.1 10.3 11.8 13.3 14.6 15.3 14.9 13.8 12.4 10.8 9.5 8.8 12.1
 S/So 0.26 0.35 0.45 0.47 0.48 0.52 0.63 0.54 0.53 0.46 0.30 0.20 0.43
 Somax 9.5 10.8 12.4 13.9 15.0 15.3 15.2 14.3 12.9 11.4 9.9 8.8

Angstrom coefficients:Reference site: Limoges

Angstrom a 0.20 0.19 0.21 0.21 0.22 0.24 0.22 0.21 0.21 0.22 0.19 0.19 0.21
 Angstrom b 0.63 0.61 0.63 0.60 0.59 0.56 0.57 0.56 0.58 0.56 0.58 0.59 0.59

FRANCE Map site No.203 Computer file FRANCHOR.203 MILLAU
 Latitude 44 7' N Longitude 3 1' E Height a.s.l. 720 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 1.44 2.28 3.53 4.60 5.46 6.48 7.09 5.73 4.37 3.03 1.67 1.27 3.92
 Gmax 2.93 4.44 5.97 7.60 8.57 8.87 8.93 8.04 6.62 4.90 3.35 2.47 6.06
 Gmin 0.19 0.44 0.74 0.89 1.21 1.92 2.36 1.81 1.14 0.59 0.25 0.25 0.99
 Go 3.58 5.10 7.23 9.38 10.95 11.62 11.26 9.95 7.99 5.80 3.99 3.14 7.51

Ratios to extraterrestrial radiation

G/Go 0.40 0.44 0.49 0.49 0.50 0.56 0.63 0.58 0.55 0.52 0.42 0.40 0.50
 Ktmax 0.72 0.76 0.73 0.75 0.75 0.76 0.77 0.76 0.75 0.74 0.74 0.76 0.75
 Ktmin 0.05 0.09 0.10 0.10 0.11 0.16 0.21 0.18 0.14 0.10 0.06 0.08 0.13

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.74 1.09 1.62 2.16 2.56 2.63 2.23 2.16 1.79 1.23 0.84 0.64 1.65
 D/G mean +++ 0.51 0.48 0.46 0.47 0.47 0.41 0.32 0.38 0.41 0.41 0.50 0.50 0.42

Daily sunshine duration: hours.

S 2.9 4.0 5.1 6.0 6.8 8.4 10.3 8.3 6.5 5.5 3.4 2.9 5.9
 So 9.1 10.3 11.8 13.3 14.6 15.3 14.9 13.8 12.4 10.8 9.5 8.8 12.1
 S/So 0.32 0.39 0.43 0.45 0.47 0.55 0.69 0.60 0.52 0.51 0.36 0.33 0.47
 Somax 9.5 10.8 12.4 13.8 15.0 15.3 15.2 14.3 12.9 11.4 9.9 8.8

Angstrom coefficients:Radiation observing site

Angstrom a 0.20 0.20 0.20 0.20 0.19 0.22 0.24 0.23 0.21 0.20 0.19 0.21 0.21
 Angstrom b 0.64 0.64 0.65 0.64 0.65 0.60 0.57 0.58 0.61 0.61 0.62 0.60 0.62

FRANCE Map site No.204 Computer file FRANCHOR.204 CARPENTRAS
 Latitude 44 5' N Longitude 5 3' E Height a.s.l. 105 metres
 Horizontal planes: - monthly means. Data used & period: G & S (2/68 -12/75)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 1.59 2.54 3.75 5.30 6.29 7.05 7.52 6.23 4.59 3.21 1.88 1.46 4.29
 Gmax 2.74 4.11 5.86 7.46 8.55 8.89 8.78 7.80 6.39 4.72 3.07 2.17 5.89
 Gmin 0.29 0.63 0.60 1.10 1.42 1.86 4.22 2.06 0.95 0.51 0.46 0.26 1.20
 Go 3.59 5.11 7.23 9.39 10.95 11.62 11.26 9.95 7.99 5.81 3.99 3.14 7.52

Ratios to extraterrestrial radiation

G/Go 0.44 0.49 0.52 0.56 0.57 0.61 0.67 0.63 0.57 0.55 0.47 0.46 0.55
 Ktmax 0.67 0.70 0.71 0.73 0.75 0.76 0.76 0.74 0.73 0.71 0.68 0.66 0.72
 Ktmin 0.08 0.12 0.08 0.13 0.13 0.16 0.37 0.21 0.12 0.09 0.11 0.08 0.16

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.77 1.14 1.64 2.03 2.54 2.39 2.16 2.03 1.68 1.18 0.90 0.63 1.60
 D/G mean +++ 0.49 0.45 0.44 0.38 0.40 0.34 0.29 0.33 0.37 0.37 0.48 0.43 0.37

Daily sunshine duration: hours.

S 4.5 5.8 6.5 8.1 8.9 10.2 12.0 10.3 8.0 7.1 5.0 4.7 7.6
 So 9.1 10.3 11.8 13.3 14.6 15.2 14.9 13.8 12.4 10.9 9.5 8.8 12.1
 S/So 0.49 0.56 0.55 0.61 0.61 0.67 0.81 0.75 0.65 0.65 0.53 0.53 0.62
 Somax 9.5 10.8 12.4 13.8 15.0 15.3 15.2 14.3 12.9 11.4 9.9 8.8

Angstrom coefficients:Radiation observing site

Angstrom a 0.19 0.18 0.19 0.21 0.22 0.24 0.28 0.23 0.21 0.21 0.21 0.20 0.21
 Angstrom b 0.51 0.56 0.59 0.59 0.57 0.55 0.49 0.53 0.56 0.53 0.49 0.49 0.54

FRANCE	Map site No.205				Computer file FRANCHOR.205					MONT DE MARSAN				
Latitude 43 55' N					Longitude 0 30' W					Height a.s.l. 63 metres				
Horizontal planes: - monthly means.					Data used & period: 8 (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	+++	1.40	2.13	3.49	4.32	5.28	5.79	6.03	4.88	4.01	2.82	1.51	1.02	3.57
Gmax	+++	2.57	4.05	5.79	7.43	8.35	8.78	8.50	7.47	6.12	4.52	3.10	2.34	5.77
Gmin	+++	0.29	0.43	0.86	1.20	1.51	1.81	1.94	1.52	1.14	0.69	0.32	0.24	1.01
Go		3.62	5.14	7.26	9.40	10.96	11.62	11.27	9.96	8.01	5.83	4.02	3.17	7.53

Ratios to extraterrestrial radiation

G/Go	++++	0.39	0.41	0.48	0.46	0.48	0.50	0.53	0.49	0.50	0.48	0.37	0.32	0.45
Ktmax	++++	0.63	0.69	0.70	0.73	0.73	0.75	0.73	0.71	0.69	0.68	0.68	0.71	0.71
Ktmin	++++	0.08	0.08	0.12	0.13	0.14	0.16	0.17	0.15	0.14	0.12	0.08	0.08	0.13

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.76	1.13	1.66	2.29	2.75	2.92	2.76	2.46	1.87	1.33	0.86	0.64	1.79
D/G mean	++++	0.54	0.53	0.48	0.53	0.52	0.50	0.46	0.50	0.47	0.47	0.57	0.63	0.50

Daily sunshine duration: hours.

S		2.7	3.8	5.1	5.5	6.5	7.0	8.2	6.9	6.2	5.1	3.0	1.9	5.2
So		9.2	10.3	11.8	13.3	14.6	15.2	14.9	13.8	12.4	10.9	9.5	8.8	12.1
S/So		0.30	0.37	0.43	0.42	0.44	0.46	0.55	0.50	0.50	0.47	0.32	0.22	0.42
Somax		9.5	10.8	12.4	13.8	14.9	15.2	15.2	14.3	12.9	11.4	9.9	8.9	

Angstrom coefficients:Reference site: Limoges

Angstrom a		0.20	0.19	0.21	0.21	0.22	0.24	0.22	0.21	0.21	0.22	0.19	0.19	0.21
Angstrom b		0.63	0.61	0.63	0.60	0.59	0.56	0.57	0.56	0.58	0.56	0.58	0.59	0.59

FRANCE	Map site No.206				Computer file FRANCHOR.206								NIMES		
Latitude 43 52' N					Longitude 4 24' E				Height a.s.l.				62 metres		
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)										
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m ² .															
G mean	+++	1.58	2.40	3.74	5.25	6.08	7.09	7.49	6.06	4.43	3.07	1.83	1.43	4.21	
Gmax	+++	2.77	4.13	5.87	7.47	8.56	8.89	8.78	7.80	6.41	4.75	3.10	2.19	5.90	
Gmin	+++	0.29	0.63	0.60	1.23	1.42	1.86	4.22	2.06	0.95	0.51	0.46	0.27	1.21	
Go		3.62	5.14	7.26	9.40	10.96	11.62	11.27	9.96	8.02	5.84	4.03	3.18	7.54	

Ratios to extraterrestrial radiation

G/Go	++++	0.44	0.47	0.51	0.56	0.56	0.61	0.66	0.61	0.55	0.52	0.45	0.45	0.53
Ktmax	++++	0.68	0.70	0.71	0.73	0.75	0.76	0.76	0.74	0.73	0.71	0.68	0.66	0.72
Ktmin	++++	0.08	0.12	0.08	0.13	0.13	0.16	0.37	0.21	0.12	0.09	0.11	0.08	0.16

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.78	1.15	1.64	2.11	2.56	2.40	2.24	2.09	1.73	1.25	0.92	0.65	1.63
D/G mean	++++	0.50	0.48	0.44	0.40	0.42	0.34	0.30	0.35	0.39	0.41	0.50	0.45	0.39

Daily sunshine duration: hours.

S		4.4	5.3	6.5	7.8	8.6	10.2	11.7	9.9	7.6	6.5	4.7	4.5	7.3
So		9.2	10.3	11.8	13.3	14.6	15.2	14.9	13.8	12.4	10.9	9.5	8.8	12.1
S/So		0.48	0.51	0.55	0.59	0.59	0.67	0.79	0.71	0.61	0.59	0.50	0.51	0.59
Somax		9.5	10.8	12.4	13.8	14.9	15.2	15.1	14.3	12.9	11.4	9.9	8.9	

Angstrom coefficients:Reference site: Carpentras

Angstrom a		0.19	0.18	0.19	0.21	0.22	0.24	0.28	0.23	0.21	0.21	0.21	0.20	0.21
Angstrom b		0.51	0.56	0.59	0.59	0.57	0.55	0.49	0.53	0.56	0.53	0.49	0.49	0.54

FRANCE	Map site No.207				Computer file FRANCHOR.207								NICE
Latitude 43 39' N					Longitude 7 12' E				Height a.s.l.				10 metres
Horizontal planes: - monthly means.					Data used & period: G & S (1966 -1975)								
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean	1.72	2.46	3.91	5.36	6.10	6.79	7.13	5.92	4.59	3.27	1.99	1.65	4.25
Gmax	2.89	4.05	5.90	7.39	8.33	8.56	8.36	7.42	6.21	4.72	3.11	2.31	5.78
Gmin	0.22	0.40	0.61	1.27	1.41	2.06	3.81	2.49	1.43	0.80	0.37	0.28	1.27
Go	3.66	5.18	7.29	9.42	10.97	11.63	11.27	9.97	8.04	5.87	4.06	3.22	7.56

Ratios to extraterrestrial radiation

G/Go		0.47	0.47	0.54	0.57	0.56	0.58	0.63	0.59	0.57	0.56	0.49	0.51	0.55
Ktmax		0.70	0.69	0.71	0.73	0.73	0.73	0.72	0.70	0.70	0.70	0.67	0.69	0.71
Ktmin		0.06	0.08	0.08	0.13	0.13	0.18	0.34	0.25	0.18	0.14	0.09	0.09	0.17

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.74	1.14	1.70	2.13	2.62	2.53	2.40	2.25	1.74	1.22	0.86	0.61	1.67
D/G mean	++++	0.43	0.46	0.44	0.40	0.43	0.37	0.34	0.38	0.38	0.37	0.43	0.37	0.39

Daily sunshine duration: hours.

S		4.7	5.3	6.6	8.1	8.5	9.8	11.4	9.7	8.0	7.1	5.2	5.1	7.5
So		9.2	10.3	11.8	13.3	14.5	15.2	14.9	13.8	12.4	10.9	9.5	8.8	12.1
S/So		0.51	0.51	0.56	0.61	0.59	0.64	0.77	0.70	0.65	0.65	0.55	0.58	0.61
Somax		9.5	10.8	12.4	13.8	14.9	15.2	15.1	14.2	12.9	11.4	9.9	8.9	

Angstrom coefficients:Radiation observing site

Angstrom a		0.18	0.18	0.20	0.22	0.21	0.24	0.24	0.22	0.21	0.21	0.19	0.20	0.21
Angstrom b		0.57	0.58	0.58	0.57	0.58	0.54	0.51	0.52	0.55	0.53	0.55	0.53	0.55

FRANCE				Map site No.209				Computer file FRANCHOR.209				MONTPELLIER			
Latitude 43 35' N				Longitude 3 58' E				Height a.s.l.				6 metres			
Horizontal planes: - monthly means.				Data used & period:				S (1966 -1975)							
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.															
G mean	++++	1.65	2.47	3.86	5.31	6.17	7.11	7.51	6.02	4.48	3.14	1.89	1.48	4.27	
Gmax	++++	2.80	4.17	5.90	7.49	8.57	8.89	8.78	7.81	6.43	4.78	3.13	2.22	5.92	
Gmin	++++	0.29	0.63	0.61	1.23	1.43	1.86	4.23	2.07	0.96	0.51	0.47	0.27	1.21	
Go		3.67	5.19	7.30	9.43	10.97	11.63	11.27	9.98	8.05	5.88	4.08	3.23	7.57	
Ratios to extraterrestrial radiation															
G/G ₀	++++	0.45	0.48	0.53	0.56	0.56	0.61	0.67	0.60	0.56	0.53	0.46	0.46	0.54	
Ktmax	++++	0.68	0.71	0.71	0.73	0.75	0.76	0.76	0.74	0.73	0.71	0.68	0.66	0.72	
Ktmin	++++	0.08	0.12	0.08	0.13	0.13	0.16	0.37	0.21	0.12	0.09	0.11	0.08	0.16	
Daily diffuse radiation: kWh/m^2.															
D mean est.	++++	0.78	1.16	1.62	2.10	2.56	2.37	2.25	2.14	1.75	1.26	0.93	0.65	1.64	
D/G mean	++++	0.48	0.47	0.42	0.40	0.42	0.33	0.30	0.36	0.39	0.40	0.49	0.44	0.38	
Daily sunshine duration: hours.															
S		4.7	5.5	6.8	7.9	8.7	10.3	11.7	9.7	7.6	6.6	4.9	4.7	7.4	
So		9.2	10.3	11.8	13.3	14.5	15.2	14.9	13.8	12.4	10.9	9.5	8.8	12.1	
S/So		0.51	0.53	0.57	0.60	0.60	0.68	0.79	0.70	0.62	0.61	0.52	0.53	0.61	
Somax		9.5	10.8	12.4	13.8	14.9	15.2	15.1	14.2	12.9	11.4	9.9	8.9		
Angstrom coefficients:Reference site: Carpentras															
Angstrom a		0.19	0.18	0.19	0.21	0.22	0.24	0.28	0.23	0.21	0.21	0.21	0.20	0.21	
Angstrom b		0.51	0.56	0.59	0.59	0.57	0.55	0.49	0.53	0.56	0.53	0.49	0.49	0.54	

FRANCE				Map site No.210				Computer file FRANCHOR.210				MARGIANNE			
Latitude 43 27' N				Longitude 5 13' E				Height a.s.l.				3 metres			
Horizontal planes: - monthly means.				Data used & period:				S (1966 -1975)							
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.															
G mean	++++	1.67	2.50	3.95	5.47	6.49	7.40	7.69	6.31	4.71	3.33	1.93	1.53	4.43	
Gmax	++++	2.81	4.18	5.91	7.49	8.57	8.89	8.78	7.81	6.44	4.79	3.14	2.24	5.93	
Gmin	++++	0.30	0.64	0.61	1.24	1.43	1.86	4.23	2.07	0.96	0.51	0.47	0.27	1.21	
Go		3.70	5.21	7.32	9.44	10.97	11.63	11.27	9.99	8.07	5.91	4.10	3.25	7.58	
Ratios to extraterrestrial radiation															
G/Go	++++	0.45	0.48	0.54	0.58	0.59	0.64	0.68	0.63	0.58	0.56	0.47	0.47	0.56	
Ktmax	++++	0.67	0.71	0.71	0.73	0.75	0.76	0.76	0.74	0.73	0.71	0.67	0.66	0.72	
Ktmin	++++	0.08	0.12	0.08	0.13	0.13	0.16	0.37	0.21	0.12	0.09	0.11	0.08	0.16	
Daily diffuse radiation: kWh/m^2.															
D mean est.	++++	0.80	1.17	1.61	2.04	2.42	2.25	2.15	2.03	1.64	1.19	0.92	0.65	1.58	
D/G mean	++++	0.48	0.47	0.41	0.37	0.37	0.30	0.28	0.32	0.35	0.36	0.48	0.42	0.36	
Daily sunshine duration: hours.															
S		4.7	5.5	7.0	8.3	9.5	10.9	12.2	10.4	8.3	7.3	5.1	4.9	7.9	
So		9.2	10.3	11.8	13.3	14.5	15.2	14.9	13.8	12.4	10.9	9.5	8.8	12.1	
S/So		0.51	0.54	0.59	0.63	0.65	0.72	0.82	0.76	0.67	0.67	0.53	0.55	0.64	
Somax		9.5	10.8	12.4	13.8	14.9	15.2	15.1	14.2	12.9	11.4	9.9	8.9		
Angstrom coefficients:Reference site: Carpentras															
Angstrom a		0.19	0.18	0.19	0.21	0.22	0.24	0.28	0.23	0.21	0.21	0.21	0.20	0.21	
Angstrom b		0.51	0.56	0.59	0.59	0.57	0.55	0.49	0.53	0.56	0.53	0.49	0.49	0.54	

FRANCE	Map site No.211	Computer file FRANCHOR.211	PAU
Latitude 43 23' N	Longitude 0 25' W	Height a.s.l. 185 metres	
Horizontal planes: - monthly means.	Data used & period: S (1966-1975)		
Month	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean		
Daily global radiation: kWh/m ² .			
G mean	++++ 1.54 2.13 3.31 4.12 5.07 5.50 5.63 4.58 3.90 2.92 1.62 1.09 3.46		
Gmax	++++ 2.63 4.10 5.84 7.45 8.36 8.78 8.50 7.49 6.16 4.58 3.15 2.41 5.80		
Gmin	++++ 0.30 0.44 0.86 1.21 1.51 1.81 1.94 1.53 1.15 0.70 0.32 0.24 1.02		
Go	3.71 5.22 7.33 9.44 10.98 11.63 11.27 9.99 8.07 5.92 4.11 3.26 7.59		

Ratios to extraterrestrial radiation

G/Go	++++ 0.41 0.41 0.45 0.44 0.46 0.47 0.50 0.46 0.48 0.49 0.39 0.33 0.44
Ktmax	++++ 0.63 0.69 0.70 0.73 0.73 0.75 0.73 0.71 0.70 0.68 0.68 0.71 0.71
Ktmin	++++ 0.08 0.08 0.12 0.13 0.14 0.16 0.17 0.15 0.14 0.12 0.08 0.08 0.13

Daily diffuse radiation: kWh/m².

D mean est.	++++ 0.78 1.15 1.70 2.28 2.74 2.94 2.81 2.48 1.90 1.33 0.88 0.65 1.81
D/G mean	++++ 0.51 0.54 0.51 0.55 0.54 0.53 0.50 0.54 0.49 0.46 0.54 0.60 0.52

Daily sunshine duration: hours.

S	3.1 3.7 4.5 5.0 6.0 6.3 7.3 6.1 5.8 5.3 3.4 2.2 4.9
So	9.2 10.3 11.8 13.3 14.5 15.2 14.9 13.8 12.4 10.9 9.6 8.8 12.1
S/So	0.34 0.36 0.38 0.38 0.41 0.42 0.49 0.44 0.47 0.49 0.35 0.24 0.40
Somax	9.5 10.8 12.4 13.8 14.9 15.2 15.1 14.2 12.9 11.4 9.9 8.9

Angstrom coefficients:Reference site: Limoges

Angstrom a	0.20 0.19 0.21 0.21 0.22 0.24 0.22 0.21 0.21 0.22 0.19 0.19 0.21
Angstrom b	0.63 0.61 0.63 0.60 0.59 0.56 0.57 0.56 0.58 0.56 0.58 0.59 0.59

FRANCE	Map site No.212	Computer file FRANCHOR.212	TOULON
Latitude 43 6' N	Longitude 5 56' E	Height a.s.l. 27 metres	
Horizontal planes: - monthly means.	Data used & period: S (1966-1975)		
Month	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean		
Daily global radiation: kWh/m ² .			
G mean	++++ 1.81 2.55 3.98 5.58 6.51 7.35 7.50 6.23 4.75 3.37 2.06 1.67 4.46		
Gmax	++++ 2.95 4.10 5.95 7.42 8.34 8.57 8.37 7.43 6.24 4.77 3.17 2.37 5.82		
Gmin	++++ 0.23 0.41 0.62 1.28 1.42 2.06 3.81 2.49 1.43 0.80 0.37 0.29 1.28		
Go	3.76 5.27 7.36 9.47 10.98 11.63 11.28 10.01 8.10 5.96 4.16 3.31 7.62		

Ratios to extraterrestrial radiation

G/Go	++++ 0.48 0.48 0.54 0.59 0.59 0.63 0.67 0.62 0.59 0.57 0.50 0.50 0.56
Ktmax	++++ 0.70 0.69 0.71 0.73 0.73 0.73 0.72 0.70 0.70 0.70 0.67 0.69 0.71
Ktmin	++++ 0.06 0.08 0.08 0.13 0.13 0.18 0.34 0.25 0.18 0.14 0.09 0.09 0.17

Daily diffuse radiation: kWh/m².

D mean est.	++++ 0.75 1.17 1.66 2.05 2.41 2.28 2.22 2.09 1.66 1.22 0.87 0.62 1.59
D/G mean	++++ 0.42 0.46 0.42 0.37 0.37 0.31 0.30 0.34 0.35 0.36 0.42 0.37 0.36

Daily sunshine duration: hours.

S	4.9 5.4 6.9 8.6 9.6 11.0 12.4 10.6 8.5 7.3 5.3 5.1 8.0
So	9.2 10.4 11.8 13.2 14.5 15.1 14.8 13.8 12.4 10.9 9.6 8.9 12.1
S/So	0.53 0.53 0.59 0.65 0.66 0.73 0.83 0.77 0.68 0.67 0.56 0.57 0.65
Somax	9.6 10.8 12.4 13.8 14.9 15.1 15.1 14.2 12.9 11.4 10.0 9.0

Angstrom coefficients:Reference site: Nice

Angstrom a	0.18 0.18 0.20 0.22 0.21 0.24 0.24 0.22 0.21 0.21 0.19 0.20 0.21
Angstrom b	0.57 0.58 0.58 0.57 0.58 0.54 0.51 0.52 0.55 0.53 0.55 0.53 0.55

FRANCE	Map site No.213	Computer file FRANCHOR.213	PERPIGNAN
Latitude 42 44' N	Longitude 2 52' E	Height a.s.l. 48 metres	
Horizontal planes: - monthly means.	Data used & period: S (1966-1975)		
Month	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean		
Daily global radiation: kWh/m ² .			
G mean	++++ 1.74 2.52 3.87 5.07 5.83 6.71 7.05 5.60 4.28 3.09 1.98 1.55 4.12		
Gmax	++++ 2.90 4.26 5.97 7.52 8.57 8.89 8.78 7.83 6.48 4.86 3.22 2.32 5.98		
Gmin	++++ 0.31 0.65 0.62 1.24 1.43 1.86 4.23 2.08 0.97 0.52 0.49 0.28 1.22		
Go	3.82 5.33 7.41 9.50 10.99 11.63 11.28 10.03 8.15 6.01 4.22 3.37 7.66		

Ratios to extraterrestrial radiation

G/Go	++++ 0.46 0.47 0.52 0.53 0.53 0.58 0.62 0.56 0.53 0.51 0.47 0.46 0.52
Ktmax	++++ 0.68 0.71 0.71 0.73 0.75 0.76 0.76 0.74 0.73 0.71 0.67 0.66 0.72
Ktmin	++++ 0.08 0.12 0.08 0.13 0.13 0.16 0.37 0.21 0.12 0.09 0.11 0.08 0.16

Daily diffuse radiation: kWh/m².

D mean est.	++++ 0.82 1.20 1.67 2.17 2.65 2.59 2.49 2.32 1.82 1.30 0.94 0.68 1.73
D/G mean	++++ 0.47 0.48 0.43 0.43 0.45 0.39 0.35 0.41 0.42 0.42 0.48 0.44 0.42

Daily sunshine duration: hours.

S	4.8 5.4 6.6 7.3 7.9 9.2 10.4 8.5 7.0 6.3 5.1 4.7 6.9
So	9.3 10.4 11.8 13.2 14.5 15.1 14.8 13.7 12.4 10.9 9.6 8.9 12.1
S/So	0.52 0.52 0.56 0.55 0.54 0.61 0.70 0.62 0.56 0.57 0.53 0.53 0.57
Somax	9.6 10.8 12.4 13.8 14.8 15.1 15.0 14.2 12.8 11.4 10.0 9.0

Angstrom coefficients:Reference site: Carpentras

Angstrom a	0.19 0.18 0.19 0.21 0.22 0.24 0.28 0.23 0.21 0.21 0.21 0.20 0.21
Angstrom b	0.51 0.56 0.59 0.59 0.57 0.55 0.49 0.53 0.56 0.53 0.49 0.49 0.54

FRANCE		Map site No.214			Computer file FRANCHOR.214							BASTIA		
Latitude	42 33' N	Longitude			9 29' E			Height a.s.l.			12 metres			
Horizontal planes: - monthly means.					Data used & period:			S	(1966 -1975)					
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	++++	1.76	2.44	3.70	5.14	5.97	7.01	7.22	5.91	4.62	3.39	2.07	1.59	4.25
Gmax	++++	3.02	4.16	5.99	7.44	8.34	8.56	8.37	7.45	6.28	4.82	3.24	2.44	5.85
Gmin	++++	0.23	0.41	0.62	1.28	1.42	2.06	3.81	2.50	1.45	0.82	0.38	0.30	1.29
Go		3.85	5.36	7.44	9.51	11.00	11.63	11.29	10.04	8.17	6.04	4.25	3.41	7.68
Ratios to extraterrestrial radiation														
G/Go	++++	0.46	0.46	0.50	0.54	0.54	0.60	0.64	0.59	0.57	0.56	0.49	0.47	0.53
Ktmax	++++	0.70	0.69	0.71	0.73	0.73	0.73	0.72	0.70	0.70	0.70	0.67	0.69	0.71
Ktmin	++++	0.06	0.08	0.08	0.13	0.13	0.18	0.34	0.25	0.18	0.14	0.09	0.09	0.17
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.79	1.20	1.75	2.24	2.61	2.47	2.34	2.22	1.74	1.25	0.90	0.67	1.69
D/G mean	++++	0.45	0.49	0.47	0.44	0.44	0.35	0.32	0.38	0.38	0.37	0.43	0.42	0.40
Daily sunshine duration: hours.														
S		4.5	4.9	6.0	7.4	8.3	10.1	11.6	9.7	8.0	7.2	5.2	4.5	7.3
So		9.3	10.4	11.8	13.2	14.4	15.1	14.8	13.7	12.3	10.9	9.6	8.9	12.0
S/So		0.49	0.48	0.51	0.56	0.57	0.67	0.78	0.71	0.65	0.66	0.54	0.50	0.59
Somax		9.6	10.8	12.4	13.7	14.8	15.1	15.0	14.2	12.8	11.4	10.0	9.0	
Angstrom coefficients:Reference site: Nice														
Angstrom a		0.18	0.18	0.20	0.22	0.21	0.24	0.24	0.22	0.21	0.21	0.19	0.20	0.21
Angstrom b		0.57	0.58	0.58	0.57	0.58	0.54	0.51	0.52	0.55	0.53	0.55	0.53	0.55

FRANCE		Map site No.215			Computer file FRANCHOR.215							AJACCIO		
Latitude	41 55' N				Longitude	8 48' E			Height a.s.l.			9 metres		
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.														
G mean	++++	1.74	2.50	3.74	5.28	6.39	7.29	7.42	6.35	4.98	3.48	2.05	1.58	4.41
Gmax	++++	3.09	4.23	6.04	7.46	8.35	8.56	8.37	7.46	6.32	4.89	3.31	2.51	5.90
Gmin	++++	0.24	0.42	0.63	1.29	1.42	2.06	3.82	2.51	1.46	0.83	0.39	0.31	1.30
Go		3.96	5.46	7.52	9.56	11.02	11.63	11.29	10.08	8.24	6.14	4.36	3.52	7.74
Ratios to extraterrestrial radiation														
G/Go	++++	0.44	0.46	0.50	0.55	0.58	0.63	0.66	0.63	0.60	0.57	0.47	0.45	0.55
Ktmax	++++	0.70	0.69	0.71	0.72	0.73	0.73	0.72	0.70	0.70	0.70	0.67	0.69	0.71
Ktmin	++++	0.06	0.08	0.08	0.13	0.13	0.18	0.34	0.25	0.18	0.14	0.09	0.09	0.17
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.81	1.21	1.74	2.20	2.47	2.33	2.27	2.05	1.62	1.24	0.94	0.70	1.64
D/G mean	++++	0.47	0.49	0.47	0.42	0.39	0.32	0.31	0.32	0.33	0.35	0.46	0.44	0.37
Daily sunshine duration: hours.														
S		4.3	5.0	6.1	7.7	9.2	10.7	12.0	10.8	8.9	7.4	4.9	4.3	7.6
So		9.4	10.4	11.8	13.2	14.4	15.0	14.7	13.7	12.3	10.9	9.7	9.0	12.0
S/So		0.46	0.48	0.51	0.58	0.64	0.72	0.82	0.79	0.72	0.67	0.51	0.47	0.61
Somax		9.7	10.9	12.4	13.7	14.7	15.0	14.9	14.1	12.8	11.4	10.0	9.1	
Angstrom coefficients:Reference site: Nice														
Angstrom a		0.18	0.18	0.20	0.22	0.21	0.24	0.24	0.22	0.21	0.21	0.19	0.20	0.21
Angstrom b		0.57	0.58	0.58	0.57	0.58	0.54	0.51	0.52	0.55	0.53	0.55	0.53	0.55

GERMANY		Map site No.81			Computer file GERMAHOR.081								LIST/SYLT	
Latitude	55 1' N				Longitude	8 25' E			Height a.s.l.			31 metres		
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.														
G mean	++++	0.51	1.19	2.54	4.11	5.36	6.24	5.63	4.82	2.94	1.56	0.66	0.41	3.01
Gmax	++++	1.26	2.70	4.78	6.79	8.26	8.76	8.31	6.92	5.13	3.32	1.55	0.84	4.89
Gmin	++++	0.11	0.31	0.53	0.94	1.35	1.59	1.55	1.44	0.91	0.41	0.12	0.08	0.78
Go		1.76	3.28	5.65	8.33	10.49	11.49	10.97	9.13	6.61	4.06	2.16	1.36	6.29
Ratios to extraterrestrial radiation														
G/Go	++++	0.29	0.36	0.45	0.49	0.51	0.54	0.51	0.53	0.45	0.38	0.30	0.30	0.43
Ktmax	++++	0.57	0.67	0.70	0.72	0.74	0.76	0.73	0.69	0.67	0.66	0.57	0.57	0.68
Ktmin	++++	0.06	0.10	0.09	0.11	0.13	0.14	0.14	0.16	0.14	0.10	0.05	0.06	0.12
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.36	0.76	1.36	2.06	2.65	2.74	2.75	2.31	1.63	0.95	0.46	0.28	1.53
D/G mean	++++	0.71	0.64	0.54	0.50	0.50	0.44	0.49	0.48	0.56	0.61	0.69	0.69	0.51
Daily sunshine duration: hours.														
S		1.2	2.4	4.2	6.0	7.7	9.0	8.0	8.0	4.9	3.1	1.6	1.4	4.8
So		7.6	9.5	11.7	13.9	15.9	17.0	16.5	14.7	12.5	10.3	8.2	7.0	12.1
S/So		0.15	0.25	0.36	0.43	0.48	0.53	0.49	0.54	0.39	0.30	0.19	0.19	0.36
Somax		8.2	10.2	12.6	14.8	16.6	17.1	16.9	15.5	13.3	11.1	8.9	7.2	
Angstrom coefficients:Reference site: Nordeney														
Angstrom a		0.19	0.22	0.23	0.24	0.23	0.24	0.23	0.24	0.23	0.22	0.19	0.19	0.22
Angstrom b		0.66	0.57	0.60	0.59	0.58	0.57	0.58	0.53	0.55	0.55	0.59	0.57	0.58

GERMANY		Map site No.82		Computer file GERMAHOR.082								SCHLESWIG	
Latitude 54 32' N				Longitude 9 33' E		Height a.s.l.						43 metres	
Horizontal planes: - monthly means.				Data used & period: S		(1966 -1975)							
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean	+++	0.47	1.11	2.26	3.73	4.90	5.79	5.02	4.50	2.81	1.47	0.63	2.77
Gmax	+++	1.19	2.96	4.35	6.50	7.95	8.37	7.65	6.80	5.09	3.24	1.72	4.75
Gmin	+++	0.09	0.21	0.46	1.05	1.66	1.75	1.49	1.30	0.79	0.29	0.09	0.77
Go		1.84	3.36	5.73	8.38	10.51	11.50	10.99	9.17	6.68	4.14	2.24	6.35
Ratios to extraterrestrial radiation													
G/Go	+++	0.26	0.33	0.40	0.45	0.47	0.50	0.46	0.49	0.42	0.36	0.28	0.39
Ktmax	+++	0.52	0.72	0.63	0.69	0.71	0.72	0.67	0.68	0.66	0.64	0.62	0.67
Ktmin	+++	0.05	0.06	0.08	0.13	0.16	0.15	0.14	0.14	0.12	0.07	0.04	0.12
Daily diffuse radiation: kWh/m ² .													
D mean est.	+++	0.36	0.69	1.29	1.97	2.68	2.79	2.80	2.32	1.58	0.92	0.44	1.52
D/G mean	+++	0.76	0.63	0.57	0.53	0.55	0.48	0.56	0.51	0.56	0.63	0.69	0.55
Daily sunshine duration: hours.													
S		1.1	2.1	3.7	5.6	7.1	8.6	7.4	7.6	4.9	3.0	1.5	4.5
So		7.7	9.5	11.7	13.9	15.8	16.9	16.4	14.7	12.5	10.3	8.3	12.1
S/So		0.14	0.22	0.31	0.41	0.45	0.51	0.45	0.52	0.39	0.29	0.19	0.34
Somax		8.3	10.2	12.6	14.7	16.5	17.0	16.8	15.4	13.3	11.1	8.9	7.3
Angstrom coefficients:Reference site: Jyndevad													
Angstrom a		0.17	0.19	0.20	0.19	0.21	0.22	0.21	0.21	0.20	0.19	0.16	0.19
Angstrom b		0.60	0.65	0.62	0.63	0.57	0.56	0.55	0.54	0.57	0.56	0.64	0.59

GERMANY		Map site No.83		Computer file GERMAHOR.083								ST.PETER-ORDING	
Latitude 54 18' N				Longitude 8 39' E		Height a.s.l.						4 metres	
Horizontal planes: - monthly means.				Data used & period: S		(1966 -1975)							
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean	+++	0.54	1.21	2.49	4.11	5.19	5.97	5.40	4.70	3.03	1.57	0.69	2.95
Gmax	+++	1.32	2.78	4.85	6.84	8.27	8.77	8.32	6.96	5.19	3.40	1.62	4.94
Gmin	+++	0.12	0.33	0.54	0.95	1.36	1.59	1.55	1.45	0.93	0.43	0.12	0.79
Go		1.87	3.40	5.76	8.41	10.52	11.50	11.00	9.19	6.71	4.18	2.28	6.37
Ratios to extraterrestrial radiation													
G/Go	+++	0.29	0.36	0.43	0.49	0.49	0.52	0.49	0.51	0.45	0.38	0.30	0.42
Ktmax	+++	0.57	0.67	0.70	0.73	0.74	0.76	0.73	0.69	0.67	0.67	0.57	0.68
Ktmin	+++	0.06	0.10	0.09	0.11	0.13	0.14	0.14	0.16	0.14	0.10	0.05	0.12
Daily diffuse radiation: kWh/m ² .													
D mean est.	+++	0.39	0.78	1.38	2.10	2.68	2.80	2.77	2.36	1.67	0.97	0.48	1.57
D/G mean	+++	0.72	0.65	0.55	0.51	0.52	0.47	0.51	0.50	0.55	0.62	0.69	0.53
Daily sunshine duration: hours.													
S		1.1	2.3	3.9	5.8	7.2	8.3	7.4	7.5	5.0	2.9	1.6	4.5
So		7.8	9.5	11.7	13.9	15.8	16.8	16.3	14.6	12.5	10.3	8.3	12.1
S/So		0.14	0.24	0.34	0.42	0.45	0.49	0.45	0.51	0.40	0.28	0.19	0.34
Somax		8.3	10.2	12.6	14.7	16.4	16.9	16.7	15.4	13.3	11.1	8.9	7.3
Angstrom coefficients:Reference site: Nordeney													
Angstrom a		0.19	0.22	0.23	0.24	0.23	0.24	0.23	0.24	0.23	0.22	0.19	0.22
Angstrom b		0.66	0.57	0.60	0.59	0.58	0.57	0.58	0.53	0.55	0.55	0.59	0.58

GERMANY		Map site No.84		Computer file GERMAHOR.084								HELGOLAND	
Latitude 54 11' N				Longitude 7 54' E		Height a.s.l.						4 metres	
Horizontal planes: - monthly means.				Data used & period: S		(1966 -1975)							
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean	+++	0.55	1.28	2.59	4.24	5.35	6.14	5.57	4.81	3.04	1.61	0.70	3.03
Gmax	+++	1.33	2.80	4.86	6.84	8.27	8.77	8.32	6.96	5.20	3.42	1.63	4.96
Gmin	+++	0.12	0.33	0.54	0.95	1.36	1.59	1.55	1.45	0.93	0.43	0.12	0.79
Go		1.89	3.42	5.78	8.42	10.53	11.50	11.00	9.20	6.73	4.20	2.30	6.39
Ratios to extraterrestrial radiation													
G/Go	+++	0.29	0.37	0.45	0.50	0.51	0.53	0.51	0.52	0.45	0.38	0.30	0.43
Ktmax	+++	0.57	0.67	0.70	0.72	0.74	0.76	0.73	0.69	0.68	0.67	0.57	0.68
Ktmin	+++	0.06	0.10	0.09	0.11	0.13	0.14	0.14	0.16	0.14	0.10	0.05	0.12
Daily diffuse radiation: kWh/m ² .													
D mean est.	+++	0.39	0.79	1.39	2.08	2.66	2.76	2.76	2.35	1.66	0.98	0.48	1.56
D/G mean	+++	0.71	0.62	0.54	0.49	0.50	0.45	0.50	0.49	0.55	0.61	0.69	0.51
Daily sunshine duration: hours.													
S		1.2	2.6	4.2	6.2	7.6	8.7	7.8	7.8	5.1	3.1	1.6	4.8
So		7.8	9.5	11.7	13.9	15.8	16.8	16.3	14.6	12.5	10.3	8.3	12.1
S/So		0.15	0.27	0.36	0.45	0.48	0.52	0.48	0.53	0.40	0.30	0.19	0.36
Somax		8.4	10.3	12.6	14.7	16.4	16.9	16.7	15.3	13.3	11.1	9.0	7.4
Angstrom coefficients:Reference site: Nordeney													
Angstrom a		0.19	0.22	0.23	0.24	0.23	0.24	0.23	0.24	0.23	0.22	0.19	0.22
Angstrom b		0.66	0.57	0.60	0.59	0.58	0.57	0.58	0.53	0.55	0.55	0.59	0.58

GERMANY				Map site No.157				Computer file GERMAHOR.157				HEILIGENDAMM			
Latitude 54 9' N				Longitude 11 51' E				Height a.s.l. 21 metres							
Horizontal planes: - monthly means.				Data used & period: Gd & S monthly (1966 -1975)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m^2.															
G mean	0.46	1.05	2.28	3.81	5.07	5.86	5.19	4.60	2.95	1.48	0.67	0.39	2.83		
Gmax	1.10	2.37	4.51	6.75	8.03	8.43	7.88	6.64	4.96	3.02	1.62	0.91	4.70		
Gmin	0.11	0.15	0.43	0.67	0.90	1.49	1.67	1.11	0.83	0.32	0.09	0.08	0.66		
Go	1.90	3.42	5.79	8.42	10.53	11.50	11.00	9.21	6.73	4.21	2.30	1.49	6.39		
Ratios to extraterrestrial radiation															
G/Go	0.24	0.30	0.39	0.45	0.48	0.51	0.47	0.50	0.44	0.35	0.29	0.26	0.39		
Ktmax	0.47	0.57	0.65	0.71	0.72	0.73	0.69	0.66	0.64	0.59	0.57	0.57	0.63		
Ktmin	0.06	0.04	0.07	0.08	0.09	0.13	0.15	0.12	0.12	0.08	0.04	0.06	0.10		
Daily diffuse radiation: kWh/m^2.															
D mean est. +++	0.34	0.67	1.29	2.10	2.53	2.63	2.76	2.19	1.57	0.88	0.45	0.29	1.48		
D/G mean +++	0.75	0.64	0.56	0.55	0.50	0.45	0.53	0.48	0.53	0.59	0.67	0.76	0.52		
Daily sunshine duration: hours.															
S	1.2	2.2	4.0	5.3	7.7	9.1	7.8	8.2	5.3	3.1	1.8	1.1	4.8		
So	7.8	9.6	11.7	13.9	15.8	16.8	16.3	14.6	12.5	10.3	8.3	7.2	12.1		
S/So	0.15	0.23	0.34	0.38	0.49	0.54	0.48	0.56	0.42	0.30	0.22	0.15	0.40		
Somax	8.4	10.3	12.6	14.7	16.4	16.9	16.7	15.3	13.3	11.1	9.0	7.4			
Angstrom coefficients:Reference site: Estimated (Observing site : but no daily Sd)															
no daily S available)															
Angstrom a	0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.22	0.20	0.18	0.17	0.16	0.19		
Angstrom b	0.58	0.62	0.61	0.62	0.60	0.58	0.56	0.54	0.58	0.60	0.60	0.58	0.59		

GERMANY		Map site No.85			Computer file GERMAHOR.085									LUEBECK	
Latitude 53 53' N					Longitude 10 42' E			Height a.s.l. 8 metres							
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)										
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m ² .															
G mean	++++	0.51	1.12	2.27	3.69	4.96	5.66	4.98	4.51	2.87	1.50	0.67	0.38	2.77	
Gmax	++++	1.24	2.62	4.41	6.22	7.78	8.13	7.49	6.59	4.85	3.02	1.57	0.94	4.58	
Gmin	+++	0.11	0.24	0.43	0.70	1.22	1.47	1.78	1.36	0.84	0.28	0.11	0.08	0.72	
Go		1.94	3.47	5.83	8.45	10.55	11.51	11.01	9.23	6.77	4.25	2.35	1.53	6.42	
Ratios to extraterrestrial radiation															
G/Go	++++	0.26	0.32	0.39	0.44	0.47	0.49	0.45	0.49	0.42	0.35	0.29	0.25	0.39	
Ktmax	++++	0.52	0.62	0.63	0.66	0.70	0.70	0.66	0.66	0.63	0.58	0.54	0.57	0.65	
Ktmin	+++	0.06	0.07	0.07	0.08	0.12	0.13	0.16	0.15	0.12	0.07	0.05	0.05	0.11	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.39	0.74	1.35	2.03	2.61	2.79	2.83	2.36	1.61	0.91	0.46	0.28	1.54	
D/G mean	++++	0.77	0.66	0.60	0.55	0.53	0.49	0.57	0.52	0.56	0.61	0.69	0.74	0.56	
Daily sunshine duration: hours.															
S		1.2	2.2	3.9	5.9	7.5	8.9	7.7	7.8	5.2	3.1	1.6	1.2	4.7	
So		7.8	9.6	11.7	13.8	15.7	16.8	16.3	14.6	12.5	10.4	8.4	7.3	12.1	
S/So		0.16	0.23	0.33	0.42	0.47	0.53	0.48	0.54	0.42	0.30	0.20	0.16	0.35	
Somax		8.4	10.3	12.6	14.7	16.3	16.8	16.7	15.3	13.3	11.2	9.0	7.4		
Angstrom coefficients:Reference site: Hamburg															
Angstrom a		0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.22	0.20	0.18	0.17	0.16	0.19	
Angstrom b		0.53	0.58	0.57	0.58	0.57	0.53	0.51	0.50	0.54	0.57	0.59	0.56	0.55	

GERMANY		Map site No.86			Computer file GERMAHOR.086								CUXHAVEN	
Latitude 53 52' N					Longitude 8 42' E			Height a.s.l.			5 metres			
Horizontal planes: - monthly means.				Data used & period: S (1966 -1975)										
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m².														
G mean	++++	0.59	1.25	2.52	4.14	5.13	5.96	5.43	4.74	3.07	1.65	0.73	0.45	2.98
Gmax	++++	1.36	2.84	4.89	6.87	8.28	8.78	8.33	6.97	5.22	3.45	1.66	0.94	4.98
Gmin	++++	0.12	0.33	0.55	0.96	1.36	1.59	1.55	1.46	0.93	0.43	0.13	0.09	0.80
Go		1.94	3.47	5.83	8.45	10.55	11.51	11.01	9.23	6.77	4.25	2.35	1.53	6.42
Ratios to extraterrestrial radiation														
G/Go	++++	0.30	0.36	0.43	0.49	0.49	0.52	0.49	0.51	0.45	0.39	0.31	0.30	0.42
Ktmax	++++	0.57	0.67	0.70	0.73	0.74	0.76	0.73	0.69	0.67	0.67	0.57	0.57	0.68
Ktmin	++++	0.06	0.10	0.09	0.11	0.13	0.14	0.14	0.16	0.14	0.10	0.05	0.06	0.12
Daily diffuse radiation: kWh/m².														
D mean est.	++++	0.40	0.80	1.40	2.11	2.68	2.81	2.78	2.38	1.67	0.99	0.50	0.32	1.58
D/G mean	++++	0.67	0.64	0.55	0.51	0.52	0.47	0.51	0.50	0.55	0.60	0.68	0.72	0.53
Daily sunshine duration: hours.														
S		1.4	2.4	3.9	5.8	7.0	8.2	7.4	7.5	5.1	3.2	1.7	1.3	4.6
So		7.8	9.6	11.7	13.8	15.7	16.8	16.3	14.6	12.5	10.4	8.4	7.3	12.1
S/So		0.17	0.25	0.34	0.42	0.44	0.49	0.45	0.52	0.41	0.31	0.20	0.18	0.35
Somax		8.4	10.3	12.6	14.7	16.3	16.8	16.7	15.3	13.3	11.2	9.0	7.4	
Angstrom coefficients:Reference site: Nordeney														
Angstrom a		0.19	0.22	0.23	0.24	0.23	0.24	0.23	0.24	0.23	0.22	0.19	0.19	0.22
Angstrom b		0.66	0.57	0.60	0.59	0.58	0.57	0.58	0.53	0.55	0.55	0.59	0.57	0.55

GERMANY		Map site No.87		Computer file GERMAHOR.087								GLUECKSTADT			
Latitude 53 47' N				Longitude 9 27' E				Height a.s.l.		1 metres					
Horizontal planes: - monthly means.				Data used & period:		S (1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.52	1.13	2.25	3.66	4.75	5.46	4.81	4.40	2.80	1.45	0.67	0.39	2.70	
Gmax	++++	1.25	2.63	4.42	6.22	7.78	8.13	7.49	6.60	4.85	3.03	1.58	0.95	4.59	
Gmin	++++	0.11	0.24	0.43	0.70	1.22	1.47	1.78	1.36	0.84	0.28	0.11	0.08	0.72	
Go		1.96	3.49	5.84	8.46	10.55	11.51	11.01	9.24	6.78	4.27	2.36	1.55	6.43	
Ratios to extraterrestrial radiation															
G/Go	++++	0.27	0.32	0.39	0.43	0.45	0.47	0.44	0.48	0.41	0.34	0.28	0.25	0.38	
Ktmax	++++	0.52	0.62	0.63	0.66	0.70	0.70	0.65	0.66	0.63	0.58	0.54	0.57	0.62	
Ktmin	++++	0.06	0.07	0.07	0.08	0.12	0.13	0.16	0.15	0.12	0.07	0.05	0.05	0.11	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.39	0.74	1.35	2.03	2.62	2.82	2.82	2.36	1.60	0.90	0.46	0.29	1.54	
D/G mean	++++	0.75	0.66	0.60	0.55	0.55	0.52	0.59	0.54	0.57	0.62	0.69	0.74	0.57	
Daily sunshine duration: hours.															
S		1.3	2.2	3.8	5.8	6.9	8.3	7.2	7.5	5.0	2.9	1.6	1.2	4.5	
So		7.9	9.6	11.7	13.8	15.7	16.7	16.3	14.6	12.5	10.4	8.4	7.3	12.1	
S/So		0.16	0.23	0.32	0.42	0.44	0.50	0.44	0.51	0.40	0.28	0.19	0.17	0.34	
Somax		8.4	10.3	12.6	14.6	16.3	16.8	16.6	15.3	13.3	11.2	9.0	7.4		
Angstrom coefficients:Reference site: Hamburg															
Angstrom a		0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.22	0.20	0.18	0.17	0.16	0.19	
Angstrom b		0.53	0.58	0.57	0.58	0.57	0.53	0.51	0.50	0.54	0.57	0.59	0.56	0.55	

GERMANY		Map site No.88		Computer file GERMAHOR.088								LANGEROOG			
Latitude 53 45' N				Longitude 7 29' E				Height a.s.l.		5 metres					
Horizontal planes: - monthly means.				Data used & period:		S (1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.54	1.27	2.50	4.10	5.06	5.82	5.29	4.63	2.98	1.61	0.71	0.44	2.92	
Gmax	++++	1.37	2.85	4.90	6.87	8.28	8.78	8.33	6.98	5.23	3.46	1.67	0.95	4.98	
Gmin	++++	0.12	0.34	0.55	0.96	1.36	1.59	1.55	1.46	0.94	0.44	0.13	0.09	0.80	
Go		1.96	3.49	5.85	8.47	10.55	11.51	11.02	9.24	6.78	4.27	2.37	1.55	6.44	
Ratios to extraterrestrial radiation															
G/Go	++++	0.28	0.36	0.43	0.48	0.48	0.51	0.48	0.50	0.44	0.38	0.30	0.28	0.41	
Ktmax	++++	0.57	0.67	0.70	0.73	0.74	0.76	0.73	0.69	0.67	0.67	0.57	0.57	0.68	
Ktmin	++++	0.06	0.10	0.09	0.11	0.13	0.14	0.14	0.16	0.14	0.10	0.05	0.06	0.12	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.40	0.81	1.40	2.11	2.71	2.85	2.80	2.38	1.67	0.98	0.50	0.32	1.59	
D/G mean	++++	0.74	0.64	0.56	0.52	0.54	0.49	0.53	0.52	0.56	0.61	0.70	0.73	0.54	
Daily sunshine duration: hours.															
S		1.0	2.4	3.8	5.7	6.7	7.8	7.0	7.2	4.8	3.0	1.5	1.2	4.4	
So		7.9	9.6	11.7	13.8	15.7	16.7	16.3	14.6	12.5	10.4	8.4	7.3	12.1	
S/So		0.13	0.25	0.33	0.41	0.43	0.47	0.43	0.49	0.38	0.28	0.18	0.16	0.33	
Somax		8.4	10.3	12.6	14.6	16.3	16.8	16.6	15.3	13.3	11.2	9.0	7.4		
Angstrom coefficients:Reference site: Norderney															
Angstrom a		0.19	0.22	0.23	0.24	0.23	0.24	0.23	0.24	0.23	0.22	0.19	0.19	0.22	
Angstrom b		0.66	0.57	0.60	0.59	0.58	0.57	0.58	0.53	0.55	0.55	0.59	0.57	0.58	

GERMANY		Map site No.89		Computer file GERMAHOR.089								NORDERNEY			
Latitude 53 43' N				Longitude 7 9' E				Height a.s.l.		13 metres					
Horizontal planes: - monthly means.				Data used & period:		G (1967-1975) & S									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean		0.57	1.30	2.60	4.27	5.13	6.02	5.45	4.75	3.06	1.66	0.74	0.44	3.01	
Gmax		1.38	2.85	4.91	6.87	8.29	8.78	8.33	6.98	5.24	3.47	1.68	0.96	4.99	
Gmin		0.12	0.33	0.55	0.96	1.36	1.59	1.56	1.46	0.94	0.44	0.13	0.09	0.80	
Go		1.97	3.50	5.85	8.47	10.55	11.51	11.02	9.24	6.79	4.28	2.37	1.56	6.44	
Ratios to extraterrestrial radiation															
G/Go		0.29	0.37	0.44	0.50	0.49	0.52	0.50	0.51	0.45	0.39	0.31	0.28	0.42	
Ktmax		0.57	0.67	0.70	0.72	0.74	0.76	0.73	0.69	0.68	0.67	0.57	0.57	0.68	
Ktmin		0.06	0.10	0.09	0.11	0.13	0.14	0.14	0.16	0.14	0.10	0.05	0.06	0.12	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.40	0.82	1.41	2.16	2.68	2.81	2.81	2.40	1.68	1.00	0.50	0.32	1.59	
D/G mean	++++	0.71	0.63	0.54	0.51	0.52	0.47	0.52	0.51	0.55	0.61	0.68	0.73	0.53	
Daily sunshine duration: hours.															
S		1.2	2.5	4.1	5.9	7.0	8.3	7.3	7.4	5.0	3.1	1.7	1.2	4.6	
So		7.9	9.6	11.7	13.8	15.7	16.7	16.2	14.6	12.5	10.4	8.4	7.3	12.1	
S/So		0.15	0.26	0.35	0.43	0.45	0.50	0.45	0.51	0.40	0.30	0.20	0.16	0.35	
Somax		8.4	10.3	12.6	14.6	16.3	16.8	16.6	15.3	13.3	11.2	9.0	7.4		
Angstrom coefficients:Radiation observing site															
Angstrom a		0.19	0.22	0.23	0.24	0.23	0.24	0.23	0.24	0.23	0.22	0.19	0.19	0.22	
Angstrom b		0.66	0.57	0.60	0.59	0.58	0.57	0.58	0.53	0.55	0.55	0.59	0.57	0.58	

GERMANY Map site No.90 Computer file GERMAHOR.090 HAMBURG
 Latitude 53 38' N Longitude 10 0' E Height a.s.l. 14 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.52 1.13 2.23 3.55 4.69 5.44 4.82 4.34 2.79 1.49 0.67 0.40 2.68
 Gmax 1.26 2.65 4.44 6.23 7.78 8.13 7.50 6.61 4.86 3.04 1.60 0.96 4.60
 Gmin 0.11 0.24 0.43 0.71 1.22 1.48 1.78 1.36 0.85 0.28 0.11 0.08 0.72
 Go 1.98 3.51 5.87 8.48 10.56 11.51 11.02 9.25 6.80 4.29 2.39 1.57 6.45

Ratios to extraterrestrial radiation

G/Go 0.26 0.32 0.38 0.42 0.44 0.47 0.44 0.47 0.41 0.35 0.28 0.26 0.38
 Ktmax 0.52 0.62 0.63 0.66 0.69 0.70 0.66 0.66 0.63 0.58 0.54 0.57 0.62
 Ktmin 0.06 0.07 0.07 0.08 0.12 0.13 0.16 0.15 0.12 0.07 0.05 0.05 0.11

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.39 0.74 1.34 2.03 2.60 2.83 2.84 2.36 1.62 0.92 0.46 0.30 1.54
 D/G mean +++ 0.75 0.66 0.60 0.57 0.55 0.52 0.59 0.54 0.58 0.61 0.69 0.74 0.57

Daily sunshine duration: hours.

S 1.3 2.2 3.8 5.4 6.8 8.2 7.1 7.3 4.8 3.0 1.6 1.2 4.4
 So 7.9 9.6 11.7 13.8 15.7 16.7 16.2 14.6 12.5 10.4 8.4 7.3 12.1
 S/So 0.16 0.23 0.32 0.39 0.43 0.49 0.44 0.50 0.38 0.29 0.19 0.16 0.33
 Somax 8.4 10.3 12.6 14.6 16.3 16.8 16.6 15.3 13.3 11.2 9.0 7.5

Angstrom coefficients: Radiation observing site

Angstrom a 0.18 0.19 0.20 0.19 0.20 0.21 0.21 0.22 0.20 0.18 0.17 0.16 0.19
 Angstrom b 0.53 0.58 0.57 0.58 0.57 0.53 0.51 0.50 0.54 0.57 0.59 0.56 0.55

GERMANY Map site No.91 Computer file GERMAHOR.091 BORKUM
 Latitude 53 34' N Longitude 6 45' E Height a.s.l. 5 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.55 1.29 2.51 4.09 4.94 5.83 5.22 4.60 2.93 1.62 0.73 0.44 2.91
 Gmax +++ 1.39 2.87 4.92 6.88 8.29 8.78 8.33 6.99 5.25 3.48 1.69 0.97 5.00
 Gmin +++ 0.12 0.34 0.55 0.96 1.36 1.59 1.55 1.46 0.94 0.44 0.13 0.09 0.80
 Go 1.99 3.52 5.88 8.49 10.56 11.51 11.02 9.25 6.81 4.30 2.40 1.58 6.46

Ratios to extraterrestrial radiation

G/Go +++ 0.28 0.37 0.43 0.48 0.47 0.51 0.47 0.50 0.43 0.38 0.30 0.28 0.41
 Ktmax +++ 0.57 0.67 0.70 0.72 0.74 0.76 0.73 0.69 0.68 0.67 0.57 0.57 0.68
 Ktmin +++ 0.06 0.10 0.09 0.11 0.13 0.14 0.14 0.16 0.14 0.10 0.05 0.06 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.40 0.81 1.41 2.11 2.71 2.85 2.80 2.39 1.67 0.99 0.50 0.32 1.59
 D/G mean +++ 0.72 0.63 0.56 0.52 0.55 0.49 0.54 0.52 0.57 0.61 0.69 0.73 0.55

Daily sunshine duration: hours.

S 1.1 2.5 3.8 5.7 6.4 7.8 6.8 7.1 4.6 3.0 1.6 1.2 4.3
 So 7.9 9.6 11.7 13.8 15.7 16.7 16.2 14.6 12.5 10.4 8.4 7.3 12.1
 S/So 0.13 0.26 0.33 0.41 0.41 0.47 0.42 0.49 0.37 0.29 0.19 0.16 0.33
 Somax 8.4 10.3 12.6 14.6 16.3 16.7 16.6 15.3 13.3 11.2 9.0 7.5

Angstrom coefficients: Reference site: Nordeney

Angstrom a 0.19 0.22 0.23 0.24 0.23 0.24 0.23 0.24 0.23 0.22 0.19 0.19 0.22
 Angstrom b 0.66 0.57 0.60 0.59 0.58 0.57 0.58 0.53 0.55 0.55 0.59 0.57 0.58

GERMANY Map site No.92 Computer file GERMAHOR.092 JEVER
 Latitude 53 32' N Longitude 7 54' E Height a.s.l. 7 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.55 1.24 2.37 3.85 4.96 5.60 5.10 4.62 3.11 1.63 0.72 0.44 2.86
 Gmax +++ 1.27 2.65 4.54 6.61 7.75 8.29 7.81 6.79 4.93 3.27 1.72 0.97 4.73
 Gmin +++ 0.14 0.30 0.61 0.80 1.40 1.58 1.47 1.58 0.90 0.40 0.19 0.10 0.79
 Go 2.00 3.53 5.88 8.49 10.56 11.52 11.02 9.26 6.81 4.31 2.40 1.59 6.46

Ratios to extraterrestrial radiation

G/Go +++ 0.28 0.35 0.40 0.45 0.47 0.49 0.46 0.50 0.46 0.38 0.30 0.28 0.40
 Ktmax +++ 0.52 0.62 0.64 0.70 0.69 0.72 0.68 0.67 0.63 0.63 0.58 0.57 0.64
 Ktmin +++ 0.07 0.09 0.10 0.09 0.13 0.14 0.13 0.17 0.13 0.09 0.08 0.06 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.42 0.79 1.40 2.09 2.71 2.93 2.84 2.48 1.72 1.00 0.50 0.33 1.61
 D/G mean +++ 0.76 0.64 0.59 0.54 0.55 0.52 0.56 0.54 0.55 0.61 0.70 0.75 0.56

Daily sunshine duration: hours.

S 1.0 2.1 3.7 5.5 6.6 7.6 6.7 7.1 4.9 3.0 1.5 1.0 4.2
 So 7.9 9.6 11.7 13.8 15.7 16.7 16.2 14.6 12.5 10.4 8.4 7.3 12.1
 S/So 0.13 0.22 0.32 0.40 0.42 0.46 0.42 0.49 0.39 0.29 0.18 0.14 0.32
 Somax 8.4 10.3 12.6 14.6 16.3 16.7 16.6 15.3 13.3 11.2 9.0 7.5

Angstrom coefficients: Reference site: Groningen/Elde

Angstrom a 0.20 0.22 0.22 0.22 0.23 0.24 0.23 0.26 0.25 0.22 0.19 0.19 0.22
 Angstrom b 0.61 0.60 0.58 0.59 0.57 0.54 0.56 0.49 0.53 0.55 0.60 0.62 0.57

GERMANY		Map site No.93		Computer file GERMAHOR.093								BREMERHAVEN			
Latitude 53 32' N				Longitude 8 35' E				Height a.s.l.				7 metres			
Horizontal planes: - monthly means.				Data used & period:		S		(1966 -1975)							
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.58	1.22	2.42	4.02	5.00	5.84	5.18	4.60	2.98	1.62	0.70	0.44	2.89	
Gmax	++++	1.39	2.87	4.92	6.88	8.29	8.78	8.33	6.99	5.25	3.48	1.70	0.97	5.01	
Gmin	++++	0.12	0.34	0.55	0.96	1.36	1.59	1.55	1.46	0.94	0.44	0.13	0.09	0.80	
Go		2.00	3.53	5.88	8.49	10.56	11.52	11.02	9.26	6.81	4.31	2.40	1.59	6.46	
Ratios to extraterrestrial radiation															
G/Go	++++	0.29	0.34	0.41	0.47	0.47	0.51	0.47	0.50	0.44	0.38	0.29	0.28	0.40	
Ktmax	++++	0.57	0.67	0.70	0.72	0.74	0.76	0.73	0.69	0.67	0.67	0.57	0.57	0.68	
Ktmin	++++	0.06	0.10	0.09	0.11	0.13	0.14	0.14	0.16	0.14	0.10	0.05	0.06	0.12	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.41	0.81	1.40	2.11	2.70	2.86	2.80	2.39	1.68	1.00	0.49	0.32	1.59	
D/G mean	++++	0.71	0.66	0.58	0.52	0.54	0.49	0.54	0.52	0.56	0.62	0.70	0.73	0.55	
Daily sunshine duration: hours.															
S		1.2	2.1	3.5	5.5	6.6	7.8	6.7	7.1	4.7	2.9	1.5	1.2	4.2	
So		7.9	9.6	11.7	13.8	15.7	16.7	16.2	14.6	12.5	10.4	8.4	7.3	12.1	
S/So		0.15	0.22	0.30	0.40	0.42	0.47	0.41	0.48	0.38	0.28	0.17	0.16	0.32	
Somax		8.4	10.3	12.6	14.6	16.3	16.7	16.6	15.3	13.3	11.2	9.0	7.5		
Angstrom coefficients:Reference site: Nordeney															
Angstrom a		0.19	0.22	0.23	0.24	0.23	0.24	0.23	0.24	0.23	0.22	0.19	0.19	0.22	
Angstrom b		0.66	0.57	0.60	0.59	0.58	0.57	0.58	0.53	0.55	0.55	0.59	0.57	0.58	

GERMANY		Map site No.94		Computer file GERMAHOR.094								AURICH			
Latitude 53 27' N				Longitude 7 28' E				Height a.s.l.				4 metres			
Horizontal planes: - monthly means.				Data used & period:		S		(1966 -1975)							
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.56	1.24	2.36	3.83	4.93	5.57	5.06	4.62	3.06	1.61	0.72	0.43	2.84	
Gmax	++++	1.28	2.66	4.55	6.61	7.75	8.29	7.81	6.79	4.94	3.28	1.73	0.97	4.73	
Gmin	++++	0.14	0.30	0.61	0.80	1.41	1.58	1.47	1.58	0.90	0.40	0.19	0.10	0.79	
Go		2.01	3.54	5.89	8.50	10.57	11.52	11.02	9.26	6.82	4.32	2.42	1.60	6.47	
Ratios to extraterrestrial radiation															
G/Go	++++	0.28	0.35	0.40	0.45	0.47	0.48	0.46	0.50	0.45	0.37	0.30	0.27	0.40	
Ktmax	++++	0.52	0.62	0.65	0.70	0.69	0.72	0.68	0.67	0.63	0.63	0.58	0.56	0.64	
Ktmin	++++	0.07	0.09	0.10	0.09	0.13	0.14	0.13	0.17	0.13	0.09	0.08	0.06	0.12	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.42	0.79	1.41	2.10	2.72	2.94	2.83	2.48	1.72	0.99	0.50	0.32	1.61	
D/G mean	++++	0.76	0.64	0.60	0.55	0.55	0.53	0.56	0.54	0.56	0.62	0.70	0.75	0.57	
Daily sunshine duration: hours.															
S		1.0	2.1	3.6	5.4	6.5	7.5	6.6	7.1	4.7	2.9	1.5	1.0	4.2	
So		7.9	9.6	11.7	13.8	15.7	16.7	16.2	14.6	12.5	10.4	8.4	7.3	12.1	
S/So		0.13	0.22	0.31	0.39	0.41	0.45	0.41	0.49	0.37	0.28	0.18	0.13	0.31	
Somax		8.5	10.3	12.6	14.6	16.3	16.7	16.6	15.3	13.3	11.2	9.0	7.5		
Angstrom coefficients:Reference site: Groningen/Elde															
Angstrom a		0.20	0.22	0.22	0.22	0.23	0.24	0.23	0.26	0.25	0.22	0.19	0.19	0.22	
Angstrom b		0.61	0.60	0.58	0.59	0.57	0.54	0.56	0.49	0.53	0.55	0.60	0.62	0.57	

GERMANY		Map site No.95		Computer file GERMAHOR.095								ZEVEN			
Latitude 53 19' N				Longitude 9 18' E				Height a.s.l.				17 metres			
Horizontal planes: - monthly means.				Data used & period:		S		(1966 -1975)							
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.52	1.09	2.17	3.41	4.53	5.19	4.65	4.23	2.69	1.46	0.65	0.38	2.59	
Gmax	++++	1.29	2.68	4.46	6.25	7.79	8.14	7.50	6.62	4.89	3.07	1.62	0.99	4.62	
Gmin	++++	0.12	0.24	0.43	0.71	1.23	1.47	1.79	1.36	0.85	0.29	0.11	0.08	0.73	
Go		2.03	3.57	5.91	8.51	10.57	11.52	11.03	9.28	6.84	4.34	2.44	1.62	6.49	
Ratios to extraterrestrial radiation															
G/Go	++++	0.26	0.31	0.37	0.40	0.43	0.45	0.42	0.46	0.39	0.34	0.27	0.24	0.36	
Ktmax	++++	0.52	0.62	0.63	0.66	0.70	0.70	0.66	0.66	0.63	0.58	0.54	0.57	0.62	
Ktmin	++++	0.06	0.07	0.07	0.08	0.12	0.13	0.16	0.15	0.12	0.07	0.05	0.05	0.11	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.41	0.74	1.34	2.00	2.59	2.84	2.80	2.37	1.59	0.91	0.46	0.29	1.54	
D/G mean	++++	0.78	0.68	0.62	0.59	0.57	0.55	0.60	0.56	0.59	0.63	0.71	0.77	0.59	
Daily sunshine duration: hours.															
S		1.1	1.9	3.4	5.0	6.3	7.5	6.7	6.9	4.5	2.8	1.4	1.0	4.1	
So		7.9	9.6	11.7	13.8	15.6	16.6	16.2	14.5	12.5	10.4	8.5	7.4	12.1	
S/So		0.14	0.20	0.29	0.36	0.40	0.45	0.41	0.47	0.36	0.27	0.16	0.14	0.31	
Somax		8.5	10.3	12.6	14.6	16.2	16.7	16.6	15.2	13.2	11.2	9.1	7.5		
Angstrom coefficients:Reference site: Hamburg															
Angstrom a		0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.22	0.20	0.18	0.17	0.16	0.19	
Angstrom b		0.53	0.58	0.57	0.58	0.57	0.53	0.51	0.50	0.54	0.57	0.59	0.56	0.55	

GERMANY		Map site No.96		Computer file GERMAHOR.096								LUENSBURG		
Latitude 53 16' N				Longitude 10 26' E				Height a.s.l.				11 metres		
Horizontal planes: - monthly means.				Data used & period: S				(1966 -1975)						
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	0.53	1.09	2.22	3.42	4.62	5.26	4.70	4.27	2.76	1.46	0.66	0.39	2.62
Gmax	++++	1.29	2.69	4.47	6.25	7.79	8.14	7.50	6.62	4.89	3.08	1.63	0.99	4.62
Gmin	++++	0.12	0.24	0.43	0.71	1.23	1.47	1.79	1.36	0.85	0.29	0.11	0.08	0.73
Go		2.04	3.57	5.92	8.52	10.58	11.52	11.03	9.28	6.85	4.35	2.45	1.63	6.49
Ratios to extraterrestrial radiation														
G/Go	++++	0.26	0.30	0.37	0.40	0.44	0.46	0.43	0.46	0.40	0.34	0.27	0.24	0.36
Ktmax	++++	0.52	0.62	0.63	0.66	0.70	0.70	0.66	0.66	0.63	0.58	0.54	0.57	0.62
Ktmin	++++	0.06	0.07	0.07	0.08	0.12	0.13	0.16	0.15	0.12	0.07	0.05	0.05	0.11
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.41	0.74	1.35	2.00	2.61	2.83	2.80	2.37	1.61	0.90	0.47	0.30	1.54
D/G mean	++++	0.77	0.68	0.61	0.59	0.56	0.54	0.60	0.56	0.58	0.62	0.71	0.77	0.59
Daily sunshine duration: hours.														
S		1.2	1.9	3.6	5.0	6.5	7.7	6.9	7.0	4.7	2.9	1.4	1.0	4.2
So		7.9	9.6	11.7	13.8	15.6	16.6	16.2	14.5	12.5	10.4	8.5	7.4	12.1
S/So		0.15	0.20	0.31	0.36	0.42	0.47	0.42	0.48	0.38	0.27	0.17	0.14	0.31
Somax		8.5	10.3	12.6	14.6	16.2	16.7	16.5	15.2	13.2	11.2	9.1	7.5	
Angstrom coefficients:Reference site: Hamburg														
Angstrom a		0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.22	0.20	0.18	0.17	0.16	0.19
Angstrom b		0.53	0.58	0.57	0.58	0.57	0.53	0.51	0.50	0.54	0.57	0.59	0.56	0.55

GERMANY		Map site No.97		Computer file GERMAHOR.097								OLDENBURG		
Latitude 53 8' N				Longitude 8 13' E				Height a.s.l.				5 metres		
Horizontal planes: - monthly means.				Data used & period: S				(1966 -1975)						
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	0.52	1.14	2.20	3.46	4.45	5.05	4.53	4.22	2.72	1.49	0.70	0.38	2.58
Gmax	++++	1.30	2.70	4.48	6.26	7.79	8.14	7.50	6.62	4.90	3.09	1.64	1.00	4.63
Gmin	++++	0.12	0.24	0.43	0.71	1.23	1.47	1.79	1.37	0.85	0.29	0.11	0.08	0.73
Go		2.06	3.60	5.94	8.53	10.58	11.52	11.03	9.29	6.87	4.37	2.47	1.65	6.51
Ratios to extraterrestrial radiation														
G/Go	++++	0.25	0.32	0.37	0.41	0.42	0.44	0.41	0.45	0.40	0.34	0.28	0.23	0.36
Ktmax	++++	0.52	0.62	0.63	0.66	0.69	0.70	0.66	0.65	0.63	0.58	0.54	0.56	0.62
Ktmin	++++	0.06	0.07	0.07	0.08	0.12	0.13	0.16	0.15	0.12	0.07	0.05	0.05	0.11
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.40	0.76	1.35	2.01	2.58	2.82	2.78	2.38	1.60	0.92	0.48	0.29	1.54
D/G mean	++++	0.78	0.66	0.61	0.58	0.58	0.56	0.61	0.56	0.59	0.62	0.69	0.77	0.60
Daily sunshine duration: hours.														
S		1.1	2.1	3.5	5.1	6.1	7.2	6.3	6.8	4.6	2.9	1.6	1.0	4.0
So		8.0	9.6	11.7	13.8	15.6	16.6	16.1	14.5	12.5	10.4	8.5	7.4	12.1
S/So		0.14	0.22	0.30	0.37	0.39	0.43	0.39	0.47	0.36	0.28	0.19	0.13	0.31
Somax		8.5	10.3	12.6	14.6	16.2	16.7	16.5	15.2	13.2	11.2	9.1	7.5	
Angstrom coefficients:Reference site: Hamburg														
Angstrom a		0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.22	0.20	0.18	0.17	0.16	0.19
Angstrom b		0.53	0.58	0.57	0.58	0.57	0.53	0.51	0.50	0.54	0.57	0.59	0.56	0.55

GERMANY		Map site No.98		Computer file GERMAHOR.098								BREMEN		
Latitude 53 3' N				Longitude 8 48' E				Height a.s.l.				4 metres		
Horizontal planes: - monthly means.				Data used & period: S				(1966 -1975)						
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	0.54	1.18	2.22	3.46	4.55	5.08	4.64	4.26	2.74	1.51	0.70	0.42	2.62
Gmax	++++	1.31	2.71	4.49	6.26	7.79	8.14	7.50	6.62	4.91	3.10	1.65	1.01	4.64
Gmin	++++	0.12	0.25	0.43	0.71	1.23	1.47	1.79	1.37	0.85	0.29	0.11	0.08	0.73
Go		2.08	3.61	5.95	8.54	10.59	11.52	11.04	9.30	6.88	4.39	2.48	1.66	6.52
Ratios to extraterrestrial radiation														
G/Go	++++	0.26	0.33	0.37	0.41	0.43	0.44	0.42	0.46	0.40	0.34	0.28	0.25	0.37
Ktmax	++++	0.52	0.62	0.63	0.66	0.69	0.70	0.65	0.65	0.63	0.58	0.54	0.57	0.62
Ktmin	++++	0.06	0.07	0.07	0.08	0.12	0.13	0.16	0.15	0.12	0.07	0.05	0.05	0.11
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.41	0.77	1.36	2.01	2.60	2.83	2.79	2.38	1.61	0.93	0.48	0.31	1.55
D/G mean	++++	0.76	0.65	0.61	0.58	0.57	0.56	0.60	0.56	0.59	0.61	0.69	0.74	0.59
Daily sunshine duration: hours.														
S		1.2	2.3	3.5	5.1	6.3	7.2	6.7	6.9	4.6	3.0	1.6	1.2	4.1
So		8.0	9.7	11.7	13.8	15.6	16.6	16.1	14.5	12.5	10.4	8.5	7.4	12.1
S/So		0.15	0.24	0.30	0.37	0.40	0.44	0.41	0.48	0.37	0.29	0.19	0.16	0.32
Somax		8.5	10.3	12.6	14.6	16.2	16.6	16.5	15.2	13.2	11.2	9.1	7.6	
Angstrom coefficients:Reference site: Hamburg														
Angstrom a		0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.22	0.20	0.18	0.17	0.16	0.19
Angstrom b		0.53	0.58	0.57	0.58	0.57	0.53	0.51	0.50	0.54	0.57	0.59	0.56	0.55

GERMANY Map site No.99 Computer file GERMAHOR.099 SOLTAU
 Latitude 53 0' N Longitude 9 50' E Height a.s.l. 77 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 0.57 1.18 2.30 3.48 4.66 5.18 4.67 4.34 2.82 1.54 0.67 0.43 2.66
 Gmax ++++ 1.31 2.71 4.49 6.27 7.80 8.14 7.50 6.63 4.91 3.10 1.66 1.01 4.64
 Gmin ++++ 0.12 0.25 0.44 0.71 1.23 1.48 1.79 1.37 0.85 0.29 0.11 0.09 0.73
 Go 2.09 3.62 5.96 8.55 10.59 11.52 11.04 9.30 6.89 4.39 2.49 1.67 6.52

Ratios to extraterrestrial radiation

G/Go ++++ 0.27 0.32 0.39 0.41 0.44 0.45 0.42 0.47 0.41 0.35 0.27 0.26 0.37
 Ktmax ++++ 0.51 0.62 0.63 0.66 0.70 0.70 0.65 0.66 0.63 0.58 0.54 0.56 0.62
 Ktmin ++++ 0.06 0.07 0.07 0.08 0.12 0.13 0.16 0.15 0.12 0.07 0.05 0.05 0.11

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.42 0.77 1.37 2.01 2.60 2.82 2.80 2.36 1.61 0.93 0.48 0.31 1.55
 D/G mean ++++ 0.74 0.65 0.60 0.58 0.56 0.54 0.60 0.54 0.57 0.61 0.71 0.72 0.58

Daily sunshine duration: hours.

S 1.4 2.2 3.8 5.2 6.6 7.5 6.7 7.2 4.9 3.1 1.4 1.3 4.3
 So 8.0 9.7 11.7 13.8 15.6 16.6 16.1 14.5 12.5 10.4 8.5 7.4 12.1
 S/So 0.17 0.23 0.33 0.38 0.42 0.45 0.42 0.49 0.39 0.30 0.17 0.17 0.33
 Somax 8.5 10.3 12.6 14.6 16.2 16.6 16.5 15.2 13.2 11.2 9.1 7.6

Angstrom coefficients:Reference site: Hamburg

Angstrom a 0.18 0.19 0.20 0.19 0.20 0.21 0.21 0.22 0.20 0.18 0.17 0.16 0.19
 Angstrom b 0.53 0.58 0.57 0.58 0.57 0.53 0.51 0.50 0.54 0.57 0.59 0.56 0.55

GERMANY Map site No.100 Computer file GERMAHOR. 100 LUECHOW
 Latitude 52 58' N Longitude 11 10' E Height a.s.l. 17 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 0.57 1.15 2.35 3.55 4.75 5.40 4.88 4.36 2.88 1.51 0.71 0.42 2.72
 Gmax ++++ 1.32 2.72 4.49 6.27 7.80 8.14 7.50 6.63 4.91 3.11 1.66 1.02 4.65
 Gmin ++++ 0.12 0.25 0.44 0.71 1.23 1.48 1.79 1.37 0.85 0.29 0.11 0.09 0.73
 Go 2.09 3.63 5.97 8.55 10.59 11.52 11.04 9.30 6.89 4.40 2.50 1.67 6.53

Ratios to extraterrestrial radiation

G/Go ++++ 0.27 0.32 0.39 0.42 0.45 0.47 0.44 0.47 0.42 0.34 0.28 0.25 0.38
 Ktmax ++++ 0.52 0.62 0.63 0.66 0.70 0.70 0.65 0.66 0.63 0.58 0.54 0.57 0.62
 Ktmin ++++ 0.06 0.07 0.07 0.08 0.12 0.13 0.16 0.15 0.12 0.07 0.05 0.05 0.11

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.42 0.76 1.38 2.02 2.62 2.82 2.83 2.38 1.63 0.93 0.49 0.31 1.56
 D/G mean ++++ 0.74 0.66 0.59 0.57 0.55 0.52 0.58 0.55 0.56 0.61 0.69 0.74 0.57

Daily sunshine duration: hours.

S 1.4 2.1 4.0 5.4 6.8 8.1 7.3 7.2 5.1 3.0 1.6 1.2 4.4
 So 8.0 9.7 11.7 13.8 15.6 16.6 16.1 14.5 12.5 10.4 8.5 7.4 12.1
 S/So 0.17 0.22 0.34 0.39 0.44 0.49 0.45 0.50 0.40 0.29 0.19 0.16 0.34
 Somax 8.5 10.3 12.6 14.6 16.2 16.6 16.5 15.2 13.2 11.2 9.1 7.6

Angstrom coefficients:Reference site: Hamburg

Angstrom a 0.18 0.19 0.20 0.19 0.20 0.21 0.21 0.22 0.20 0.18 0.17 0.16 0.19
 Angstrom b 0.53 0.58 0.57 0.58 0.57 0.53 0.51 0.50 0.54 0.57 0.59 0.56 0.55

GERMANY Map site No.101 Computer file GERMAHOR.101 HANNOVER
 Latitude 52 28' N Longitude 9 42' E Height a.s.l. 53 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 0.57 1.13 2.22 3.44 4.54 5.20 4.66 4.17 2.77 1.48 0.67 0.42 2.61
 Gmax ++++ 1.40 2.69 4.36 6.21 7.46 7.96 7.70 6.48 4.96 3.20 1.71 0.95 4.60
 Gmin ++++ 0.11 0.25 0.44 0.77 0.79 1.34 1.74 1.25 0.70 0.26 0.12 0.08 0.66
 Go 2.17 3.71 6.04 8.60 10.62 11.53 11.06 9.35 6.96 4.48 2.58 1.75 6.58

Ratios to extraterrestrial radiation

G/Go ++++ 0.26 0.31 0.37 0.40 0.43 0.45 0.42 0.45 0.40 0.33 0.26 0.24 0.36
 Ktmax ++++ 0.53 0.60 0.61 0.65 0.66 0.69 0.67 0.64 0.63 0.59 0.55 0.51 0.61
 Ktmin ++++ 0.05 0.06 0.07 0.09 0.08 0.12 0.16 0.13 0.10 0.06 0.05 0.04 0.10

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.43 0.75 1.36 2.02 2.57 2.80 2.75 2.41 1.62 0.98 0.49 0.32 1.55
 D/G mean ++++ 0.76 0.66 0.61 0.59 0.57 0.54 0.59 0.58 0.59 0.66 0.73 0.77 0.59

Daily sunshine duration: hours.

S 1.2 2.0 3.6 5.1 6.4 7.2 6.7 6.8 4.6 3.2 1.5 1.1 4.1
 So 8.1 9.7 11.7 13.7 15.5 16.5 16.0 14.5 12.5 10.4 8.6 7.5 12.1
 S/So 0.15 0.21 0.31 0.37 0.41 0.44 0.42 0.47 0.37 0.30 0.18 0.14 0.32
 Somax 8.6 10.4 12.6 14.5 16.1 16.5 16.4 15.1 13.2 11.2 9.2 7.7

Angstrom coefficients:Reference site: Braunschweig

Angstrom a 0.18 0.18 0.19 0.19 0.19 0.21 0.20 0.22 0.20 0.18 0.16 0.16 0.19
 Angstrom b 0.54 0.60 0.57 0.57 0.58 0.55 0.53 0.48 0.54 0.49 0.56 0.53 0.55

GERMANY Map site No.102 Computer file GERMAHOR.102 BERLIN
 Latitude 52 28' N Longitude 13 18' E Height a.s.l. 51 metres
 Horizontal planes: - monthly means. Data used & period: G & m'thly means S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.61 1.14 2.44 3.49 4.77 5.44 5.26 4.58 3.05 1.59 0.76 0.45 2.81
 Gmax 1.33 2.50 4.54 6.17 7.87 8.28 8.16 7.04 4.95 3.26 1.83 1.00 4.76
 Gmin 0.14 0.21 0.59 0.83 1.16 1.51 1.85 1.39 0.68 0.38 0.16 0.11 0.76
 Go 2.17 3.71 6.04 8.60 10.62 11.53 11.06 9.34 6.96 4.48 2.58 1.75 6.59

Ratios to extraterrestrial radiation

G/Go 0.28 0.31 0.40 0.41 0.45 0.47 0.48 0.49 0.44 0.36 0.29 0.26 0.39
 Ktmax 0.50 0.56 0.63 0.64 0.70 0.71 0.71 0.69 0.63 0.60 0.58 0.53 0.63
 Ktmin 0.07 0.06 0.10 0.10 0.11 0.13 0.17 0.15 0.10 0.09 0.06 0.06 0.11

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.44 0.74 1.41 2.07 2.64 2.86 2.97 2.53 1.67 1.05 0.54 0.35 1.62
 D/G mean +++ 0.73 0.65 0.58 0.59 0.55 0.53 0.56 0.55 0.55 0.66 0.71 0.77 0.59

Daily sunshine duration: hours.

S 1.4 2.2 4.4 5.0 6.7 7.5 7.4 7.4 5.4 3.2 1.7 1.1 3.6
 So 8.1 9.7 11.7 13.7 15.5 16.5 16.0 14.5 12.5 10.4 8.6 7.5 12.1
 S/So 0.17 0.22 0.37 0.36 0.43 0.45 0.45 0.50 0.43 0.30 0.19 0.14 0.33
 Somax 8.6 10.4 12.6 14.5 16.1 16.5 16.4 15.1 13.2 11.2 9.2 7.7

Angstrom coefficients:Reference site: Braunschweig (Observing site : but no daily Sd)

no daily Sd available)

Angstrom a 0.18 0.18 0.19 0.19 0.19 0.21 0.20 0.22 0.20 0.18 0.16 0.16 0.19
 Angstrom b 0.54 0.60 0.57 0.57 0.58 0.55 0.53 0.48 0.54 0.49 0.56 0.53 0.55

GERMANY Map site No.158 Computer file GERMAHOR.158 POTSDAM
 Latitude 52 23' N Longitude 13 6' E Height a.s.l. 33 metres
 Horizontal planes: - monthly means. Data used & period: Gd & S monthly (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.56 1.06 2.38 3.46 4.74 5.44 5.21 4.49 2.96 1.53 0.72 0.41 2.76
 Gmax 1.28 2.41 4.35 6.11 7.66 8.24 8.03 6.82 5.16 3.31 1.75 0.92 4.68
 Gmin 0.13 0.19 0.49 0.70 1.06 1.44 1.95 1.32 0.63 0.30 0.13 0.09 0.71
 Go 2.19 3.72 6.05 8.61 10.62 11.53 11.06 9.35 6.97 4.50 2.59 1.77 6.59

Ratios to extraterrestrial radiation

G/Go 0.26 0.28 0.39 0.40 0.45 0.47 0.47 0.48 0.43 0.34 0.28 0.23 0.37
 Ktmax 0.48 0.54 0.60 0.64 0.68 0.71 0.70 0.67 0.65 0.61 0.56 0.49 0.61
 Ktmin 0.06 0.05 0.08 0.08 0.10 0.12 0.18 0.14 0.09 0.07 0.05 0.05 0.11

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.42 0.68 1.37 2.00 2.57 2.70 2.82 2.44 1.61 1.00 0.50 0.31 1.54
 D/G mean +++ 0.74 0.65 0.58 0.58 0.54 0.50 0.54 0.54 0.54 0.65 0.70 0.76 0.56

Daily sunshine duration: hours.

S 1.3 2.2 4.4 5.4 7.0 8.2 8.0 7.6 5.5 3.3 1.8 1.2 4.7
 So 8.1 9.7 11.7 13.7 15.5 16.5 16.0 14.5 12.5 10.5 8.6 7.5 12.1
 S/So 0.16 0.23 0.38 0.39 0.45 0.50 0.50 0.52 0.44 0.31 0.21 0.16 0.39
 Somax 8.6 10.4 12.5 14.5 16.1 16.5 16.4 15.1 13.2 11.2 9.2 7.7

Angstrom coefficients:Reference site: Braunschweig (Observing site : but no daily Sd)

no daily Sd available)

Angstrom a 0.18 0.18 0.19 0.19 0.19 0.21 0.20 0.22 0.20 0.18 0.16 0.16 0.19
 Angstrom b 0.54 0.60 0.57 0.57 0.58 0.55 0.53 0.48 0.54 0.49 0.56 0.53 0.55

GERMANY Map site No.103 Computer file GERMAHOR.103 BRAUNSCHWEIG
 Latitude 52 18' N Longitude 10 27' E Height a.s.l. 81 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.61 1.16 2.24 3.43 4.65 5.20 4.78 4.21 2.79 1.50 0.70 0.42 2.65
 Gmax 1.42 2.70 4.37 6.21 7.46 7.96 7.70 6.48 4.98 3.21 1.73 0.96 4.61
 Gmin 0.11 0.22 0.44 0.82 0.83 1.34 1.74 1.25 0.70 0.26 0.13 0.08 0.66
 Go 2.20 3.74 6.07 8.62 10.62 11.54 11.06 9.36 6.98 4.51 2.61 1.78 6.60

Ratios to extraterrestrial radiation

G/Go 0.28 0.31 0.37 0.40 0.44 0.45 0.43 0.45 0.40 0.33 0.27 0.23 0.36
 Ktmax 0.53 0.60 0.61 0.65 0.66 0.69 0.67 0.64 0.63 0.59 0.55 0.50 0.61
 Ktmin 0.05 0.06 0.07 0.09 0.08 0.12 0.16 0.13 0.10 0.06 0.05 0.04 0.10

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.44 0.76 1.37 2.03 2.61 2.77 2.80 2.43 1.62 0.99 0.49 0.33 1.56
 D/G mean +++ 0.72 0.65 0.61 0.59 0.56 0.53 0.59 0.58 0.58 0.66 0.71 0.79 0.59

Daily sunshine duration: hours.

S 1.5 2.1 3.7 5.0 6.5 7.3 6.8 6.8 4.7 3.2 1.7 1.0 4.2
 So 8.1 9.7 11.7 13.7 15.5 16.5 16.0 14.4 12.5 10.5 8.6 7.6 12.1
 S/So 0.19 0.22 0.32 0.36 0.42 0.44 0.43 0.47 0.38 0.30 0.20 0.13 0.32
 Somax 8.6 10.4 12.5 14.5 16.1 16.5 16.4 15.1 13.2 11.2 9.2 7.7

Angstrom coefficients:Radiation observing site

Angstrom a 0.18 0.18 0.19 0.19 0.19 0.21 0.20 0.22 0.20 0.18 0.16 0.16 0.19
 Angstrom b 0.54 0.60 0.57 0.57 0.58 0.55 0.53 0.48 0.54 0.49 0.56 0.53 0.55

GERMANY		Map site No.104			Computer file GERMAHOR.104								OSNABRUECK	
Latitude	52 15' N				Longitude	8 3' E				Height a.s.l.			95 metres	
Horizontal planes: - monthly means.					Data used & period:					S (1966 -1975)				
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	+++	0.58	1.17	2.19	3.40	4.39	4.83	4.50	4.13	2.72	1.60	0.71	0.43	2.56
Gmax	+++	1.38	2.79	4.55	6.31	7.81	8.14	7.51	6.65	4.96	3.17	1.72	1.08	4.69
Gmin	+++	0.13	0.25	0.44	0.72	1.23	1.48	1.79	1.38	0.87	0.30	0.12	0.09	0.74
Go		2.21	3.75	6.07	8.62	10.63	11.54	11.06	9.36	6.99	4.52	2.62	1.79	6.61

Ratios to extraterrestrial radiation

G/Go	++++	0.26	0.31	0.36	0.39	0.41	0.42	0.41	0.44	0.39	0.35	0.27	0.24	0.36
Ktmax	++++	0.52	0.62	0.63	0.66	0.70	0.70	0.66	0.65	0.63	0.58	0.54	0.57	0.62
Ktmin	++++	0.06	0.07	0.07	0.08	0.12	0.13	0.16	0.15	0.12	0.07	0.05	0.05	0.11

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.44	0.78	1.36	2.01	2.57	2.79	2.76	2.38	1.61	0.96	0.50	0.32	1.55
D/G mean	++++	0.76	0.67	0.62	0.59	0.59	0.58	0.61	0.58	0.59	0.60	0.70	0.75	0.61

Daily sunshine duration: hours.

S		1.2	2.0	3.3	4.8	5.8	6.5	6.2	6.4	4.4	3.2	1.5	1.1	3.9
So		8.1	9.7	11.7	13.7	15.5	16.4	16.0	14.4	12.5	10.5	8.6	7.6	12.1
S/So		0.15	0.21	0.28	0.35	0.37	0.39	0.39	0.44	0.35	0.31	0.17	0.14	0.30
Somax		8.6	10.4	12.5	14.5	16.1	16.5	16.4	15.1	13.2	11.2	9.2	7.7	

Angstrom coefficients:Reference site: Hamburg

Angstrom a		0.18	0.19	0.20	0.19	0.20	0.21	0.21	0.22	0.20	0.18	0.17	0.16	0.19
Angstrom b		0.53	0.58	0.57	0.58	0.57	0.53	0.51	0.50	0.54	0.57	0.59	0.56	0.55

GERMANY		Map site No.105			Computer file GERMAHOR.105							MUENSTER		
Latitude	51 57' N				Longitude	7 35' E				Height a.s.l.	60 metres			
Horizontal planes: - monthly means.					Data used & period:		S	(1966 -1975)						
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	0.66	1.33	2.42	3.80	4.82	5.27	4.96	4.51	3.09	1.81	0.79	0.50	2.84
Gmax	++++	1.57	2.81	4.57	6.42	7.30	7.74	7.63	6.44	4.94	3.21	1.83	1.17	4.64
Gmin	++++	0.12	0.21	0.51	0.70	1.22	1.47	1.51	1.35	0.73	0.37	0.16	0.11	0.70
Go		2.26	3.80	6.12	8.65	10.64	11.54	11.07	9.39	7.02	4.57	2.67	1.84	6.64

Ratios to extraterrestrial radiation

G/Go	++++	0.29	0.35	0.39	0.44	0.45	0.46	0.45	0.48	0.44	0.40	0.29	0.27	0.39
Ktmax	++++	0.58	0.62	0.63	0.67	0.65	0.67	0.67	0.63	0.62	0.59	0.57	0.60	0.63
Ktmin	++++	0.05	0.05	0.08	0.08	0.11	0.13	0.14	0.14	0.10	0.08	0.06	0.06	0.11

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.46	0.83	1.42	2.11	2.73	2.89	2.87	2.45	1.73	1.04	0.53	0.36	1.63
D/G mean	++++	0.69	0.63	0.59	0.56	0.57	0.55	0.58	0.54	0.56	0.58	0.67	0.71	0.57

Daily sunshine duration: hours.

S		1.4	2.2	3.7	5.3	6.2	6.6	6.4	6.8	5.0	3.5	1.7	1.2	4.2
So		8.1	9.7	11.7	13.7	15.5	16.4	16.0	14.4	12.5	10.5	8.6	7.6	12.1
S/So		0.17	0.23	0.31	0.39	0.40	0.41	0.40	0.47	0.40	0.33	0.19	0.15	0.32
Somax		8.7	10.4	12.5	14.5	16.0	16.4	16.3	15.1	13.2	11.2	9.2	7.8	

Angstrom coefficients:Reference site: Germany Region 1

Angstrom a		0.19	0.21	0.21	0.21	0.23	0.23	0.23	0.24	0.23	0.21	0.18	0.18	0.22
Angstrom b		0.61	0.61	0.59	0.59	0.56	0.56	0.54	0.51	0.53	0.56	0.60	0.62	0.56

GERMANY		Map site No.106			Computer file GERMAHOR.106								EINBECK	
Latitude	51 49' N				Longitude	9 53' E				Height a.s.l.	105 metres			
Horizontal planes: - monthly means.					Data used & period:			S	(1966 -1975)					
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	0.57	1.13	2.18	3.37	4.23	4.75	4.46	3.99	2.66	1.43	0.68	0.40	2.50
Gmax	++++	1.46	2.75	4.41	6.24	7.47	7.96	7.71	6.50	5.01	3.26	1.77	1.00	4.64
Gmin	++++	0.11	0.22	0.45	0.82	0.83	1.34	1.74	1.26	0.70	0.27	0.13	0.08	0.67
Go		2.28	3.82	6.14	8.67	10.65	11.54	11.08	9.40	7.04	4.59	2.69	1.86	6.66

Ratios to extraterrestrial radiation

G/Go	++++	0.25	0.30	0.35	0.39	0.40	0.41	0.40	0.42	0.38	0.31	0.25	0.22	0.34
Ktmax	++++	0.53	0.60	0.61	0.65	0.66	0.69	0.67	0.64	0.63	0.59	0.55	0.50	0.61
Ktmin	++++	0.05	0.06	0.07	0.09	0.08	0.12	0.16	0.13	0.10	0.06	0.05	0.04	0.10

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.44	0.76	1.36	2.01	2.52	2.76	2.71	2.39	1.61	0.97	0.49	0.33	1.54
D/G mean	++++	0.77	0.67	0.62	0.60	0.60	0.58	0.61	0.60	0.60	0.68	0.72	0.82	0.62

Daily sunshine duration: hours.

S		1.1	1.9	3.4	4.8	5.5	6.0	6.1	6.2	4.1	2.8	1.5	0.8	3.7
So		8.2	9.8	11.7	13.7	15.4	16.4	15.9	14.4	12.5	10.5	8.7	7.6	12.1
S/So		0.13	0.19	0.29	0.35	0.36	0.37	0.38	0.43	0.33	0.27	0.17	0.11	0.28
Somax		8.7	10.4	12.5	14.5	16.0	16.4	16.3	15.0	13.2	11.2	9.2	7.8	

Angstrom coefficients:Reference site: Braunschweig

Angstrom a		0.18	0.18	0.19	0.19	0.19	0.21	0.20	0.22	0.20	0.18	0.16	0.16	0.19
Angstrom b		0.54	0.60	0.57	0.57	0.58	0.55	0.53	0.48	0.54	0.49	0.56	0.53	0.55

GERMANY		Map site No.107			Computer file GERMAHOR.107							BAD LIPPSPRINGE		
Latitude	51 47' N				Longitude	8 50' E			Height a.s.l.			157 metres		
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	0.62	1.19	2.19	3.48	4.45	4.90	4.53	4.09	2.77	1.55	0.69	0.43	2.58
Gmax	++++	1.47	2.76	4.41	6.24	7.47	7.96	7.71	6.50	5.01	3.26	1.77	1.00	4.64
Gmin	++++	0.11	0.22	0.45	0.82	0.83	1.34	1.74	1.26	0.70	0.27	0.13	0.08	0.67
Go		2.29	3.83	6.14	8.67	10.65	11.54	11.08	9.40	7.05	4.59	2.69	1.86	6.66
Ratios to extraterrestrial radiation														
G/Go	++++	0.27	0.31	0.36	0.40	0.42	0.42	0.41	0.43	0.39	0.34	0.26	0.23	0.35
Ktmax	++++	0.53	0.60	0.61	0.65	0.66	0.69	0.67	0.64	0.63	0.59	0.54	0.50	0.61
Ktmin	++++	0.05	0.06	0.07	0.09	0.08	0.12	0.16	0.13	0.10	0.06	0.05	0.04	0.10
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.45	0.78	1.36	2.04	2.55	2.77	2.72	2.41	1.63	1.00	0.50	0.33	1.55
D/G mean	++++	0.73	0.65	0.62	0.59	0.57	0.57	0.60	0.59	0.59	0.65	0.72	0.77	0.60
Daily sunshine duration: hours.														
S		1.4	2.1	3.4	5.1	6.1	6.4	6.3	6.4	4.5	3.4	1.5	1.1	4.0
So		8.2	9.8	11.7	13.7	15.4	16.4	15.9	14.4	12.5	10.5	8.7	7.7	12.1
S/So		0.17	0.22	0.29	0.37	0.39	0.39	0.39	0.45	0.36	0.32	0.17	0.14	0.31
Somax		8.7	10.4	12.5	14.5	16.0	16.4	16.3	15.0	13.2	11.2	9.2	7.8	
Angstrom coefficients:Reference site: Braunschweig														
Angstrom a		0.18	0.18	0.19	0.19	0.19	0.21	0.20	0.22	0.20	0.18	0.16	0.16	0.19
Angstrom b		0.54	0.60	0.57	0.57	0.58	0.55	0.53	0.48	0.54	0.49	0.56	0.53	0.55

GERMANY		Map site No.108			Computer file GERMAHOR.108							BRAUNLAGE	
Latitude	51 43' N				Longitude	10 37' E			Height a.s.l.		601 metres		
Horizontal planes: - monthly means.					Data used & period:					G & S (1966 -1975)			
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.													
G mean	0.74	1.34	2.40	3.51	4.42	4.95	4.79	4.16	2.78	1.67	0.76	0.51	2.68
Gmax	1.67	2.94	4.78	6.49	7.54	7.95	7.93	6.74	5.23	3.38	2.03	1.24	4.84
Gmin	0.14	0.28	0.54	0.71	1.15	1.48	1.85	1.36	0.52	0.29	0.13	0.07	0.71
Go	2.30	3.84	6.15	8.68	10.65	11.55	11.08	9.41	7.06	4.60	2.71	1.87	6.67
Ratios to extraterrestrial radiation													
G/Go	0.32	0.35	0.39	0.40	0.42	0.43	0.43	0.44	0.39	0.36	0.28	0.27	0.37
Ktmax	0.60	0.64	0.66	0.67	0.67	0.68	0.69	0.66	0.65	0.61	0.62	0.62	0.65
Ktmin	0.06	0.07	0.09	0.08	0.11	0.13	0.17	0.14	0.07	0.06	0.05	0.04	0.11
Daily diffuse radiation: kWh/m^2.													
D mean est. ++++	0.49	0.82	1.38	2.03	2.53	2.80	2.78	2.36	1.57	0.96	0.51	0.36	1.56
D/G mean ++++	0.66	0.61	0.57	0.58	0.57	0.56	0.58	0.57	0.57	0.57	0.67	0.71	0.58
Daily sunshine duration: hours.													
S	1.6	2.4	3.5	5.0	6.0	6.7	6.7	6.2	4.4	3.4	1.6	1.3	4.1
So	8.2	9.8	11.7	13.7	15.4	16.4	15.9	14.4	12.5	10.5	8.7	7.7	12.1
S/So	0.20	0.24	0.30	0.36	0.39	0.41	0.42	0.43	0.35	0.32	0.18	0.17	0.32
Somax	8.7	10.4	12.5	14.4	16.0	16.4	16.3	15.0	13.2	11.2	9.2	7.8	
Angstrom coefficients:Radiation observing site													
Angstrom a	0.21	0.20	0.21	0.19	0.19	0.20	0.20	0.22	0.18	0.16	0.16	0.17	0.19
Angstrom b	0.60	0.61	0.61	0.59	0.59	0.55	0.54	0.52	0.60	0.61	0.64	0.59	0.59

GERMANY		Map site No.109				Computer file GERMAHOR.109							GOETTINGEN		
Latitude	51 33' N					Longitude	9 57' E <th colspan="7">Height a.s.l.</th> <td>176 metres</td>	Height a.s.l.							176 metres
Horizontal planes: - monthly means.						Data used & period: S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m^2.															
G mean	++++	0.61	1.21	2.26	3.45	4.41	4.94	4.68	4.04	2.81	1.52	0.71	0.43	2.60	
Gmax	++++	1.49	2.78	4.43	6.25	7.48	7.96	7.71	6.51	5.03	3.28	1.79	1.02	4.66	
Gmin	++++	0.12	0.22	0.45	0.83	0.83	1.34	1.74	1.26	0.71	0.27	0.13	0.08	0.67	
Go		2.32	3.86	6.18	8.70	10.66	11.55	11.08	9.42	7.08	4.63	2.73	1.90	6.69	
Ratios to extraterrestrial radiation															
G/Go	++++	0.26	0.31	0.37	0.40	0.41	0.43	0.42	0.43	0.40	0.33	0.26	0.23	0.35	
Ktmax	++++	0.53	0.60	0.61	0.65	0.66	0.69	0.67	0.64	0.63	0.59	0.54	0.50	0.61	
Ktmin	++++	0.05	0.06	0.07	0.09	0.08	0.12	0.16	0.13	0.10	0.06	0.05	0.04	0.10	
Daily diffuse radiation: kWh/m^2.															
D mean est.	++++	0.45	0.78	1.38	2.03	2.56	2.77	2.74	2.39	1.64	1.00	0.51	0.34	1.56	
D/G mean	++++	0.74	0.64	0.61	0.59	0.58	0.56	0.59	0.59	0.58	0.66	0.71	0.78	0.60	
Daily sunshine duration: hours.															
S		1.3	2.2	3.6	5.0	5.9	6.5	6.7	6.3	4.6	3.2	1.6	1.0	4.0	
So		8.2	9.8	11.7	13.7	15.4	16.3	15.9	14.4	12.5	10.5	8.7	7.7	12.1	
S/So		0.16	0.22	0.31	0.36	0.39	0.40	0.42	0.44	0.36	0.30	0.18	0.12	0.31	
Somax		8.7	10.4	12.5	14.4	16.0	16.4	16.2	15.0	13.2	11.2	9.2	7.8		
Angstrom coefficients:Reference site: Braunschweig															
Angstrom a		0.18	0.18	0.19	0.19	0.19	0.21	0.20	0.22	0.20	0.18	0.16	0.16	0.19	
Angstrom b		0.54	0.60	0.57	0.57	0.58	0.55	0.53	0.48	0.54	0.49	0.56	0.53	0.55	

GERMANY		Map site No.110		Computer file GERMAHOR.110		ESSEN	
Latitude	51 24' N			Longitude	6 58' E	Height a.s.l.	154 metres
Horizontal planes: - monthly means.		Data used & period:		S (1966-1975)			
Month	Jan Feb Mar	Apr	May	Jun	Jul	Aug	Sep Oct Nov Dec mean
Daily global radiation: kWh/m ² .							
G mean	+++ 0.69	1.37	2.34	3.68	4.75	5.08	4.91 4.39 3.05 1.84 0.81 0.52 2.79
Gmax	+++ 1.63	2.86	4.62	6.44	7.31	7.74	7.63 6.46 4.98 3.25 1.89 1.23 4.68
Gmin	+++ 0.12	0.21	0.52	0.71	1.23	1.47	1.51 1.36 0.74 0.37 0.17 0.12 0.71
Go		2.35	3.89	6.20	8.71	10.67	11.55 11.09 9.43 7.10 4.66 2.76 1.92 6.71

Ratios to extraterrestrial radiation

G/Go	+++ 0.30	0.35	0.38	0.42	0.45	0.44	0.44 0.47 0.43 0.39 0.29 0.27 0.39
Ktmax	+++ 0.58	0.62	0.63	0.67	0.65	0.67	0.66 0.63 0.62 0.58 0.57 0.60 0.63
Ktmin	+++ 0.05	0.05	0.08	0.08	0.11	0.13	0.14 0.14 0.10 0.08 0.06 0.06 0.11

Daily diffuse radiation: kWh/m².

D mean est.	+++ 0.48	0.85	1.42	2.10	2.73	2.87	2.86 2.47 1.75 1.06 0.55 0.38 1.64
D/G mean	+++ 0.69	0.62	0.61	0.57	0.57	0.56	0.58 0.56 0.57 0.57 0.68 0.73 0.59

Daily sunshine duration: hours.

S	1.4	2.3	3.3	4.9	5.9	6.1	6.2 6.3 4.7 3.5 1.6 1.1 4.0
So	8.2	9.8	11.7	13.7	15.4	16.3	15.9 14.4 12.5 10.5 8.7 7.7 12.1
S/So	0.17	0.23	0.28	0.36	0.39	0.38	0.39 0.44 0.38 0.33 0.19 0.15 0.31
Somax	8.7	10.4	12.5	14.4	15.9	16.3	16.2 15.0 13.2 11.2 9.3 7.8

Angstrom coefficients:Reference site: Germany Region 1

Angstrom a	0.19	0.21	0.21	0.21	0.23	0.23	0.23 0.24 0.23 0.21 0.18 0.18 0.22
Angstrom b	0.61	0.61	0.59	0.59	0.56	0.56	0.54 0.51 0.53 0.56 0.60 0.62 0.56

GERMANY		Map site No.111		Computer file GERMAHOR.111		KASSEL	
Latitude	51 18' N			Longitude	9 27' E	Height a.s.l.	231 metres
Horizontal planes: - monthly means.		Data used & period:		S (1966-1975)			
Month	Jan Feb Mar	Apr	May	Jun	Jul	Aug	Sep Oct Nov Dec mean
Daily global radiation: kWh/m ² .							
G mean	+++ 0.60	1.27	2.29	3.51	4.40	4.97	4.78 4.10 2.83 1.50 0.70 0.42 2.62
Gmax	+++ 1.51	2.81	4.45	6.27	7.48	7.96	7.71 6.52 5.05 3.30 1.81 1.04 4.68
Gmin	+++ 0.12	0.23	0.45	0.83	0.83	1.34	1.74 1.26 0.71 0.27 0.13 0.08 0.67
Go		2.37	3.91	6.22	8.72	10.67	11.55 11.09 9.44 7.11 4.67 2.77 1.94 6.72

Ratios to extraterrestrial radiation

G/Go	+++ 0.25	0.33	0.37	0.40	0.41	0.43	0.43 0.43 0.40 0.32 0.25 0.22 0.35
Ktmax	+++ 0.53	0.60	0.61	0.65	0.66	0.69	0.67 0.64 0.63 0.59 0.54 0.50 0.61
Ktmin	+++ 0.05	0.06	0.07	0.09	0.08	0.12	0.16 0.13 0.10 0.06 0.05 0.04 0.10

Daily diffuse radiation: kWh/m².

D mean est.	+++ 0.46	0.80	1.39	2.05	2.54	2.78	2.75 2.40 1.64 0.99 0.51 0.34 1.56
D/G mean	+++ 0.76	0.63	0.61	0.58	0.58	0.56	0.58 0.59 0.58 0.66 0.73 0.81 0.60

Daily sunshine duration: hours.

S	1.1	2.4	3.7	5.1	5.9	6.5	6.9 6.4 4.6 3.0 1.4 0.8 4.0
So	8.2	9.8	11.7	13.7	15.4	16.3	15.9 14.4 12.5 10.5 8.7 7.7 12.1
S/So	0.13	0.24	0.31	0.37	0.38	0.40	0.44 0.45 0.37 0.29 0.16 0.10 0.30
Somax	8.7	10.4	12.5	14.4	15.9	16.3	16.2 15.0 13.2 11.2 9.3 7.9

Angstrom coefficients:Reference site: Braunschweig

Angstrom a	0.18	0.18	0.19	0.19	0.19	0.21	0.20 0.22 0.20 0.18 0.16 0.16 0.19
Angstrom b	0.54	0.60	0.57	0.57	0.58	0.55	0.53 0.48 0.54 0.49 0.56 0.53 0.55

GERMANY		Map site No.112		Computer file GERMAHOR.112		DÜRSSELDORF	
Latitude	51 12' N			Longitude	6 45' E	Height a.s.l.	37 metres
Horizontal planes: - monthly means.		Data used & period:		S (1966-1975)			
Month	Jan Feb Mar	Apr	May	Jun	Jul	Aug	Sep Oct Nov Dec mean
Daily global radiation: kWh/m ² .							
G mean	+++ 0.65	1.29	2.26	3.57	4.60	4.84	4.77 4.21 2.95 1.74 0.77 0.49 2.69
Gmax	+++ 1.65	2.88	4.63	6.46	7.31	7.74	7.63 6.47 4.99 3.27 1.90 1.24 4.69
Gmin	+++ 0.12	0.22	0.52	0.71	1.23	1.47	1.51 1.36 0.74 0.37 0.17 0.12 0.71
Go		2.38	3.92	6.23	8.73	10.68	11.55 11.09 9.45 7.12 4.69 2.79 1.96 6.73

Ratios to extraterrestrial radiation

G/Go	+++ 0.27	0.33	0.36	0.41	0.43	0.42	0.43 0.45 0.41 0.37 0.27 0.25 0.37
Ktmax	+++ 0.58	0.62	0.63	0.67	0.65	0.67	0.66 0.63 0.62 0.58 0.57 0.60 0.63
Ktmin	+++ 0.05	0.05	0.08	0.08	0.11	0.13	0.14 0.14 0.10 0.08 0.06 0.06 0.11

Daily diffuse radiation: kWh/m².

D mean est.	+++ 0.48	0.84	1.40	2.09	2.72	2.84	2.84 2.46 1.75 1.05 0.54 0.38 1.62
D/G mean	+++ 0.74	0.65	0.62	0.59	0.59	0.59	0.59 0.58 0.59 0.61 0.71 0.77 0.60

Daily sunshine duration: hours.

S	1.1	1.9	3.0	4.6	5.5	5.5	5.9 5.8 4.3 3.0 1.4 0.9 3.6
So	8.3	9.8	11.7	13.7	15.4	16.3	15.8 14.4 12.5 10.5 8.7 7.8 12.1
S/So	0.13	0.20	0.26	0.34	0.36	0.34	0.37 0.40 0.35 0.29 0.16 0.12 0.28
Somax	8.7	10.4	12.5	14.4	15.9	16.3	16.2 15.0 13.2 11.2 9.3 7.9

Angstrom coefficients:Reference site: Germany Region 1

Angstrom a	0.19	0.21	0.21	0.21	0.23	0.23	0.23 0.24 0.23 0.21 0.18 0.18 0.22
Angstrom b	0.61	0.61	0.59	0.59	0.56	0.56	0.54 0.51 0.53 0.56 0.60 0.62 0.56

GERMANY Map site No.113 Computer file GERMAHOR.113 KÄHLER ASTEN
 Latitude 51 11' N Longitude 8 29' E Height a.s.l. 841 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.69 1.29 2.32 3.45 4.27 4.60 4.51 4.10 2.88 1.69 0.70 0.51 2.59
 Gmax +++ 1.72 3.00 4.82 6.51 7.55 7.95 7.93 6.76 5.27 3.43 2.08 1.29 4.87
 Gmin +++ 0.15 0.29 0.55 0.72 1.15 1.48 1.85 1.37 0.53 0.30 0.13 0.08 0.72
 Go 2.38 3.93 6.23 8.73 10.68 11.55 11.09 9.45 7.13 4.69 2.79 1.96 6.73

Ratios to extraterrestrial radiation
 G/Go +++ 0.29 0.33 0.37 0.39 0.40 0.40 0.41 0.43 0.40 0.36 0.25 0.26 0.36
 Ktmax +++ 0.60 0.64 0.66 0.67 0.67 0.68 0.69 0.66 0.65 0.61 0.62 0.62 0.65
 Ktmin +++ 0.06 0.07 0.09 0.08 0.11 0.13 0.17 0.14 0.07 0.06 0.05 0.04 0.11

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.50 0.82 1.38 2.02 2.50 2.71 2.69 2.35 1.57 0.96 0.50 0.37 1.54
 D/G mean +++ 0.73 0.63 0.59 0.58 0.59 0.59 0.60 0.57 0.55 0.57 0.72 0.72 0.59

Daily sunshine duration: hours.
 S 1.1 2.1 3.1 4.7 5.5 5.9 6.1 5.9 4.7 3.4 1.2 1.2 3.7
 So 8.3 9.8 11.7 13.7 15.4 16.3 15.8 14.3 12.5 10.5 8.7 7.8 12.1
 S/So 0.13 0.21 0.26 0.35 0.36 0.36 0.38 0.41 0.37 0.33 0.14 0.15 0.29
 Somax 8.7 10.4 12.5 14.4 15.9 16.3 16.2 15.0 13.2 11.2 9.3 7.9

Angstrom coefficients:Reference site: Braunlage
 Angstrom a 0.21 0.20 0.21 0.19 0.19 0.20 0.20 0.22 0.18 0.16 0.16 0.17 0.19
 Angstrom b 0.60 0.61 0.61 0.59 0.59 0.55 0.54 0.52 0.60 0.61 0.64 0.59 0.59

GERMANY Map site No.159 Computer file GERMAHOR.159 DRESDEN
 Latitude 51 7' N Longitude 13 41' E Height a.s.l. 271 metres
 Horizontal planes: - monthly means. Data used & period: Gd & S monthly (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.72 1.21 2.38 3.44 4.42 5.02 5.05 4.37 3.08 1.72 0.83 0.50 2.74
 Gmax 1.51 2.62 4.34 6.44 7.47 7.94 7.64 6.76 5.15 3.45 1.89 1.17 4.71
 Gmin 0.16 0.21 0.43 0.63 0.87 1.05 1.48 0.97 0.71 0.23 0.16 0.10 0.59
 Go 2.40 3.94 6.24 8.74 10.68 11.55 11.10 9.45 7.13 4.70 2.81 1.97 6.74

Ratios to extraterrestrial radiation
 G/Go 0.30 0.31 0.38 0.39 0.41 0.43 0.45 0.46 0.43 0.37 0.30 0.25 0.37
 Ktmax 0.53 0.56 0.59 0.67 0.66 0.68 0.67 0.66 0.64 0.62 0.56 0.56 0.62
 Ktmin 0.06 0.05 0.07 0.07 0.08 0.09 0.13 0.10 0.10 0.05 0.06 0.05 0.09

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.47 0.75 1.42 2.03 2.52 2.72 2.77 2.47 1.69 1.08 0.56 0.36 1.58
 D/G mean +++ 0.66 0.62 0.60 0.59 0.57 0.54 0.55 0.56 0.55 0.63 0.67 0.72 0.58

Daily sunshine duration: hours.
 S 2.0 2.5 3.9 4.9 6.1 6.9 7.6 6.9 5.3 3.7 2.0 1.4 4.4
 So 8.3 9.8 11.7 13.7 15.3 16.2 15.8 14.3 12.5 10.5 8.7 7.8 12.1
 S/So 0.24 0.26 0.33 0.36 0.40 0.43 0.48 0.48 0.42 0.35 0.23 0.18 0.36
 Somax 8.8 10.4 12.5 14.4 15.9 16.3 16.2 15.0 13.1 11.2 9.3 7.9

Angstrom coefficients:Reference site: Braunschweig (Observing site : but no daily Sd)
 no daily Sd available)
 Angstrom a 0.18 0.18 0.19 0.19 0.19 0.21 0.20 0.22 0.20 0.18 0.16 0.16 0.19
 Angstrom b 0.54 0.60 0.57 0.57 0.58 0.55 0.53 0.48 0.54 0.49 0.56 0.53 0.55

GERMANY Map site No.114 Computer file GERMAHOR.114 KOELN/WAHN
 Latitude 50 52' N Longitude 7 8' E Height a.s.l. 73 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.71 1.43 2.45 3.88 4.85 5.20 4.98 4.44 3.21 1.88 0.87 0.54 2.88
 Gmax +++ 1.68 2.92 4.66 6.47 7.31 7.75 7.64 6.48 5.02 3.31 1.94 1.28 4.71
 Gmin +++ 0.13 0.22 0.53 0.71 1.23 1.47 1.51 1.36 0.75 0.38 0.17 0.12 0.72
 Go 2.44 3.98 6.28 8.76 10.69 11.56 11.10 9.47 7.17 4.74 2.85 2.01 6.77

Ratios to extraterrestrial radiation
 G/Go +++ 0.29 0.36 0.39 0.44 0.45 0.45 0.45 0.47 0.45 0.40 0.30 0.27 0.39
 Ktmax +++ 0.58 0.62 0.63 0.67 0.65 0.67 0.66 0.63 0.62 0.59 0.57 0.60 0.63
 Ktmin +++ 0.05 0.05 0.08 0.08 0.11 0.13 0.14 0.14 0.10 0.08 0.06 0.06 0.11

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.49 0.87 1.45 2.13 2.75 2.88 2.86 2.48 1.78 1.08 0.58 0.39 1.65
 D/G mean +++ 0.69 0.61 0.59 0.55 0.57 0.55 0.58 0.56 0.56 0.58 0.66 0.73 0.57

Daily sunshine duration: hours.
 S 1.4 2.4 3.6 5.4 6.1 6.4 6.4 5.1 3.5 1.8 1.1 4.1
 So 8.3 9.8 11.7 13.6 15.3 16.2 15.8 14.3 12.5 10.5 8.8 7.8 12.1
 S/So 0.16 0.24 0.31 0.39 0.40 0.39 0.40 0.45 0.41 0.33 0.21 0.14 0.32
 Somax 8.8 10.5 12.5 14.4 15.8 16.2 16.1 14.9 13.1 11.2 9.3 7.9

Angstrom coefficients:Reference site: Germany Region 1
 Angstrom a 0.19 0.21 0.21 0.21 0.21 0.23 0.23 0.24 0.23 0.21 0.18 0.18 0.22
 Angstrom b 0.61 0.61 0.59 0.59 0.56 0.56 0.54 0.51 0.53 0.56 0.60 0.62 0.56

GERMANY Map site No.115 Computer file GERMAHOR.115 AACHEN
 Latitude 50 47' N Longitude 6 6' E Height a.s.l. 202 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 0.75 1.45 2.49 3.74 4.82 5.21 4.98 4.48 3.24 1.91 0.94 0.56 2.89
 Gmax ++++ 1.65 3.07 4.83 6.56 7.85 8.29 7.99 6.80 5.27 3.36 1.98 1.29 4.91
 Gmin ++++ 0.14 0.27 0.56 0.81 1.41 1.57 1.87 1.33 0.92 0.38 0.17 0.11 0.79
 Go 2.45 3.99 6.29 8.77 10.69 11.56 11.11 9.48 7.18 4.75 2.86 2.02 6.78

Ratios to extraterrestrial radiation

G/Go ++++ 0.30 0.36 0.40 0.43 0.45 0.45 0.45 0.47 0.45 0.40 0.33 0.28 0.40
 Ktmax ++++ 0.57 0.65 0.65 0.68 0.70 0.71 0.70 0.66 0.65 0.59 0.58 0.60 0.65
 Ktmin ++++ 0.06 0.07 0.09 0.09 0.13 0.14 0.17 0.14 0.13 0.08 0.06 0.05 0.12

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.49 0.85 1.43 2.09 2.77 2.86 2.84 2.39 1.76 1.04 0.57 0.38 1.63
 D/G mean ++++ 0.65 0.59 0.57 0.56 0.57 0.55 0.57 0.53 0.54 0.55 0.61 0.67 0.56

Daily sunshine duration: hours.

S 1.7 2.6 3.5 5.2 6.1 6.5 6.7 6.7 5.3 3.7 2.2 1.4 4.3
 So 8.3 9.8 11.7 13.6 15.3 16.2 15.8 14.3 12.5 10.5 8.8 7.8 12.1
 S/So 0.20 0.26 0.30 0.38 0.40 0.40 0.42 0.47 0.43 0.35 0.25 0.18 0.34
 Somax 8.8 10.5 12.5 14.4 15.8 16.2 16.1 14.9 13.1 11.2 9.3 7.9

Angstrom coefficients:Reference site: Trier

Angstrom a 0.18 0.20 0.21 0.20 0.23 0.22 0.22 0.22 0.22 0.19 0.17 0.16 0.20
 Angstrom b 0.62 0.63 0.62 0.60 0.55 0.57 0.54 0.54 0.54 0.60 0.63 0.66 0.59

GERMANY Map site No.116 Computer file GERMAHOR.116 WASSERKUPPE
 Latitude 50 30' N Longitude 9 57' E Height a.s.l. 921 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 0.82 1.44 2.50 3.66 4.56 4.96 4.96 4.33 3.12 1.83 0.80 0.58 2.80
 Gmax ++++ 1.79 3.08 4.88 6.55 7.56 7.96 7.94 6.78 5.33 3.49 2.16 1.37 4.92
 Gmin ++++ 0.15 0.30 0.56 0.72 1.16 1.48 1.86 1.38 0.53 0.30 0.14 0.08 0.73
 Go 2.50 4.04 6.33 8.80 10.71 11.56 11.11 9.50 7.21 4.80 2.91 2.07 6.81

Ratios to extraterrestrial radiation

G/Go ++++ 0.33 0.36 0.39 0.42 0.43 0.43 0.45 0.46 0.43 0.38 0.27 0.28 0.39
 Ktmax ++++ 0.60 0.64 0.66 0.67 0.67 0.68 0.69 0.66 0.66 0.61 0.62 0.62 0.65
 Ktmin ++++ 0.06 0.07 0.09 0.08 0.11 0.13 0.17 0.14 0.07 0.06 0.05 0.04 0.11

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.54 0.86 1.42 2.06 2.55 2.76 2.73 2.36 1.62 0.99 0.53 0.39 1.58
 D/G mean ++++ 0.65 0.60 0.57 0.56 0.56 0.56 0.55 0.54 0.52 0.54 0.67 0.68 0.56

Daily sunshine duration: hours.

S 1.6 2.5 3.5 5.2 6.1 6.7 7.2 6.5 5.2 3.8 1.6 1.5 4.3
 So 8.4 9.9 11.7 13.6 15.3 16.1 15.7 14.3 12.5 10.6 8.8 7.9 12.1
 S/So 0.20 0.26 0.30 0.38 0.40 0.42 0.46 0.45 0.42 0.36 0.18 0.19 0.33
 Somax 8.8 10.5 12.5 14.3 15.8 16.2 16.1 14.9 13.1 11.2 9.3 8.0

Angstrom coefficients:Reference site: Braunlage

Angstrom a 0.21 0.20 0.21 0.19 0.19 0.20 0.20 0.22 0.18 0.16 0.16 0.17 0.19
 Angstrom b 0.60 0.61 0.61 0.59 0.59 0.55 0.54 0.52 0.60 0.61 0.64 0.59 0.59

GERMANY Map site No.160 Computer file GERMAHOR.160 FICHELBERG
 Latitude 50 26' N Longitude 12 57' E Height a.s.l. 1214 metres
 Horizontal planes: - monthly means. Data used & period: Gd & S monthly (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.74 1.15 2.14 3.37 4.09 4.37 4.40 3.98 2.99 1.74 0.79 0.56 2.53
 Gmax 1.92 2.94 5.08 6.84 7.76 8.18 7.84 7.02 5.45 3.50 2.35 1.53 5.05
 Gmin 0.09 0.17 0.30 0.70 0.75 0.87 0.69 0.67 0.63 0.25 0.11 0.08 0.44
 Go 2.51 4.05 6.34 8.81 10.71 11.56 11.12 9.51 7.22 4.81 2.92 2.08 6.82

Ratios to extraterrestrial radiation

G/Go 0.29 0.28 0.34 0.38 0.38 0.38 0.40 0.42 0.41 0.36 0.27 0.27 0.35
 Ktmax 0.64 0.61 0.68 0.70 0.69 0.70 0.68 0.68 0.67 0.61 0.68 0.69 0.67
 Ktmin 0.03 0.04 0.05 0.08 0.07 0.07 0.06 0.07 0.09 0.05 0.04 0.04 0.06

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.40 0.67 1.19 1.84 2.28 2.33 2.35 2.02 1.47 0.84 0.48 0.33 1.36
 D/G mean ++++ 0.54 0.59 0.55 0.55 0.56 0.53 0.53 0.51 0.49 0.48 0.61 0.58 0.54

Daily sunshine duration: hours.

S 2.3 2.3 3.4 4.7 5.4 6.0 6.6 6.2 5.1 4.1 2.0 1.9 4.2
 So 8.4 9.9 11.7 13.6 15.3 16.1 15.7 14.3 12.5 10.6 8.8 7.9 12.1
 S/So 0.27 0.23 0.29 0.35 0.35 0.37 0.42 0.43 0.41 0.39 0.23 0.24 0.35
 Somax 8.8 10.5 12.5 14.3 15.8 16.2 16.0 14.9 13.1 11.2 9.4 8.0

Angstrom coefficients:Reference site: Hohenpeissenburg(Observing site : but no daily Sd)
 no daily S available)

Angstrom a 0.25 0.25 0.25 0.22 0.19 0.19 0.20 0.19 0.21 0.20 0.22 0.24 0.22
 Angstrom b 0.60 0.61 0.60 0.61 0.63 0.63 0.59 0.61 0.61 0.62 0.61 0.59 0.61

GERMANY				Map site No.119				Computer file GERMAHOR.119								COBURG	
Latitude 50 16' N				Longitude 10 57' E				Height a.s.l.								337 metres	
Horizontal planes: - monthly means.				Data used & period: S (1966 -1975)													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean				
Daily global radiation: kWh/m ² .																	
G mean	++++	0.83	1.55	2.68	4.05	5.07	5.65	5.34	4.53	3.49	1.92	0.89	0.63	3.06			
Gmax	++++	1.66	3.16	4.86	6.54	7.79	8.24	7.76	6.73	5.40	3.50	2.02	1.40	4.92			
Gmin	++++	0.21	0.42	0.64	0.96	1.23	1.67	2.08	1.47	1.21	0.47	0.19	0.13	0.89			
Go		2.54	4.08	6.37	8.82	10.72	11.57	11.12	9.52	7.24	4.84	2.95	2.11	6.84			
Ratios to extraterrestrial radiation																	
G/G ₀	++++	0.33	0.38	0.42	0.46	0.47	0.49	0.48	0.48	0.48	0.40	0.30	0.30	0.42			
Gtmax	++++	0.55	0.65	0.65	0.67	0.69	0.71	0.67	0.65	0.66	0.61	0.58	0.63	0.65			
Ktmin	++++	0.08	0.10	0.10	0.11	0.12	0.14	0.19	0.15	0.17	0.10	0.07	0.06	0.13			
Daily diffuse radiation: kWh/m ² .																	
D mean est.	++++	0.56	0.95	1.54	2.25	2.79	2.91	2.95	2.48	1.81	1.07	0.60	0.45	1.71			
D/G mean	++++	0.68	0.61	0.57	0.56	0.55	0.52	0.55	0.55	0.52	0.56	0.68	0.71	0.56			
Daily sunshine duration: hours.																	
S		1.3	2.5	3.9	5.4	6.6	7.4	7.5	6.7	5.6	3.4	1.5	1.2	4.4			
So		8.4	9.9	11.7	13.6	15.2	16.1	15.7	14.3	12.5	10.6	8.9	7.9	12.1			
S/So		0.16	0.25	0.33	0.40	0.43	0.46	0.48	0.47	0.45	0.32	0.17	0.15	0.34			
Somax		8.9	10.5	12.5	14.3	15.8	16.1	16.0	14.9	13.1	11.2	9.4	8.0				
Angstrom coefficients:Reference site: Wuerzburg																	
Angstrom a		0.23	0.24	0.23	0.24	0.24	0.24	0.24	0.24	0.25	0.21	0.20	0.21	0.23			
Angstrom b		0.63	0.56	0.57	0.55	0.54	0.54	0.50	0.50	0.52	0.59	0.61	0.60	0.56			

GERMANY Map site No.120 Computer file GERMAHOR.120 KL.FELDBERG/TS.
 Latitude 50 13' N Longitude 8 27' E Height a.s.l. 805 metres
 Horizontal planes: - monthly means. Data used & period: S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 0.75 1.39 2.52 3.70 4.50 4.85 4.83 4.38 3.13 1.77 0.80 0.57 2.77
 Gmax ++++ 1.82 3.10 4.91 6.56 7.56 7.97 7.95 6.80 5.34 3.52 2.19 1.39 4.94
 Gmin ++++ 0.16 0.30 0.56 0.72 1.16 1.48 1.86 1.38 0.54 0.31 0.14 0.08 0.73
 Go 2.55 4.09 6.38 8.83 10.72 11.57 11.12 9.52 7.25 4.85 2.96 2.12 6.84

Ratios to extraterrestrial radiation

G/Go ++++ 0.29 0.34 0.40 0.42 0.42 0.42 0.43 0.46 0.43 0.37 0.27 0.27 0.38
 Ktmax ++++ 0.60 0.64 0.66 0.67 0.67 0.69 0.69 0.66 0.65 0.61 0.62 0.62 0.65
 Ktmin ++++ 0.06 0.07 0.09 0.08 0.11 0.13 0.17 0.14 0.07 0.06 0.05 0.04 0.11

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.53 0.86 1.43 2.07 2.56 2.76 2.75 2.37 1.63 0.99 0.54 0.40 1.58
 D/G mean ++++ 0.71 0.62 0.57 0.56 0.57 0.57 0.57 0.54 0.52 0.56 0.68 0.71 0.57

Daily sunshine duration: hours.

S 1.2 2.3 3.6 5.3 5.9 6.4 6.8 6.6 5.2 3.6 1.5 1.3 4.1
 So 8.4 9.9 11.7 13.6 15.2 16.1 15.7 14.3 12.5 10.6 8.9 7.9 12.1
 S/So 0.14 0.23 0.30 0.39 0.39 0.40 0.43 0.46 0.42 0.34 0.17 0.17 0.32
 Somax 8.9 10.5 12.5 14.3 15.7 16.1 16.0 14.9 13.1 11.3 9.4 8.0

Angstrom coefficients:Reference site: Braunlage

Angstrom a 0.21 0.20 0.21 0.19 0.19 0.20 0.20 0.22 0.18 0.16 0.16 0.17 0.19
 Angstrom b 0.60 0.61 0.61 0.59 0.59 0.55 0.54 0.52 0.60 0.61 0.64 0.59 0.59

GERMANY Map site No.121 Computer file GERMAHOR.121 BAD KISSINGEN
 Latitude 50 12' N Longitude 10 5' E Height a.s.l. 262 metres
 Horizontal planes: - monthly means. Data used & period: S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 0.80 1.52 2.60 3.98 4.87 5.45 5.19 4.40 3.36 1.83 0.85 0.60 2.96
 Gmax ++++ 1.67 3.17 4.86 6.54 7.79 8.25 7.76 6.73 5.40 3.51 2.03 1.41 4.93
 Gmin ++++ 0.21 0.43 0.64 0.96 1.23 1.67 2.08 1.47 1.21 0.47 0.20 0.13 0.89
 Go 2.55 4.09 6.38 8.83 10.72 11.57 11.12 9.52 7.25 4.85 2.96 2.12 6.84

Ratios to extraterrestrial radiation

G/Go ++++ 0.31 0.37 0.41 0.45 0.45 0.47 0.47 0.46 0.46 0.38 0.29 0.28 0.40
 Ktmax ++++ 0.55 0.65 0.65 0.67 0.69 0.71 0.67 0.65 0.66 0.61 0.58 0.63 0.65
 Ktmin ++++ 0.08 0.10 0.10 0.11 0.12 0.14 0.19 0.15 0.17 0.10 0.07 0.06 0.13

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.57 0.96 1.53 2.25 2.80 2.93 2.95 2.49 1.83 1.07 0.61 0.44 1.71
 D/G mean ++++ 0.71 0.63 0.59 0.57 0.58 0.54 0.57 0.57 0.55 0.58 0.72 0.74 0.58

Daily sunshine duration: hours.

S 1.1 2.3 3.6 5.2 6.0 6.9 7.1 6.3 5.1 3.0 1.2 1.0 4.1
 So 8.4 9.9 11.7 13.6 15.2 16.1 15.7 14.3 12.5 10.6 8.9 7.9 12.1
 S/So 0.13 0.23 0.31 0.38 0.40 0.43 0.45 0.44 0.41 0.28 0.14 0.12 0.31
 Somax 8.9 10.5 12.5 14.3 15.7 16.1 16.0 14.9 13.1 11.3 9.4 8.0

Angstrom coefficients:Reference site: Wuerzburg

Angstrom a 0.23 0.24 0.23 0.24 0.24 0.24 0.24 0.24 0.25 0.21 0.20 0.21 0.23
 Angstrom b 0.63 0.56 0.57 0.55 0.54 0.54 0.50 0.50 0.52 0.59 0.61 0.60 0.56

GERMANY Map site No.122 Computer file GERMAHOR.122 WIESBADEN
 Latitude 50 4' N Longitude 8 16' E Height a.s.l. 142 metres
 Horizontal planes: - monthly means. Data used & period: S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 0.69 1.43 2.57 3.87 4.83 5.13 5.16 4.45 3.23 1.75 0.85 0.56 2.88
 Gmax ++++ 1.68 3.18 4.88 6.55 7.79 8.25 7.76 6.74 5.42 3.52 2.04 1.42 4.94
 Gmin ++++ 0.21 0.43 0.64 0.96 1.23 1.67 2.08 1.47 1.21 0.47 0.20 0.13 0.89
 Go 2.57 4.12 6.40 8.84 10.73 11.57 11.13 9.53 7.27 4.87 2.98 2.14 6.86

Ratios to extraterrestrial radiation

G/Go ++++ 0.27 0.35 0.40 0.44 0.45 0.44 0.46 0.47 0.44 0.36 0.29 0.26 0.39
 Ktmax ++++ 0.55 0.65 0.65 0.67 0.69 0.71 0.67 0.66 0.66 0.61 0.58 0.63 0.65
 Ktmin ++++ 0.08 0.10 0.10 0.11 0.12 0.14 0.19 0.15 0.17 0.10 0.07 0.06 0.13

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.51 0.90 1.50 2.19 2.74 2.86 2.89 2.45 1.80 1.04 0.59 0.42 1.67
 D/G mean ++++ 0.74 0.63 0.58 0.57 0.57 0.56 0.56 0.55 0.56 0.60 0.69 0.75 0.58

Daily sunshine duration: hours.

S 1.0 2.3 3.6 5.2 6.0 6.4 6.9 6.5 5.0 2.9 1.4 1.0 4.0
 So 8.4 9.9 11.7 13.6 15.2 16.1 15.7 14.3 12.5 10.6 8.9 7.9 12.1
 S/So 0.11 0.23 0.31 0.38 0.39 0.40 0.44 0.45 0.40 0.27 0.16 0.13 0.31
 Somax 8.9 10.5 12.5 14.3 15.7 16.1 16.0 14.9 13.1 11.3 9.4 8.1

Angstrom coefficients:Reference site: Germany Region 2

Angstrom a 0.20 0.21 0.22 0.22 0.23 0.22 0.23 0.23 0.23 0.20 0.19 0.18 0.22
 Angstrom b 0.62 0.59 0.59 0.57 0.56 0.56 0.53 0.52 0.53 0.59 0.61 0.61 0.56

GERMANY		Map site No.123			Computer file GERMAHOR.123								FRANKFURT/M.	
Latitude	50 3' N				Longitude	8 35' E			Height a.s.l.			111 metres		
Horizontal planes: - monthly means.					Data used & period:			S (1966 -1975)						
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	0.73	1.46	2.64	3.99	5.02	5.33	5.30	4.55	3.36	1.84	0.87	0.57	2.98
Gmax	++++	1.68	3.18	4.88	6.55	7.79	8.25	7.76	6.74	5.42	3.52	2.04	1.42	4.94
Gmin	++++	0.21	0.43	0.64	0.96	1.23	1.67	2.08	1.47	1.21	0.47	0.20	0.13	0.89
Go		2.57	4.12	6.40	8.84	10.73	11.57	11.13	9.53	7.27	4.87	2.98	2.14	6.86
Ratios to extraterrestrial radiation														
G/Go	++++	0.28	0.36	0.41	0.45	0.47	0.46	0.48	0.48	0.46	0.38	0.29	0.27	0.40
Ktmax	++++	0.55	0.65	0.65	0.67	0.69	0.71	0.67	0.66	0.66	0.61	0.58	0.63	0.65
Ktmin	++++	0.08	0.10	0.10	0.11	0.12	0.14	0.19	0.15	0.17	0.10	0.07	0.06	0.13
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.53	0.91	1.51	2.20	2.75	2.87	2.89	2.44	1.81	1.06	0.59	0.42	1.67
D/G mean	++++	0.73	0.62	0.57	0.55	0.55	0.54	0.54	0.54	0.54	0.58	0.68	0.73	0.56
Daily sunshine duration: hours.														
S		1.1	2.4	3.8	5.5	6.5	6.9	7.3	6.8	5.4	3.2	1.5	1.1	4.3
So		8.4	9.9	11.7	13.6	15.2	16.1	15.7	14.3	12.5	10.6	8.9	7.9	12.1
S/So		0.14	0.25	0.33	0.41	0.43	0.43	0.46	0.48	0.44	0.30	0.17	0.14	0.33
Somax		8.9	10.5	12.5	14.3	15.7	16.1	16.0	14.9	13.1	11.3	9.4	8.1	
Angstrom coefficients:Reference site: Germany Region 2														
Angstrom a		0.20	0.21	0.22	0.22	0.23	0.22	0.23	0.23	0.23	0.20	0.19	0.18	0.22
Angstrom b		0.62	0.59	0.59	0.57	0.56	0.56	0.53	0.52	0.53	0.59	0.61	0.61	0.56

GERMANY		Map site No.124			Computer file GERMAHOR.124							OCHSENKOPF		
Latitude	50 2' N				Longitude	11 48' E			Height a.s.l.				1019 metres	
Horizontal planes: - monthly means.					Data used & period:				S (1966 -1975)					
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	0.94	1.55	2.65	3.77	4.55	5.18	5.02	4.31	3.44	2.04	0.97	0.77	2.94
Gmax	++++	2.25	3.66	5.40	7.11	8.32	8.64	8.49	7.39	5.88	4.24	2.54	1.74	5.48
Gmin	++++	0.29	0.38	0.64	0.81	1.00	1.06	1.18	0.84	0.76	0.31	0.22	0.16	0.64
Go		2.58	4.12	6.40	8.85	10.73	11.57	11.13	9.54	7.27	4.88	2.99	2.15	6.86
Ratios to extraterrestrial radiation														
G/Go	++++	0.36	0.38	0.41	0.43	0.42	0.45	0.45	0.45	0.47	0.42	0.33	0.36	0.41
Ktmax	++++	0.74	0.75	0.72	0.73	0.74	0.74	0.74	0.72	0.72	0.73	0.72	0.77	0.74
Ktmin	++++	0.11	0.09	0.10	0.09	0.09	0.09	0.11	0.09	0.10	0.06	0.07	0.07	0.09
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.60	0.94	1.51	2.08	2.50	2.64	2.67	2.22	1.63	1.05	0.65	0.49	1.59
D/G mean	++++	0.64	0.61	0.57	0.55	0.55	0.51	0.53	0.51	0.48	0.51	0.67	0.63	0.54
Daily sunshine duration: hours.														
S		1.6	2.1	3.2	4.6	5.6	6.6	6.7	6.1	5.4	3.7	1.5	1.6	4.1
So		8.4	9.9	11.7	13.6	15.2	16.1	15.7	14.3	12.5	10.6	8.9	7.9	12.1
S/So		0.19	0.21	0.27	0.34	0.37	0.41	0.43	0.43	0.43	0.35	0.17	0.20	0.32
Somax		8.9	10.5	12.5	14.3	15.7	16.1	16.0	14.8	13.1	11.3	9.4	8.1	
Angstrom coefficients:Reference site: Hohenpeissenburg														
Angstrom a		0.25	0.25	0.25	0.22	0.19	0.19	0.20	0.19	0.21	0.20	0.22	0.24	0.22
Angstrom b		0.60	0.61	0.60	0.61	0.63	0.63	0.59	0.61	0.61	0.62	0.61	0.59	0.61

GERMANY		Map site No.125			Computer file GERMAHOR.125								BERNKASTEL	
Latitude	49 55' N				Longitude	7 4' E				Height a.s.l.			120 metres	
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.														
G mean	++++	0.66	1.40	2.41	3.68	4.75	5.08	5.08	4.31	3.03	1.72	0.74	0.49	2.79
Gmax	++++	1.73	3.16	4.90	6.60	7.86	8.29	7.99	6.83	5.32	3.43	2.07	1.38	4.97
Gmin	++++	0.15	0.28	0.57	0.81	1.42	1.57	1.87	1.34	0.93	0.39	0.18	0.12	0.80
Go		2.60	4.14	6.42	8.86	10.73	11.57	11.13	9.55	7.29	4.89	3.01	2.17	6.88
Ratios to extraterrestrial radiation														
G/Go	++++	0.26	0.34	0.38	0.42	0.44	0.44	0.46	0.45	0.42	0.35	0.25	0.23	0.37
Ktmax	++++	0.56	0.65	0.65	0.68	0.70	0.71	0.69	0.66	0.65	0.59	0.58	0.60	0.65
Ktmin	++++	0.06	0.07	0.09	0.09	0.13	0.14	0.17	0.14	0.13	0.08	0.06	0.05	0.12
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.49	0.87	1.43	2.10	2.76	2.84	2.86	2.42	1.77	1.04	0.54	0.38	1.63
D/G mean	++++	0.75	0.62	0.59	0.57	0.58	0.56	0.56	0.56	0.58	0.60	0.73	0.78	0.58
Daily sunshine duration: hours.														
S		1.0	2.2	3.1	4.9	5.9	6.2	6.9	6.1	4.5	2.8	1.1	0.8	3.8
So		8.4	9.9	11.7	13.6	15.2	16.1	15.7	14.2	12.5	10.6	8.9	8.0	12.1
S/So		0.12	0.22	0.27	0.36	0.39	0.38	0.44	0.43	0.36	0.27	0.12	0.10	0.29
Somax		8.9	10.5	12.5	14.3	15.7	16.1	16.0	14.8	13.1	11.3	9.4	8.1	
Angstrom coefficients:Reference site: Trier														
Angstrom a		0.18	0.20	0.21	0.20	0.23	0.22	0.22	0.22	0.22	0.19	0.17	0.16	0.20
Angstrom b		0.62	0.63	0.62	0.60	0.55	0.57	0.54	0.54	0.54	0.60	0.63	0.66	0.59

GERMANY		Map site No.126		Computer file GERMAHOR.126								BAMBERG			
Latitude 49 53' N				Longitude 10 55' E				Height a.s.l.		239 metres					
Horizontal planes: - monthly means.				Data used & period: S		(1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.85	1.58	2.68	4.01	5.00	5.54	5.21	4.47	3.49	1.92	0.90	0.66	3.03	
Gmax	++++	1.69	3.20	4.89	6.56	7.80	8.25	7.76	6.75	5.43	3.54	2.06	1.44	4.95	
Gmin	++++	0.21	0.43	0.64	0.97	1.23	1.67	2.08	1.47	1.22	0.48	0.20	0.13	0.89	
Go		2.60	4.15	6.42	8.86	10.73	11.57	11.13	9.55	7.29	4.90	3.01	2.17	6.88	
Ratios to extraterrestrial radiation															
G/Go	++++	0.33	0.38	0.42	0.45	0.47	0.48	0.47	0.47	0.48	0.39	0.30	0.31	0.41	
Ktmax	++++	0.55	0.65	0.65	0.67	0.69	0.71	0.67	0.66	0.66	0.61	0.58	0.63	0.65	
Ktmin	++++	0.08	0.10	0.10	0.11	0.12	0.14	0.19	0.15	0.17	0.10	0.07	0.06	0.13	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.58	0.97	1.55	2.25	2.80	2.93	2.96	2.49	1.83	1.09	0.61	0.46	1.72	
D/G mean	++++	0.68	0.62	0.58	0.56	0.56	0.53	0.57	0.56	0.52	0.57	0.68	0.69	0.57	
Daily sunshine duration: hours.															
S		1.3	2.5	3.8	5.3	6.4	7.1	7.1	6.5	5.5	3.2	1.5	1.3	4.3	
So		8.4	9.9	11.7	13.6	15.2	16.0	15.6	14.2	12.5	10.6	8.9	8.0	12.1	
S/So		0.15	0.25	0.33	0.39	0.42	0.44	0.46	0.46	0.44	0.31	0.16	0.16	0.33	
Somax		8.9	10.5	12.5	14.3	15.7	16.1	16.0	14.8	13.1	11.3	9.4	8.1		
Angstrom coefficients:Reference site: Wuerzburg															
Angstrom a		0.23	0.24	0.23	0.24	0.24	0.24	0.24	0.24	0.25	0.21	0.20	0.21	0.23	
Angstrom b		0.63	0.56	0.57	0.55	0.54	0.54	0.50	0.50	0.52	0.59	0.61	0.60	0.56	

GERMANY		Map site No.127		Computer file GERMAHOR.127								BAD KREUZNACH			
Latitude 49 51' N				Longitude 7 51' E				Height a.s.l.		159 metres					
Horizontal planes: - monthly means.				Data used & period: S		(1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.65	1.47	2.62	3.99	4.95	5.34	5.19	4.57	3.35	1.78	0.85	0.55	2.95	
Gmax	++++	1.74	3.17	4.91	6.61	7.86	8.29	7.99	6.83	5.33	3.44	2.07	1.38	4.97	
Gmin	++++	0.15	0.28	0.57	0.82	1.42	1.57	1.87	1.34	0.93	0.39	0.18	0.12	0.81	
Go		2.61	4.15	6.43	8.86	10.74	11.57	11.13	9.55	7.30	4.91	3.02	2.18	6.88	
Ratios to extraterrestrial radiation															
G/Go	++++	0.25	0.35	0.41	0.45	0.46	0.46	0.47	0.48	0.46	0.36	0.28	0.25	0.39	
Ktmax	++++	0.57	0.65	0.65	0.68	0.70	0.71	0.69	0.66	0.65	0.59	0.58	0.60	0.65	
Ktmin	++++	0.06	0.07	0.09	0.09	0.13	0.14	0.17	0.14	0.13	0.08	0.06	0.05	0.12	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.50	0.89	1.47	2.13	2.77	2.85	2.87	2.42	1.79	1.05	0.57	0.40	1.65	
D/G mean	++++	0.77	0.60	0.56	0.53	0.56	0.53	0.55	0.53	0.53	0.59	0.67	0.72	0.56	
Daily sunshine duration: hours.															
S		0.9	2.4	3.7	5.7	6.4	6.8	7.1	6.8	5.5	3.0	1.6	1.1	4.3	
So		8.4	9.9	11.7	13.6	15.2	16.0	15.6	14.2	12.5	10.6	8.9	8.0	12.1	
S/So		0.11	0.24	0.32	0.42	0.42	0.42	0.46	0.48	0.44	0.29	0.18	0.14	0.33	
Somax		8.9	10.5	12.5	14.3	15.7	16.1	16.0	14.8	13.1	11.3	9.4	8.1		
Angstrom coefficients:Reference site: Trier															
Angstrom a		0.18	0.20	0.21	0.20	0.23	0.22	0.22	0.22	0.22	0.19	0.17	0.16	0.20	
Angstrom b		0.62	0.63	0.62	0.60	0.55	0.57	0.54	0.54	0.54	0.60	0.63	0.66	0.59	

GERMANY		Map site No.128		Computer file GERMAHOR.128								DARMSTADT			
Latitude 49 51' N				Longitude 8 35' E				Height a.s.l.		108 metres					
Horizontal planes: - monthly means.				Data used & period: S		(1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.82	1.56	2.76	4.10	5.13	5.49	5.46	4.68	3.56	1.97	0.93	0.62	3.10	
Gmax	++++	1.74	3.17	4.91	6.61	7.86	8.29	7.99	6.83	5.33	3.44	2.07	1.38	4.97	
Gmin	++++	0.15	0.28	0.57	0.82	1.42	1.57	1.87	1.34	0.93	0.39	0.18	0.12	0.81	
Go		2.61	4.15	6.43	8.86	10.74	11.57	11.13	9.55	7.30	4.91	3.02	2.18	6.88	
Ratios to extraterrestrial radiation															
G/Go	++++	0.31	0.38	0.43	0.46	0.48	0.47	0.49	0.49	0.49	0.40	0.31	0.28	0.42	
Ktmax	++++	0.57	0.65	0.65	0.68	0.70	0.71	0.69	0.66	0.65	0.59	0.58	0.60	0.65	
Ktmin	++++	0.06	0.07	0.09	0.09	0.13	0.14	0.17	0.14	0.13	0.08	0.06	0.05	0.12	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.55	0.93	1.52	2.21	2.76	2.86	2.88	2.45	1.79	1.09	0.61	0.43	1.68	
D/G mean	++++	0.67	0.59	0.55	0.54	0.54	0.52	0.53	0.52	0.50	0.55	0.66	0.70	0.54	
Daily sunshine duration: hours.															
S		1.5	2.8	4.2	5.8	6.7	7.3	7.7	7.1	6.1	3.6	1.7	1.3	4.7	
So		8.4	9.9	11.7	13.6	15.2	16.0	15.6	14.2	12.5	10.6	8.9	8.0	12.1	
S/So		0.18	0.28	0.36	0.43	0.44	0.45	0.49	0.50	0.49	0.34	0.20	0.17	0.36	
Somax		8.9	10.5	12.5	14.3	15.7	16.1	16.0	14.8	13.1	11.3	9.4	8.1		
Angstrom coefficients:Reference site: Germany Region 2															
Angstrom a		0.20	0.21	0.22	0.22	0.23	0.22	0.23	0.23	0.23	0.20	0.19	0.18	0.22	
Angstrom b		0.62	0.59	0.59	0.57	0.56	0.56	0.53	0.52	0.53	0.59	0.61	0.61	0.56	

GERMANY Map site No.129 Computer file GERMAHOR.129 WUERZBURG
 Latitude 49 48' N Longitude 9 54' E Height a.s.l. 259 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.82 1.60 2.68 4.04 5.03 5.54 5.34 4.48 3.53 1.94 0.92 0.65 3.05
 Gmax 1.71 3.21 4.90 6.56 7.80 8.25 7.76 6.74 5.43 3.54 2.07 1.45 4.96
 Gmin 0.21 0.43 0.64 0.97 1.24 1.67 2.08 1.47 1.22 0.48 0.20 0.13 0.90
 Go 2.62 4.16 6.44 8.87 10.74 11.57 11.13 9.55 7.30 4.91 3.03 2.18 6.89

Ratios to extraterrestrial radiation

G/Go 0.31 0.38 0.42 0.46 0.47 0.48 0.47 0.47 0.48 0.40 0.30 0.30 0.41
 Ktmax 0.55 0.65 0.65 0.67 0.69 0.71 0.67 0.65 0.66 0.61 0.58 0.63 0.65
 Ktmin 0.08 0.10 0.10 0.11 0.12 0.14 0.19 0.15 0.17 0.10 0.07 0.06 0.13

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.57 0.98 1.57 2.25 2.81 2.95 2.99 2.48 1.85 1.09 0.62 0.46 1.73
 D/G mean +++ 0.69 0.62 0.58 0.56 0.56 0.53 0.56 0.55 0.52 0.56 0.68 0.71 0.57

Daily sunshine duration: hours.

S 1.2 2.5 3.7 5.4 6.4 7.0 7.3 6.6 5.5 3.3 1.5 1.2 4.3
 So 8.5 9.9 11.7 13.6 15.2 16.0 15.6 14.2 12.5 10.6 8.9 8.0 12.1
 S/So 0.14 0.25 0.32 0.40 0.42 0.44 0.47 0.46 0.44 0.31 0.17 0.15 0.33
 Somax 8.9 10.5 12.5 14.3 15.7 16.1 15.9 14.8 13.1 11.3 9.4 8.1

Angstrom coefficients: Radiation observing site

Angstrom a 0.23 0.24 0.23 0.24 0.24 0.24 0.24 0.24 0.25 0.21 0.20 0.21 0.23
 Angstrom b 0.63 0.56 0.57 0.55 0.54 0.54 0.50 0.50 0.52 0.59 0.61 0.60 0.56

GERMANY Map site No.130 Computer file GERMAHOR.130 DEUSELBACH
 Latitude 49 46' N Longitude 7 3' E Height a.s.l. 480 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.79 1.52 2.53 3.87 4.89 5.30 5.30 4.56 3.42 2.01 0.94 0.62 2.99
 Gmax +++ 1.75 3.18 4.92 6.62 7.86 8.29 8.00 6.83 5.34 3.45 2.08 1.39 4.98
 Gmin +++ 0.15 0.28 0.57 0.82 1.42 1.57 1.87 1.34 0.94 0.39 0.18 0.12 0.81
 Go 2.62 4.17 6.44 8.87 10.74 11.57 11.14 9.56 7.31 4.92 3.03 2.19 6.89

Ratios to extraterrestrial radiation

G/Go +++ 0.30 0.36 0.39 0.44 0.46 0.46 0.48 0.48 0.47 0.41 0.31 0.28 0.40
 Ktmax +++ 0.57 0.65 0.65 0.68 0.70 0.71 0.70 0.66 0.65 0.59 0.58 0.60 0.65
 Ktmin +++ 0.06 0.07 0.09 0.09 0.13 0.14 0.17 0.14 0.13 0.08 0.06 0.05 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.51 0.89 1.45 2.12 2.75 2.83 2.83 2.38 1.77 1.06 0.59 0.41 1.64
 D/G mean +++ 0.65 0.59 0.57 0.55 0.56 0.53 0.53 0.52 0.52 0.53 0.63 0.66 0.55

Daily sunshine duration: hours.

S 1.7 2.6 3.4 5.3 6.2 6.7 7.4 6.8 5.7 3.9 2.0 1.5 4.4
 So 8.5 9.9 11.7 13.6 15.2 16.0 15.6 14.2 12.5 10.6 8.9 8.0 12.1
 S/So 0.20 0.26 0.29 0.39 0.41 0.42 0.47 0.48 0.46 0.36 0.22 0.19 0.35
 Somax 8.9 10.5 12.5 14.3 15.7 16.1 15.9 14.8 13.1 11.3 9.4 8.1

Angstrom coefficients: Reference site: Trier

Angstrom a 0.18 0.20 0.21 0.20 0.23 0.22 0.22 0.22 0.22 0.19 0.17 0.16 0.20
 Angstrom b 0.62 0.63 0.62 0.60 0.55 0.57 0.54 0.54 0.54 0.60 0.63 0.66 0.59

GERMANY Map site No.131 Computer file GERMAHOR.131 TRIER
 Latitude 49 45' N Longitude 6 40' E Height a.s.l. 265 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.72 1.47 2.52 3.88 4.88 5.25 5.27 4.43 3.31 1.79 0.84 0.56 2.92
 Gmax 1.75 3.18 4.92 6.62 7.86 8.29 7.99 6.83 5.34 3.45 2.08 1.39 4.98
 Gmin 0.16 0.28 0.58 0.82 1.41 1.58 1.87 1.34 0.94 0.39 0.18 0.12 0.81
 Go 2.62 4.17 6.44 8.87 10.74 11.57 11.14 9.56 7.31 4.92 3.03 2.19 6.89

Ratios to extraterrestrial radiation

G/Go 0.28 0.35 0.39 0.44 0.45 0.45 0.47 0.46 0.45 0.36 0.28 0.26 0.39
 Ktmax 0.57 0.65 0.65 0.68 0.70 0.71 0.69 0.66 0.65 0.59 0.58 0.60 0.65
 Ktmin 0.06 0.07 0.09 0.09 0.13 0.14 0.17 0.14 0.13 0.08 0.06 0.05 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.51 0.89 1.44 2.14 2.76 2.84 2.88 2.41 1.81 1.04 0.58 0.39 1.65
 D/G mean +++ 0.70 0.60 0.57 0.55 0.57 0.54 0.55 0.54 0.55 0.58 0.69 0.70 0.57

Daily sunshine duration: hours.

S 1.3 2.4 3.5 5.3 6.2 6.6 7.2 6.4 5.2 3.1 1.4 1.2 4.2
 So 8.5 9.9 11.7 13.6 15.2 16.0 15.6 14.2 12.5 10.6 8.9 8.0 12.1
 S/So 0.15 0.24 0.30 0.39 0.41 0.41 0.46 0.45 0.42 0.29 0.16 0.15 0.32
 Somax 8.9 10.5 12.5 14.3 15.7 16.1 15.9 14.8 13.1 11.3 9.4 8.1

Angstrom coefficients: Radiation observing site

Angstrom a 0.18 0.20 0.21 0.20 0.23 0.22 0.22 0.22 0.22 0.19 0.17 0.16 0.20
 Angstrom b 0.62 0.63 0.62 0.60 0.55 0.57 0.54 0.54 0.54 0.60 0.63 0.66 0.59

GERMANY		Map site No.132			Computer file GERMAHOR.132								MANNHEIM	
Latitude	49 31' N				Longitude	8 33' E			Height a.s.l.			96 metres		
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	0.81	1.54	2.71	4.11	5.07	5.41	5.45	4.60	3.51	1.92	0.92	0.65	3.07
Gmax	++++	1.77	3.21	4.94	6.62	7.87	8.29	8.00	6.84	5.36	3.47	2.11	1.42	5.00
Gmin	++++	0.16	0.28	0.58	0.82	1.42	1.57	1.87	1.37	0.94	0.39	0.18	0.12	0.81
Go		2.66	4.21	6.48	8.90	10.75	11.58	11.14	9.58	7.34	4.96	3.07	2.23	6.92
Ratios to extraterrestrial radiation														
G/Go	++++	0.30	0.37	0.42	0.46	0.47	0.47	0.49	0.48	0.48	0.39	0.30	0.29	0.41
Ktmax	++++	0.56	0.65	0.65	0.68	0.70	0.71	0.70	0.66	0.65	0.59	0.58	0.60	0.65
Ktmin	++++	0.06	0.07	0.09	0.09	0.13	0.14	0.17	0.14	0.13	0.08	0.06	0.05	0.12
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.55	0.94	1.54	2.21	2.77	2.86	2.89	2.47	1.82	1.08	0.62	0.44	1.69
D/G mean	++++	0.68	0.61	0.57	0.54	0.55	0.53	0.53	0.54	0.52	0.56	0.67	0.67	0.55
Daily sunshine duration: hours.														
S		1.4	2.6	3.9	5.8	6.5	7.1	7.6	6.8	5.8	3.4	1.6	1.5	4.5
So		8.5	9.9	11.7	13.6	15.2	16.0	15.6	14.2	12.4	10.6	8.9	8.0	12.1
S/So		0.17	0.26	0.34	0.43	0.43	0.44	0.49	0.48	0.47	0.32	0.18	0.18	0.35
Somax		8.9	10.5	12.5	14.3	15.6	16.0	15.9	14.8	13.1	11.3	9.4	8.1	
Angstrom coefficients:Reference site: Germany Region 2														
Angstrom a		0.20	0.21	0.22	0.22	0.23	0.22	0.23	0.23	0.23	0.20	0.19	0.18	0.22
Angstrom b		0.62	0.59	0.59	0.57	0.56	0.56	0.53	0.52	0.53	0.59	0.61	0.61	0.55

GERMANY		Map site No.133			Computer file GERMAHOR.133								BUCHEN	
Latitude	49 31' N				Longitude	9 20' E			Height a.s.l.			350 metres		
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	++++	0.84	1.59	2.65	4.08	5.06	5.58	5.39	4.60	3.64	2.05	0.95	0.67 3.10	
Gmax	++++	1.73	3.24	4.92	6.58	7.80	8.25	7.77	6.76	5.45	3.57	2.10	1.48 4.98	
Gmin	++++	0.22	0.44	0.65	0.97	1.24	1.67	2.08	1.47	1.23	0.48	0.20	0.14 0.90	
Go		2.66	4.21	6.48	8.90	10.75	11.58	11.14	9.58	7.34	4.96	3.07	2.23 6.92	
Ratios to extraterrestrial radiation														
G/Go	++++	0.32	0.38	0.41	0.46	0.47	0.48	0.48	0.48	0.50	0.41	0.31	0.30 0.42	
Ktmax	++++	0.55	0.65	0.65	0.67	0.69	0.71	0.68	0.66	0.66	0.61	0.58	0.63 0.65	
Ktmin	++++	0.08	0.10	0.10	0.11	0.12	0.14	0.19	0.15	0.17	0.10	0.07	0.06 0.13	
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.58	0.98	1.55	2.26	2.79	2.91	2.94	2.49	1.82	1.10	0.63	0.47 1.72	
D/G mean	++++	0.69	0.61	0.58	0.55	0.55	0.52	0.54	0.54	0.50	0.54	0.67	0.71 0.55	
Daily sunshine duration: hours.														
S		1.2	2.5	3.7	5.4	6.5	7.2	7.6	6.8	5.9	3.7	1.6	1.2 4.4	
So		8.5	9.9	11.7	13.6	15.2	16.0	15.6	14.2	12.4	10.6	8.9	8.0 12.1	
S/So		0.14	0.25	0.31	0.40	0.43	0.45	0.49	0.48	0.47	0.34	0.18	0.15 0.34	
Somax		8.9	10.5	12.5	14.3	15.6	16.0	15.9	14.8	13.1	11.3	9.4	8.1	
Angstrom coefficients:Reference site: Wuerzburg														
Angstrom a		0.23	0.24	0.23	0.24	0.24	0.24	0.24	0.24	0.25	0.21	0.20	0.21 0.23	
Angstrom b		0.63	0.56	0.57	0.55	0.54	0.54	0.50	0.50	0.52	0.59	0.61	0.60 0.55	

GERMANY		Map site No.134			Computer file GERMAHOR.134								NUERNBURG	
Latitude	49 30' N				Longitude			11 5' E	Height a.s.l.			310 metres		
Horizontal planes: - monthly means.					Data used & period:			S	(1966 -1975)					
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.														
G mean	++++	0.92	1.67	2.79	4.16	5.21	5.71	5.42	4.65	3.69	2.09	1.00	3.17	
Gmax	++++	1.73	3.24	4.92	6.58	7.80	8.25	7.77	6.76	5.45	3.57	2.10	4.98	
Gmin	++++	0.22	0.44	0.65	0.97	1.24	1.67	2.08	1.47	1.23	0.48	0.20	0.90	
Go		2.67	4.21	6.48	8.90	10.75	11.58	11.14	9.58	7.34	4.96	3.08	6.92	
Ratios to extraterrestrial radiation														
G/Go	++++	0.34	0.40	0.43	0.47	0.48	0.49	0.49	0.49	0.50	0.42	0.32	0.43	
Ktmax	++++	0.55	0.65	0.65	0.67	0.69	0.71	0.68	0.66	0.66	0.61	0.58	0.65	
Ktmin	++++	0.08	0.10	0.10	0.11	0.12	0.14	0.19	0.15	0.17	0.10	0.07	0.13	
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.60	0.99	1.57	2.27	2.79	2.90	2.93	2.48	1.83	1.11	0.64	1.72	
D/G mean	++++	0.65	0.59	0.56	0.55	0.54	0.51	0.54	0.53	0.50	0.53	0.64	0.54	
Daily sunshine duration: hours.														
S		1.5	2.8	4.1	5.6	6.9	7.5	7.7	7.0	6.0	3.8	1.8	4.7	
So		8.5	9.9	11.7	13.6	15.2	16.0	15.6	14.2	12.4	10.6	8.9	8.0	
S/So		0.18	0.28	0.35	0.41	0.45	0.47	0.49	0.49	0.49	0.36	0.20	0.36	
Somax		8.9	10.5	12.5	14.3	15.6	16.0	15.9	14.8	13.1	11.3	9.4	8.1	
Angstrom coefficients:Reference site: Wuerzburg														
Angstrom a		0.23	0.24	0.23	0.24	0.24	0.24	0.24	0.24	0.25	0.21	0.20	0.23	
Angstrom b		0.63	0.56	0.57	0.55	0.54	0.54	0.50	0.50	0.52	0.59	0.61	0.56	

GERMANY		Map site No.135			Computer file GERMAHOR.135					NEUSTADT/WSTR.				
Latitude	49 22' N				Longitude	8 8' E				Height a.s.l.		163 metres		
Horizontal planes: - monthly means.					Data used & period: S					(1966 -1975)				
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.														
G mean	++++	0.81	1.56	2.73	4.01	4.97	5.36	5.43	4.57	3.54	1.99	0.98	0.66	3.06
Gmax	++++	1.74	3.25	4.93	6.59	7.80	8.25	7.77	6.76	5.46	3.58	2.11	1.49	4.98
Gmin	++++	0.22	0.44	0.65	0.97	1.24	1.67	2.08	1.48	1.23	0.48	0.20	0.14	0.90
Go		2.69	4.23	6.50	8.91	10.76	11.58	11.15	9.59	7.36	4.98	3.10	2.26	6.94
Ratios to extraterrestrial radiation														
G/Go	++++	0.30	0.37	0.42	0.45	0.46	0.46	0.49	0.48	0.48	0.40	0.32	0.29	0.41
Ktmax	++++	0.55	0.65	0.65	0.67	0.69	0.71	0.67	0.65	0.66	0.61	0.58	0.63	0.65
Ktmin	++++	0.08	0.10	0.10	0.11	0.12	0.14	0.19	0.15	0.17	0.10	0.07	0.06	0.13
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.55	0.94	1.53	2.21	2.75	2.87	2.46	1.81	1.10	0.63	0.44	1.69	
D/G mean	++++	0.68	0.60	0.56	0.55	0.55	0.54	0.53	0.54	0.51	0.55	0.64	0.67	0.55
Daily sunshine duration: hours.														
S		1.4	2.7	4.0	5.5	6.3	6.9	7.6	6.7	5.9	3.6	1.9	1.5	4.5
So		8.5	10.0	11.7	13.6	15.1	16.0	15.6	14.2	12.4	10.6	9.0	8.0	12.1
S/So		0.16	0.27	0.34	0.40	0.41	0.43	0.49	0.47	0.47	0.34	0.21	0.18	0.35
Somax		9.0	10.5	12.5	14.2	15.6	16.0	15.9	14.8	13.1	11.3	9.5	8.2	
Angstrom coefficients:Reference site: Germany Region 2														
Angstrom a		0.20	0.21	0.22	0.22	0.23	0.23	0.23	0.23	0.23	0.20	0.19	0.18	0.22
Angstrom b		0.62	0.59	0.59	0.57	0.56	0.56	0.53	0.52	0.53	0.59	0.61	0.61	0.56

GERMANY		Map site No.136			Computer file GERMAHOR.136								BERUS	
Latitude	49 17' N				Longitude			6 41' E			Height a.s.l.			363 metres
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.														
G mean	++++	0.78	1.65	2.72	4.09	5.11	5.60	5.54	4.68	3.52	1.95	0.94	0.65	3.11
Gmax	++++	1.79	3.23	4.96	6.64	7.87	8.29	8.00	6.85	5.37	3.49	2.12	1.44	5.01
Gmin	++++	0.16	0.28	0.58	0.82	1.42	1.57	1.87	1.34	0.94	0.39	0.19	0.12	0.81
Go		2.70	4.25	6.51	8.92	10.76	11.58	11.15	9.59	7.37	5.00	3.11	2.27	6.95
Ratios to extraterrestrial radiation														
G/Go	++++	0.29	0.39	0.42	0.46	0.47	0.48	0.50	0.49	0.48	0.39	0.30	0.28	0.41
Ktmax	++++	0.56	0.65	0.65	0.68	0.70	0.71	0.69	0.66	0.65	0.59	0.58	0.60	0.65
Ktmin	++++	0.06	0.07	0.09	0.09	0.13	0.14	0.17	0.14	0.13	0.08	0.06	0.05	0.12
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.53	0.92	1.49	2.15	2.77	2.82	2.82	2.40	1.79	1.09	0.60	0.43	1.66
D/G mean	++++	0.68	0.56	0.55	0.53	0.54	0.50	0.51	0.51	0.51	0.56	0.64	0.66	0.53
Daily sunshine duration: hours.														
S		1.5	3.0	3.9	5.8	6.7	7.4	8.0	7.0	5.9	3.5	1.9	1.5	4.7
So		8.5	10.0	11.7	13.6	15.1	16.0	15.6	14.2	12.4	10.6	9.0	8.1	12.1
S/So		0.18	0.30	0.33	0.43	0.45	0.46	0.51	0.50	0.48	0.33	0.21	0.19	0.36
Somax		9.0	10.5	12.5	14.2	15.6	16.0	15.9	14.8	13.1	11.3	9.5	8.2	
Angstrom coefficients:Reference site: Trier														
Angstrom a		0.18	0.20	0.21	0.20	0.23	0.22	0.22	0.22	0.22	0.19	0.17	0.16	0.20
Angstrom b		0.62	0.63	0.62	0.60	0.55	0.57	0.54	0.54	0.54	0.60	0.63	0.66	0.59

GERMANY		Map site No.137			Computer file GERMAHOR.137								ANSBACH	
Latitude	49 17' N				Longitude	10 34' E			Height a.s.l.			413 metres		
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.														
G mean	++++	0.90	1.64	2.76	4.14	5.12	5.56	5.39	4.59	3.72	2.11	0.99	0.69	3.14
Gmax	++++	1.75	3.27	4.94	6.59	7.80	8.25	7.77	6.77	5.47	3.59	2.11	1.50	4.99
Gmin	++++	0.22	0.44	0.65	0.97	1.24	1.67	2.08	1.48	1.23	0.48	0.21	0.14	0.90
Go		2.70	4.25	6.51	8.92	10.76	11.58	11.15	9.59	7.37	5.00	3.11	2.27	6.95
Ratios to extraterrestrial radiation														
G/Go	++++	0.33	0.39	0.42	0.46	0.48	0.48	0.48	0.48	0.51	0.42	0.32	0.30	0.42
Ktmax	++++	0.55	0.65	0.65	0.67	0.69	0.71	0.67	0.66	0.66	0.61	0.57	0.63	0.65
Ktmin	++++	0.08	0.10	0.10	0.11	0.12	0.14	0.19	0.15	0.17	0.10	0.07	0.06	0.13
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.60	0.99	1.57	2.27	2.80	2.91	2.92	2.48	1.81	1.12	0.65	0.49	1.73
D/G mean	++++	0.66	0.61	0.57	0.55	0.55	0.52	0.54	0.54	0.49	0.53	0.65	0.71	0.55
Daily sunshine duration: hours.														
S		1.4	2.6	4.0	5.5	6.6	7.1	7.6	6.8	6.1	3.8	1.7	1.2	4.5
So		8.5	10.0	11.7	13.6	15.1	16.0	15.6	14.2	12.4	10.6	9.0	8.1	12.1
S/So		0.16	0.26	0.34	0.41	0.44	0.45	0.49	0.48	0.49	0.36	0.19	0.15	0.35
Somax		9.0	10.5	12.5	14.2	15.6	16.0	15.9	14.8	13.1	11.3	9.5	8.2	
Angstrom coefficients:Reference site: Wuerzburg														
Angstrom a		0.23	0.24	0.23	0.24	0.24	0.24	0.24	0.24	0.25	0.21	0.20	0.21	0.23
Angstrom b		0.63	0.56	0.57	0.55	0.54	0.54	0.50	0.50	0.52	0.59	0.61	0.60	0.56

GERMANY		Map site No.138				Computer file GERMAHOR.138								CHAM	
Latitude 49 14' N						Longitude 12 40' E				Height a.s.l.				423 metres	
Horizontal planes: - monthly means.						Data used & period: S				(1966 -1975)					
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.															
G mean	++++	1.00	1.81	2.96	4.13	5.05	5.32	5.38	4.62	3.68	2.13	1.11	0.78	3.17	
Gmax	++++	2.02	3.44	5.03	6.65	7.76	8.09	7.93	6.86	5.58	3.87	2.45	1.62	5.12	
Gmin	++++	0.31	0.47	0.82	1.16	1.16	1.40	1.52	1.36	0.92	0.52	0.27	0.22	0.85	
Go		2.71	4.26	6.52	8.92	10.76	11.58	11.15	9.60	7.37	5.00	3.12	2.28	6.95	
Ratios to extraterrestrial radiation															
G/Go	++++	0.37	0.42	0.45	0.46	0.47	0.46	0.48	0.48	0.50	0.43	0.35	0.34	0.44	
Ktmax	++++	0.63	0.69	0.66	0.68	0.69	0.70	0.69	0.66	0.67	0.66	0.67	0.67	0.68	
Ktmin	++++	0.11	0.11	0.13	0.13	0.11	0.12	0.14	0.14	0.13	0.10	0.09	0.10	0.12	
Daily diffuse radiation: kWh/m^2.															
D mean est.	++++	0.64	1.02	1.62	2.30	2.80	2.91	2.92	2.45	1.86	1.14	0.68	0.51	1.75	
D/G mean	++++	0.64	0.56	0.55	0.56	0.55	0.55	0.54	0.53	0.50	0.54	0.62	0.66	0.55	
Daily sunshine duration: hours.															
S		1.6	2.9	4.2	5.3	6.4	6.9	7.4	7.0	5.8	3.8	1.9	1.4	4.6	
So		8.5	10.0	11.7	13.5	15.1	15.9	15.6	14.2	12.4	10.6	9.0	8.1	12.1	
S/So		0.19	0.29	0.35	0.39	0.42	0.43	0.48	0.49	0.47	0.36	0.22	0.17	0.36	
Somax		9.0	10.5	12.5	14.2	15.6	16.0	15.9	14.8	13.1	11.3	9.5	8.2		
Angstrom coefficients:Reference site: Weihenstephan															
Angstrom a		0.26	0.26	0.26	0.25	0.24	0.23	0.24	0.23	0.26	0.22	0.22	0.24	0.24	
Angstrom b		0.58	0.57	0.55	0.54	0.54	0.53	0.51	0.51	0.51	0.57	0.62	0.61	0.55	

GERMANY		Map site No.139			Computer file GERMAHOR.139								SAARBUECKEN			
Latitude 49 13' N					Longitude 7 1' E				Height a.s.l.				191 metres			
Horizontal planes: - monthly means.					Data used & period:		S		(1966 -1975)							
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m^2.																
G mean	++++	0.73	1.53	2.49	3.74	4.80	5.18	5.13	4.31	3.30	1.87	0.88	0.59	2.89		
Gmax	++++	1.80	3.24	4.96	6.65	7.87	8.30	8.00	6.85	5.38	3.50	2.14	1.45	5.02		
Gmin	++++	0.16	0.29	0.58	0.82	1.42	1.57	1.87	1.34	0.94	0.40	0.19	0.12	0.81		
Go		2.71	4.26	6.52	8.93	10.76	11.58	11.15	9.60	7.38	5.01	3.12	2.28	6.95		
Ratios to extraterrestrial radiation																
G/Go	++++	0.27	0.36	0.38	0.42	0.45	0.45	0.46	0.45	0.45	0.37	0.28	0.26	0.38		
Ktmax	++++	0.57	0.65	0.65	0.68	0.70	0.71	0.69	0.66	0.65	0.59	0.58	0.60	0.65		
Ktmin	++++	0.06	0.07	0.09	0.09	0.13	0.14	0.17	0.14	0.13	0.08	0.06	0.05	0.12		
Daily diffuse radiation: kWh/m^2.																
D mean est.	++++	0.52	0.91	1.45	2.13	2.78	2.84	2.87	2.43	1.81	1.08	0.59	0.41	1.66		
D/G mean	++++	0.72	0.60	0.58	0.57	0.58	0.55	0.56	0.56	0.55	0.58	0.67	0.70	0.57		
Daily sunshine duration: hours.																
S		1.2	2.5	3.3	4.9	5.9	6.4	6.9	6.0	5.2	3.2	1.6	1.2	4.0		
So		8.5	10.0	11.7	13.5	15.1	15.9	15.6	14.2	12.4	10.6	9.0	8.1	12.1		
S/So		0.15	0.25	0.28	0.36	0.39	0.40	0.44	0.42	0.42	0.31	0.18	0.15	0.31		
Somax		9.0	10.5	12.5	14.2	15.6	16.0	15.9	14.8	13.1	11.3	9.5	8.2			
Angstrom coefficients:Reference site: Trier																
Angstrom a		0.18	0.20	0.21	0.20	0.23	0.22	0.22	0.22	0.22	0.19	0.17	0.16	0.20		
Angstrom b		0.62	0.63	0.62	0.60	0.55	0.57	0.54	0.54	0.54	0.60	0.63	0.66	0.59		

GERMANY		Map site No.140			Computer file GERMAHOR.140								OHRINGEN	
Latitude 49 12' N					Longitude 9 31' E				Height a.s.l.				276 metres	
Horizontal planes: - monthly means.					Data used & period:		S		(1966 -1975)					
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.														
G mean	++++	0.98	1.63	2.75	4.12	5.10	5.51	5.38	4.57	3.74	2.17	1.05	0.75	3.15
Gmax	++++	1.76	3.27	4.95	6.60	7.81	8.25	7.77	6.77	5.47	3.60	2.13	1.51	5.00
Gmin	++++	0.22	0.44	0.65	0.97	1.24	1.67	2.09	1.48	1.23	0.49	0.21	0.14	0.90
Go		2.72	4.26	6.52	8.93	10.76	11.58	11.15	9.60	7.38	5.01	3.13	2.28	6.96
Ratios to extraterrestrial radiation														
G/Go	++++	0.36	0.38	0.42	0.46	0.47	0.48	0.48	0.48	0.51	0.43	0.33	0.33	0.43
Ktmax	++++	0.55	0.65	0.65	0.67	0.69	0.71	0.67	0.66	0.66	0.61	0.58	0.63	0.65
Ktmin	++++	0.08	0.10	0.10	0.11	0.12	0.14	0.19	0.15	0.17	0.10	0.07	0.06	0.13
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.60	1.00	1.58	2.27	2.82	2.92	2.96	2.50	1.83	1.12	0.65	0.49	1.74
D/G mean	++++	0.61	0.61	0.57	0.55	0.55	0.53	0.55	0.55	0.49	0.52	0.62	0.65	0.55
Daily sunshine duration: hours.														
S		1.8	2.5	3.9	5.5	6.5	7.0	7.5	6.7	6.1	4.0	2.0	1.6	4.6
So		8.5	10.0	11.7	13.5	15.1	15.9	15.6	14.2	12.4	10.6	9.0	8.1	12.1
S/So		0.21	0.25	0.34	0.40	0.43	0.44	0.48	0.47	0.49	0.38	0.22	0.19	0.36
Somax		9.0	10.5	12.5	14.2	15.6	16.0	15.9	14.8	13.1	11.3	9.5	8.2	
Angstrom coefficients:Reference site: Wuerzburg														
Angstrom a		0.23	0.24	0.23	0.24	0.24	0.24	0.24	0.24	0.25	0.21	0.20	0.21	0.23
Angstrom b		0.63	0.56	0.57	0.55	0.54	0.54	0.50	0.50	0.52	0.59	0.61	0.60	0.56

GERMANY Map site No.141 Computer file GERMAHOR.141 KARLSRUHE
 Latitude 49 2' N Longitude 8 22' E Height a.s.l. 112 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.86 1.54 2.67 3.98 5.12 5.50 5.54 4.61 3.53 1.99 0.96 0.66 3.09
 Gmax +++ 1.82 3.26 4.97 6.65 7.88 8.30 8.01 6.86 5.39 3.51 2.15 1.47 5.03
 Gmin +++ 0.16 0.29 0.58 0.82 1.42 1.58 1.87 1.35 0.95 0.40 0.19 0.12 0.82
 Go 2.74 4.29 6.55 8.94 10.77 11.58 11.16 9.61 7.40 5.04 3.16 2.31 6.98

Ratios to extraterrestrial radiation

G/Go +++ 0.31 0.36 0.41 0.44 0.47 0.47 0.50 0.48 0.48 0.40 0.30 0.29 0.41
 Ktmax +++ 0.57 0.65 0.65 0.68 0.70 0.71 0.70 0.66 0.65 0.59 0.58 0.60 0.65
 Ktmin +++ 0.06 0.07 0.09 0.09 0.13 0.14 0.17 0.14 0.13 0.08 0.06 0.05 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.57 0.95 1.54 2.23 2.77 2.87 2.88 2.46 1.82 1.11 0.63 0.45 1.70
 D/G mean +++ 0.67 0.62 0.58 0.56 0.54 0.52 0.52 0.53 0.52 0.56 0.66 0.68 0.55

Daily sunshine duration: hours.

S 1.5 2.5 3.7 5.3 6.6 7.2 7.8 6.8 5.8 3.5 1.7 1.4 4.5
 So 8.6 10.0 11.7 13.5 15.1 15.9 15.5 14.2 12.4 10.6 9.0 8.1 12.1
 S/So 0.18 0.25 0.32 0.39 0.44 0.45 0.50 0.48 0.47 0.33 0.19 0.17 0.35
 Somax 9.0 10.5 12.5 14.2 15.6 15.9 15.8 14.7 13.1 11.3 9.5 8.2

Angstrom coefficients:Reference site: Germany Region 2

Angstrom a 0.20 0.21 0.22 0.22 0.23 0.22 0.23 0.23 0.23 0.20 0.19 0.18 0.22
 Angstrom b 0.62 0.59 0.59 0.57 0.56 0.56 0.53 0.52 0.53 0.59 0.61 0.61 0.56

GERMANY Map site No.142 Computer file GERMAHOR.142 REGENSBURG
 Latitude 49 3' N Longitude 12 6' E Height a.s.l. 366 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.98 1.75 3.00 4.20 5.14 5.43 5.46 4.59 3.67 2.03 1.07 0.77 3.18
 Gmax +++ 2.04 3.46 5.04 6.66 7.77 8.09 7.94 6.87 5.60 3.89 2.47 1.65 5.12
 Gmin +++ 0.31 0.47 0.82 1.16 1.16 1.40 1.52 1.36 0.92 0.52 0.27 0.22 0.85
 Go 2.74 4.29 6.54 8.94 10.77 11.58 11.15 9.61 7.40 5.03 3.15 2.31 6.97

Ratios to extraterrestrial radiation

G/Go +++ 0.36 0.41 0.46 0.47 0.48 0.47 0.49 0.48 0.50 0.40 0.34 0.33 0.43
 Ktmax +++ 0.63 0.69 0.66 0.68 0.69 0.70 0.69 0.66 0.68 0.66 0.67 0.68 0.68
 Ktmin +++ 0.11 0.11 0.13 0.13 0.11 0.12 0.14 0.14 0.13 0.10 0.09 0.10 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.66 1.03 1.65 2.30 2.81 2.91 2.92 2.46 1.85 1.14 0.68 0.52 1.75
 D/G mean +++ 0.67 0.59 0.55 0.55 0.55 0.54 0.53 0.54 0.51 0.56 0.64 0.67 0.55

Daily sunshine duration: hours.

S 1.4 2.6 4.2 5.5 6.6 7.2 7.6 6.9 5.8 3.4 1.7 1.3 4.5
 So 8.6 10.0 11.7 13.5 15.1 15.9 15.5 14.2 12.4 10.6 9.0 8.1 12.1
 S/So 0.17 0.26 0.36 0.41 0.44 0.45 0.49 0.49 0.46 0.32 0.19 0.16 0.35
 Somax 9.0 10.5 12.5 14.2 15.6 16.0 15.8 14.7 13.1 11.3 9.5 8.2

Angstrom coefficients:Reference site: Weißenstephan

Angstrom a 0.26 0.26 0.26 0.25 0.24 0.23 0.24 0.23 0.26 0.22 0.22 0.24 0.24
 Angstrom b 0.58 0.57 0.55 0.54 0.54 0.53 0.51 0.51 0.51 0.57 0.62 0.61 0.55

GERMANY Map site No.143 Computer file GERMAHOR.143 STUTTGART
 Latitude 48 46' N Longitude 9 11' E Height a.s.l. 286 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.97 1.66 2.67 4.06 4.97 5.41 5.44 4.49 3.64 2.22 1.10 0.76 3.12
 Gmax +++ 1.84 3.29 4.99 6.67 7.89 8.30 8.01 6.87 5.41 3.53 2.18 1.49 5.05
 Gmin +++ 0.16 0.29 0.59 0.83 1.42 1.58 1.88 1.35 0.95 0.40 0.19 0.13 0.82
 Go 2.79 4.33 6.59 8.97 10.78 11.59 11.16 9.63 7.43 5.08 3.20 2.35 7.01

Ratios to extraterrestrial radiation

G/Go +++ 0.35 0.38 0.41 0.45 0.46 0.47 0.49 0.47 0.49 0.44 0.34 0.32 0.42
 Ktmax +++ 0.56 0.65 0.65 0.68 0.70 0.71 0.70 0.66 0.65 0.59 0.58 0.60 0.65
 Ktmin +++ 0.06 0.07 0.09 0.09 0.13 0.14 0.17 0.14 0.13 0.08 0.06 0.05 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.62 0.99 1.57 2.28 2.77 2.90 2.88 2.48 1.86 1.14 0.67 0.50 1.73
 D/G mean +++ 0.64 0.60 0.59 0.56 0.56 0.54 0.53 0.55 0.51 0.51 0.61 0.66 0.55

Daily sunshine duration: hours.

S 1.6 2.7 3.6 5.2 6.3 6.8 7.7 6.5 5.7 4.2 2.1 1.5 4.5
 So 8.6 10.0 11.7 13.5 15.1 15.9 15.5 14.1 12.4 10.6 9.0 8.1 12.1
 S/So 0.19 0.27 0.31 0.39 0.42 0.43 0.49 0.46 0.46 0.39 0.23 0.19 0.35
 Somax 9.0 10.6 12.5 14.2 15.5 15.9 15.8 14.7 13.1 11.3 9.5 8.2

Angstrom coefficients:Reference site: Germany Region 3

Angstrom a 0.23 0.23 0.23 0.24 0.23 0.23 0.23 0.23 0.25 0.21 0.20 0.21 0.23
 Angstrom b 0.61 0.57 0.57 0.55 0.55 0.55 0.52 0.51 0.52 0.58 0.61 0.59 0.55

GERMANY		Map site No.144			Computer file GERMAHOR.144								PASSAU	
Latitude	48 35' N				Longitude 13 29' E			Height a.s.l.					409 metres	
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.														
G mean	++++	1.04	1.82	3.04	4.23	5.17	5.38	5.45	4.68	3.66	2.13	1.15	0.80	3.22
Gmax	++++	2.09	3.51	5.08	6.68	7.77	8.09	7.94	6.89	5.63	3.94	2.52	1.70	5.16
Gmin	++++	0.32	0.48	0.83	1.17	1.17	1.40	1.52	1.37	0.93	0.53	0.28	0.23	0.86
Go		2.82	4.36	6.61	8.99	10.79	11.59	11.17	9.64	7.46	5.11	3.23	2.39	7.03
Ratios to extraterrestrial radiation														
G/Go	++++	0.37	0.42	0.46	0.47	0.48	0.46	0.49	0.49	0.49	0.42	0.35	0.34	0.44
Ktmax	++++	0.63	0.69	0.66	0.68	0.69	0.69	0.69	0.66	0.68	0.66	0.66	0.68	0.68
Ktmin	++++	0.11	0.11	0.13	0.13	0.11	0.12	0.14	0.14	0.13	0.10	0.09	0.10	0.12
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.67	1.04	1.65	2.31	2.79	2.91	2.92	2.45	1.89	1.16	0.70	0.54	1.76
D/G mean	++++	0.64	0.57	0.54	0.55	0.54	0.54	0.54	0.52	0.52	0.54	0.61	0.67	0.55
Daily sunshine duration: hours.														
S		1.6	2.8	4.3	5.5	6.7	7.0	7.5	7.1	5.6	3.7	2.0	1.3	4.6
So		8.6	10.0	11.7	13.5	15.0	15.8	15.5	14.1	12.4	10.7	9.0	8.2	12.1
S/So		0.19	0.28	0.36	0.41	0.44	0.44	0.49	0.50	0.45	0.35	0.22	0.16	0.36
Somax		9.0	10.6	12.5	14.2	15.5	15.9	15.8	14.7	13.0	11.3	9.5	8.3	
Angstrom coefficients:Reference site: Weihestephan														
Angstrom a		0.26	0.26	0.26	0.25	0.24	0.23	0.24	0.23	0.26	0.22	0.22	0.24	0.24
Angstrom b		0.58	0.57	0.55	0.54	0.54	0.53	0.51	0.51	0.51	0.57	0.62	0.61	0.55

GERMANY		Map site No.145			Computer file GERMAHOR.145						WEIHENSTEPHAN			
Latitude	48 24' N				Longitude			11 44' E	Height a.s.l.			467 metres		
Horizontal planes: - monthly means.					Data used & period:			G & S (1966 -1975)						
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.														
G mean	1.07	1.83	2.96	4.11	5.07	5.38	5.46	4.60	3.70	2.23	1.18	0.83	3.21	
Gmax	2.11	3.53	5.09	6.69	7.78	8.10	7.94	6.89	5.65	3.95	2.55	1.72	5.17	
Gmin	0.32	0.48	0.84	1.17	1.17	1.40	1.52	1.37	0.94	0.54	0.28	0.24	0.86	
Go	2.85	4.39	6.64	9.00	10.80	11.59	11.17	9.66	7.48	5.14	3.26	2.42	7.05	
Ratios to extraterrestrial radiation														
G/Go	0.38	0.41	0.45	0.46	0.47	0.46	0.49	0.48	0.49	0.43	0.36	0.34	0.44	
Ktmax	0.63	0.69	0.66	0.68	0.69	0.70	0.69	0.66	0.68	0.66	0.67	0.68	0.68	
Ktmin	0.11	0.11	0.13	0.13	0.11	0.12	0.14	0.14	0.13	0.10	0.09	0.10	0.12	
Daily diffuse radiation: kWh/m^2.														
D mean est. ++++	0.68	1.06	1.65	2.30	2.77	2.95	2.94	2.49	1.86	1.17	0.70	0.55	1.77	
D/G mean ++++	0.63	0.58	0.56	0.56	0.55	0.55	0.54	0.54	0.50	0.52	0.60	0.66	0.55	
Daily sunshine duration: hours.														
S	1.7	2.7	4.0	5.2	6.5	6.8	7.4	6.7	5.8	4.0	2.1	1.4	4.5	
So	8.6	10.0	11.7	13.5	15.0	15.8	15.4	14.1	12.4	10.7	9.1	8.2	12.1	
S/So	0.20	0.27	0.34	0.39	0.43	0.43	0.48	0.48	0.47	0.37	0.23	0.17	0.36	
Somax	9.1	10.6	12.5	14.2	15.5	15.9	15.7	14.7	13.0	11.3	9.5	8.3		
Angstrom coefficients:Radiation observing site														
Angstrom a	0.26	0.26	0.26	0.25	0.24	0.23	0.24	0.23	0.26	0.22	0.22	0.24	0.24	
Angstrom b	0.58	0.57	0.55	0.54	0.54	0.53	0.51	0.51	0.51	0.57	0.62	0.61	0.55	

GERMANY		Map site No.146			Computer file GERMAHOR.146								AUGSBURG	
Latitude	48 26' N				Longitude	10 56' E <th colspan="3"></th> <th>Height a.s.l.</th> <td>461 metres</td> <th colspan="2"></th>				Height a.s.l.	461 metres			
Horizontal planes: - monthly means.					Data used & period:			S	(1966 -1975)					
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	++++	1.09	1.85	2.96	4.19	5.17	5.45	5.59	4.57	3.78	2.21	1.20	0.86	3.25
Gmax	++++	2.10	3.53	5.10	6.69	7.77	8.09	7.94	6.89	5.64	3.95	2.54	1.72	5.17
Gmin	++++	0.32	0.48	0.84	1.17	1.17	1.40	1.52	1.37	0.93	0.53	0.28	0.23	0.86
Go		2.85	4.39	6.63	9.00	10.80	11.59	11.17	9.66	7.47	5.13	3.26	2.41	7.04
Ratios to extraterrestrial radiation														
G/Go	++++	0.38	0.42	0.45	0.47	0.48	0.47	0.50	0.47	0.51	0.43	0.37	0.36	0.44
Ktmax	++++	0.63	0.69	0.66	0.68	0.69	0.69	0.69	0.66	0.68	0.66	0.67	0.68	0.68
Ktmin	++++	0.11	0.11	0.13	0.13	0.11	0.12	0.14	0.14	0.13	0.10	0.09	0.10	0.12
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.67	1.06	1.65	2.31	2.78	2.90	2.89	2.47	1.86	1.17	0.70	0.54	1.76
D/G mean	++++	0.62	0.57	0.56	0.55	0.54	0.53	0.52	0.54	0.49	0.53	0.58	0.63	0.54
Daily sunshine duration: hours.														
S		1.8	2.8	4.0	5.4	6.7	7.2	7.9	6.7	6.0	3.9	2.2	1.6	4.7
So		8.6	10.0	11.7	13.5	15.0	15.8	15.5	14.1	12.4	10.7	9.1	8.2	12.1
S/So		0.21	0.28	0.34	0.40	0.44	0.45	0.51	0.48	0.48	0.37	0.24	0.19	0.37
Somax		9.1	10.6	12.5	14.2	15.5	15.9	15.7	14.7	13.0	11.3	9.5	8.3	
Angstrom coefficients:Reference site: Weihestephan														
Angstrom a		0.26	0.26	0.26	0.25	0.24	0.23	0.24	0.23	0.26	0.22	0.22	0.24	0.24
Angstrom b		0.58	0.57	0.55	0.54	0.54	0.53	0.51	0.51	0.51	0.57	0.62	0.61	0.55

GERMANY		Map site No.147				Computer file GERMAHOR.147								MUEHLIDORF	
Latitude 48 15' N						Longitude 12 32' E				Height a.s.l.				401 metres	
Horizontal planes: - monthly means.						Data used & period:				S (1966 -1975)					
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	1.06	1.84	3.03	4.11	5.08	5.30	5.44	4.56	3.65	2.20	1.18	0.85	3.20	
Gmax	++++	2.12	3.55	5.11	6.70	7.78	8.09	7.94	6.89	5.65	3.97	2.56	1.74	5.19	
Gmin	++++	0.32	0.49	0.84	1.17	1.17	1.40	1.52	1.37	0.94	0.54	0.29	0.24	0.86	
Go		2.88	4.42	6.66	9.02	10.80	11.59	11.18	9.67	7.50	5.16	3.29	2.44	7.06	
Ratios to extraterrestrial radiation															
G/Go	++++	0.37	0.42	0.45	0.46	0.47	0.46	0.49	0.47	0.49	0.43	0.36	0.35	0.43	
Ktmax	++++	0.63	0.69	0.66	0.68	0.69	0.69	0.69	0.66	0.67	0.66	0.67	0.68	0.68	
Ktmin	++++	0.11	0.11	0.13	0.13	0.11	0.12	0.14	0.14	0.13	0.10	0.09	0.10	0.12	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.68	1.05	1.66	2.30	2.80	2.91	2.91	2.47	1.90	1.17	0.72	0.56	1.77	
D/G mean	++++	0.64	0.57	0.55	0.56	0.55	0.55	0.54	0.54	0.52	0.53	0.61	0.66	0.55	
Daily sunshine duration: hours.															
S		1.6	2.8	4.2	5.2	6.4	6.8	7.5	6.7	5.5	3.9	2.0	1.4	4.5	
So		8.7	10.0	11.7	13.5	15.0	15.8	15.4	14.1	12.4	10.7	9.1	8.2	12.1	
S/So		0.19	0.27	0.35	0.38	0.43	0.43	0.48	0.47	0.44	0.36	0.22	0.17	0.35	
Somax		9.1	10.6	12.5	14.1	15.5	15.8	15.7	14.7	13.0	11.3	9.6	8.3		
Angstrom coefficients:Reference site: Weihenstephan															
Angstrom a		0.26	0.26	0.26	0.25	0.24	0.23	0.24	0.23	0.26	0.22	0.22	0.24	0.24	
Angstrom b		0.58	0.57	0.55	0.54	0.54	0.53	0.51	0.51	0.51	0.57	0.62	0.61	0.55	

GERMANY		Map site No.148			Computer file GERMAHOR.148								PUCH	
Latitude	48 11' N				Longitude	11 13' E			Height a.s.l.			550 metres		
Horizontal planes: - monthly means.					Data used & period:					S (1966 -1975)				
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.														
G mean	++++	1.12	1.88	2.98	4.22	5.05	5.40	5.47	4.62	3.75	2.30	1.23	0.89	3.25
Gmax	++++	2.13	3.55	5.12	6.70	7.78	8.10	7.94	6.90	5.66	3.97	2.57	1.75	5.19
Gmin	++++	0.33	0.49	0.84	1.17	1.17	1.40	1.52	1.37	0.94	0.54	0.29	0.24	0.86
Go		2.89	4.43	6.67	9.02	10.81	11.59	11.18	9.67	7.51	5.17	3.30	2.45	7.07
Ratios to extraterrestrial radiation														
G/Go	++++	0.39	0.42	0.45	0.47	0.47	0.47	0.49	0.48	0.50	0.45	0.37	0.36	0.44
Ktmax	++++	0.63	0.69	0.66	0.68	0.69	0.70	0.69	0.66	0.68	0.66	0.67	0.68	0.68
Ktmin	++++	0.11	0.11	0.13	0.13	0.11	0.12	0.14	0.14	0.13	0.10	0.09	0.10	0.12
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.68	1.06	1.66	2.32	2.80	2.91	2.91	2.47	1.88	1.17	0.71	0.54	1.77
D/G mean	++++	0.61	0.56	0.56	0.55	0.55	0.54	0.53	0.53	0.50	0.51	0.57	0.61	0.54
Daily sunshine duration: hours.														
S		1.9	2.9	4.0	5.4	6.3	7.0	7.5	6.8	5.8	4.2	2.3	1.7	4.7
So		8.7	10.0	11.7	13.5	15.0	15.8	15.4	14.1	12.4	10.7	9.1	8.2	12.1
S/So		0.22	0.29	0.34	0.40	0.42	0.44	0.49	0.48	0.47	0.39	0.25	0.20	0.37
Somax		9.1	10.6	12.5	14.1	15.5	15.8	15.7	14.7	13.0	11.3	9.6	8.3	
Angstrom coefficients:Reference site: Weihenstephan														
Angstrom a		0.26	0.26	0.26	0.25	0.24	0.23	0.24	0.23	0.26	0.22	0.22	0.24	0.24
Angstrom b		0.58	0.57	0.55	0.54	0.54	0.53	0.51	0.51	0.51	0.57	0.62	0.61	0.55

GERMANY		Map site No.149			Computer file GERMAHOR.149								FREIBURG	
Latitude	48 0' N				Longitude	7 51' E			Height a.s.l.			269 metres		
Horizontal planes: - monthly means.					Data used & period:		S	(1966 -1975)						
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	1.04	1.75	2.80	4.24	5.06	5.63	5.69	4.66	3.73	2.25	1.16	0.84	3.24
Gmax	++++	1.92	3.37	5.06	6.70	7.89	8.31	8.01	6.90	5.46	3.61	2.25	1.57	5.10
Gmin	++++	0.17	0.30	0.60	0.83	1.43	1.58	1.88	1.36	0.96	0.41	0.20	0.13	0.83
Go		2.92	4.46	6.69	9.04	10.81	11.59	11.18	9.69	7.53	5.20	3.33	2.48	7.09
Ratios to extraterrestrial radiation														
G/Go	++++	0.36	0.39	0.42	0.47	0.47	0.49	0.51	0.48	0.50	0.43	0.35	0.34	0.43
Ktmax	++++	0.57	0.65	0.65	0.68	0.70	0.71	0.69	0.66	0.65	0.59	0.58	0.60	0.65
Ktmin	++++	0.06	0.07	0.09	0.09	0.13	0.14	0.17	0.14	0.13	0.08	0.06	0.05	0.12
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.64	1.02	1.60	2.30	2.77	2.88	2.87	2.48	1.86	1.17	0.70	0.52	1.74
D/G mean	++++	0.62	0.58	0.57	0.54	0.55	0.51	0.50	0.53	0.50	0.52	0.60	0.62	0.54
Daily sunshine duration: hours.														
S		1.8	2.9	3.9	5.6	6.5	7.3	8.2	6.9	5.9	4.1	2.2	1.8	4.8
So		8.7	10.1	11.7	13.5	15.0	15.8	15.4	14.1	12.4	10.7	9.1	8.3	12.1
S/So		0.21	0.28	0.33	0.42	0.43	0.47	0.54	0.49	0.47	0.38	0.24	0.22	0.37
Somax		9.1	10.6	12.5	14.1	15.4	15.8	15.7	14.6	13.0	11.3	9.6	8.4	
Angstrom coefficients:Reference site: Germany Region 3														
Angstrom a		0.23	0.23	0.23	0.24	0.23	0.23	0.23	0.23	0.25	0.21	0.20	0.21	0.23
Angstrom b		0.61	0.57	0.57	0.55	0.55	0.55	0.52	0.51	0.52	0.58	0.61	0.59	0.55

GERMANY Map site No.150 Computer file GERMAHOR.150 FELDBERG/SCHW.
 Latitude 47 53' N Longitude 8 0' E Height a.s.l. 1486 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 1.26 1.90 2.93 3.93 4.46 4.91 5.18 4.29 3.55 2.51 1.30 1.12 3.12
 Gmax ++++ 2.52 3.93 5.59 7.22 8.35 8.66 8.51 7.47 6.05 4.48 2.80 2.02 5.64
 Gmin ++++ 0.33 0.41 0.67 0.83 1.01 1.07 1.19 0.85 0.78 0.33 0.25 0.18 0.66
 Go 2.94 4.48 6.71 9.05 10.82 11.60 11.18 9.69 7.54 5.22 3.35 2.50 7.10

Ratios to extraterrestrial radiation

G/Go ++++ 0.43 0.42 0.44 0.43 0.41 0.42 0.46 0.44 0.47 0.48 0.39 0.45 0.44
 Ktmax ++++ 0.74 0.75 0.72 0.73 0.74 0.74 0.74 0.72 0.72 0.73 0.72 0.77 0.74
 Ktmin ++++ 0.11 0.09 0.10 0.09 0.09 0.09 0.11 0.09 0.10 0.06 0.07 0.07 0.09

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.65 1.02 1.58 2.12 2.47 2.62 2.64 2.23 1.68 1.08 0.72 0.52 1.62
 D/G mean ++++ 0.51 0.53 0.54 0.54 0.55 0.53 0.51 0.52 0.47 0.43 0.55 0.47 0.52

Daily sunshine duration: hours.

S 2.6 2.9 3.6 4.7 5.3 5.8 6.9 5.8 5.3 4.8 2.5 2.9 4.4
 So 8.7 10.1 11.7 13.5 15.0 15.7 15.4 14.1 12.4 10.7 9.1 8.3 12.1
 S/So 0.30 0.29 0.31 0.35 0.35 0.37 0.45 0.41 0.43 0.45 0.27 0.35 0.36
 Somax 9.1 10.6 12.5 14.1 15.4 15.8 15.7 14.6 13.0 11.3 9.6 8.4

Angstrom coefficients:Reference site: Hohenpeissenburg

Angstrom a 0.25 0.25 0.25 0.22 0.19 0.19 0.20 0.19 0.21 0.20 0.22 0.24 0.22
 Angstrom b 0.60 0.61 0.60 0.61 0.63 0.63 0.59 0.61 0.61 0.62 0.61 0.59 0.61

GERMANY Map site No.151 Computer file GERMAHOR.151 ROSENHEIM
 Latitude 47 52' N Longitude 12 7' E Height a.s.l. 446 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 1.11 1.83 2.93 3.98 4.90 5.06 5.29 4.43 3.59 2.27 1.24 0.90 3.13
 Gmax ++++ 2.17 3.59 5.14 6.72 7.78 8.10 7.94 6.91 5.68 4.01 2.60 1.78 5.21
 Gmin ++++ 0.33 0.49 0.85 1.18 1.17 1.40 1.52 1.38 0.94 0.54 0.29 0.24 0.87
 Go 2.94 4.48 6.71 9.05 10.82 11.60 11.18 9.70 7.54 5.22 3.35 2.50 7.11

Ratios to extraterrestrial radiation

G/Go ++++ 0.38 0.41 0.44 0.44 0.45 0.44 0.47 0.46 0.48 0.43 0.37 0.36 0.43
 Ktmax ++++ 0.64 0.69 0.66 0.68 0.69 0.70 0.69 0.66 0.68 0.66 0.66 0.68 0.68
 Ktmin ++++ 0.11 0.11 0.13 0.13 0.11 0.12 0.14 0.14 0.13 0.10 0.09 0.10 0.12

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.69 1.07 1.67 2.31 2.80 2.91 2.93 2.47 1.90 1.19 0.73 0.56 1.78
 D/G mean ++++ 0.62 0.59 0.57 0.58 0.57 0.58 0.55 0.56 0.53 0.52 0.59 0.63 0.57

Daily sunshine duration: hours.

S 1.8 2.6 3.8 4.7 5.9 6.1 7.0 6.3 5.3 4.0 2.2 1.6 4.3
 So 8.7 10.1 11.7 13.5 15.0 15.7 15.4 14.1 12.4 10.7 9.1 8.3 12.1
 S/So 0.20 0.26 0.32 0.35 0.39 0.39 0.46 0.45 0.42 0.38 0.24 0.19 0.34
 Somax 9.1 10.6 12.5 14.1 15.4 15.8 15.7 14.6 13.0 11.3 9.6 8.4

Angstrom coefficients:Reference site: Weihestephane

Angstrom a 0.26 0.26 0.26 0.25 0.24 0.23 0.24 0.23 0.26 0.22 0.22 0.24 0.24
 Angstrom b 0.58 0.57 0.55 0.54 0.54 0.53 0.51 0.51 0.51 0.57 0.62 0.61 0.55

GERMANY Map site No.152 Computer file GERMAHOR.152 HOHENPEISSENBERG
 Latitude 47 48' N Longitude 11 1' E Height a.s.l. 975 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 1.37 2.05 3.17 4.15 4.89 5.13 5.40 4.62 3.85 2.61 1.43 1.12 3.32
 Gmax 2.53 3.94 5.61 7.22 8.36 8.66 8.51 7.47 6.05 4.49 2.81 2.03 5.65
 Gmin 0.33 0.41 0.68 0.84 1.01 1.06 1.19 0.85 0.78 0.33 0.25 0.18 0.66
 Go 2.95 4.49 6.72 9.06 10.82 11.60 11.19 9.70 7.55 5.23 3.36 2.52 7.11

Ratios to extraterrestrial radiation

G/Go 0.46 0.45 0.47 0.46 0.45 0.44 0.48 0.48 0.51 0.50 0.42 0.44 0.46
 Ktmax 0.74 0.75 0.72 0.73 0.74 0.74 0.74 0.72 0.72 0.73 0.72 0.77 0.74
 Ktmin 0.11 0.09 0.10 0.09 0.09 0.09 0.11 0.09 0.10 0.06 0.07 0.07 0.09

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.62 1.02 1.60 2.16 2.54 2.64 2.67 2.22 1.64 1.07 0.72 0.53 1.63
 D/G mean ++++ 0.45 0.50 0.50 0.52 0.52 0.51 0.49 0.48 0.43 0.41 0.50 0.47 0.49

Daily sunshine duration: hours.

S 3.2 3.4 4.3 5.2 6.2 6.4 7.4 6.7 6.2 5.2 3.1 2.9 5.0
 So 8.7 10.1 11.7 13.5 15.0 15.7 15.4 14.1 12.4 10.7 9.1 8.3 12.1
 S/So 0.37 0.34 0.37 0.39 0.41 0.41 0.48 0.48 0.50 0.49 0.34 0.35 0.41
 Somax 9.1 10.6 12.5 14.1 15.4 15.8 15.7 14.6 13.0 11.3 9.6 8.4

Angstrom coefficients:Radiation observing site

Angstrom a 0.25 0.25 0.25 0.22 0.19 0.19 0.20 0.19 0.21 0.20 0.22 0.24 0.22
 Angstrom b 0.60 0.61 0.60 0.61 0.63 0.63 0.59 0.61 0.61 0.62 0.61 0.59 0.61

GERMANY		Map site No.153			Computer file GERMAHOR.153							BAD TOELZ		
Latitude	47 47' N	Longitude			11 33' E			Height a.s.l.				640 metres		
Horizontal planes: - monthly means.					Data used & period:				S (1966 -1975)					
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	1.31	1.99	3.06	4.15	4.88	5.00	5.27	4.49	3.77	2.50	1.34	1.03	3.24
Gmax	++++	2.17	3.59	5.15	6.72	7.79	8.10	7.94	6.91	5.68	4.01	2.62	1.79	5.21
Gmin	++++	0.33	0.49	0.85	1.18	1.17	1.40	1.52	1.38	0.94	0.54	0.29	0.24	0.87
Go		2.96	4.50	6.73	9.06	10.82	11.60	11.19	9.70	7.55	5.23	3.37	2.52	7.11
Ratios to extraterrestrial radiation														
G/Go	++++	0.44	0.44	0.45	0.46	0.45	0.43	0.47	0.46	0.50	0.48	0.40	0.41	0.45
Ktmax	++++	0.63	0.68	0.66	0.68	0.69	0.70	0.69	0.66	0.67	0.66	0.67	0.68	0.68
Ktmin	++++	0.11	0.11	0.13	0.13	0.11	0.12	0.14	0.14	0.13	0.10	0.09	0.10	0.12
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.68	1.07	1.67	2.31	2.79	2.88	2.90	2.47	1.88	1.17	0.73	0.55	1.77
D/G mean	++++	0.52	0.54	0.55	0.56	0.57	0.58	0.55	0.55	0.50	0.47	0.54	0.53	0.55
Daily sunshine duration: hours.														
S		2.7	3.2	4.2	5.2	5.8	6.0	7.0	6.4	5.8	4.8	2.6	2.3	4.7
So		8.7	10.1	11.7	13.5	15.0	15.7	15.4	14.1	12.4	10.7	9.1	8.3	12.1
S/So		0.31	0.32	0.35	0.39	0.39	0.38	0.45	0.46	0.47	0.45	0.29	0.28	0.38
Somax		9.1	10.6	12.5	14.1	15.4	15.8	15.6	14.6	13.0	11.3	9.6	8.4	
Angstrom coefficients:Reference site: Weißenstephan														
Angstrom a		0.26	0.26	0.26	0.25	0.24	0.23	0.24	0.23	0.26	0.22	0.22	0.24	0.24
Angstrom b		0.58	0.57	0.55	0.54	0.54	0.53	0.51	0.51	0.51	0.57	0.62	0.61	0.55

GERMANY		Map site No.154			Computer file GERMAHOR.154								KEMPTEN	
Latitude	47 43' N				Longitude			10 20' E		Height a.s.l.			705 metres	
Horizontal planes: - monthly means.					Data used & period:								S (1966 -1975)	
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.														
G mean	++++	1.31	2.01	3.04	4.13	4.88	5.12	5.40	4.49	3.82	2.51	1.38	1.05	3.27
Gmax	++++	2.18	3.60	5.15	6.72	7.79	8.10	7.94	6.91	5.69	4.02	2.62	1.80	5.22
Gmin	++++	0.34	0.50	0.85	1.18	1.17	1.40	1.52	1.38	0.95	0.55	0.29	0.25	0.87
Go		2.97	4.51	6.73	9.07	10.82	11.60	11.19	9.71	7.56	5.24	3.38	2.53	7.12
Ratios to extraterrestrial radiation														
G/Go	++++	0.44	0.44	0.45	0.46	0.45	0.44	0.48	0.46	0.51	0.48	0.41	0.41	0.45
Ktmax	+++	0.63	0.69	0.66	0.68	0.69	0.70	0.69	0.66	0.67	0.66	0.67	0.68	0.68
Ktmin	++++	0.11	0.11	0.13	0.13	0.11	0.12	0.14	0.14	0.13	0.10	0.09	0.10	0.12
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.66	1.07	1.67	2.31	2.79	2.88	2.89	2.46	1.86	1.16	0.72	0.55	1.76
D/G mean	++++	0.51	0.53	0.55	0.56	0.57	0.56	0.54	0.55	0.49	0.46	0.52	0.52	0.54
Daily sunshine duration: hours.														
S		2.8	3.3	4.1	5.1	5.8	6.3	7.3	6.4	6.0	4.9	2.8	2.4	4.8
So		8.7	10.1	11.7	13.5	14.9	15.7	15.4	14.1	12.4	10.7	9.1	8.3	12.1
S/So		0.32	0.32	0.35	0.38	0.39	0.40	0.48	0.46	0.48	0.45	0.30	0.29	0.38
Somax		9.1	10.6	12.5	14.1	15.4	15.8	15.6	14.6	13.0	11.3	9.6	8.4	
Angstrom coefficients:Reference site: Weißenstephan														
Angstrom a		0.26	0.26	0.26	0.25	0.24	0.23	0.24	0.23	0.26	0.22	0.22	0.24	0.24
Angstrom b		0.58	0.57	0.55	0.54	0.54	0.53	0.51	0.51	0.51	0.57	0.62	0.61	0.55

GERMANY		Map site No.155			Computer file GERMAHOR.155								WENDELSTEIN		
Latitude	47 42' N				Longitude 12 1' E			Height a.s.l.			1838 metres				
Horizontal planes: - monthly means.					Data used & period:			S	(1966 -1975)						
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.															
G mean	++++	1.44	2.06	3.17	3.87	4.51	4.58	4.91	4.33	3.68	2.66	1.52	1.24	3.17	
Gmax	++++	2.54	3.95	5.62	7.23	8.35	8.66	8.51	7.47	6.06	4.50	2.82	2.04	5.65	
Gmin	++++	0.33	0.42	0.67	0.83	1.01	1.07	1.19	0.85	0.79	0.33	0.25	0.18	0.66	
Go		2.97	4.51	6.74	9.07	10.83	11.60	11.19	9.71	7.57	5.25	3.38	2.53	7.12	
Ratios to extraterrestrial radiation															
G/Go	++++	0.49	0.46	0.47	0.43	0.42	0.40	0.44	0.45	0.49	0.51	0.45	0.49	0.46	
Ktmax	++++	0.74	0.75	0.72	0.73	0.74	0.74	0.74	0.72	0.72	0.73	0.72	0.77	0.74	
Ktmin	++++	0.11	0.09	0.10	0.09	0.09	0.09	0.11	0.09	0.10	0.06	0.07	0.07	0.09	
Daily diffuse radiation: kWh/m^2.															
D mean est.	++++	0.61	1.01	1.57	2.09	2.45	2.56	2.63	2.20	1.66	1.03	0.71	0.49	1.59	
D/G mean	++++	0.42	0.49	0.49	0.54	0.54	0.56	0.53	0.51	0.45	0.39	0.46	0.39	0.50	
Daily sunshine duration: hours.															
S		3.4	3.4	4.3	4.6	5.4	5.1	6.2	5.9	5.6	5.3	3.4	3.5	4.7	
So		8.7	10.1	11.7	13.5	14.9	15.7	15.4	14.1	12.4	10.7	9.1	8.3	12.1	
S/So		0.39	0.34	0.37	0.34	0.36	0.33	0.41	0.42	0.45	0.49	0.38	0.43	0.39	
Somax		9.1	10.6	12.5	14.1	15.4	15.7	15.6	14.6	13.0	11.3	9.6	8.4		
Angstrom coefficients:Reference site: Hohenpeißenburg															
Angstrom a		0.25	0.25	0.25	0.22	0.19	0.19	0.20	0.19	0.21	0.20	0.22	0.24	0.22	
Angstrom b		0.60	0.61	0.60	0.61	0.63	0.63	0.59	0.61	0.61	0.62	0.61	0.59	0.61	

GERMANY Map site No.156 Computer file GERMAHOR.156 ZUGSPITZE
 Latitude 47 25' N Longitude 10 59' E Height a.s.l. 2960 metres
 Horizontal planes: - monthly means. Data used & period: S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 1.52 2.20 3.35 4.10 4.52 4.50 4.60 4.19 3.91 2.77 1.61 1.22 3.21
 Gmax ++++ 2.58 3.99 5.64 7.24 8.35 8.66 8.52 7.49 6.08 4.53 2.85 2.08 5.67
 Gmin ++++ 0.33 0.42 0.68 0.84 1.01 1.07 1.19 0.86 0.79 0.33 0.25 0.19 0.67
 Go 3.02 4.56 6.78 9.09 10.84 11.60 11.20 9.73 7.60 5.29 3.43 2.58 7.15

Ratios to extraterrestrial radiation

G/Go ++++ 0.50 0.48 0.49 0.45 0.42 0.39 0.41 0.43 0.51 0.52 0.47 0.47 0.46
 Ktmax ++++ 0.74 0.75 0.72 0.73 0.74 0.74 0.74 0.72 0.72 0.73 0.71 0.77 0.74
 Ktmin ++++ 0.11 0.09 0.10 0.09 0.09 0.09 0.11 0.09 0.10 0.06 0.07 0.07 0.09

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.58 0.98 1.50 2.04 2.38 2.49 2.51 2.13 1.53 0.96 0.68 0.49 1.53
 D/G mean ++++ 0.38 0.44 0.45 0.50 0.53 0.55 0.55 0.51 0.39 0.35 0.42 0.40 0.48

Daily sunshine duration: hours.

S 3.7 3.8 4.8 5.1 5.4 4.9 5.5 5.5 6.2 5.6 3.7 3.3 4.8
 So 8.8 10.1 11.7 13.5 14.9 15.7 15.3 14.0 12.4 10.7 9.2 8.3 12.1
 S/So 0.42 0.38 0.41 0.38 0.36 0.31 0.36 0.39 0.50 0.52 0.41 0.40 0.40
 Somax 9.2 10.6 12.5 14.1 15.4 15.7 15.6 14.6 13.0 11.3 9.6 8.4

Angstrom coefficients:Reference site: Hohenpeissenburg

Angstrom a 0.25 0.25 0.25 0.22 0.19 0.19 0.20 0.19 0.21 0.20 0.22 0.24 0.22
 Angstrom b 0.60 0.61 0.60 0.61 0.63 0.63 0.59 0.61 0.61 0.62 0.61 0.59 0.61

GREECE Map site No.302 Computer file GREECHOR.302 THESSALONIKI
 Latitude 40 31' N Longitude 22 58' E Height a.s.l. 4 metres
 Horizontal planes: - monthly means. Data used & period: S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 2.26 3.06 3.96 5.35 6.79 7.10 7.39 6.51 5.21 3.61 2.45 2.01 4.65
 Gmax ++++ 3.56 4.77 6.46 7.69 8.63 8.91 8.69 7.99 6.75 5.28 3.87 3.01 6.31
 Gmin ++++ 0.37 0.84 0.83 1.81 2.13 3.46 4.38 3.92 2.52 1.06 0.68 0.29 1.84
 Go 4.20 5.68 7.70 9.67 11.05 11.62 11.31 10.15 8.39 6.34 4.59 3.76 7.88

Ratios to extraterrestrial radiation

G/Go ++++ 0.54 0.54 0.51 0.55 0.61 0.61 0.65 0.64 0.62 0.57 0.53 0.53 0.58
 Ktmax ++++ 0.76 0.75 0.75 0.74 0.75 0.76 0.75 0.75 0.74 0.74 0.75 0.77 0.76
 Ktmin ++++ 0.09 0.15 0.11 0.19 0.19 0.30 0.39 0.39 0.30 0.17 0.15 0.08 0.23

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.92 1.26 1.89 2.31 2.54 2.50 2.31 2.13 1.68 1.30 0.99 0.76 1.72
 D/G mean ++++ 0.41 0.41 0.48 0.43 0.37 0.35 0.31 0.33 0.32 0.36 0.40 0.38 0.37

Daily sunshine duration: hours.

S 3.5 4.5 5.0 7.2 9.5 10.1 11.1 10.3 8.3 6.4 4.8 3.8 7.1
 So 9.5 10.5 11.8 13.1 14.3 14.8 14.6 13.6 12.3 11.0 9.8 9.2 12.0
 S/So 0.37 0.43 0.42 0.55 0.67 0.68 0.76 0.76 0.67 0.58 0.49 0.42 0.57
 Somax 9.8 10.9 12.3 13.6 14.6 14.9 14.8 14.0 12.8 11.5 10.1 9.2

Angstrom coefficients:Reference site: Bitola

Angstrom a 0.31 0.27 0.27 0.24 0.26 0.25 0.25 0.27 0.25 0.23 0.26 0.27 0.26
 Angstrom b 0.62 0.62 0.58 0.57 0.53 0.53 0.53 0.49 0.55 0.58 0.56 0.63 0.55

GREECE Map site No.303 Computer file GREECHOR.303 KONITSA
 Latitude 40 3' N Longitude 20 45' E Height a.s.l. 542 metres
 Horizontal planes: - monthly means. Data used & period: S (1971-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 2.42 2.86 4.02 4.91 6.21 6.50 6.91 6.17 4.94 3.31 2.44 2.17 4.41
 Gmax ++++ 3.62 4.82 6.49 7.71 8.63 8.90 8.69 8.00 6.78 5.32 3.92 3.07 6.34
 Gmin ++++ 0.38 0.85 0.84 1.81 2.13 3.46 4.38 3.93 2.53 1.07 0.70 0.30 1.86
 Go 4.28 5.76 7.75 9.70 11.06 11.62 11.31 10.18 8.43 6.41 4.67 3.84 7.93

Ratios to extraterrestrial radiation

G/Go ++++ 0.57 0.50 0.52 0.51 0.56 0.56 0.61 0.61 0.59 0.52 0.52 0.56 0.55
 Ktmax ++++ 0.76 0.75 0.75 0.74 0.75 0.76 0.75 0.75 0.74 0.74 0.75 0.77 0.76
 Ktmin ++++ 0.09 0.15 0.11 0.19 0.19 0.30 0.39 0.39 0.30 0.17 0.15 0.08 0.23

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.89 1.30 1.89 2.39 2.72 2.73 2.47 2.24 1.79 1.40 1.01 0.71 1.80
 D/G mean ++++ 0.37 0.46 0.47 0.49 0.44 0.42 0.36 0.36 0.36 0.42 0.41 0.33 0.41

Daily sunshine duration: hours.

S 3.9 3.9 5.0 6.1 8.1 8.6 9.9 9.3 7.5 5.4 4.6 4.3 6.4
 So 9.5 10.5 11.8 13.1 14.2 14.8 14.5 13.6 12.3 11.0 9.8 9.2 12.0
 S/So 0.41 0.37 0.43 0.47 0.57 0.58 0.68 0.69 0.61 0.49 0.47 0.47 0.52
 Somax 9.8 10.9 12.3 13.6 14.6 14.8 14.7 14.0 12.8 11.5 10.2 9.3

Angstrom coefficients:Reference site: Bitola

Angstrom a 0.31 0.27 0.27 0.24 0.26 0.25 0.25 0.27 0.25 0.23 0.26 0.27 0.26
 Angstrom b 0.62 0.62 0.58 0.57 0.53 0.53 0.53 0.49 0.55 0.58 0.56 0.63 0.55

GREECE		Map site No.304			Computer file GREECHOR.304						IOANNINA			
Latitude 39 42' N		Longitude 20 48' E						Height a.s.l. 483 metres						
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.														
G mean	++++	1.94	2.50	3.60	4.75	5.86	6.43	6.61	5.77	4.71	3.22	2.08	1.53	4.09
Gmax	++++	3.66	4.86	6.52	7.72	8.63	8.90	8.69	8.01	6.80	5.36	3.97	3.12	6.36
Gmin	++++	0.38	0.86	0.84	1.82	2.14	3.46	4.38	3.94	2.54	1.08	0.70	0.30	1.86
Go		4.34	5.81	7.80	9.73	11.07	11.62	11.31	10.20	8.47	6.46	4.73	3.90	7.96
Ratios to extraterrestrial radiation														
G/Go	++++	0.45	0.43	0.46	0.49	0.53	0.55	0.58	0.57	0.56	0.50	0.44	0.39	0.50
Ktmax	++++	0.76	0.75	0.75	0.74	0.75	0.76	0.75	0.75	0.74	0.74	0.75	0.78	0.76
Ktmin	++++	0.09	0.15	0.11	0.19	0.19	0.30	0.39	0.39	0.30	0.17	0.15	0.08	0.23
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.96	1.34	1.87	2.42	2.67	2.59	2.43	2.21	1.85	1.42	1.07	0.84	1.81
D/G mean	++++	0.49	0.53	0.52	0.51	0.46	0.40	0.37	0.38	0.39	0.44	0.51	0.55	0.44
Daily sunshine duration: hours.														
S		3.5	3.7	4.7	6.1	8.3	9.2	10.3	9.5	7.6	5.9	4.1	2.8	6.3
So		9.6	10.6	11.8	13.1	14.2	14.8	14.5	13.6	12.3	11.0	9.9	9.2	12.1
S/So		0.36	0.35	0.40	0.47	0.58	0.62	0.71	0.70	0.62	0.54	0.42	0.31	0.51
Somax		9.8	10.9	12.3	13.6	14.5	14.8	14.7	13.9	12.8	11.5	10.2	9.3	
Angstrom coefficients:Reference site: Mean of Bitola and Athens														
Angstrom a		0.25	0.24	0.24	0.24	0.22	0.23	0.20	0.20	0.24	0.22	0.23	0.23	0.23
Angstrom b		0.54	0.55	0.56	0.53	0.53	0.52	0.54	0.52	0.51	0.52	0.50	0.53	0.52

GREECE		Map site No.305			Computer file GREECHOR.305							LARISSA	
Latitude	39 38' N	Longitude 22 25' E					Height a.s.l.				72 metres		
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)								
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean	++++	1.80	2.65	3.76	5.05	6.23	6.66	6.73	6.08	4.88	3.29	2.24	1.57 4.25
Gmax	++++	3.19	4.32	6.01	7.57	8.45	8.24	8.05	7.75	6.49	5.00	3.72	2.62 5.95
Gmin	++++	0.38	0.86	0.84	1.82	2.14	3.46	4.38	3.94	2.54	1.08	0.71	0.30 1.86
Go		4.35	5.82	7.81	9.73	11.07	11.62	11.31	10.20	8.48	6.47	4.74	3.91 7.97
Ratios to extraterrestrial radiation													
G/Go	++++	0.41	0.45	0.48	0.52	0.56	0.57	0.60	0.60	0.58	0.51	0.47	0.40 0.51
Ktmax	++++	0.66	0.66	0.69	0.73	0.74	0.71	0.70	0.72	0.71	0.69	0.70	0.65 0.70
Ktmin	++++	0.09	0.15	0.11	0.19	0.19	0.30	0.39	0.39	0.30	0.17	0.15	0.08 0.23
Daily diffuse radiation: kWh/m ² .													
D mean est.	++++	0.98	1.36	1.89	2.39	2.60	2.57	2.45	2.16	1.82	1.43	1.06	0.84 1.80
D/G mean	++++	0.55	0.52	0.50	0.47	0.42	0.39	0.36	0.35	0.37	0.43	0.47	0.53 0.42
Daily sunshine duration: hours.													
S		2.9	4.1	5.1	6.9	9.2	9.7	10.6	10.3	8.1	6.1	4.8	3.0 6.8
So		9.6	10.6	11.8	13.1	14.2	14.8	14.5	13.5	12.3	11.0	9.9	9.3 12.1
S/So		0.30	0.39	0.43	0.53	0.65	0.66	0.73	0.76	0.66	0.55	0.49	0.33 0.54
Somax		9.9	10.9	12.3	13.6	14.5	14.8	14.7	13.9	12.7	11.5	10.2	9.3
Angstrom coefficients:Reference site: Mean of Bitola and Athens													
Angstrom a		0.25	0.24	0.24	0.24	0.22	0.23	0.20	0.20	0.24	0.22	0.23	0.23 0.23
Angstrom b		0.54	0.55	0.56	0.53	0.53	0.52	0.54	0.52	0.51	0.52	0.50	0.53 0.52

GREECE		Map site No.306			Computer file GREECHOR.306								LAMIA	
Latitude	38 51' N				Longitude 22 24' E			Height a.s.l.			143 metres			
Horizontal planes: - monthly means.					Data used & period: S (1971 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	++++	1.81	2.39	3.99	5.19	6.16	7.06	6.91	6.10	4.90	3.29	2.38	1.86	4.35
Gmax	++++	3.27	4.40	6.07	7.60	8.45	8.23	8.05	7.77	6.53	5.07	3.81	2.71	6.00
Gmin	++++	0.39	0.88	0.85	1.83	2.14	3.46	4.38	3.95	2.57	1.10	0.73	0.32	1.88
Go		4.48	5.95	7.90	9.79	11.09	11.61	11.32	10.24	8.56	6.58	4.87	4.04	8.05
Ratios to extraterrestrial radiation														
G/Go	++++	0.40	0.40	0.50	0.53	0.56	0.61	0.61	0.60	0.57	0.50	0.49	0.46	0.52
Ktmax	++++	0.66	0.66	0.69	0.73	0.74	0.71	0.70	0.72	0.71	0.69	0.70	0.65	0.70
Ktmin	++++	0.09	0.15	0.11	0.19	0.19	0.30	0.39	0.39	0.30	0.17	0.15	0.08	0.23
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	1.02	1.37	1.88	2.36	2.61	2.35	2.36	2.14	1.84	1.47	1.07	0.83	1.78
D/G mean	++++	0.56	0.57	0.47	0.45	0.42	0.33	0.34	0.35	0.38	0.45	0.45	0.45	0.41
Daily sunshine duration: hours.														
S		2.7	3.1	5.6	7.2	9.0	10.7	11.0	10.3	8.0	5.9	5.1	4.1	6.9
So		9.6	10.6	11.8	13.1	14.1	14.7	14.4	13.5	12.3	11.0	9.9	9.3	12.0
S/So		0.28	0.30	0.47	0.55	0.63	0.73	0.76	0.76	0.65	0.54	0.52	0.44	0.55
Somax		9.9	11.0	12.3	13.5	14.4	14.7	14.6	13.9	12.7	11.5	10.2	9.4	
Angstrom coefficients:Reference site: Mean of Bitola and Athens														
Angstrom a		0.25	0.24	0.24	0.24	0.22	0.23	0.20	0.20	0.24	0.22	0.23	0.23	0.23
Angstrom b		0.54	0.55	0.56	0.53	0.53	0.52	0.54	0.52	0.51	0.52	0.50	0.53	0.52

GREECE	Map site No.307	Computer file GREECHOR.307	ALIARTOS
Latitude 38 23' N		Longitude 23 6' E	Height a.s.l. 110 metres
Horizontal planes: - monthly means.		Data used & period: S (1968 -1975)	
Month	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean		
Daily global radiation: kWh/m ² .			
G mean	++++ 1.41 2.17 3.36 4.84 5.89 6.51 6.27 5.73 4.56 2.92 1.96 1.37 3.93		
Gmax	++++ 3.00 4.02 5.81 6.94 7.72 7.99 7.84 7.14 5.96 4.70 3.36 2.53 5.59		
Gmin	++++ 0.40 0.89 0.86 1.84 2.14 3.46 4.38 3.96 2.58 1.11 0.74 0.32 1.89		
Go	4.56 6.02 7.96 9.82 11.09 11.61 11.32 10.26 8.60 6.65 4.95 4.12 8.09		

Ratios to extraterrestrial radiation

G/Go	++++ 0.31 0.36 0.42 0.49 0.53 0.56 0.55 0.56 0.53 0.44 0.40 0.33 0.46
Ktmax	++++ 0.60 0.60 0.66 0.66 0.67 0.69 0.68 0.66 0.64 0.63 0.61 0.60 0.65
Ktmin	++++ 0.09 0.15 0.11 0.19 0.19 0.30 0.39 0.39 0.30 0.17 0.15 0.08 0.23

Daily diffuse radiation: kWh/m².

D mean est.	++++ 0.88 1.30 1.79 2.32 2.46 2.35 2.34 2.02 1.81 1.46 1.04 0.80 1.72
D/G mean	++++ 0.63 0.60 0.53 0.48 0.42 0.36 0.37 0.35 0.40 0.50 0.53 0.58 0.44

Daily sunshine duration: hours.

S	2.6 3.6 5.0 7.0 9.3 10.3 10.8 10.5 8.1 5.6 4.7 3.1 6.7
So	9.7 10.6 11.8 13.1 14.1 14.6 14.4 13.5 12.3 11.1 10.0 9.4 12.1
S/So	0.26 0.34 0.42 0.54 0.66 0.71 0.75 0.78 0.66 0.51 0.47 0.33 0.54
Somax	9.9 11.0 12.3 13.5 14.4 14.6 14.6 13.9 12.7 11.5 10.3 9.4

Angstrom coefficients:Reference site: Athens

Angstrom a	0.19 0.20 0.20 0.23 0.18 0.20 0.15 0.13 0.22 0.21 0.19 0.19 0.19
Angstrom b	0.45 0.47 0.53 0.49 0.53 0.51 0.54 0.55 0.47 0.45 0.44 0.43 0.49

GREECE	Map site No.308	Computer file GREECHOR.308	PATRAI
Latitude 38 15' N		Longitude 21 44' E	Height a.s.l. 3 metres
Horizontal planes: - monthly means.		Data used & period: S (1971 -1975)	
Month	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean		
Daily global radiation: kWh/m ² .			
G mean	++++ 1.62 2.22 3.56 4.51 5.59 6.51 6.05 5.35 4.68 3.08 1.90 1.60 3.90		
Gmax	++++ 3.34 4.46 6.11 7.61 8.45 8.23 8.05 7.78 6.56 5.13 3.87 2.77 6.04		
Gmin	++++ 0.40 0.89 0.86 1.84 2.14 3.46 4.38 3.96 2.59 1.11 0.74 0.32 1.90		
Go	4.58 6.04 7.97 9.83 11.10 11.61 11.32 10.27 8.62 6.67 4.97 4.15 8.10		

Ratios to extraterrestrial radiation

G/Go	++++ 0.35 0.37 0.45 0.46 0.50 0.56 0.53 0.52 0.54 0.46 0.38 0.39 0.46
Ktmax	++++ 0.66 0.66 0.69 0.73 0.74 0.71 0.70 0.72 0.70 0.69 0.70 0.65 0.70
Ktmin	++++ 0.09 0.15 0.11 0.19 0.19 0.30 0.39 0.39 0.30 0.17 0.15 0.08 0.23

Daily diffuse radiation: kWh/m².

D mean est.	++++ 0.93 1.31 1.81 2.38 2.54 2.36 2.43 2.12 1.79 1.44 1.04 0.81 1.75
D/G mean	++++ 0.58 0.59 0.51 0.53 0.45 0.36 0.40 0.40 0.38 0.47 0.55 0.51 0.45

Daily sunshine duration: hours.

S	3.5 3.8 5.5 6.1 8.6 10.3 10.2 9.6 8.4 6.2 4.4 4.3 6.8
So	9.7 10.6 11.8 13.0 14.1 14.6 14.4 13.5 12.3 11.1 10.0 9.4 12.0
S/So	0.36 0.36 0.46 0.47 0.61 0.71 0.71 0.69 0.56 0.44 0.45 0.55
Somax	10.0 11.0 12.3 13.5 14.4 14.6 14.5 13.8 12.7 11.5 10.3 9.4

Angstrom coefficients:Reference site: Athens

Angstrom a	0.19 0.20 0.20 0.23 0.18 0.20 0.15 0.13 0.22 0.21 0.19 0.19 0.19
Angstrom b	0.45 0.47 0.53 0.49 0.53 0.51 0.54 0.55 0.47 0.45 0.44 0.43 0.49

GREECE	Map site No.309	Computer file GREECHOR.309	ATHENS
Latitude 37 58' N		Longitude 23 43' E	Height a.s.l. 107 metres
Horizontal planes: - monthly means.		Data used & period: G & S (1966 -1975)	
Month	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean		
Daily global radiation: kWh/m ² .			
G mean	1.75 2.62 3.82 5.15 6.41 6.84 6.88 6.18 4.86 3.38 2.33 1.69 4.34		
Gmax	3.04 4.06 5.83 6.95 7.72 7.98 7.84 7.15 5.98 4.73 3.40 2.58 5.61		
Gmin	0.41 0.90 0.87 1.85 2.14 3.45 4.38 3.96 2.60 1.12 0.75 0.33 1.90		
Go	4.63 6.08 8.01 9.85 11.10 11.61 11.32 10.28 8.65 6.71 5.02 4.20 8.13		

Ratios to extraterrestrial radiation

G/Go	0.38 0.43 0.48 0.52 0.58 0.59 0.61 0.60 0.56 0.50 0.46 0.40 0.51
Ktmax	0.60 0.60 0.66 0.66 0.67 0.69 0.68 0.66 0.64 0.63 0.61 0.60 0.65
Ktmin	0.09 0.15 0.11 0.19 0.19 0.30 0.39 0.39 0.30 0.17 0.15 0.08 0.23

Daily diffuse radiation: kWh/m².

D mean est.	++++ 0.95 1.34 1.81 2.22 2.34 2.19 2.22 1.92 1.67 1.35 1.03 0.82 1.66
D/G mean	++++ 0.55 0.51 0.47 0.43 0.37 0.32 0.32 0.31 0.34 0.40 0.44 0.49 0.38

Daily sunshine duration: hours.

S	4.0 5.3 6.1 7.9 10.4 11.2 12.1 11.6 9.1 7.3 6.1 4.6 3.0
So	9.7 10.6 11.8 13.0 14.1 14.6 14.3 13.5 12.3 11.1 10.0 9.4 12.0
S/So	0.41 0.50 0.52 0.61 0.74 0.77 0.85 0.86 0.74 0.66 0.61 0.49 0.65
Somax	10.0 11.0 12.3 13.5 14.4 14.6 14.5 13.8 12.7 11.5 10.3 9.5

Angstrom coefficients:Radiation observing site

Angstrom a	0.19 0.20 0.20 0.23 0.18 0.20 0.15 0.13 0.22 0.21 0.19 0.19 0.19
Angstrom b	0.45 0.47 0.53 0.49 0.53 0.51 0.54 0.55 0.47 0.45 0.44 0.43 0.49

GREECE Map site No.310 Computer file GREECHOR.310 KORINTHOS
 Latitude 37 56' N Longitude 22 57' E Height a.s.l. 2 metres
 Horizontal planes: - monthly means. Data used & period: S (1971 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 1.53 2.36 3.80 4.97 6.16 6.74 6.52 5.89 4.79 3.16 2.19 1.62 4.15
 Gmax +++ 3.04 4.06 5.83 6.95 7.72 7.98 7.83 7.15 5.99 4.73 3.40 2.58 5.61
 Gmin +++ 0.41 0.90 0.87 1.84 2.14 3.46 4.38 3.97 2.59 1.12 0.75 0.33 1.90
 Go 4.64 6.09 8.01 9.85 11.10 11.61 11.32 10.28 8.65 6.72 5.02 4.20 8.13

Ratios to extraterrestrial radiation

G/Go +++ 0.33 0.39 0.47 0.50 0.55 0.58 0.57 0.55 0.47 0.44 0.39 0.49
 Ktmax +++ 0.60 0.60 0.66 0.66 0.67 0.69 0.68 0.66 0.64 0.63 0.61 0.60 0.65
 Ktmin +++ 0.09 0.15 0.11 0.19 0.19 0.30 0.39 0.39 0.30 0.17 0.15 0.08 0.23

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.93 1.35 1.80 2.31 2.41 2.26 2.31 2.02 1.76 1.44 1.05 0.82 1.71
 D/G mean +++ 0.60 0.57 0.47 0.46 0.39 0.34 0.35 0.34 0.37 0.46 0.48 0.51 0.41

Daily sunshine duration: hours.

S 3.0 4.2 6.1 7.3 9.9 10.9 11.3 10.8 8.7 6.4 5.6 4.3 7.4
 So 9.7 10.6 11.8 13.0 14.1 14.6 14.3 13.5 12.3 11.1 10.0 9.4 12.0
 S/So 0.31 0.40 0.52 0.56 0.71 0.75 0.79 0.81 0.71 0.58 0.56 0.46 0.60
 Somax 10.0 11.0 12.3 13.5 14.4 14.6 14.5 13.8 12.7 11.5 10.3 9.5

Angstrom coefficients:Reference site: Athens

Angstrom a 0.19 0.20 0.20 0.23 0.18 0.20 0.15 0.13 0.22 0.21 0.19 0.19 0.19
 Angstrom b 0.45 0.47 0.53 0.49 0.53 0.51 0.54 0.55 0.47 0.45 0.44 0.43 0.49

HUNGARY Map site No.234 Computer file HUNGAHOR.234 SOPRON
 Latitude 47 43' N Longitude 16 35' E Height a.s.l. 427 metres
 Horizontal planes: - monthly means. Data used & period: G (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 1.01 1.68 2.90 4.30 5.37 5.65 5.80 4.82 3.62 2.31 1.25 0.87 3.31
 Gmax 2.16 3.33 4.96 6.72 7.72 8.27 8.30 6.98 5.72 4.01 2.49 1.68 5.20
 Gmin 0.17 0.35 0.57 1.29 1.57 1.61 1.61 1.04 0.86 0.47 0.17 0.16 0.82
 Go 2.97 4.51 6.73 9.07 10.82 11.60 11.19 9.71 7.56 5.24 3.38 2.53 7.12

Ratios to extraterrestrial radiation

G/Go 0.34 0.37 0.43 0.47 0.50 0.49 0.52 0.50 0.48 0.44 0.37 0.34 0.44
 Ktmax 0.63 0.63 0.64 0.68 0.68 0.71 0.72 0.67 0.68 0.66 0.63 0.63 0.67
 Ktmin 0.06 0.08 0.08 0.14 0.15 0.14 0.14 0.11 0.11 0.09 0.05 0.06 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.70 1.15 1.72 2.29 2.72 2.76 2.75 2.27 1.69 1.19 0.75 0.56 1.72
 D/G mean +++ 0.69 0.68 0.59 0.53 0.51 0.49 0.47 0.47 0.47 0.52 0.60 0.64 0.52

Daily sunshine duration: hours.

S ++ 1.6 2.0 3.9 6.2 7.3 7.5 8.3 7.3 5.9 4.5 3.0 1.9 5.0
 So 8.7 10.1 11.7 13.5 14.9 15.7 15.4 14.1 12.4 10.7 9.1 8.3 12.1
 S/So ++ 0.19 0.20 0.34 0.46 0.49 0.48 0.54 0.52 0.47 0.42 0.33 0.23 0.39
 Somax 9.1 10.6 12.5 14.1 15.4 15.8 15.6 14.6 13.0 11.3 9.6 8.4

Angstrom coefficients:Site referenced for estimating sunshine: Bratislava

Angstrom a 0.25 0.28 0.26 0.23 0.22 0.21 0.22 0.19 0.19 0.21 0.20 0.23 0.23
 Angstrom b 0.48 0.46 0.51 0.53 0.56 0.58 0.55 0.59 0.61 0.55 0.52 0.50 0.54

HUNGARY Map site No.235 Computer file HUNGAHOR.235 DEBRECEN
 Latitude 47 30' N Longitude 21 38' E Height a.s.l. 123 metres
 Horizontal planes: - monthly means. Data used & period: G (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.94 1.61 2.97 4.19 5.21 5.71 5.90 4.89 3.72 2.29 1.16 0.72 3.28
 Gmax 2.01 3.05 4.55 6.21 7.41 7.94 7.77 6.77 5.33 3.78 2.28 1.54 4.89
 Gmin 0.20 0.33 0.91 1.26 1.57 1.98 2.29 1.86 1.04 0.62 0.26 0.15 1.04
 Go 3.00 4.54 6.77 9.09 10.83 11.60 11.19 9.72 7.59 5.28 3.41 2.57 7.15

Ratios to extraterrestrial radiation

G/Go 0.31 0.35 0.44 0.46 0.48 0.49 0.53 0.50 0.49 0.43 0.34 0.28 0.43
 Ktmax 0.58 0.58 0.58 0.62 0.65 0.68 0.67 0.65 0.63 0.61 0.57 0.57 0.62
 Ktmin 0.07 0.07 0.14 0.14 0.15 0.17 0.20 0.19 0.14 0.12 0.08 0.06 0.15

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.70 1.15 1.74 2.32 2.76 2.79 2.77 2.28 1.71 1.21 0.74 0.57 1.74
 D/G mean +++ 0.74 0.71 0.59 0.55 0.53 0.49 0.47 0.47 0.46 0.53 0.64 0.79 0.53

Daily sunshine duration: hours.

S +++ 1.2 1.6 4.1 5.9 6.9 7.6 8.5 7.5 6.1 4.4 2.5 0.8 4.8
 So 8.8 10.1 11.7 13.5 14.9 15.7 15.3 14.1 12.4 10.7 9.2 8.3 12.1
 S/So +++ 0.13 0.16 0.35 0.44 0.47 0.49 0.56 0.53 0.49 0.41 0.27 0.10 0.37
 Somax 9.2 10.6 12.5 14.1 15.4 15.7 15.6 14.6 13.0 11.3 9.6 8.4

Angstrom coefficients:Site referenced for estimating sunshine: Bratislava

Angstrom a 0.25 0.28 0.26 0.23 0.22 0.21 0.22 0.19 0.19 0.21 0.20 0.23 0.23
 Angstrom b 0.48 0.46 0.51 0.53 0.56 0.58 0.55 0.59 0.61 0.55 0.52 0.50 0.54

HUNGARY		Map site No.236		Computer file HUNGAHOR.236								BUDAPEST			
Latitude	47 26' N			Longitude	19 11' E							Height a.s.l.	130 metres		
Horizontal planes: - monthly means.				Data used & period: G (1966 -1975)											
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean		0.97	1.72	3.02	4.32	5.57	6.02	5.89	5.09	3.82	2.49	1.22	0.77	3.42	
Gmax		2.02	3.30	5.07	6.71	7.98	8.34	7.99	7.16	5.60	4.06	2.49	1.59	5.20	
Gmin		0.27	0.40	0.81	1.24	1.72	1.71	1.52	1.65	0.96	0.55	0.23	0.17	0.94	
Go		3.02	4.56	6.77	9.09	10.84	11.60	11.19	9.73	7.60	5.29	3.43	2.58	7.15	
Ratios to extraterrestrial radiation															
G/Go		0.32	0.37	0.45	0.47	0.51	0.52	0.53	0.52	0.50	0.47	0.36	0.30	0.44	
Ktmax		0.58	0.62	0.65	0.67	0.70	0.72	0.69	0.69	0.66	0.66	0.62	0.59	0.66	
Ktmin		0.09	0.09	0.12	0.14	0.16	0.15	0.14	0.17	0.13	0.10	0.07	0.07	0.13	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.71	1.17	1.74	2.33	2.71	2.70	2.76	2.26	1.68	1.20	0.75	0.57	1.72	
D/G mean	++++	0.73	0.68	0.58	0.54	0.49	0.45	0.47	0.44	0.44	0.48	0.62	0.74	0.50	
Daily sunshine duration: hours.															
S	+++	1.3	2.1	4.3	6.2	7.8	8.4	8.5	7.9	6.4	5.1	2.8	1.1	5.2	
So		8.8	10.1	11.7	13.5	14.9	15.7	15.3	14.0	12.4	10.7	9.2	8.3	12.1	
S/So	+++	0.15	0.21	0.36	0.46	0.52	0.53	0.56	0.56	0.51	0.47	0.30	0.14	0.40	
Somax		9.2	10.6	12.5	14.1	15.4	15.7	15.6	14.6	13.0	11.3	9.6	8.4		
Angstrom coefficients:Site referenced for estimating sunshine: Bratislava															
Angstrom a		0.25	0.28	0.26	0.23	0.22	0.21	0.22	0.19	0.19	0.21	0.20	0.23	0.23	
Angstrom b		0.48	0.46	0.51	0.53	0.56	0.58	0.55	0.59	0.61	0.55	0.52	0.50	0.54	

HUNGARY		Map site No.237		Computer file HUNGAHOR.237								KECSKEMET			
Latitude	46 54' N			Longitude	19 46' E							Height a.s.l.	113 metres		
Horizontal planes: - monthly means.				Data used & period: G (1966 -1975)											
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean		1.15	1.94	3.26	4.49	5.66	6.27	6.40	5.27	4.03	2.64	1.41	0.88	3.63	
Gmax		2.18	3.41	5.12	6.83	7.94	8.51	8.40	7.25	5.67	4.04	2.58	1.81	5.32	
Gmin		0.30	0.47	0.98	1.35	1.71	2.06	2.54	1.85	1.49	0.64	0.35	0.21	1.17	
Go		3.11	4.64	6.85	9.14	10.86	11.61	11.21	9.76	7.66	5.37	3.52	2.67	7.21	
Ratios to extraterrestrial radiation															
G/Go		0.37	0.42	0.48	0.49	0.52	0.54	0.57	0.54	0.53	0.49	0.40	0.33	0.47	
Ktmax		0.61	0.63	0.65	0.68	0.70	0.73	0.73	0.69	0.67	0.65	0.63	0.65	0.67	
Ktmin		0.10	0.10	0.14	0.15	0.16	0.18	0.23	0.19	0.19	0.12	0.10	0.08	0.16	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.74	1.21	1.77	2.33	2.69	2.65	2.58	2.22	1.67	1.21	0.79	0.59	1.71	
D/G mean	++++	0.64	0.62	0.54	0.52	0.48	0.42	0.40	0.42	0.42	0.46	0.56	0.67	0.47	
Daily sunshine duration: hours.															
S	+++	2.2	3.0	5.0	6.6	8.0	8.9	9.8	8.3	6.8	5.5	3.6	1.7	5.8	
So		8.8	10.1	11.7	13.4	14.9	15.6	15.3	14.0	12.4	10.7	9.2	8.4	12.1	
S/So	+++	0.25	0.30	0.42	0.49	0.54	0.57	0.64	0.59	0.55	0.51	0.39	0.20	0.46	
Somax		9.2	10.6	12.4	14.0	15.3	15.6	15.5	14.5	13.0	11.3	9.7	8.5		
Angstrom coefficients:Site referenced for estimating sunshine: Bratislava															
Angstrom a		0.25	0.28	0.26	0.23	0.22	0.21	0.22	0.19	0.19	0.21	0.20	0.23	0.23	
Angstrom b		0.48	0.46	0.51	0.53	0.56	0.58	0.55	0.59	0.61	0.55	0.52	0.50	0.54	

IRELAND		Map site No.49		Computer file IRELAHOR.049								MALIN HEAD			
Latitude	55 22' N			Longitude	7 20' W							Height a.s.l.	30 metres		
Horizontal planes: - monthly means.				Data used & period: S (1966 -1975)											
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.43	1.07	2.16	3.41	4.56	5.16	4.15	3.58	2.56	1.29	0.60	0.32	2.45	
Gmax	++++	1.13	2.23	4.03	5.98	7.20	8.17	7.48	6.29	4.95	2.81	1.48	0.81	4.39	
Gmin	++++	0.09	0.27	0.47	0.86	0.91	1.79	1.29	1.23	0.85	0.33	0.15	0.08	0.69	
Go		1.70	3.22	5.60	8.29	10.47	11.48	10.96	9.10	6.56	4.00	2.10	1.30	6.25	
Ratios to extraterrestrial radiation															
G/Go	++++	0.25	0.33	0.39	0.41	0.44	0.45	0.38	0.39	0.39	0.32	0.29	0.25	0.36	
Ktmax	++++	0.53	0.56	0.59	0.64	0.65	0.71	0.66	0.63	0.65	0.57	0.56	0.57	0.61	
Ktmin	++++	0.05	0.09	0.08	0.10	0.09	0.16	0.12	0.14	0.13	0.08	0.07	0.06	0.11	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.32	0.71	1.31	2.11	2.67	2.95	2.62	2.18	1.57	0.86	0.44	0.26	1.51	
D/G mean	++++	0.75	0.66	0.61	0.62	0.58	0.57	0.63	0.61	0.61	0.66	0.73	0.80	0.62	
Daily sunshine duration: hours.															
S		1.1	2.3	3.5	5.1	6.1	6.4	4.7	4.6	3.7	2.5	1.3	0.8	3.5	
So		7.6	9.4	11.7	13.9	16.0	17.1	16.5	14.8	12.6	10.3	8.2	6.9	12.1	
S/So		0.14	0.24	0.30	0.37	0.38	0.38	0.28	0.31	0.30	0.24	0.16	0.12	0.27	
Somax		8.2	10.2	12.6	14.8	16.6	17.1	17.0	15.5	13.3	11.1	8.8	7.1		
Angstrom coefficients:Reference site: Aldergrove															
Angstrom a		0.16	0.19	0.21	0.22	0.22	0.25	0.22	0.22	0.23	0.19	0.19	0.18	0.21	
Angstrom b		0.63	0.58	0.58	0.52	0.56	0.53	0.56	0.56	0.54	0.55	0.58	0.57	0.56	

IRELAND		Map site No.50			Computer file IRELAHOR.050								BELMULLET	
Latitude	54 14' N				Longitude	10 0' W				Height a.s.l.			13 metres	
Horizontal planes: - monthly means.					Data used & period:					S (1966 -1975)				
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.														
G mean	++++	0.62	1.35	2.50	3.99	5.03	5.46	4.51	4.17	2.87	1.62	0.80	0.46	2.79
Gmax	++++	1.41	2.61	4.46	6.57	7.75	8.15	8.12	6.61	5.24	3.05	1.75	0.97	4.72
Gmin	++++	0.15	0.39	0.77	1.13	1.61	2.22	1.30	1.40	0.95	0.47	0.19	0.12	0.89
Go		1.89	3.41	5.77	8.42	10.53	11.50	11.00	9.20	6.72	4.19	2.29	1.48	6.38
Ratios to extraterrestrial radiation														
G/Go	++++	0.33	0.39	0.43	0.47	0.48	0.47	0.41	0.45	0.43	0.39	0.35	0.31	0.41
Ktmax	++++	0.60	0.63	0.64	0.70	0.69	0.70	0.71	0.66	0.68	0.60	0.62	0.61	0.66
Ktmin	++++	0.08	0.11	0.13	0.13	0.15	0.19	0.12	0.15	0.14	0.11	0.08	0.08	0.14
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.42	0.80	1.40	2.20	2.72	3.05	2.74	2.39	1.60	0.98	0.53	0.34	1.61
D/G mean	++++	0.68	0.59	0.56	0.55	0.54	0.56	0.61	0.57	0.56	0.60	0.67	0.74	0.58
Daily sunshine duration: hours.														
S		1.4	2.7	3.8	5.4	6.2	6.2	4.5	5.1	4.0	2.6	1.6	1.0	3.7
So		7.8	9.5	11.7	13.9	15.8	16.8	16.3	14.6	12.5	10.3	8.3	7.2	12.1
S/So		0.18	0.28	0.33	0.39	0.39	0.37	0.28	0.35	0.32	0.25	0.20	0.15	0.29
Somax		8.3	10.3	12.6	14.7	16.4	16.9	16.7	15.4	13.3	11.1	9.0	7.3	
Angstrom coefficients:Reference site: Birr														
Angstrom a		0.22	0.23	0.24	0.26	0.25	0.28	0.25	0.26	0.24	0.24	0.23	0.22	0.24
Angstrom b		0.62	0.59	0.59	0.55	0.58	0.53	0.58	0.55	0.59	0.58	0.60	0.62	0.58

IRELAND		Map site No.51				Computer file IRELAHOR.051								CLONES	
Latitude	54 11' N					Longitude	7 14' W					Height a.s.l.	89 metres		
Horizontal planes: - monthly means.						Data used & period:				S (1966 -1975)					
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.54	1.25	2.35	3.71	4.64	5.24	4.54	3.83	2.72	1.47	0.79	0.44	2.63	
Gmax	++++	1.29	2.57	4.73	6.69	8.30	8.52	8.24	7.19	5.29	3.23	1.69	0.86	4.88	
Gmin	++++	0.11	0.29	0.69	0.98	1.37	1.38	1.19	1.19	0.76	0.34	0.15	0.11	0.71	
Go		1.89	3.42	5.78	8.42	10.53	11.50	11.00	9.20	6.73	4.20	2.30	1.48	6.39	
Ratios to extraterrestrial radiation															
G/Go	++++	0.28	0.37	0.41	0.44	0.44	0.46	0.41	0.42	0.40	0.35	0.34	0.30	0.38	
Ktmax	++++	0.55	0.61	0.68	0.71	0.74	0.74	0.72	0.72	0.69	0.63	0.59	0.54	0.66	
Ktmin	++++	0.06	0.09	0.12	0.12	0.13	0.12	0.11	0.13	0.11	0.08	0.07	0.07	0.11	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.40	0.75	1.36	2.07	2.62	2.85	2.65	2.25	1.58	0.87	0.49	0.32	1.53	
D/G mean	++++	0.73	0.60	0.58	0.56	0.56	0.54	0.58	0.59	0.58	0.59	0.62	0.72	0.58	
Daily sunshine duration: hours.															
S		1.1	2.3	3.2	4.6	4.9	5.5	4.3	4.1	3.4	2.4	1.9	1.1	3.2	
So		7.8	9.5	11.7	13.9	15.8	16.8	16.3	14.6	12.5	10.3	8.3	7.2	12.1	
S/So		0.15	0.24	0.27	0.33	0.31	0.33	0.26	0.28	0.27	0.23	0.22	0.15	0.25	
Somax		8.4	10.3	12.6	14.7	16.4	16.9	16.7	15.3	13.3	11.1	9.0	7.4		
Angstrom coefficients:Reference site: Valentia															
Angstrom a		0.19	0.21	0.24	0.24	0.25	0.26	0.25	0.25	0.24	0.20	0.20	0.20	0.23	
Angstrom b		0.64	0.64	0.61	0.60	0.61	0.60	0.62	0.59	0.60	0.66	0.64	0.62	0.62	

IRELAND		Map site No.52			Computer file IRELAHOR.052								CLAREMORRIS	
Latitude	53 43' N				Longitude	8 59' W			Height a.s.l.			70 metres		
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	0.58	1.33	2.41	3.68	4.75	5.20	4.46	3.88	2.75	1.52	0.81	0.46	2.66
Gmax	++++	1.33	2.62	4.78	6.72	8.31	8.52	8.25	7.20	5.33	3.28	1.73	0.90	4.91
Gmin	++++	0.11	0.30	0.70	0.98	1.37	1.38	1.19	1.19	0.77	0.35	0.16	0.11	0.71
Go		1.97	3.50	5.85	8.47	10.55	11.51	11.02	9.24	6.79	4.28	2.37	1.56	6.44
Ratios to extraterrestrial radiation														
G/Go	++++	0.29	0.38	0.41	0.43	0.45	0.45	0.40	0.42	0.41	0.35	0.34	0.30	0.39
Ktmax	++++	0.55	0.61	0.68	0.71	0.74	0.74	0.72	0.71	0.69	0.63	0.59	0.54	0.66
Ktmin	++++	0.06	0.09	0.12	0.12	0.13	0.12	0.11	0.13	0.11	0.08	0.07	0.07	0.11
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.40	0.77	1.38	2.07	2.64	2.87	2.64	2.26	1.59	0.90	0.51	0.33	1.54
D/G mean	++++	0.70	0.58	0.57	0.56	0.56	0.55	0.59	0.58	0.58	0.59	0.63	0.72	0.58
Daily sunshine duration: hours.														
S		1.3	2.5	3.3	4.5	5.1	5.3	4.1	4.2	3.4	2.4	1.8	1.1	3.3
So		7.9	9.6	11.7	13.8	15.7	16.7	16.2	14.6	12.5	10.4	8.4	7.3	12.1
S/So		0.16	0.26	0.28	0.32	0.33	0.32	0.25	0.29	0.28	0.23	0.22	0.16	0.26
Somax		8.4	10.3	12.6	14.6	16.3	16.8	16.6	15.3	13.3	11.2	9.0	7.4	
Angstrom coefficients:Reference site: Valentia														
Angstrom a		0.19	0.21	0.24	0.24	0.25	0.26	0.25	0.25	0.24	0.20	0.20	0.20	0.23
Angstrom b		0.64	0.64	0.61	0.60	0.61	0.60	0.62	0.59	0.60	0.66	0.64	0.62	0.62

UNITED KINGDOM		Map site No.14			Computer file UKINGHOR.014								KIRKWALL	
Latitude 58 57' N					Longitude 2 54' W			Height a.s.l.			29 metres			
Horizontal planes: - monthly means.					Data used & period:			S (1966 -1975)						
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	+++	0.27	0.88	1.89	3.35	4.14	4.86	4.33	3.50	2.12	1.16	0.39	0.19	2.26
Gmax	+++	0.72	1.97	3.79	5.67	7.36	8.05	7.41	6.33	4.28	2.51	1.04	0.43	4.15
Gmin	+++	0.03	0.10	0.31	0.99	0.73	1.18	1.30	0.64	0.48	0.16	0.08	0.03	0.51
Go		1.15	2.61	5.03	7.89	10.28	11.43	10.84	8.78	6.05	3.41	1.53	0.79	5.83

Ratios to extraterrestrial radiation

G/Go	++++	0.24	0.34	0.38	0.42	0.40	0.43	0.40	0.40	0.35	0.34	0.26	0.24	0.35
Ktmax	++++	0.46	0.58	0.60	0.63	0.67	0.70	0.65	0.65	0.60	0.58	0.51	0.48	0.60
Ktmin	++++	0.02	0.04	0.06	0.13	0.07	0.10	0.12	0.07	0.08	0.05	0.05	0.03	0.09

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.22	0.56	1.12	1.96	2.34	2.70	2.62	2.12	1.31	0.74	0.30	0.16	1.35
D/G mean	++++	0.81	0.64	0.59	0.59	0.57	0.55	0.60	0.61	0.62	0.64	0.77	0.84	0.60

Daily sunshine duration: hours.

S		0.8	2.3	3.2	4.5	4.9	6.0	4.6	4.4	3.1	2.4	1.1	0.6	3.2
So		6.8	9.0	11.6	14.2	16.6	18.0	17.3	15.2	12.6	10.0	7.5	6.0	12.1
S/So		0.12	0.25	0.27	0.32	0.29	0.33	0.26	0.29	0.24	0.24	0.14	0.09	0.24
Somax		7.6	9.9	12.7	15.3	17.4	18.1	17.9	16.1	13.6	11.0	8.3	6.2	

Angstrom coefficients:Reference site: Lerwick

Angstrom a		0.16	0.18	0.20	0.24	0.21	0.22	0.24	0.23	0.20	0.19	0.17	0.18	0.20
Angstrom b		0.63	0.62	0.64	0.58	0.66	0.62	0.60	0.58	0.62	0.61	0.61	0.62	0.62

UNITED KINGDOM		Map site No.15			Computer file UKINGHOR.015								STORNOWAY	
Latitude 58 13' N				Longitude 6 19' W				Height a.s.l.				9 metres		
Horizontal planes: - monthly means.				Data used & period:		S		(1966 -1975)						
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.														
G mean	++++	0.31	0.97	2.08	3.59	4.55	4.99	4.23	3.60	2.32	1.21	0.48	0.22	2.39
Gmax	++++	0.78	2.05	3.85	5.71	7.38	8.05	7.41	6.36	4.33	2.58	1.10	0.48	4.20
Gmin	++++	0.03	0.10	0.32	1.00	0.73	1.18	1.30	0.65	0.49	0.17	0.09	0.03	0.51
Go		1.26	2.73	5.15	7.97	10.32	11.44	10.87	8.85	6.16	3.53	1.65	0.89	5.92

Ratios to extraterrestrial radiation

G/Go	++++	0.24	0.35	0.40	0.45	0.44	0.44	0.39	0.41	0.38	0.34	0.29	0.25	0.37
Ktmax	++++	0.46	0.59	0.60	0.63	0.67	0.70	0.65	0.65	0.60	0.58	0.51	0.48	0.60
Ktmin	++++	0.02	0.04	0.06	0.13	0.07	0.10	0.12	0.07	0.08	0.05	0.05	0.03	0.09

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.24	0.60	1.16	2.01	2.41	2.72	2.59	2.16	1.37	0.76	0.34	0.18	1.39
D/G mean	++++	0.79	0.62	0.56	0.56	0.53	0.55	0.61	0.60	0.59	0.63	0.71	0.81	0.58

Daily sunshine duration: hours.

S		0.9	2.5	3.7	5.1	5.8	6.2	4.3	4.6	3.6	2.5	1.5	0.7	3.5
So		7.0	9.1	11.6	14.2	16.5	17.8	17.2	15.1	12.6	10.1	7.7	6.2	12.1
S/So		0.13	0.28	0.32	0.36	0.35	0.35	0.25	0.31	0.29	0.25	0.20	0.11	0.27
Somax		7.7	10.0	12.7	15.2	17.3	17.9	17.7	16.0	13.5	11.0	8.4	6.4	

Angstrom coefficients:Reference site: Lerwick

Angstrom a		0.16	0.18	0.20	0.24	0.21	0.22	0.24	0.23	0.20	0.19	0.17	0.18	0.20
Angstrom b		0.63	0.62	0.64	0.58	0.66	0.62	0.60	0.58	0.62	0.61	0.61	0.62	0.62

UNITED KINGDOM		Map site No.16			Computer file UKINGHOR.016								KINLOSS	
Latitude 57 39' N				Longitude 3 34' W				Height a.s.l.				8 metres		
Horizontal planes: - monthly means.				Data used & period:		S		(1966 -1975)						
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	+++	0.36	1.00	2.05	3.50	4.30	4.90	4.49	3.67	2.36	1.28	0.52	0.29	2.40
Gmax	+++	0.82	2.10	3.91	5.74	7.39	8.06	7.42	6.38	4.38	2.64	1.16	0.52	4.24
Gmin	+++	0.03	0.10	0.32	1.00	0.73	1.18	1.31	0.65	0.50	0.17	0.10	0.03	0.52
Go		1.35	2.83	5.24	8.04	10.35	11.45	10.88	8.90	6.24	3.62	1.74	0.97	5.98

Ratios to extraterrestrial radiation

G/Go	++++	0.27	0.35	0.39	0.44	0.42	0.43	0.41	0.41	0.38	0.35	0.30	0.30	0.37
Ktmax	++++	0.46	0.58	0.60	0.63	0.67	0.70	0.65	0.65	0.60	0.58	0.51	0.48	0.60
Ktmin	++++	0.02	0.04	0.06	0.13	0.07	0.10	0.12	0.07	0.08	0.05	0.05	0.03	0.09

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.26	0.61	1.17	2.00	2.39	2.72	2.66	2.18	1.39	0.78	0.36	0.20	1.40
D/G mean	++++	0.73	0.61	0.57	0.57	0.56	0.55	0.59	0.59	0.59	0.61	0.69	0.69	0.58

Daily sunshine duration: hours.

S		1.2	2.6	3.5	4.8	5.1	5.9	4.9	4.7	3.6	2.7	1.6	1.2	3.5
So		7.1	9.2	11.6	14.1	16.4	17.6	17.0	15.0	12.6	10.1	7.8	6.4	12.1
S/So		0.17	0.28	0.30	0.34	0.31	0.34	0.29	0.31	0.29	0.27	0.21	0.19	0.27
Somax		7.8	10.0	12.7	15.1	17.1	17.7	17.5	15.9	13.5	11.0	8.5	6.6	

Angstrom coefficients:Reference site: Lerwick

Angstrom a		0.16	0.18	0.20	0.24	0.21	0.22	0.24	0.23	0.20	0.19	0.17	0.18	0.20
Angstrom b		0.63	0.62	0.64	0.58	0.66	0.62	0.60	0.58	0.62	0.61	0.61	0.62	0.62

UNITED KINGDOM		Map site No.17		Computer file UKINGHOR.017								ABERDEEN		
Latitude 57 12' N				Longitude 2 12' W				Height a.s.l.		54 metres				
Horizontal planes: - monthly means.				Data used & period: S		(1966 -1975)								
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	++++	0.40	1.02	2.13	3.54	4.36	5.03	4.57	3.80	2.35	1.36	0.61	0.33	2.47
Gmax	++++	0.85	2.15	3.94	5.77	7.40	8.06	7.42	6.40	4.41	2.68	1.19	0.55	4.27
Gmin	++++	0.03	0.11	0.33	1.01	0.74	1.18	1.31	0.65	0.50	0.18	0.10	0.03	0.53
Go		1.42	2.91	5.31	8.09	10.37	11.45	10.90	8.94	6.31	3.70	1.81	1.03	6.04
Ratios to extraterrestrial radiation														
G/Go	++++	0.28	0.35	0.40	0.44	0.42	0.44	0.42	0.42	0.37	0.37	0.33	0.32	0.38
Ktmax	++++	0.46	0.59	0.60	0.63	0.67	0.70	0.65	0.65	0.60	0.58	0.51	0.48	0.60
Ktmin	++++	0.02	0.04	0.06	0.13	0.07	0.10	0.12	0.07	0.08	0.05	0.05	0.03	0.09
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.28	0.62	1.19	2.02	2.40	2.73	2.67	2.21	1.39	0.81	0.38	0.21	1.42
D/G mean	++++	0.70	0.61	0.56	0.57	0.55	0.54	0.58	0.58	0.59	0.60	0.63	0.63	0.57
Daily sunshine duration: hours.														
S		1.4	2.6	3.7	4.8	5.2	6.2	5.1	5.0	3.5	2.9	2.1	1.5	3.7
So		7.2	9.2	11.6	14.1	16.3	17.5	16.9	15.0	12.6	10.1	7.8	6.5	12.1
S/So		0.19	0.28	0.31	0.34	0.32	0.35	0.30	0.34	0.28	0.29	0.27	0.23	0.29
Somax		7.9	10.0	12.7	15.0	17.0	17.6	17.4	15.8	13.5	11.0	8.6	6.7	
Angstrom coefficients:Reference site: Lerwick														
Angstrom a		0.16	0.18	0.20	0.24	0.21	0.22	0.24	0.23	0.20	0.19	0.17	0.18	0.20
Angstrom b		0.63	0.62	0.64	0.58	0.66	0.62	0.60	0.58	0.62	0.61	0.61	0.62	0.62

UNITED KINGDOM		Map site No.18		Computer file UKINGHOR.018								TIREE		
Latitude 56 30' N				Longitude 6 53' W				Height a.s.l.		17 metres				
Horizontal planes: - monthly means.				Data used & period: S		(1966 -1975)								
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	++++	0.44	1.12	2.43	3.56	4.74	5.38	5.04	4.15	3.03	1.52	0.70	0.34	2.71
Gmax	++++	1.03	2.12	3.93	5.91	7.18	8.16	7.47	6.25	4.86	2.70	1.37	0.71	4.31
Gmin	++++	0.08	0.26	0.46	0.85	0.91	1.79	1.29	1.22	0.83	0.31	0.14	0.07	0.68
Go		1.53	3.03	5.42	8.17	10.41	11.46	10.92	9.00	6.40	3.82	1.92	1.14	6.12
Ratios to extraterrestrial radiation														
G/Go	++++	0.29	0.37	0.45	0.44	0.45	0.47	0.46	0.46	0.47	0.40	0.37	0.30	0.41
Ktmax	++++	0.52	0.56	0.59	0.64	0.65	0.71	0.66	0.63	0.65	0.57	0.56	0.57	0.61
Ktmin	++++	0.05	0.09	0.08	0.10	0.09	0.16	0.12	0.14	0.13	0.08	0.07	0.06	0.11
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.30	0.69	1.31	2.12	2.67	2.94	2.78	2.26	1.60	0.89	0.42	0.23	1.53
D/G mean	++++	0.68	0.61	0.54	0.60	0.56	0.55	0.55	0.54	0.53	0.59	0.60	0.68	0.56
Daily sunshine duration: hours.														
S		1.5	2.9	4.8	5.8	6.8	7.2	7.2	6.4	5.6	3.8	2.4	1.4	4.7
So		7.3	9.3	11.6	14.0	16.2	17.3	16.8	14.9	12.6	10.2	8.0	6.7	12.1
S/So		0.20	0.31	0.41	0.42	0.42	0.41	0.43	0.43	0.45	0.38	0.30	0.21	0.36
Somax		8.0	10.1	12.6	14.9	16.9	17.4	17.2	15.7	13.4	11.1	8.7	6.9	
Angstrom coefficients:Reference site: Aldergrove														
Angstrom a		0.16	0.19	0.21	0.22	0.22	0.25	0.22	0.22	0.23	0.19	0.19	0.18	0.21
Angstrom b		0.63	0.58	0.58	0.52	0.56	0.53	0.56	0.56	0.54	0.55	0.58	0.57	0.56

UNITED KINGDOM		Map site No.19		Computer file UKINGHOR.019								EDINBURGH		
Latitude 55 58' N				Longitude 3 12' W				Height a.s.l.		39 metres				
Horizontal planes: - monthly means.				Data used & period: S		(1966 -1975)								
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	++++	0.43	1.11	2.10	3.25	4.03	4.61	4.24	3.45	2.47	1.41	0.67	0.35	2.35
Gmax	++++	1.03	2.38	4.13	6.02	7.12	7.81	7.39	6.33	4.65	2.84	1.48	0.77	4.33
Gmin	++++	0.05	0.14	0.41	0.63	0.93	1.30	1.18	0.84	0.56	0.22	0.09	0.05	0.54
Go		1.61	3.12	5.51	8.23	10.44	11.47	10.94	9.05	6.48	3.91	2.01	1.21	6.18
Ratios to extraterrestrial radiation														
G/Go	++++	0.27	0.36	0.38	0.40	0.39	0.40	0.39	0.38	0.38	0.36	0.34	0.29	0.36
Ktmax	++++	0.50	0.61	0.62	0.65	0.64	0.68	0.65	0.64	0.62	0.59	0.58	0.58	0.62
Ktmin	++++	0.03	0.04	0.08	0.08	0.09	0.11	0.11	0.09	0.09	0.06	0.04	0.04	0.09
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.30	0.69	1.23	1.93	2.42	2.73	2.59	2.13	1.49	0.84	0.43	0.24	1.43
D/G mean	++++	0.71	0.62	0.59	0.59	0.60	0.59	0.61	0.62	0.60	0.59	0.64	0.69	0.61
Daily sunshine duration: hours.														
S		1.4	2.5	3.6	4.6	5.1	5.7	5.3	4.7	3.9	3.0	2.1	1.4	3.6
So		7.5	9.4	11.6	14.0	16.1	17.2	16.7	14.8	12.6	10.2	8.1	6.8	12.1
S/So		0.19	0.27	0.31	0.33	0.32	0.33	0.32	0.32	0.31	0.30	0.26	0.21	0.29
Somax		8.1	10.1	12.6	14.9	16.8	17.3	17.1	15.6	13.4	11.1	8.7	7.0	
Angstrom coefficients:Reference site: Eskdalemuir														
Angstrom a		0.15	0.19	0.19	0.20	0.20	0.19	0.20	0.20	0.20	0.18	0.18	0.16	0.19
Angstrom b		0.63	0.61	0.62	0.60	0.62	0.58	0.59	0.57	0.58	0.61	0.59	0.59	0.60

UNITED KINGDOM		Map site No.20		Computer file UKINGHOR.020								GLASGOW			
Latitude 55 52' N				Longitude 4 26' W				Height a.s.l.		131 metres					
Horizontal planes: - monthly means.				Data used & period:		S		(1966 -1975)							
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.38	1.06	2.02	3.53	4.15	4.93	4.22	3.54	2.40	1.35	0.63	0.32	2.38	
Gmax	++++	1.04	2.39	4.14	6.03	7.12	7.81	7.39	6.33	4.66	2.85	1.49	0.77	4.34	
Gmin	++++	0.06	0.14	0.41	0.63	0.93	1.30	1.18	0.84	0.56	0.22	0.09	0.05	0.54	
Go		1.62	3.13	5.52	8.24	10.44	11.48	10.94	9.06	6.49	3.92	2.02	1.23	6.19	
Ratios to extraterrestrial radiation															
G/Go	++++	0.23	0.34	0.37	0.43	0.40	0.43	0.39	0.39	0.37	0.34	0.31	0.26	0.35	
Ktmax	++++	0.50	0.61	0.62	0.65	0.64	0.68	0.65	0.64	0.62	0.59	0.58	0.57	0.62	
Ktmin	++++	0.03	0.04	0.08	0.08	0.09	0.11	0.11	0.09	0.09	0.06	0.04	0.04	0.09	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.29	0.67	1.22	1.99	2.44	2.78	2.58	2.16	1.46	0.83	0.42	0.23	1.43	
D/G mean	++++	0.77	0.63	0.60	0.56	0.59	0.56	0.61	0.61	0.61	0.61	0.67	0.73	0.60	
Daily sunshine duration: hours.															
S		1.0	2.3	3.3	5.3	5.4	6.5	5.2	4.9	3.7	2.7	1.8	1.2	3.6	
So		7.5	9.4	11.6	14.0	16.0	17.2	16.6	14.8	12.6	10.2	8.1	6.8	12.1	
S/So		0.13	0.24	0.28	0.38	0.33	0.38	0.31	0.33	0.29	0.27	0.22	0.17	0.28	
Somax		8.1	10.1	12.6	14.9	16.7	17.3	17.1	15.6	13.4	11.1	8.8	7.0		
Angstrom coefficients:Reference site: Eskdalemuir															
Angstrom a		0.15	0.19	0.19	0.20	0.19	0.21	0.20	0.20	0.20	0.18	0.18	0.16	0.19	
Angstrom b		0.63	0.61	0.62	0.60	0.62	0.58	0.59	0.57	0.58	0.61	0.59	0.59	0.60	

UNITED KINGDOM		Map site No.21		Computer file UKINGHOR.021								BLYTHE BRIDGE			
Latitude 55 42' N				Longitude 3 22' W				Height a.s.l.		255 metres					
Horizontal planes: - monthly means.				Data used & period:		S		(1966 -1975)							
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.38	1.08	1.95	3.15	3.96	4.64	3.99	3.38	2.36	1.31	0.62	0.31	2.27	
Gmax	++++	1.05	2.41	4.15	6.03	7.13	7.81	7.39	6.34	4.67	2.86	1.51	0.79	4.35	
Gmin	++++	0.06	0.14	0.42	0.64	0.93	1.30	1.18	0.84	0.56	0.23	0.09	0.05	0.54	
Go		1.65	3.16	5.55	8.26	10.45	11.48	10.95	9.07	6.52	3.95	2.05	1.25	6.21	
Ratios to extraterrestrial radiation															
G/Go	++++	0.23	0.34	0.35	0.38	0.38	0.40	0.36	0.37	0.36	0.33	0.30	0.25	0.34	
Ktmax	++++	0.50	0.61	0.62	0.65	0.64	0.68	0.65	0.64	0.62	0.59	0.58	0.58	0.62	
Ktmin	++++	0.03	0.04	0.08	0.08	0.09	0.11	0.11	0.09	0.09	0.06	0.04	0.04	0.09	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.30	0.68	1.20	1.91	2.39	2.73	2.51	2.10	1.46	0.81	0.42	0.24	1.40	
D/G mean	++++	0.79	0.63	0.62	0.61	0.60	0.59	0.63	0.62	0.62	0.62	0.68	0.76	0.62	
Daily sunshine duration: hours.															
S		0.9	2.3	3.0	4.2	4.9	5.7	4.6	4.5	3.5	2.6	1.7	1.0	3.3	
So		7.5	9.4	11.7	14.0	16.0	17.1	16.6	14.8	12.6	10.2	8.1	6.9	12.1	
S/So		0.12	0.25	0.26	0.30	0.30	0.34	0.28	0.30	0.28	0.25	0.21	0.15	0.25	
Somax		8.1	10.2	12.6	14.9	16.7	17.2	17.0	15.6	13.4	11.1	8.8	7.0		
Angstrom coefficients:Reference site: Eskdalemuir															
Angstrom a		0.15	0.19	0.19	0.20	0.19	0.21	0.20	0.20	0.20	0.18	0.18	0.16	0.19	
Angstrom b		0.63	0.61	0.62	0.60	0.62	0.58	0.59	0.57	0.58	0.61	0.59	0.59	0.60	

UNITED KINGDOM		Map site No.22		Computer file UKINGHOR.022								ESKDALEMUIR			
Latitude 55 19' N				Longitude 3 12' W				Height a.s.l.		242 metres					
Horizontal planes: - monthly means.				Data used & period:		G & S		(1966 -1975)							
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean		0.38	1.12	2.01	3.24	3.90	4.67	4.06	3.42	2.31	1.29	0.65	0.34	2.29	
Gmax		1.08	2.45	4.18	6.06	7.13	7.82	7.39	6.36	4.70	2.90	1.55	0.82	4.38	
Gmin		0.06	0.14	0.42	0.64	0.93	1.30	1.18	0.85	0.57	0.23	0.09	0.05	0.54	
Go		1.71	3.23	5.61	8.30	10.47	11.48	10.96	9.11	6.57	4.01	2.11	1.31	6.25	
Ratios to extraterrestrial radiation															
G/Go		0.22	0.34	0.36	0.39	0.37	0.41	0.37	0.38	0.35	0.32	0.31	0.26	0.34	
Ktmax		0.50	0.61	0.62	0.65	0.64	0.68	0.65	0.64	0.62	0.59	0.58	0.57	0.62	
Ktmin		0.03	0.04	0.08	0.08	0.09	0.11	0.11	0.09	0.09	0.06	0.04	0.04	0.09	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.30	0.70	1.23	1.92	2.36	2.71	2.54	2.14	1.45	0.82	0.44	0.25	1.41	
D/G mean	++++	0.79	0.62	0.61	0.59	0.61	0.58	0.62	0.62	0.63	0.63	0.67	0.73	0.62	
Daily sunshine duration: hours.															
S		0.9	2.4	3.1	4.5	4.8	5.9	4.7	4.4	3.2	2.4	1.8	1.2	3.3	
So		7.6	9.4	11.7	13.9	16.0	17.1	16.5	14.7	12.6	10.3	8.2	7.0	12.1	
S/So		0.12	0.25	0.26	0.32	0.30	0.35	0.28	0.30	0.25	0.23	0.22	0.17	0.26	
Somax		8.2	10.2	12.6	14.8	16.6	17.1	17.0	15.5	13.3	11.1	8.8	7.1		
Angstrom coefficients:Radiation observing site															
Angstrom a		0.15	0.19	0.19	0.20	0.19	0.21	0.20	0.20	0.20	0.18	0.18	0.16	0.19	
Angstrom b		0.63	0.61	0.62	0.60	0.62	0.58	0.59	0.57	0.58	0.61	0.59	0.59	0.60	

IRELAND		Map site No.53		Computer file IRELAHOR.053								MULLINGAR			
Latitude 53 32' N				Longitude 7 22' W				Height a.s.l.		105 metres					
Horizontal planes: - monthly means.				Data used & period: S		(1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.67	1.38	2.46	3.87	4.67	5.26	4.59	3.97	2.89	1.66	0.93	0.54	2.75	
Gmax	++++	1.48	2.68	4.52	6.61	7.76	8.15	8.12	6.64	5.29	3.12	1.83	1.04	4.78	
Gmin	++++	0.16	0.40	0.78	1.14	1.62	2.22	1.30	1.41	0.96	0.48	0.20	0.13	0.90	
Go		2.00	3.53	5.88	8.49	10.56	11.52	11.02	9.26	6.81	4.31	2.40	1.59	6.46	
Ratios to extraterrestrial radiation															
G/Go	++++	0.33	0.39	0.42	0.46	0.44	0.46	0.42	0.43	0.42	0.39	0.39	0.34	0.41	
Ktmax	++++	0.60	0.62	0.64	0.70	0.69	0.70	0.71	0.66	0.68	0.60	0.62	0.61	0.66	
Ktmin	++++	0.08	0.11	0.13	0.13	0.15	0.19	0.12	0.15	0.14	0.11	0.08	0.08	0.14	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.44	0.82	1.42	2.21	2.69	3.04	2.76	2.36	1.63	1.00	0.55	0.35	1.61	
D/G mean	++++	0.66	0.60	0.58	0.57	0.58	0.58	0.60	0.59	0.56	0.60	0.59	0.64	0.59	
Daily sunshine duration: hours.															
S		1.5	2.6	3.5	4.9	5.2	5.6	4.6	4.5	3.9	2.6	2.2	1.5	3.6	
So		7.9	9.6	11.7	13.8	15.7	16.7	16.2	14.6	12.5	10.4	8.4	7.3	12.1	
S/So		0.19	0.27	0.30	0.36	0.33	0.33	0.29	0.31	0.31	0.25	0.26	0.20	0.28	
Somax		8.4	10.3	12.6	14.6	16.3	16.7	16.6	15.3	13.3	11.2	9.0	7.5		
Angstrom coefficients:Reference site: Birr															
Angstrom a		0.22	0.23	0.24	0.26	0.25	0.28	0.25	0.26	0.24	0.24	0.23	0.22	0.24	
Angstrom b		0.62	0.59	0.59	0.55	0.58	0.53	0.58	0.55	0.59	0.58	0.60	0.62	0.58	

IRELAND		Map site No.54		Computer file IRELAHOR.054								DUBLIN			
Latitude 53 26' N				Longitude 6 15' W				Height a.s.l.		80 metres					
Horizontal planes: - monthly means.				Data used & period: S		(1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.68	1.48	2.67	4.23	5.18	6.09	5.32	4.36	3.26	1.86	0.97	0.58	3.06	
Gmax	++++	1.56	2.83	4.65	6.56	7.97	8.62	8.18	6.78	5.28	3.31	1.85	1.01	4.89	
Gmin	++++	0.14	0.36	0.65	1.33	1.46	2.33	1.73	1.20	0.79	0.52	0.22	0.14	0.91	
Go		2.01	3.55	5.90	8.50	10.57	11.52	11.03	9.27	6.83	4.32	2.42	1.60	6.47	
Ratios to extraterrestrial radiation															
G/Go	++++	0.34	0.42	0.45	0.50	0.49	0.53	0.48	0.47	0.48	0.43	0.40	0.36	0.45	
Ktmax	++++	0.63	0.66	0.66	0.69	0.71	0.74	0.71	0.67	0.68	0.63	0.62	0.59	0.67	
Ktmin	++++	0.07	0.10	0.11	0.16	0.14	0.20	0.16	0.13	0.12	0.12	0.09	0.09	0.14	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.46	0.85	1.45	2.22	2.66	3.06	2.86	2.38	1.66	1.05	0.57	0.38	1.64	
D/G mean	++++	0.67	0.57	0.54	0.52	0.51	0.50	0.54	0.55	0.51	0.57	0.59	0.66	0.54	
Daily sunshine duration: hours.															
S		1.5	2.9	3.8	5.5	5.9	6.7	5.7	5.1	4.6	3.1	2.4	1.6	4.1	
So		7.9	9.6	11.7	13.8	15.7	16.7	16.2	14.6	12.5	10.4	8.4	7.3	12.1	
S/So		0.19	0.30	0.33	0.40	0.38	0.40	0.35	0.35	0.37	0.30	0.28	0.22	0.32	
Somax		8.5	10.3	12.6	14.6	16.3	16.7	16.6	15.2	13.3	11.2	9.0	7.5		
Angstrom coefficients:Reference site: Kilkenny															
Angstrom a		0.22	0.24	0.26	0.28	0.26	0.31	0.28	0.27	0.26	0.26	0.24	0.25	0.26	
Angstrom b		0.60	0.58	0.59	0.55	0.61	0.54	0.58	0.57	0.59	0.56	0.56	0.52	0.57	

IRELAND		Map site No.55		Computer file IRELAHOR.055								CASEMENT			
Latitude 53 18' N				Longitude 6 26' W				Height a.s.l.		92 metres					
Horizontal planes: - monthly means.				Data used & period: S		(1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	0.68	1.44	2.56	4.11	5.09	6.00	5.14	4.25	3.18	1.84	0.94	0.57	2.99	
Gmax	++++	1.57	2.84	4.66	6.56	7.98	8.62	8.19	6.79	5.30	3.33	1.87	1.02	4.90	
Gmin	++++	0.14	0.36	0.66	1.34	1.46	2.33	1.73	1.20	0.79	0.53	0.22	0.14	0.91	
Go		2.04	3.57	5.92	8.51	10.57	11.52	11.03	9.28	6.84	4.35	2.44	1.62	6.49	
Ratios to extraterrestrial radiation															
G/Go	++++	0.33	0.40	0.43	0.48	0.48	0.52	0.47	0.46	0.47	0.42	0.38	0.35	0.43	
Ktmax	++++	0.63	0.66	0.66	0.69	0.71	0.74	0.72	0.67	0.68	0.63	0.62	0.59	0.67	
Ktmin	++++	0.07	0.10	0.11	0.16	0.14	0.20	0.16	0.13	0.12	0.12	0.09	0.09	0.14	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.46	0.85	1.45	2.23	2.66	3.06	2.86	2.38	1.65	1.06	0.57	0.40	1.64	
D/G mean	++++	0.67	0.59	0.57	0.54	0.52	0.51	0.56	0.56	0.52	0.57	0.61	0.69	0.55	
Daily sunshine duration: hours.															
S		1.5	2.7	3.4	5.1	5.7	6.5	5.2	4.8	4.4	3.0	2.2	1.4	3.8	
So		7.9	9.6	11.7	13.8	15.6	16.6	16.2	14.5	12.5	10.4	8.5	7.4	12.1	
S/So		0.19	0.28	0.29	0.37	0.36	0.39	0.32	0.33	0.35	0.29	0.26	0.20	0.30	
Somax		8.5	10.3	12.6	14.6	16.2	16.7	16.6	15.2	13.2	11.2	9.1	7.5		
Angstrom coefficients:Reference site: Kilkenny															
Angstrom a		0.22	0.24	0.26	0.28	0.26	0.31	0.28	0.27	0.26	0.26	0.24	0.25	0.26	
Angstrom b		0.60	0.58	0.59	0.55	0.61	0.54	0.58	0.57	0.59	0.56	0.56	0.52	0.57	

IRELAND				Map site No.56				Computer file IRELAHOR.056										BIRRHILL	
Latitude 53 5' N				Longitude 7 54' W				Height a.s.l. 72 metres											
Horizontal planes: - monthly means.				Data used & period:				G (1971 -1975) & S											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean						
Daily global radiation: kWh/m ² .																			
G mean	0.70	1.37	2.48	3.92	4.73	5.22	4.61	3.89	3.09	1.68	0.92	0.54	2.77						
Gmax	1.53	2.73	4.56	6.63	7.77	8.16	8.13	6.65	5.33	3.16	1.87	1.08	4.81						
Gmin	0.17	0.41	0.79	1.15	1.62	2.23	1.31	1.42	0.97	0.49	0.21	0.13	0.91						
Go	2.07	3.61	5.95	8.54	10.59	11.52	11.04	9.29	6.87	4.38	2.48	1.66	6.51						

Ratios to extraterrestrial radiation

G/Go	0.34	0.38	0.42	0.46	0.45	0.45	0.42	0.42	0.45	0.38	0.37	0.32	0.40		
Ktmax	0.60	0.63	0.64	0.70	0.69	0.70	0.71	0.66	0.68	0.60	0.62	0.61	0.66		
Ktmin	0.08	0.11	0.13	0.13	0.15	0.19	0.12	0.15	0.14	0.11	0.08	0.08	0.14		

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.48	0.81	1.42	2.22	2.69	3.01	2.76	2.31	1.72	1.00	0.55	0.36	1.62		
D/G mean ++++	0.68	0.59	0.57	0.57	0.57	0.58	0.60	0.59	0.56	0.60	0.60	0.66	0.58		

Daily sunshine duration: hours.

S	1.4	2.7	3.6	5.0	5.4	5.6	4.7	4.5	4.0	2.7	2.1	1.4	3.6		
So	8.0	9.6	11.7	13.8	15.6	16.6	16.1	14.5	12.5	10.4	8.5	7.4	12.1		
S/So	0.18	0.28	0.31	0.36	0.35	0.34	0.29	0.31	0.32	0.26	0.25	0.19	0.29		
Somax	8.5	10.3	12.6	14.6	16.2	16.7	16.5	15.2	13.2	11.2	9.1	7.6			

Angstrom coefficients: Radiation observing site

Angstrom a	0.22	0.23	0.24	0.26	0.25	0.28	0.25	0.26	0.24	0.24	0.23	0.22	0.24		
Angstrom b	0.62	0.59	0.59	0.55	0.58	0.53	0.58	0.55	0.59	0.58	0.60	0.62	0.58		

IRELAND			Map site No.57			Computer file IRELAHOR.057								SHANNON	
Latitude 52 41' N						Longitude 8 55' W			Height a.s.l.					3 metres	
Horizontal planes: - monthly means.						Data used & period:			S (1966 -1975)						
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m^2.															
G mean	++++	0.72	1.48	2.59	4.00	4.96	5.33	4.76	4.09	2.96	1.72	0.94	0.58	2.85	
Gmax	++++	1.57	2.77	4.60	6.65	7.78	8.16	8.14	6.67	5.36	3.19	1.91	1.12	4.84	
Gmin	++++	0.17	0.42	0.80	1.15	1.62	2.23	1.30	1.42	0.98	0.49	0.21	0.14	0.91	
Go		2.14	3.67	6.01	8.58	10.60	11.53	11.05	9.33	6.93	4.45	2.54	1.72	6.56	

Ratios to extraterrestrial radiation

G/Go ++++	0.34	0.40	0.43	0.47	0.47	0.46	0.43	0.44	0.43	0.39	0.37	0.34	0.41		
Ktmax ++++	0.60	0.62	0.64	0.70	0.69	0.70	0.71	0.66	0.68	0.59	0.62	0.61	0.66		
Ktmin ++++	0.08	0.11	0.13	0.13	0.15	0.19	0.12	0.15	0.14	0.11	0.08	0.08	0.14		

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.48	0.86	1.45	2.23	2.74	3.06	2.80	2.40	1.65	1.04	0.58	0.38	1.65		
D/G mean ++++	0.66	0.58	0.56	0.56	0.55	0.57	0.59	0.59	0.56	0.60	0.62	0.66	0.58		

Daily sunshine duration: hours.

S	1.5	2.8	3.8	5.2	5.8	5.7	5.0	4.7	4.0	2.6	2.0	1.4	3.7		
So	8.0	9.7	11.7	13.8	15.6	16.5	16.1	14.5	12.5	10.4	8.5	7.5	12.1		
S/So	0.19	0.29	0.32	0.37	0.37	0.34	0.31	0.32	0.32	0.25	0.23	0.19	0.29		
Somax	8.6	10.3	12.6	14.5	16.1	16.6	16.4	15.2	13.2	11.2	9.1	7.6			

Angstrom coefficients: Reference site: Birr

Angstrom a	0.22	0.23	0.24	0.26	0.25	0.28	0.25	0.26	0.24	0.24	0.23	0.22	0.24		
Angstrom b	0.62	0.59	0.59	0.55	0.58	0.53	0.58	0.55	0.59	0.58	0.60	0.62	0.58		

IRELAND			Map site No.58			Computer file IRELAHOR.058								KILKENNY	
Latitude 52 40' N						Longitude 7 16' W			Height a.s.l.					64 metres	
Horizontal planes: - monthly means.						Data used & period:			G (1969 -1975) & S						
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m^2.															
G mean	0.71	1.45	2.63	4.20	4.84	5.70	5.05	4.15	3.14	1.76	0.97	0.58	2.94		
Gmax	1.64	2.91	4.72	6.60	7.99	8.63	8.20	6.82	5.35	3.39	1.94	1.08	4.95		
Gmin	0.15	0.37	0.67	1.35	1.47	2.33	1.74	1.20	0.81	0.54	0.23	0.15	0.92		
Go	2.14	3.68	6.01	8.58	10.61	11.53	11.05	9.33	6.93	4.45	2.55	1.72	6.56		

Ratios to extraterrestrial radiation

G/Go	0.33	0.39	0.44	0.49	0.46	0.49	0.46	0.44	0.45	0.40	0.38	0.34	0.42		
Ktmax	0.63	0.66	0.66	0.69	0.71	0.74	0.72	0.67	0.68	0.63	0.63	0.59	0.67		
Ktmin	0.07	0.10	0.11	0.16	0.14	0.20	0.16	0.13	0.12	0.12	0.09	0.09	0.14		

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.49	0.86	1.44	2.28	2.59	3.07	2.87	2.34	1.68	1.05	0.59	0.41	1.65		
D/G mean ++++	0.69	0.59	0.55	0.54	0.53	0.54	0.57	0.56	0.54	0.60	0.61	0.71	0.56		

Daily sunshine duration: hours.

S	1.4	2.7	3.7	5.1	5.4	5.8	4.9	4.7	4.1	2.7	2.2	1.3	3.7		
So	8.0	9.7	11.7	13.8	15.6	16.5	16.1	14.5	12.5	10.4	8.5	7.5	12.1		
S/So	0.18	0.28	0.32	0.37	0.35	0.35	0.30	0.32	0.33	0.26	0.26	0.17	0.29		
Somax	8.6	10.3	12.6	14.5	16.1	16.6	16.4	15.2	13.2	11.2	9.1	7.6			

Angstrom coefficients: Radiation observing site

Angstrom a	0.22	0.24	0.26	0.28	0.26	0.31	0.28	0.27	0.26	0.26	0.24	0.25	0.26		
Angstrom b	0.60	0.58	0.59	0.55	0.61	0.54	0.58	0.57	0.59	0.56	0.56	0.52	0.57		

IRELAND		Map site No.59		Computer file IRELAHOR.059								ROSSLARE		
Latitude	52 15' N			Longitude	6 20' W									29 metres
Horizontal planes: - monthly means.				Data used & period: S (1966 -1975)										
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	0.75	1.54	2.91	4.43	5.59	6.36	5.79	4.65	3.51	1.99	1.07	0.65	3.28
Gmax	++++	1.68	2.96	4.75	6.62	8.00	8.63	8.20	6.83	5.38	3.43	1.98	1.12	4.97
Gmin	++++	0.15	0.38	0.67	1.35	1.47	2.33	1.74	1.21	0.81	0.55	0.24	0.16	0.93
Go		2.21	3.75	6.07	8.62	10.63	11.54	11.06	9.36	6.99	4.52	2.62	1.79	6.61
Ratios to extraterrestrial radiation														
G/Go	++++	0.34	0.41	0.48	0.51	0.53	0.55	0.52	0.50	0.50	0.44	0.41	0.37	0.46
Ktmax	++++	0.63	0.66	0.66	0.69	0.71	0.74	0.72	0.67	0.68	0.63	0.62	0.59	0.67
Ktmin	++++	0.07	0.10	0.11	0.16	0.14	0.20	0.16	0.13	0.12	0.12	0.09	0.09	0.14
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.50	0.89	1.50	2.25	2.62	2.97	2.84	2.38	1.69	1.09	0.61	0.42	1.66
D/G mean	++++	0.66	0.57	0.51	0.51	0.47	0.47	0.49	0.51	0.48	0.55	0.57	0.65	0.51
Daily sunshine duration: hours.														
S		1.6	2.9	4.3	5.8	6.8	7.4	6.7	5.8	5.1	3.4	2.6	1.7	4.5
So		8.1	9.7	11.7	13.7	15.5	16.4	16.0	14.4	12.5	10.5	8.6	7.6	12.1
S/So		0.20	0.29	0.37	0.42	0.44	0.45	0.42	0.40	0.41	0.32	0.30	0.22	0.35
Somax		8.6	10.4	12.5	14.5	16.1	16.5	16.4	15.1	13.2	11.2	9.2	7.7	
Angstrom coefficients:Reference site: Kilkenny														
Angstrom a		0.22	0.24	0.26	0.28	0.26	0.31	0.28	0.27	0.26	0.26	0.24	0.25	0.26
Angstrom b		0.60	0.58	0.59	0.55	0.61	0.54	0.58	0.57	0.59	0.56	0.56	0.52	0.57

IRELAND		Map site No.60		Computer file IRELAHOR.060								VALENTIA		
Latitude	51 56' N			Longitude	10 15' W									20 metres
Horizontal planes: - monthly means.				Data used & period: G & S (1966 -1975)										
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean		0.67	1.44	2.62	3.96	5.09	5.31	4.80	4.15	3.02	1.63	0.86	0.53	2.85
Gmax		1.50	2.81	4.94	6.82	8.35	8.55	8.27	7.28	5.47	3.45	1.91	1.06	5.04
Gmin		0.13	0.33	0.73	1.00	1.38	1.38	1.19	1.21	0.79	0.37	0.18	0.13	0.74
Go		2.26	3.80	6.12	8.66	10.64	11.54	11.07	9.39	7.03	4.57	2.67	1.84	6.65
Ratios to extraterrestrial radiation														
G/Go		0.29	0.37	0.43	0.46	0.48	0.46	0.43	0.44	0.43	0.36	0.32	0.29	0.40
Ktmax		0.55	0.62	0.68	0.71	0.74	0.74	0.72	0.72	0.69	0.63	0.59	0.54	0.66
Ktmin		0.06	0.09	0.12	0.12	0.13	0.12	0.11	0.13	0.11	0.08	0.07	0.07	0.11
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.47	0.83	1.45	2.13	2.68	2.89	2.72	2.31	1.67	0.96	0.56	0.38	1.60
D/G mean	++++	0.70	0.58	0.55	0.54	0.53	0.54	0.57	0.56	0.55	0.59	0.66	0.72	0.56
Daily sunshine duration: hours.														
S		1.3	2.6	3.6	5.0	5.7	5.4	4.7	4.8	3.9	2.4	1.6	1.1	3.5
So		8.1	9.7	11.7	13.7	15.5	16.4	16.0	14.4	12.5	10.5	8.6	7.6	12.1
S/So		0.16	0.27	0.31	0.36	0.37	0.33	0.29	0.33	0.31	0.23	0.19	0.14	0.27
Somax		8.7	10.4	12.5	14.5	16.0	16.4	16.3	15.1	13.2	11.2	9.2	7.8	
Angstrom coefficients:Radiation observing site														
Angstrom a		0.19	0.21	0.24	0.24	0.25	0.26	0.25	0.25	0.24	0.20	0.20	0.20	0.23
Angstrom b		0.64	0.64	0.61	0.60	0.61	0.60	0.62	0.59	0.60	0.66	0.64	0.62	0.62

IRELAND		Map site No.61		Computer file IRELAHOR.061								CORK		
Latitude	51 51' N			Longitude	8 29' W									153 metres
Horizontal planes: - monthly means.				Data used & period: S (1966 -1975)										
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	0.76	1.54	2.86	4.32	5.35	5.97	5.38	4.51	3.22	1.88	1.04	0.67	3.13
Gmax	++++	1.73	3.00	4.79	6.64	8.01	8.64	8.20	6.85	5.41	3.46	2.02	1.16	5.00
Gmin	++++	0.16	0.39	0.68	1.36	1.47	2.33	1.74	1.21	0.82	0.55	0.24	0.16	0.93
Go		2.27	3.81	6.13	8.66	10.64	11.54	11.07	9.39	7.04	4.58	2.68	1.85	6.66
Ratios to extraterrestrial radiation														
G/Go	++++	0.34	0.40	0.47	0.50	0.50	0.52	0.49	0.48	0.46	0.41	0.39	0.36	0.44
Ktmax	++++	0.63	0.66	0.66	0.69	0.71	0.74	0.71	0.67	0.68	0.63	0.62	0.59	0.67
Ktmin	++++	0.07	0.10	0.11	0.16	0.14	0.20	0.16	0.13	0.12	0.12	0.09	0.09	0.14
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.50	0.91	1.50	2.27	2.68	3.07	2.87	2.41	1.71	1.10	0.63	0.45	1.68
D/G mean	++++	0.66	0.59	0.52	0.53	0.50	0.51	0.53	0.53	0.53	0.59	0.60	0.67	0.54
Daily sunshine duration: hours.														
S		1.6	2.7	4.1	5.4	6.1	6.3	5.7	5.3	4.2	2.8	2.3	1.6	4.0
So		8.2	9.8	11.7	13.7	15.4	16.4	15.9	14.4	12.5	10.5	8.7	7.6	12.1
S/So		0.19	0.28	0.35	0.40	0.40	0.38	0.36	0.37	0.34	0.27	0.26	0.21	0.32
Somax		8.7	10.4	12.5	14.5	16.0	16.4	16.3	15.1	13.2	11.2	9.2	7.8	
Angstrom coefficients:Reference site: Kilkenny														
Angstrom a		0.22	0.24	0.26	0.28	0.28	0.31	0.28	0.27	0.26	0.26	0.24	0.25	0.26
Angstrom b		0.60	0.58	0.59	0.55	0.61	0.54	0.58	0.57	0.59	0.56	0.56	0.52	0.57

IRELAND Map site No.62 Computer file IRELAHOR.062 ROCHE'S POINT
 Latitude 51 48' N Longitude 8 15' W Height a.s.l. 45 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.77 1.53 2.83 4.28 5.37 6.02 5.40 4.50 3.29 1.87 1.07 0.68 3.14
 Gmax +++ 1.74 3.00 4.79 6.64 8.01 8.64 8.20 6.85 5.41 3.47 2.03 1.16 5.01
 Gmin +++ 0.16 0.39 0.68 1.36 1.47 2.33 1.74 1.21 0.82 0.56 0.24 0.17 0.93
 Go 2.28 3.82 6.14 8.67 10.65 11.54 11.08 9.40 7.04 4.59 2.69 1.86 6.66

Ratios to extraterrestrial radiation

G/Go +++ 0.34 0.40 0.46 0.49 0.50 0.52 0.49 0.48 0.47 0.41 0.40 0.37 0.44
 Ktmax +++ 0.63 0.65 0.66 0.69 0.71 0.74 0.71 0.67 0.68 0.63 0.62 0.58 0.67
 Ktmin +++ 0.07 0.10 0.11 0.16 0.14 0.20 0.16 0.13 0.12 0.12 0.09 0.09 0.14

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.51 0.90 1.50 2.28 2.67 3.08 2.89 2.41 1.71 1.10 0.63 0.44 1.69
 D/G mean +++ 0.66 0.59 0.53 0.53 0.50 0.51 0.53 0.54 0.52 0.59 0.59 0.65 0.54

Daily sunshine duration: hours.

S 1.6 2.7 4.0 5.3 6.2 6.4 5.7 5.3 4.4 2.8 2.4 1.7 4.0
 So 8.2 9.8 11.7 13.7 15.4 16.4 15.9 14.4 12.5 10.5 8.7 7.6 12.1
 S/So 0.19 0.28 0.34 0.39 0.40 0.39 0.36 0.37 0.35 0.26 0.28 0.23 0.32
 Somax 8.7 10.4 12.5 14.5 16.0 16.4 16.3 15.0 13.2 11.2 9.2 7.8

Angstrom coefficients:Reference site: Kilkenny

Angstrom a 0.22 0.24 0.26 0.28 0.26 0.31 0.28 0.27 0.26 0.26 0.24 0.25 0.26
 Angstrom b 0.60 0.58 0.59 0.55 0.61 0.54 0.58 0.57 0.59 0.56 0.56 0.52 0.57

ISRAEL Map site No.340 Computer file ISRAEHOR.340 BET DAGAN
 Latitude 32 00' N Longitude 34 49' E Height a.s.l. 30 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 2.96 3.98 5.01 6.24 7.33 7.94 7.76 7.18 6.06 4.69 3.42 2.65 5.44
 Gmax 4.35 5.43 6.75 7.69 8.26 8.49 8.34 7.81 6.86 5.70 4.51 3.27 6.46
 Gmin 0.91 1.35 1.74 2.95 3.97 6.66 6.69 6.16 4.74 2.48 1.33 0.60 3.31
 Go 5.61 6.94 8.64 10.17 11.14 11.50 11.30 10.52 9.21 7.54 5.99 5.21 8.65

Ratios to extraterrestrial radiation

G/Go 0.53 0.57 0.58 0.61 0.66 0.69 0.69 0.68 0.66 0.62 0.57 0.51 0.61
 Ktmax 0.72 0.72 0.72 0.72 0.72 0.74 0.73 0.72 0.70 0.69 0.70 0.61 0.71
 Ktmin 0.16 0.19 0.20 0.29 0.36 0.58 0.59 0.59 0.51 0.33 0.22 0.12 0.38

Daily diffuse radiation: kWh/m².

D mean est. +++ 1.04 1.29 2.02 2.20 2.27 1.96 2.01 1.73 1.57 1.14 0.90 0.88 1.59
 D/G mean +++ 0.35 0.33 0.40 0.35 0.31 0.25 0.26 0.24 0.26 0.24 0.26 0.33 0.29

Daily sunshine duration: hours.

S 6.1 7.5 7.3 9.0 10.8 12.1 12.1 11.6 9.9 9.0 7.7 5.9 9.1
 So 10.2 10.9 11.8 12.8 13.6 14.1 13.9 13.2 12.2 11.3 10.4 9.9 12.0
 S/So 0.60 0.69 0.62 0.70 0.79 0.86 0.87 0.88 0.81 0.80 0.74 0.59 0.75
 Somax 10.4 11.2 12.2 13.2 13.9 14.1 14.0 13.4 12.6 11.6 10.6 10.0

Angstrom coefficients:Derived from Gm and Sm at Bet Dagan

Angstrom a 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20
 Angstrom b 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56 0.56

ITALY Map site No.274 Computer file ITALYHOR.274 BOLZANO
 Latitude 46 28' N Longitude 11 20' E Height a.s.l. 241 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean CCCC 1.21 1.92 3.17 4.42 4.87 5.38 5.48 4.90 3.94 2.65 1.40 1.04 3.37
 Gmax CCCC 2.02 3.29 4.95 6.59 7.36 7.74 7.43 6.90 5.79 3.89 2.45 1.60 5.01
 Gmin CCCC 0.30 0.34 0.67 0.70 1.23 1.41 1.78 1.57 1.03 0.57 0.25 0.26 0.85
 Go 3.18 4.72 6.91 9.18 10.87 11.61 11.22 9.79 7.71 5.44 3.59 2.74 7.26

Ratios to extraterrestrial radiation

G/Go CCCC 0.38 0.40 0.46 0.48 0.45 0.46 0.49 0.50 0.51 0.49 0.39 0.38 0.45
 Ktmax CCCC 0.55 0.60 0.62 0.66 0.65 0.66 0.64 0.66 0.68 0.62 0.59 0.56 0.64
 Ktmin CCCC 0.10 0.07 0.10 0.08 0.11 0.12 0.16 0.16 0.13 0.10 0.07 0.09 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.73 1.15 1.64 2.19 2.64 2.75 2.74 2.35 1.80 1.21 0.78 0.58 1.72
 D/G mean +++ 0.60 0.60 0.52 0.49 0.54 0.51 0.50 0.48 0.46 0.46 0.56 0.56 0.51

Daily sunshine duration: hours.

S 3.1 3.9 5.0 5.7 5.9 6.6 7.5 6.4 5.9 5.6 3.3 3.5 5.2
 So 8.9 10.2 11.8 13.4 14.8 15.6 15.2 14.0 12.4 10.7 9.3 8.5 12.1
 S/So 0.35 0.38 0.42 0.43 0.40 0.42 0.49 0.46 0.48 0.52 0.35 0.41 0.43
 Somax 9.3 10.7 12.4 14.0 15.2 15.6 15.5 14.5 13.0 11.3 9.7 8.6

Angstrom coefficients:Radiation observing site

Angstrom a 0.22 0.21 0.22 0.22 0.21 0.21 0.21 0.23 0.23 0.20 0.19 0.20 0.21
 Angstrom b 0.46 0.49 0.57 0.61 0.60 0.60 0.57 0.59 0.58 0.55 0.55 0.45 0.55

ITALY Map site No.275 Computer file ITALYHOR.275 UDINE
 Latitude 46 2' N Longitude 13 11' E Height a.s.l. 92 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean CCCC 1.15 1.79 2.99 3.94 4.71 4.98 5.50 4.78 3.69 2.51 1.32 1.17 3.22
 Gmax CCCC 2.13 3.47 5.07 6.30 6.95 7.40 7.22 6.58 5.39 3.97 2.50 1.88 4.91
 Gmin CCCC 0.17 0.26 0.43 0.71 1.27 1.53 1.86 1.63 0.91 0.50 0.13 0.11 0.80
 Go 3.25 4.79 6.97 9.22 10.89 11.61 11.23 9.82 7.77 5.51 3.66 2.81 7.31

Ratios to extraterrestrial radiation
 G/Go CCCC 0.35 0.37 0.43 0.43 0.43 0.43 0.49 0.49 0.48 0.45 0.36 0.42 0.43
 Ktmax CCCC 0.57 0.63 0.63 0.63 0.61 0.63 0.62 0.63 0.63 0.62 0.59 0.64 0.62
 Ktmin CCCC 0.05 0.05 0.06 0.08 0.12 0.13 0.17 0.17 0.12 0.09 0.04 0.04 0.11

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.70 1.03 1.61 2.14 2.74 2.77 2.75 2.40 1.82 1.27 0.76 0.60 1.72
 D/G mean +++ 0.61 0.58 0.54 0.54 0.58 0.56 0.50 0.50 0.49 0.50 0.58 0.51 0.53

Daily sunshine duration: hours.
 S 3.0 3.5 4.7 5.7 6.8 7.0 8.6 7.5 6.3 5.5 3.2 3.7 5.5
 So 8.9 10.2 11.8 13.4 14.8 15.5 15.2 13.9 12.4 10.8 9.3 8.5 12.1
 S/So 0.34 0.34 0.40 0.43 0.46 0.45 0.57 0.54 0.51 0.51 0.34 0.44 0.44
 Somax 9.3 10.7 12.4 14.0 15.2 15.5 15.4 14.5 13.0 11.3 9.7 8.6

Angstrom coefficients: Radiation observing site
 Angstrom a 0.20 0.17 0.21 0.19 0.22 0.21 0.22 0.23 0.23 0.21 0.20 0.23 0.21
 Angstrom b 0.45 0.56 0.55 0.56 0.47 0.49 0.48 0.48 0.49 0.47 0.50 0.44 0.49

ITALY Map site No.276 Computer file ITALYHOR.276 TRIESTE
 Latitude 45 39' N Longitude 13 45' E Height a.s.l. 20 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean CCCC 1.14 1.77 2.97 4.18 5.05 5.43 5.75 5.14 3.84 2.64 1.46 1.16 3.39
 Gmax CCCC 2.26 3.54 5.08 6.64 7.39 7.65 7.67 6.93 5.58 4.36 2.87 1.96 5.17
 Gmin CCCC 0.18 0.29 0.45 0.71 1.17 1.66 2.01 1.51 1.23 0.61 0.26 0.19 0.86
 Go 3.32 4.85 7.02 9.25 10.90 11.62 11.23 9.85 7.81 5.57 3.73 2.88 7.35

Ratios to extraterrestrial radiation
 G/Go CCCC 0.34 0.36 0.42 0.45 0.46 0.47 0.51 0.52 0.49 0.47 0.39 0.40 0.44
 Ktmax CCCC 0.60 0.63 0.63 0.66 0.65 0.66 0.66 0.66 0.65 0.68 0.67 0.65 0.65
 Ktmin CCCC 0.05 0.06 0.06 0.08 0.11 0.14 0.18 0.15 0.16 0.11 0.07 0.06 0.12

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.70 1.07 1.67 2.18 2.73 2.81 2.72 2.32 1.85 1.22 0.78 0.60 1.73
 D/G mean +++ 0.61 0.60 0.56 0.52 0.54 0.52 0.47 0.45 0.48 0.46 0.54 0.52 0.51

Daily sunshine duration: hours.
 S 2.7 3.6 4.9 6.1 7.5 7.9 9.3 8.4 6.8 5.7 3.2 3.2 5.8
 So 9.0 10.2 11.8 13.4 14.7 15.4 15.1 13.9 12.4 10.8 9.3 8.6 12.1
 S/So 0.30 0.35 0.42 0.46 0.51 0.51 0.62 0.60 0.55 0.53 0.34 0.37 0.46
 Somax 9.3 10.7 12.4 14.0 15.1 15.5 15.4 14.4 12.9 11.4 9.8 8.7

Angstrom coefficients: Radiation observing site
 Angstrom a 0.19 0.16 0.19 0.19 0.19 0.20 0.20 0.21 0.20 0.19 0.19 0.22 0.20
 Angstrom b 0.51 0.55 0.55 0.58 0.53 0.52 0.51 0.52 0.52 0.54 0.58 0.50 0.53

ITALY Map site No.277 Computer file ITALYHOR.277 VENEZIA
 Latitude 45 30' N Longitude 12 20' E Height a.s.l. 6 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean CCCC 1.08 1.75 3.25 4.39 5.14 5.87 6.17 5.49 4.07 2.64 1.36 1.06 3.53
 Gmax CCCC 2.11 3.35 5.25 6.80 7.21 7.75 7.77 7.23 5.86 4.32 2.58 1.90 5.19
 Gmin CCCC 0.19 0.27 0.60 0.76 1.38 1.71 2.54 1.85 1.01 0.62 0.23 0.24 0.96
 Go 3.34 4.88 7.04 9.27 10.91 11.62 11.24 9.86 7.83 5.59 3.75 2.90 7.36

Ratios to extraterrestrial radiation
 G/Go CCCC 0.32 0.36 0.46 0.47 0.47 0.51 0.55 0.56 0.52 0.47 0.36 0.36 0.45
 Ktmax CCCC 0.55 0.60 0.65 0.67 0.63 0.66 0.67 0.69 0.68 0.67 0.60 0.63 0.65
 Ktmin CCCC 0.06 0.06 0.08 0.08 0.13 0.15 0.23 0.19 0.13 0.11 0.06 0.08 0.13

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.70 1.06 1.78 2.19 2.78 2.80 2.73 2.38 1.90 1.32 0.83 0.61 1.77
 D/G mean +++ 0.65 0.61 0.55 0.50 0.54 0.48 0.44 0.43 0.47 0.50 0.61 0.58 0.50

Daily sunshine duration: hours.
 S 2.2 3.5 5.0 6.0 7.5 8.0 9.3 8.0 6.4 5.1 2.8 2.8 5.6
 So 9.0 10.2 11.8 13.4 14.7 15.4 15.1 13.9 12.4 10.8 9.4 8.6 12.1
 S/So 0.24 0.34 0.42 0.45 0.51 0.52 0.62 0.58 0.52 0.47 0.30 0.33 0.44
 Somax 9.4 10.7 12.4 13.9 15.1 15.4 15.3 14.4 12.9 11.4 9.8 8.7

Angstrom coefficients: Radiation observing site
 Angstrom a 0.20 0.18 0.21 0.22 0.22 0.23 0.24 0.26 0.26 0.23 0.21 0.22 0.22
 Angstrom b 0.50 0.53 0.54 0.58 0.50 0.53 0.50 0.51 0.50 0.50 0.50 0.47 0.51

ITALY	Map site No.278	Computer file ITALYHOR.278	MILANO
Latitude 45 26' N		Longitude 9 17' E	Height a.s.l. 103 metres
Horizontal planes: - monthly means.		Data used & period: G & S (1966 -1975)	
Month	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean		
Daily global radiation: kWh/m ² .			
G mean	CCCC 0.92 1.71 3.00 4.49 5.14 5.83 6.07 5.26 3.82 2.45 1.14 0.86 3.40		
Gmax	CCCC 2.11 3.48 5.04 6.74 7.51 7.83 7.79 7.25 5.73 3.96 2.48 1.77 5.15		
Gmin	CCCC 0.14 0.23 0.55 0.84 1.03 1.80 2.38 1.54 1.03 0.58 0.18 0.15 0.88		
Go	3.36 4.89 7.05 9.27 10.91 11.62 11.24 9.86 7.84 5.60 3.76 2.91 7.37		
Ratios to extraterrestrial radiation			
G/Go	CCCC 0.27 0.35 0.43 0.48 0.47 0.50 0.54 0.53 0.49 0.44 0.30 0.29 0.43		
Ktmax	CCCC 0.55 0.62 0.62 0.67 0.66 0.67 0.67 0.69 0.66 0.61 0.57 0.58 0.65		
Ktmin	CCCC 0.04 0.05 0.08 0.09 0.09 0.16 0.21 0.16 0.13 0.10 0.05 0.05 0.12		
Daily diffuse radiation: kWh/m ² .			
D mean est. ++++	0.62 1.09 1.72 2.24 2.77 2.85 2.78 2.45 1.95 1.30 0.73 0.59 1.77		
D/G mean ++++	0.67 0.64 0.57 0.50 0.54 0.49 0.46 0.47 0.51 0.53 0.64 0.69 0.52		
Daily sunshine duration: hours.			
S	1.7 3.0 5.0 6.2 6.8 8.0 9.2 7.6 5.8 4.6 2.2 1.6 5.2		
So	9.0 10.2 11.8 13.4 14.7 15.4 15.1 13.9 12.4 10.8 9.4 8.6 12.1		
S/So	0.19 0.29 0.42 0.46 0.46 0.52 0.61 0.55 0.47 0.43 0.23 0.19 0.40		
Somax	9.4 10.7 12.4 13.9 15.1 15.4 15.3 14.4 12.9 11.4 9.8 8.7		
Angstrom coefficients: Radiation observing site			
Angstrom a	0.18 0.17 0.20 0.23 0.22 0.24 0.25 0.26 0.25 0.21 0.18 0.22 0.22		
Angstrom b	0.55 0.54 0.52 0.56 0.54 0.51 0.48 0.50 0.50 0.52 0.56 0.47 0.52		

ITALY	Map site No.279	Computer file ITALYHOR.279	TORINO
Latitude 45 13' N		Longitude 7 39' E	Height a.s.l. 287 metres
Horizontal planes: - monthly means.		Data used & period: G & S (1966 -1975)	
Month	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean		
Daily global radiation: kWh/m ² .			
G mean	CCCC 1.51 2.11 3.31 4.66 4.96 5.53 5.75 5.09 3.90 2.77 1.61 1.38 3.56		
Gmax	CCCC 2.67 3.90 5.62 7.33 7.65 8.09 8.04 7.27 6.15 4.54 2.93 2.21 5.54		
Gmin	CCCC 0.19 0.34 0.49 1.16 0.92 1.29 2.15 1.53 0.79 0.63 0.25 0.32 0.84		
Go	3.39 4.92 7.08 9.29 10.92 11.62 11.24 9.88 7.86 5.63 3.80 2.95 7.39		
Ratios to extraterrestrial radiation			
G/Go	CCCC 0.44 0.43 0.47 0.50 0.45 0.48 0.51 0.51 0.50 0.49 0.42 0.47 0.47		
Ktmax	CCCC 0.69 0.69 0.69 0.73 0.67 0.69 0.70 0.69 0.71 0.70 0.67 0.72 0.70		
Ktmin	CCCC 0.06 0.07 0.07 0.13 0.08 0.11 0.19 0.16 0.10 0.11 0.07 0.11 0.11		
Daily diffuse radiation: kWh/m ² .			
D mean est. ++++	0.78 1.14 1.63 2.20 2.76 2.89 2.87 2.56 1.92 1.35 0.80 0.65 1.80		
D/G mean ++++	0.52 0.54 0.49 0.47 0.56 0.52 0.50 0.50 0.49 0.49 0.50 0.47 0.51		
Daily sunshine duration: hours.			
S	3.2 3.9 5.3 6.3 6.3 7.2 8.4 6.8 5.3 5.0 3.6 3.7 5.4		
So	9.0 10.2 11.8 13.3 14.7 15.4 15.1 13.9 12.4 10.8 9.4 8.6 12.1		
S/So	0.36 0.38 0.45 0.47 0.43 0.47 0.56 0.49 0.43 0.46 0.38 0.43 0.44		
Somax	9.4 10.7 12.4 13.9 15.1 15.4 15.3 14.4 12.9 11.4 9.8 8.7		
Angstrom coefficients: Radiation observing site			
Angstrom a	0.24 0.19 0.19 0.22 0.21 0.20 0.22 0.27 0.26 0.23 0.22 0.24 0.22		
Angstrom b	0.54 0.58 0.61 0.60 0.56 0.56 0.51 0.50 0.55 0.53 0.57 0.50 0.55		

ITALY	Map site No.280	Computer file ITALYHOR.280	BOLOGNA
Latitude 44 32' N		Longitude 11 18' E	Height a.s.l. 49 metres
Horizontal planes: - monthly means.		Data used & period: G & S (1966 -1975)	
Month	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean		
Daily global radiation: kWh/m ² .			
G mean	CCCC 1.13 1.83 3.08 4.44 5.27 5.79 6.07 5.35 3.97 2.71 1.53 1.10 3.53		
Gmax	CCCC 2.38 3.64 5.37 6.90 7.61 7.82 7.79 7.15 5.85 4.08 2.86 2.02 5.30		
Gmin	CCCC 0.23 0.26 0.65 1.08 1.38 1.97 2.14 1.32 0.99 0.91 0.20 0.17 0.95		
Go	3.51 5.03 7.17 9.35 10.94 11.62 11.25 9.92 7.94 5.74 3.92 3.07 7.47		
Ratios to extraterrestrial radiation			
G/Go	CCCC 0.32 0.36 0.43 0.47 0.48 0.50 0.54 0.54 0.50 0.47 0.39 0.36 0.45		
Ktmax	CCCC 0.60 0.63 0.66 0.68 0.67 0.67 0.67 0.68 0.67 0.62 0.64 0.63 0.66		
Ktmin	CCCC 0.07 0.05 0.09 0.12 0.13 0.17 0.19 0.13 0.12 0.16 0.05 0.06 0.13		
Daily diffuse radiation: kWh/m ² .			
D mean est. ++++	0.70 1.09 1.70 2.27 2.85 2.88 2.83 2.42 1.93 1.37 0.84 0.64 1.80		
D/G mean ++++	0.62 0.60 0.55 0.51 0.54 0.50 0.47 0.45 0.49 0.51 0.55 0.58 0.51		
Daily sunshine duration: hours.			
S	2.1 3.3 4.8 6.3 7.3 8.3 9.4 8.2 6.4 5.5 2.9 2.3 5.6		
So	9.1 10.3 11.8 13.3 14.6 15.3 15.0 13.8 12.4 10.8 9.5 8.7 12.1		
S/So	0.23 0.32 0.41 0.47 0.50 0.54 0.63 0.59 0.52 0.51 0.31 0.26 0.44		
Somax	9.4 10.8 12.4 13.9 15.0 15.3 15.2 14.3 12.9 11.4 9.9 8.8		
Angstrom coefficients: Radiation observing site			
Angstrom a	0.19 0.18 0.22 0.21 0.23 0.23 0.24 0.23 0.23 0.23 0.22 0.22 0.22		
Angstrom b	0.57 0.56 0.54 0.56 0.50 0.49 0.47 0.51 0.51 0.47 0.57 0.54 0.52		

ITALY	Map site No.281	Computer file ITALYHOR.281	GENOVA
Latitude 44 25' N	Longitude 8 51' E	Height a.s.l.	3 metres
Horizontal planes: - monthly means.	Data used & period: G & S (1966 -1975)		
Month	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean		
Daily global radiation: kWh/m ² .			
G mean	CCCC 1.37 2.03 3.30 4.54 5.16 5.77 6.20 5.40 4.06 2.79 1.65 1.29 3.64		
Gmax	CCCC 2.53 3.85 5.39 6.94 7.70 7.91 7.99 7.20 5.92 4.24 2.91 2.15 5.40		
Gmin	CCCC 0.17 0.29 0.53 0.74 1.33 1.37 3.00 1.99 1.15 0.84 0.30 0.21 1.00		
Go	3.53 5.05 7.19 9.36 10.94 11.62 11.26 9.93 7.96 5.76 3.93 3.09 7.48		
Ratios to extraterrestrial radiation			
G/Go	CCCC 0.39 0.40 0.46 0.48 0.47 0.50 0.55 0.54 0.51 0.48 0.42 0.42 0.47		
Ktmax	CCCC 0.63 0.67 0.66 0.68 0.68 0.68 0.69 0.68 0.68 0.64 0.65 0.67 0.67		
Ktmin	CCCC 0.05 0.06 0.07 0.08 0.12 0.12 0.27 0.20 0.15 0.15 0.08 0.07 0.13		
Daily diffuse radiation: kWh/m ² .			
D mean est. ++++	0.77 1.13 1.68 2.20 2.75 2.79 2.73 2.29 1.85 1.33 0.89 0.66 1.76		
D/G mean ++++	0.56 0.56 0.51 0.48 0.53 0.48 0.44 0.42 0.46 0.48 0.54 0.51 0.48		
Daily sunshine duration: hours.			
S	3.4 4.1 5.4 6.6 7.0 8.0 9.7 8.5 6.7 5.9 3.8 3.8 6.1		
So	9.1 10.3 11.8 13.3 14.6 15.3 15.0 13.8 12.4 10.8 9.5 8.7 12.1		
S/So	0.37 0.40 0.46 0.50 0.48 0.52 0.65 0.62 0.54 0.55 0.40 0.44 0.49		
Somax	9.5 10.8 12.4 13.9 15.0 15.3 15.2 14.3 12.9 11.4 9.9 8.8		
Angstrom coefficients: Radiation observing site			
Angstrom a	0.20 0.17 0.20 0.19 0.21 0.21 0.24 0.23 0.23 0.23 0.22 0.20 0.21		
Angstrom b	0.50 0.56 0.57 0.59 0.54 0.54 0.48 0.52 0.52 0.47 0.50 0.48 0.52		

ITALY	Map site No.282	Computer file ITALYHOR.282	CAPO MELE
Latitude 43 57' N	Longitude 8 10' E	Height a.s.l.	221 metres
Horizontal planes: - monthly means.	Data used & period: G & S (1966 -1975)		
Month	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean		
Daily global radiation: kWh/m ² .			
G mean	CCCC 1.53 2.22 3.64 4.82 5.24 5.99 6.34 5.64 4.31 3.11 1.90 1.51 3.86		
Gmax	CCCC 2.74 4.06 5.58 6.86 7.44 7.93 7.93 7.46 6.09 4.62 3.21 2.31 5.52		
Gmin	CCCC 0.20 0.36 0.77 0.99 1.45 1.82 3.47 2.19 1.38 0.98 0.35 0.29 1.19		
Go	3.61 5.13 7.25 9.40 10.96 11.62 11.26 9.96 8.01 5.83 4.01 3.17 7.53		
Ratios to extraterrestrial radiation			
G/Go	CCCC 0.42 0.43 0.50 0.51 0.48 0.52 0.56 0.57 0.54 0.53 0.47 0.48 0.50		
Ktmax	CCCC 0.67 0.69 0.68 0.67 0.65 0.68 0.69 0.70 0.69 0.69 0.70 0.70 0.68		
Ktmin	CCCC 0.05 0.07 0.11 0.11 0.13 0.16 0.31 0.22 0.17 0.17 0.09 0.09 0.16		
Daily diffuse radiation: kWh/m ² .			
D mean est. ++++	0.79 1.15 1.74 2.39 2.77 2.86 2.74 2.33 1.85 1.27 0.86 0.66 1.79		
D/G mean ++++	0.52 0.52 0.48 0.50 0.53 0.48 0.43 0.41 0.43 0.41 0.45 0.44 0.46		
Daily sunshine duration: hours.			
S	3.7 4.6 5.7 7.0 7.2 8.2 9.7 8.4 6.8 6.2 4.3 4.3 6.4		
So	9.2 10.3 11.8 13.3 14.6 15.2 14.9 13.8 12.4 10.9 9.5 8.8 12.1		
S/So	0.40 0.45 0.48 0.53 0.49 0.54 0.65 0.61 0.55 0.57 0.45 0.49 0.52		
Somax	9.5 10.8 12.4 13.8 15.0 15.2 15.2 14.3 12.9 11.4 9.9 8.9		
Angstrom coefficients: Radiation observing site			
Angstrom a	0.20 0.18 0.21 0.24 0.21 0.23 0.27 0.26 0.24 0.23 0.22 0.22 0.23		
Angstrom b	0.53 0.57 0.58 0.51 0.54 0.52 0.46 0.51 0.54 0.53 0.56 0.50 0.53		

ITALY	Map site No.283	Computer file ITALYHOR.283	PISA
Latitude 43 40' N	Longitude 10 23' E	Height a.s.l.	1 metres
Horizontal planes: - monthly means.	Data used & period: G & S (1966 -1975)		
Month	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean		
Daily global radiation: kWh/m ² .			
G mean	CCCC 1.42 2.10 3.41 4.73 5.53 6.10 6.34 5.60 4.50 3.08 1.77 1.33 3.83		
Gmax	CCCC 2.68 3.81 5.60 6.93 7.69 7.89 7.79 7.29 6.09 4.62 3.12 2.24 5.49		
Gmin	CCCC 0.26 0.33 0.84 1.30 1.81 2.16 2.90 2.10 1.80 1.12 0.31 0.23 1.27		
Go	3.66 5.18 7.29 9.42 10.97 11.63 11.27 9.97 8.04 5.87 4.06 3.22 7.56		
Ratios to extraterrestrial radiation			
G/Go	CCCC 0.39 0.40 0.47 0.50 0.50 0.52 0.56 0.56 0.56 0.52 0.44 0.41 0.49		
Ktmax	CCCC 0.65 0.65 0.68 0.68 0.67 0.68 0.67 0.69 0.69 0.69 0.67 0.67 0.68		
Ktmin	CCCC 0.07 0.06 0.12 0.14 0.16 0.19 0.26 0.21 0.22 0.19 0.08 0.07 0.17		
Daily diffuse radiation: kWh/m ² .			
D mean est. ++++	0.80 1.20 1.80 2.27 2.76 2.80 2.67 2.41 1.87 1.36 0.92 0.72 1.81		
D/G mean ++++	0.56 0.57 0.53 0.48 0.50 0.46 0.42 0.43 0.41 0.44 0.52 0.54 0.47		
Daily sunshine duration: hours.			
S	3.0 3.9 5.1 6.7 7.8 8.7 10.1 8.8 7.3 6.1 3.7 3.1 6.2		
So	9.2 10.3 11.8 13.3 14.5 15.2 14.9 13.8 12.4 10.9 9.5 8.8 12.1		
S/So	0.33 0.38 0.43 0.50 0.54 0.57 0.68 0.64 0.59 0.56 0.39 0.35 0.50		
Somax	9.5 10.8 12.4 13.8 14.9 15.2 15.1 14.2 12.9 11.4 9.9 8.9		
Angstrom coefficients: Radiation observing site			
Angstrom a	0.23 0.21 0.22 0.23 0.23 0.22 0.25 0.26 0.25 0.26 0.24 0.26 0.24		
Angstrom b	0.51 0.52 0.55 0.55 0.52 0.52 0.47 0.47 0.51 0.47 0.51 0.45 0.50		

ITALY		Map site No.284			Computer file ITALYHOR.284								ANCONA	
Latitude 43 37' N					Longitude 13 31' E			Height a.s.l.					104 metres	
Horizontal planes: - monthly means.					Data used & period: G & S (1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	CCCC	1.16	1.97	3.35	4.67	5.79	6.22	6.58	5.79	4.33	2.74	1.63	1.13	3.79
Gmax	CCCC	2.40	3.59	5.87	7.00	7.85	8.06	7.97	7.42	5.90	4.44	2.96	1.99	5.46
Gmin	CCCC	0.16	0.40	0.62	0.98	2.01	1.97	2.49	1.98	1.31	0.76	0.35	0.18	1.11
Go		3.67	5.18	7.30	9.43	10.97	11.63	11.27	9.98	8.05	5.88	4.07	3.22	7.56
Ratios to extraterrestrial radiation														
G/Go	CCCC	0.32	0.38	0.46	0.50	0.53	0.54	0.58	0.58	0.54	0.47	0.40	0.35	0.47
Ktmax	CCCC	0.58	0.61	0.71	0.69	0.69	0.69	0.69	0.70	0.67	0.66	0.64	0.59	0.67
Ktmin	CCCC	0.04	0.08	0.09	0.10	0.18	0.17	0.22	0.20	0.16	0.13	0.09	0.06	0.15
Daily diffuse radiation: kWh/m ² .														
D mean est. ++++	0.76	1.19	1.72	2.29	2.87	2.76	2.60	2.25	1.94	1.39	0.93	0.70	1.79	
D/G mean ++++	0.65	0.61	0.51	0.49	0.50	0.44	0.39	0.39	0.45	0.51	0.57	0.62	0.47	
Daily sunshine duration: hours.														
S	1.8	3.3	4.7	6.3	8.0	8.6	9.9	8.9	6.7	5.0	2.9	2.0	5.7	
So	9.2	10.3	11.8	13.3	14.5	15.2	14.9	13.8	12.4	10.9	9.5	8.8	12.1	
S/So	0.20	0.32	0.40	0.47	0.55	0.57	0.66	0.64	0.54	0.46	0.31	0.23	0.45	
Somax	9.5	10.8	12.4	13.8	14.9	15.2	15.1	14.2	12.9	11.4	9.9	8.9		
Angstrom coefficients: Radiation observing site														
Angstrom a	0.20	0.20	0.22	0.22	0.24	0.22	0.23	0.23	0.26	0.23	0.24	0.21	0.23	
Angstrom b	0.57	0.54	0.60	0.58	0.51	0.55	0.53	0.54	0.51	0.51	0.53	0.55	0.54	

ITALY		Map site No.285			Computer file ITALYHOR.285								PIANOSA	
Latitude 42 35' N					Longitude 10 6' E			Height a.s.l.					27 metres	
Horizontal planes: - monthly means.					Data used & period:					G & S (1966 -1975)				
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	CCCC	1.68	2.50	3.87	5.50	6.13	6.85	7.08	6.17	4.79	3.48	2.00	1.48	4.30
Gmax	CCCC	2.77	4.09	5.89	7.70	8.03	8.38	8.31	7.72	6.23	4.96	3.15	2.25	5.80
Gmin	CCCC	0.36	0.64	0.87	1.40	1.78	2.97	3.97	2.93	2.06	1.50	0.49	0.35	1.62
Go		3.84	5.35	7.43	9.51	11.00	11.63	11.28	10.04	8.16	6.04	4.24	3.40	7.67
Ratios to extraterrestrial radiation														
G/Go	CCCC	0.44	0.46	0.52	0.58	0.56	0.59	0.63	0.61	0.59	0.58	0.47	0.44	0.54
Ktmax	CCCC	0.64	0.67	0.70	0.75	0.70	0.72	0.72	0.73	0.70	0.72	0.66	0.64	0.71
Ktmin	CCCC	0.09	0.12	0.12	0.15	0.16	0.26	0.35	0.29	0.25	0.25	0.12	0.10	0.21
Daily diffuse radiation: kWh/m ² .														
D mean est. ++++	0.90	1.32	1.76	2.08	2.70	2.55	2.43	2.12	1.81	1.30	0.95	0.73	1.73	
D/G mean ++++	0.54	0.53	0.46	0.38	0.44	0.37	0.34	0.34	0.38	0.37	0.48	0.50	0.40	
Daily sunshine duration: hours.														
S		3.8	4.8	6.1	7.5	8.4	9.7	10.9	9.5	8.0	7.1	4.6	3.8	7.0
So		9.3	10.4	11.8	13.2	14.4	15.1	14.8	13.7	12.4	10.9	9.6	8.9	12.0
S/So		0.41	0.46	0.52	0.57	0.58	0.64	0.74	0.69	0.65	0.65	0.48	0.43	0.57
Somax		9.6	10.8	12.4	13.7	14.8	15.1	15.0	14.2	12.8	11.4	10.0	9.0	
Angstrom coefficients: Radiation observing site														
Angstrom a		0.24	0.24	0.22	0.25	0.26	0.24	0.25	0.26	0.28	0.29	0.22	0.24	0.25
Angstrom b		0.47	0.49	0.57	0.59	0.52	0.54	0.51	0.52	0.48	0.45	0.52	0.47	0.51

ITALY	Map site No.286				Computer file ITALYHOR.286								PESCARA			
Latitude	42 26' N				Longitude				14 12' E		Height a.s.l.				16 metres	
Horizontal planes: - monthly means.					Data used & period: G & S (1966 -1975)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean			
Daily global radiation: kWh/m ² .																
G mean	CCCC	1.56	2.25	3.49	4.99	5.93	6.22	6.39	5.75	4.38	2.99	2.01	1.43	3.96		
Gmax	CCCC	2.82	3.81	6.01	7.39	7.87	8.08	7.80	7.28	6.07	4.72	3.26	2.44	5.64		
Gmin	CCCC	0.31	0.50	0.76	1.32	1.82	2.50	2.32	1.87	1.48	0.66	0.50	0.29	1.20		
Go		3.87	5.38	7.45	9.52	11.00	11.63	11.29	10.05	8.18	6.06	4.27	3.43	7.69		
Ratios to extraterrestrial radiation																
G/Go	CCCC	0.40	0.42	0.47	0.52	0.54	0.53	0.57	0.57	0.54	0.49	0.47	0.42	0.50		
Ktmax	CCCC	0.65	0.63	0.71	0.72	0.69	0.69	0.67	0.68	0.68	0.69	0.68	0.69	0.69		
Ktmin	CCCC	0.08	0.09	0.10	0.14	0.17	0.21	0.21	0.19	0.18	0.11	0.12	0.09	0.16		
Daily diffuse radiation: kWh/m ² .																
D mean est.	++++	0.85	1.29	1.81	2.31	2.80	2.84	2.69	2.33	1.85	1.31	0.96	0.74	1.82		
D/G mean	++++	0.54	0.57	0.52	0.46	0.47	0.46	0.42	0.41	0.42	0.44	0.48	0.52	0.46		
Daily sunshine duration: hours.																
S		3.0	4.0	4.9	6.6	8.0	8.6	9.7	8.9	7.1	6.1	4.3	2.9	6.2		
So		9.3	10.4	11.8	13.2	14.4	15.1	14.8	13.7	12.3	10.9	9.6	9.0	12.0		
S/So		0.32	0.38	0.42	0.50	0.56	0.57	0.66	0.65	0.58	0.56	0.45	0.32	0.50		
Somax		9.6	10.8	12.4	13.7	14.8	15.1	15.0	14.1	12.8	11.4	10.0	9.0			
Angstrom coefficients: Radiation observing site																
Angstrom a		0.23	0.23	0.23	0.24	0.25	0.25	0.23	0.23	0.23	0.22	0.24	0.23	0.23		
Angstrom b		0.55	0.50	0.57	0.57	0.52	0.50	0.51	0.52	0.54	0.52	0.52	0.56	0.53		

ITALY Map site No.287 Computer file ITALYHOR.287 VIGNA DI VALLE
 Latitude 42 5' N Longitude 12 13' E Height a.s.l. 270 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean CCCC 1.67 2.30 3.58 4.75 5.81 6.35 6.67 6.01 4.57 3.24 1.94 1.44 4.04
 Gmax CCCC 2.82 4.02 5.65 6.94 7.60 7.87 7.86 7.44 6.12 4.72 3.20 2.33 5.55
 Gmin CCCC 0.29 0.51 0.74 1.40 1.73 2.92 4.18 2.82 1.75 1.14 0.38 0.27 1.52
 Go 3.93 5.43 7.50 9.55 11.01 11.63 11.29 10.07 8.22 6.11 4.33 3.49 7.72

Ratios to extraterrestrial radiation
 G/Go CCCC 0.43 0.42 0.48 0.50 0.53 0.55 0.59 0.60 0.56 0.53 0.45 0.41 0.50
 Ktmax CCCC 0.64 0.65 0.67 0.67 0.66 0.67 0.68 0.70 0.68 0.68 0.66 0.64 0.67
 Ktmin CCCC 0.07 0.09 0.10 0.15 0.16 0.25 0.37 0.28 0.21 0.19 0.09 0.08 0.20

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.85 1.24 1.75 2.26 2.70 2.62 2.53 2.13 1.74 1.33 0.93 0.73 1.74
 D/G mean +++ 0.51 0.54 0.49 0.48 0.46 0.41 0.38 0.35 0.38 0.41 0.48 0.51 0.43

Daily sunshine duration: hours.
 S 4.0 4.6 5.8 6.9 8.6 9.5 10.9 9.8 8.0 6.9 4.6 3.8 7.0
 So 9.3 10.4 11.8 13.2 14.4 15.0 14.7 13.7 12.3 10.9 9.7 9.0 12.0
 S/So 0.43 0.44 0.49 0.52 0.60 0.63 0.74 0.72 0.65 0.63 0.47 0.42 0.56
 Somax 9.7 10.9 12.4 13.7 14.8 15.0 14.9 14.1 12.8 11.4 10.0 9.1

Angstrom coefficients: Radiation observing site
 Angstrom a 0.21 0.19 0.21 0.22 0.21 0.23 0.24 0.23 0.21 0.22 0.20 0.21 0.22
 Angstrom b 0.50 0.52 0.55 0.54 0.52 0.50 0.47 0.51 0.53 0.48 0.52 0.47 0.51

ITALY Map site No.288 Computer file ITALYHOR.288 ROMA
 Latitude 41 48' N Longitude 12 35' E Height a.s.l. 131 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean CCCC 1.70 2.54 3.78 4.99 6.03 6.59 6.86 6.16 4.69 3.29 2.02 1.51 4.19
 Gmax CCCC 2.78 4.02 5.87 7.25 8.02 8.16 8.06 7.53 6.22 4.78 3.33 2.33 5.70
 Gmin CCCC 0.43 0.80 0.77 1.55 1.77 2.90 4.19 2.91 1.74 1.37 0.54 0.39 1.62
 Go 3.98 5.48 7.53 9.57 11.02 11.63 11.29 10.08 8.25 6.15 4.38 3.54 7.75

Ratios to extraterrestrial radiation
 G/Go CCCC 0.43 0.46 0.50 0.52 0.55 0.57 0.61 0.61 0.57 0.53 0.46 0.43 0.52
 Ktmax CCCC 0.62 0.65 0.69 0.70 0.70 0.70 0.71 0.69 0.69 0.68 0.64 0.69
 Ktmin CCCC 0.11 0.15 0.10 0.16 0.16 0.25 0.37 0.29 0.21 0.22 0.12 0.11 0.21

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.90 1.33 1.84 2.32 2.60 2.58 2.60 2.15 1.80 1.41 0.98 0.79 1.78
 D/G mean +++ 0.53 0.52 0.49 0.46 0.43 0.39 0.38 0.35 0.38 0.43 0.49 0.52 0.42

Daily sunshine duration: hours.
 S 3.9 4.7 5.6 6.9 8.4 9.3 10.8 9.8 7.9 6.7 4.6 3.6 6.9
 So 9.4 10.4 11.8 13.2 14.4 15.0 14.7 13.7 12.3 10.9 9.7 9.0 12.0
 S/So 0.41 0.45 0.47 0.52 0.58 0.62 0.73 0.72 0.64 0.61 0.47 0.40 0.55
 Somax 9.7 10.9 12.4 13.7 14.7 15.0 14.9 14.1 12.8 11.4 10.1 9.1

Angstrom coefficients: Radiation observing site
 Angstrom a 0.23 0.24 0.24 0.25 0.24 0.23 0.28 0.24 0.25 0.27 0.23 0.24 0.25
 Angstrom b 0.47 0.49 0.54 0.53 0.54 0.54 0.44 0.51 0.50 0.43 0.49 0.45 0.49

ITALY Map site No.289 Computer file ITALYHOR.289 AMENDOLA
 Latitude 41 32' N Longitude 15 43' E Height a.s.l. 56 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean CCCC 1.81 2.52 3.66 5.16 6.17 6.60 6.68 6.15 4.72 3.25 2.25 1.56 4.22
 Gmax CCCC 3.05 3.98 5.87 7.52 8.02 8.27 8.27 7.56 6.45 4.75 3.46 2.43 5.81
 Gmin CCCC 0.58 0.69 0.84 1.59 2.61 3.16 3.50 2.31 1.44 0.92 0.63 0.38 1.56
 Go 4.02 5.52 7.57 9.59 11.03 11.63 11.30 10.10 8.28 6.19 4.42 3.58 7.78

Ratios to extraterrestrial radiation
 G/Go CCCC 0.45 0.45 0.48 0.54 0.56 0.57 0.59 0.61 0.57 0.52 0.51 0.44 0.52
 Ktmax CCCC 0.68 0.64 0.69 0.73 0.70 0.71 0.71 0.71 0.71 0.68 0.70 0.66 0.70
 Ktmin CCCC 0.14 0.12 0.11 0.17 0.24 0.27 0.31 0.23 0.17 0.15 0.14 0.11 0.20

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.91 1.33 1.90 2.33 2.79 2.68 2.55 2.22 1.71 1.41 0.98 0.77 1.81
 D/G mean +++ 0.50 0.53 0.52 0.45 0.45 0.41 0.38 0.36 0.36 0.43 0.43 0.49 0.43

Daily sunshine duration: hours.
 S 3.9 4.6 5.2 6.9 8.5 9.3 10.2 9.5 7.7 6.3 5.2 3.7 6.8
 So 9.4 10.5 11.8 13.2 14.4 15.0 14.7 13.7 12.3 10.9 9.7 9.1 12.1
 S/So 0.41 0.44 0.44 0.52 0.59 0.62 0.69 0.69 0.63 0.58 0.54 0.41 0.55
 Somax 9.7 10.9 12.4 13.7 14.7 15.0 14.9 14.1 12.8 11.4 10.1 9.1

Angstrom coefficients: Radiation observing site
 Angstrom a 0.24 0.24 0.23 0.24 0.26 0.24 0.23 0.25 0.23 0.25 0.25 0.23 0.24
 Angstrom b 0.50 0.50 0.55 0.56 0.50 0.52 0.52 0.51 0.56 0.48 0.49 0.50 0.52

ITALY		Map site No.290			Computer file ITALYHOR.290								OLBIA	
Latitude 40 54' N					Longitude 9 31' E			Height a.s.l.					13 metres	
Horizontal planes: - monthly means.					Data used & period:					G & S (1966 -1975)				
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	CCCC	1.77	2.36	3.58	4.99	6.03	6.70	7.16	6.20	4.87	3.26	2.16	1.57	4.23
Gmax	CCCC	2.95	4.00	5.75	7.09	7.98	8.31	8.20	7.72	6.39	4.81	3.17	2.48	5.75
Gmin	CCCC	0.50	0.59	0.92	1.35	1.79	2.84	4.61	3.07	2.26	1.08	0.54	0.31	1.66
Go		4.13	5.62	7.65	9.64	11.04	11.63	11.30	10.13	8.34	6.29	4.53	3.69	7.84

Ratios to extraterrestrial radiation

G/Go	CCCC	0.43	0.42	0.47	0.52	0.55	0.58	0.63	0.61	0.58	0.52	0.48	0.42	0.52
Ktmax	CCCC	0.64	0.63	0.67	0.69	0.70	0.71	0.71	0.72	0.70	0.68	0.63	0.65	0.69
Ktmin	CCCC	0.12	0.11	0.12	0.14	0.16	0.24	0.41	0.30	0.27	0.17	0.12	0.08	0.21

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.90	1.28	1.82	2.33	2.66	2.49	2.37	2.16	1.87	1.38	1.03	0.78	1.76
D/G mean ++++	0.51	0.54	0.51	0.47	0.44	0.37	0.33	0.35	0.38	0.42	0.48	0.50	0.42

Daily sunshine duration: hours.

S	4.0	4.8	5.8	7.3	9.1	10.6	11.9	10.2	8.2	6.6	4.9	3.7	7.3
So	9.5	10.5	11.8	13.2	14.3	14.9	14.6	13.6	12.3	11.0	9.8	9.1	12.1
S/So	0.42	0.46	0.49	0.55	0.64	0.71	0.82	0.75	0.67	0.60	0.50	0.41	0.58
Somax	9.8	10.9	12.4	13.6	14.6	14.9	14.8	14.0	12.8	11.4	10.1	9.2	

Angstrom coefficients: Radiation observing site

Angstrom a	0.23	0.19	0.19	0.22	0.22	0.23	0.26	0.23	0.25	0.23	0.23	0.22	0.23
Angstrom b	0.49	0.51	0.55	0.53	0.51	0.49	0.46	0.50	0.48	0.48	0.48	0.49	0.50

ITALY		Map site No.291			Computer file ITALYHOR.291								NAPOLI	
Latitude 40 51' N					Longitude 14 18' E			Height a.s.l.					72 metres	
Horizontal planes: - monthly means.					Data used & period:			G & S (1966 -1975)						
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	CCCC	1.80	2.45	3.72	4.98	5.90	6.66	6.78	6.18	4.71	3.32	2.13	1.53	4.19
Gmax	CCCC	3.02	4.09	6.09	7.29	7.90	8.12	8.02	7.69	6.29	5.14	3.54	2.46	5.81
Gmin	CCCC	0.38	0.67	0.90	1.48	1.94	3.38	4.33	2.76	1.61	1.08	0.54	0.31	1.62
Go		4.14	5.63	7.65	9.64	11.04	11.63	11.30	10.14	8.35	6.29	4.53	3.70	7.85

Ratios to extraterrestrial radiation

G/Go	CCCC	0.43	0.43	0.49	0.52	0.53	0.57	0.60	0.61	0.56	0.53	0.47	0.41	0.51
Ktmax	CCCC	0.65	0.65	0.71	0.70	0.69	0.70	0.69	0.72	0.69	0.72	0.70	0.64	0.70
Ktmin	CCCC	0.09	0.12	0.12	0.15	0.18	0.29	0.38	0.27	0.19	0.17	0.12	0.08	0.21

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.95	1.37	1.80	2.27	2.74	2.77	2.58	2.13	1.84	1.43	1.01	0.80	1.81
D/G mean ++++	0.53	0.56	0.48	0.46	0.46	0.42	0.38	0.35	0.39	0.43	0.48	0.52	0.43

Daily sunshine duration: hours.

S	3.9	4.3	5.4	6.6	8.0	9.2	10.1	9.5	7.5	6.3	4.6	3.5	6.6
So	9.5	10.5	11.8	13.2	14.3	14.9	14.6	13.6	12.3	11.0	9.8	9.1	12.1
S/So	0.41	0.41	0.46	0.50	0.56	0.62	0.69	0.70	0.61	0.57	0.47	0.38	0.53
Somax	9.8	10.9	12.4	13.6	14.6	14.9	14.8	14.0	12.8	11.4	10.1	9.2	

Angstrom coefficients: Radiation observing site

Angstrom a	0.24	0.24	0.23	0.23	0.24	0.28	0.26	0.23	0.23	0.24	0.24	0.24	0.24
Angstrom b	0.47	0.48	0.57	0.58	0.53	0.47	0.49	0.54	0.54	0.49	0.50	0.47	0.51

ITALY				Map site No.292				Computer file ITALYHOR.292							BRINDISI	
Latitude 40 39' N								Longitude 17 57' E				Height a.s.l.			10 metres	
Horizontal planes: - monthly means.								Data used & period:			G & S (1966 -1975)					
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m ² .																
G mean	CCCC	1.82	2.54	3.76	5.19	6.40	7.02	7.14	6.60	4.84	3.30	2.28	1.67	4.39		
Gmax	CCCC	2.99	4.16	6.11	7.37	8.18	8.45	8.29	7.97	6.44	4.79	3.45	2.77	5.92		
Gmin	CCCC	0.46	0.92	1.04	1.98	2.46	3.28	3.74	3.03	1.80	1.07	0.70	0.38	1.74		
Go		4.17	5.66	7.68	9.66	11.05	11.62	11.31	10.15	8.37	6.32	4.57	3.73	7.87		

Ratios to extraterrestrial radiation

G/Go	CCCC	0.44	0.45	0.49	0.54	0.58	0.60	0.63	0.65	0.58	0.52	0.50	0.45	0.54
Ktmax	CCCC	0.64	0.65	0.71	0.71	0.71	0.73	0.72	0.74	0.71	0.67	0.67	0.72	0.71
Ktmin	CCCC	0.11	0.16	0.14	0.20	0.22	0.28	0.33	0.30	0.21	0.17	0.15	0.10	0.22

Daily diffuse radiation: kWh/m².

D mean est. ++++	1.00	1.44	1.95	2.48	2.69	2.53	2.34	1.91	1.92	1.53	1.05	0.86	1.81
D/G mean ++++	0.55	0.57	0.52	0.48	0.42	0.36	0.33	0.29	0.40	0.46	0.46	0.51	0.41

Daily sunshine duration: hours.

S	3.8	4.4	5.2	6.6	8.7	9.6	10.6	9.8	7.8	6.4	5.0	3.6	6.8
So	9.5	10.5	11.8	13.1	14.3	14.9	14.6	13.6	12.3	11.0	9.8	9.2	12.1
S/So	0.40	0.42	0.44	0.50	0.61	0.64	0.73	0.72	0.63	0.58	0.51	0.39	0.55
Somax	9.8	10.9	12.3	13.6	14.6	14.9	14.8	14.0	12.8	11.5	10.1	9.2	

Angstrom coefficients: Radiation observing site

Angstrom a	0.26	0.25	0.27	0.26	0.27	0.26	0.24	0.23	0.25	0.26	0.26	0.27	0.26
Angstrom b	0.44	0.46	0.51	0.53	0.51	0.53	0.54	0.58	0.50	0.43	0.47	0.45	0.50

ITALY		Map site No.293				Computer file ITALYHOR.293							ALGHERO	
Latitude	40 38' N					Longitude	8 17' E					Height a.s.l.	40 metres	
Horizontal planes: - monthly means.														
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.														
G mean	CCCC	1.90	2.53	3.81	5.30	6.23	6.98	7.46	6.65	5.20	3.50	2.20	1.65	4.46
Gmax	CCCC	3.06	4.20	5.91	7.37	8.10	8.47	8.42	7.87	6.52	5.04	3.38	2.60	5.92
Gmin	CCCC	0.53	0.46	0.51	1.68	2.30	3.06	4.81	3.56	2.28	1.37	0.34	0.35	1.78
Go		4.18	5.66	7.68	9.66	11.05	11.62	11.31	10.15	8.37	6.33	4.57	3.74	7.87
Ratios to extraterrestrial radiation														
G/Go	CCCC	0.46	0.44	0.50	0.55	0.56	0.60	0.66	0.66	0.62	0.55	0.48	0.44	0.54
Ktmax	CCCC	0.66	0.66	0.69	0.71	0.71	0.73	0.73	0.74	0.72	0.71	0.66	0.67	0.71
Ktmin	CCCC	0.13	0.08	0.07	0.17	0.21	0.26	0.43	0.35	0.27	0.22	0.08	0.09	0.23
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.92	1.28	1.76	2.23	2.68	2.43	2.11	1.94	1.69	1.35	1.00	0.81	1.69
D/G mean	++++	0.48	0.51	0.46	0.42	0.43	0.35	0.28	0.29	0.32	0.39	0.45	0.49	0.38
Daily sunshine duration: hours.														
S		4.1	5.1	6.0	7.4	8.9	10.2	11.6	10.4	8.5	6.9	5.1	3.7	7.3
So		9.5	10.5	11.8	13.1	14.3	14.9	14.6	13.6	12.3	11.0	9.8	9.2	12.1
S/So		0.43	0.49	0.51	0.56	0.62	0.68	0.79	0.76	0.69	0.63	0.52	0.40	0.59
Somax		9.8	10.9	12.3	13.6	14.6	14.9	14.8	14.0	12.8	11.5	10.1	9.2	
Angstrom coefficients: Radiation observing site														
Angstrom a		0.23	0.18	0.19	0.22	0.23	0.22	0.21	0.25	0.26	0.24	0.20	0.23	0.22
Angstrom b		0.52	0.55	0.60	0.58	0.53	0.55	0.57	0.53	0.52	0.50	0.53	0.51	0.54

ITALY		Map site No.294			Computer file ITALYHOR.294								CAPO PALINURO	
Latitude	40 1' N				Longitude	15 17' E				Height a.s.l.		185 metres		
Horizontal planes: - monthly means.														
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.														
G mean	CCCC	1.99	2.59	3.65	4.88	5.70	6.10	6.44	6.09	4.86	3.43	2.40	1.70	4.16
Gmax	CCCC	3.30	4.30	6.02	7.01	7.51	7.51	7.60	7.28	6.20	5.10	3.69	2.74	5.70
Gmin	CCCC	0.36	0.68	0.89	1.57	1.72	2.86	4.00	3.10	2.00	1.01	0.59	0.39	1.61
Go		4.28	5.76	7.76	9.70	11.06	11.62	11.31	10.18	8.44	6.42	4.67	3.84	7.93
Ratios to extraterrestrial radiation														
G/Go	CCCC	0.46	0.45	0.47	0.50	0.51	0.52	0.57	0.60	0.58	0.53	0.51	0.44	0.51
Ktmax	CCCC	0.69	0.67	0.69	0.68	0.66	0.64	0.66	0.68	0.68	0.71	0.71	0.69	0.68
Ktmin	CCCC	0.08	0.12	0.11	0.16	0.16	0.25	0.35	0.30	0.24	0.16	0.13	0.10	0.20
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.90	1.33	1.87	2.39	2.82	2.80	2.72	2.18	1.78	1.32	1.00	0.81	1.83
D/G mean	++++	0.45	0.51	0.51	0.49	0.49	0.46	0.42	0.36	0.37	0.39	0.42	0.48	0.44
Daily sunshine duration: hours.														
S		4.3	4.6	5.6	6.7	8.2	9.3	10.4	10.2	8.5	6.8	5.4	3.7	7.0
So		9.5	10.5	11.8	13.1	14.2	14.8	14.5	13.6	12.3	11.0	9.8	9.2	12.0
S/So		0.45	0.43	0.47	0.51	0.58	0.63	0.72	0.75	0.69	0.62	0.55	0.40	0.57
Somax		9.8	10.9	12.3	13.6	14.5	14.8	14.7	14.0	12.8	11.5	10.2	9.3	
Angstrom coefficients:Radiation observing site														
Angstrom a		0.24	0.23	0.22	0.25	0.24	0.25	0.28	0.24	0.25	0.22	0.24	0.24	0.24
Angstrom b		0.51	0.51	0.52	0.50	0.47	0.43	0.40	0.47	0.47	0.51	0.49	0.50	0.48

ITALY		Map site No.295				Computer file ITALYHOR.295								CAGLIARI	
Latitude	39 15' N					Longitude	9 3' E					Height a.s.l.	18 metres		
Horizontal planes: - monthly means.															
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	CCCC	1.98	2.63	3.84	4.99	6.02	6.55	7.04	6.55	4.89	3.51	2.41	1.77	4.36	
Gmax	CCCC	3.07	4.26	5.89	7.02	7.61	7.85	7.86	7.64	6.59	4.99	3.56	2.60	5.75	
Gmin	CCCC	0.52	0.61	0.94	1.58	1.65	3.01	5.20	3.92	1.86	1.26	0.78	0.53	1.83	
Go		4.41	5.88	7.85	9.76	11.08	11.62	11.32	10.22	8.52	6.53	4.80	3.97	8.01	
Ratios to extraterrestrial radiation															
G/Go	CCCC	0.45	0.45	0.49	0.51	0.54	0.56	0.62	0.64	0.57	0.54	0.50	0.44	0.53	
Ktmax	CCCC	0.63	0.65	0.67	0.67	0.66	0.67	0.68	0.71	0.71	0.68	0.67	0.63	0.68	
Ktmin	CCCC	0.12	0.10	0.12	0.16	0.15	0.26	0.46	0.38	0.22	0.19	0.16	0.13	0.23	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.99	1.35	1.87	2.34	2.66	2.71	2.57	2.04	1.77	1.36	1.02	0.83	1.80	
D/G mean	++++	0.50	0.51	0.49	0.47	0.44	0.41	0.37	0.31	0.36	0.39	0.42	0.47	0.41	
Daily sunshine duration: hours.															
S		4.4	5.0	6.0	7.2	8.8	9.6	10.9	10.2	8.0	6.6	5.4	4.2	7.2	
So		9.6	10.6	11.8	13.1	14.2	14.7	14.5	13.5	12.3	11.0	9.9	9.3	12.0	
S/So		0.46	0.47	0.51	0.55	0.62	0.65	0.75	0.76	0.65	0.60	0.55	0.45	0.59	
Somax		9.9	11.0	12.3	13.5	14.5	14.7	14.6	13.9	12.7	11.5	10.2	9.4		
Angstrom coefficients: Radiation observing site															
Angstrom a		0.23	0.21	0.23	0.23	0.23	0.27	0.32	0.29	0.23	0.24	0.22	0.24	0.24	
Angstrom b		0.47	0.51	0.52	0.52	0.51	0.45	0.40	0.47	0.53	0.51	0.51	0.47	0.49	

ITALY				Map site No.296				Computer file ITALYHOR.296				CROTONE			
Latitude 39 0' N				Longitude 17 4' E				Height a.s.l.				158 metres			
Horizontal planes: - monthly means.				Data used & period:				G & S (1966 -1975)							
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	CCCC	2.08	2.78	3.92	5.40	6.49	6.80	7.17	6.42	4.96	3.51	2.47	1.77	4.49	
Gmax	CCCC	3.26	4.38	6.06	7.59	8.45	8.23	8.04	7.76	6.52	5.06	3.79	2.69	5.99	
Gmin	CCCC	0.54	0.66	0.82	1.92	2.65	3.04	4.25	3.38	2.30	0.98	0.67	0.30	1.80	
Go		4.46	5.92	7.88	9.78	11.08	11.62	11.32	10.23	8.54	6.56	4.84	4.02	8.03	

Ratios to extraterrestrial radiation

G/Go	CCCC	0.47	0.47	0.50	0.55	0.59	0.59	0.63	0.63	0.58	0.53	0.51	0.44	0.54
Ktmax	CCCC	0.66	0.66	0.69	0.73	0.74	0.71	0.70	0.72	0.71	0.69	0.70	0.65	0.70
Ktmin	CCCC	0.12	0.11	0.10	0.20	0.24	0.26	0.38	0.33	0.27	0.15	0.14	0.07	0.22

Daily diffuse radiation: kWh/m².

D mean est. ++++	1.06	1.46	1.88	2.43	2.56	2.55	2.32	2.11	1.84	1.50	1.03	0.87	1.81
D/G mean ++++	0.51	0.52	0.48	0.45	0.39	0.38	0.32	0.33	0.37	0.43	0.42	0.49	0.40

Daily sunshine duration: hours.

S	4.2	4.8	5.2	6.2	7.7	8.6	9.6	8.9	7.3	6.2	5.3	3.8	6.5
So	9.6	10.6	11.8	13.1	14.1	14.7	14.4	13.5	12.3	11.0	9.9	9.3	12.0
S/So	0.44	0.45	0.44	0.47	0.55	0.59	0.67	0.66	0.59	0.56	0.54	0.41	0.53
Somax	9.9	11.0	12.3	13.5	14.5	14.7	14.6	13.9	12.7	11.5	10.2	9.4	

Angstrom coefficients: Radiation observing site

Angstrom a	0.26	0.24	0.23	0.27	0.26	0.24	0.26	0.25	0.25	0.25	0.23	0.22	0.25
Angstrom b	0.46	0.50	0.60	0.58	0.60	0.59	0.57	0.57	0.56	0.50	0.53	0.52	0.55

ITALY		Map site No.297			Computer file ITALYHOR.297								USTICA	
Latitude 38 42' N					Longitude 13 11' E			Height a.s.l.			251 metres			
Horizontal planes: - monthly means.					Data used & period:			G & S (1966 -1975)						
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	CCCC	2.33	3.08	4.19	5.64	6.43	7.03	7.17	6.74	5.24	3.78	2.79	1.98	4.71
Gmax	CCCC	3.77	4.70	6.46	7.57	8.15	8.44	8.15	7.94	6.77	5.31	4.10	3.05	6.21
Gmin	CCCC	0.69	1.01	1.19	1.83	2.67	3.05	5.33	4.07	2.32	1.15	1.01	0.58	2.08
Go		4.51	5.97	7.92	9.80	11.09	11.61	11.32	10.24	8.57	6.61	4.89	4.07	8.06

Ratios to extraterrestrial radiation

G/Go	CCCC	0.52	0.51	0.53	0.58	0.58	0.61	0.63	0.66	0.61	0.57	0.57	0.49	0.57
Ktmax	CCCC	0.76	0.71	0.73	0.72	0.71	0.72	0.70	0.74	0.73	0.72	0.76	0.73	0.73
Ktmin	CCCC	0.15	0.17	0.15	0.19	0.24	0.26	0.47	0.40	0.27	0.17	0.21	0.14	0.26

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.97	1.36	1.80	2.32	2.67	2.58	2.44	2.04	1.76	1.31	1.03	0.88	1.77
D/G mean ++++	0.42	0.44	0.43	0.41	0.41	0.37	0.34	0.30	0.34	0.35	0.37	0.44	0.38

Daily sunshine duration: hours.

S	4.5	5.3	6.2	7.4	9.3	10.1	11.4	10.3	8.3	6.8	5.7	4.0	7.5
So	9.6	10.6	11.8	13.1	14.1	14.7	14.4	13.5	12.3	11.1	9.9	9.3	12.0
S/So	0.47	0.50	0.53	0.56	0.66	0.69	0.79	0.76	0.67	0.61	0.58	0.43	0.61
Somax	9.9	11.0	12.3	13.5	14.4	14.7	14.6	13.9	12.7	11.5	10.3	9.4	

Angstrom coefficients: Radiation observing site

Angstrom a	0.27	0.24	0.22	0.27	0.27	0.26	0.26	0.27	0.25	0.23	0.28	0.24	0.26
Angstrom b	0.54	0.55	0.59	0.54	0.48	0.49	0.47	0.50	0.53	0.56	0.50	0.55	0.53

ITALY		Map site No.298			Computer file ITALYHOR.298								MESSINA	
Latitude 38 12' N					Longitude 15 33' E			Height a.s.l.			50 metres			
Horizontal planes: - monthly means.					Data used & period:					G & S (1966 -1975)				
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	CCCC	2.07	2.86	3.87	5.20	6.09	6.69	6.96	6.38	5.05	3.53	2.54	1.79	4.43
Gmax	CCCC	3.51	4.48	6.09	7.46	7.96	8.03	8.25	7.69	6.58	5.18	4.05	2.88	6.02
Gmin	CCCC	0.59	1.01	1.01	1.93	2.21	3.21	3.72	3.53	2.54	0.93	0.83	0.47	1.84
Go		4.59	6.05	7.98	9.83	11.10	11.61	11.32	10.27	8.62	6.68	4.98	4.15	8.11

Ratios to extraterrestrial radiation

G/Go	CCCC	0.45	0.47	0.49	0.53	0.55	0.58	0.61	0.62	0.59	0.53	0.51	0.43	0.53
Ktmax	CCCC	0.69	0.67	0.69	0.71	0.69	0.69	0.71	0.71	0.71	0.70	0.73	0.67	0.70
Ktmin	CCCC	0.13	0.17	0.13	0.20	0.20	0.28	0.33	0.34	0.29	0.14	0.17	0.11	0.23

Daily diffuse radiation: kWh/m².

D mean est. ++++	1.00	1.46	1.96	2.39	2.81	2.66	2.36	2.06	1.84	1.39	1.08	0.89	1.83
D/G mean ++++	0.49	0.51	0.51	0.46	0.46	0.40	0.34	0.32	0.36	0.39	0.42	0.50	0.41

Daily sunshine duration: hours.

S	4.0	4.7	5.6	6.9	8.4	9.5	10.7	9.9	8.0	6.4	5.1	3.5	6.9
So	9.7	10.6	11.8	13.0	14.1	14.6	14.4	13.5	12.3	11.1	10.0	9.4	12.0
S/So	0.41	0.44	0.47	0.53	0.60	0.65	0.74	0.73	0.65	0.58	0.51	0.37	0.56
Somax	10.0	11.0	12.3	13.5	14.4	14.6	14.5	13.8	12.7	11.5	10.3	9.5	

Angstrom coefficients: Radiation observing site

Angstrom a	0.23	0.25	0.22	0.24	0.25	0.25	0.18	0.21	0.23	0.21	0.23	0.23	0.23
Angstrom b	0.54	0.51	0.55	0.55	0.50	0.50	0.58	0.56	0.54	0.56	0.54	0.54	0.54

ITALY		Map site No.299				Computer file ITALYHOR.299							TRAPANI	
Latitude	37 55' N					Longitude	12 30' E					Height a.s.l.	14 metres	
Horizontal planes: - monthly means.						Data used & period:				G & S (1966 -1975)				
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.														
G mean	CCCC	2.30	3.03	4.25	5.56	6.58	7.00	7.36	7.03	5.37	3.86	2.75	2.06	4.77
Gmax	CCCC	3.46	4.72	6.36	7.66	8.10	8.47	8.20	8.12	6.83	5.37	4.07	3.06	6.21
Gmin	CCCC	0.78	0.98	1.35	1.67	2.55	3.50	5.20	3.97	2.34	1.21	1.01	0.56	2.10
Go		4.64	6.09	8.01	9.85	11.10	11.61	11.32	10.28	8.65	6.72	5.02	4.20	8.13
Ratios to extraterrestrial radiation														
G/Go	CCCC	0.50	0.49	0.53	0.56	0.59	0.60	0.65	0.68	0.62	0.57	0.55	0.49	0.57
Ktmax	CCCC	0.68	0.70	0.72	0.73	0.71	0.73	0.71	0.75	0.73	0.72	0.73	0.71	0.72
Ktmin	CCCC	0.17	0.16	0.17	0.17	0.23	0.30	0.46	0.39	0.27	0.18	0.20	0.13	0.26
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	1.06	1.47	1.90	2.40	2.64	2.59	2.44	1.85	1.74	1.33	1.14	0.91	1.80
D/G mean	++++	0.46	0.49	0.45	0.43	0.40	0.37	0.33	0.26	0.32	0.35	0.42	0.44	0.38
Daily sunshine duration: hours.														
S		4.6	5.2	6.2	7.5	9.3	10.0	11.3	10.4	8.3	7.1	5.7	4.2	7.5
So		9.7	10.6	11.8	13.0	14.1	14.6	14.3	13.5	12.3	11.1	10.0	9.4	12.0
S/So		0.47	0.49	0.53	0.58	0.66	0.68	0.79	0.77	0.67	0.64	0.57	0.45	0.61
Somax		10.0	11.0	12.3	13.5	14.4	14.6	14.5	13.8	12.7	11.5	10.3	9.5	
Angstrom coefficients: Radiation observing site														
Angstrom a		0.26	0.26	0.25	0.27	0.26	0.28	0.33	0.30	0.26	0.25	0.29	0.26	0.27
Angstrom b		0.48	0.49	0.54	0.51	0.50	0.47	0.41	0.50	0.53	0.52	0.44	0.51	0.49

ITALY		Map site No.300				Computer file ITALYHOR.300								GELA	
Latitude 37 5' N						Longitude 14 13' E				Height a.s.l.				33 metres	
Horizontal planes: - monthly means.						Data used & period:				G & S (1966 -1975)					
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	CCCC	2.44	3.21	4.50	5.74	6.86	7.10	7.33	6.85	5.48	4.00	2.91	2.11	4.89	
Gmax	CCCC	3.68	4.66	6.41	7.63	8.24	8.39	8.13	7.79	6.74	5.41	4.04	3.15	6.19	
Gmin	CCCC	0.69	1.16	1.26	1.41	3.08	4.03	5.49	4.36	2.70	1.23	0.96	0.64	2.26	
Go		4.78	6.22	8.11	9.90	11.11	11.60	11.32	10.32	8.73	6.84	5.16	4.35	8.21	
Ratios to extraterrestrial radiation															
G/Go	CCCC	0.51	0.51	0.56	0.58	0.62	0.61	0.65	0.66	0.63	0.58	0.56	0.49	0.58	
Ktmax	CCCC	0.70	0.68	0.71	0.72	0.72	0.72	0.70	0.72	0.72	0.71	0.71	0.70	0.71	
Ktmin	CCCC	0.14	0.19	0.16	0.14	0.28	0.35	0.48	0.42	0.31	0.18	0.19	0.15	0.28	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	1.09	1.45	1.89	2.38	2.62	2.76	2.50	2.10	1.73	1.40	1.09	0.88	1.83	
D/G mean	++++	0.45	0.45	0.42	0.41	0.38	0.39	0.34	0.31	0.32	0.35	0.37	0.42	0.37	
Daily sunshine duration: hours.															
S		4.8	5.5	6.7	7.5	8.9	9.3	10.6	10.0	8.3	7.1	6.1	4.5	7.5	
So		9.8	10.7	11.8	13.0	14.0	14.5	14.3	13.4	12.3	11.1	10.1	9.5	12.0	
S/So		0.49	0.51	0.57	0.58	0.64	0.64	0.74	0.75	0.67	0.64	0.60	0.47	0.61	
Somax		10.0	11.0	12.3	13.4	14.3	14.5	14.4	13.8	12.7	11.5	10.4	9.6		
Angstrom coefficients: Radiation observing site															
Angstrom a		0.27	0.26	0.25	0.28	0.28	0.33	0.32	0.33	0.28	0.26	0.26	0.26	0.28	
Angstrom b		0.48	0.51	0.54	0.52	0.52	0.44	0.44	0.45	0.52	0.51	0.49	0.52	0.50	

ITALY		Map site No.301				Computer file ITALYHOR.301								PANTELLERIA			
Latitude	36 49' N					Longitude	11 58' E				Height a.s.l.				170 metres		
Horizontal planes: - monthly means.														Data used & period:		G & S (1966 -1975)	
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean			
Daily global radiation: kWh/m^2.																	
G mean	CCCC	2.22	2.92	4.24	5.35	6.40	6.90	7.21	6.77	4.99	3.73	2.71	1.90	4.62			
Gmax	CCCC	3.74	4.72	6.41	7.50	7.98	8.20	8.24	7.92	6.58	5.35	4.15	3.14	6.17			
Gmin	CCCC	0.74	0.87	1.13	1.18	2.42	3.22	4.30	4.68	2.15	1.54	0.83	0.53	1.98			
Go		4.83	6.26	8.14	9.92	11.12	11.59	11.32	10.33	8.76	6.87	5.21	4.39	8.24			
Ratios to extraterrestrial radiation																	
G/Go	CCCC	0.46	0.46	0.52	0.54	0.58	0.59	0.64	0.65	0.57	0.54	0.52	0.43	0.54			
Ktmax	CCCC	0.71	0.68	0.71	0.71	0.70	0.71	0.71	0.73	0.70	0.70	0.72	0.69	0.71			
Ktmin	CCCC	0.15	0.14	0.14	0.12	0.22	0.28	0.38	0.45	0.25	0.22	0.16	0.12	0.24			
Daily diffuse radiation: kWh/m^2.																	
D mean est.	++++	1.13	1.48	1.91	2.34	2.67	2.62	2.40	2.06	1.92	1.50	1.11	0.95	1.85			
D/G mean	++++	0.51	0.51	0.45	0.44	0.42	0.38	0.33	0.30	0.38	0.40	0.41	0.50	0.40			
Daily sunshine duration: hours.																	
S		4.1	4.8	6.1	7.0	8.7	9.3	10.4	10.1	7.7	6.5	5.5	3.9	7.0			
So		9.8	10.7	11.8	13.0	14.0	14.5	14.2	13.4	12.3	11.1	10.1	9.5	12.0			
S/So		0.42	0.45	0.52	0.54	0.62	0.64	0.73	0.75	0.63	0.59	0.54	0.41	0.57			
Somax		10.1	11.0	12.3	13.4	14.3	14.5	14.4	13.7	12.7	11.5	10.4	9.6				
Angstrom coefficients: Radiation observing site																	
Angstrom a		0.25	0.23	0.24	0.24	0.26	0.28	0.27	0.29	0.27	0.25	0.23	0.23	0.25			
Angstrom b		0.48	0.52	0.55	0.56	0.51	0.49	0.50	0.48	0.49	0.50	0.52	0.49	0.51			

JORDAN	Map site No.335				Computer file JORDAHOR.335						BAQURA			
Latitude 32 38' N					Longitude 35 37' E				Height a.s.l. -170 metres					
Horizontal planes: - monthly means.					Data used & period: G & S M'thly means (1973-1976)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	2.74	3.40	4.33	5.25	6.43	6.84	6.59	6.13	5.29	4.19	3.08	2.87	4.77	
Gmax	+++	4.45	5.59	7.09	8.12	8.57	8.99	8.84	8.07	7.12	5.89	4.70	3.87	6.78
Gmin	+++	1.22	1.57	2.17	2.64	3.94	7.11	7.63	7.00	5.60	3.09	1.35	1.09	3.72
Go		5.51	6.85	8.57	10.14	11.14	11.52	11.30	10.50	9.15	7.45	5.89	5.11	8.60

Ratios to extraterrestrial radiation

G/Go		0.50	0.50	0.50	0.52	0.58	0.59	0.58	0.58	0.58	0.56	0.52	0.56	0.55
Ktmax	++++	0.75	0.75	0.76	0.76	0.75	0.78	0.77	0.74	0.73	0.72	0.74	0.74	0.75
Ktmin	++++	0.22	0.23	0.25	0.26	0.35	0.62	0.67	0.67	0.61	0.41	0.23	0.21	0.43

Daily diffuse radiation: kWh/m².

D mean est.	++++	1.22	1.33	1.83	2.06	2.05	1.84	1.86	1.73	1.49	1.20	1.11	1.13	1.58
D/G mean	++++	0.45	0.39	0.42	0.39	0.32	0.27	0.28	0.28	0.28	0.29	0.36	0.39	0.33

Daily sunshine duration: hours.

S		4.9	6.5	6.7	8.0	10.7	11.9	11.9	11.2	9.9	8.6	6.5	5.3	8.5
So		10.1	10.9	11.8	12.8	13.7	14.1	13.9	13.2	12.3	11.2	10.4	9.9	12.0
S/So		0.48	0.60	0.57	0.62	0.78	0.84	0.85	0.85	0.81	0.76	0.63	0.54	0.70
Somax		10.3	11.2	12.2	13.2	13.9	14.1	14.0	13.5	12.6	11.6	10.6	9.9	

Angstrom coefficients:Believed estimated Dogniaux & Lemoine technique

Angstrom a		0.25	0.25	0.27	0.28	0.27	0.29	0.29	0.27	0.28	0.26	0.25	0.25	0.27
Angstrom b		0.50	0.51	0.51	0.50	0.49	0.46	0.46	0.47	0.46	0.48	0.49	0.49	0.48

JORDAN	Map site No.336				Computer file JORDAHOR.336					IRBID NURSERY				
Latitude 32 33' N					Longitude 35 51' E					Height a.s.l. 616 metres				
Horizontal planes: - monthly means.					Data used & period: G & S M'thly means (1972-1976)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	3.07	3.81	5.35	6.36	7.86	8.40	8.29	7.76	6.49	5.24	3.97	3.28	5.83	
Gmax	++++	4.46	5.59	7.10	8.12	8.57	8.99	8.84	8.08	7.12	5.90	4.71	3.88	6.79
Gmin	++++	1.23	1.57	2.17	2.64	3.94	7.11	7.63	7.00	5.61	3.10	1.35	1.09	3.73
Go		5.52	6.86	8.58	10.14	11.14	11.52	11.30	10.50	9.16	7.46	5.90	5.12	8.61

Ratios to extraterrestrial radiation

G/Go		0.56	0.55	0.62	0.63	0.71	0.73	0.73	0.74	0.71	0.70	0.67	0.64	0.67
Ktmax	++++	0.75	0.74	0.76	0.76	0.75	0.78	0.77	0.74	0.73	0.72	0.74	0.74	0.75
Ktmin	++++	0.22	0.23	0.25	0.26	0.35	0.62	0.67	0.67	0.61	0.41	0.23	0.21	0.43

Daily diffuse radiation: kWh/m².

D mean est.	++++	1.21	1.38	2.08	2.25	2.42	2.03	2.05	1.91	1.57	1.30	1.15	1.15	1.72
D/G mean	++++	0.40	0.36	0.39	0.35	0.31	0.24	0.25	0.25	0.24	0.25	0.29	0.35	0.30

Daily sunshine duration: hours.

S		5.4	6.7	7.0	8.4	10.5	12.1	12.3	11.6	10.4	9.0	7.3	5.7	8.9
So		10.1	10.9	11.8	12.8	13.7	14.1	13.9	13.2	12.3	11.2	10.4	9.9	12.0
S/So		0.53	0.62	0.59	0.65	0.77	0.86	0.88	0.88	0.85	0.80	0.70	0.58	0.73
Somax		10.3	11.2	12.2	13.2	13.9	14.1	14.0	13.5	12.6	11.6	10.6	9.9	

Angstrom coefficients:Believed estimated Dogniaux & Lemoine technique

Angstrom a		0.25	0.25	0.27	0.28	0.27	0.29	0.29	0.27	0.28	0.26	0.25	0.25	0.27
Angstrom b		0.50	0.51	0.51	0.50	0.49	0.46	0.46	0.47	0.46	0.48	0.49	0.49	0.48

JORDAN	Map site No.337				Computer file JORDAHOR.337					DEIR ALLA				
Latitude 32 13' N					Longitude 35 37' E					Height a.s.l. -224 metres				
Horizontal planes: - monthly means.					Data used & period: G & S M'thly means (1973-1976)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	2.86	3.59	4.76	5.47	6.59	6.95	6.92	6.31	5.58	4.51	3.38	2.83	4.99	
Gmax	++++	4.50	5.63	7.13	8.12	8.56	8.99	8.84	8.08	7.14	5.93	4.75	3.92	6.81
Gmin	++++	1.24	1.58	2.18	2.64	3.94	7.10	7.63	7.01	5.62	3.12	1.36	1.10	3.74
Go		5.58	6.91	8.62	10.16	11.14	11.51	11.30	10.51	9.19	7.51	5.96	5.18	8.64

Ratios to extraterrestrial radiation

G/Go		0.51	0.52	0.55	0.54	0.59	0.60	0.61	0.60	0.61	0.60	0.57	0.55	0.57
Ktmax	++++	0.75	0.74	0.76	0.76	0.75	0.78	0.77	0.74	0.73	0.73	0.74	0.74	0.75
Ktmin	++++	0.22	0.23	0.25	0.26	0.35	0.62	0.67	0.67	0.61	0.41	0.23	0.21	0.43

Daily diffuse radiation: kWh/m².

D mean est.	++++	1.13	1.35	1.96	1.90	2.01	1.74	1.79	1.60	1.55	1.20	1.02	0.97	1.52
D/G mean	++++	0.40	0.38	0.41	0.35	0.31	0.25	0.26	0.25	0.28	0.27	0.30	0.34	0.30

Daily sunshine duration: hours.

S		5.6	6.9	6.9	8.8	11.0	12.4	12.6	12.0	10.0	9.0	7.4	6.0	9.1
So		10.1	10.9	11.8	12.8	13.6	14.1	13.9	13.2	12.2	11.3	10.4	9.9	12.0
S/So		0.55	0.63	0.58	0.69	0.81	0.88	0.91	0.91	0.82	0.80	0.71	0.60	0.74
Somax		10.4	11.2	12.2	13.2	13.9	14.1	14.0	13.5	12.6	11.6	10.6	10.0	

Angstrom coefficients:Believed estimated Dogniaux & Lemoine technique

Angstrom a		0.25	0.25	0.27	0.28	0.27	0.29	0.29	0.28	0.29	0.26	0.25	0.25	0.27
Angstrom b		0.50	0.50	0.51	0.50	0.49	0.46	0.46	0.46	0.45	0.48	0.49	0.49	0.48

JORDAN Map site No.338 Computer file JORDAHOR.338 WADI DHULIEL
 Latitude 32 09' N Longitude 36 17' E Height a.s.l. 580 metres
 Horizontal planes: - monthly means. Data used & period: G & S M'thly means (1971-1976)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 3.32 4.03 5.66 6.66 8.00 7.93 8.23 7.55 6.54 4.97 3.72 2.82 5.79
 Gmax ++++ 4.51 5.64 7.13 8.12 8.56 8.99 8.84 8.08 7.14 5.93 4.75 3.93 6.81
 Gmin ++++ 1.24 1.58 2.18 2.64 3.94 7.10 7.63 7.01 5.63 3.12 1.37 1.11 3.74
 Go 5.59 6.92 8.62 10.16 11.14 11.51 11.30 10.51 9.19 7.52 5.97 5.19 8.64

Ratios to extraterrestrial radiation

G/Go 0.59 0.58 0.66 0.66 0.72 0.69 0.73 0.72 0.71 0.66 0.62 0.54 0.66
 Ktmax ++++ 0.75 0.75 0.76 0.76 0.75 0.78 0.77 0.74 0.73 0.72 0.74 0.74 0.75
 Ktmin ++++ 0.22 0.23 0.25 0.26 0.35 0.62 0.67 0.67 0.61 0.41 0.23 0.21 0.43

Daily diffuse radiation: kWh/m².

D mean est. ++++ 1.19 1.53 1.99 2.51 2.43 2.01 2.07 1.95 1.64 1.14 1.08 0.99 1.72
 D/G mean +++ 0.36 0.38 0.35 0.38 0.30 0.25 0.25 0.26 0.25 0.23 0.29 0.35 0.30

Daily sunshine duration: hours.

S 5.9 6.6 7.6 8.0 10.6 11.8 12.2 11.3 10.2 9.4 7.3 5.7 8.9
 So 10.2 10.9 11.8 12.8 13.6 14.1 13.9 13.2 12.2 11.3 10.4 9.9 12.0
 S/So 0.58 0.61 0.64 0.62 0.78 0.84 0.88 0.86 0.83 0.83 0.70 0.57 0.73
 Somax 10.4 11.2 12.2 13.2 13.9 14.1 14.0 13.5 12.6 11.6 10.6 10.0

Angstrom coefficients:Believed estimated Dogniaux & Lemoine technique

Angstrom a 0.25 0.25 0.27 0.28 0.27 0.29 0.29 0.28 0.29 0.26 0.25 0.25 0.27
 Angstrom b 0.50 0.50 0.51 0.50 0.49 0.46 0.46 0.45 0.45 0.48 0.49 0.49 0.48

JORDAN Map site No.339 Computer file JORDAHOR.339 SHOUBAK
 Latitude 30 31' N Longitude 35 32' E Height a.s.l. 1365 metres
 Horizontal planes: - monthly means. Data used & period: G & S M'thly means (1975-1976)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 4.31 5.22 6.59 7.05 8.08 8.55 8.60 8.28 7.24 6.03 4.81 4.06 6.57
 Gmax ++++ 4.70 5.80 7.22 8.15 8.54 8.95 8.80 8.09 7.21 6.07 4.94 4.14 6.90
 Gmin ++++ 1.30 1.64 2.22 2.66 3.94 7.07 7.61 7.04 5.71 3.21 1.43 1.16 3.80
 Go 5.86 7.16 8.79 10.24 11.14 11.46 11.27 10.56 9.32 7.73 6.22 5.47 8.77

Ratios to extraterrestrial radiation

G/Go 0.74 0.73 0.75 0.69 0.73 0.75 0.76 0.78 0.78 0.78 0.77 0.74 0.75
 Ktmax ++++ 0.74 0.75 0.76 0.76 0.75 0.78 0.77 0.74 0.73 0.73 0.74 0.74 0.75
 Ktmin ++++ 0.22 0.23 0.25 0.26 0.35 0.62 0.67 0.67 0.61 0.41 0.23 0.21 0.43

Daily diffuse radiation: kWh/m².

D mean est. ++++ 1.60 1.83 2.16 2.11 2.15 1.77 1.97 1.70 1.52 1.24 1.35 1.42 1.74
 D/G mean ++++ 0.37 0.35 0.33 0.30 0.27 0.21 0.23 0.21 0.21 0.21 0.28 0.35 0.26

Daily sunshine duration: hours.

S 5.6 6.8 7.7 9.0 10.9 12.4 12.4 12.1 10.9 9.5 7.4 5.7 9.2
 So 10.3 11.0 11.8 12.8 13.5 13.9 13.8 13.1 12.2 11.3 10.5 10.1 12.0
 S/So 0.55 0.62 0.65 0.70 0.80 0.89 0.90 0.92 0.89 0.84 0.71 0.57 0.75
 Somax 10.5 11.2 12.2 13.1 13.8 13.9 13.9 13.4 12.5 11.6 10.7 10.1

Angstrom coefficients:Believed estimated Dogniaux & Lemoine technique

Angstrom a 0.25 0.26 0.27 0.28 0.28 0.30 0.30 0.28 0.29 0.27 0.26 0.26 0.28
 Angstrom b 0.50 0.49 0.51 0.50 0.48 0.45 0.44 0.46 0.44 0.47 0.47 0.47 0.47

LEBANON Map site No.332 Computer file LEBANHOR.332 ABDE
 Latitude 34 32' N Longitude 36 01' E Height a.s.l. 10 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1968 -1970)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 2.04 3.09 3.88 6.10 6.46 7.34 7.04 6.82 5.31 3.59 2.73 2.12 4.72
 Gmax ++++ 4.22 5.39 6.97 8.07 8.58 9.03 8.87 8.06 7.02 5.73 4.48 3.63 6.68
 Gmin ++++ 0.44 0.98 1.09 2.35 3.45 5.44 5.08 4.80 3.31 1.80 0.77 0.45 2.50
 Go 5.19 6.57 8.36 10.03 11.13 11.56 11.32 10.43 8.99 7.20 5.58 4.78 8.44

Ratios to extraterrestrial radiation

G/Go 0.39 0.47 0.46 0.61 0.58 0.64 0.62 0.65 0.59 0.50 0.49 0.44 0.54
 Ktmax ++++ 0.75 0.74 0.76 0.76 0.75 0.78 0.77 0.74 0.73 0.73 0.74 0.74 0.75
 Ktmin ++++ 0.09 0.15 0.13 0.23 0.31 0.47 0.45 0.46 0.37 0.25 0.14 0.10 0.30

Daily diffuse radiation: kWh/m².

D mean est. ++++ 1.02 1.44 1.83 2.46 2.43 2.20 2.40 2.11 1.74 1.28 1.11 0.95 1.75
 D/G mean ++++ 0.50 0.47 0.47 0.40 0.38 0.30 0.34 0.31 0.33 0.36 0.41 0.45 0.37

Daily sunshine duration: hours.

S 4.0 5.4 5.8 7.7 9.4 11.0 10.6 10.6 9.0 7.4 5.8 4.5 7.6
 So 10.0 10.8 11.8 12.9 13.8 14.3 14.1 13.3 12.3 11.2 10.2 9.7 12.0
 S/So 0.40 0.50 0.49 0.60 0.68 0.77 0.75 0.80 0.73 0.66 0.57 0.46 0.62
 Somax 10.2 11.1 12.3 13.3 14.1 14.3 14.2 13.6 12.6 11.6 10.5 9.8

Angstrom coefficients:Estimated Dogniaux & Lemoine technique

Angstrom a 0.24 0.25 0.26 0.27 0.27 0.29 0.28 0.27 0.28 0.25 0.25 0.24 0.27
 Angstrom b 0.52 0.51 0.53 0.52 0.50 0.47 0.47 0.47 0.46 0.49 0.49 0.50 0.49

LEBANON				Map site No.333				Computer file LEBANHOR.333								KSARA	
Latitude 33 49' N				Longitude 36 00' E				Height a.s.l.								425 metres	
Horizontal planes: - monthly means.				Data used & period: G & S (1956-1965)													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean				
Daily global radiation: kWh/m ² .																	
G mean	2.52	3.63	4.94	6.21	7.70	8.84	8.76	7.95	6.76	4.85	3.42	2.51	5.68				
Gmax	4.21	5.51	7.45	8.61	9.08	9.58	9.48	8.86	7.79	6.16	4.59	3.74	7.09				
Gmin	0.60	0.92	1.41	2.06	2.90	6.91	7.70	7.01	5.09	2.55	1.33	0.69	3.28				
Go	5.31	6.67	8.44	10.07	11.13	11.54	11.32	10.46	9.05	7.30	5.70	4.90	8.50				

Ratios to extraterrestrial radiation

G/Go	0.47	0.54	0.59	0.62	0.69	0.77	0.77	0.76	0.75	0.66	0.60	0.51	0.64
Ktmax	0.73	0.75	0.80	0.81	0.79	0.83	0.82	0.82	0.81	0.77	0.74	0.74	0.79
Ktmin	0.11	0.14	0.17	0.20	0.26	0.60	0.68	0.67	0.56	0.35	0.23	0.14	0.39

Daily diffuse radiation: kWh/m².

D mean est. ++++	1.18	1.57	1.93	2.32	2.06	1.59	1.58	1.37	1.14	1.09	0.89	0.95	1.48
D/G mean ++++	0.47	0.43	0.39	0.37	0.27	0.18	0.18	0.17	0.17	0.22	0.26	0.38	0.26

Daily sunshine duration: hours.

S	4.1	5.4	6.9	8.0	10.8	12.9	13.2	12.4	11.1	8.6	7.1	4.9	8.8
So	10.0	10.8	11.8	12.9	13.8	14.2	14.0	13.3	12.3	11.2	10.3	9.8	12.0
S/So	0.41	0.50	0.58	0.62	0.79	0.91	0.94	0.94	0.91	0.77	0.69	0.50	0.71
Somax	10.3	11.1	12.3	13.3	14.0	14.2	14.1	13.6	12.6	11.6	10.5	9.8	

Angstrom coefficients: Derived from Gm and Sm at Ksara

Angstrom a	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Angstrom b	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55

LEBANON		Map site No.334		Computer file LEBANHOR.334								BEYROUTH	
Latitude	33 49' N			Longitude	35 29' E			Height a.s.l.				18 metres	
Horizontal planes: - monthly means.				Data used & period: G & S (1966-1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean	2.31	3.19	4.38	5.50	6.46	7.21	7.02	6.42	5.38	4.25	3.00	2.32	4.79
Gmax	3.65	4.83	6.25	7.03	7.56	7.95	7.77	7.13	6.25	5.29	4.22	3.49	5.96
Gmin	0.45	0.99	1.10	2.35	3.46	5.44	5.08	4.82	3.33	1.83	0.78	0.47	2.51
Go	5.31	6.67	8.44	10.07	11.13	11.54	11.32	10.46	9.05	7.30	5.70	4.90	8.50

Ratios to extraterrestrial radiation

G/Go	0.43	0.48	0.52	0.55	0.58	0.62	0.62	0.61	0.59	0.58	0.53	0.47	0.55
Ktmax	0.63	0.66	0.67	0.66	0.66	0.69	0.68	0.66	0.65	0.66	0.68	0.69	0.67
Ktmin	0.09	0.15	0.13	0.23	0.31	0.47	0.45	0.46	0.37	0.25	0.14	0.10	0.30

Daily diffuse radiation: kWh/m².

D mean est. ++++	1.09	1.47	2.09	2.47	2.50	2.25	2.33	1.97	1.71	1.38	1.11	0.99	1.79
D/G mean ++++	0.47	0.46	0.48	0.45	0.39	0.31	0.33	0.31	0.32	0.32	0.37	0.43	0.37

Daily sunshine duration: hours.

S	4.6	5.8	6.5	7.8	9.9	11.3	11.2	10.8	9.3	8.0	6.4	4.8	8.0
So	10.0	10.8	11.8	12.9	13.8	14.2	14.0	13.3	12.3	11.2	10.3	9.8	12.0
S/So	0.46	0.54	0.55	0.61	0.72	0.80	0.80	0.81	0.76	0.71	0.62	0.49	0.66
Somax	10.3	11.1	12.3	13.3	14.0	14.2	14.1	13.6	12.6	11.6	10.5	9.8	

Angstrom coefficients: Derived from Gm and Sm at Beirut

Angstrom a	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Angstrom b	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49

MALTA		Map site No.311			Computer file MALTAHOR.311								QRENDI	
Latitude	35 50' N				Longitude	14 26' E			Height a.s.l.				135 metres	
Horizontal planes: - monthly means.					Data used & period: G & S M'thly means (1966-1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	2.75	3.57	4.97	5.84	7.37	7.86	7.93	7.04	5.52	4.06	3.07	2.29	5.20	
Gmax	++++	3.70	4.93	6.50	7.73	8.09	8.44	8.19	8.15	6.95	5.55	4.31	6.33	
Gmin	++++	0.83	1.03	1.38	1.69	2.56	3.50	5.21	4.01	2.40	1.26	1.08	2.15	
Go		4.97	6.37	8.22	9.95	11.12	11.58	11.33	10.39	8.87	7.02	5.37	4.56	8.32

Ratios to extraterrestrial radiation

G/Go	0.55	0.56	0.60	0.59	0.66	0.68	0.70	0.68	0.62	0.58	0.57	0.50	0.61
Ktmax	++++	0.68	0.70	0.72	0.73	0.71	0.73	0.71	0.75	0.73	0.72	0.73	0.72
Ktmin	++++	0.17	0.16	0.17	0.17	0.23	0.30	0.46	0.39	0.27	0.18	0.20	0.13

Daily diffuse radiation: kWh/m².

D mean est. ++++	1.03	1.48	1.79	2.18	2.44	2.26	2.13	1.82	1.72	1.42	1.08	0.91	1.69
D/G mean ++++	0.37	0.41	0.36	0.37	0.33	0.29	0.27	0.26	0.31	0.35	0.35	0.40	0.33

Daily sunshine duration: hours.

S	5.6	6.1	7.5	8.2	10.3	11.3	12.4	11.6	9.1	7.3	6.5	5.1	8.4
So	9.9	10.7	11.8	12.9	13.9	14.4	14.2	13.4	12.3	11.2	10.1	9.6	12.0
S/So	0.57	0.57	0.64	0.63	0.74	0.79	0.87	0.87	0.74	0.65	0.64	0.53	0.69
Somax	10.1	11.1	12.3	13.4	14.2	14.4	14.3	13.7	12.6	11.5	10.4	9.7	

Angstrom coefficients: Angstrom assessment method not identified

Angstrom a	0.24	0.24	0.26	0.27	0.26	0.28	0.28	0.27	0.27	0.25	0.24	0.24	0.26
Angstrom b	0.52	0.52	0.53	0.52	0.51	0.48	0.47	0.48	0.48	0.50	0.50	0.50	0.50

NETHERLANDS Map site No.72 Computer file NETHEHOR.072 GRONINGEN/EELDE
 Latitude 53 8' N Longitude 6 35' E Height a.s.l. 5 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.57 1.27 2.35 3.72 4.71 5.42 4.94 4.47 2.97 1.65 0.76 0.44 2.78
 Gmax 1.30 2.70 4.58 6.63 7.76 8.29 7.83 6.81 4.96 3.31 1.76 1.00 4.75
 Gmin 0.14 0.31 0.62 0.80 1.41 1.58 1.47 1.59 0.91 0.40 0.20 0.10 0.80
 Go 2.06 3.60 5.94 8.53 10.58 11.52 11.03 9.29 6.87 4.37 2.47 1.65 6.51

Ratios to extraterrestrial radiation
 G/Go 0.28 0.35 0.39 0.44 0.44 0.47 0.45 0.48 0.43 0.38 0.31 0.27 0.39
 Ktmax 0.52 0.62 0.65 0.70 0.69 0.72 0.68 0.67 0.63 0.63 0.58 0.56 0.64
 Ktmin 0.07 0.09 0.10 0.09 0.13 0.14 0.13 0.17 0.13 0.09 0.08 0.06 0.12

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.42 0.81 1.41 2.10 2.72 2.94 2.82 2.49 1.71 1.02 0.51 0.33 1.62
 D/G mean +++ 0.74 0.64 0.60 0.57 0.58 0.54 0.57 0.56 0.58 0.62 0.67 0.75 0.58

Daily sunshine duration: hours.
 S 1.1 2.1 3.5 5.0 5.8 7.1 6.3 6.6 4.4 2.9 1.7 1.0 4.0
 So 8.0 9.6 11.7 13.8 15.6 16.6 16.1 14.5 12.5 10.4 8.5 7.4 12.1
 S/So 0.14 0.22 0.30 0.36 0.37 0.43 0.39 0.46 0.35 0.28 0.20 0.14 0.30
 Somax 8.5 10.3 12.6 14.6 16.2 16.7 16.5 15.2 13.2 11.2 9.1 7.5

Angstrom coefficients: Radiation observing site
 Angstrom a 0.20 0.22 0.22 0.22 0.23 0.24 0.23 0.26 0.25 0.22 0.19 0.19 0.22
 Angstrom b 0.61 0.60 0.58 0.59 0.57 0.54 0.56 0.49 0.53 0.55 0.60 0.62 0.57

NETHERLANDS Map site No.73 Computer file NETHEHOR.073 DEN HELDER/DE KOOG
 Latitude 52 55' N Longitude 4 47' E Height a.s.l. 2 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.60 1.32 2.64 3.99 5.30 5.89 5.20 4.54 3.10 1.73 0.79 0.50 2.97
 Gmax 1.39 2.83 4.82 6.72 7.96 8.32 7.90 6.65 5.08 3.15 1.72 1.06 4.81
 Gmin 0.11 0.30 0.69 0.84 1.45 1.96 1.45 1.29 0.76 0.48 0.16 0.11 0.80
 Go 2.10 3.63 5.97 8.55 10.59 11.53 11.04 9.31 6.90 4.41 2.51 1.68 6.53

Ratios to extraterrestrial radiation
 G/Go 0.29 0.36 0.44 0.47 0.50 0.51 0.47 0.49 0.45 0.39 0.32 0.29 0.41
 Ktmax 0.54 0.64 0.68 0.70 0.71 0.72 0.69 0.66 0.65 0.59 0.56 0.59 0.65
 Ktmin 0.05 0.08 0.12 0.10 0.14 0.17 0.13 0.14 0.11 0.11 0.07 0.06 0.12

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.44 0.81 1.44 2.09 2.78 2.98 2.90 2.46 1.66 1.02 0.52 0.35 1.63
 D/G mean +++ 0.73 0.62 0.54 0.52 0.53 0.51 0.56 0.54 0.54 0.59 0.66 0.69 0.55

Daily sunshine duration: hours.
 S 1.1 2.4 4.1 5.5 6.9 7.8 6.7 7.0 4.9 3.1 1.7 1.2 4.4
 So 8.0 9.7 11.7 13.8 15.6 16.6 16.1 14.5 12.5 10.4 8.5 7.4 12.1
 S/So 0.14 0.25 0.35 0.40 0.44 0.47 0.42 0.48 0.39 0.30 0.20 0.16 0.33
 Somax 8.5 10.3 12.6 14.6 16.2 16.6 16.5 15.2 13.2 11.2 9.1 7.6

Angstrom coefficients: Radiation observing site
 Angstrom a 0.20 0.21 0.24 0.23 0.25 0.26 0.24 0.25 0.23 0.23 0.19 0.19 0.23
 Angstrom b 0.63 0.61 0.59 0.60 0.56 0.53 0.55 0.50 0.57 0.56 0.62 0.66 0.58

NETHERLANDS Map site No.74 Computer file NETHEHOR.074 DE BILT
 Latitude 52 6' N Longitude 5 11' E Height a.s.l. 40 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.60 1.27 2.25 3.57 4.67 5.24 4.65 4.29 2.94 1.72 0.79 0.51 2.71
 Gmax 1.39 2.68 4.39 6.39 7.53 7.94 7.45 6.51 4.75 3.32 1.74 1.16 4.61
 Gmin 0.13 0.32 0.58 0.79 1.31 1.64 1.42 1.42 0.86 0.40 0.17 0.11 0.76
 Go 2.23 3.77 6.10 8.64 10.63 11.54 11.07 9.37 7.00 4.54 2.64 1.81 6.63

Ratios to extraterrestrial radiation
 G/Go 0.27 0.33 0.37 0.41 0.44 0.45 0.42 0.46 0.42 0.38 0.30 0.28 0.38
 Ktmax 0.52 0.59 0.61 0.67 0.67 0.68 0.65 0.64 0.60 0.61 0.54 0.60 0.62
 Ktmin 0.06 0.08 0.09 0.09 0.12 0.14 0.13 0.15 0.12 0.09 0.07 0.06 0.12

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.43 0.82 1.40 2.08 2.69 2.88 2.76 2.41 1.69 1.01 0.53 0.35 1.60
 D/G mean +++ 0.72 0.65 0.62 0.58 0.58 0.55 0.59 0.56 0.58 0.59 0.68 0.69 0.59

Daily sunshine duration: hours.
 S 1.3 2.3 3.5 5.1 6.2 7.0 6.2 6.6 4.7 3.3 1.8 1.4 4.1
 So 8.1 9.7 11.7 13.7 15.5 16.4 16.0 14.4 12.5 10.5 8.6 7.6 12.1
 S/So 0.16 0.23 0.30 0.37 0.40 0.43 0.39 0.46 0.38 0.31 0.21 0.18 0.32
 Somax 8.6 10.4 12.5 14.5 16.0 16.5 16.3 15.1 13.2 11.2 9.2 7.7

Angstrom coefficients: Radiation observing site
 Angstrom a 0.17 0.20 0.20 0.20 0.22 0.23 0.21 0.23 0.22 0.21 0.18 0.17 0.20
 Angstrom b 0.60 0.57 0.56 0.57 0.55 0.53 0.54 0.50 0.53 0.55 0.57 0.60 0.55

NETHERLANDS			Map site No.75		Computer file NETHEHOR.075								VLISSINGEN	
Latitude 51 27' N					Longitude 3 36' E		Height a.s.l. 22 metres							
Horizontal planes: - monthly means.					Data used & period: G & S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	0.68	1.36	2.49	3.79	4.92	5.48	5.00	4.34	3.12	1.83	0.88	0.54	2.88	
Gmax	1.54	2.84	4.71	6.73	7.70	8.01	7.71	6.55	5.03	3.27	1.91	1.17	4.77	
Gmin	0.16	0.31	0.63	1.12	1.66	1.50	1.37	1.21	0.89	0.43	0.21	0.13	0.80	
Go	2.34	3.88	6.19	8.71	10.66	11.55	11.09	9.43	7.09	4.65	2.75	1.92	6.70	

Ratios to extraterrestrial radiation

G/Go	0.29	0.35	0.40	0.44	0.46	0.47	0.45	0.46	0.44	0.39	0.32	0.28	0.40
Ktmax	0.55	0.61	0.64	0.70	0.68	0.69	0.67	0.64	0.63	0.59	0.58	0.57	0.63
Ktmin	0.07	0.08	0.10	0.13	0.16	0.13	0.12	0.13	0.12	0.09	0.08	0.07	0.12

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.47	0.87	1.52	2.20	2.82	2.93	2.87	2.50	1.74	1.08	0.58	0.38	1.67
D/G mean ++++	0.69	0.64	0.61	0.58	0.57	0.54	0.57	0.58	0.56	0.59	0.66	0.71	0.58

Daily sunshine duration: hours.

S	1.3	2.3	3.6	5.1	6.2	7.3	6.5	6.4	5.1	3.4	1.7	1.3	4.2
So	8.2	9.8	11.7	13.7	15.4	16.3	15.9	14.4	12.5	10.5	8.7	7.7	12.1
S/So	0.16	0.23	0.31	0.37	0.40	0.45	0.41	0.44	0.41	0.32	0.20	0.17	0.32
Somax	8.7	10.4	12.5	14.4	15.9	16.3	16.2	15.0	13.2	11.2	9.3	7.8	

Angstrom coefficients: Radiation observing site

Angstrom a	0.20	0.21	0.23	0.23	0.25	0.23	0.23	0.24	0.22	0.22	0.20	0.18	0.22
Angstrom b	0.63	0.58	0.55	0.55	0.53	0.54	0.54	0.49	0.54	0.54	0.60	0.60	0.56

NETHERLANDS			Map site No.76		Computer file NETHEHOR.076							MAASTRICHT/BEEK		
Latitude 50 55' N					Longitude 5 46' E		Height a.s.l. 116 metres							
Horizontal planes: - monthly means.					Data used & period: G & S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	0.69	1.34	2.29	3.61	4.75	5.00	4.82	4.26	3.06	1.76	0.88	0.54	2.76	
Gmax	1.68	2.92	4.66	6.47	7.32	7.74	7.64	6.48	5.01	3.30	1.93	1.27	4.71	
Gmin	0.13	0.22	0.52	0.71	1.23	1.46	1.51	1.37	0.74	0.38	0.17	0.12	0.72	
Go	2.43	3.97	6.27	8.76	10.69	11.56	11.10	9.47	7.16	4.73	2.84	2.00	6.76	

Ratios to extraterrestrial radiation

G/Go	0.28	0.33	0.37	0.41	0.44	0.43	0.43	0.45	0.43	0.37	0.31	0.27	0.38
Ktmax	0.58	0.62	0.63	0.67	0.65	0.67	0.67	0.63	0.62	0.59	0.57	0.60	0.63
Ktmin	0.05	0.05	0.08	0.08	0.11	0.13	0.14	0.14	0.10	0.08	0.06	0.06	0.11

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.49	0.86	1.42	2.10	2.70	2.85	2.85	2.45	1.76	1.09	0.59	0.39	1.64
D/G mean ++++	0.71	0.64	0.62	0.58	0.57	0.57	0.59	0.58	0.57	0.62	0.67	0.73	0.59

Daily sunshine duration: hours.

S	1.3	2.2	3.1	4.8	6.0	6.1	6.1	6.1	4.8	3.2	1.9	1.2	3.9
So	8.3	9.8	11.7	13.6	15.3	16.2	15.8	14.3	12.5	10.5	8.8	7.8	12.1
S/So	0.16	0.22	0.26	0.35	0.39	0.38	0.39	0.43	0.38	0.30	0.22	0.15	0.30
Somax	8.8	10.4	12.5	14.4	15.9	16.3	16.1	14.9	13.1	11.2	9.3	7.9	

Angstrom coefficients: Radiation observing site

Angstrom a	0.19	0.20	0.21	0.21	0.22	0.22	0.23	0.24	0.22	0.21	0.19	0.18	0.21
Angstrom b	0.59	0.59	0.58	0.58	0.57	0.56	0.53	0.50	0.53	0.52	0.56	0.57	0.56

NORWAY			Map site No.1		Computer file NORWAHOR.001								BERGEN	
Latitude 60 24' N					Longitude 5 19' E		Height a.s.l. 45 metres							
Horizontal planes: - monthly means.					Data used & period: G & S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	0.20	0.72	1.71	3.27	4.13	4.85	4.15	3.49	1.86	0.94	0.30	0.12	2.15	
Gmax	0.47	1.77	3.68	5.91	7.34	7.99	7.66	6.17	4.12	2.26	0.79	0.25	4.05	
Gmin	0.04	0.10	0.30	0.64	0.96	1.02	0.88	0.95	0.31	0.12	0.03	0.02	0.45	
Go	0.94	2.37	4.80	7.72	10.20	11.41	10.79	8.65	5.84	3.16	1.31	0.60	5.67	

Ratios to extraterrestrial radiation

G/Go	0.21	0.30	0.36	0.42	0.41	0.43	0.38	0.40	0.32	0.30	0.23	0.20	0.33
Ktmax	0.35	0.57	0.61	0.66	0.67	0.69	0.68	0.64	0.60	0.55	0.44	0.36	0.57
Ktmin	0.04	0.04	0.06	0.08	0.09	0.09	0.08	0.11	0.05	0.04	0.03	0.03	0.08

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.18	0.54	1.06	1.86	2.39	2.67	2.42	2.08	1.16	0.65	0.25	0.11	1.29
D/G mean ++++	0.89	0.75	0.62	0.57	0.58	0.55	0.58	0.60	0.62	0.69	0.84	0.93	0.60

Daily sunshine duration: hours.

S	0.5	1.9	3.2	5.5	5.9	6.8	5.2	5.5	3.0	2.1	0.9	0.3	3.4
So	6.4	8.8	11.6	14.4	17.0	18.5	17.7	15.4	12.7	9.9	7.2	5.6	12.1
S/So	0.08	0.21	0.28	0.38	0.35	0.37	0.29	0.36	0.24	0.21	0.13	0.05	0.25
Somax	7.3	9.8	12.8	15.5	17.9	18.6	18.3	16.4	13.7	10.9	8.1	5.8	

Angstrom coefficients: Radiation observing site

Angstrom a	0.17	0.18	0.19	0.20	0.20	0.19	0.20	0.20	0.17	0.17	0.16	0.17	0.18
Angstrom b	0.57	0.53	0.61	0.59	0.61	0.62	0.64	0.57	0.64	0.59	0.55	0.59	0.59

POLAND				Map site No.161				Computer file POLANHOR.161								KOLOBRZEG	
Latitude 54 11' N				Longitude 15 35' E				Height a.s.l.								16 metres	
Horizontal planes: - monthly means.				Data used & period: G & S (1966 -1975)													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean				
Daily global radiation: kWh/m ² .																	
G mean	0.50	1.07	2.44	3.98	5.23	6.11	5.73	5.02	3.12	1.54	0.65	0.36	2.99				
Gmax	1.25	2.40	4.66	6.90	8.34	8.85	8.45	7.24	5.26	3.42	1.56	0.82	4.94				
Gmin	0.12	0.21	0.50	1.06	1.30	1.81	1.91	1.45	0.59	0.28	0.13	0.08	0.79				
Go	1.89	3.42	5.78	8.42	10.53	11.50	11.00	9.20	6.73	4.20	2.30	1.48	6.39				

Ratios to extraterrestrial radiation

G/Go	0.26	0.31	0.42	0.47	0.50	0.53	0.52	0.55	0.46	0.37	0.28	0.24	0.41	
Ktmax	0.53	0.57	0.67	0.73	0.75	0.76	0.74	0.72	0.68	0.67	0.55	0.51	0.66	
Ktmin	0.06	0.06	0.09	0.13	0.12	0.16	0.17	0.16	0.09	0.07	0.06	0.06	0.12	

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.38	0.71	1.23	2.08	2.68	2.81	2.87	3.40	1.54	0.91	0.47	0.28	1.62	
D/G mean ++++	0.77	0.66	0.50	0.52	0.51	0.46	0.50	0.68	0.49	0.59	0.72	0.79	0.54	

Daily sunshine duration: hours.

S	1.1	2.0	3.6	5.2	6.8	8.5	7.9	7.9	5.0	2.8	1.5	1.0	4.5	
So	7.8	9.5	11.7	13.9	15.8	16.8	16.3	14.6	12.5	10.3	8.3	7.2	12.1	
S/So	0.14	0.21	0.31	0.37	0.43	0.51	0.48	0.54	0.40	0.27	0.18	0.14	0.33	
Somax	8.4	10.3	12.6	14.7	16.4	16.9	16.7	15.3	13.3	11.1	9.0	7.4		

Angstrom coefficients: Radiation observing site

Angstrom a	0.18	0.18	0.21	0.24	0.25	0.24	0.25	0.25	0.21	0.19	0.18	0.17	0.21	
Angstrom b	0.57	0.62	0.70	0.61	0.58	0.57	0.55	0.55	0.63	0.63	0.57	0.54	0.59	

POLAND	Map site No.162				Computer file POLANHOR.162								SUWALKI	
Latitude	54 8' N				Longitude 22 57' E				Height a.s.l.				184 metres	
Horizontal planes: - monthly means.					Data used & period: G & S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation:	kWh/m ² .													
G mean	0.61	1.20	2.55	3.48	5.05	5.79	5.59	4.83	3.13	1.48	0.62	0.41	2.90	
Gmax	1.36	2.78	4.44	6.36	8.17	8.59	8.41	7.10	5.04	3.25	1.66	0.98	4.86	
Gmin	0.13	0.28	0.71	0.95	1.36	1.46	1.73	1.69	0.86	0.29	0.12	0.11	0.81	
Go	1.90	3.43	5.79	8.43	10.53	11.51	11.00	9.21	6.73	4.21	2.30	1.49	6.39	

Ratios to extraterrestrial radiation

G/Go	0.32	0.35	0.44	0.41	0.48	0.50	0.51	0.52	0.47	0.35	0.27	0.27	0.41	
Ktmax	0.58	0.66	0.64	0.67	0.73	0.74	0.74	0.71	0.65	0.63	0.58	0.61	0.67	
Ktmin	0.07	0.08	0.12	0.11	0.13	0.13	0.16	0.18	0.13	0.07	0.05	0.07	0.13	

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.43	0.80	1.41	2.00	2.66	2.72	2.73	2.36	1.67	0.92	0.46	0.30	1.55	
D/G mean ++++	0.71	0.66	0.55	0.57	0.53	0.47	0.49	0.49	0.53	0.62	0.74	0.74	0.53	

Daily sunshine duration: hours.

S	1.4	1.9	3.9	4.8	7.1	8.4	8.1	7.9	5.1	2.6	1.1	1.1	4.5	
So	7.8	9.6	11.7	13.9	15.8	16.8	16.3	14.6	12.5	10.3	8.3	7.2	12.1	
S/So	0.18	0.20	0.33	0.35	0.45	0.50	0.50	0.54	0.41	0.25	0.13	0.15	0.33	
Somax	8.4	10.3	12.6	14.7	16.4	16.9	16.7	15.3	13.3	11.1	9.0	7.4		

Angstrom coefficients: Radiation observing site

Angstrom a	0.23	0.23	0.25	0.20	0.21	0.21	0.23	0.24	0.23	0.20	0.18	0.19	0.22	
Angstrom b	0.54	0.58	0.58	0.61	0.59	0.59	0.57	0.52	0.56	0.59	0.65	0.59	0.58	

POLAND	Map site No.163			Computer file POLANHOR.163								WARSZAWA			
Latitude	52 16' N			Longitude				20 59' E				Height a.s.l.		130 metres	
Horizontal planes: - monthly means.				Data used & period: G & S (1966 -1975)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m ² .															
G mean	0.53	0.97	2.31	3.32	4.56	5.36	5.05	4.57	2.89	1.41	0.59	0.37	2.67		
Gmax	1.26	2.30	4.45	6.00	7.57	8.01	7.94	6.82	4.78	3.18	1.56	0.96	4.58		
Gmin	0.08	0.17	0.51	0.74	0.90	1.22	0.95	1.38	0.56	0.20	0.07	0.05	0.57		
Go	2.21	3.74	6.07	8.62	10.62	11.54	11.06	9.36	6.98	4.51	2.61	1.78	6.61		

Ratios to extraterrestrial radiation

G/Go	0.24	0.26	0.38	0.38	0.43	0.46	0.46	0.49	0.41	0.31	0.23	0.21	0.36	
Ktmax	0.47	0.51	0.62	0.63	0.67	0.69	0.69	0.67	0.60	0.59	0.49	0.50	0.60	
Ktmin	0.04	0.05	0.08	0.09	0.08	0.11	0.09	0.15	0.08	0.04	0.03	0.03	0.09	

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.40	0.70	1.35	1.96	2.58	2.75	2.63	2.24	1.59	0.87	0.43	0.29	1.49	
D/G mean ++++	0.75	0.73	0.58	0.59	0.57	0.51	0.52	0.49	0.55	0.61	0.73	0.77	0.56	

Daily sunshine duration: hours.

S	1.5	1.9	3.8	4.9	6.7	8.1	7.9	8.0	5.1	3.0	1.6	1.1	4.5	
So	8.1	9.7	11.7	13.7	15.5	16.5	16.0	14.4	12.5	10.5	8.6	7.6	12.1	
S/So	0.19	0.19	0.32	0.36	0.43	0.49	0.49	0.56	0.41	0.29	0.19	0.14	0.34	
Somax	8.6	10.4	12.5	14.5	16.1	16.5	16.4	15.1	13.2	11.2	9.2	7.7		

Angstrom coefficients: Radiation observing site

Angstrom a	0.15	0.15	0.19	0.18	0.19	0.20	0.18	0.18	0.18	0.14	0.12	0.12	0.17	
Angstrom b	0.51	0.54	0.59	0.58	0.56	0.54	0.57	0.55	0.57	0.60	0.57	0.56	0.56	

POLAND	Map site No.164			Computer file POLANHOR.164								ZAKOPANE	
Latitude 49 18' N				Longitude 19 57' E				Height a.s.l.				857 metres	
Horizontal planes: - monthly means.				Data used & period: G & S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean	0.92	1.58	2.95	3.66	4.28	4.44	4.34	3.99	3.02	2.00	1.10	0.72	2.76
Gmax	1.92	3.09	5.10	6.90	7.90	8.31	8.13	7.16	5.32	3.76	2.37	1.43	5.13
Gmin	0.19	0.27	0.85	0.52	0.63	0.72	0.52	0.58	0.51	0.30	0.19	0.12	0.45
Go	2.70	4.24	6.51	8.92	10.76	11.58	11.15	9.59	7.37	4.99	3.11	2.27	6.95

Ratios to extraterrestrial radiation

G/Go	0.34	0.37	0.45	0.41	0.40	0.38	0.39	0.42	0.41	0.40	0.35	0.32	0.39			
Ktmax	0.61	0.62	0.67	0.70	0.70	0.71	0.71	0.69	0.64	0.64	0.65	0.60	0.66			
Ktmin	0.07	0.06	0.13	0.06	0.06	0.06	0.05	0.06	0.07	0.06	0.06	0.05	0.07			

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.59	0.93	1.57	2.03	2.37	2.52	2.39	2.12	1.54	1.03	0.66	0.48	1.53			
D/G mean ++++	0.64	0.59	0.53	0.56	0.55	0.57	0.55	0.53	0.51	0.52	0.60	0.66	0.55			

Daily sunshine duration: hours.

S	2.1	2.7	4.0	4.7	5.5	5.4	5.7	5.6	4.7	3.8	2.4	1.8	4.0			
So	8.5	10.0	11.7	13.6	15.1	16.0	15.6	14.2	12.4	10.6	9.0	8.1	12.1			
S/So	0.25	0.27	0.34	0.35	0.36	0.34	0.37	0.39	0.38	0.36	0.27	0.22	0.32			
Somax	9.0	10.5	12.5	14.2	15.6	16.0	15.9	14.8	13.1	11.3	9.5	8.2				

Angstrom coefficients: Radiation observing site

Angstrom a	0.21	0.21	0.25	0.20	0.15	0.16	0.14	0.15	0.16	0.17	0.20	0.20	0.18			
Angstrom b	0.52	0.60	0.59	0.62	0.67	0.65	0.68	0.66	0.67	0.64	0.58	0.52	0.62			

PORTUGAL	Map site No.253				Computer file PORTUHOR.253								BRAGANCA				
Latitude	41 49' N				Longitude				6 46' W				Height a.s.l.			725 metres	
Horizontal planes: - monthly means.				Data used & period: G (1966 -1975)													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean				
Daily global radiation: kWh/m ² .																	
G mean	1.55	2.65	4.16	5.44	6.46	7.33	7.81	6.79	4.88	3.32	2.14	1.60	4.52				
Gmax	2.90	4.53	6.40	7.99	9.02	9.28	9.11	8.18	6.68	4.84	3.45	2.63	6.26				
Gmin	0.34	0.71	1.19	1.83	1.93	2.28	4.56	3.72	1.97	1.06	0.46	0.30	1.71				
Go	3.97	5.48	7.53	9.57	11.02	11.63	11.29	10.08	8.25	6.15	4.37	3.53	7.75				

Ratios to extraterrestrial radiation

G/Go	0.39	0.48	0.55	0.57	0.59	0.63	0.69	0.67	0.59	0.54	0.49	0.45	0.55			
Ktmax	0.65	0.73	0.75	0.78	0.79	0.80	0.79	0.77	0.74	0.70	0.70	0.72	0.75			
Ktmin	0.08	0.13	0.16	0.19	0.18	0.20	0.40	0.37	0.24	0.17	0.10	0.09	0.22			

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.88	1.26	1.66	2.14	2.46	2.20	1.94	1.75	1.67	1.30	0.94	0.74	1.58			
D/G mean ++++	0.57	0.48	0.40	0.39	0.38	0.30	0.25	0.26	0.34	0.39	0.44	0.46	0.35			

Daily sunshine duration: hours.

S	+++	2.7	4.8	6.6	7.7	9.2	11.0	12.8	11.7	8.3	6.3	4.8	3.7	7.5		
So		9.4	10.4	11.8	13.2	14.4	15.0	14.7	13.7	12.3	10.9	9.7	9.0	12.0		
S/So	+++	0.28	0.46	0.56	0.59	0.64	0.74	0.87	0.85	0.68	0.58	0.49	0.41	0.60		
Somax		9.7	10.9	12.4	13.7	14.7	15.0	14.9	14.1	12.8	11.4	10.1	9.1			

Angstrom coefficients: Site referenced for estimating sunshine: Porto

Angstrom a	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24			
Angstrom b	0.53	0.53	0.56	0.56	0.54	0.53	0.52	0.51	0.52	0.52	0.51	0.52	0.52			

PORTUGAL	Map site No.254				Computer file PORTUHOR.254								PORTO	
Latitude	41 8' N				Longitude 8 36' W				Height a.s.l.				93 metres	
Horizontal planes: - monthly means.					Data used & period: G & m'thly mean S (1966-1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	1.70	2.68	4.22	5.63	6.46	7.01	7.33	6.45	4.73	3.41	2.29	1.99	4.50	
Gmax	3.10	4.55	6.53	7.84	8.83	9.32	8.94	7.96	6.67	5.21	3.61	2.78	6.29	6.29
Gmin	0.40	0.73	1.31	1.57	1.65	2.07	2.99	2.88	1.49	1.02	0.65	0.51	1.44	
Go	4.09	5.58	7.62	9.62	11.04	11.63	11.30	10.12	8.32	6.25	4.49	3.65	7.82	7.82

Ratios to extraterrestrial radiation

G/Go	0.41	0.48	0.55	0.59	0.59	0.60	0.65	0.64	0.57	0.55	0.51	0.55	0.56			
Ktmax	0.68	0.72	0.76	0.76	0.77	0.80	0.77	0.74	0.74	0.74	0.72	0.74	0.75			
Ktmin	0.10	0.13	0.17	0.16	0.15	0.18	0.26	0.28	0.18	0.16	0.14	0.14	0.18			

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.86	1.31	1.60	2.14	2.75	2.81	2.60	2.32	1.97	1.36	0.99	0.69	1.79			
D/G mean ++++	0.51	0.49	0.38	0.38	0.43	0.40	0.35	0.36	0.42	0.40	0.43	0.35	0.40			

Daily sunshine duration: hours.

S	3.6	4.8	7.1	8.1	8.6	9.2	10.5	9.7	7.3	6.4	5.1	5.2	7.2			
So	9.4	10.5	11.8	13.2	14.3	14.9	14.6	13.6	12.3	11.0	9.7	9.1	12.0			
S/So	0.38	0.46	0.60	0.61	0.60	0.62	0.72	0.71	0.59	0.58	0.53	0.57	0.60			
Somax	9.7	10.9	12.4	13.7	14.7	14.9	14.8	14.0	12.8	11.4	10.1	9.2				

Angstrom coefficients: Radiation observing site

Angstrom a	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24			
Angstrom b	0.53	0.53	0.56	0.56	0.54	0.53	0.52	0.51	0.52	0.52	0.51	0.52	0.52			

PORTUGAL Map site No.255 Computer file PORTUHOR.255 PENHAS DOURADAS
 Latitude 40 25' N Longitude 7 33' W Height a.s.l. 1383 metres
 Horizontal planes: - monthly means. Data used & period: G (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 1.87 2.66 4.01 5.23 6.04 6.91 7.61 6.73 4.66 3.18 2.24 2.07 4.44
 Gmax 3.32 4.60 6.52 7.73 8.77 9.09 9.05 8.01 6.51 5.04 3.67 3.08 6.29
 Gmin 0.36 0.53 1.02 1.23 2.05 2.38 3.83 3.21 2.13 1.02 0.48 0.46 1.57
 Go 4.21 5.70 7.71 9.67 11.05 11.62 11.31 10.16 8.40 6.36 4.61 3.77 7.89

Ratios to extraterrestrial radiation

G/Go 0.44 0.46 0.52 0.54 0.55 0.59 0.67 0.66 0.56 0.50 0.49 0.55 0.54
 Ktmax 0.71 0.72 0.76 0.75 0.77 0.78 0.78 0.75 0.71 0.70 0.71 0.79 0.75
 Ktmin 0.09 0.09 0.13 0.13 0.19 0.20 0.34 0.32 0.25 0.16 0.10 0.12 0.20

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.90 1.29 1.74 2.20 2.56 2.31 1.88 1.69 1.75 1.38 0.98 0.63 1.61
 D/G mean +++ 0.48 0.49 0.43 0.42 0.42 0.33 0.25 0.25 0.37 0.43 0.44 0.30 0.36

Daily sunshine duration: hours.

S +++ 3.7 4.5 5.9 7.0 8.1 9.9 12.2 11.3 7.5 5.5 4.7 5.5 7.2
 So 9.5 10.5 11.8 13.1 14.3 14.8 14.6 13.6 12.3 11.0 9.8 9.2 12.0
 S/So +++ 0.38 0.43 0.50 0.54 0.57 0.67 0.83 0.83 0.61 0.50 0.48 0.59 0.58
 Somax 9.8 10.9 12.3 13.6 14.6 14.8 14.8 14.0 12.8 11.5 10.1 9.2

Angstrom coefficients: Site referenced for estimating sunshine: Porto

Angstrom a 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24
 Angstrom b 0.53 0.53 0.56 0.56 0.54 0.53 0.52 0.51 0.52 0.52 0.51 0.52 0.52

PORTUGAL Map site No.256 Computer file PORTUHOR.256 COIMBRA
 Latitude 40 12' N Longitude 8 25' W Height a.s.l. 141 metres
 Horizontal planes: - monthly means. Data used & period: G & m'thly mean S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 1.98 2.90 4.38 5.45 6.07 6.42 6.81 6.23 4.70 3.55 2.46 2.17 4.44
 Gmax 3.42 4.82 6.72 7.89 8.69 8.84 8.54 7.83 6.60 5.42 3.86 3.01 6.31
 Gmin 0.41 0.75 1.16 1.49 1.81 1.97 2.65 2.57 1.73 0.88 0.67 0.61 1.40
 Go 4.25 5.73 7.74 9.69 11.06 11.62 11.31 10.17 8.42 6.39 4.64 3.81 7.91

Ratios to extraterrestrial radiation

G/Go 0.47 0.50 0.57 0.56 0.55 0.55 0.60 0.61 0.56 0.56 0.53 0.57 0.55
 Ktmax 0.72 0.75 0.78 0.76 0.76 0.76 0.74 0.73 0.72 0.75 0.74 0.76 0.75
 Ktmin 0.10 0.13 0.15 0.15 0.16 0.17 0.23 0.25 0.21 0.14 0.14 0.16 0.18

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.95 1.38 1.86 2.42 2.70 2.74 2.60 2.20 1.95 1.48 1.03 0.72 1.84
 D/G mean +++ 0.48 0.48 0.43 0.44 0.45 0.43 0.38 0.35 0.42 0.42 0.42 0.33 0.41

Daily sunshine duration: hours.

S 4.1 5.0 6.4 7.2 8.2 8.5 9.9 9.8 7.3 6.3 5.3 5.6 7.0
 So 9.5 10.5 11.8 13.1 14.2 14.8 14.5 13.6 12.3 11.0 9.8 9.2 12.0
 S/So 0.43 0.48 0.54 0.55 0.58 0.57 0.68 0.72 0.59 0.57 0.54 0.61 0.58
 Somax 9.8 10.9 12.3 13.6 14.6 14.8 14.7 14.0 12.8 11.5 10.2 9.3

Angstrom coefficients: Radiation observing site

Angstrom a 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24
 Angstrom b 0.52 0.53 0.56 0.55 0.54 0.54 0.52 0.51 0.52 0.51 0.51 0.51 0.53

PORTUGAL Map site No.257 Computer file PORTUHOR.257 LISBOA
 Latitude 38 43' N Longitude 9 9' W Height a.s.l. 77 metres
 Horizontal planes: - monthly means. Data used & period: G & m'thly mean S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 1.99 2.96 4.28 5.50 6.67 7.18 7.54 6.96 5.22 3.70 2.51 2.15 4.73
 Gmax 3.35 4.63 6.38 7.52 8.65 8.87 8.64 8.05 6.67 5.29 3.76 2.97 6.24
 Gmin 0.45 0.72 1.22 1.57 2.18 2.96 4.24 4.24 2.30 1.31 0.62 0.66 1.88
 Go 4.51 5.97 7.92 9.80 11.09 11.61 11.32 10.24 8.57 6.60 4.89 4.07 8.06

Ratios to extraterrestrial radiation

G/Go 0.44 0.49 0.54 0.56 0.60 0.62 0.67 0.68 0.61 0.56 0.51 0.53 0.57
 Ktmax 0.67 0.70 0.72 0.72 0.76 0.76 0.75 0.75 0.72 0.72 0.69 0.71 0.73
 Ktmin 0.10 0.12 0.15 0.16 0.20 0.25 0.37 0.41 0.27 0.20 0.13 0.16 0.23

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.90 1.36 1.89 2.03 2.50 2.52 2.22 1.90 1.83 1.25 0.88 0.74 1.67
 D/G mean +++ 0.45 0.46 0.44 0.37 0.38 0.35 0.29 0.27 0.35 0.34 0.35 0.35 0.35

Daily sunshine duration: hours.

S 4.4 5.3 6.3 8.4 9.4 10.0 11.7 11.5 8.5 7.5 6.3 5.5 7.9
 So 9.6 10.6 11.8 13.1 14.1 14.7 14.4 13.5 12.3 11.1 9.9 9.3 12.0
 S/So 0.46 0.50 0.53 0.64 0.67 0.68 0.81 0.85 0.69 0.68 0.64 0.59 0.66
 Somax 9.9 11.0 12.3 13.5 14.4 14.7 14.6 13.9 12.7 11.5 10.3 9.4

Angstrom coefficients: Radiation observing site

Angstrom a 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24
 Angstrom b 0.53 0.53 0.55 0.55 0.54 0.53 0.52 0.51 0.51 0.51 0.51 0.51 0.52

PORTUGAL		Map site No.258				Computer file PORTUHOR.258				EVORA			
Latitude	38 34' N	Longitude				7 54' W				Height a.s.l. 309 metres			
Horizontal planes: - monthly means.		Data used & period:				G (1966 -1975)							
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean	1.88	2.78	4.15	5.31	6.45	6.83	7.38	6.50	4.84	3.47	2.42	2.08	4.52
Gmax	3.11	4.55	6.19	7.36	8.32	8.47	8.45	7.62	6.24	4.96	3.56	2.96	5.99
Gmin	0.46	0.73	1.21	1.82	2.56	2.92	4.44	4.06	2.02	1.34	0.75	0.68	1.93
Go	4.53	5.99	7.94	9.81	11.09	11.61	11.32	10.25	8.59	6.63	4.92	4.09	8.07

Ratios to extraterrestrial radiation

G/Go	0.41	0.46	0.52	0.54	0.58	0.59	0.65	0.63	0.56	0.52	0.49	0.51	0.54
Ktmax	0.62	0.68	0.70	0.70	0.73	0.73	0.73	0.71	0.67	0.67	0.65	0.70	0.70
Ktmin	0.10	0.12	0.15	0.19	0.23	0.25	0.39	0.40	0.24	0.20	0.15	0.17	0.24

Daily diffuse radiation: kWh/m².

D mean est. +++	1.01	1.41	1.87	2.31	2.56	2.51	2.21	2.03	1.87	1.45	1.08	0.79	1.76
D/G mean +++	0.54	0.51	0.45	0.43	0.40	0.37	0.30	0.31	0.39	0.42	0.45	0.38	0.39

Daily sunshine duration: hours.

S	+++	3.2	4.5	6.1	7.2	8.9	9.6	11.4	10.4	7.8	6.2	4.9	5.0	7.1
So		9.7	10.6	11.8	13.1	14.1	14.6	14.4	13.5	12.3	11.1	9.9	9.4	12.0
S/So	+++	0.33	0.42	0.51	0.55	0.63	0.66	0.79	0.77	0.63	0.55	0.49	0.53	0.57
Somax		9.9	11.0	12.3	13.5	14.4	14.7	14.6	13.9	12.7	11.5	10.3	9.4	

Angstrom coefficients:Site referenced for estimating sunshine: Lisboa

Angstrom a	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Angstrom b	0.53	0.53	0.55	0.55	0.54	0.53	0.52	0.51	0.51	0.51	0.51	0.51	0.52

PORTUGAL		Map site No.259			Computer file PORTUHOR.259							FARO	
Latitude	37 1' N	Longitude			7 55' W			Height a.s.l.				14 metres	
Horizontal planes: - monthly means.					Data used & period: G & m'thly mean S (1966-1975)								
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean	2.22	3.12	4.36	5.71	7.22	7.60	7.69	6.80	5.51	3.98	2.71	2.31	4.95
Gmax	3.38	4.56	6.08	7.28	8.62	8.74	8.54	7.71	6.56	5.30	3.72	3.05	6.14
Gmin	0.67	0.73	1.41	2.16	3.52	3.99	4.91	4.31	3.22	1.65	0.87	0.66	2.35
Go	4.79	6.23	8.12	9.91	11.12	11.60	11.32	10.32	8.74	6.85	5.17	4.36	8.22

Ratios to extraterrestrial radiation

G/Go	0.46	0.50	0.54	0.58	0.65	0.66	0.68	0.66	0.63	0.58	0.52	0.53	0.58
Ktmax	0.64	0.66	0.68	0.69	0.75	0.75	0.74	0.71	0.70	0.70	0.65	0.68	0.70
Ktmin	0.14	0.12	0.17	0.22	0.32	0.34	0.43	0.42	0.37	0.24	0.17	0.15	0.29

Daily diffuse radiation: kWh/m².

D mean est. +++	0.91	1.32	1.78	1.96	2.32	2.20	2.11	1.83	1.77	1.39	1.00	0.68	1.61
D/G mean +++	0.41	0.42	0.41	0.34	0.32	0.29	0.27	0.27	0.32	0.35	0.37	0.30	0.33

Daily sunshine duration: hours.

S		5.1	6.0	6.8	8.8	10.4	11.2	12.1	11.8	9.0	7.5	6.1	6.4	8.5
So		9.8	10.7	11.8	13.0	14.0	14.5	14.3	13.4	12.3	11.1	10.1	9.5	12.0
S/So		0.52	0.56	0.58	0.68	0.74	0.77	0.85	0.88	0.73	0.68	0.60	0.67	0.71
Somax		10.0	11.0	12.3	13.4	14.3	14.5	14.4	13.8	12.7	11.5	10.4	9.6	

Angstrom coefficients:Radiation observing site

Angstrom a	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Angstrom b	0.52	0.52	0.55	0.55	0.54	0.53	0.52	0.50	0.51	0.50	0.51	0.50	0.52

ROMANIA		Map site No.238			Computer file ROMANHOR.238								CLUJ	
Latitude 46 47' N		Longitude 23 34' E			Height a.s.l.								410 metres	
Horizontal planes: - monthly means.					Data used & period: G (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	1.31	2.05	3.54	4.54	5.72	6.10	6.14	5.42	4.06	2.59	1.41	0.86	3.65	
Gmax	2.32	3.61	5.54	7.17	8.59	9.04	8.59	7.42	5.77	4.14	2.61	1.66	5.55	
Gmin	0.40	0.61	1.27	1.17	1.71	2.02	2.03	1.80	1.19	0.75	0.34	0.23	1.13	
Go	3.13	4.66	6.87	9.15	10.86	11.61	11.21	9.77	7.68	5.39	3.54	2.69	7.22	

Ratios to extraterrestrial radiation

G/Go	0.42	0.44	0.52	0.50	0.53	0.53	0.55	0.55	0.53	0.48	0.40	0.32	0.48
Ktmax	0.64	0.67	0.70	0.72	0.76	0.78	0.74	0.71	0.68	0.66	0.64	0.59	0.69
Ktmin	0.13	0.13	0.19	0.13	0.16	0.17	0.18	0.18	0.15	0.14	0.10	0.09	0.16

Daily diffuse radiation: kWh/m².

D mean est. +++	0.70	1.12	1.61	2.24	2.63	2.78	2.68	2.27	1.84	1.19	0.79	0.58	1.71
D/G mean +++	0.54	0.54	0.45	0.49	0.46	0.46	0.44	0.42	0.45	0.46	0.56	0.67	0.47

Daily sunshine duration: hours.

S	+++	2.7	3.4	5.5	6.0	7.7	8.4	8.9	8.5	6.5	5.0	2.8	1.4	5.6
So		8.8	10.1	11.7	13.4	14.8	15.6	15.2	14.0	12.4	10.7	9.2	8.4	12.0
S/So	+++	0.31	0.34	0.47	0.45	0.52	0.54	0.59	0.61	0.53	0.47	0.31	0.17	0.44
Somax		9.2	10.7	12.4	14.0	15.3	15.6	15.5	14.5	13.0	11.3	9.7	8.5	

Angstrom coefficients:Site referenced for estimating sunshine: Beograd

Angstrom a	0.24	0.25	0.24	0.23	0.22	0.23	0.22	0.22	0.25	0.21	0.22	0.22	0.23
Angstrom b	0.58	0.56	0.59	0.59	0.59	0.55	0.56	0.55	0.53	0.58	0.58	0.60	0.57

SLOVAKIA				Map site No.229				Computer file SLOVACHOR.229				PIESTANY			
Latitude 48 37' N				Longitude 17 50' E				Height a.s.l. 162 metres							
Horizontal planes: - monthly means.				Data used & period:				S (1966 -1975)							
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m^2.															
G mean	++++	0.74	1.49	2.75	4.21	5.50	5.84	5.64	4.77	3.55	2.15	0.94	0.63	3.19	
Gmax	++++	1.72	3.19	4.90	7.04	8.32	8.80	8.34	7.38	5.65	3.78	2.38	1.53	5.26	
Gmin	++++	0.11	0.20	0.47	1.08	1.49	1.17	1.13	1.00	0.86	0.46	0.12	0.06	0.68	
Go		2.81	4.36	6.61	8.98	10.79	11.59	11.17	9.64	7.45	5.10	3.23	2.38	7.02	
Ratios to extraterrestrial radiation															
G/Go	++++	0.26	0.34	0.42	0.47	0.51	0.50	0.51	0.49	0.48	0.42	0.29	0.27	0.41	
Ktmax	++++	0.52	0.62	0.64	0.71	0.73	0.76	0.72	0.71	0.68	0.63	0.63	0.61	0.67	
Ktmin	++++	0.04	0.05	0.07	0.12	0.14	0.10	0.10	0.10	0.11	0.09	0.04	0.03	0.10	
Daily diffuse radiation: kWh/m^2.															
D mean est.	++++	0.50	0.90	1.56	2.16	2.63	2.68	2.69	2.32	1.75	1.18	0.60	0.44	1.63	
D/G mean	+++	0.68	0.60	0.47	0.51	0.48	0.46	0.48	0.49	0.49	0.55	0.64	0.70	0.51	
Daily sunshine duration: hours.															
S		1.5	2.8	4.4	6.1	7.5	7.6	7.9	7.2	5.9	4.5	2.0	1.5	4.9	
So		8.6	10.0	11.7	13.5	15.0	15.9	15.5	14.1	12.4	10.7	9.0	8.2	12.1	
S/So		0.18	0.28	0.37	0.45	0.50	0.48	0.51	0.51	0.48	0.42	0.22	0.19	0.38	
Somax		9.0	10.6	12.5	14.2	15.5	15.9	15.8	14.7	13.0	11.3	9.5	8.3		
Angstrom coefficients:Reference site: Bratislava															
Angstrom a		0.15	0.17	0.20	0.20	0.21	0.20	0.20	0.20	0.20	0.20	0.15	0.16	0.19	
Angstrom b		0.65	0.62	0.58	0.60	0.60	0.63	0.60	0.58	0.58	0.53	0.63	0.57	0.60	

SLOVAKIA	Map site No.230	Computer file SLOVAHOR.230	JASOVSKÉ BOHUNICE
Latitude 48 29' N		Longitude 17 40' E	Height a.s.l. 170 metres
Horizontal planes: - monthly means.		Data used & period: S (1966 -1975)	
Month	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean		
Daily global radiation: kWh/m ² .			
G mean	++++ 0.73 1.47 2.75 4.31 5.56 5.89 5.69 4.80 3.57 2.15 0.95 0.65 3.22		
Gmax	++++ 1.73 3.20 4.91 7.04 8.32 8.80 8.34 7.38 5.66 3.79 2.40 1.55 5.26		
Gmin	++++ 0.11 0.20 0.47 1.08 1.49 1.17 1.13 1.00 0.86 0.46 0.12 0.06 0.68		
Go	2.84 4.38 6.63 9.00 10.79 11.59 11.17 9.65 7.47 5.12 3.25 2.40 7.04		

Ratios to extraterrestrial radiation

G/Go	++++ 0.26 0.34 0.41 0.48 0.51 0.51 0.51 0.50 0.48 0.42 0.29 0.27 0.42
Ktmax	++++ 0.52 0.62 0.64 0.71 0.73 0.76 0.72 0.71 0.68 0.63 0.63 0.61 0.67
Ktmin	++++ 0.04 0.05 0.07 0.12 0.14 0.10 0.10 0.10 0.11 0.09 0.04 0.03 0.10

Daily diffuse radiation: kWh/m².

D mean est.	++++ 0.50 0.90 1.57 2.16 2.63 2.67 2.68 2.34 1.74 1.19 0.60 0.45 1.63
D/G mean	++++ 0.69 0.61 0.57 0.50 0.47 0.45 0.47 0.49 0.49 0.56 0.63 0.69 0.51

Daily sunshine duration: hours.

S	1.4 2.7 4.3 6.3 7.6 7.7 8.0 7.2 6.0 4.4 2.1 1.6 5.0
So	8.6 10.0 11.7 13.5 15.0 15.8 15.5 14.1 12.4 10.7 9.1 8.2 12.1
S/So	0.17 0.27 0.37 0.47 0.51 0.49 0.52 0.51 0.48 0.41 0.23 0.20 0.38
Somax	9.1 10.6 12.5 14.2 15.5 15.9 15.7 14.7 13.0 11.3 9.5 8.3

Angstrom coefficients:Reference site: Bratislava

Angstrom a	0.15 0.17 0.20 0.20 0.21 0.20 0.20 0.20 0.20 0.20 0.15 0.16 0.19
Angstrom b	0.65 0.62 0.58 0.60 0.60 0.63 0.60 0.58 0.58 0.53 0.63 0.57 0.60

SLOVAKIA	Map site No.231	Computer file SLOVAHOR.231	KUCHYNA
Latitude 48 24' N		Longitude 17 8' E	Height a.s.l. 210 metres
Horizontal planes: - monthly means.		Data used & period: S (1966 -1975)	
Month	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean		
Daily global radiation: kWh/m ² .			
G mean	++++ 0.76 1.47 2.57 4.12 5.41 5.67 5.55 4.73 3.54 2.15 0.98 0.63 3.14		
Gmax	++++ 1.73 3.21 4.92 7.04 8.32 8.80 8.35 7.39 5.67 3.80 2.40 1.55 5.27		
Gmin	++++ 0.11 0.20 0.47 1.08 1.49 1.17 1.13 1.00 0.86 0.46 0.12 0.06 0.68		
Go	2.85 4.39 6.64 9.00 10.80 11.59 11.17 9.66 7.48 5.14 3.26 2.42 7.05		

Ratios to extraterrestrial radiation

G/Go	++++ 0.27 0.33 0.39 0.46 0.50 0.49 0.50 0.49 0.47 0.42 0.30 0.26 0.41
Ktmax	++++ 0.52 0.62 0.64 0.71 0.73 0.76 0.72 0.71 0.68 0.63 0.63 0.61 0.67
Ktmin	++++ 0.04 0.05 0.07 0.12 0.14 0.10 0.10 0.10 0.11 0.09 0.04 0.03 0.10

Daily diffuse radiation: kWh/m².

D mean est.	++++ 0.51 0.89 1.53 2.17 2.64 2.68 2.71 2.35 1.74 1.19 0.61 0.44 1.63
D/G mean	++++ 0.66 0.61 0.60 0.53 0.49 0.47 0.49 0.50 0.49 0.55 0.62 0.70 0.52

Daily sunshine duration: hours.

S	1.6 2.7 3.8 5.8 7.3 7.3 7.6 7.0 5.9 4.4 2.2 1.5 4.8
So	8.6 10.0 11.7 13.5 15.0 15.8 15.4 14.1 12.4 10.7 9.1 8.2 12.1
S/So	0.18 0.26 0.32 0.43 0.49 0.46 0.49 0.50 0.47 0.41 0.24 0.18 0.37
Somax	9.1 10.6 12.5 14.2 15.5 15.9 15.7 14.7 13.0 11.3 9.5 8.3

Angstrom coefficients:Reference site: Bratislava

Angstrom a	0.15 0.17 0.20 0.20 0.21 0.20 0.20 0.20 0.20 0.20 0.15 0.16 0.19
Angstrom b	0.65 0.62 0.58 0.60 0.60 0.63 0.60 0.58 0.58 0.53 0.63 0.57 0.60

SLOVAKIA	Map site No.232	Computer file SLOVAHOR.232	NITRA
Latitude 48 19' N		Longitude 18 5' E	Height a.s.l. 145 metres
Horizontal planes: - monthly means.		Data used & period: S (1966 -1975)	
Month	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean		
Daily global radiation: kWh/m ² .			
G mean	++++ 0.73 1.48 2.70 4.17 5.45 5.94 5.75 4.80 3.65 2.16 0.97 0.63 3.21		
Gmax	++++ 1.74 3.21 4.93 7.05 8.32 8.80 8.35 7.39 5.67 3.80 2.42 1.56 5.28		
Gmin	++++ 0.11 0.20 0.47 1.08 1.49 1.17 1.13 1.00 0.86 0.46 0.12 0.06 0.68		
Go	2.87 4.41 6.65 9.01 10.80 11.59 11.17 9.66 7.49 5.15 3.28 2.43 7.06		

Ratios to extraterrestrial radiation

G/Go	++++ 0.26 0.33 0.41 0.46 0.50 0.51 0.51 0.50 0.49 0.42 0.29 0.26 0.41
Ktmax	++++ 0.52 0.62 0.64 0.71 0.73 0.76 0.72 0.71 0.68 0.63 0.63 0.61 0.67
Ktmin	++++ 0.04 0.05 0.07 0.12 0.14 0.10 0.10 0.10 0.11 0.09 0.04 0.03 0.10

Daily diffuse radiation: kWh/m².

D mean est.	++++ 0.50 0.90 1.56 2.18 2.63 2.66 2.68 2.34 1.74 1.20 0.61 0.45 1.63
D/G mean	++++ 0.69 0.61 0.58 0.52 0.48 0.45 0.47 0.49 0.48 0.56 0.63 0.71 0.51

Daily sunshine duration: hours.

S	1.4 2.7 4.2 5.9 7.4 7.8 8.1 7.2 6.2 4.4 2.1 1.4 4.9
So	8.6 10.0 11.7 13.5 15.0 15.8 15.4 14.1 12.4 10.7 9.1 8.2 12.1
S/So	0.16 0.27 0.36 0.44 0.49 0.50 0.52 0.51 0.50 0.41 0.23 0.18 0.38
Somax	9.1 10.6 12.5 14.2 15.5 15.8 15.7 14.7 13.0 11.3 9.5 8.3

Angstrom coefficients:Reference site: Bratislava

Angstrom a	0.15 0.17 0.20 0.20 0.21 0.20 0.20 0.20 0.20 0.20 0.15 0.16 0.19
Angstrom b	0.65 0.62 0.58 0.60 0.60 0.63 0.60 0.58 0.58 0.53 0.63 0.57 0.60

SPAIN Map site No.264 Computer file SPAINHOR.264 SALAMANCA
 Latitude 40 57' N Longitude 5 30' W Height a.s.l. 793 metres
 Horizontal planes: - monthly means. Data used & period: Monthly mean S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 1.80 2.86 3.80 5.23 6.30 6.89 7.63 6.84 4.87 3.42 2.19 1.57 4.46
 Gmax +++ 3.25 4.54 6.47 7.70 8.76 9.09 9.05 8.00 6.47 4.99 3.61 3.01 6.25
 Gmin +++ 0.35 0.52 1.02 1.22 2.04 2.38 3.83 3.20 2.11 1.00 0.47 0.45 1.55
 Go 4.12 5.61 7.64 9.63 11.04 11.63 11.30 10.13 8.34 6.28 4.52 3.68 7.84

Ratios to extraterrestrial radiation

G/Go +++ 0.44 0.51 0.50 0.54 0.57 0.59 0.68 0.68 0.58 0.54 0.49 0.43 0.55
 Ktmax +++ 0.71 0.72 0.75 0.74 0.77 0.78 0.78 0.75 0.71 0.70 0.71 0.79 0.75
 Ktmin +++ 0.09 0.09 0.13 0.13 0.19 0.20 0.34 0.32 0.25 0.16 0.10 0.12 0.20

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.91 1.27 1.85 2.26 2.56 2.42 2.01 1.74 1.71 1.31 0.98 0.79 1.66
 D/G mean +++ 0.51 0.44 0.49 0.43 0.41 0.35 0.26 0.25 0.35 0.38 0.45 0.50 0.37

Daily sunshine duration: hours.

S 3.5 5.3 5.7 7.5 8.9 9.9 12.0 11.2 8.0 6.3 4.5 3.2 7.2
 So 9.4 10.5 11.8 13.2 14.3 14.9 14.6 13.6 12.3 11.0 9.8 9.1 12.1
 S/So 0.37 0.51 0.48 0.57 0.62 0.66 0.82 0.82 0.65 0.57 0.46 0.35 0.57
 Somax 9.8 10.9 12.4 13.6 14.6 14.9 14.8 14.0 12.8 11.4 10.1 9.2

Angstrom coefficients: Estimated Dogniaux & Lemoine technique

Angstrom a 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24
 Angstrom b 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.53

SPAIN Map site No.265 Computer file SPAINHOR.265 TORTOSA
 Latitude 40 49' N Longitude 0 30' E Height a.s.l. 44 metres
 Horizontal planes: - monthly means. Data used & period: Monthly mean S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 2.18 3.04 4.05 5.12 6.06 6.48 6.94 5.99 4.60 3.49 2.40 1.99 4.37
 Gmax +++ 2.88 4.08 5.98 7.58 8.36 8.50 8.20 7.44 6.11 4.77 3.22 2.52 5.81
 Gmin +++ 0.52 0.82 1.26 2.43 2.33 2.65 4.94 4.38 2.62 1.17 0.55 0.50 2.02
 Go 4.15 5.64 7.66 9.64 11.04 11.63 11.30 10.14 8.35 6.30 4.54 3.70 7.85

Ratios to extraterrestrial radiation

G/Go +++ 0.53 0.54 0.53 0.53 0.55 0.56 0.61 0.59 0.55 0.55 0.53 0.54 0.55
 Ktmax +++ 0.62 0.64 0.70 0.73 0.73 0.73 0.71 0.70 0.67 0.67 0.63 0.66 0.69
 Ktmin +++ 0.13 0.15 0.16 0.25 0.21 0.23 0.44 0.43 0.31 0.19 0.12 0.13 0.26

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.85 1.27 1.86 2.38 2.75 2.72 2.47 2.26 1.91 1.34 0.96 0.70 1.80
 D/G mean +++ 0.39 0.42 0.46 0.47 0.45 0.42 0.36 0.38 0.42 0.38 0.40 0.35 0.41

Daily sunshine duration: hours.

S 5.1 5.9 6.4 7.2 8.3 8.9 10.3 9.0 7.2 6.5 5.3 5.1 7.1
 So 9.5 10.5 11.8 13.1 14.3 14.9 14.6 13.6 12.3 11.0 9.8 9.1 12.0
 S/So 0.54 0.56 0.54 0.55 0.58 0.60 0.71 0.66 0.58 0.59 0.54 0.56 0.58
 Somax 9.8 10.9 12.4 13.6 14.6 14.9 14.8 14.0 12.8 11.4 10.1 9.2

Angstrom coefficients: Estimated Dogniaux & Lemoine technique

Angstrom a 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24
 Angstrom b 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.53

SPAIN Map site No.266 Computer file SPAINHOR.266 MADRID
 Latitude 40 27' N Longitude 3 43' W Height a.s.l. 669 metres
 Horizontal planes: - monthly means. Data used & period: G & m'thly mean S (1966-1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 1.73 2.63 4.15 5.45 6.17 6.69 7.22 6.49 4.80 3.16 1.99 1.77 4.36
 Gmax 2.92 4.12 6.01 7.59 8.37 8.50 8.20 7.45 6.13 4.80 3.26 2.56 5.83
 Gmin 0.53 0.83 1.26 2.44 2.33 2.65 4.94 4.38 2.63 1.18 0.56 0.51 2.03
 Go 4.21 5.69 7.70 9.67 11.05 11.62 11.31 10.16 8.39 6.35 4.60 3.77 7.89

Ratios to extraterrestrial radiation

G/Go 0.41 0.46 0.54 0.56 0.56 0.58 0.64 0.64 0.57 0.50 0.43 0.47 0.53
 Ktmax 0.62 0.65 0.70 0.73 0.73 0.73 0.71 0.70 0.67 0.67 0.63 0.66 0.69
 Ktmin 0.13 0.15 0.16 0.25 0.21 0.23 0.44 0.43 0.31 0.19 0.12 0.13 0.26

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.88 1.27 1.48 1.39 1.69 1.60 1.17 1.43 1.48 1.09 0.86 0.63 1.25
 D/G mean +++ 0.51 0.48 0.36 0.26 0.27 0.24 0.16 0.22 0.31 0.34 0.43 0.36 0.29

Daily sunshine duration: hours.

S 4.4 5.7 6.5 8.0 9.3 10.5 12.5 11.4 8.7 7.0 5.2 5.0 7.9
 So 9.5 10.5 11.8 13.1 14.3 14.8 14.6 13.6 12.3 11.0 9.8 9.2 12.0
 S/So 0.46 0.54 0.55 0.61 0.65 0.71 0.86 0.84 0.71 0.64 0.53 0.54 0.66
 Somax 9.8 10.9 12.3 13.6 14.6 14.8 14.8 14.0 12.8 11.5 10.1 9.2

Angstrom coefficients: Radiation observing site

Angstrom a 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24 0.24
 Angstrom b 0.45 0.47 0.62 0.68 0.64 0.62 0.61 0.56 0.54 0.53 0.50 0.53 0.58

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SPAIN		Map site No.273			Computer file SPAINHOR.273								MALAGA	
Latitude	36 40' N				Longitude	4 29' W				Height a.s.l.		16 metres		
Horizontal planes: - monthly means.					Data used & period: Monthly mean S (1966 -1975)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	2.69	3.42	4.39	5.40	6.67	7.22	7.48	6.82	5.42	3.99	2.86	2.44	4.91
Gmax	++++	3.41	4.59	6.10	7.28	8.62	8.73	8.54	7.71	6.57	5.33	3.76	3.08	6.16
Gmin	++++	0.68	0.74	1.42	2.16	3.51	3.99	4.90	4.32	3.23	1.66	0.88	0.67	2.36
Go		4.85	6.28	8.16	9.93	11.12	11.59	11.32	10.34	8.77	6.89	5.23	4.42	8.25

Ratios to extraterrestrial radiation

G/Go	++++	0.55	0.54	0.54	0.54	0.60	0.62	0.66	0.66	0.62	0.58	0.55	0.55	0.59
Ktmax	++++	0.64	0.66	0.68	0.69	0.75	0.75	0.74	0.71	0.70	0.70	0.65	0.68	0.70
Ktmin	++++	0.14	0.12	0.17	0.22	0.32	0.34	0.43	0.42	0.37	0.24	0.17	0.15	0.29

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.97	1.42	1.98	2.45	2.58	2.39	2.25	1.98	1.75	1.42	1.09	0.83	1.77
D/G mean	++++	0.36	0.42	0.45	0.45	0.39	0.33	0.30	0.29	0.32	0.36	0.38	0.34	0.36

Daily sunshine duration: hours.

S		5.8	6.1	6.6	7.4	9.5	10.5	11.4	10.7	8.8	7.1	5.8	5.6	8.0
So		9.8	10.7	11.8	13.0	14.0	14.5	14.2	13.4	12.3	11.1	10.1	9.5	12.0
S/So		0.59	0.57	0.56	0.57	0.68	0.73	0.80	0.80	0.72	0.64	0.57	0.59	0.65
Somax		10.1	11.0	12.3	13.4	14.2	14.5	14.4	13.7	12.7	11.5	10.4	9.6	

Angstrom coefficients: Estimated Dogniaux & Lemoine technique

Angstrom a		0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Angstrom b		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

SWEDEN		Map site No.2			Computer file SWEDEHOR.002								KARLSTAD	
Latitude 59 22' N					Longitude 13 28' E			Height a.s.l.					46 metres	
Horizontal planes: - monthly means.					Data used & period:					G & S (1966 -1975)				
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean		0.29	1.03	2.38	3.89	5.26	6.68	5.73	4.61	2.65	1.20	0.40	0.21	2.87
Gmax		0.93	2.26	4.69	6.76	8.15	8.81	8.33	6.82	4.87	2.75	1.14	0.55	4.68
Gmin		0.06	0.22	0.50	1.00	1.24	2.32	1.39	1.06	0.48	0.14	0.04	0.03	0.71
Go		1.09	2.54	4.97	7.84	10.26	11.42	10.83	8.74	5.99	3.34	1.47	0.73	5.79

Ratios to extraterrestrial radiation

G/Go		0.26	0.40	0.48	0.50	0.51	0.59	0.53	0.53	0.44	0.36	0.27	0.29	0.43
Ktmax		0.62	0.69	0.75	0.75	0.74	0.77	0.73	0.70	0.69	0.64	0.57	0.66	0.70
Ktmin		0.05	0.09	0.10	0.13	0.12	0.20	0.13	0.12	0.08	0.04	0.02	0.03	0.12

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.21	0.61	1.20	1.87	2.53	2.57	2.74	2.19	1.39	0.72	0.29	0.16	1.38
D/G mean	++++	0.73	0.59	0.50	0.48	0.48	0.38	0.48	0.48	0.52	0.60	0.73	0.77	0.48

Daily sunshine duration: hours.

S		1.1	2.5	4.4	6.1	7.6	10.8	8.7	8.2	5.2	3.1	1.5	1.4	5.1
So		6.7	9.0	11.6	14.3	16.7	18.1	17.5	15.2	12.6	10.0	7.4	5.9	12.1
S/So		0.16	0.28	0.38	0.43	0.46	0.60	0.50	0.54	0.41	0.31	0.20	0.24	0.38
Somax		7.5	9.9	12.7	15.3	17.6	18.2	18.0	16.2	13.6	11.0	8.3	6.1	

Angstrom coefficients: Radiation observing site

Angstrom a		0.18	0.23	0.24	0.23	0.23	0.25	0.25	0.23	0.19	0.16	0.17	0.19	0.21
Angstrom b		0.63	0.60	0.61	0.62	0.61	0.56	0.56	0.55	0.61	0.62	0.57	0.44	0.58

SWEDEN		Map site No.3			Computer file SWEDEHOR.003								STOCKHOLM	
Latitude 59 21' N					Longitude 17 57' E						Height a.s.l.		12 metres	
Horizontal planes: - monthly means.					Data used & period:								G & S (1966 -1975)	
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean		0.32	0.95	2.24	3.68	5.29	6.58	5.59	4.52	2.70	1.24	0.46	0.23	2.83
Gmax		0.83	2.24	4.14	6.48	7.91	8.68	8.26	6.97	4.63	2.75	1.21	0.53	4.57
Gmin		0.10	0.19	0.51	0.78	1.53	2.23	1.47	1.10	0.65	0.26	0.10	0.08	0.75
Go		1.10	2.54	4.97	7.84	10.26	11.42	10.83	8.75	6.00	3.34	1.47	0.74	5.79

Ratios to extraterrestrial radiation

G/Go		0.30	0.37	0.45	0.47	0.52	0.58	0.52	0.52	0.45	0.37	0.31	0.32	0.43
Ktmax		0.55	0.68	0.67	0.72	0.72	0.75	0.73	0.72	0.66	0.64	0.61	0.63	0.68
Ktmin		0.09	0.07	0.10	0.10	0.15	0.20	0.14	0.13	0.11	0.08	0.07	0.11	0.13

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.24	0.57	1.23	1.94	2.55	2.57	2.79	2.18	1.63	0.82	0.32	0.16	1.43
D/G mean	++++	0.74	0.60	0.55	0.53	0.48	0.39	0.50	0.48	0.60	0.66	0.70	0.71	0.51

Daily sunshine duration: hours.

S		1.1	2.6	4.5	6.2	8.8	11.4	9.4	8.5	4.7	2.8	1.7	1.1	5.2
So		6.7	9.0	11.6	14.3	16.7	18.1	17.4	15.2	12.6	10.0	7.4	5.9	12.1
S/So		0.16	0.29	0.39	0.43	0.53	0.63	0.54	0.56	0.37	0.28	0.23	0.19	0.38
Somax		7.5	9.9	12.7	15.3	17.6	18.2	18.0	16.2	13.6	11.0	8.3	6.1	

Angstrom coefficients: Radiation observing site

Angstrom a		0.21	0.20	0.22	0.21	0.22	0.24	0.22	0.21	0.27	0.23	0.18	0.23	0.22
Angstrom b		0.58	0.60	0.58	0.59	0.57	0.54	0.54	0.55	0.47	0.50	0.56	0.53	0.55

SWEDEN	Map site No.4			Computer file SWEDEHOR.004								JOENKOEPIG		
Latitude	57 46' N			Longitude	14 5' E							Height a.s.l.	226 metres	
Horizontal planes:	- monthly means.			Data used & period: 8 (1966 -1975)										
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	+++ 0.31	0.89	2.07	3.37	4.62	5.67	4.85	4.16	2.47	1.15	0.45	0.23	2.53	
Gmax	+++ 1.01	2.32	4.44	6.53	8.05	8.79	8.42	6.97	4.94	3.03	1.27	0.64	4.71	
Gmin	+++ 0.05	0.14	0.36	1.01	1.25	1.75	1.54	1.18	0.63	0.15	0.04	0.02	0.68	
Go	1.33	2.81	5.22	8.03	10.34	11.44	10.88	8.89	6.23	3.61	1.72	0.95	5.97	

Ratios to extraterrestrial radiation

G/Go	+++ 0.23	0.31	0.40	0.42	0.45	0.50	0.45	0.47	0.40	0.32	0.26	0.24	0.37	
Ktmax	+++ 0.57	0.65	0.69	0.72	0.73	0.76	0.74	0.71	0.68	0.67	0.56	0.60	0.68	
Ktmin	+++ 0.04	0.05	0.07	0.13	0.12	0.15	0.14	0.13	0.10	0.04	0.02	0.02	0.11	

Daily diffuse radiation: kWh/m².

D mean est. +++	0.25	0.60	1.18	1.91	2.49	2.75	2.64	2.26	1.44	0.74	0.35	0.18	1.41	
D/G mean +++	0.82	0.68	0.57	0.57	0.54	0.48	0.54	0.54	0.58	0.64	0.78	0.80	0.56	

Daily sunshine duration: hours.

S	0.8	1.9	3.7	5.2	6.5	8.4	7.0	6.9	4.3	2.4	1.2	0.9	4.1	
So	7.1	9.2	11.6	14.1	16.4	17.7	17.1	15.0	12.6	10.1	7.7	6.4	12.1	
S/So	0.12	0.21	0.32	0.37	0.40	0.48	0.41	0.46	0.34	0.24	0.16	0.15	0.30	
Somax	7.8	10.0	12.7	15.1	17.2	17.7	17.6	15.9	13.5	11.0	8.5	6.6		

Angstrom coefficients:Reference site: Torslanda

Angstrom a	0.16	0.19	0.20	0.20	0.20	0.22	0.20	0.22	0.20	0.17	0.17	0.16	0.19	
Angstrom b	0.60	0.60	0.62	0.60	0.62	0.58	0.60	0.54	0.58	0.61	0.56	0.54	0.59	

SWEDEN	Map site No.5			Computer file SWEDEHOR.005								TORSLANDA		
Latitude	57 43' N			Longitude	11 47' E							Height a.s.l.	5 metres	
Horizontal planes:	- monthly means.			Data used & period: G & S (1966 -1975)										
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	0.33	0.99	2.41	3.87	5.13	6.41	5.67	4.76	2.87	1.35	0.48	0.26	2.89	
Gmax	1.01	2.33	4.44	6.53	8.05	8.78	8.42	6.98	4.94	3.03	1.28	0.65	4.72	
Gmin	0.05	0.14	0.35	1.01	1.25	1.75	1.55	1.18	0.64	0.15	0.04	0.02	0.68	
Go	1.34	2.82	5.23	8.03	10.35	11.44	10.88	8.89	6.23	3.61	1.73	0.96	5.98	

Ratios to extraterrestrial radiation

G/Go	0.25	0.35	0.46	0.48	0.50	0.56	0.52	0.53	0.46	0.37	0.28	0.27	0.42	
Ktmax	0.57	0.65	0.69	0.71	0.73	0.76	0.74	0.71	0.68	0.67	0.57	0.61	0.68	
Ktmin	0.04	0.05	0.07	0.13	0.12	0.15	0.14	0.13	0.10	0.04	0.02	0.02	0.11	

Daily diffuse radiation: kWh/m².

D mean est. +++	0.25	0.64	1.21	1.95	2.52	2.57	2.61	2.22	1.48	0.78	0.35	0.19	1.41	
D/G mean +++	0.76	0.64	0.50	0.50	0.49	0.40	0.46	0.47	0.52	0.57	0.73	0.72	0.49	

Daily sunshine duration: hours.

S	1.1	2.3	4.9	6.7	7.7	10.4	9.1	8.7	5.7	3.4	1.6	1.3	5.3	
So	7.1	9.2	11.6	14.1	16.4	17.6	17.0	15.0	12.6	10.1	7.8	6.4	12.1	
S/So	0.15	0.25	0.42	0.48	0.47	0.59	0.54	0.58	0.45	0.34	0.21	0.20	0.39	
Somax	7.8	10.0	12.7	15.1	17.1	17.7	17.5	15.9	13.5	11.0	8.5	6.6		

Angstrom coefficients:Radiation observing site

Angstrom a	0.16	0.19	0.20	0.20	0.20	0.22	0.20	0.22	0.20	0.17	0.17	0.16	0.19	
Angstrom b	0.60	0.60	0.62	0.60	0.62	0.58	0.60	0.54	0.58	0.61	0.56	0.54	0.59	

SWEDEN	Map site No.6			Computer file SWEDEHOR.006								VISBY		
Latitude	57 40' N			Longitude	18 21' E							Height a.s.l.	28 metres	
Horizontal planes:	- monthly means.			Data used & period: G & S (1966 -1975)										
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	0.39	1.02	2.55	4.00	5.49	6.87	5.93	4.73	2.90	1.41	0.52	0.29	3.02	
Gmax	0.99	2.31	4.44	6.58	8.06	8.62	8.27	6.90	5.01	2.92	1.35	0.68	4.69	
Gmin	0.12	0.22	0.77	1.02	1.56	1.74	1.57	1.58	0.66	0.31	0.12	0.09	0.82	
Go	1.35	2.83	5.24	8.04	10.35	11.44	10.88	8.90	6.24	3.62	1.73	0.97	5.98	

Ratios to extraterrestrial radiation

G/Go	0.29	0.36	0.49	0.50	0.53	0.60	0.54	0.53	0.47	0.39	0.30	0.30	0.44	
Ktmax	0.56	0.64	0.69	0.72	0.73	0.75	0.73	0.70	0.69	0.64	0.60	0.63	0.68	
Ktmin	0.09	0.08	0.15	0.13	0.15	0.15	0.14	0.18	0.11	0.09	0.07	0.09	0.14	

Daily diffuse radiation: kWh/m².

D mean est. +++	0.30	0.66	1.28	1.94	2.60	2.59	2.69	2.26	1.50	0.83	0.37	0.21	1.44	
D/G mean +++	0.77	0.65	0.50	0.48	0.47	0.38	0.45	0.48	0.52	0.59	0.71	0.74	0.48	

Daily sunshine duration: hours.

S	1.0	2.1	4.6	6.2	8.4	11.5	9.8	8.7	5.5	3.4	1.5	1.0	5.3	
So	7.1	9.2	11.6	14.1	16.4	17.6	17.0	15.0	12.6	10.1	7.8	6.4	12.1	
S/So	0.14	0.23	0.40	0.44	0.51	0.65	0.58	0.58	0.44	0.34	0.19	0.16	0.39	
Somax	7.8	10.0	12.7	15.1	17.1	17.7	17.5	15.9	13.5	11.0	8.5	6.6		

Angstrom coefficients:Radiation observing site

Angstrom a	0.22	0.21	0.25	0.23	0.23	0.26	0.23	0.23	0.21	0.20	0.18	0.22	0.22	
Angstrom b	0.56	0.60	0.59	0.61	0.58	0.52	0.55	0.52	0.58	0.57	0.59	0.57	0.57	

SWEDEN	Map site No.7				Computer file SWEDEHOR.007								VINGA
Latitude	57 38' N				Longitude	11 37' E				Height a.s.l.			19 metres
Horizontal planes:	- monthly means.				Data used & period: S (1966 -1975)								
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean	++++	0.32	0.95	2.38	3.91	5.15	6.50	5.67	4.79	2.84	1.36	0.50	2.90
Gmax	++++	1.02	2.34	4.45	6.54	8.06	8.79	8.42	6.98	4.95	3.04	1.28	4.72
Gmin	++++	0.05	0.14	0.36	1.01	1.25	1.75	1.55	1.18	0.64	0.15	0.04	0.68
Go		1.35	2.83	5.24	8.04	10.35	11.45	10.88	8.90	6.24	3.63	1.74	5.99

Ratios to extraterrestrial radiation

G/Go	++++	0.24	0.33	0.45	0.49	0.50	0.57	0.52	0.54	0.45	0.37	0.29	0.27	0.42
Ktmax	++++	0.57	0.65	0.69	0.72	0.73	0.76	0.74	0.71	0.68	0.67	0.56	0.60	0.68
Ktmin	++++	0.04	0.05	0.07	0.13	0.12	0.15	0.14	0.13	0.10	0.04	0.02	0.02	0.11

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.26	0.62	1.21	1.96	2.49	2.54	2.61	2.21	1.49	0.78	0.36	0.19	1.40
D/G mean	++++	0.80	0.65	0.51	0.50	0.48	0.39	0.46	0.46	0.53	0.57	0.72	0.72	0.48

Daily sunshine duration: hours.

S		0.9	2.2	4.8	6.7	7.9	10.6	9.1	8.8	5.5	3.4	1.7	1.3	5.3
So		7.1	9.2	11.6	14.1	16.4	17.6	17.0	15.0	12.6	10.1	7.8	6.4	12.1
S/So		0.13	0.24	0.41	0.48	0.48	0.60	0.53	0.59	0.44	0.33	0.21	0.20	0.39
Somax		7.8	10.0	12.7	15.1	17.1	17.7	17.5	15.9	13.5	11.0	8.5	6.6	

Angstrom coefficients:Reference site: Torslanda

Angstrom a		0.16	0.19	0.20	0.20	0.20	0.22	0.20	0.22	0.20	0.17	0.17	0.16	0.19
Angstrom b		0.60	0.60	0.62	0.60	0.62	0.58	0.60	0.54	0.58	0.61	0.56	0.54	0.59

SWEDEN	Map site No.8				Computer file SWEDEHOR.008								OELANDS	SÖRDRA UDDE
Latitude	56 12' N				Longitude	16 24' E				Height a.s.l.			4 metres	
Horizontal planes:	- monthly means.				Data used & period: S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	++++	0.48	1.10	2.57	4.15	5.46	6.80	6.02	4.78	3.11	1.54	0.60	0.39	3.09
Gmax	++++	1.12	2.47	4.58	6.67	8.10	8.63	8.28	6.96	5.13	3.07	1.50	0.81	4.80
Gmin	++++	0.14	0.24	0.80	1.03	1.57	1.74	1.59	1.60	0.68	0.33	0.13	0.11	0.84
Go		1.57	3.08	5.47	8.20	10.43	11.47	10.93	9.03	6.45	3.87	1.97	1.18	6.15

Ratios to extraterrestrial radiation

G/Go	++++	0.30	0.36	0.47	0.51	0.52	0.59	0.55	0.53	0.48	0.40	0.31	0.33	0.45
Ktmax	++++	0.56	0.64	0.69	0.72	0.73	0.75	0.73	0.70	0.69	0.64	0.60	0.63	0.68
Ktmin	++++	0.09	0.08	0.15	0.13	0.15	0.15	0.14	0.18	0.11	0.09	0.07	0.09	0.14

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.36	0.69	1.32	1.98	2.60	2.61	2.71	2.28	1.54	0.88	0.41	0.27	1.48
D/G mean	++++	0.76	0.63	0.51	0.48	0.48	0.38	0.45	0.48	0.49	0.57	0.69	0.69	0.48

Daily sunshine duration: hours.

S		1.1	2.3	4.4	6.3	8.2	11.1	9.7	8.6	5.9	3.6	1.7	1.3	5.4
So		7.4	9.3	11.6	14.0	16.1	17.3	16.7	14.8	12.6	10.2	8.0	6.8	12.1
S/So		0.15	0.25	0.37	0.45	0.51	0.64	0.58	0.58	0.47	0.35	0.21	0.19	0.40
Somax		8.0	10.1	12.6	14.9	16.8	17.3	17.2	15.6	13.4	11.1	8.7	6.9	

Angstrom coefficients:Reference site: Visby

Angstrom a		0.22	0.21	0.25	0.23	0.23	0.26	0.23	0.23	0.21	0.20	0.18	0.22	0.22
Angstrom b		0.56	0.60	0.59	0.61	0.58	0.52	0.55	0.52	0.58	0.57	0.59	0.57	0.57

SWEDEN	Map site No.9				Computer file SWEDEHOR.009								SVALÖEV
Latitude 55 55' N					Longitude 13 7' E					Height a.s.l.	72 metres		
Horizontal planes: - monthly means.					Data used & period: G & S (1966 -1975)								
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean	0.39	0.98	2.30	3.80	4.97	6.06	5.22	4.47	2.77	1.42	0.59	0.34	2.79
Gmax	1.08	2.54	4.62	6.50	8.02	8.54	7.96	6.69	4.90	3.03	1.49	0.93	4.70
Gmin	0.08	0.21	0.42	1.00	1.35	1.54	1.66	1.16	0.78	0.25	0.11	0.05	0.72
Go	1.62	3.12	5.51	8.23	10.44	11.47	10.94	9.05	6.49	3.91	2.01	1.22	6.19

Ratios to extraterrestrial radiation

G/Go		0.24	0.31	0.42	0.46	0.48	0.53	0.48	0.49	0.43	0.36	0.29	0.28	0.40
Ktmax		0.52	0.65	0.69	0.70	0.72	0.74	0.70	0.67	0.65	0.62	0.58	0.70	0.67
Ktmin		0.05	0.07	0.08	0.12	0.13	0.13	0.15	0.13	0.12	0.06	0.05	0.04	0.12

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.32	0.64	1.29	2.09	2.60	2.82	2.76	2.32	1.56	0.85	0.43	0.26	1.50
D/G mean	++++	0.82	0.65	0.56	0.55	0.52	0.47	0.53	0.52	0.56	0.60	0.73	0.78	0.54

Daily sunshine duration: hours.

S		0.7	2.0	3.7	5.8	7.3	8.9	8.0	7.8	4.9	2.9	1.5	0.9	4.5
So		7.5	9.4	11.6	14.0	16.1	17.2	16.7	14.8	12.6	10.2	8.1	6.8	12.1
S/So		0.09	0.21	0.32	0.41	0.45	0.52	0.48	0.53	0.39	0.28	0.19	0.13	0.33
Somax		8.1	10.1	12.6	14.9	16.7	17.3	17.1	15.6	13.4	11.1	8.7	7.0	

Angstrom coefficients:Radiation observing site

Angstrom a		0.19	0.21	0.22	0.24	0.22	0.25	0.22	0.22	0.20	0.18	0.19	0.20	0.21
Angstrom b		0.62	0.61	0.61	0.55	0.58	0.54	0.55	0.52	0.57	0.61	0.55	0.57	0.57

SWEDEN Map site No.10 Computer file SWEDEHOR.010 TRELLEBORG
 Latitude 55 23' N Longitude 13 9' E Height a.s.l. 5 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.44 1.09 2.44 4.09 5.11 6.13 5.40 4.70 2.93 1.49 0.64 0.38 2.91
 Gmax +++ 1.13 2.59 4.68 6.53 8.04 8.55 7.96 6.71 4.95 3.08 1.54 0.99 4.74
 Gmin +++ 0.09 0.22 0.43 1.01 1.35 1.54 1.67 1.16 0.79 0.25 0.11 0.05 0.72
 Go 1.70 3.22 5.60 8.29 10.47 11.48 10.96 9.10 6.56 4.00 2.10 1.30 6.25

Ratios to extraterrestrial radiation

G/Go +++ 0.26 0.34 0.44 0.49 0.49 0.53 0.49 0.52 0.45 0.37 0.30 0.29 0.42
 Ktmax +++ 0.53 0.65 0.69 0.70 0.72 0.74 0.70 0.67 0.65 0.62 0.58 0.70 0.67
 Ktmin +++ 0.05 0.07 0.08 0.12 0.13 0.13 0.15 0.13 0.12 0.06 0.05 0.04 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.34 0.71 1.32 2.14 2.64 2.82 2.81 2.31 1.58 0.86 0.45 0.27 1.53
 D/G mean +++ 0.78 0.65 0.54 0.52 0.52 0.46 0.52 0.49 0.54 0.58 0.71 0.72 0.53

Daily sunshine duration: hours.

S 0.9 2.0 4.1 6.4 7.4 9.0 8.2 8.4 5.4 3.2 1.7 1.2 4.8
 So 7.6 9.4 11.7 13.9 16.0 17.1 16.6 14.8 12.6 10.3 8.1 6.9 12.1
 S/So 0.11 0.21 0.36 0.46 0.46 0.52 0.49 0.57 0.43 0.32 0.21 0.17 0.36
 Somax 8.2 10.2 12.6 14.8 16.6 17.1 17.0 15.5 13.4 11.1 8.8 7.1

Angstrom coefficients:Reference site: Svaloev

Angstrom a 0.19 0.21 0.22 0.24 0.22 0.25 0.22 0.22 0.20 0.18 0.19 0.20 0.21
 Angstrom b 0.62 0.61 0.61 0.55 0.58 0.54 0.55 0.52 0.57 0.61 0.55 0.57 0.57

SWITZERLAND Map site No.216 Computer file SWITZHOR.216 ZUERICH
 Latitude 47 27' N Longitude 8 33' E Height a.s.l. 440 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.83 1.61 2.72 3.93 5.03 5.45 5.80 4.56 3.58 2.01 1.00 0.66 3.11
 Gmax 1.85 3.32 5.06 6.94 8.07 8.41 8.41 7.18 5.79 3.88 2.16 1.41 5.22
 Gmin 0.19 0.30 0.58 0.81 0.83 1.32 1.53 1.17 0.79 0.43 0.20 0.17 0.70
 Go 3.01 4.55 6.77 9.09 10.84 11.60 11.19 9.73 7.60 5.29 3.42 2.57 7.15

Ratios to extraterrestrial radiation

G/Go 0.28 0.35 0.40 0.43 0.46 0.47 0.52 0.47 0.47 0.38 0.29 0.26 0.40
 Ktmax 0.53 0.63 0.65 0.70 0.71 0.72 0.73 0.69 0.68 0.63 0.54 0.52 0.65
 Ktmin 0.06 0.07 0.09 0.09 0.08 0.11 0.14 0.12 0.10 0.08 0.06 0.07 0.10

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.63 1.01 1.59 2.18 2.61 2.71 2.78 2.41 1.81 1.16 0.70 0.52 1.68
 D/G mean +++ 0.76 0.63 0.59 0.55 0.52 0.50 0.48 0.53 0.51 0.58 0.70 0.79 0.54

Daily sunshine duration: hours.

S 0.9 2.4 3.5 5.0 5.8 6.4 7.5 5.9 5.3 3.1 1.4 0.8 4.0
 So 8.8 10.1 11.7 13.5 14.9 15.7 15.3 14.0 12.4 10.7 9.2 8.3 12.1
 S/So 0.10 0.24 0.30 0.37 0.39 0.41 0.49 0.42 0.43 0.29 0.15 0.10 0.31
 Somax 9.2 10.6 12.5 14.1 15.4 15.7 15.6 14.6 13.0 11.3 9.6 8.4

Angstrom coefficients:Radiation observing site

Angstrom a 0.22 0.22 0.22 0.22 0.23 0.21 0.23 0.23 0.23 0.21 0.20 0.21 0.22
 Angstrom b 0.56 0.57 0.59 0.59 0.62 0.64 0.58 0.57 0.57 0.59 0.59 0.54 0.59

SWITZERLAND Map site No.217 Computer file SWITZHOR.217 DAVOS
 Latitude 46 48' N Longitude 9 49' E Height a.s.l. 1590 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 1.55 2.45 3.99 5.23 5.66 5.48 5.56 4.74 4.09 2.88 1.67 1.35 3.73
 Gmax 2.48 3.96 6.03 7.71 8.77 9.02 8.73 7.71 6.12 4.41 2.83 1.91 5.82
 Gmin 0.57 0.71 1.55 2.16 2.02 1.61 1.54 1.27 0.84 0.71 0.33 0.42 1.15
 Go 3.12 4.66 6.86 9.15 10.86 11.61 11.21 9.77 7.67 5.39 3.53 2.68 7.22

Ratios to extraterrestrial radiation

G/Go 0.50 0.52 0.58 0.57 0.52 0.47 0.50 0.48 0.53 0.53 0.47 0.50 0.52
 Ktmax 0.69 0.73 0.76 0.77 0.77 0.77 0.76 0.74 0.72 0.70 0.69 0.68 0.74
 Ktmin 0.18 0.15 0.23 0.24 0.19 0.14 0.14 0.13 0.11 0.13 0.09 0.16 0.16

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.76 1.14 1.69 2.36 2.65 2.68 2.53 2.13 1.57 1.11 0.76 0.60 1.67
 D/G mean +++ 0.49 0.47 0.42 0.45 0.47 0.49 0.45 0.45 0.38 0.39 0.46 0.45 0.45

Daily sunshine duration: hours.

S 2.9 3.4 4.5 5.2 5.6 5.4 6.5 5.9 5.7 4.7 3.1 3.0 4.7
 So 8.8 10.1 11.7 13.4 14.8 15.6 15.2 14.0 12.4 10.7 9.2 8.4 12.0
 S/So 0.33 0.33 0.38 0.39 0.38 0.35 0.43 0.42 0.46 0.44 0.34 0.36 0.38
 Somax 9.2 10.7 12.4 14.0 15.3 15.6 15.5 14.5 13.0 11.3 9.7 8.5

Angstrom coefficients:Radiation observing site

Angstrom a 0.33 0.34 0.37 0.37 0.30 0.24 0.22 0.22 0.22 0.27 0.28 0.31 0.29
 Angstrom b 0.50 0.55 0.55 0.53 0.60 0.66 0.65 0.65 0.67 0.61 0.60 0.53 0.59

SYRIAN ARAB REP. Map site No.331 Computer file SYRIAHOR.331 KHARABO
 Latitude 33 30' N Longitude 36 28' E Height a.s.l. 620 metres
 Horizontal planes: - monthly means. Data used & period: G & S M'thly means (1971-1974)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 2.84 4.14 5.38 6.41 7.75 8.47 8.30 7.59 6.42 4.89 3.61 2.84 5.73
 Gmax 4.35 5.50 7.04 8.09 8.58 9.01 8.86 8.07 7.07 5.82 4.60 3.76 6.73
 Gmin 1.19 1.54 2.15 2.63 3.94 7.12 7.64 6.98 5.56 3.05 1.32 1.06 3.69
 Go 5.36 6.72 8.48 10.09 11.13 11.54 11.31 10.47 9.08 7.34 5.75 4.96 8.53

Ratios to extraterrestrial radiation

G/Go 0.53 0.62 0.63 0.64 0.70 0.73 0.73 0.72 0.71 0.67 0.63 0.57 0.66
 Ktmax 0.75 0.74 0.76 0.76 0.75 0.78 0.77 0.74 0.73 0.73 0.74 0.74 0.75
 Ktmin 0.22 0.23 0.25 0.26 0.35 0.62 0.67 0.67 0.61 0.41 0.23 0.21 0.43

Daily diffuse radiation: kWh/m².

D mean est. +++ 1.07 1.42 1.89 2.28 2.08 1.78 1.80 1.57 1.27 0.96 0.91 0.90 1.50
 D/G mean +++ 0.38 0.34 0.35 0.36 0.27 0.21 0.22 0.21 0.20 0.20 0.25 0.32 0.26

Daily sunshine duration: hours.

S 5.4 6.8 7.7 8.5 11.1 12.4 12.5 11.8 10.7 9.4 7.4 5.8 9.1
 So 10.1 10.8 11.8 12.9 13.7 14.2 14.0 13.2 12.3 11.2 10.3 9.8 12.0
 S/So 0.54 0.63 0.65 0.66 0.81 0.87 0.89 0.89 0.87 0.84 0.72 0.59 0.75
 Somax 10.3 11.1 12.3 13.2 14.0 14.2 14.1 13.5 12.6 11.6 10.6 9.9

Angstrom coefficients: Derived from Gm and Sm at Kharabo

Angstrom a 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30
 Angstrom b 0.48 0.48 0.48 0.48 0.48 0.48 0.48 0.48 0.48 0.48 0.48 0.48 0.48

TURKEY Map site No.313 Computer file TURKEHOR.313 BOZKURT
 Latitude 41 58' N Longitude 34 06' E Height a.s.l. 167 metres
 Horizontal planes: - monthly means. Data used & period: M'thly mean S (1969 -1978)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 1.32 2.11 3.10 4.56 5.69 6.96 7.01 6.09 4.43 3.78 1.89 1.24 4.03
 Gmax +++ 2.88 3.98 5.66 7.19 8.22 8.59 8.23 7.23 5.97 4.43 3.12 2.52 5.67
 Gmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999
 Go 3.92 5.41 7.46 9.52 11.00 11.63 11.30 10.09 8.25 6.14 4.35 3.50 7.72

Ratios to extraterrestrial radiation

G/Go +++ 0.34 0.39 0.42 0.48 0.52 0.60 0.62 0.60 0.54 0.62 0.44 0.35 0.49
 Ktmax +++ 0.65 0.65 0.67 0.70 0.72 0.74 0.71 0.68 0.66 0.64 0.64 0.69 0.69
 Ktmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.83 1.25 1.80 2.43 2.80 2.53 2.44 2.24 1.96 1.12 0.98 0.74 1.77
 D/G mean +++ 0.63 0.59 0.58 0.53 0.49 0.36 0.35 0.37 0.44 0.30 0.52 0.59 0.44

Daily sunshine duration: hours.

S 2.0 3.1 3.7 5.6 7.2 9.8 10.5 9.6 6.9 8.0 3.9 2.3 6.1
 So 9.3 10.4 11.8 13.2 14.4 15.0 14.7 13.7 12.4 10.9 9.7 9.0 12.0
 S/So 0.21 0.30 0.31 0.43 0.50 0.65 0.71 0.70 0.56 0.73 0.40 0.26 0.48
 Somax 9.7 10.9 12.4 13.7 14.7 15.0 14.9 14.1 12.8 11.4 10.0 9.1

Angstrom coefficients: Estimated Dogniaux & Lemoine technique

Angstrom a 0.22 0.23 0.24 0.25 0.25 0.26 0.26 0.25 0.25 0.23 0.22 0.22 0.24
 Angstrom b 0.55 0.54 0.56 0.54 0.54 0.52 0.51 0.50 0.51 0.53 0.53 0.54 0.53

TURKEY Map site No.314 Computer file TURKEHOR.314 TRABZON
 Latitude 41 00' N Longitude 39 43' E Height a.s.l. 30 metres
 Horizontal planes: - monthly means. Data used & period: M'thly mean S (1969 -1978)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 1.62 2.38 3.20 4.26 5.11 6.18 5.60 5.05 3.87 2.96 2.01 1.50 3.65
 Gmax +++ 2.99 4.09 5.75 7.24 8.22 8.56 8.21 7.26 6.02 4.52 3.23 2.63 5.73
 Gmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999
 Go 4.09 5.56 7.59 9.60 11.02 11.62 11.31 10.15 8.35 6.28 4.51 3.67 7.82

Ratios to extraterrestrial radiation

G/Go +++ 0.40 0.43 0.42 0.44 0.46 0.53 0.49 0.50 0.46 0.47 0.45 0.41 0.46
 Ktmax +++ 0.65 0.65 0.67 0.70 0.72 0.73 0.71 0.68 0.66 0.64 0.64 0.69 0.69
 Ktmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.90 1.32 1.85 2.46 2.92 2.95 3.04 2.63 2.11 1.46 1.02 0.79 1.96
 D/G mean +++ 0.56 0.55 0.58 0.58 0.57 0.48 0.54 0.52 0.55 0.49 0.51 0.53 0.54

Daily sunshine duration: hours.

S 3.0 3.8 3.8 4.7 5.7 7.8 6.8 6.7 5.1 5.0 4.1 3.2 5.0
 So 9.4 10.5 11.8 13.1 14.3 14.9 14.6 13.6 12.3 11.0 9.8 9.1 12.0
 S/So 0.32 0.36 0.32 0.36 0.40 0.52 0.46 0.49 0.41 0.46 0.42 0.35 0.41
 Somax 9.7 10.9 12.4 13.6 14.6 14.9 14.8 14.0 12.8 11.4 10.1 9.2

Angstrom coefficients: Estimated Dogniaux & Lemoine technique

Angstrom a 0.22 0.23 0.24 0.25 0.25 0.26 0.26 0.25 0.26 0.23 0.22 0.22 0.25
 Angstrom b 0.55 0.54 0.56 0.54 0.53 0.51 0.50 0.50 0.50 0.53 0.53 0.53 0.52

TURKEY		Map site No.315			Computer file TURKEHOR.315								FLORYA	
Latitude 40 59' N					Longitude 28 48' E			Height a.s.l.					36 metres	
Horizontal planes: - monthly means.					Data used & period:								M'thly mean S (1967 -1978)	
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .														
G mean	++++	1.57	2.35	3.49	4.98	6.43	7.38	7.54	6.32	5.00	3.35	2.04	1.41	4.33
Gmax	++++	2.99	4.09	5.75	7.24	8.22	8.56	8.21	7.26	6.02	4.52	3.23	2.63	5.73
Gmin	++++	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999
Go		4.09	5.56	7.59	9.60	11.02	11.62	11.31	10.15	8.36	6.29	4.52	3.67	7.82
Ratios to extraterrestrial radiation														
G/Go	++++	0.38	0.42	0.46	0.52	0.58	0.63	0.67	0.62	0.60	0.53	0.45	0.38	0.52
Ktmax	++++	0.65	0.65	0.67	0.70	0.72	0.73	0.71	0.68	0.66	0.64	0.64	0.69	0.69
Ktmin	++++	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999
Daily diffuse radiation: kWh/m ² .														
D mean est.	++++	0.90	1.32	1.87	2.42	2.65	2.39	2.27	2.17	1.77	1.37	1.02	0.79	1.75
D/G mean	++++	0.57	0.56	0.54	0.49	0.41	0.32	0.30	0.34	0.35	0.41	0.50	0.56	0.40
Daily sunshine duration: hours.														
S		2.8	3.7	4.6	6.5	8.9	10.8	11.8	10.1	8.4	6.3	4.2	2.8	6.8
So		9.4	10.5	11.8	13.1	14.3	14.9	14.6	13.6	12.3	11.0	9.8	9.1	12.0
S/So		0.30	0.35	0.39	0.49	0.62	0.73	0.81	0.74	0.68	0.57	0.43	0.31	0.54
Somax		9.7	10.9	12.4	13.6	14.6	14.9	14.8	14.0	12.8	11.4	10.1	9.2	
Angstrom coefficients:Estimated Dogniaux & Lemoine technique														
Angstrom a		0.22	0.23	0.24	0.25	0.25	0.26	0.26	0.25	0.26	0.23	0.22	0.22	0.25
Angstrom b		0.55	0.54	0.56	0.54	0.53	0.51	0.50	0.50	0.50	0.53	0.53	0.53	0.52

TURKEY		Map site No.316			Computer file TURKEHOR.316							CANKIRI		
Latitude 40 36' N					Longitude 33 37' E			Height a.s.l.				751 metres		
Horizontal planes: - monthly means.					Data used & period: M'thly mean S (1969 -1978)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	+++	1.50	2.14	3.41	5.00	6.15	7.03	7.28	6.34	5.06	3.56	1.99	1.20	4.23
Gmax	+++	3.04	4.12	5.79	7.25	8.21	8.54	8.21	7.27	6.04	4.55	3.27	2.68	5.76
Gmin	+++	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999
Go		4.16	5.62	7.64	9.63	11.03	11.62	11.32	10.17	8.40	6.34	4.58	3.74	7.86
Ratios to extraterrestrial radiation														
G/Go	+++	0.36	0.38	0.45	0.52	0.56	0.60	0.64	0.62	0.60	0.56	0.43	0.32	0.50
Ktmax	+++	0.65	0.65	0.67	0.70	0.72	0.73	0.71	0.68	0.66	0.64	0.64	0.69	0.69
Ktmin	+++	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999
Daily diffuse radiation: kWh/m ² .														
D mean est.	+++	0.89	1.28	1.85	2.37	2.67	2.47	2.27	2.05	1.68	1.26	1.02	0.78	1.72
D/G mean	+++	0.59	0.60	0.54	0.47	0.43	0.35	0.31	0.32	0.33	0.35	0.51	0.65	0.41
Daily sunshine duration: hours.														
S		2.4	2.9	4.3	6.5	8.2	9.9	11.1	10.1	8.5	6.9	3.9	1.7	6.4
So		9.5	10.5	11.8	13.1	14.3	14.9	14.6	13.6	12.3	11.0	9.8	9.2	12.0
S/So		0.25	0.28	0.37	0.50	0.58	0.67	0.76	0.74	0.69	0.63	0.40	0.19	0.50
Somax		9.8	10.9	12.3	13.6	14.6	14.9	14.8	14.0	12.8	11.5	10.1	9.2	
Angstrom coefficients:Estimated Dogniaux & Lemoine technique														
Angstrom a		0.22	0.23	0.24	0.25	0.25	0.27	0.26	0.25	0.26	0.23	0.22	0.22	0.25
Angstrom b		0.55	0.54	0.56	0.54	0.53	0.50	0.50	0.50	0.50	0.53	0.53	0.53	0.52

TURKEY		Map site No.317			Computer file TURKEHOR.317								KARS		
Latitude 40 36' N					Longitude 43 05' E			Height a.s.l. 1775 metres							
Horizontal planes: - monthly means.					Data used & period: M'thly mean S (1969 -1978)										
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	1.67	2.52	3.73	4.68	5.82	6.83	7.01	6.41	5.09	3.50	2.14	1.43	4.24	
Gmax	++++	3.04	4.12	5.79	7.25	8.21	8.54	8.21	7.27	6.04	4.55	3.27	2.68	5.76	
Gmin	+++	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	
Go		4.16	5.62	7.64	9.63	11.03	11.62	11.32	10.17	8.40	6.34	4.58	3.74	7.86	
Ratios to extraterrestrial radiation															
G/Go	+++	0.40	0.45	0.49	0.49	0.53	0.59	0.62	0.63	0.61	0.55	0.47	0.38	0.52	
Ktmax	+++	0.65	0.65	0.67	0.70	0.72	0.73	0.71	0.68	0.66	0.64	0.64	0.69	0.69	
Ktmin	+++	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.88	1.26	1.77	2.34	2.66	2.43	2.23	1.84	1.53	1.21	0.96	0.77	1.66	
D/G mean	+++	0.53	0.50	0.47	0.50	0.46	0.36	0.32	0.29	0.30	0.34	0.45	0.54	0.39	
Daily sunshine duration: hours.															
S		3.1	4.2	5.2	5.7	7.4	9.4	10.4	10.3	8.6	6.7	4.5	2.8	6.5	
So		9.5	10.5	11.8	13.1	14.3	14.9	14.6	13.6	12.3	11.0	9.8	9.2	12.0	
S/So		0.33	0.40	0.44	0.43	0.52	0.63	0.71	0.76	0.70	0.61	0.46	0.31	0.53	
Somax		9.8	10.9	12.3	13.6	14.6	14.9	14.8	14.0	12.8	11.5	10.1	9.2		
Angstrom coefficients:Estimated Dogniaux & Lemoine technique															
Angstrom a		0.22	0.23	0.24	0.25	0.25	0.27	0.26	0.25	0.26	0.23	0.22	0.22	0.25	
Angstrom b		0.55	0.54	0.56	0.54	0.53	0.50	0.50	0.50	0.50	0.53	0.53	0.53	0.52	

TURKEY Map site No.318 Computer file TURKEHOR.318 CANAKKALE
 Latitude 40 08' N Longitude 26 24' E Height a.s.l. 3 metres
 Horizontal planes: - monthly means. Data used & period: M'thly mean S (1968 -1978)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 1.85 2.70 3.87 5.58 6.98 7.75 7.87 7.06 5.39 3.60 2.27 1.60 4.72
 Gmax +++ 3.10 4.17 5.82 7.28 8.21 8.53 8.20 7.28 6.07 4.60 3.33 2.74 5.79
 Gmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999
 Go +++ 4.24 5.70 7.70 9.66 11.04 11.62 11.32 10.19 8.44 6.41 4.66 3.82 7.91

Ratios to extraterrestrial radiation

G/Go +++ 0.44 0.47 0.50 0.58 0.63 0.67 0.70 0.69 0.64 0.56 0.49 0.42 0.57
 Ktmax +++ 0.65 0.65 0.67 0.70 0.72 0.73 0.71 0.68 0.66 0.64 0.64 0.69 0.69
 Ktmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.93 1.35 1.88 2.26 2.40 2.18 2.12 1.86 1.61 1.33 1.03 0.82 1.65
 D/G mean +++ 0.50 0.50 0.48 0.40 0.34 0.28 0.27 0.26 0.30 0.37 0.45 0.51 0.35

Daily sunshine duration: hours.

S 3.7 4.7 5.5 7.9 10.2 11.7 12.6 12.0 9.4 6.9 4.9 3.4 7.8
 So 9.5 10.5 11.8 13.1 14.2 14.8 14.5 13.6 12.3 11.0 9.8 9.2 12.0
 S/So 0.39 0.45 0.47 0.60 0.72 0.79 0.87 0.88 0.76 0.63 0.50 0.37 0.62
 Somax 9.8 10.9 12.3 13.6 14.6 14.8 14.7 14.0 12.8 11.5 10.2 9.3

Angstrom coefficients:Estimated Dogniaux & Lemoine technique

Angstrom a 0.22 0.23 0.25 0.25 0.25 0.27 0.26 0.25 0.26 0.23 0.23 0.22 0.25
 Angstrom b 0.55 0.54 0.55 0.54 0.53 0.50 0.50 0.50 0.50 0.53 0.52 0.53 0.52

TURKEY Map site No.319 Computer file TURKEHOR.319 ANKARA
 Latitude 39 57' N Longitude 32 53' E Height a.s.l. 902 metres
 Horizontal planes: - monthly means. Data used & period: M'thly mean S (1968 -1978)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 1.76 2.54 3.88 5.31 6.54 7.51 7.84 7.04 5.50 3.76 2.39 1.52 4.64
 Gmax +++ 3.12 4.19 5.83 7.28 8.21 8.52 8.20 7.28 6.08 4.62 3.34 2.76 5.79
 Gmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999
 Go 4.27 5.73 7.72 9.67 11.05 11.62 11.32 10.20 8.46 6.44 4.69 3.85 7.93

Ratios to extraterrestrial radiation

G/Go +++ 0.41 0.44 0.50 0.55 0.59 0.65 0.69 0.69 0.65 0.58 0.51 0.40 0.56
 Ktmax +++ 0.65 0.65 0.67 0.70 0.72 0.73 0.71 0.68 0.66 0.64 0.64 0.69 0.69
 Ktmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.92 1.33 1.82 2.27 2.48 2.15 1.95 1.71 1.45 1.23 0.97 0.81 1.60
 D/G mean +++ 0.52 0.52 0.47 0.43 0.38 0.29 0.25 0.24 0.26 0.33 0.41 0.53 0.34

Daily sunshine duration: hours.

S 3.3 4.1 5.5 7.2 9.1 11.1 12.5 11.9 9.7 7.4 5.3 3.0 7.5
 So 9.5 10.5 11.8 13.1 14.2 14.8 14.5 13.6 12.3 11.0 9.8 9.2 12.0
 S/So 0.35 0.39 0.47 0.55 0.64 0.75 0.86 0.88 0.79 0.67 0.54 0.33 0.60
 Somax 9.8 10.9 12.3 13.6 14.5 14.8 14.7 14.0 12.8 11.5 10.2 9.3

Angstrom coefficients:Estimated Dogniaux & Lemoine technique

Angstrom a 0.22 0.23 0.25 0.25 0.25 0.27 0.26 0.25 0.26 0.24 0.23 0.22 0.25
 Angstrom b 0.55 0.54 0.55 0.54 0.53 0.50 0.50 0.50 0.50 0.51 0.52 0.53 0.52

TURKEY Map site No.320 Computer file TURKEHOR.320 IGDİR
 Latitude 39 56' N Longitude 44 02' E Height a.s.l. 858 metres
 Horizontal planes: - monthly means. Data used & period: M'thly mean S (1968 -1978)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 1.59 2.48 3.49 5.00 6.04 7.00 7.18 6.37 5.27 3.49 2.09 1.39 4.29
 Gmax +++ 3.12 4.20 5.84 7.29 8.21 8.52 8.20 7.28 6.08 4.62 3.34 2.76 5.79
 Gmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999
 Go 4.27 5.73 7.72 9.68 11.05 11.62 11.32 10.20 8.47 6.44 4.69 3.85 7.93

Ratios to extraterrestrial radiation

G/Go +++ 0.37 0.43 0.45 0.52 0.55 0.60 0.63 0.62 0.62 0.54 0.45 0.36 0.51
 Ktmax +++ 0.65 0.65 0.67 0.70 0.72 0.73 0.71 0.68 0.66 0.64 0.64 0.69 0.69
 Ktmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.92 1.33 1.87 2.38 2.70 2.46 2.30 2.03 1.58 1.35 1.03 0.81 1.74
 D/G mean +++ 0.58 0.54 0.54 0.48 0.45 0.35 0.32 0.32 0.30 0.39 0.50 0.59 0.41

Daily sunshine duration: hours.

S 2.6 3.9 4.4 6.4 7.9 9.8 10.8 10.1 9.0 6.5 4.1 2.4 6.5
 So 9.5 10.5 11.8 13.1 14.2 14.8 14.5 13.6 12.3 11.0 9.8 9.2 12.0
 S/So 0.27 0.37 0.37 0.49 0.56 0.66 0.74 0.74 0.73 0.59 0.42 0.26 0.52
 Somax 9.8 10.9 12.3 13.6 14.5 14.8 14.7 14.0 12.8 11.5 10.2 9.3

Angstrom coefficients:Estimated Dogniaux & Lemoine technique

Angstrom a 0.22 0.23 0.25 0.25 0.25 0.27 0.26 0.26 0.26 0.24 0.23 0.22 0.25
 Angstrom b 0.55 0.54 0.55 0.54 0.53 0.50 0.50 0.49 0.50 0.51 0.52 0.53 0.52

TURKEY		Map site No.321			Computer file TURKEHOR.321								KEBAN	
Latitude 38 48' N					Longitude 38 45' E			Height a.s.l. 808 metres						
Horizontal planes: - monthly means.					Data used & period: M'thly mean S (1968 -1978)									
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m^2.														
G mean	++++	1.59	2.32	3.41	5.42	6.44	7.57	7.59	6.94	5.47	3.63	2.37	1.53	4.53
Gmax	++++	3.25	4.31	5.93	7.33	8.20	8.48	8.18	7.31	6.15	4.72	3.47	2.89	5.85
Gmin	+++	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999
Go		4.47	5.91	7.86	9.76	11.07	11.61	11.33	10.26	8.58	6.60	4.88	4.05	8.04
Ratios to extraterrestrial radiation														
G/Go	++++	0.36	0.39	0.43	0.56	0.58	0.65	0.67	0.68	0.64	0.55	0.49	0.38	0.53
Ktmax	++++	0.66	0.65	0.67	0.70	0.72	0.73	0.71	0.68	0.66	0.64	0.64	0.69	0.69
Ktmin	+++	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.96	1.36	1.93	2.29	2.54	2.12	2.08	1.78	1.57	1.37	1.04	0.86	1.66
D/G mean	++++	0.60	0.59	0.56	0.42	0.39	0.28	0.27	0.26	0.29	0.38	0.44	0.56	0.37
Daily sunshine duration: hours.														
S		2.3	3.1	4.0	7.3	8.8	11.2	11.8	11.5	9.4	6.7	4.9	2.7	7.0
So		9.6	10.6	11.8	13.0	14.1	14.7	14.4	13.5	12.3	11.1	9.9	9.3	12.0
S/So		0.24	0.29	0.34	0.56	0.62	0.76	0.82	0.85	0.76	0.61	0.49	0.29	0.55
Somax		9.9	11.0	12.3	13.5	14.4	14.7	14.6	13.9	12.7	11.5	10.2	9.4	
Angstrom coefficients: Estimated Dogniaux & Lemoine technique														
Angstrom a		0.23	0.24	0.25	0.26	0.26	0.27	0.27	0.26	0.26	0.24	0.23	0.23	0.25
Angstrom b		0.54	0.53	0.54	0.53	0.52	0.50	0.49	0.49	0.49	0.51	0.52	0.52	0.52

TURKEY		Map site No.322			Computer file TURKEHOR.322								BORNOVA			
Latitude 38 28' N					Longitude 27 15' E				Height a.s.l. 27 metres							
Horizontal planes: - monthly means.					Data used & period:								M'thly mean S (1968 -1978)			
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m^2.																
G mean	++++	2.04	2.85	4.09	5.60	7.03	7.73	7.98	7.14	5.70	4.00	2.55	1.81	4.88		
Gmax	++++	3.29	4.35	5.96	7.34	8.19	8.47	8.17	7.31	6.17	4.75	3.51	2.93	5.87		
Gmin	+++	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999		
Go		4.52	5.96	7.90	9.78	11.08	11.61	11.33	10.27	8.61	6.65	4.94	4.11	8.07		
Ratios to extraterrestrial radiation																
G/Go	++++	0.45	0.48	0.52	0.57	0.63	0.67	0.70	0.69	0.66	0.60	0.52	0.44	0.58		
Ktmax	++++	0.66	0.65	0.67	0.70	0.72	0.73	0.71	0.68	0.66	0.64	0.64	0.69	0.69		
Ktmin	+++	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999		
Daily diffuse radiation: kWh/m^2.																
D mean est.	++++	0.99	1.41	1.95	2.31	2.37	2.15	2.05	1.84	1.58	1.29	1.05	0.88	1.66		
D/G mean	+++	0.48	0.49	0.48	0.41	0.34	0.28	0.26	0.26	0.28	0.32	0.41	0.49	0.34		
Daily sunshine duration: hours.																
S		4.0	4.8	5.8	7.7	10.2	11.6	12.8	12.0	10.0	7.8	5.5	3.8	8.0		
So		9.7	10.6	11.8	13.0	14.1	14.6	14.4	13.5	12.3	11.1	10.0	9.4	12.0		
S/So		0.41	0.45	0.49	0.59	0.72	0.79	0.89	0.89	0.81	0.70	0.55	0.41	0.64		
Somax		9.9	11.0	12.3	13.5	14.4	14.6	14.6	13.9	12.7	11.5	10.3	9.4			
Angstrom coefficients:Estimated Dogniaux & Lemoine technique																
Angstrom a		0.23	0.24	0.25	0.26	0.26	0.27	0.27	0.26	0.26	0.24	0.23	0.23	0.25		
Angstrom b		0.54	0.53	0.54	0.53	0.52	0.50	0.49	0.49	0.49	0.51	0.52	0.52	0.52		

TURKEY		Map site No.323			Computer file TURKEHOR.323								KONYA		
Latitude 37 52' N					Longitude 32 30' E			Height a.s.l. 1028 metres							
Horizontal planes: - monthly means.					Data used & period:			M'thly mean S (1968 -1978)							
Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .															
G mean	++++	1.96	2.86	4.06	5.55	6.71	7.58	7.84	7.16	5.63	3.92	2.68	1.76	4.82	
Gmax	++++	3.36	4.41	6.00	7.37	8.18	8.46	8.16	7.32	6.19	4.81	3.57	2.99	5.91	
Gmin	++++	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	
Go		4.63	6.06	7.98	9.82	11.09	11.60	11.33	10.30	8.67	6.74	5.04	4.21	8.13	
Ratios to extraterrestrial radiation															
G/Go	++++	0.42	0.47	0.51	0.56	0.61	0.65	0.69	0.70	0.65	0.58	0.53	0.42	0.57	
Ktmax	++++	0.66	0.65	0.68	0.70	0.71	0.73	0.71	0.68	0.66	0.64	0.64	0.69	0.69	
Ktmin	++++	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	-999	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	1.01	1.38	1.90	2.23	2.36	2.04	1.89	1.63	1.49	1.27	0.99	0.89	1.60	
D/G mean	++++	0.51	0.48	0.47	0.40	0.35	0.27	0.24	0.23	0.26	0.32	0.37	0.50	0.33	
Daily sunshine duration: hours.															
S		3.5	4.7	5.6	7.5	9.4	11.2	12.4	12.0	9.7	7.4	5.8	3.4	7.7	
So		9.7	10.6	11.8	13.0	14.0	14.6	14.3	13.5	12.3	11.1	10.0	9.4	12.0	
S/So		0.36	0.44	0.47	0.58	0.67	0.77	0.86	0.89	0.79	0.67	0.58	0.36	0.62	
Somax		10.0	11.0	12.3	13.5	14.4	14.6	14.5	13.8	12.7	11.5	10.3	9.5		
Angstrom coefficients:Estimated Dogniaux & Lemoine technique															
Angstrom a		0.23	0.24	0.25	0.26	0.26	0.28	0.27	0.26	0.27	0.24	0.23	0.23	0.26	
Angstrom b		0.53	0.53	0.54	0.53	0.52	0.49	0.49	0.49	0.48	0.51	0.52	0.52	0.50	

TURKEY Map site No.324 Computer file TURKEHOR.324 ADIYAMAN
 Latitude 37 45' N Longitude 38 17' E Height a.s.l. 678 metres
 Horizontal planes: - monthly means. Data used & period: M'thly mean S (1968 -1978)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 1.86 2.81 4.07 5.84 7.04 8.17 8.15 7.39 5.91 3.99 2.69 1.86 4.99
 Gmax +++ 3.37 4.42 6.01 7.37 8.18 8.46 8.15 7.32 6.20 4.82 3.58 3.00 5.92
 Gmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999
 Go 4.65 6.07 7.99 9.83 11.09 11.60 11.33 10.30 8.69 6.75 5.05 4.23 8.14

Ratios to extraterrestrial radiation

G/Go +++ 0.40 0.46 0.51 0.59 0.63 0.70 0.72 0.72 0.68 0.59 0.53 0.44 0.58
 Ktmax +++ 0.66 0.65 0.68 0.70 0.71 0.73 0.71 0.68 0.66 0.64 0.64 0.69 0.69
 Ktmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999

Daily diffuse radiation: kWh/m².

D mean est. +++ 1.02 1.41 1.93 2.14 2.24 1.78 1.83 1.61 1.40 1.27 1.01 0.89 1.55
 D/G mean +++ 0.55 0.50 0.47 0.37 0.32 0.22 0.22 0.22 0.24 0.32 0.38 0.48 0.31

Daily sunshine duration: hours.

S 3.1 4.5 5.6 8.2 10.2 12.7 13.2 12.6 10.5 7.6 5.8 3.8 4.2
 So 9.7 10.6 11.8 13.0 14.0 14.6 14.3 13.5 12.3 11.1 10.0 9.4 12.0
 S/So 0.32 0.42 0.47 0.63 0.73 0.87 0.92 0.94 0.85 0.69 0.58 0.40 0.65
 Somax 10.0 11.0 12.3 13.5 14.3 14.6 14.5 13.8 12.7 11.5 10.3 9.5

Angstrom coefficients:Estimated Dogniaux & Lemoine technique

Angstrom a 0.23 0.24 0.25 0.26 0.26 0.28 0.27 0.26 0.27 0.24 0.23 0.23 0.26
 Angstrom b 0.53 0.53 0.54 0.53 0.52 0.49 0.49 0.49 0.48 0.51 0.52 0.52 0.50

TURKEY Map site No.325 Computer file TURKEHOR.325 HAKKARI
 Latitude 37 34' N Longitude 43 46' E Height a.s.l. 1720 metres
 Horizontal planes: - monthly means. Data used & period: M'thly mean S (1968 -1978)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 1.85 2.85 3.60 4.96 6.76 7.70 7.73 7.13 5.65 3.76 2.65 1.80 4.71
 Gmax +++ 3.39 4.44 6.03 7.38 8.18 8.45 8.15 7.32 6.20 4.84 3.61 3.03 5.93
 Gmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999
 Go 4.68 6.10 8.01 9.84 11.09 11.60 11.33 10.31 8.70 6.78 5.08 4.26 8.16

Ratios to extraterrestrial radiation

G/Go +++ 0.40 0.47 0.45 0.50 0.61 0.66 0.68 0.69 0.65 0.55 0.52 0.42 0.55
 Ktmax +++ 0.66 0.65 0.68 0.70 0.71 0.73 0.71 0.68 0.66 0.64 0.64 0.69 0.69
 Ktmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999

Daily diffuse radiation: kWh/m².

D mean est. +++ 1.00 1.36 1.92 2.37 2.23 1.84 1.80 1.51 1.39 1.31 0.98 0.88 1.55
 D/G mean +++ 0.54 0.48 0.53 0.48 0.33 0.24 0.23 0.21 0.25 0.35 0.37 0.49 0.33

Daily sunshine duration: hours.

S 3.0 4.6 4.3 6.0 9.5 11.5 12.1 11.9 9.7 6.8 5.6 3.5 7.4
 So 9.7 10.6 11.8 13.0 14.0 14.5 14.3 13.4 12.3 11.1 10.0 9.5 12.0
 S/So 0.31 0.43 0.36 0.46 0.68 0.79 0.85 0.88 0.79 0.61 0.56 0.37 0.59
 Somax 10.0 11.0 12.3 13.5 14.3 14.6 14.5 13.8 12.7 11.5 10.3 9.5

Angstrom coefficients:Estimated Dogniaux & Lemoine technique

Angstrom a 0.23 0.24 0.25 0.26 0.26 0.28 0.27 0.26 0.27 0.24 0.24 0.23 0.26
 Angstrom b 0.53 0.53 0.54 0.53 0.52 0.49 0.49 0.49 0.48 0.51 0.51 0.52 0.50

TURKEY Map site No.326 Computer file TURKEHOR.326 MUGLA
 Latitude 37 15' N Longitude 28 22' E Height a.s.l. 646 metres
 Horizontal planes: - monthly means. Data used & period: M'thly mean S (1969 -1978)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 2.05 2.99 4.36 5.70 6.77 7.74 7.89 7.15 5.83 3.97 2.65 1.87 4.92
 Gmax +++ 3.43 4.47 6.05 7.39 8.18 8.44 8.14 7.33 6.22 4.86 3.64 3.06 5.94
 Gmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999
 Go 4.73 6.15 8.05 9.86 11.10 11.60 11.33 10.33 8.73 6.82 5.14 4.32 8.19

Ratios to extraterrestrial radiation

G/Go +++ 0.43 0.49 0.54 0.58 0.61 0.67 0.70 0.69 0.67 0.58 0.52 0.43 0.58
 Ktmax +++ 0.66 0.65 0.68 0.70 0.71 0.73 0.70 0.68 0.66 0.64 0.64 0.69 0.68
 Ktmin +++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999

Daily diffuse radiation: kWh/m².

D mean est. +++ 1.04 1.40 1.88 2.22 2.39 2.00 1.94 1.71 1.45 1.32 1.06 0.91 1.62
 D/G mean +++ 0.51 0.47 0.43 0.39 0.35 0.26 0.25 0.24 0.25 0.33 0.40 0.49 0.33

Daily sunshine duration: hours.

S 3.7 5.0 6.3 7.8 9.5 11.6 12.5 11.9 10.2 7.4 5.5 3.7 7.9
 So 9.8 10.6 11.8 13.0 14.0 14.5 14.3 13.4 12.3 11.1 10.0 9.5 12.0
 S/So 0.38 0.47 0.53 0.60 0.68 0.80 0.87 0.89 0.83 0.67 0.55 0.39 0.64
 Somax 10.0 11.0 12.3 13.4 14.3 14.5 14.4 13.8 12.7 11.5 10.3 9.5

Angstrom coefficients:Estimated Dogniaux & Lemoine technique

Angstrom a 0.23 0.24 0.25 0.26 0.26 0.28 0.27 0.26 0.27 0.24 0.24 0.23 0.26
 Angstrom b 0.53 0.53 0.54 0.53 0.52 0.49 0.49 0.49 0.48 0.51 0.51 0.52 0.50

TURKEY Map site No.327 Computer file TURKEHOR.327 FINIKE
 Latitude 36 18' N Longitude 30 09' E Height a.s.l. 3 metres
 Horizontal planes: - monthly means. Data used & period: M'thly mean S (1969 -1978)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 2.33 3.21 4.53 6.19 7.23 8.05 7.98 7.18 5.89 4.13 3.06 2.08 5.16
 Gmax ++++ 3.53 4.57 6.13 7.43 8.16 8.40 8.12 7.34 6.27 4.94 3.74 3.17 5.99
 Gmin ++++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999
 Go 4.89 6.30 8.16 9.92 11.11 11.59 11.33 10.37 8.82 6.96 5.29 4.48 8.28

Ratios to extraterrestrial radiation

G/Go ++++ 0.48 0.51 0.55 0.62 0.65 0.70 0.70 0.69 0.67 0.59 0.58 0.46 0.60
 Ktmax ++++ 0.66 0.65 0.68 0.70 0.71 0.72 0.70 0.68 0.66 0.64 0.64 0.69 0.69
 Ktmin ++++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999

Daily diffuse radiation: kWh/m².

D mean est. ++++ 1.07 1.47 1.91 2.08 2.32 2.00 2.10 1.82 1.55 1.35 1.02 0.94 1.64
 D/G mean ++++ 0.46 0.46 0.42 0.34 0.32 0.25 0.26 0.25 0.26 0.33 0.33 0.45 0.32

Daily sunshine duration: hours.

S 4.5 5.5 6.6 8.9 10.6 12.4 12.7 11.9 10.2 7.7 6.8 4.3 8.5
 So 9.8 10.7 11.8 13.0 13.9 14.4 14.2 13.4 12.3 11.1 10.1 9.6 12.0
 S/So 0.46 0.51 0.56 0.69 0.76 0.86 0.89 0.89 0.83 0.69 0.67 0.45 0.69
 Somax 10.1 11.1 12.3 13.4 14.2 14.4 14.4 13.7 12.7 11.5 10.4 9.6

Angstrom coefficients: Estimated Dogniaux & Lemoine technique

Angstrom a 0.24 0.24 0.26 0.26 0.26 0.28 0.28 0.26 0.27 0.25 0.24 0.24 0.26
 Angstrom b 0.52 0.52 0.53 0.53 0.51 0.48 0.47 0.49 0.48 0.50 0.50 0.51 0.50

TURKEY Map site No.328 Computer file TURKEHOR.328 ANAMUR
 Latitude 36 06' N Longitude 32 50' E Height a.s.l. 5 metres
 Horizontal planes: - monthly means. Data used & period: M'thly mean S (1969 -1978)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean ++++ 2.27 3.32 4.76 6.32 7.24 8.09 8.05 7.26 6.03 4.17 3.03 2.21 5.24
 Gmax ++++ 3.56 4.59 6.14 7.44 8.16 8.39 8.12 7.35 6.28 4.96 3.76 3.19 6.00
 Gmin ++++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999
 Go 4.93 6.33 8.19 9.94 11.11 11.58 11.33 10.38 8.84 6.99 5.33 4.51 8.29

Ratios to extraterrestrial radiation

G/Go ++++ 0.46 0.52 0.58 0.64 0.65 0.70 0.71 0.70 0.68 0.60 0.57 0.49 0.61
 Ktmax ++++ 0.66 0.65 0.68 0.70 0.71 0.72 0.70 0.68 0.66 0.64 0.64 0.69 0.69
 Ktmin ++++ -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999 -999

Daily diffuse radiation: kWh/m².

D mean est. ++++ 1.09 1.45 1.82 2.01 2.32 1.98 2.07 1.79 1.48 1.34 1.05 0.93 1.62
 D/G mean ++++ 0.48 0.44 0.38 0.32 0.32 0.24 0.26 0.25 0.25 0.32 0.35 0.42 0.31

Daily sunshine duration: hours.

S 4.2 5.8 7.2 9.2 10.6 12.5 12.9 12.1 10.6 7.8 6.6 4.8 8.7
 So 9.9 10.7 11.8 12.9 13.9 14.4 14.2 13.4 12.3 11.1 10.1 9.6 12.0
 S/So 0.43 0.54 0.61 0.71 0.76 0.87 0.91 0.90 0.86 0.70 0.65 0.50 0.70
 Somax 10.1 11.1 12.3 13.4 14.2 14.4 14.3 13.7 12.7 11.5 10.4 9.6

Angstrom coefficients: Estimated Dogniaux & Lemoine technique

Angstrom a 0.24 0.24 0.26 0.27 0.26 0.28 0.28 0.27 0.27 0.25 0.24 0.24 0.26
 Angstrom b 0.52 0.52 0.53 0.52 0.51 0.48 0.47 0.48 0.48 0.50 0.50 0.50 0.50

UNITED KINGDOM Map site No.13 Computer file UKINGHOR.013 LERWICK
 Latitude 60 8' N Longitude 1 11' W Height a.s.l. 82 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.21 0.78 1.75 3.27 3.94 4.80 4.15 3.35 2.06 1.02 0.37 0.14 2.16
 Gmax 0.64 1.86 3.68 5.60 7.35 8.04 7.40 6.27 4.19 2.40 0.95 0.35 4.07
 Gmin 0.02 0.09 0.30 0.97 0.73 1.18 1.30 0.63 0.47 0.15 0.07 0.02 0.50
 Go 0.98 2.41 4.84 7.75 10.22 11.41 10.80 8.67 5.88 3.21 1.35 0.63 5.70

Ratios to extraterrestrial radiation

G/Go 0.21 0.32 0.36 0.42 0.39 0.42 0.38 0.39 0.35 0.32 0.27 0.22 0.34
 Ktmax 0.46 0.59 0.60 0.63 0.67 0.70 0.65 0.65 0.60 0.58 0.51 0.48 0.60
 Ktmin 0.02 0.04 0.06 0.13 0.07 0.10 0.12 0.07 0.08 0.05 0.05 0.03 0.09

Daily diffuse radiation: kWh/m².

D mean est. ++++ 0.18 0.51 1.08 1.91 2.30 2.69 2.56 2.06 1.29 0.68 0.28 0.12 1.31
 D/G mean ++++ 0.85 0.66 0.62 0.58 0.58 0.56 0.62 0.62 0.63 0.66 0.77 0.89 0.61

Daily sunshine duration: hours.

S 0.6 2.1 2.8 4.6 4.5 5.9 4.3 4.2 2.9 2.1 1.1 0.4 3.0
 So 6.5 8.9 11.6 14.4 16.9 18.4 17.7 15.4 12.7 9.9 7.3 5.6 12.1
 S/So 0.09 0.24 0.24 0.32 0.27 0.32 0.24 0.27 0.23 0.21 0.15 0.07 0.22
 Somax 7.3 9.8 12.8 15.4 17.8 18.5 18.3 16.3 13.6 10.9 8.1 5.9

Angstrom coefficients: Radiation observing site

Angstrom a 0.16 0.18 0.20 0.24 0.21 0.22 0.24 0.23 0.20 0.19 0.17 0.18 0.20
 Angstrom b 0.63 0.62 0.64 0.58 0.66 0.62 0.60 0.58 0.62 0.61 0.61 0.62 0.62

UNITED KINGDOM Map site No.23 Computer file UKINGHOR.023 MOORHOUSE
 Latitude 54 41' N Longitude 2 23' W Height a.s.l. 556 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.37 1.03 1.95 3.14 4.09 4.80 4.09 3.52 2.35 1.30 0.61 0.33 2.31
 Gmax +++ 1.13 2.51 4.24 6.09 7.15 7.82 7.40 6.38 4.74 2.96 1.61 0.88 4.42
 Gmin +++ 0.06 0.15 0.43 0.64 0.93 1.30 1.19 0.85 0.57 0.23 0.10 0.06 0.55
 Go 1.81 3.33 5.71 8.37 10.51 11.50 10.98 9.16 6.66 4.12 2.21 1.41 6.33

Ratios to extraterrestrial radiation

G/Go +++ 0.21 0.31 0.34 0.38 0.39 0.42 0.37 0.38 0.35 0.32 0.28 0.23 0.33
 Ktmax +++ 0.50 0.61 0.62 0.65 0.64 0.68 0.65 0.64 0.62 0.59 0.58 0.58 0.62
 Ktmin +++ 0.03 0.04 0.08 0.08 0.09 0.11 0.11 0.09 0.09 0.06 0.04 0.04 0.09

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.30 0.69 1.22 1.90 2.41 2.73 2.52 2.13 1.46 0.83 0.44 0.26 1.41
 D/G mean +++ 0.82 0.67 0.62 0.60 0.59 0.57 0.62 0.61 0.62 0.64 0.72 0.78 0.61

Daily sunshine duration: hours.

S 0.7 1.9 2.8 4.1 5.1 6.1 4.8 4.8 3.3 2.3 1.4 0.9 3.2
 So 7.7 9.5 11.7 13.9 15.9 16.9 16.4 14.7 12.5 10.3 8.3 7.1 12.1
 S/So 0.09 0.20 0.24 0.29 0.32 0.36 0.29 0.32 0.26 0.22 0.16 0.13 0.24
 Somax 8.3 10.2 12.6 14.7 16.5 17.0 16.8 15.4 13.3 11.1 8.9 7.3

Angstrom coefficients:Reference site: Eskdalemuir

Angstrom a 0.15 0.19 0.19 0.20 0.19 0.21 0.20 0.20 0.20 0.18 0.18 0.16 0.19
 Angstrom b 0.63 0.61 0.62 0.60 0.62 0.58 0.59 0.57 0.58 0.61 0.59 0.59 0.60

UNITED KINGDOM Map site No.24 Computer file UKINGHOR.024 ALDERGROVE
 Latitude 54 39' N Longitude 6 13' W Height a.s.l. 68 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1968 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.48 1.15 2.17 3.62 4.35 5.23 4.33 3.59 2.64 1.38 0.72 0.39 2.51
 Gmax 1.19 2.30 4.09 6.01 7.21 8.18 7.50 6.32 5.01 2.87 1.54 0.87 4.43
 Gmin 0.10 0.28 0.48 0.87 0.91 1.80 1.30 1.24 0.87 0.34 0.16 0.09 0.70
 Go 1.82 3.34 5.71 8.37 10.51 11.50 10.99 9.16 6.66 4.12 2.22 1.41 6.33

Ratios to extraterrestrial radiation

G/Go 0.26 0.34 0.38 0.43 0.41 0.46 0.39 0.39 0.40 0.33 0.33 0.27 0.37
 Ktmax 0.52 0.56 0.59 0.64 0.65 0.71 0.66 0.63 0.66 0.57 0.56 0.57 0.61
 Ktmin 0.05 0.09 0.08 0.10 0.09 0.16 0.12 0.14 0.13 0.08 0.07 0.06 0.11

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.35 0.73 1.31 2.17 2.62 2.93 2.69 2.20 1.61 0.90 0.47 0.28 1.53
 D/G mean +++ 0.73 0.63 0.61 0.60 0.60 0.56 0.62 0.61 0.61 0.65 0.65 0.73 0.61

Daily sunshine duration: hours.

S 1.2 2.6 3.5 5.6 5.5 6.6 5.0 4.5 3.8 2.7 2.0 1.2 3.7
 So 7.7 9.5 11.7 13.9 15.9 16.9 16.4 14.7 12.5 10.3 8.3 7.1 12.1
 S/So 0.16 0.27 0.30 0.40 0.35 0.39 0.30 0.31 0.30 0.26 0.24 0.17 0.29
 Somax 8.3 10.2 12.6 14.7 16.5 17.0 16.8 15.4 13.3 11.1 8.9 7.3

Angstrom coefficients:Radiation observing site

Angstrom a 0.16 0.19 0.21 0.22 0.22 0.25 0.22 0.22 0.23 0.19 0.19 0.18 0.21
 Angstrom b 0.63 0.58 0.58 0.52 0.56 0.53 0.56 0.56 0.54 0.55 0.58 0.57 0.56

UNITED KINGDOM Map site No.25 Computer file UKINGHOR.025 LEBMING
 Latitude 54 18' N Longitude 1 32' W Height a.s.l. 32 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.50 1.05 2.08 3.00 4.11 4.65 4.18 3.44 2.51 1.39 0.75 0.45 2.35
 Gmax +++ 1.24 2.15 4.11 5.45 6.73 7.88 7.29 6.13 4.37 3.01 1.55 0.84 4.23
 Gmin +++ 0.09 0.20 0.31 0.87 1.01 1.55 1.42 1.02 0.72 0.26 0.14 0.08 0.64
 Go 1.87 3.40 5.76 8.41 10.52 11.50 11.00 9.19 6.71 4.18 2.28 1.47 6.37

Ratios to extraterrestrial radiation

G/Go +++ 0.27 0.31 0.36 0.36 0.39 0.40 0.38 0.37 0.37 0.33 0.33 0.31 0.35
 Ktmax +++ 0.53 0.52 0.59 0.58 0.60 0.68 0.64 0.61 0.57 0.59 0.55 0.53 0.59
 Ktmin +++ 0.05 0.06 0.05 0.10 0.10 0.14 0.13 0.11 0.11 0.06 0.06 0.06 0.10

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.36 0.74 1.27 1.95 2.51 2.71 2.66 2.25 1.58 0.90 0.50 0.29 1.48
 D/G mean +++ 0.71 0.71 0.61 0.65 0.61 0.58 0.64 0.65 0.63 0.65 0.67 0.65 0.63

Daily sunshine duration: hours.

S 1.4 2.5 3.6 4.3 5.5 6.1 5.1 4.9 3.9 2.8 2.2 1.6 3.7
 So 7.8 9.5 11.7 13.9 15.8 16.8 16.3 14.6 12.5 10.3 8.3 7.2 12.1
 S/So 0.18 0.27 0.31 0.31 0.35 0.36 0.31 0.34 0.31 0.27 0.27 0.23 0.29
 Somax 8.3 10.2 12.6 14.7 16.4 16.9 16.7 15.4 13.3 11.1 8.9 7.3

Angstrom coefficients:Reference site: Sutton Bonnington

Angstrom a 0.16 0.18 0.18 0.20 0.20 0.21 0.22 0.22 0.22 0.19 0.19 0.18 0.19
 Angstrom b 0.58 0.49 0.58 0.51 0.55 0.54 0.51 0.46 0.49 0.52 0.52 0.57 0.53

UNITED KINGDOM		Map site No.26		Computer file UKINGHOR.026								CAWOOD	
Latitude 53 50' N				Longitude 1 8' W				Height a.s.l.		6 metres			
Horizontal planes: - monthly means.				Data used & period:		G & S		(7/68 -12/75)					
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean	0.54	1.14	2.08	3.31	4.38	5.09	4.34	3.66	2.64	1.53	0.88	0.54	2.52
Gmax	1.35	2.62	4.38	5.87	7.19	8.02	7.33	6.21	4.69	3.13	1.74	1.09	4.48
Gmin	0.12	0.25	0.56	0.86	1.27	2.09	1.41	1.03	0.93	0.47	0.31	0.22	0.79
Go	1.95	3.48	5.84	8.46	10.55	11.51	11.01	9.23	6.77	4.26	2.35	1.54	6.43

Ratios to extraterrestrial radiation

G/Go	0.28	0.33	0.36	0.39	0.42	0.44	0.39	0.40	0.39	0.36	0.38	0.35	0.37
Ktmax	0.56	0.62	0.63	0.62	0.64	0.69	0.64	0.62	0.61	0.60	0.60	0.66	0.63
Ktmin	0.06	0.07	0.10	0.10	0.12	0.18	0.13	0.11	0.14	0.11	0.13	0.14	0.12

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.41	0.79	1.33	2.12	2.78	2.87	2.75	2.27	1.65	0.99	0.57	0.36	1.58
D/G mean ++++	0.76	0.69	0.64	0.64	0.63	0.56	0.63	0.62	0.62	0.65	0.65	0.67	0.63

Daily sunshine duration: hours.

S	1.1	2.0	2.8	4.1	5.6	6.4	4.9	5.0	3.7	2.6	2.1	1.3	3.5
So	7.8	9.6	11.7	13.8	15.7	16.7	16.3	14.6	12.5	10.4	8.4	7.3	12.1
S/So	0.14	0.21	0.24	0.30	0.36	0.38	0.30	0.34	0.30	0.25	0.25	0.18	0.27
Somax	8.4	10.3	12.6	14.7	16.3	16.8	16.7	15.3	13.3	11.2	9.0	7.4	

Angstrom coefficients: Radiation observing site

Angstrom a	0.20	0.21	0.22	0.24	0.24	0.23	0.24	0.22	0.23	0.23	0.27	0.26	0.23
Angstrom b	0.55	0.54	0.57	0.51	0.49	0.55	0.52	0.52	0.52	0.52	0.48	0.58	0.53

UNITED KINGDOM		Map site No.27		Computer file UKINGHOR.027								FAIRFIELD	
Latitude 53 48' N				Longitude 2 53' W				Height a.s.l.		24 metres			
Horizontal planes: - monthly means.				Data used & period:		S		(1966 -1975)					
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean ++++	0.55	1.23	2.40	3.85	4.72	5.63	4.98	3.98	2.83	1.63	0.78	0.46	2.76
Gmax ++++	1.23	2.66	4.60	6.59	7.88	8.43	8.17	6.75	5.12	3.19	1.55	0.90	4.76
Gmin ++++	0.15	0.28	0.64	1.23	1.34	1.67	1.29	0.88	0.91	0.36	0.21	0.12	0.75
Go	1.95	3.48	5.84	8.46	10.55	11.51	11.01	9.24	6.78	4.26	2.36	1.54	6.43

Ratios to extraterrestrial radiation

G/Go ++++	0.28	0.35	0.41	0.45	0.45	0.49	0.45	0.43	0.42	0.38	0.33	0.30	0.40
Ktmax ++++	0.51	0.63	0.66	0.70	0.70	0.73	0.71	0.67	0.66	0.61	0.53	0.54	0.64
Ktmin ++++	0.08	0.08	0.11	0.15	0.13	0.14	0.12	0.09	0.14	0.08	0.09	0.08	0.12

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.40	0.80	1.39	2.19	2.65	2.84	2.81	2.34	1.67	0.99	0.52	0.33	1.59
D/G mean ++++	0.73	0.65	0.58	0.57	0.56	0.50	0.56	0.59	0.59	0.61	0.67	0.71	0.58

Daily sunshine duration: hours.

S	1.4	2.6	3.8	5.2	6.3	7.5	5.9	5.5	4.3	3.1	2.1	1.4	4.1
So	7.9	9.6	11.7	13.8	15.7	16.7	16.3	14.6	12.5	10.4	8.4	7.3	12.1
S/So	0.17	0.27	0.33	0.38	0.40	0.45	0.36	0.38	0.34	0.30	0.25	0.19	0.32
Somax	8.4	10.3	12.6	14.6	16.3	16.8	16.6	15.3	13.3	11.2	9.0	7.4	

Angstrom coefficients: Reference site: Aberporth

Angstrom a	0.19	0.21	0.22	0.25	0.22	0.24	0.25	0.23	0.24	0.22	0.20	0.20	0.22
Angstrom b	0.54	0.54	0.58	0.54	0.57	0.56	0.56	0.53	0.52	0.54	0.53	0.52	0.54

UNITED KINGDOM		Map site No.28		Computer file UKINGHOR.028								VALLEY	
Latitude 53 15' N				Longitude 4 32' W				Height a.s.l.		18 metres			
Horizontal planes: - monthly means.				Data used & period:		S		(1966 -1975)					
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean ++++	0.59	1.36	2.54	4.10	4.89	5.78	5.18	4.14	3.07	1.70	0.82	0.49	2.89
Gmax ++++	1.28	2.71	4.64	6.63	7.89	8.44	8.18	6.77	5.16	3.24	1.60	0.95	4.80
Gmin ++++	0.16	0.29	0.65	1.24	1.34	1.67	1.29	0.88	0.92	0.37	0.22	0.13	0.76
Go	2.04	3.58	5.92	8.52	10.58	11.52	11.03	9.28	6.85	4.35	2.45	1.63	6.49

Ratios to extraterrestrial radiation

G/Go ++++	0.29	0.38	0.43	0.48	0.46	0.50	0.47	0.45	0.45	0.39	0.33	0.30	0.41
Ktmax ++++	0.51	0.62	0.66	0.70	0.70	0.73	0.71	0.67	0.66	0.61	0.53	0.54	0.64
Ktmin ++++	0.08	0.08	0.11	0.15	0.13	0.14	0.12	0.09	0.14	0.08	0.09	0.08	0.12

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.42	0.85	1.42	2.20	2.69	2.83	2.82	2.37	1.72	1.01	0.54	0.35	1.61
D/G mean ++++	0.72	0.62	0.56	0.54	0.55	0.49	0.54	0.57	0.56	0.59	0.66	0.71	0.56

Daily sunshine duration: hours.

S	1.5	3.0	4.2	5.9	6.6	7.8	6.4	5.9	5.0	3.3	2.2	1.4	4.4
So	7.9	9.6	11.7	13.8	15.6	16.6	16.2	14.5	12.5	10.4	8.5	7.4	12.1
S/So	0.19	0.32	0.36	0.43	0.42	0.47	0.39	0.41	0.40	0.31	0.25	0.19	0.35
Somax	8.5	10.3	12.6	14.6	16.2	16.7	16.5	15.2	13.2	11.2	9.1	7.5	

Angstrom coefficients: Reference site: Aberporth

Angstrom a	0.19	0.21	0.22	0.25	0.22	0.24	0.25	0.23	0.24	0.22	0.20	0.20	0.22
Angstrom b	0.54	0.54	0.58	0.54	0.57	0.56	0.56	0.53	0.52	0.54	0.53	0.52	0.54

UNITED KINGDOM Map site No.29 Computer file UKINGHOR.029 LINCOLN
 Latitude 53 14' N Longitude 0 34' W Height a.s.l. 9 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.53 1.05 2.09 3.10 4.38 5.11 4.39 3.68 2.68 1.50 0.79 0.46 2.49
 Gmax +++ 1.34 2.24 4.19 5.50 6.75 7.89 7.31 6.17 4.44 3.12 1.65 0.93 4.31
 Gmin +++ 0.10 0.21 0.32 0.88 1.02 1.56 1.42 1.03 0.74 0.27 0.15 0.09 0.65
 Go 2.05 3.58 5.93 8.52 10.58 11.52 11.03 9.28 6.85 4.36 2.45 1.63 6.50

Ratios to extraterrestrial radiation
 G/Go +++ 0.26 0.29 0.35 0.36 0.41 0.44 0.40 0.40 0.39 0.34 0.32 0.28 0.36
 Ktmax +++ 0.53 0.52 0.59 0.58 0.60 0.68 0.64 0.61 0.57 0.59 0.55 0.53 0.59
 Ktmin +++ 0.05 0.06 0.05 0.10 0.10 0.14 0.13 0.11 0.11 0.06 0.06 0.06 0.10

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.38 0.76 1.28 2.00 2.57 2.77 2.72 2.32 1.64 0.95 0.53 0.32 1.53
 D/G mean +++ 0.72 0.72 0.61 0.64 0.59 0.54 0.62 0.63 0.61 0.63 0.67 0.70 0.61

Daily sunshine duration: hours.
 S 1.3 2.2 3.5 4.4 6.1 7.2 5.6 5.6 4.4 3.1 2.1 1.3 3.9
 So 7.9 9.6 11.7 13.8 15.6 16.6 16.2 14.5 12.5 10.4 8.5 7.4 12.1
 S/So 0.17 0.23 0.30 0.32 0.39 0.43 0.35 0.38 0.35 0.30 0.25 0.18 0.30
 Somax 8.5 10.3 12.6 14.6 16.2 16.7 16.5 15.2 13.2 11.2 9.1 7.5

Angstrom coefficients:Reference site: Sutton Bonnington
 Angstrom a 0.16 0.18 0.18 0.20 0.20 0.21 0.22 0.22 0.22 0.19 0.19 0.18 0.19
 Angstrom b 0.58 0.49 0.58 0.51 0.55 0.54 0.51 0.46 0.49 0.52 0.52 0.57 0.53

UNITED KINGDOM Map site No.30 Computer file UKINGHOR.030 SUTTON BONNINGTON
 Latitude 52 50' N Longitude 1 15' W Height a.s.l. 118 metres
 Horizontal planes: - monthly means. Data used & period: G & S (9/68 -12/75)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.54 1.06 1.91 3.03 4.21 4.86 4.35 3.68 2.68 1.52 0.79 0.45 2.43
 Gmax 1.37 2.28 4.22 5.52 6.76 7.89 7.31 6.18 4.47 3.15 1.69 0.96 4.33
 Gmin 0.10 0.22 0.32 0.88 1.02 1.56 1.43 1.03 0.75 0.28 0.15 0.10 0.66
 Go 2.11 3.65 5.99 8.56 10.60 11.53 11.04 9.32 6.91 4.42 2.52 1.69 6.54

Ratios to extraterrestrial radiation
 G/Go 0.26 0.29 0.32 0.35 0.40 0.42 0.39 0.40 0.39 0.34 0.31 0.27 0.34
 Ktmax 0.53 0.52 0.59 0.58 0.60 0.68 0.64 0.61 0.57 0.59 0.55 0.53 0.59
 Ktmin 0.05 0.06 0.05 0.10 0.10 0.14 0.13 0.11 0.11 0.06 0.06 0.06 0.10

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.40 0.76 1.22 1.96 2.52 2.78 2.69 2.32 1.64 0.96 0.53 0.33 1.52
 D/G mean +++ 0.74 0.72 0.64 0.65 0.60 0.57 0.62 0.63 0.61 0.63 0.67 0.74 0.63

Daily sunshine duration: hours.
 S 1.2 2.2 2.9 4.2 5.7 6.3 5.6 5.5 4.3 3.1 2.1 1.1 3.7
 So 8.0 9.7 11.7 13.8 15.6 16.6 16.1 14.5 12.5 10.4 8.5 7.5 12.1
 S/So 0.15 0.23 0.25 0.30 0.37 0.38 0.35 0.38 0.34 0.30 0.25 0.15 0.29
 Somax 8.5 10.3 12.6 14.6 16.2 16.6 16.5 15.2 13.2 11.2 9.1 7.6

Angstrom coefficients:Radiation observing site
 Angstrom a 0.16 0.18 0.18 0.20 0.20 0.21 0.22 0.22 0.22 0.19 0.19 0.18 0.19
 Angstrom b 0.58 0.49 0.58 0.51 0.55 0.54 0.51 0.46 0.49 0.52 0.52 0.57 0.53

UNITED KINGDOM Map site No.31 Computer file UKINGHOR.031 SHAWBURY
 Latitude 52 48' N Longitude 2 40' W Height a.s.l. 82 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.53 1.03 2.09 3.10 4.18 4.85 4.39 3.50 2.59 1.47 0.81 0.47 2.42
 Gmax 1.57 2.45 4.55 6.08 7.95 8.65 8.06 6.34 4.91 3.14 1.79 1.28 4.74
 Gmin 0.34 0.66 1.08 1.71 2.12 2.42 2.43 2.05 1.52 0.84 0.48 0.31 1.33
 Go 2.12 3.65 5.99 8.57 10.60 11.53 11.05 9.32 6.91 4.43 2.53 1.70 6.55

Ratios to extraterrestrial radiation
 G/Go 0.25 0.28 0.35 0.36 0.39 0.42 0.40 0.38 0.37 0.33 0.32 0.28 0.35
 Ktmax 0.16 0.24 0.43 0.59 0.80 0.88 0.82 0.63 0.47 0.31 0.18 0.14 0.47
 Gmin +++ 0.10 0.22 0.32 0.88 1.02 1.56 1.42 1.03 0.75 0.28 0.15 0.10 0.65

Daily diffuse radiation: kWh/m².
 D mean est. +++ 0.37 0.71 1.28 1.90 2.29 2.34 2.44 2.13 1.58 0.93 0.52 0.32 1.41
 D/G mean +++ 0.69 0.68 0.61 0.61 0.55 0.48 0.56 0.61 0.61 0.63 0.64 0.68 0.58

Daily sunshine duration: hours.
 S 1.3 2.0 3.4 4.4 5.5 6.4 5.6 4.9 4.0 2.9 2.2 1.3 3.7
 So 8.0 9.7 11.7 13.8 15.6 16.5 16.1 14.5 12.5 10.4 8.5 7.5 12.1
 S/So 0.16 0.21 0.29 0.32 0.35 0.39 0.35 0.34 0.32 0.27 0.25 0.17 0.29
 Somax 11.7 11.8 12.0 12.1 12.2 12.2 12.2 12.2 12.0 11.9 11.8 11.7

Angstrom coefficients:Reference site: Sutton Bonnington
 Angstrom a 0.16 0.18 0.18 0.20 0.20 0.21 0.22 0.22 0.22 0.19 0.19 0.18 0.19
 Angstrom b 0.58 0.49 0.58 0.51 0.55 0.54 0.51 0.46 0.49 0.52 0.52 0.57 0.53

UNITED KINGDOM			Map site No.32			Computer file UKINGHOR.032							CAMBRIDGE	
Latitude 52 13' N						Longitude 0 6' E			Height a.s.l.				23 metres	
Horizontal planes: - monthly means.						Data used & period: G & S (1966 -1975)								
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	0.63	1.25	2.31	3.29	4.54	5.23	4.66	3.80	2.93	1.70	0.89	0.53	2.65	
Gmax	1.52	2.69	4.49	6.11	7.45	7.90	7.48	6.48	4.81	3.28	1.89	1.10	4.61	
Gmin	0.16	0.34	0.59	0.98	1.24	1.69	1.65	0.81	0.70	0.41	0.23	0.14	0.75	
Go	2.21	3.75	6.08	8.63	10.63	11.54	11.06	9.37	6.99	4.52	2.62	1.79	6.61	

Ratios to extraterrestrial radiation

G/Go	0.29	0.33	0.38	0.38	0.43	0.45	0.42	0.41	0.42	0.38	0.34	0.29	0.38
Ktmax	0.57	0.60	0.62	0.64	0.66	0.68	0.65	0.64	0.61	0.60	0.59	0.57	0.62
Ktmin	0.07	0.09	0.10	0.11	0.12	0.15	0.15	0.09	0.10	0.09	0.09	0.08	0.11

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.44	0.81	1.37	2.04	2.71	2.88	2.77	2.26	1.66	1.01	0.57	0.36	1.58
D/G mean ++++	0.70	0.65	0.59	0.62	0.60	0.55	0.60	0.60	0.57	0.59	0.64	0.68	0.60

Daily sunshine duration: hours.

S	1.4	2.3	3.7	4.5	6.0	7.1	5.9	5.3	4.7	3.2	2.3	1.4	4.0
So	8.1	9.7	11.7	13.7	15.5	16.4	16.0	14.4	12.5	10.5	8.6	7.6	12.1
S/So	0.17	0.23	0.32	0.33	0.39	0.43	0.37	0.37	0.38	0.30	0.27	0.18	0.31
Somax	8.6	10.4	12.5	14.5	16.1	16.5	16.4	15.1	13.2	11.2	9.2	7.7	

Angstrom coefficients: Radiation observing site

Angstrom a	0.20	0.21	0.20	0.20	0.22	0.23	0.23	0.21	0.21	0.21	0.22	0.21	0.21
Angstrom b	0.59	0.57	0.59	0.56	0.54	0.53	0.54	0.55	0.56	0.56	0.52	0.59	0.56

UNITED KINGDOM			Map site No.33			Computer file UKINGHOR.033							ABERPORTH	
Latitude 52 8' N						Longitude 4 34' W			Height a.s.l.				133 metres	
Horizontal planes: - monthly means.						Data used & period: G & S (1966 -1975)								
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	0.62	1.36	2.57	4.00	4.88	5.54	5.11	4.06	3.07	1.71	0.83	0.52	2.86	
Gmax	1.37	2.83	4.75	6.68	7.91	8.45	8.19	6.81	5.25	3.35	1.70	1.04	4.87	
Gmin	0.17	0.30	0.67	1.25	1.35	1.67	1.29	0.89	0.95	0.38	0.23	0.14	0.78	
Go	2.23	3.77	6.09	8.64	10.63	11.54	11.07	9.37	7.00	4.54	2.64	1.81	6.62	

Ratios to extraterrestrial radiation

G/Go	0.28	0.36	0.42	0.46	0.46	0.48	0.46	0.43	0.44	0.38	0.31	0.29	0.40
Ktmax	0.51	0.63	0.66	0.70	0.70	0.73	0.71	0.67	0.66	0.61	0.53	0.54	0.64
Ktmin	0.08	0.08	0.11	0.15	0.13	0.14	0.12	0.09	0.14	0.08	0.09	0.08	0.12

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.46	0.87	1.45	2.22	2.71	2.82	2.80	2.38	1.75	1.03	0.57	0.38	1.63
D/G mean ++++	0.74	0.64	0.57	0.56	0.56	0.51	0.55	0.59	0.57	0.60	0.68	0.73	0.57

Daily sunshine duration: hours.

S	1.3	2.7	4.0	5.4	6.3	7.2	6.2	5.4	4.7	3.1	1.9	1.3	4.1
So	8.1	9.7	11.7	13.7	15.5	16.4	16.0	14.4	12.5	10.5	8.6	7.6	12.1
S/So	0.16	0.28	0.34	0.39	0.41	0.44	0.39	0.38	0.38	0.30	0.22	0.17	0.32
Somax	8.6	10.4	12.5	14.5	16.0	16.5	16.3	15.1	13.2	11.2	9.2	7.7	

Angstrom coefficients: Radiation observing site

Angstrom a	0.19	0.21	0.22	0.25	0.22	0.24	0.25	0.23	0.24	0.22	0.20	0.20	0.22
Angstrom b	0.54	0.54	0.58	0.54	0.57	0.56	0.56	0.53	0.52	0.54	0.53	0.52	0.54

UNITED KINGDOM			Map site No.34			Computer file UKINGHOR.034								MALVERN	
Latitude 52 6' N						Longitude 2 18' W			Height a.s.l.					63 metres	
Horizontal planes: - monthly means.						Data used & period: S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m ² .															
G mean	++++	0.65	1.25	2.37	3.28	4.39	5.11	4.83	3.81	2.84	1.68	0.94	0.57	2.65	
Gmax	++++	1.53	2.70	4.50	6.11	7.45	7.90	7.48	6.48	4.82	3.29	1.90	1.12	4.62	
Gmin	++++	0.16	0.34	0.60	0.98	1.24	1.70	1.65	0.81	0.70	0.41	0.23	0.14	0.75	
Go		2.23	3.77	6.10	8.64	10.63	11.54	11.07	9.37	7.00	4.54	2.64	1.81	6.63	

Ratios to extraterrestrial radiation

G/Go	++++	0.29	0.33	0.39	0.38	0.41	0.44	0.44	0.41	0.41	0.37	0.36	0.31
Ktmax	++++	0.57	0.60	0.62	0.64	0.66	0.68	0.65	0.64	0.61	0.60	0.59	0.58
Ktmin	++++	0.07	0.09	0.10	0.11	0.12	0.15	0.15	0.09	0.10	0.09	0.09	0.11

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.46	0.83	1.41	2.04	2.69	2.91	2.84	2.28	1.65	1.02	0.60	0.40	1.60
D/G mean ++++	0.71	0.66	0.59	0.62	0.61	0.57	0.59	0.60	0.58	0.60	0.64	0.69	0.60

Daily sunshine duration: hours.

S	1.3	2.1	3.7	4.4	5.5	6.6	6.1	5.2	4.4	3.0	2.3	1.3	3.8
So	8.1	9.7	11.7	13.7	15.5	16.4	16.0	14.4	12.5	10.5	8.6	7.6	12.1
S/So	0.15	0.21	0.32	0.32	0.36	0.40	0.38	0.36	0.35	0.29	0.26	0.18	0.30
Somax	8.6	10.4	12.5	14.5	16.0	16.5	16.3	15.1	13.2	11.2	9.2	7.7	

Angstrom coefficients: Reference site: Cambridge

Angstrom a	0.20	0.21	0.20	0.20	0.22	0.23	0.23	0.21	0.21	0.21	0.22	0.21	0.21
Angstrom b	0.59	0.57	0.59	0.56	0.54	0.53	0.54	0.55	0.56	0.56	0.52	0.59	0.56

UNITED KINGDOM		Map site No.35			Computer file UKINGHOR.035								SILSOE	
Latitude 52 1' N					Longitude 0 25' W			Height a.s.l.					59 metres	
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m^2.														
G mean	++++	0.68	1.31	2.35	3.28	4.55	5.31	4.81	3.89	2.96	1.77	0.94	0.57	2.71
Gmax	++++	1.54	2.71	4.51	6.11	7.45	7.90	7.48	6.48	4.82	3.30	1.91	1.12	4.62
Gmin	++++	0.16	0.34	0.60	0.99	1.24	1.70	1.65	0.81	0.70	0.41	0.23	0.14	0.75
Go		2.25	3.79	6.11	8.65	10.64	11.54	11.07	9.38	7.02	4.55	2.66	1.82	6.64
Ratios to extraterrestrial radiation														
G/Go	++++	0.30	0.35	0.38	0.38	0.43	0.46	0.43	0.42	0.42	0.39	0.35	0.31	0.39
Ktmax	++++	0.57	0.60	0.62	0.64	0.66	0.68	0.65	0.64	0.61	0.60	0.59	0.57	0.62
Ktmin	++++	0.07	0.09	0.10	0.11	0.12	0.15	0.15	0.09	0.10	0.09	0.09	0.08	0.11
Daily diffuse radiation: kWh/m^2.														
D mean est.	++++	0.47	0.85	1.40	2.04	2.73	2.92	2.84	2.30	1.67	1.03	0.61	0.40	1.61
D/G mean	++++	0.70	0.65	0.59	0.62	0.60	0.55	0.59	0.59	0.57	0.58	0.65	0.69	0.59
Daily sunshine duration: hours.														
S		1.4	2.3	3.7	4.4	5.9	7.1	6.0	5.4	4.7	3.4	2.2	1.3	4.0
So		8.1	9.7	11.7	13.7	15.5	16.4	16.0	14.4	12.5	10.5	8.6	7.6	12.1
S/So		0.18	0.24	0.31	0.32	0.38	0.43	0.38	0.37	0.38	0.32	0.25	0.18	0.31
Somax		8.6	10.4	12.5	14.5	16.0	16.5	16.3	15.1	13.2	11.2	9.2	7.7	
Angstrom coefficients:Reference site: Cambridge														
Angstrom a		0.20	0.21	0.20	0.20	0.22	0.23	0.23	0.21	0.21	0.21	0.22	0.21	0.21
Angstrom b		0.59	0.57	0.59	0.56	0.54	0.53	0.54	0.55	0.56	0.56	0.52	0.59	0.56

UNITED KINGDOM		Map site No.36			Computer file UKINGHOR.036							GRENDON UNDERWOOD			
Latitude 51 54' N					Longitude 1 1' W		Height a.s.l. 70 metres								
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)										
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m^2.															
G mean	++++	0.66	1.29	2.36	3.32	4.42	5.25	4.78	3.94	2.97	1.76	0.94	0.56	2.69	
Gmax	++++	1.55	2.72	4.52	6.12	7.46	7.90	7.48	6.48	4.83	3.31	1.92	1.13	4.63	
Gmin	++++	0.16	0.34	0.60	0.99	1.25	1.70	1.65	0.81	0.70	0.42	0.23	0.14	0.75	
Go		2.27	3.81	6.13	8.66	10.64	11.54	11.07	9.39	7.03	4.57	2.67	1.84	6.65	
Ratios to extraterrestrial radiation															
G/Go	++++	0.29	0.34	0.39	0.38	0.42	0.45	0.43	0.42	0.42	0.38	0.35	0.30	0.38	
Ktmax	++++	0.57	0.60	0.62	0.64	0.66	0.68	0.65	0.64	0.61	0.60	0.59	0.57	0.62	
Ktmin	++++	0.07	0.09	0.10	0.11	0.12	0.15	0.15	0.09	0.10	0.09	0.09	0.08	0.11	
Daily diffuse radiation: kWh/m^2.															
D mean est.	++++	0.47	0.84	1.40	2.05	2.69	2.90	2.84	2.31	1.68	1.03	0.61	0.40	1.61	
D/G mean	++++	0.71	0.65	0.59	0.62	0.61	0.55	0.59	0.59	0.57	0.59	0.65	0.71	0.60	
Daily sunshine duration: hours.															
S		1.3	2.2	3.7	4.5	5.6	7.0	5.9	5.5	4.7	3.3	2.2	1.2	3.9	
So		8.2	9.8	11.7	13.7	15.5	16.4	15.9	14.4	12.5	10.5	8.6	7.6	12.1	
S/So		0.16	0.22	0.31	0.33	0.36	0.42	0.37	0.38	0.38	0.31	0.26	0.16	0.31	
Somax		8.7	10.4	12.5	14.5	16.0	16.4	16.3	15.1	13.2	11.2	9.2	7.8		
Angstrom coefficients:Reference site: Cambridge															
Angstrom a		0.20	0.21	0.20	0.20	0.22	0.23	0.23	0.21	0.21	0.21	0.22	0.21	0.21	
Angstrom b		0.59	0.57	0.59	0.56	0.54	0.53	0.54	0.55	0.56	0.56	0.52	0.59	0.56	

UNITED KINGDOM				Map site No.37		Computer file UKINGHOR.037								CARMARTHEN	
Latitude 51 51' N				Longitude 4 18' W		Height a.s.l. 17 metres									
Horizontal planes: - monthly means.															
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean		
Daily global radiation: kWh/m ² .															
G mean	++++	0.64	1.38	2.60	4.04	4.86	5.56	5.25	4.14	3.05	1.76	0.93	0.56	2.91	
Gmax	++++	1.40	2.86	4.77	6.70	7.92	8.45	8.19	6.83	5.27	3.38	1.73	1.07	4.89	
Gmin	++++	0.18	0.31	0.67	1.26	1.35	1.67	1.30	0.89	0.95	0.38	0.24	0.15	0.78	
Go		2.27	3.81	6.13	8.66	10.64	11.54	11.07	9.39	7.04	4.58	2.68	1.85	6.66	
Ratios to extraterrestrial radiation															
G/Go	++++	0.28	0.36	0.42	0.47	0.46	0.48	0.47	0.44	0.43	0.38	0.35	0.30	0.40	
Ktmax	++++	0.51	0.63	0.66	0.70	0.70	0.73	0.71	0.67	0.66	0.62	0.53	0.54	0.64	
Ktmin	++++	0.08	0.08	0.11	0.15	0.13	0.14	0.12	0.09	0.14	0.08	0.09	0.08	0.12	
Daily diffuse radiation: kWh/m ² .															
D mean est.	++++	0.47	0.88	1.46	2.23	2.69	2.86	2.84	2.39	1.76	1.05	0.59	0.39	1.64	
D/G mean	++++	0.73	0.64	0.56	0.55	0.55	0.51	0.54	0.58	0.58	0.60	0.64	0.70	0.56	
Daily sunshine duration: hours.															
S		1.4	2.7	4.1	5.5	6.4	7.1	6.4	5.7	4.6	3.2	2.4	1.5	4.3	
So		8.2	9.8	11.7	13.7	15.4	16.4	15.9	14.4	12.5	10.5	8.7	7.6	12.1	
S/So		0.17	0.28	0.35	0.40	0.41	0.43	0.40	0.40	0.37	0.30	0.28	0.20	0.33	
Somax		8.7	10.4	12.5	14.5	16.0	16.4	16.3	15.1	13.2	11.2	9.2	7.8		
Angstrom coefficients:Reference site: Aberporth															
Angstrom a		0.19	0.21	0.22	0.25	0.22	0.24	0.25	0.23	0.24	0.22	0.20	0.20	0.22	
Angstrom b		0.54	0.54	0.58	0.54	0.57	0.56	0.56	0.53	0.52	0.54	0.53	0.52	0.54	

UNITED KINGDOM		Map site No.38			Computer file UKINGHOR.038							ROTHAMPSTEAD		
Latitude 51 48' N					Longitude 0 21' W			Height a.s.l. 128 metres						
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	++++	0.64	1.34	2.24	3.33	4.22	5.41	4.79	3.89	2.96	1.77	0.95	0.57	2.68
Gmax	++++	1.56	2.73	4.52	6.12	7.46	7.91	7.48	6.49	4.84	3.32	1.93	1.14	4.64
Gmin	++++	0.16	0.34	0.60	0.99	1.25	1.70	1.65	0.81	0.70	0.42	0.23	0.14	0.75
Go		2.28	3.82	6.14	8.67	10.65	11.54	11.08	9.40	7.04	4.59	2.69	1.86	6.66

Ratios to extraterrestrial radiation

G/Go	++++	0.28	0.35	0.36	0.38	0.40	0.47	0.43	0.41	0.42	0.39	0.35	0.30	0.38
Ktmax	++++	0.57	0.60	0.62	0.64	0.66	0.68	0.65	0.64	0.61	0.60	0.59	0.57	0.62
Ktmin	++++	0.07	0.09	0.10	0.11	0.12	0.15	0.15	0.09	0.10	0.09	0.09	0.08	0.11

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.47	0.85	1.37	2.06	2.65	2.90	2.82	2.31	1.67	1.04	0.62	0.41	1.61
D/G mean	++++	0.74	0.64	0.61	0.62	0.63	0.54	0.59	0.59	0.56	0.58	0.65	0.71	0.60

Daily sunshine duration: hours.

S		1.1	2.4	3.3	4.5	5.0	7.4	6.0	5.3	4.7	3.3	2.2	1.2	3.9
So		8.2	9.8	11.7	13.7	15.4	16.4	15.9	14.4	12.5	10.5	8.7	7.6	12.1
S/So		0.14	0.25	0.28	0.33	0.33	0.45	0.37	0.37	0.37	0.31	0.26	0.16	0.30
Somax		8.7	10.4	12.5	14.5	16.0	16.4	16.3	15.0	13.2	11.2	9.2	7.8	

Angstrom coefficients:Reference site: Cambridge

Angstrom a		0.20	0.21	0.20	0.20	0.22	0.23	0.23	0.21	0.21	0.21	0.22	0.21	0.21
Angstrom b		0.59	0.57	0.59	0.56	0.54	0.53	0.54	0.55	0.56	0.56	0.52	0.59	0.56

UNITED KINGDOM			Map site No.39			Computer file UKINGHOR.039							LONDON	
Latitude 51 31' N						Longitude 0 7' W			Height a.s.l.				77 metres	
Horizontal planes: - monthly means.						Data used & period: G & S (1966 -1975)								
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	0.56	1.10	2.07	3.04	4.12	4.99	4.38	3.62	2.71	1.56	0.81	0.47	2.46	
Gmax	1.34	2.41	4.27	5.80	7.14	7.57	7.46	6.21	4.71	3.18	1.75	1.08	4.42	
Gmin	0.10	0.22	0.49	0.76	1.01	1.46	1.41	0.96	0.68	0.36	0.17	0.10	0.65	
Go	2.33	3.87	6.18	8.70	10.66	11.55	11.08	9.42	7.08	4.64	2.74	1.90	6.69	

Ratios to extraterrestrial radiation

G/Go		0.24	0.28	0.34	0.35	0.39	0.43	0.40	0.38	0.38	0.34	0.29	0.25	0.34
Ktmax		0.48	0.52	0.58	0.60	0.63	0.65	0.65	0.61	0.59	0.57	0.53	0.53	0.58
Ktmin		0.04	0.06	0.08	0.09	0.09	0.13	0.13	0.10	0.10	0.08	0.06	0.05	0.10

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.42	0.75	1.32	1.86	2.46	2.63	2.61	2.16	1.56	0.97	0.56	0.34	1.48
D/G mean	++++	0.75	0.68	0.64	0.61	0.60	0.53	0.60	0.60	0.58	0.62	0.69	0.73	0.60

Daily sunshine duration: hours.

S		1.3	2.5	3.8	4.7	6.3	7.5	6.3	5.9	4.9	3.4	2.3	1.4	4.2
So		8.2	9.8	11.7	13.7	15.4	16.3	15.9	14.4	12.5	10.5	8.7	7.7	12.1
S/So		0.16	0.26	0.32	0.34	0.41	0.46	0.40	0.41	0.39	0.32	0.26	0.18	0.33
Somax		8.7	10.4	12.5	14.4	15.9	16.4	16.2	15.0	13.2	11.2	9.2	7.8	

Angstrom coefficients:Radiation observing site

Angstrom a		0.15	0.15	0.16	0.16	0.18	0.18	0.19	0.18	0.18	0.17	0.17	0.15	0.17
Angstrom b		0.51	0.52	0.52	0.55	0.52	0.54	0.51	0.50	0.52	0.50	0.47	0.50	0.51

UNITED KINGDOM			Map site No.40		Computer file UKINGHOR.040								KEW	
Latitude 51 28' N					Longitude 0 19' W		Height a.s.l. 5 metres							
Horizontal planes: - monthly means.					Data used & period: G & S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	0.59	1.20	2.23	3.21	4.33	5.09	4.56	3.84	2.87	1.65	0.87	0.50	2.59	
Gmax	1.41	2.64	4.42	5.99	7.39	7.73	7.56	6.40	4.85	3.26	1.82	1.11	4.56	
Gmin	0.12	0.26	0.51	0.91	1.11	1.58	1.49	1.09	0.77	0.41	0.20	0.12	0.72	
Go	2.34	3.88	6.19	8.70	10.66	11.55	11.09	9.43	7.09	4.64	2.75	1.91	6.70	

Ratios to extraterrestrial radiation

G/Go		0.25	0.31	0.36	0.37	0.41	0.44	0.41	0.41	0.41	0.36	0.32	0.26	0.36
Ktmax		0.50	0.57	0.60	0.62	0.66	0.67	0.66	0.63	0.60	0.59	0.55	0.54	0.60
Ktmin		0.05	0.07	0.08	0.10	0.10	0.14	0.13	0.12	0.11	0.09	0.07	0.06	0.11

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.44	0.80	1.37	1.95	2.58	2.79	2.73	2.31	1.66	1.00	0.58	0.35	1.56
D/G mean	++++	0.74	0.67	0.61	0.61	0.60	0.55	0.60	0.60	0.58	0.61	0.66	0.70	0.60

Daily sunshine duration: hours.

S		1.3	2.5	3.9	4.9	6.3	7.4	6.5	6.0	5.0	3.4	2.4	1.4	4.3
So		8.2	9.8	11.7	13.7	15.4	16.3	15.9	14.4	12.5	10.5	8.7	7.7	12.1
S/So		0.16	0.26	0.33	0.36	0.41	0.45	0.41	0.42	0.40	0.32	0.28	0.18	0.33
Somax		8.7	10.4	12.5	14.4	15.9	16.4	16.2	15.0	13.2	11.2	9.3	7.8	

Angstrom coefficients:Radiation observing site

Angstrom a		0.17	0.17	0.17	0.17	0.18	0.21	0.20	0.20	0.19	0.18	0.18	0.17	0.18
Angstrom b		0.53	0.54	0.56	0.56	0.54	0.51	0.51	0.49	0.52	0.53	0.50	0.54	0.53

UNITED KINGDOM		Map site No.41		Computer file UKINGHOR.041								BRACKNELL	
Latitude 51 23' N		Longitude 0 47' W		Height a.s.l. 73 metres									
Horizontal planes: - monthly means.		Data used & period: G & S (1966 -1975)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean	0.62	1.24	2.31	3.32	4.41	5.20	4.71	3.88	2.94	1.71	0.91	0.53	2.65
Gmax	1.54	2.76	4.64	6.14	7.30	8.05	7.82	6.42	4.81	3.31	1.91	1.11	4.66
Gmin	0.16	0.29	0.55	1.00	1.23	1.60	1.58	0.85	0.84	0.49	0.23	0.15	0.75
Go	2.35	3.89	6.20	8.71	10.67	11.55	11.09	9.43	7.10	4.66	2.76	1.93	6.71
Ratios to extraterrestrial radiation													
G/Go	0.26	0.32	0.37	0.38	0.41	0.45	0.42	0.41	0.41	0.37	0.33	0.27	0.37
Ktmax	0.55	0.59	0.63	0.64	0.65	0.69	0.68	0.63	0.60	0.59	0.58	0.54	0.62
Ktmin	0.07	0.08	0.09	0.12	0.12	0.14	0.14	0.09	0.12	0.10	0.08	0.08	0.11
Daily diffuse radiation: kWh/m ² .													
D mean est. +++	0.45	0.81	1.37	2.05	2.65	2.80	2.84	2.30	1.71	1.06	0.59	0.38	1.59
D/G mean +++	0.73	0.65	0.59	0.62	0.60	0.54	0.60	0.59	0.58	0.62	0.65	0.72	0.60
Daily sunshine duration: hours.													
S	1.2	2.4	3.7	4.7	6.0	7.3	6.2	5.7	4.8	3.2	2.3	1.3	4.1
So	8.2	9.8	11.7	13.7	15.4	16.3	15.9	14.4	12.5	10.5	8.7	7.7	12.1
S/So	0.15	0.24	0.32	0.34	0.39	0.45	0.39	0.40	0.38	0.30	0.26	0.17	0.32
Somax	8.7	10.4	12.5	14.4	15.9	16.3	16.2	15.0	13.2	11.2	9.3	7.8	
Angstrom coefficients: Radiation observing site													
Angstrom a	0.17	0.18	0.18	0.19	0.21	0.21	0.22	0.20	0.21	0.20	0.20	0.18	0.20
Angstrom b	0.59	0.57	0.60	0.55	0.53	0.54	0.51	0.53	0.52	0.52	0.52	0.54	0.54

UNITED KINGDOM		Map site No.42		Computer file UKINGHOR.042								EAST MALLING	
Latitude 51 17' N		Longitude 0 27' E		Height a.s.l. 37 metres									
Horizontal planes: - monthly means.		Data used & period: S (1966 -1975)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean +++	0.59	1.22	2.22	3.12	4.21	5.14	4.47	3.80	2.85	1.68	0.89	0.51	2.56
Gmax +++	1.42	2.66	4.43	6.00	7.39	7.73	7.57	6.41	4.86	3.28	1.84	1.12	4.57
Gmin +++	0.12	0.26	0.51	0.92	1.11	1.57	1.49	1.09	0.78	0.42	0.21	0.12	0.72
Go	2.37	3.91	6.22	8.72	10.67	11.55	11.09	9.44	7.11	4.67	2.78	1.94	6.72
Ratios to extraterrestrial radiation													
G/Go +++	0.25	0.31	0.36	0.36	0.39	0.44	0.40	0.40	0.40	0.36	0.32	0.26	0.35
Ktmax +++	0.50	0.57	0.60	0.62	0.66	0.67	0.66	0.63	0.60	0.59	0.55	0.54	0.60
Ktmin +++	0.05	0.07	0.08	0.10	0.10	0.14	0.13	0.12	0.11	0.09	0.07	0.06	0.11
Daily diffuse radiation: kWh/m ² .													
D mean est. +++	0.45	0.80	1.36	1.92	2.54	2.79	2.70	2.30	1.65	1.00	0.59	0.37	1.55
D/G mean +++	0.76	0.66	0.61	0.62	0.60	0.54	0.60	0.60	0.58	0.60	0.66	0.72	0.61
Daily sunshine duration: hours.													
S	1.2	2.6	3.9	4.6	6.1	7.5	6.3	5.9	5.0	3.6	2.4	1.3	4.2
So	8.2	9.8	11.7	13.7	15.4	16.3	15.9	14.4	12.5	10.5	8.7	7.7	12.1
S/So	0.15	0.26	0.33	0.33	0.40	0.46	0.40	0.41	0.40	0.34	0.28	0.17	0.33
Somax	8.7	10.4	12.5	14.4	15.9	16.3	16.2	15.0	13.2	11.2	9.3	7.9	
Angstrom coefficients: Reference site: Kew													
Angstrom a	0.17	0.17	0.17	0.17	0.18	0.21	0.20	0.20	0.19	0.18	0.18	0.17	0.18
Angstrom b	0.53	0.54	0.56	0.56	0.54	0.51	0.51	0.49	0.52	0.53	0.50	0.54	0.53

UNITED KINGDOM		Map site No.43		Computer file UKINGHOR.043								HAWKRIDGE	
Latitude 51 5' N		Longitude 3 36' W		Height a.s.l. 315 metres									
Horizontal planes: - monthly means.		Data used & period: S (1966 -1975)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean
Daily global radiation: kWh/m ² .													
G mean +++	0.62	1.31	2.55	3.84	4.61	5.38	5.21	4.08	3.01	1.72	0.95	0.56	2.83
Gmax +++	1.46	2.94	4.83	6.74	7.93	8.46	8.20	6.85	5.33	3.45	1.80	1.14	4.95
Gmin +++	0.19	0.32	0.69	1.27	1.36	1.68	1.30	0.90	0.96	0.40	0.25	0.16	0.79
Go	2.40	3.94	6.25	8.74	10.68	11.55	11.10	9.46	7.14	4.71	2.81	1.97	6.74
Ratios to extraterrestrial radiation													
G/Go +++	0.26	0.33	0.41	0.44	0.43	0.47	0.47	0.43	0.42	0.37	0.34	0.28	0.39
Ktmax +++	0.51	0.63	0.66	0.70	0.70	0.73	0.71	0.67	0.66	0.61	0.53	0.54	0.64
Ktmin +++	0.08	0.08	0.11	0.15	0.13	0.14	0.12	0.09	0.14	0.08	0.09	0.08	0.12
Daily diffuse radiation: kWh/m ² .													
D mean est. +++	0.47	0.88	1.46	2.21	2.65	2.87	2.82	2.38	1.76	1.06	0.61	0.41	1.64
D/G mean +++	0.76	0.67	0.57	0.58	0.57	0.53	0.54	0.58	0.58	0.62	0.64	0.74	0.58
Daily sunshine duration: hours.													
S	1.1	2.2	3.8	4.8	5.7	6.5	6.2	5.4	4.3	2.8	2.3	1.2	3.9
So	8.3	9.8	11.7	13.7	15.3	16.2	15.8	14.3	12.5	10.5	8.8	7.8	12.1
S/So	0.13	0.23	0.32	0.35	0.37	0.40	0.39	0.38	0.35	0.27	0.26	0.16	0.30
Somax	8.8	10.4	12.5	14.4	15.9	16.3	16.2	15.0	13.1	11.2	9.3	7.9	
Angstrom coefficients: Reference site: Aberporth													
Angstrom a	0.19	0.21	0.22	0.25	0.22	0.24	0.25	0.23	0.24	0.22	0.20	0.20	0.22
Angstrom b	0.54	0.54	0.58	0.54	0.57	0.56	0.56	0.53	0.52	0.54	0.53	0.52	0.54

UNITED KINGDOM		Map site No.44			Computer file UKINGHOR.044										EFFORD	
Latitude 50 44' N					Longitude 1 34' W			Height a.s.l.							16 metres	
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean			
Daily global radiation: kWh/m ² .																
G mean	++++	0.68	1.38	2.57	3.68	4.76	5.53	5.10	4.16	3.14	1.86	1.04	0.60	2.88		
Gmax	++++	1.60	2.82	4.68	6.17	7.31	8.05	7.82	6.45	4.85	3.37	1.97	1.17	4.70		
Gmin	++++	0.16	0.30	0.55	1.01	1.23	1.61	1.59	0.85	0.85	0.50	0.24	0.16	0.75		
Go		2.46	4.00	6.30	8.78	10.70	11.56	11.11	9.48	7.18	4.79	2.87	2.03	6.78		

Ratios to extraterrestrial radiation

G/Go	++++	0.28	0.35	0.41	0.42	0.44	0.48	0.46	0.44	0.44	0.39	0.36	0.30	0.40
Ktmax	++++	0.55	0.59	0.63	0.64	0.65	0.69	0.68	0.63	0.60	0.59	0.57	0.54	0.62
Ktmin	++++	0.07	0.08	0.09	0.12	0.12	0.14	0.14	0.09	0.12	0.10	0.08	0.08	0.11

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.47	0.86	1.42	2.13	2.72	2.81	2.85	2.35	1.75	1.10	0.64	0.40	1.63
D/G mean	++++	0.69	0.62	0.55	0.58	0.57	0.51	0.56	0.56	0.56	0.59	0.62	0.67	0.57

Daily sunshine duration: hours.

S		1.5	2.9	4.5	5.7	6.8	8.0	7.4	6.4	5.4	3.8	2.7	1.7	4.7
So		8.3	9.8	11.7	13.6	15.3	16.2	15.8	14.3	12.5	10.5	8.8	7.8	12.1
S/So		0.18	0.29	0.38	0.42	0.44	0.50	0.47	0.45	0.44	0.36	0.31	0.21	0.37
Somax		8.8	10.5	12.5	14.4	15.8	16.2	16.1	14.9	13.1	11.2	9.3	8.0	

Angstrom coefficients:Reference site: Bracknell

Angstrom a		0.17	0.18	0.18	0.19	0.21	0.21	0.22	0.20	0.21	0.20	0.20	0.18	0.20
Angstrom b		0.59	0.57	0.60	0.55	0.53	0.54	0.51	0.53	0.52	0.52	0.52	0.54	0.54

UNITED KINGDOM			Map site No.45		Computer file UKINGHOR.045										EXETER	
Latitude 50 44' N					Longitude 3 25' W		Height a.s.l. 41 metres									
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean			
Daily global radiation: kWh/m ² .																
G mean	+++	0.66	1.39	2.61	3.85	4.61	5.39	5.23	4.07	3.03	1.74	0.98	0.61	2.86		
Gmax	+++	1.49	2.98	4.86	6.76	7.94	8.46	8.20	6.87	5.35	3.49	1.83	1.17	4.97		
Gmin	+++	0.19	0.32	0.69	1.27	1.36	1.68	1.30	0.90	0.97	0.40	0.25	0.16	0.79		
Go		2.46	4.00	6.30	8.78	10.70	11.56	11.11	9.48	7.18	4.76	2.87	2.03	6.78		

Ratios to extraterrestrial radiation

G/Go	++++	0.27	0.35	0.41	0.44	0.43	0.47	0.47	0.43	0.42	0.37	0.34	0.30	0.39
Ktmax	++++	0.51	0.63	0.66	0.70	0.70	0.73	0.71	0.67	0.66	0.62	0.53	0.54	0.64
Ktmin	++++	0.08	0.08	0.11	0.15	0.13	0.14	0.12	0.09	0.14	0.08	0.09	0.08	0.12

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.49	0.91	1.49	2.23	2.66	2.87	2.85	2.39	1.77	1.08	0.62	0.43	1.66
D/G mean	++++	0.75	0.65	0.57	0.58	0.58	0.53	0.55	0.59	0.58	0.62	0.64	0.70	0.58

Daily sunshine duration: hours.

S		1.2	2.5	3.9	4.8	5.7	6.6	6.2	5.4	4.4	2.8	2.4	1.5	3.9
So		8.3	9.8	11.7	13.6	15.3	16.2	15.8	14.3	12.5	10.5	8.8	7.8	12.1
S/So		0.15	0.26	0.34	0.35	0.37	0.40	0.39	0.38	0.35	0.27	0.27	0.19	0.31
Somax		8.8	10.5	12.5	14.4	15.8	16.2	16.1	14.9	13.1	11.2	9.3	8.0	

Angstrom coefficients:Reference site: Aberporth

Angstrom a		0.19	0.21	0.22	0.25	0.22	0.24	0.25	0.23	0.24	0.22	0.20	0.20	0.22
Angstrom b		0.54	0.54	0.58	0.54	0.57	0.56	0.56	0.53	0.52	0.54	0.53	0.52	0.54

UNITED KINGDOM		Map site No.46			Computer file UKINGHOR.046								PLYMOUTH	
Latitude 50 21' N					Longitude 4 7' W			Height a.s.l.					34 metres	
Horizontal planes: - monthly means.					Data used & period: S (1966 -1975)									
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	++++	0.69	1.48	2.84	4.25	5.03	5.84	5.63	4.44	3.31	1.92	1.03	0.63	3.10
Gmax	++++	1.52	3.01	4.89	6.78	7.95	8.46	8.21	6.88	5.39	3.52	1.86	1.20	5.00
Gmin	++++	0.20	0.33	0.70	1.28	1.36	1.68	1.30	0.90	0.98	0.41	0.26	0.17	0.80
Go		2.52	4.07	6.36	8.82	10.71	11.57	11.12	9.51	7.23	4.82	2.93	2.09	6.83

Ratios to extraterrestrial radiation

G/Go	++++	0.27	0.36	0.45	0.48	0.47	0.50	0.51	0.47	0.46	0.40	0.35	0.30	0.42
Ktmax	++++	0.51	0.62	0.66	0.70	0.70	0.73	0.71	0.67	0.66	0.61	0.53	0.54	0.64
Ktmin	++++	0.08	0.08	0.11	0.15	0.13	0.14	0.12	0.09	0.14	0.08	0.09	0.08	0.12

Daily diffuse radiation: kWh/m².

D mean est.	++++	0.51	0.94	1.52	2.28	2.70	2.85	2.82	2.41	1.81	1.11	0.65	0.44	1.68
D/G mean	++++	0.74	0.63	0.53	0.54	0.54	0.49	0.50	0.54	0.55	0.58	0.63	0.70	0.54

Daily sunshine duration: hours.

S		1.3	2.8	4.6	5.8	6.7	7.6	7.2	6.4	5.2	3.5	2.5	1.5	4.6
So		8.4	9.9	11.7	13.6	15.3	16.1	15.7	14.3	12.5	10.6	8.8	7.9	12.1
S/So		0.16	0.29	0.39	0.43	0.44	0.47	0.46	0.45	0.42	0.33	0.29	0.19	0.36
Somax		8.8	10.5	12.5	14.3	15.8	16.2	16.0	14.9	13.1	11.2	9.4	8.0	

Angstrom coefficients:Reference site: Aberporth

Angstrom a		0.19	0.21	0.22	0.25	0.22	0.24	0.25	0.23	0.24	0.22	0.20	0.20	0.22
Angstrom b		0.54	0.54	0.58	0.54	0.57	0.56	0.56	0.53	0.52	0.54	0.53	0.52	0.54

UNITED KINGDOM Map site No.47 Computer file UKINGHOR.047 PENZANCE
 Latitude 50 7' N Longitude 5 32' W Height a.s.l. 33 metres
 Horizontal planes: - monthly means. Data used & period: S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean +++ 0.64 1.38 2.62 4.20 4.93 5.58 4.80 4.02 2.93 1.69 0.87 0.54 2.86
 Gmax +++ 1.55 3.04 4.91 6.79 7.95 8.47 8.21 6.89 5.40 3.54 1.88 1.22 5.01
 Gmin +++ 0.20 0.33 0.70 1.28 1.36 1.68 1.30 0.91 0.98 0.41 0.26 0.17 0.80
 Go 2.56 4.11 6.39 8.84 10.72 11.57 11.13 9.53 7.26 4.86 2.97 2.13 6.85

Ratios to extraterrestrial radiation

G/Go +++ 0.25 0.34 0.41 0.48 0.46 0.48 0.43 0.42 0.40 0.35 0.29 0.25 0.38
 Ktmax +++ 0.51 0.63 0.66 0.70 0.70 0.73 0.71 0.67 0.66 0.61 0.53 0.54 0.64
 Ktmin +++ 0.08 0.08 0.11 0.15 0.13 0.14 0.12 0.09 0.14 0.08 0.09 0.08 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.50 0.92 1.51 2.27 2.70 2.87 2.81 2.38 1.77 1.08 0.62 0.43 1.66
 D/G mean +++ 0.77 0.66 0.58 0.54 0.55 0.51 0.59 0.59 0.60 0.64 0.72 0.80 0.58

Daily sunshine duration: hours.

S 1.0 2.3 3.8 5.7 6.4 7.0 5.1 5.2 3.9 2.5 1.5 0.8 3.8
 So 8.4 9.9 11.7 13.6 15.2 16.1 15.7 14.3 12.5 10.6 8.9 7.9 12.1
 S/So 0.11 0.23 0.33 0.42 0.42 0.43 0.32 0.36 0.31 0.24 0.17 0.10 0.29
 Somax 8.9 10.5 12.5 14.3 15.7 16.1 16.0 14.9 13.1 11.3 9.4 8.0

Angstrom coefficients:Reference site: Aberporth

Angstrom a 0.19 0.21 0.22 0.25 0.22 0.24 0.25 0.23 0.24 0.22 0.20 0.20 0.22
 Angstrom b 0.54 0.54 0.58 0.54 0.57 0.56 0.56 0.53 0.52 0.54 0.53 0.52 0.54

UNITED KINGDOM Map site No.48 Computer file UKINGHOR.048 JERSEY
 Latitude 49 13' N Longitude 2 12' W Height a.s.l. 83 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1968 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 0.81 1.60 2.88 4.30 5.34 5.99 5.61 4.55 3.38 2.13 0.99 0.65 3.19
 Gmax 1.79 3.29 5.39 6.87 8.03 8.40 8.15 7.14 5.60 4.11 2.32 1.42 5.22
 Gmin 0.16 0.36 0.52 1.34 1.40 1.83 1.55 1.28 0.80 0.41 0.18 0.12 0.83
 Go 2.71 4.26 6.52 8.93 10.76 11.58 11.15 9.60 7.38 5.01 3.12 2.28 6.95

Ratios to extraterrestrial radiation

G/Go 0.30 0.37 0.44 0.48 0.50 0.52 0.50 0.47 0.46 0.43 0.32 0.28 0.42
 Ktmax 0.56 0.66 0.71 0.70 0.71 0.72 0.71 0.69 0.68 0.70 0.63 0.59 0.67
 Ktmin 0.06 0.08 0.08 0.15 0.13 0.16 0.14 0.13 0.11 0.08 0.06 0.05 0.12

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.54 0.94 1.51 2.21 2.71 2.93 2.86 2.41 1.73 1.16 0.62 0.43 1.68
 D/G mean +++ 0.66 0.59 0.53 0.52 0.51 0.49 0.51 0.53 0.51 0.54 0.63 0.66 0.53

Daily sunshine duration: hours.

S 1.6 3.2 4.8 6.4 7.5 8.3 8.0 6.9 5.7 4.4 2.3 1.7 5.1
 So 8.5 10.0 11.7 13.5 15.1 15.9 15.6 14.2 12.4 10.6 9.0 8.1 12.1
 S/So 0.19 0.32 0.41 0.47 0.50 0.52 0.51 0.49 0.46 0.42 0.26 0.21 0.40
 Somax 9.0 10.5 12.5 14.2 15.6 16.0 15.9 14.8 13.1 11.3 9.5 8.2

Angstrom coefficients:Radiation observing site

Angstrom a 0.18 0.19 0.19 0.21 0.22 0.24 0.23 0.21 0.20 0.19 0.16 0.16 0.20
 Angstrom b 0.62 0.58 0.61 0.57 0.56 0.52 0.53 0.54 0.57 0.55 0.59 0.60 0.57

YUGOSLAVIA Map site No.244 Computer file YUGOSHOR.244 BEOGRAD
 Latitude 44 47' N Longitude 20 32' E Height a.s.l. 243 metres
 Horizontal planes: - monthly means. Data used & period: G & S (1966 -1975)
 Month Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec mean
 Daily global radiation: kWh/m².
 G mean 1.49 2.24 3.47 4.72 5.80 6.19 6.27 5.59 4.26 2.92 1.74 1.06 3.82
 Gmax 2.90 4.00 5.97 7.38 8.40 8.61 8.43 7.56 6.13 4.64 3.27 2.21 5.80
 Gmin 0.27 0.45 0.84 0.80 1.01 1.44 1.44 1.49 1.24 0.56 0.28 0.18 0.84
 Go 3.47 4.99 7.14 9.33 10.93 11.62 11.25 9.90 7.91 5.70 3.87 3.02 7.44

Ratios to extraterrestrial radiation

G/Go 0.43 0.44 0.44 0.51 0.53 0.53 0.56 0.56 0.54 0.51 0.45 0.35 0.49
 Ktmax 0.74 0.70 0.73 0.73 0.74 0.74 0.73 0.72 0.70 0.71 0.74 0.70 0.73
 Ktmin 0.08 0.09 0.12 0.09 0.09 0.12 0.13 0.15 0.16 0.10 0.07 0.06 0.11

Daily diffuse radiation: kWh/m².

D mean est. +++ 0.78 1.18 1.72 2.25 2.65 2.79 2.64 2.30 1.89 1.24 0.85 0.64 1.75
 D/G mean +++ 0.53 0.53 0.50 0.48 0.46 0.45 0.42 0.41 0.44 0.42 0.49 0.61 0.46

Daily sunshine duration: hours.

S 2.9 3.7 4.9 6.3 7.7 8.4 9.1 8.6 6.7 5.6 3.7 1.9 5.8
 So 9.1 10.3 11.8 13.3 14.6 15.3 15.0 13.9 12.4 10.8 9.4 8.7 12.1
 S/So 0.32 0.36 0.42 0.47 0.53 0.55 0.61 0.62 0.54 0.52 0.39 0.22 0.46
 Somax 9.4 10.7 12.4 13.9 15.0 15.4 15.3 14.3 12.9 11.4 9.8 8.8

Angstrom coefficients:Radiation observing site

Angstrom a 0.24 0.25 0.24 0.23 0.22 0.23 0.22 0.22 0.25 0.21 0.22 0.22 0.23
 Angstrom b 0.58 0.56 0.59 0.59 0.59 0.55 0.56 0.55 0.53 0.58 0.58 0.60 0.57

YUGOSLAVIA			Map site No.245		Computer file YUGOSHOR.245								NEGOTIN			
Latitude 44 14' N					Longitude 22 33' E		Height a.s.l.								42 metres	
Horizontal planes: - monthly means.					Data used & period: G & S (1966 -1975)											
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean			
Daily global radiation: kWh/m ² .																
G mean	1.45	2.11	3.65	4.86	6.47	6.83	7.07	6.11	4.74	3.23	1.60	1.24	4.13			
Gmax	3.03	4.25	6.33	7.82	9.34	9.28	9.04	8.04	6.77	5.24	3.37	2.40	6.25			
Gmin	0.26	0.36	0.54	0.75	1.60	2.61	2.37	2.27	1.06	0.66	0.27	0.20	1.08			
Go	3.56	5.08	7.21	9.37	10.95	11.62	11.26	9.94	7.98	5.79	3.97	3.12	7.50			

Ratios to extraterrestrial radiation

G/Go	0.41	0.41	0.51	0.52	0.59	0.59	0.63	0.61	0.59	0.56	0.40	0.40	0.52
Ktmax	0.75	0.73	0.77	0.77	0.82	0.80	0.78	0.76	0.77	0.79	0.75	0.74	0.77
Ktmin	0.07	0.07	0.07	0.08	0.15	0.22	0.21	0.23	0.13	0.11	0.07	0.06	0.14

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.83	1.10	1.67	2.15	2.59	2.58	2.44	2.19	1.66	1.20	0.77	0.73	1.67
D/G mean ++++	0.57	0.52	0.46	0.44	0.40	0.38	0.35	0.36	0.35	0.37	0.48	0.59	0.40

Daily sunshine duration: hours.

S	2.0	2.8	4.5	5.9	7.8	8.7	9.5	8.8	6.6	5.2	2.9	2.3	5.6
So	9.1	10.3	11.8	13.3	14.6	15.3	15.0	13.8	12.4	10.8	9.5	8.7	12.1
S/So	0.22	0.27	0.38	0.44	0.53	0.57	0.63	0.64	0.53	0.48	0.31	0.26	0.44
Somax	9.5	10.8	12.4	13.9	15.0	15.3	15.2	14.3	12.9	11.4	9.9	8.8	

Angstrom coefficients: Radiation observing site

Angstrom a	0.27	0.24	0.27	0.23	0.27	0.28	0.27	0.28	0.24	0.23	0.19	0.27	0.25
Angstrom b	0.62	0.67	0.63	0.65	0.59	0.56	0.56	0.53	0.64	0.65	0.72	0.50	0.61

YUGOSLAVIA			Map site No.249			Computer file YUGOSHOR.249							PRISTINA	
Latitude 42 39' N						Longitude 21 9' E			Height a.s.l.				573 metres	
Horizontal planes: - monthly means.						Data used & period: G (1968 -1975) & S								
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean	
Daily global radiation: kWh/m ² .														
G mean	1.61	2.46	3.80	4.97	6.02	6.52	6.69	5.99	4.58	3.33	2.06	1.42	4.13	
Gmax	3.13	4.45	6.27	7.59	8.57	8.98	8.79	7.89	6.42	5.20	3.46	2.55	6.12	
Gmin	0.49	0.65	1.20	1.50	2.55	2.10	2.29	2.22	1.41	0.94	0.54	0.44	1.37	
Go	3.83	5.34	7.42	9.50	11.00	11.63	11.28	10.03	8.15	6.03	4.23	3.39	7.66	

Ratios to extraterrestrial radiation

G/Go	0.42	0.46	0.51	0.52	0.55	0.56	0.59	0.60	0.56	0.55	0.49	0.42	0.52
Ktmax	0.73	0.74	0.75	0.74	0.75	0.77	0.76	0.74	0.72	0.76	0.72	0.72	0.75
Ktmin	0.13	0.12	0.16	0.16	0.23	0.18	0.20	0.22	0.17	0.16	0.13	0.13	0.18

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.90	1.24	1.85	2.42	2.82	2.91	2.52	2.07	1.70	1.18	0.91	0.82	1.79
D/G mean ++++	0.56	0.50	0.49	0.49	0.47	0.45	0.38	0.35	0.37	0.35	0.44	0.58	0.43

Daily sunshine duration: hours.

S	2.1	3.6	4.7	6.0	7.5	8.1	9.1	9.2	7.1	5.8	3.7	2.0	5.8
So	9.3	10.4	11.8	13.2	14.4	15.1	14.8	13.7	12.4	10.9	9.6	8.9	12.0
S/So	0.23	0.35	0.40	0.45	0.52	0.54	0.61	0.67	0.57	0.53	0.39	0.22	0.46
Somax	9.6	10.8	12.4	13.8	14.8	15.1	15.0	14.2	12.8	11.4	10.0	9.0	

Angstrom coefficients: Radiation observing site

Angstrom a	0.29	0.29	0.29	0.26	0.27	0.30	0.26	0.25	0.25	0.23	0.26	0.29	0.27
Angstrom b	0.61	0.56	0.56	0.56	0.53	0.49	0.55	0.54	0.57	0.62	0.61	0.57	0.56

YUGOSLAVIA				Map site No.250		Computer file YUGOSHOR.250								BAR			
Latitude 42 6' N				Longitude 19 6' E				Height a.s.l.								6 metres	
Horizontal planes: - monthly means.				Data used & period: G & S (1966 -1975)													
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean				
Daily global radiation: kWh/m ² .																	
G mean	1.86	2.51	3.86	4.96	6.43	7.14	7.36	6.40	4.87	3.54	2.08	1.59	4.39				
Gmax	3.37	4.72	6.44	7.66	8.47	8.75	8.51	7.68	6.57	5.21	3.65	2.70	6.15				
Gmin	0.24	0.53	0.66	1.06	1.71	2.96	3.45	2.50	1.32	0.80	0.33	0.27	1.32				
Go	3.93	5.43	7.49	9.55	11.01	11.63	11.29	10.07	8.22	6.11	4.33	3.48	7.72				

Ratios to extraterrestrial radiation

G/Go	0.47	0.46	0.51	0.52	0.58	0.61	0.65	0.64	0.59	0.58	0.48	0.46	0.55
Ktmax	0.77	0.77	0.76	0.75	0.74	0.75	0.74	0.72	0.73	0.75	0.75	0.75	0.75
Ktmin	0.06	0.10	0.09	0.11	0.16	0.25	0.31	0.25	0.16	0.13	0.08	0.08	0.17

Daily diffuse radiation: kWh/m².

D mean est. ++++	0.78	1.20	1.71	2.22	2.58	2.48	2.28	2.16	1.64	1.17	0.88	0.69	1.66
D/G mean ++++	0.42	0.48	0.44	0.45	0.40	0.35	0.31	0.34	0.34	0.33	0.42	0.44	0.38

Daily sunshine duration: hours.

S	4.0	4.2	5.5	6.5	8.7	10.1	11.3	10.2	8.1	6.8	4.3	3.7	7.0
So	9.3	10.4	11.8	13.2	14.4	15.0	14.7	13.7	12.3	10.9	9.7	9.0	12.0
S/So	0.43	0.40	0.47	0.49	0.60	0.67	0.77	0.74	0.66	0.62	0.44	0.41	0.56
Somax	9.7	10.9	12.4	13.7	14.8	15.0	14.9	14.1	12.8	11.4	10.0	9.1	

Angstrom coefficients: Radiation observing site

Angstrom a	0.19	0.20	0.22	0.21	0.24	0.26	0.26	0.24	0.20	0.21	0.19	0.21	0.22
Angstrom b	0.66	0.64	0.63	0.63	0.57	0.53	0.52	0.52	0.60	0.60	0.65	0.61	0.60

YUGOSLAVIA				Map site No.251				Computer file YUGOSHOR.251								BITOLA	
Latitude 41 3' N				Longitude 21 22' E				Height a.s.l.								586 metres	
Horizontal planes: - monthly means.														Data used & period: G & S (1966 -1975)			
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	mean				
Daily global radiation: kWh/m ² .																	
G mean	1.89	2.71	3.92	5.02	6.43	6.99	7.08	6.36	4.96	3.41	2.25	1.57	4.39				
Gmax	3.49	4.71	6.41	7.67	8.63	8.91	8.69	7.98	6.72	5.23	3.80	2.94	6.27				
Gmin	0.62	0.87	1.01	1.35	2.14	2.28	3.12	2.81	1.86	0.87	0.55	0.39	1.49				
Go	4.11	5.60	7.63	9.63	11.04	11.63	11.30	10.12	8.33	6.26	4.50	3.66	7.83				
Ratios to extraterrestrial radiation																	
G/Go	0.46	0.48	0.51	0.52	0.58	0.60	0.63	0.63	0.59	0.54	0.50	0.43	0.54				
Ktmax	0.76	0.75	0.75	0.74	0.75	0.76	0.75	0.75	0.74	0.74	0.75	0.78	0.76				
Ktmin	0.15	0.16	0.13	0.14	0.19	0.20	0.28	0.28	0.22	0.14	0.12	0.11	0.19				
Daily diffuse radiation: kWh/m ² .																	
D mean est. ++++	0.99	1.29	1.84	2.36	2.66	2.54	2.33	2.13	1.70	1.31	1.00	0.85	1.76				
D/G mean ++++	0.53	0.48	0.47	0.47	0.41	0.36	0.33	0.33	0.34	0.39	0.44	0.54	0.40				
Daily sunshine duration: hours.																	
s	2.3	3.6	5.0	6.4	8.6	9.7	10.5	9.9	7.8	5.9	4.2	2.2	6.4				
So	9.4	10.5	11.8	13.2	14.3	14.9	14.6	13.6	12.3	11.0	9.8	9.1	12.0				
S/So	0.24	0.34	0.42	0.48	0.60	0.65	0.72	0.73	0.63	0.54	0.43	0.24	0.50				
Somax	9.7	10.9	12.4	13.7	14.6	14.9	14.8	14.0	12.8	11.4	10.1	9.2					
Angstrom coefficients: Radiation observing site																	
Angstrom a	0.31	0.27	0.27	0.24	0.26	0.25	0.25	0.27	0.25	0.23	0.26	0.27	0.26				
Angstrom b	0.62	0.62	0.58	0.57	0.53	0.53	0.53	0.49	0.55	0.58	0.56	0.63	0.57				

Site tables for inclined surfaces.
Tables of inclined surface radiation data for 101 sites,
arranged in alphabetic order of country name.
Sites within each country arranged in
descending order of latitude.

AUSTRIA Site No. 219

WIEN

Computer file AUSTR219.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 48 15' N

Longitude 16 22' E

Height 202 metres

Data period (1.1966-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.76	1.42	2.64	3.95	5.10	5.33	5.44	4.52	3.30	2.05	1.01	0.69	3.03
	D mean	0.53	0.94	1.54	2.20	2.64	2.72	2.65	2.29	1.73	1.17	0.65	0.48	1.63
10 Deg South	Gm	0.89	1.61	2.89	4.18	5.26	5.41	5.58	4.74	3.60	2.34	1.20	0.83	3.22
	Dm	0.54	0.97	1.57	2.25	2.68	2.74	2.69	2.34	1.79	1.22	0.68	0.49	1.67
30 Deg South	Gm	1.09	1.88	3.19	4.35	5.22	5.24	5.47	4.87	3.94	2.76	1.49	1.06	3.39
	Dm	0.54	0.98	1.56	2.24	2.64	2.68	2.65	2.34	1.82	1.26	0.69	0.50	1.66
Latitude South	Gm	1.18	1.98	3.22	4.17	4.82	4.73	5.00	4.62	3.94	2.92	1.64	1.18	3.29
tilt 48 15' N	Dm	0.51	0.94	1.48	2.12	2.48	2.50	2.50	2.23	1.75	1.23	0.67	0.48	1.58
60 Deg South	Gm	1.20	1.96	3.12	3.90	4.38	4.23	4.51	4.28	3.78	2.90	1.67	1.21	3.10
	Dm	0.48	0.89	1.40	1.99	2.33	2.34	2.35	2.11	1.67	1.18	0.64	0.46	1.49
Vertical South	Gm	1.08	1.68	2.47	2.78	2.86	2.65	2.87	2.95	2.90	2.46	1.51	1.13	2.28
	Dm	0.38	0.72	1.12	1.58	1.84	1.85	1.87	1.70	1.37	0.99	0.53	0.37	1.20
Vertical SE/SW	Gm	0.87	1.41	2.21	2.75	3.06	2.97	3.16	3.01	2.68	2.07	1.22	0.89	2.20
	Dm	0.38	0.69	1.10	1.56	1.83	1.85	1.88	1.68	1.33	0.95	0.51	0.36	1.18
Vertical E/W	Gm	0.51	0.92	1.68	2.39	2.94	3.06	3.16	2.71	2.10	1.37	0.72	0.49	1.84
	Dm	0.35	0.62	1.03	1.49	1.80	1.85	1.87	1.61	1.23	0.83	0.46	0.32	1.12
Vertical NE/NW	Gm	0.32	0.59	1.11	1.74	2.30	2.53	2.52	1.99	1.37	0.81	0.42	0.29	1.34
	Dm	0.32	0.56	0.95	1.37	1.70	1.78	1.77	1.48	1.11	0.73	0.40	0.29	1.04
Vertical North	Gm	0.30	0.53	0.90	1.34	1.77	2.02	1.95	1.48	1.04	0.68	0.38	0.28	1.06
	Dm	0.30	0.53	0.90	1.31	1.64	1.74	1.72	1.41	1.04	0.68	0.38	0.28	1.00

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.17	1.13	1.10	1.06	1.03	1.01	1.03	1.05	1.09	1.14	1.19	1.20	1.06
30 Deg South	Gm/Gmean	1.43	1.32	1.21	1.10	1.02	0.98	1.01	1.08	1.19	1.35	1.48	1.54	1.12
Latitude South	Gm/Gmean	1.55	1.39	1.22	1.06	0.94	0.89	0.92	1.02	1.19	1.42	1.62	1.71	1.09
60 Deg South	Gm/Gmean	1.58	1.38	1.18	0.99	0.86	0.79	0.83	0.95	1.14	1.41	1.65	1.75	1.02
Vertical South	Gm/Gmean	1.42	1.18	0.94	0.70	0.56	0.50	0.53	0.65	0.88	1.20	1.50	1.64	0.75
Vertical SE/SW	Gm/Gmean	1.14	0.99	0.84	0.70	0.60	0.56	0.58	0.67	0.81	1.01	1.21	1.29	0.73
Vertical E/W	Gm/Gmean	0.67	0.65	0.64	0.61	0.58	0.57	0.58	0.60	0.64	0.67	0.71	0.71	0.61
Vertical NE/NW	Gm/Gmean	0.42	0.41	0.42	0.44	0.45	0.47	0.46	0.44	0.41	0.40	0.42	0.42	0.44
Vertical North	Gm/Gmean	0.40	0.37	0.34	0.34	0.35	0.38	0.36	0.33	0.31	0.33	0.38	0.41	0.35

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.73	2.90	4.78	6.46	7.55	7.96	8.07	6.76	5.21	3.75	2.35	1.41	4.92
	D clear	0.69	1.03	0.99	1.55	1.60	1.64	1.60	1.74	1.36	1.17	0.84	0.59	1.24
10 Deg South	Gc	2.32	3.56	5.48	6.89	7.82	8.15	8.25	7.12	5.81	4.42	3.00	1.96	5.41
	Dc	0.82	1.17	1.13	1.62	1.68	1.71	1.64	1.81	1.49	1.27	0.90	0.68	1.33
30 Deg South	Gc	3.29	4.58	6.35	7.27	7.72	7.94	8.07	7.32	6.50	5.48	4.15	2.92	5.97
	Dc	1.00	1.37	1.28	1.75	1.76	1.78	1.72	1.91	1.65	1.47	1.09	0.84	1.47
Latitude South	Gc	3.87	5.10	6.58	7.00	7.07	7.17	7.32	6.91	6.56	5.95	4.83	3.52	5.99
tilt 48 15' N	Dc	1.11	1.48	1.38	1.81	1.81	1.82	1.77	1.95	1.73	1.58	1.20	0.93	1.55
60 Deg South	Gc	4.07	5.19	6.42	6.52	6.34	6.37	6.51	6.35	6.30	5.97	5.04	3.74	5.74
	Dc	1.14	1.51	1.42	1.83	1.82	1.83	1.79	1.94	1.75	1.61	1.24	0.96	1.57
Vertical South	Gc	3.88	4.59	4.99	4.41	3.81	3.70	3.81	4.12	4.69	5.08	4.71	3.66	4.28
	Dc	1.10	1.42	1.41	1.74	1.77	1.79	1.78	1.81	1.65	1.53	1.20	0.92	1.51
Vertical SE/SW	Gc	2.98	3.68	4.59	4.65	4.53	4.53	4.65	4.48	4.49	4.25	3.65	2.74	4.10
	Dc	0.97	1.29	1.37	1.75	1.83	1.86	1.84	1.84	1.63	1.44	1.07	0.79	1.47
Vertical E/W	Gc	1.45	2.12	3.37	4.10	4.63	4.80	4.89	4.13	3.51	2.69	1.85	1.17	3.23
	Dc	0.71	1.01	1.23	1.68	1.85	1.89	1.87	1.79	1.49	1.19	0.82	0.56	1.34
Vertical NE/NW	Gc	0.58	0.92	1.73	2.59	3.33	3.55	3.58	2.73	1.98	1.23	0.72	0.45	1.95
	Dc	0.53	0.77	1.04	1.46	1.69	1.75	1.74	1.57	1.24	0.93	0.63	0.44	1.15
Vertical North	Gc	0.49	0.71	0.96	1.48	2.10	2.29	2.28	1.63	1.13	0.83	0.59	0.42	1.25
	Dc	0.49	0.71	0.96	1.31	1.55	1.62	1.60	1.40	1.10	0.83	0.59	0.42	1.05

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.34	1.23	1.15	1.07	1.04	1.02	1.02	1.05	1.12	1.18	1.28	1.39	1.10
30 Deg South	Gc/Gmax	1.90	1.58	1.33	1.13	1.02	1.00	1.00	1.08	1.25	1.46	1.77	2.07	1.21
Latitude South	Gc/Gmax	2.24	1.76	1.38	1.08	0.94	0.90	0.91	1.02	1.26	1.59	2.06	2.50	1.22
60 Deg South	Gc/Gmax	2.35	1.79	1.34	1.01	0.84	0.80	0.81	0.94	1.21	1.59	2.14	2.65	1.17
Vertical South	Gc/Gmax	2.24	1.58	1.04	0.68	0.50	0.47	0.47	0.61	0.90	1.36	2.00	2.60	0.87
Vertical SE/SW	Gc/Gmax	1.72	1.27	0.96	0.72	0.60	0.57	0.58	0.66	0.86	1.13	1.55	1.94	0.83
Vertical E/W	Gc/Gmax	0.84	0.73	0.70	0.63	0.61	0.60	0.61	0.61	0.67	0.72	0.79	0.83	0.66
Vertical NE/NW	Gc/Gmax	0.34	0.32	0.36	0.40	0.44	0.45	0.44	0.40	0.38	0.33	0.31	0.32	0.40
Vertical North	Gc/Gmax	0.28	0.25	0.20	0.23	0.28	0.29	0.28	0.24	0.22	0.22	0.25	0.30	0.25

Sunshine data

Mean sunshine	Hours	1.6	2.6	3.9	5.7	7.3	7.4	8.1	7.2	5.8	4.4	2.4	1.8	4.9
Max. sunshine	Hours	6.9	8.6	10.4	12.2	13.7	14.3	14.2	12.9	11.2	9.7	8.0	7.0	10.8

AUSTRIA Site No. 220

SALZBURG

Computer file AUSTR220.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 47 48' N

Longitude 13 0' E

Height 435 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.03	1.70	2.81	3.76	4.57	4.63	4.91	4.25	3.31	2.19	1.08	0.79	2.93
	D mean	0.63	1.01	1.56	2.10	2.48	2.52	2.68	2.26	1.72	1.13	0.69	0.52	1.61
10 Deg South	Gm	1.25	1.96	3.09	3.96	4.70	4.70	5.02	4.45	3.60	2.52	1.29	0.96	3.13
	Dm	0.65	1.04	1.60	2.14	2.51	2.54	2.71	2.31	1.77	1.17	0.72	0.54	1.64
30 Deg South	Gm	1.60	2.33	3.43	4.10	4.64	4.53	4.91	4.54	3.94	3.00	1.60	1.24	3.33
	Dm	0.65	1.04	1.59	2.11	2.46	2.47	2.66	2.30	1.80	1.20	0.74	0.55	1.63
Latitude South	Gm	1.78	2.48	3.47	3.92	4.27	4.10	4.49	4.30	3.93	3.19	1.76	1.39	3.26
tilt 47 48' N	Dm	0.62	0.99	1.52	1.99	2.30	2.30	2.49	2.18	1.73	1.18	0.72	0.53	1.55
60 Deg South	Gm	1.83	2.49	3.36	3.65	3.86	3.65	4.03	3.97	3.76	3.18	1.80	1.43	3.09
	Dm	0.59	0.94	1.43	1.86	2.15	2.14	2.32	2.05	1.65	1.13	0.69	0.51	1.46
Vertical South	Gm	1.69	2.15	2.66	2.58	2.52	2.30	2.58	2.73	2.87	2.71	1.63	1.33	2.31
	Dm	0.48	0.76	1.16	1.47	1.68	1.66	1.80	1.63	1.35	0.95	0.57	0.42	1.16
Vertical SE/SW	Gm	1.33	1.79	2.40	2.59	2.71	2.57	2.81	2.79	2.67	2.27	1.31	1.05	2.19
	Dm	0.47	0.75	1.14	1.45	1.67	1.67	1.81	1.61	1.31	0.92	0.55	0.40	1.15
Vertical E/W	Gm	0.73	1.15	1.82	2.28	2.63	2.65	2.80	2.53	2.11	1.50	0.78	0.56	1.80
	Dm	0.43	0.69	1.06	1.40	1.64	1.66	1.80	1.55	1.22	0.83	0.49	0.36	1.10
Vertical NE/NW	Gm	0.40	0.68	1.17	1.68	2.10	2.23	2.28	1.89	1.38	0.85	0.45	0.33	1.29
	Dm	0.39	0.63	0.98	1.31	1.57	1.61	1.71	1.44	1.10	0.74	0.43	0.32	1.02
Vertical North	Gm	0.38	0.60	0.94	1.30	1.65	1.81	1.82	1.44	1.05	0.70	0.40	0.31	1.04
	Dm	0.38	0.60	0.94	1.27	1.52	1.59	1.65	1.37	1.05	0.70	0.40	0.31	0.98

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.21	1.15	1.10	1.05	1.03	1.01	1.02	1.05	1.09	1.15	1.19	1.22	1.07
30 Deg South	Gm/Gmean	1.55	1.37	1.22	1.09	1.01	0.98	1.00	1.07	1.19	1.37	1.48	1.57	1.14
Latitude South	Gm/Gmean	1.73	1.46	1.24	1.04	0.93	0.89	0.91	1.01	1.19	1.46	1.63	1.76	1.11
60 Deg South	Gm/Gmean	1.78	1.47	1.20	0.97	0.85	0.79	0.82	0.93	1.14	1.45	1.67	1.81	1.05
Vertical South	Gm/Gmean	1.64	1.26	0.95	0.69	0.55	0.50	0.52	0.64	0.87	1.24	1.51	1.68	0.79
Vertical SE/SW	Gm/Gmean	1.29	1.05	0.85	0.69	0.59	0.56	0.57	0.66	0.81	1.04	1.21	1.33	0.75
Vertical E/W	Gm/Gmean	0.71	0.68	0.65	0.61	0.57	0.57	0.57	0.60	0.64	0.69	0.72	0.71	0.61
Vertical NE/NW	Gm/Gmean	0.39	0.40	0.42	0.45	0.46	0.48	0.46	0.44	0.42	0.39	0.42	0.42	0.44
Vertical North	Gm/Gmean	0.37	0.35	0.34	0.35	0.36	0.39	0.37	0.34	0.32	0.32	0.37	0.39	0.35

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.03	3.24	5.10	6.77	7.67	7.98	7.76	6.86	5.58	3.89	2.38	1.55	5.08
	D clear	0.68	0.84	0.95	1.33	1.39	1.51	1.62	1.68	1.33	0.97	0.82	0.60	1.14
10 Deg South	Gc	2.73	4.01	5.81	7.22	7.96	8.19	8.01	7.24	6.16	4.63	3.08	2.16	5.61
	Dc	0.77	0.95	1.06	1.40	1.50	1.60	1.72	1.77	1.41	1.06	0.92	0.68	1.24
30 Deg South	Gc	3.91	5.21	6.73	7.60	7.83	7.95	7.82	7.43	6.89	5.76	4.24	3.21	6.22
	Dc	0.95	1.12	1.20	1.53	1.59	1.67	1.79	1.87	1.57	1.24	1.11	0.84	1.37
Latitude South	Gc	4.62	5.82	6.96	7.31	7.17	7.19	7.10	7.02	6.95	6.25	4.91	3.86	6.26
tilt 47 48' N	Dc	1.05	1.22	1.31	1.61	1.65	1.72	1.83	1.91	1.65	1.35	1.22	0.93	1.46
60 Deg South	Gc	4.87	5.96	6.77	6.77	6.39	6.34	6.29	6.41	6.66	6.29	5.12	4.12	6.00
	Dc	1.09	1.26	1.36	1.64	1.68	1.74	1.83	1.91	1.68	1.39	1.26	0.96	1.48
Vertical South	Gc	4.65	5.27	5.24	4.52	3.77	3.64	3.66	4.13	4.91	5.34	4.77	4.03	4.49
	Dc	1.07	1.24	1.38	1.64	1.68	1.74	1.77	1.79	1.62	1.36	1.22	0.93	1.45
Vertical SE/SW	Gc	3.55	4.22	4.84	4.86	4.58	4.51	4.46	4.52	4.75	4.50	3.69	3.01	4.29
	Dc	0.95	1.15	1.34	1.65	1.74	1.80	1.84	1.82	1.61	1.29	1.09	0.81	1.43
Vertical E/W	Gc	1.71	2.43	3.58	4.35	4.76	4.83	4.68	4.18	3.73	2.90	1.87	1.27	3.36
	Dc	0.72	0.94	1.22	1.59	1.76	1.84	1.88	1.77	1.48	1.11	0.83	0.58	1.31
Vertical NE/NW	Gc	0.62	0.98	1.82	2.74	3.43	3.58	3.43	2.77	2.08	1.29	0.72	0.47	2.00
	Dc	0.56	0.76	1.05	1.42	1.63	1.71	1.73	1.56	1.25	0.90	0.64	0.46	1.14
Vertical North	Gc	0.52	0.71	0.97	1.50	2.13	2.30	2.18	1.63	1.15	0.81	0.59	0.44	1.25
	Dc	0.52	0.71	0.97	1.29	1.51	1.58	1.59	1.40	1.12	0.81	0.59	0.44	1.05

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.35	1.24	1.14	1.07	1.04	1.03	1.03	1.05	1.10	1.19	1.29	1.39	1.10
30 Deg South	Gc/Gmax	1.93	1.61	1.32	1.12	1.02	1.00	1.01	1.08	1.24	1.48	1.78	2.07	1.22
Latitude South	Gc/Gmax	2.28	1.80	1.37	1.08	0.94	0.90	0.92	1.02	1.25	1.61	2.06	2.49	1.23
60 Deg South	Gc/Gmax	2.40	1.84	1.33	1.00	0.83	0.79	0.81	0.93	1.19	1.62	2.15	2.66	1.18
Vertical South	Gc/Gmax	2.29	1.63	1.03	0.67	0.49	0.46	0.47	0.60	0.88	1.37	2.00	2.60	0.88
Vertical SE/SW	Gc/Gmax	1.75	1.30	0.95	0.72	0.60	0.56	0.57	0.66	0.85	1.16	1.55	1.94	0.84
Vertical E/W	Gc/Gmax	0.84	0.75	0.70	0.64	0.62	0.61	0.60	0.61	0.67	0.75	0.79	0.82	0.66
Vertical NE/NW	Gc/Gmax	0.31	0.30	0.36	0.41	0.45	0.45	0.44	0.40	0.37	0.33	0.30	0.30	0.39
Vertical North	Gc/Gmax	0.26	0.22	0.19	0.22	0.28	0.29	0.28	0.24	0.21	0.21	0.25	0.28	0.25

Sunshine data

Mean sunshine	Hours	2.4	3.1	4.4	5.2	6.4	6.5	7.2	6.7	5.8	4.7	2.7	2.1	4.8
Max. sunshine	Hours	7.8	9.0	10.7	12.5	14.0	14.4	14.4	13.2	11.4	9.6	8.6	7.6	11.1

AUSTRIA Site No. 221

INNSBRUCK

Computer file AUSTR221.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 47 16' N

Longitude 11 24' E

Height 582 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.31	2.17	3.38	4.47	5.30	5.42	5.42	4.67	3.95	2.62	1.44	1.12	3.45
	D mean	0.71	1.15	1.76	2.28	2.73	2.80	2.74	2.40	1.80	1.26	0.77	0.60	1.75
10 Deg South	Gm	1.62	2.53	3.72	4.70	5.43	5.46	5.52	4.87	4.31	3.03	1.77	1.43	3.70
	Dm	0.72	1.17	1.79	2.30	2.76	2.81	2.77	2.43	1.85	1.31	0.79	0.62	1.78
30 Deg South	Gm	2.12	3.08	4.13	4.85	5.31	5.22	5.35	4.94	4.73	3.64	2.29	1.94	3.97
	Dm	0.72	1.17	1.76	2.26	2.68	2.72	2.69	2.40	1.86	1.35	0.79	0.61	1.75
Latitude South	Gm	2.38	3.31	4.18	4.63	4.88	4.70	4.87	4.66	4.73	3.88	2.56	2.23	3.92
tilt 47 16' N	Dm	0.68	1.12	1.67	2.12	2.50	2.52	2.52	2.26	1.80	1.33	0.76	0.58	1.66
60 Deg South	Gm	2.47	3.34	4.05	4.29	4.37	4.15	4.34	4.26	4.52	3.87	2.64	2.34	3.72
	Dm	0.64	1.05	1.57	1.97	2.32	2.33	2.34	2.12	1.71	1.28	0.72	0.55	1.55
Vertical South	Gm	2.29	2.91	3.19	2.99	2.81	2.57	2.73	2.90	3.43	3.30	2.43	2.22	2.81
	Dm	0.52	0.86	1.26	1.57	1.83	1.83	1.85	1.69	1.42	1.09	0.60	0.45	1.25
Vertical SE/SW	Gm	1.78	2.41	2.92	3.11	3.10	2.96	3.08	3.03	3.23	2.76	1.94	1.71	2.67
	Dm	0.52	0.85	1.25	1.56	1.81	1.81	1.84	1.67	1.39	1.05	0.59	0.45	1.23
Vertical E/W	Gm	0.95	1.54	2.25	2.82	3.07	3.17	3.17	2.81	2.57	1.80	1.13	0.86	2.18
	Dm	0.50	0.80	1.19	1.52	1.79	1.81	1.84	1.63	1.32	0.94	0.55	0.43	1.20
Vertical NE/NW	Gm	0.48	0.85	1.43	2.07	2.47	2.70	2.61	2.12	1.63	0.98	0.56	0.41	1.53
	Dm	0.47	0.74	1.13	1.47	1.75	1.79	1.79	1.55	1.22	0.84	0.51	0.40	1.14
Vertical North	Gm	0.45	0.71	1.09	1.51	1.92	2.20	2.07	1.59	1.17	0.80	0.48	0.39	1.20
	Dm	0.45	0.71	1.09	1.44	1.73	1.79	1.77	1.50	1.17	0.80	0.48	0.39	1.11

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.24	1.17	1.10	1.05	1.02	1.01	1.02	1.04	1.09	1.16	1.23	1.28	1.07
30 Deg South	Gm/Gmean	1.62	1.42	1.22	1.09	1.00	0.96	0.99	1.06	1.20	1.39	1.59	1.73	1.15
Latitude South	Gm/Gmean	1.82	1.52	1.24	1.04	0.92	0.87	0.90	1.00	1.20	1.48	1.78	1.99	1.14
60 Deg South	Gm/Gmean	1.88	1.54	1.20	0.96	0.82	0.77	0.80	0.91	1.14	1.48	1.83	2.09	1.08
Vertical South	Gm/Gmean	1.75	1.34	0.94	0.67	0.53	0.47	0.50	0.62	0.87	1.26	1.69	1.98	0.81
Vertical SE/SW	Gm/Gmean	1.36	1.11	0.86	0.70	0.58	0.55	0.57	0.65	0.82	1.05	1.35	1.53	0.77
Vertical E/W	Gm/Gmean	0.73	0.71	0.67	0.63	0.58	0.58	0.58	0.60	0.65	0.69	0.79	0.77	0.63
Vertical NE/NW	Gm/Gmean	0.37	0.39	0.42	0.46	0.47	0.50	0.48	0.45	0.41	0.37	0.39	0.37	0.44
Vertical North	Gm/Gmean	0.34	0.33	0.32	0.34	0.36	0.41	0.38	0.34	0.30	0.31	0.33	0.35	0.35

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.20	3.69	5.39	7.01	8.05	8.36	8.05	7.10	5.75	4.07	2.58	1.68	5.33
	D clear	0.53	0.74	0.76	0.92	1.00	0.92	1.08	1.38	1.05	0.98	0.57	0.42	0.86
10 Deg South	Gc	3.00	4.52	6.12	7.46	8.26	8.51	8.23	7.43	6.37	4.81	3.41	2.40	5.88
	Dc	0.57	0.77	0.83	0.98	1.05	1.00	1.15	1.42	1.12	1.05	0.62	0.44	0.92
30 Deg South	Gc	4.40	5.91	7.08	7.80	8.06	8.18	7.96	7.59	7.11	5.97	4.83	3.70	6.55
	Dc	0.70	0.92	0.96	1.10	1.15	1.10	1.25	1.52	1.26	1.23	0.76	0.55	1.04
Latitude South	Gc	5.23	6.61	7.31	7.49	7.36	7.36	7.21	7.16	7.16	6.46	5.63	4.50	6.62
tilt 47 16' N	Dc	0.79	1.02	1.07	1.21	1.26	1.21	1.34	1.59	1.36	1.34	0.85	0.62	1.14
60 Deg South	Gc	5.57	6.78	7.10	6.89	6.48	6.41	6.31	6.50	6.83	6.50	5.92	4.85	6.34
	Dc	0.84	1.08	1.14	1.28	1.34	1.30	1.41	1.62	1.41	1.38	0.90	0.65	1.20
Vertical South	Gc	5.35	5.99	5.44	4.52	3.73	3.55	3.56	4.12	4.99	5.49	5.56	4.78	4.75
	Dc	0.86	1.11	1.23	1.41	1.49	1.49	1.54	1.63	1.44	1.37	0.92	0.67	1.26
Vertical SE/SW	Gc	4.09	4.81	5.11	5.06	4.76	4.70	4.60	4.64	4.99	4.63	4.31	3.53	4.60
	Dc	0.78	1.05	1.21	1.42	1.53	1.52	1.58	1.66	1.44	1.30	0.85	0.60	1.25
Vertical E/W	Gc	2.02	2.79	3.83	4.68	5.18	5.31	5.10	4.39	4.05	2.99	2.24	1.49	3.68
	Dc	0.63	0.89	1.12	1.39	1.55	1.55	1.61	1.63	1.35	1.12	0.70	0.47	1.17
Vertical NE/NW	Gc	0.65	1.06	1.92	2.96	3.79	4.00	3.80	2.91	2.28	1.33	0.76	0.43	2.16
	Dc	0.52	0.75	0.99	1.27	1.47	1.48	1.52	1.47	1.17	0.91	0.58	0.41	1.05
Vertical North	Gc	0.49	0.71	0.94	1.52	2.33	2.55	2.41	1.65	1.16	0.83	0.56	0.40	1.30
	Dc	0.49	0.71	0.94	1.19	1.39	1.41	1.44	1.34	1.07	0.83	0.56	0.40	0.98

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.36	1.23	1.13	1.06	1.03	1.02	1.02	1.05	1.11	1.18	1.32	1.43	1.10
30 Deg South	Gc/Gmax	2.00	1.60	1.31	1.11	1.00	0.98	0.99	1.07	1.24	1.47	1.87	2.20	1.23
Latitude South	Gc/Gmax	2.38	1.79	1.36	1.07	0.91	0.88	0.90	1.01	1.25	1.59	2.18	2.68	1.24
60 Deg South	Gc/Gmax	2.53	1.84	1.32	0.98	0.81	0.77	0.78	0.92	1.19	1.60	2.30	2.89	1.19
Vertical South	Gc/Gmax	2.43	1.62	1.01	0.64	0.46	0.43	0.44	0.58	0.87	1.35	2.15	2.85	0.89
Vertical SE/SW	Gc/Gmax	1.86	1.30	0.95	0.72	0.59	0.56	0.57	0.65	0.87	1.14	1.67	2.10	0.86
Vertical E/W	Gc/Gmax	0.92	0.76	0.71	0.67	0.64	0.63	0.63	0.62	0.70	0.74	0.87	0.89	0.69
Vertical NE/NW	Gc/Gmax	0.29	0.29	0.36	0.42	0.47	0.48	0.47	0.41	0.40	0.33	0.29	0.26	0.41
Vertical North	Gc/Gmax	0.22	0.19	0.17	0.22	0.29	0.31	0.30	0.23	0.20	0.20	0.22	0.24	0.24

Sunshine data

Mean sunshine	Hours	2.8	3.8	4.7	5.5	6.2	6.1	6.9	6.5	6.4	5.5	3.2	2.7	5.0
Max. sunshine	Hours	7.0	8.8	10.5	12.0	13.2	14.0	13.7	12.5	11.2	9.7	7.8	6.1	10.6

AUSTRIA Site No. 222

SONNBLICK

Computer file AUSTR222.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 47° 3' N

Longitude 12° 57' E

Height 3106 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.69	2.58	4.09	5.38	5.99	5.75	5.45	4.49	3.87	3.08	1.83	1.46	3.81
	D mean	0.75	1.27	1.97	2.82	3.18	3.27	3.03	2.47	1.88	1.17	0.83	0.61	1.94
10 Deg South	Gm	2.17	3.03	4.50	5.62	6.10	5.79	5.53	4.65	4.19	3.62	2.31	1.97	4.13
	Dm	0.76	1.29	1.98	2.84	3.19	3.27	3.05	2.49	1.90	1.20	0.84	0.63	1.96
30 Deg South	Gm	2.96	3.69	5.00	5.75	5.92	5.51	5.34	4.67	4.52	4.42	3.08	2.82	4.48
	Dm	0.76	1.25	1.92	2.73	3.06	3.13	2.93	2.41	1.87	1.21	0.84	0.64	1.90
Latitude South	Gm	3.40	3.98	5.06	5.46	5.41	4.95	4.85	4.37	4.47	4.75	3.49	3.31	4.46
tilt 47° 3' N	Dm	0.72	1.18	1.79	2.53	2.83	2.87	2.71	2.24	1.76	1.18	0.81	0.62	1.77
60 Deg South	Gm	3.57	4.01	4.88	5.01	4.81	4.35	4.29	3.97	4.24	4.77	3.64	3.52	4.26
	Dm	0.69	1.10	1.66	2.33	2.59	2.62	2.48	2.07	1.64	1.13	0.77	0.60	1.64
Vertical South	Gm	3.36	3.50	3.82	3.46	3.06	2.70	2.70	2.67	3.17	4.08	3.38	3.40	3.27
	Dm	0.58	0.89	1.33	1.81	2.00	2.00	1.91	1.60	1.32	0.98	0.65	0.52	1.30
Vertical SE/SW	Gm	2.56	2.88	3.51	3.59	3.39	3.03	2.99	2.79	3.01	3.37	2.66	2.56	3.03
	Dm	0.58	0.89	1.33	1.80	1.98	1.97	1.90	1.59	1.31	0.97	0.64	0.51	1.29
Vertical E/W	Gm	1.27	1.82	2.72	3.26	3.39	3.19	3.04	2.60	2.44	2.16	1.48	1.19	2.38
	Dm	0.55	0.86	1.30	1.78	1.96	1.96	1.89	1.56	1.26	0.90	0.61	0.47	1.26
Vertical NE/NW	Gm	0.53	0.96	1.68	2.43	2.77	2.76	2.54	2.02	1.60	1.06	0.65	0.45	1.62
	Dm	0.51	0.82	1.26	1.75	1.95	1.96	1.86	1.52	1.21	0.84	0.56	0.44	1.23
Vertical North	Gm	0.49	0.79	1.24	1.81	2.18	2.31	2.07	1.57	1.18	0.81	0.54	0.42	1.29
	Dm	0.49	0.79	1.24	1.74	1.96	1.98	1.85	1.49	1.18	0.81	0.54	0.42	1.21

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.28	1.17	1.10	1.04	1.02	1.01	1.01	1.04	1.08	1.17	1.26	1.35	1.08
30 Deg South	Gm/Gmean	1.75	1.43	1.22	1.07	0.99	0.96	0.98	1.04	1.17	1.43	1.68	1.93	1.18
Latitude South	Gm/Gmean	2.01	1.54	1.24	1.01	0.90	0.86	0.89	0.97	1.15	1.54	1.91	2.27	1.17
60 Deg South	Gm/Gmean	2.11	1.55	1.19	0.93	0.80	0.76	0.79	0.88	1.10	1.55	1.99	2.41	1.12
Vertical South	Gm/Gmean	1.99	1.36	0.93	0.64	0.51	0.47	0.50	0.60	0.82	1.33	1.85	2.33	0.86
Vertical SE/SW	Gm/Gmean	1.51	1.12	0.86	0.67	0.57	0.53	0.55	0.62	0.78	1.09	1.45	1.75	0.80
Vertical E/W	Gm/Gmean	0.75	0.70	0.67	0.61	0.57	0.56	0.56	0.58	0.63	0.70	0.81	0.81	0.63
Vertical NE/NW	Gm/Gmean	0.31	0.37	0.41	0.45	0.46	0.48	0.47	0.45	0.41	0.34	0.35	0.31	0.43
Vertical North	Gm/Gmean	0.29	0.31	0.30	0.34	0.36	0.40	0.38	0.35	0.31	0.26	0.29	0.29	0.34

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.70	3.96	6.06	7.86	9.02	9.39	9.03	7.78	6.18	4.71	3.00	2.06	5.99
	D clear	0.47	0.46	0.40	0.67	0.60	0.73	1.04	1.07	0.74	0.59	0.43	0.40	0.64
10 Deg South	Gc	3.71	4.97	6.92	8.34	9.22	9.50	9.17	8.13	6.87	5.66	4.04	2.99	6.63
	Dc	0.52	0.53	0.46	0.70	0.64	0.76	1.05	1.10	0.82	0.65	0.50	0.44	0.68
30 Deg South	Gc	5.47	6.55	8.02	8.71	8.95	9.08	8.85	8.28	7.67	7.10	5.76	4.63	7.43
	Dc	0.65	0.64	0.57	0.82	0.75	0.87	1.14	1.20	0.94	0.78	0.62	0.55	0.80
Latitude South	Gc	6.49	7.34	8.27	8.34	8.13	8.15	8.00	7.79	7.72	7.72	6.73	5.62	7.52
tilt 47° 3' N	Dc	0.74	0.74	0.69	0.95	0.90	1.01	1.25	1.29	1.05	0.89	0.70	0.63	0.90
60 Deg South	Gc	6.92	7.54	8.03	7.63	7.09	7.03	6.96	7.02	7.35	7.78	7.11	6.07	7.21
	Dc	0.79	0.80	0.78	1.05	1.02	1.13	1.33	1.36	1.12	0.96	0.76	0.67	0.98
Vertical South	Gc	6.63	6.66	6.09	4.90	3.93	3.79	3.83	4.34	5.29	6.56	6.67	5.98	5.38
	Dc	0.85	0.90	1.00	1.29	1.33	1.42	1.52	1.47	1.24	1.06	0.82	0.70	1.13
Vertical SE/SW	Gc	5.00	5.31	5.78	5.60	5.23	5.13	4.97	5.00	5.30	5.60	5.13	4.39	5.20
	Dc	0.78	0.86	0.99	1.29	1.35	1.45	1.57	1.50	1.25	1.03	0.77	0.63	1.12
Vertical E/W	Gc	2.33	3.04	4.34	5.21	5.82	5.88	5.45	4.76	4.26	3.65	2.60	1.76	4.10
	Dc	0.63	0.75	0.94	1.27	1.37	1.47	1.60	1.48	1.20	0.93	0.65	0.49	1.07
Vertical NE/NW	Gc	0.66	1.04	2.08	3.23	4.22	4.38	3.97	3.09	2.30	1.49	0.78	0.44	2.31
	Dc	0.52	0.66	0.88	1.19	1.32	1.42	1.52	1.36	1.06	0.80	0.55	0.42	0.98
Vertical North	Gc	0.49	0.63	0.85	1.54	2.49	2.71	2.39	1.63	1.05	0.75	0.53	0.41	1.29
	Dc	0.49	0.63	0.85	1.13	1.28	1.37	1.44	1.26	0.98	0.75	0.53	0.41	0.93

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.37	1.25	1.14	1.06	1.02	1.01	1.02	1.04	1.11	1.20	1.35	1.45	1.11
30 Deg South	Gc/Gmax	2.03	1.65	1.32	1.11	0.99	0.97	0.98	1.06	1.24	1.51	1.92	2.25	1.24
Latitude South	Gc/Gmax	2.40	1.85	1.37	1.06	0.90	0.87	0.89	1.00	1.25	1.64	2.24	2.73	1.25
60 Deg South	Gc/Gmax	2.56	1.90	1.33	0.97	0.79	0.75	0.77	0.90	1.19	1.65	2.37	2.95	1.20
Vertical South	Gc/Gmax	2.46	1.68	1.00	0.62	0.44	0.40	0.42	0.56	0.86	1.39	2.22	2.90	0.90
Vertical SE/SW	Gc/Gmax	1.85	1.34	0.95	0.71	0.58	0.55	0.55	0.64	0.86	1.19	1.71	2.13	0.87
Vertical E/W	Gc/Gmax	0.86	0.77	0.72	0.66	0.64	0.63	0.60	0.61	0.69	0.77	0.87	0.85	0.68
Vertical NE/NW	Gc/Gmax	0.24	0.26	0.34	0.41	0.47	0.47	0.44	0.40	0.37	0.32	0.26	0.21	0.39
Vertical North	Gc/Gmax	0.18	0.16	0.14	0.20	0.28	0.29	0.26	0.21	0.17	0.16	0.18	0.20	0.22

Sunshine data

Mean sunshine	Hours	3.7	3.7	4.4	4.6	4.9	4.4	5.5	5.0	5.2	5.7	3.8	3.8	4.6
Max. sunshine	Hours	9.0	10.1	11.6	12.9	14.2	14.8	14.6	13.3	12.0	10.8	9.4	8.4	11.8

AUSTRIA Site No. 223

KLAGENFURT

Computer file AUSTR223.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 46 39' N

Longitude 14 20' E

Height 452 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.14	2.14	3.30	4.34	5.58	5.72	5.73	4.86	3.72	2.47	1.22	0.91	3.43
	D mean	0.74	1.23	1.77	2.33	2.66	2.80	2.72	2.30	1.73	1.24	0.78	0.61	1.74
10 Deg South	Gm	1.34	2.47	3.63	4.57	5.73	5.79	5.85	5.07	4.05	2.83	1.43	1.09	3.66
	Dm	0.76	1.26	1.81	2.37	2.70	2.83	2.75	2.34	1.77	1.28	0.80	0.61	1.78
30 Deg South	Gm	1.64	2.94	4.02	4.73	5.66	5.55	5.70	5.16	4.40	3.34	1.75	1.36	3.86
	Dm	0.74	1.27	1.81	2.35	2.66	2.75	2.70	2.32	1.76	1.29	0.80	0.60	1.76
Latitude South	Gm	1.78	3.13	4.07	4.55	5.24	5.04	5.23	4.90	4.39	3.52	1.89	1.49	3.77
tilt 46 39' N	Dm	0.70	1.22	1.73	2.23	2.52	2.58	2.56	2.22	1.69	1.25	0.77	0.56	1.67
60 Deg South	Gm	1.81	3.14	3.93	4.21	4.69	4.42	4.64	4.47	4.18	3.50	1.92	1.52	3.54
	Dm	0.65	1.15	1.63	2.09	2.36	2.40	2.39	2.08	1.60	1.19	0.72	0.52	1.57
Vertical South	Gm	1.63	2.71	3.10	2.96	3.00	2.72	2.89	3.02	3.14	2.95	1.71	1.39	2.60
	Dm	0.51	0.94	1.32	1.66	1.89	1.90	1.91	1.69	1.32	0.99	0.58	0.41	1.26
Vertical SE/SW	Gm	1.30	2.25	2.80	2.97	3.29	3.13	3.26	3.18	3.00	2.49	1.40	1.11	2.52
	Dm	0.51	0.92	1.30	1.64	1.88	1.90	1.92	1.67	1.30	0.97	0.57	0.41	1.25
Vertical E/W	Gm	0.75	1.45	2.14	2.63	3.23	3.30	3.32	2.94	2.43	1.67	0.86	0.62	2.11
	Dm	0.48	0.84	1.22	1.58	1.85	1.90	1.91	1.63	1.24	0.89	0.53	0.39	1.21
Vertical NE/NW	Gm	0.45	0.84	1.37	1.92	2.52	2.76	2.67	2.18	1.57	0.95	0.51	0.37	1.51
	Dm	0.45	0.77	1.12	1.48	1.77	1.86	1.84	1.54	1.16	0.82	0.48	0.36	1.14
Vertical North	Gm	0.43	0.73	1.07	1.45	1.90	2.20	2.06	1.59	1.12	0.78	0.45	0.35	1.18
	Dm	0.43	0.73	1.07	1.42	1.72	1.84	1.79	1.49	1.12	0.78	0.45	0.35	1.10

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.17	1.15	1.10	1.05	1.03	1.01	1.02	1.04	1.09	1.15	1.17	1.20	1.07
30 Deg South	Gm/Gmean	1.44	1.37	1.22	1.09	1.01	0.97	1.00	1.06	1.18	1.35	1.43	1.50	1.10
Latitude South	Gm/Gmean	1.56	1.46	1.23	1.05	0.94	0.88	0.91	1.01	1.18	1.42	1.55	1.64	1.10
60 Deg South	Gm/Gmean	1.59	1.47	1.19	0.97	0.84	0.77	0.81	0.92	1.12	1.42	1.57	1.67	1.03
Vertical South	Gm/Gmean	1.43	1.27	0.94	0.68	0.54	0.48	0.50	0.62	0.84	1.19	1.40	1.53	0.76
Vertical SE/SW	Gm/Gmean	1.14	1.05	0.85	0.68	0.59	0.55	0.57	0.65	0.81	1.01	1.15	1.22	0.74
Vertical E/W	Gm/Gmean	0.66	0.68	0.65	0.61	0.58	0.58	0.58	0.61	0.65	0.68	0.70	0.68	0.62
Vertical NE/NW	Gm/Gmean	0.40	0.39	0.41	0.44	0.45	0.48	0.47	0.45	0.42	0.38	0.42	0.41	0.44
Vertical North	Gm/Gmean	0.38	0.34	0.32	0.33	0.34	0.38	0.36	0.33	0.30	0.32	0.37	0.38	0.34

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.12	3.65	5.37	6.85	8.01	8.30	7.95	7.06	5.65	3.94	2.42	1.73	5.26
	D clear	0.72	0.94	0.98	1.41	1.38	1.34	1.40	1.37	0.95	0.83	0.72	0.52	1.05
10 Deg South	Gc	2.77	4.43	6.06	7.26	8.22	8.43	8.12	7.40	6.25	4.72	3.16	2.41	5.77
	Dc	0.78	1.00	1.06	1.46	1.42	1.37	1.45	1.43	1.02	0.95	0.84	0.56	1.11
30 Deg South	Gc	3.92	5.70	6.97	7.60	8.04	8.12	7.86	7.54	6.95	5.84	4.34	3.63	6.38
	Dc	0.95	1.18	1.21	1.58	1.51	1.46	1.53	1.54	1.15	1.11	1.01	0.69	1.24
Latitude South	Gc	4.57	6.31	7.17	7.31	7.38	7.35	7.16	7.12	6.99	6.31	4.98	4.34	6.41
tilt 46 39' N	Dc	1.05	1.29	1.31	1.65	1.58	1.53	1.59	1.60	1.25	1.21	1.11	0.77	1.33
60 Deg South	Gc	4.84	6.46	6.95	6.71	6.47	6.38	6.24	6.42	6.65	6.35	5.22	4.68	6.11
	Dc	1.09	1.34	1.37	1.69	1.62	1.58	1.62	1.63	1.30	1.26	1.15	0.81	1.37
Vertical South	Gc	4.59	5.67	5.32	4.43	3.74	3.57	3.54	4.04	4.81	5.34	4.84	4.58	4.53
	Dc	1.07	1.32	1.40	1.67	1.67	1.66	1.66	1.63	1.36	1.26	1.12	0.81	1.39
Vertical SE/SW	Gc	3.52	4.54	4.95	4.79	4.64	4.59	4.46	4.58	4.89	4.58	3.76	3.40	4.39
	Dc	0.96	1.22	1.36	1.68	1.72	1.71	1.72	1.66	1.36	1.20	1.02	0.71	1.36
Vertical E/W	Gc	1.73	2.63	3.69	4.32	4.92	5.10	4.84	4.36	4.03	3.04	1.95	1.45	3.51
	Dc	0.73	1.00	1.25	1.63	1.76	1.75	1.76	1.63	1.28	1.05	0.80	0.54	1.27
Vertical NE/NW	Gc	0.65	1.06	1.89	2.74	3.57	3.84	3.58	2.91	2.28	1.36	0.74	0.47	2.10
	Dc	0.57	0.81	1.08	1.44	1.64	1.65	1.65	1.47	1.13	0.87	0.63	0.45	1.12
Vertical North	Gc	0.53	0.76	1.00	1.52	2.19	2.48	2.27	1.65	1.13	0.80	0.59	0.44	1.28
	Dc	0.53	0.76	1.00	1.31	1.52	1.55	1.53	1.34	1.04	0.80	0.59	0.44	1.04

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.31	1.21	1.13	1.06	1.03	1.02	1.02	1.05	1.11	1.20	1.31	1.39	1.10
30 Deg South	Gc/Gmax	1.85	1.56	1.30	1.11	1.00	0.98	0.99	1.07	1.23	1.48	1.79	2.10	1.21
Latitude South	Gc/Gmax	2.16	1.73	1.34	1.07	0.92	0.89	0.90	1.01	1.24	1.60	2.06	2.51	1.22
60 Deg South	Gc/Gmax	2.28	1.77	1.29	0.98	0.81	0.77	0.79	0.91	1.18	1.61	2.16	2.70	1.16
Vertical South	Gc/Gmax	2.16	1.55	0.99	0.65	0.47	0.43	0.44	0.57	0.85	1.36	2.00	2.65	0.86
Vertical SE/SW	Gc/Gmax	1.66	1.24	0.92	0.70	0.58	0.55	0.56	0.65	0.87	1.16	1.55	1.97	0.83
Vertical E/W	Gc/Gmax	0.82	0.72	0.69	0.63	0.61	0.61	0.61	0.62	0.71	0.77	0.81	0.84	0.67
Vertical NE/NW	Gc/Gmax	0.31	0.29	0.35	0.40	0.45	0.46	0.45	0.41	0.40	0.34	0.31	0.27	0.40
Vertical North	Gc/Gmax	0.25	0.21	0.19	0.22	0.27	0.30	0.29	0.23	0.20	0.20	0.24	0.25	0.24

Sunshine data

Mean sunshine	Hours	2.0	3.8	5.0	6.1	7.8	7.4	8.2	7.2	5.9	4.7	2.4	1.7	5.2
Max. sunshine	Hours	7.0	9.5	10.7	12.3	13.6	13.9	13.6	12.6	10.7	9.6	8.2	6.7	10.7

BELGIUM Site No. 77

OOSTENDE

Computer file BELGI077.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 51 12' N

Longitude 2 52' E

Height 4 metres

Data period (2.1968-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.62	1.37	2.62	3.97	4.99	5.80	5.12	4.37	3.27	1.89	0.85	0.53	2.96
	D mean	0.46	0.88	1.57	2.25	2.82	2.91	2.79	2.47	1.76	1.16	0.58	0.39	1.68
10 Deg South	Gm	0.73	1.58	2.89	4.20	5.14	5.89	5.23	4.59	3.58	2.15	1.01	0.65	3.14
	Dm	0.47	0.90	1.61	2.29	2.85	2.94	2.82	2.53	1.81	1.20	0.60	0.40	1.71
30 Deg South	Gm	0.89	1.90	3.23	4.39	5.10	5.74	5.14	4.73	3.95	2.53	1.24	0.83	3.31
	Dm	0.47	0.90	1.61	2.25	2.78	2.87	2.75	2.51	1.83	1.22	0.60	0.40	1.69
Latitude South	Gm	0.99	2.05	3.28	4.17	4.63	5.09	4.61	4.44	3.95	2.68	1.37	0.94	3.19
tilt 51 12' N	Dm	0.44	0.85	1.51	2.09	2.55	2.64	2.52	2.35	1.74	1.16	0.56	0.38	1.57
60 Deg South	Gm	0.99	2.05	3.21	3.97	4.31	4.69	4.27	4.19	3.84	2.66	1.39	0.96	3.05
	Dm	0.42	0.81	1.45	1.99	2.42	2.50	2.38	2.24	1.67	1.11	0.53	0.36	1.49
Vertical South	Gm	0.91	1.80	2.59	2.87	2.89	3.00	2.80	2.95	2.99	2.27	1.26	0.90	2.27
	Dm	0.33	0.65	1.16	1.57	1.88	1.99	1.87	1.77	1.37	0.91	0.43	0.29	1.19
Vertical SE/SW	Gm	0.73	1.49	2.30	2.84	3.05	3.33	3.03	2.96	2.75	1.91	1.01	0.72	2.18
	Dm	0.32	0.64	1.14	1.55	1.87	1.98	1.86	1.74	1.33	0.88	0.42	0.28	1.17
Vertical E/W	Gm	0.42	0.95	1.71	2.46	2.94	3.41	3.01	2.63	2.13	1.27	0.58	0.39	1.83
	Dm	0.30	0.59	1.05	1.49	1.84	1.97	1.84	1.66	1.23	0.79	0.39	0.26	1.12
Vertical NE/NW	Gm	0.27	0.57	1.12	1.80	2.36	2.82	2.46	1.96	1.38	0.78	0.36	0.24	1.35
	Dm	0.27	0.54	0.96	1.40	1.77	1.91	1.78	1.53	1.12	0.71	0.35	0.23	1.05
Vertical North	Gm	0.26	0.51	0.92	1.39	1.90	2.26	1.99	1.52	1.07	0.67	0.34	0.22	1.09
	Dm	0.26	0.51	0.92	1.36	1.73	1.89	1.75	1.46	1.07	0.67	0.34	0.22	1.02

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.15	1.10	1.06	1.03	1.02	1.02	1.05	1.10	1.14	1.19	1.23	1.06
30 Deg South	Gm/Gmean	1.43	1.39	1.23	1.11	1.02	0.99	1.00	1.08	1.21	1.34	1.46	1.57	1.12
Latitude South	Gm/Gmean	1.60	1.50	1.25	1.05	0.93	0.88	0.90	1.02	1.21	1.42	1.61	1.77	1.08
60 Deg South	Gm/Gmean	1.60	1.50	1.23	1.00	0.86	0.81	0.83	0.96	1.17	1.41	1.63	1.81	1.03
Vertical South	Gm/Gmean	1.47	1.31	0.99	0.72	0.58	0.52	0.55	0.68	0.91	1.20	1.48	1.70	0.77
Vertical SE/SW	Gm/Gmean	1.18	1.09	0.88	0.71	0.61	0.57	0.59	0.68	0.84	1.01	1.19	1.36	0.74
Vertical E/W	Gm/Gmean	0.68	0.69	0.65	0.62	0.59	0.59	0.59	0.60	0.65	0.67	0.68	0.74	0.62
Vertical NE/NW	Gm/Gmean	0.44	0.42	0.43	0.45	0.47	0.49	0.48	0.45	0.42	0.41	0.42	0.45	0.46
Vertical North	Gm/Gmean	0.42	0.37	0.35	0.35	0.38	0.39	0.39	0.35	0.33	0.35	0.40	0.41	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.50	2.94	4.79	6.81	7.90	8.36	8.16	6.90	5.31	3.37	1.77	1.16	4.92
	D clear	0.66	0.86	1.11	1.34	1.49	1.45	1.36	1.93	1.35	1.03	0.62	0.49	1.14
10 Deg South	Gc	2.02	3.68	5.48	7.31	8.17	8.55	8.38	7.22	5.90	4.09	2.43	1.69	5.42
	Dc	0.74	0.93	1.18	1.40	1.53	1.48	1.41	1.91	1.40	1.16	0.76	0.56	1.21
30 Deg South	Gc	2.92	4.91	6.47	7.82	8.18	8.43	8.30	7.52	6.72	5.18	3.48	2.64	6.05
	Dc	0.90	1.10	1.35	1.54	1.64	1.58	1.51	2.03	1.57	1.36	0.92	0.70	1.35
Latitude South	Gc	3.55	5.65	6.79	7.54	7.42	7.52	7.44	7.10	6.85	5.75	4.18	3.34	6.09
tilt 51 12' N	Dc	1.00	1.22	1.47	1.65	1.72	1.68	1.62	2.08	1.68	1.48	1.03	0.79	1.45
60 Deg South	Gc	3.69	5.76	6.69	7.16	6.87	6.91	6.84	6.69	6.66	5.78	4.33	3.51	5.90
	Dc	1.02	1.24	1.50	1.68	1.75	1.71	1.65	2.07	1.70	1.50	1.06	0.81	1.48
Vertical South	Gc	3.57	5.23	5.34	4.97	4.27	4.15	4.15	4.51	5.09	5.03	4.13	3.52	4.49
	Dc	0.98	1.22	1.48	1.69	1.77	1.77	1.72	1.93	1.64	1.44	1.02	0.79	1.46
Vertical SE/SW	Gc	2.70	4.16	4.81	5.21	4.98	5.00	4.99	4.78	4.83	4.18	3.19	2.62	4.29
	Dc	0.85	1.12	1.42	1.69	1.81	1.81	1.76	1.96	1.61	1.35	0.91	0.67	1.41
Vertical E/W	Gc	1.23	2.31	3.44	4.52	5.02	5.23	5.22	4.32	3.70	2.59	1.59	1.07	3.36
	Dc	0.61	0.90	1.27	1.61	1.81	1.83	1.77	1.90	1.47	1.11	0.69	0.48	1.29
Vertical NE/NW	Gc	0.49	0.92	1.72	2.79	3.57	3.83	3.81	2.84	2.03	1.16	0.61	0.39	2.02
	Dc	0.47	0.73	1.06	1.43	1.67	1.71	1.65	1.66	1.23	0.87	0.54	0.38	1.12
Vertical North	Gc	0.45	0.68	0.98	1.53	2.25	2.47	2.46	1.74	1.14	0.78	0.50	0.37	1.28
	Dc	0.45	0.68	0.98	1.30	1.55	1.59	1.54	1.48	1.10	0.78	0.50	0.37	1.03

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.35	1.25	1.14	1.07	1.03	1.02	1.03	1.05	1.11	1.21	1.37	1.46	1.10
30 Deg South	Gc/Gmax	1.95	1.67	1.35	1.15	1.03	1.01	1.02	1.09	1.27	1.54	1.97	2.28	1.23
Latitude South	Gc/Gmax	2.37	1.92	1.42	1.11	0.94	0.90	0.91	1.03	1.29	1.71	2.36	2.88	1.24
60 Deg South	Gc/Gmax	2.46	1.96	1.40	1.05	0.87	0.83	0.84	0.97	1.25	1.72	2.45	3.03	1.20
Vertical South	Gc/Gmax	2.38	1.78	1.12	0.73	0.54	0.50	0.51	0.65	0.96	1.49	2.33	3.03	0.91
Vertical SE/SW	Gc/Gmax	1.80	1.41	1.00	0.76	0.63	0.60	0.61	0.69	0.91	1.24	1.80	2.26	0.87
Vertical E/W	Gc/Gmax	0.82	0.79	0.72	0.66	0.63	0.63	0.64	0.63	0.70	0.77	0.90	0.92	0.68
Vertical NE/NW	Gc/Gmax	0.33	0.31	0.36	0.41	0.45	0.46	0.47	0.41	0.38	0.34	0.34	0.34	0.41
Vertical North	Gc/Gmax	0.30	0.23	0.20	0.22	0.28	0.29	0.30	0.25	0.22	0.23	0.28	0.32	0.26

Sunshine data

Mean sunshine	Hours	1.4	2.6	4.1	5.2	6.1	7.4	6.5	6.6	5.6	3.6	1.9	1.4	4.4
Max. sunshine	Hours	6.6	8.7	10.5	13.0	14.2	14.7	14.5	13.1	11.2	9.7	7.4	6.4	10.8

BELGIUM Site No. 78

MELLE

Computer file BELGI078.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 50 59' N

Longitude 3 50' E

Height 15 metres

Data period (6.1967-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.61	1.24	2.15	3.33	4.36	4.90	4.51	3.95	2.89	1.67	0.80	0.49	2.58
	D mean	0.44	0.82	1.41	2.04	2.59	2.75	2.73	2.29	1.70	1.07	0.57	0.36	1.57
10 Deg South	Gm	0.72	1.43	2.36	3.53	4.50	5.00	4.63	4.16	3.16	1.90	0.94	0.59	2.75
	Dm	0.46	0.84	1.46	2.09	2.63	2.78	2.77	2.35	1.76	1.12	0.59	0.38	1.61
30 Deg South	Gm	0.90	1.71	2.61	3.69	4.50	4.89	4.56	4.30	3.47	2.23	1.15	0.75	2.90
	Dm	0.46	0.86	1.47	2.09	2.59	2.72	2.70	2.35	1.79	1.15	0.61	0.38	1.60
Latitude South	Gm	1.00	1.83	2.63	3.52	4.11	4.36	4.11	4.05	3.47	2.36	1.27	0.85	2.80
tilt 50 59' N	Dm	0.44	0.82	1.39	1.95	2.39	2.49	2.48	2.21	1.71	1.12	0.58	0.36	1.50
60 Deg South	Gm	1.01	1.83	2.56	3.35	3.82	4.02	3.81	3.83	3.36	2.34	1.28	0.86	2.68
	Dm	0.42	0.78	1.34	1.86	2.26	2.36	2.34	2.11	1.65	1.08	0.56	0.34	1.43
Vertical South	Gm	0.93	1.61	2.06	2.44	2.58	2.60	2.51	2.70	2.62	2.00	1.16	0.80	2.00
	Dm	0.34	0.64	1.07	1.45	1.74	1.83	1.78	1.66	1.34	0.89	0.46	0.28	1.13
Vertical SE/SW	Gm	0.75	1.33	1.81	2.35	2.67	2.81	2.64	2.68	2.38	1.68	0.93	0.64	1.89
	Dm	0.33	0.62	1.03	1.42	1.73	1.83	1.78	1.63	1.29	0.85	0.44	0.27	1.10
Vertical E/W	Gm	0.42	0.84	1.34	2.00	2.52	2.80	2.55	2.35	1.83	1.10	0.54	0.35	1.56
	Dm	0.30	0.55	0.93	1.34	1.69	1.81	1.75	1.54	1.17	0.73	0.38	0.24	1.04
Vertical NE/NW	Gm	0.27	0.52	0.90	1.47	2.00	2.31	2.09	1.74	1.21	0.68	0.34	0.22	1.15
	Dm	0.26	0.49	0.82	1.22	1.59	1.73	1.66	1.40	1.03	0.63	0.34	0.22	0.95
Vertical North	Gm	0.25	0.46	0.77	1.17	1.62	1.88	1.72	1.35	0.96	0.59	0.32	0.21	0.94
	Dm	0.25	0.46	0.77	1.16	1.52	1.68	1.60	1.31	0.96	0.59	0.32	0.21	0.90

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.15	1.10	1.06	1.03	1.02	1.03	1.05	1.09	1.14	1.17	1.20	1.07
30 Deg South	Gm/Gmean	1.48	1.38	1.21	1.11	1.03	1.00	1.01	1.09	1.20	1.34	1.44	1.53	1.12
Latitude South	Gm/Gmean	1.64	1.48	1.22	1.06	0.94	0.89	0.91	1.02	1.20	1.41	1.59	1.74	1.09
60 Deg South	Gm/Gmean	1.66	1.48	1.19	1.01	0.88	0.82	0.85	0.97	1.16	1.40	1.60	1.75	1.04
Vertical South	Gm/Gmean	1.52	1.30	0.96	0.73	0.59	0.53	0.56	0.68	0.91	1.20	1.45	1.63	0.77
Vertical SE/SW	Gm/Gmean	1.23	1.07	0.84	0.71	0.61	0.57	0.58	0.68	0.82	1.01	1.16	1.31	0.73
Vertical E/W	Gm/Gmean	0.69	0.68	0.62	0.60	0.58	0.57	0.56	0.60	0.63	0.66	0.68	0.71	0.61
Vertical NE/NW	Gm/Gmean	0.44	0.42	0.42	0.44	0.46	0.47	0.46	0.44	0.42	0.41	0.43	0.45	0.45
Vertical North	Gm/Gmean	0.41	0.37	0.36	0.35	0.37	0.38	0.38	0.34	0.33	0.35	0.40	0.43	0.36

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.38	2.67	4.05	6.00	7.02	7.49	7.41	6.16	4.75	3.00	1.70	1.11	4.40
	D clear	0.67	0.98	1.36	1.76	1.89	1.96	1.96	1.68	1.59	1.20	0.79	0.52	1.39
10 Deg South	Gc	1.86	3.32	4.68	6.49	7.34	7.73	7.64	6.63	5.34	3.65	2.25	1.58	4.88
	Dc	0.79	1.09	1.54	1.89	2.00	2.04	2.02	2.16	1.75	1.39	0.95	0.60	1.52
30 Deg South	Gc	2.64	4.36	5.47	6.93	7.37	7.66	7.60	6.90	6.05	4.55	3.12	2.42	5.43
	Dc	0.97	1.29	1.73	2.03	2.08	2.11	2.09	2.27	1.93	1.62	1.15	0.75	1.67
Latitude South	Gc	3.17	4.97	5.71	6.70	6.72	6.88	6.86	6.52	6.15	5.00	3.69	3.02	5.45
tilt 50 59' N	Dc	1.07	1.41	1.83	2.08	2.09	2.11	2.10	2.28	2.01	1.74	1.27	0.84	1.74
60 Deg South	Gc	3.29	5.05	5.62	6.37	6.22	6.32	6.32	6.14	5.98	5.02	3.81	3.18	5.27
	Dc	1.09	1.43	1.83	2.07	2.07	2.09	2.08	2.24	2.01	1.75	1.30	0.86	1.74
Vertical South	Gc	3.16	4.56	4.50	4.47	3.93	3.87	3.91	4.15	4.59	4.34	3.60	3.17	4.02
	Dc	1.03	1.36	1.68	1.89	1.90	1.93	1.93	1.98	1.82	1.61	1.22	0.83	1.60
Vertical SE/SW	Gc	2.41	3.63	4.00	4.53	4.43	4.48	4.49	4.32	4.26	3.60	2.79	2.37	3.77
	Dc	0.89	1.23	1.59	1.88	1.96	2.00	1.99	2.00	1.77	1.48	1.07	0.71	1.55
Vertical E/W	Gc	1.12	2.04	2.84	3.85	4.34	4.53	4.49	3.82	3.22	2.22	1.39	0.99	2.91
	Dc	0.62	0.95	1.36	1.76	1.95	2.01	1.99	1.90	1.57	1.17	0.76	0.49	1.38
Vertical NE/NW	Gc	0.48	0.87	1.49	2.41	3.09	3.31	3.25	2.50	1.80	1.05	0.60	0.39	1.77
	Dc	0.47	0.73	1.08	1.49	1.75	1.82	1.80	1.61	1.25	0.87	0.56	0.38	1.15
Vertical North	Gc	0.44	0.68	0.96	1.44	2.00	2.18	2.13	1.56	1.11	0.76	0.51	0.37	1.18
	Dc	0.44	0.68	0.96	1.31	1.58	1.65	1.63	1.40	1.09	0.76	0.51	0.37	1.03

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.35	1.24	1.16	1.08	1.05	1.03	1.03	1.08	1.12	1.22	1.32	1.42	1.11
30 Deg South	Gc/Gmax	1.91	1.63	1.35	1.15	1.05	1.02	1.03	1.12	1.27	1.52	1.84	2.18	1.23
Latitude South	Gc/Gmax	2.30	1.86	1.41	1.12	0.96	0.92	0.93	1.06	1.29	1.67	2.17	2.72	1.24
60 Deg South	Gc/Gmax	2.38	1.89	1.39	1.06	0.89	0.84	0.85	1.00	1.26	1.67	2.24	2.87	1.20
Vertical South	Gc/Gmax	2.29	1.71	1.11	0.75	0.56	0.52	0.53	0.67	0.97	1.45	2.12	2.86	0.91
Vertical SE/SW	Gc/Gmax	1.75	1.36	0.99	0.75	0.63	0.60	0.61	0.70	0.90	1.20	1.64	2.13	0.86
Vertical E/W	Gc/Gmax	0.81	0.76	0.70	0.64	0.62	0.61	0.61	0.62	0.68	0.74	0.82	0.89	0.66
Vertical NE/NW	Gc/Gmax	0.35	0.33	0.37	0.40	0.44	0.44	0.44	0.41	0.38	0.35	0.35	0.35	0.40
Vertical North	Gc/Gmax	0.32	0.25	0.24	0.24	0.28	0.29	0.29	0.25	0.23	0.25	0.30	0.33	0.27

Sunshine data

Mean sunshine	Hours	1.5	2.5	3.5	4.9	6.1	6.8	6.0	6.4	5.2	3.6	2.0	1.3	4.2
Max. sunshine	Hours	6.4	8.4	9.8	12.5	13.6	14.3	14.0	13.3	11.2	9.2	7.6	6.2	10.6

BELGIUM Site No. 79

UCCLE

Computer file BELGI079.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 50 48' N

Longitude 4 21' E

Height 105 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.64	1.26	2.20	3.44	4.57	4.93	4.64	4.09	3.02	1.74	0.83	0.49	2.66
	D mean	0.46	0.82	1.39	2.03	2.63	2.76	2.74	2.38	1.70	1.06	0.56	0.36	1.58
10 Deg South	Gm	0.76	1.45	2.41	3.64	4.71	5.01	4.75	4.29	3.29	1.99	0.99	0.59	2.83
	Dm	0.47	0.85	1.42	2.07	2.66	2.78	2.77	2.43	1.75	1.10	0.58	0.37	1.61
30 Deg South	Gm	0.94	1.73	2.67	3.80	4.68	4.88	4.67	4.40	3.61	2.33	1.23	0.76	2.98
	Dm	0.47	0.85	1.42	2.05	2.61	2.71	2.70	2.42	1.77	1.12	0.58	0.38	1.59
Latitude South	Gm	1.04	1.86	2.69	3.63	4.26	4.35	4.20	4.13	3.60	2.47	1.36	0.86	2.88
tilt 50 48' N	Dm	0.44	0.81	1.34	1.91	2.40	2.48	2.47	2.25	1.68	1.07	0.55	0.36	1.48
60 Deg South	Gm	1.05	1.85	2.62	3.44	3.95	3.99	3.88	3.89	3.49	2.45	1.37	0.88	2.74
	Dm	0.42	0.77	1.28	1.82	2.26	2.34	2.33	2.14	1.62	1.03	0.53	0.35	1.41
Vertical South	Gm	0.96	1.62	2.10	2.49	2.65	2.58	2.56	2.73	2.71	2.10	1.25	0.82	2.05
	Dm	0.34	0.63	1.02	1.43	1.76	1.82	1.79	1.68	1.31	0.84	0.43	0.28	1.11
Vertical SE/SW	Gm	0.78	1.35	1.87	2.44	2.79	2.81	2.72	2.74	2.48	1.76	1.00	0.65	1.95
	Dm	0.33	0.61	1.00	1.41	1.75	1.81	1.79	1.65	1.27	0.82	0.42	0.27	1.10
Vertical E/W	Gm	0.44	0.86	1.39	2.11	2.67	2.83	2.66	2.43	1.93	1.17	0.57	0.36	1.62
	Dm	0.30	0.55	0.92	1.34	1.72	1.80	1.76	1.58	1.17	0.73	0.38	0.24	1.04
Vertical NE/NW	Gm	0.28	0.53	0.94	1.55	2.15	2.36	2.19	1.83	1.28	0.71	0.35	0.22	1.20
	Dm	0.28	0.50	0.83	1.25	1.64	1.74	1.69	1.46	1.06	0.65	0.34	0.22	0.97
Vertical North	Gm	0.26	0.47	0.79	1.22	1.73	1.94	1.80	1.44	1.01	0.62	0.32	0.21	0.99
	Dm	0.26	0.47	0.79	1.20	1.59	1.71	1.64	1.39	1.01	0.62	0.32	0.21	0.94

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.19	1.15	1.10	1.06	1.03	1.02	1.02	1.05	1.09	1.14	1.19	1.20	1.06
30 Deg South	Gm/Gmean	1.47	1.37	1.21	1.11	1.02	0.99	1.01	1.08	1.20	1.34	1.48	1.55	1.12
Latitude South	Gm/Gmean	1.63	1.48	1.22	1.05	0.93	0.88	0.90	1.01	1.19	1.42	1.64	1.75	1.08
60 Deg South	Gm/Gmean	1.64	1.47	1.19	1.00	0.86	0.81	0.84	0.95	1.16	1.41	1.65	1.80	1.03
Vertical South	Gm/Gmean	1.50	1.29	0.95	0.72	0.58	0.52	0.55	0.67	0.90	1.21	1.51	1.67	0.77
Vertical SE/SW	Gm/Gmean	1.22	1.07	0.85	0.71	0.61	0.57	0.59	0.67	0.82	1.01	1.21	1.33	0.73
Vertical E/W	Gm/Gmean	0.69	0.68	0.63	0.61	0.58	0.57	0.57	0.59	0.64	0.67	0.69	0.74	0.61
Vertical NE/NW	Gm/Gmean	0.44	0.42	0.43	0.45	0.47	0.48	0.47	0.45	0.42	0.41	0.42	0.45	0.45
Vertical North	Gm/Gmean	0.41	0.37	0.36	0.35	0.38	0.39	0.39	0.35	0.33	0.36	0.39	0.43	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.54	2.80	4.52	6.56	7.38	7.70	7.71	6.42	5.04	3.33	1.87	1.20	4.68
	D clear	0.64	0.88	1.14	1.51	1.55	1.68	1.65	1.83	1.35	1.02	0.65	0.50	1.20
10 Deg South	Gc	2.10	3.52	5.20	7.05	7.69	7.93	7.98	6.86	5.68	4.04	2.55	1.75	5.20
	Dc	0.74	1.00	1.27	1.58	1.65	1.75	1.75	1.96	1.50	1.16	0.79	0.59	1.31
30 Deg South	Gc	3.03	4.65	6.11	7.52	7.69	7.83	7.91	7.13	6.44	5.09	3.64	2.71	5.82
	Dc	0.90	1.18	1.44	1.72	1.74	1.83	1.83	2.07	1.66	1.35	0.96	0.73	1.45
Latitude South	Gc	3.67	5.32	6.39	7.25	6.99	7.01	7.12	6.74	6.55	5.63	4.35	3.40	5.87
tilt 50 48' N	Dc	1.01	1.30	1.55	1.80	1.80	1.87	1.88	2.10	1.76	1.47	1.07	0.83	1.54
60 Deg South	Gc	3.81	5.42	6.28	6.88	6.45	6.42	6.54	6.33	6.37	5.67	4.51	3.58	5.69
	Dc	1.03	1.32	1.57	1.82	1.81	1.88	1.88	2.08	1.77	1.50	1.10	0.85	1.55
Vertical South	Gc	3.68	4.89	5.01	4.78	4.01	3.89	3.99	4.25	4.85	4.92	4.30	3.57	4.34
	Dc	0.99	1.27	1.51	1.76	1.77	1.82	1.83	1.90	1.67	1.43	1.06	0.82	1.49
Vertical SE/SW	Gc	2.78	3.90	4.51	4.95	4.65	4.60	4.68	4.48	4.58	4.09	3.31	2.66	4.10
	Dc	0.86	1.16	1.45	1.76	1.82	1.88	1.88	1.92	1.64	1.34	0.95	0.71	1.45
Vertical E/W	Gc	1.26	2.18	3.22	4.27	4.66	4.74	4.77	3.99	3.50	2.55	1.65	1.09	3.16
	Dc	0.61	0.92	1.28	1.67	1.82	1.89	1.89	1.83	1.48	1.10	0.72	0.50	1.31
Vertical NE/NW	Gc	0.50	0.90	1.64	2.65	3.32	3.47	3.46	2.61	1.94	1.15	0.63	0.40	1.89
	Dc	0.48	0.73	1.06	1.46	1.66	1.74	1.74	1.58	1.23	0.86	0.55	0.39	1.13
Vertical North	Gc	0.45	0.68	0.96	1.50	2.11	2.26	2.24	1.58	1.12	0.77	0.51	0.38	1.22
	Dc	0.45	0.68	0.96	1.31	1.52	1.60	1.59	1.39	1.09	0.77	0.51	0.38	1.02

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.36	1.26	1.15	1.08	1.04	1.03	1.03	1.07	1.13	1.21	1.36	1.46	1.11
30 Deg South	Gc/Gmax	1.97	1.66	1.35	1.15	1.04	1.02	1.03	1.11	1.28	1.53	1.95	2.26	1.24
Latitude South	Gc/Gmax	2.38	1.90	1.41	1.11	0.95	0.91	0.92	1.05	1.30	1.69	2.33	2.83	1.25
60 Deg South	Gc/Gmax	2.47	1.94	1.39	1.05	0.87	0.83	0.85	0.99	1.26	1.70	2.41	2.98	1.22
Vertical South	Gc/Gmax	2.39	1.75	1.11	0.73	0.54	0.50	0.52	0.66	0.96	1.48	2.30	2.97	0.93
Vertical SE/SW	Gc/Gmax	1.80	1.39	1.00	0.75	0.63	0.60	0.61	0.70	0.91	1.23	1.77	2.22	0.88
Vertical E/W	Gc/Gmax	0.82	0.78	0.71	0.65	0.63	0.62	0.62	0.62	0.69	0.77	0.88	0.91	0.68
Vertical NE/NW	Gc/Gmax	0.32	0.32	0.36	0.40	0.45	0.45	0.45	0.41	0.38	0.34	0.34	0.33	0.40
Vertical North	Gc/Gmax	0.29	0.24	0.21	0.23	0.29	0.29	0.29	0.25	0.22	0.23	0.27	0.32	0.26

Sunshine data

Mean sunshine	Hours	1.5	2.5	3.5	5.0	6.0	6.5	6.1	6.1	5.2	3.5	2.0	1.4	4.1
Max. sunshine	Hours	7.0	8.7	10.3	12.8	13.8	14.2	14.6	13.3	11.5	9.4	7.9	7.1	10.9

BELGIUM Site No. 80

ST-HUBERT

Computer file BELGI080.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 50 2' N

Longitude 5 24' E

Height 563 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.66	1.46	2.43	3.70	4.64	5.07	5.01	4.30	3.26	1.81	0.85	0.55	2.82
	D mean	0.47	0.94	1.44	2.09	2.58	2.77	2.73	2.35	1.66	1.03	0.58	0.38	1.59
10 Deg South	Gm	0.78	1.68	2.66	3.90	4.77	5.14	5.12	4.50	3.56	2.07	1.00	0.67	2.99
	Dm	0.48	0.96	1.46	2.12	2.61	2.80	2.76	2.39	1.70	1.05	0.60	0.39	1.61
30 Deg South	Gm	0.95	1.99	2.93	4.05	4.71	4.98	5.01	4.60	3.90	2.44	1.22	0.87	3.14
	Dm	0.47	0.95	1.43	2.08	2.54	2.71	2.69	2.36	1.69	1.05	0.59	0.38	1.58
Latitude South	Gm	1.05	2.12	2.95	3.85	4.29	4.44	4.52	4.31	3.88	2.59	1.33	0.98	3.03
tilt 50 2' N	Dm	0.43	0.89	1.32	1.92	2.34	2.49	2.48	2.20	1.60	0.99	0.56	0.35	1.47
60 Deg South	Gm	1.06	2.12	2.86	3.63	3.95	4.04	4.14	4.03	3.75	2.57	1.34	1.01	2.88
	Dm	0.41	0.85	1.25	1.82	2.20	2.34	2.33	2.08	1.53	0.95	0.53	0.33	1.39
Vertical South	Gm	0.96	1.84	2.27	2.60	2.62	2.59	2.69	2.80	2.89	2.19	1.20	0.95	2.13
	Dm	0.32	0.68	0.98	1.43	1.71	1.82	1.82	1.65	1.24	0.77	0.42	0.26	1.09
Vertical SE/SW	Gm	0.77	1.53	2.05	2.60	2.81	2.86	2.93	2.87	2.70	1.85	0.97	0.74	2.06
	Dm	0.31	0.67	0.97	1.41	1.70	1.81	1.81	1.63	1.22	0.76	0.41	0.26	1.08
Vertical E/W	Gm	0.45	0.98	1.57	2.29	2.75	2.93	2.93	2.60	2.14	1.24	0.57	0.40	1.74
	Dm	0.30	0.62	0.93	1.37	1.68	1.81	1.80	1.57	1.16	0.70	0.38	0.25	1.05
Vertical NE/NW	Gm	0.28	0.61	1.05	1.69	2.22	2.46	2.40	1.96	1.40	0.74	0.36	0.24	1.29
	Dm	0.28	0.57	0.88	1.30	1.63	1.76	1.74	1.48	1.08	0.65	0.35	0.23	1.00
Vertical North	Gm	0.27	0.54	0.85	1.31	1.78	2.02	1.93	1.50	1.05	0.62	0.33	0.23	1.04
	Dm	0.27	0.54	0.85	1.27	1.60	1.74	1.71	1.43	1.05	0.62	0.33	0.23	0.97

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.15	1.10	1.05	1.03	1.01	1.02	1.05	1.09	1.14	1.18	1.22	1.06
30 Deg South	Gm/Gmean	1.44	1.36	1.21	1.10	1.01	0.98	1.00	1.07	1.20	1.35	1.43	1.58	1.11
Latitude South	Gm/Gmean	1.59	1.45	1.21	1.04	0.93	0.88	0.90	1.00	1.19	1.43	1.57	1.78	1.07
60 Deg South	Gm/Gmean	1.61	1.45	1.18	0.98	0.85	0.80	0.83	0.94	1.15	1.42	1.58	1.84	1.02
Vertical South	Gm/Gmean	1.46	1.26	0.93	0.70	0.56	0.51	0.54	0.65	0.89	1.21	1.41	1.73	0.75
Vertical SE/SW	Gm/Gmean	1.17	1.05	0.84	0.70	0.61	0.56	0.58	0.67	0.83	1.02	1.14	1.35	0.73
Vertical E/W	Gm/Gmean	0.68	0.67	0.65	0.62	0.59	0.58	0.58	0.61	0.66	0.69	0.67	0.73	0.62
Vertical NE/NW	Gm/Gmean	0.42	0.42	0.43	0.46	0.48	0.49	0.48	0.46	0.43	0.41	0.42	0.44	0.46
Vertical North	Gm/Gmean	0.41	0.37	0.35	0.35	0.38	0.40	0.38	0.35	0.32	0.34	0.39	0.42	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.69	3.15	5.18	7.05	8.02	8.51	8.47	7.17	5.60	3.61	2.15	1.57	5.19
	D clear	0.53	0.84	0.75	1.15	1.23	1.43	1.36	1.50	0.99	0.73	0.65	0.36	0.96
10 Deg South	Gc	2.36	3.91	5.95	7.54	8.29	8.68	8.68	7.58	6.26	4.44	2.90	2.41	5.76
	Dc	0.63	0.90	0.82	1.19	1.29	1.46	1.39	1.56	1.06	0.85	0.76	0.40	1.03
30 Deg South	Gc	3.46	5.19	7.01	8.00	8.23	8.51	8.54	7.84	7.11	5.65	4.14	3.90	6.47
	Dc	0.76	1.07	0.95	1.32	1.40	1.55	1.49	1.67	1.21	1.01	0.92	0.50	1.15
Latitude South	Gc	4.19	5.91	7.32	7.70	7.47	7.62	7.67	7.39	7.21	6.26	4.94	4.96	6.56
tilt 50 2' N	Dc	0.86	1.18	1.08	1.44	1.50	1.64	1.59	1.75	1.33	1.12	1.03	0.58	1.26
60 Deg South	Gc	4.39	6.04	7.18	7.25	6.81	6.89	6.96	6.88	6.98	6.31	5.14	5.28	6.34
	Dc	0.88	1.22	1.13	1.49	1.55	1.68	1.64	1.77	1.37	1.16	1.06	0.60	1.30
Vertical South	Gc	4.24	5.44	5.65	4.93	4.13	4.06	4.13	4.52	5.24	5.46	4.89	5.33	4.83
	Dc	0.86	1.20	1.22	1.56	1.64	1.75	1.72	1.74	1.41	1.17	1.04	0.63	1.33
Vertical SE/SW	Gc	3.18	4.33	5.22	5.31	4.98	4.96	5.03	4.91	5.16	4.63	3.76	3.90	4.61
	Dc	0.76	1.11	1.19	1.57	1.68	1.80	1.77	1.76	1.40	1.12	0.94	0.56	1.31
Vertical E/W	Gc	1.42	2.42	3.81	4.73	5.18	5.25	5.28	4.48	4.10	2.97	1.86	1.56	3.59
	Dc	0.58	0.90	1.09	1.51	1.69	1.82	1.78	1.71	1.31	0.97	0.72	0.44	1.21
Vertical NE/NW	Gc	0.50	0.95	1.86	2.93	3.73	3.85	3.84	2.91	2.26	1.29	0.67	0.40	2.11
	Dc	0.47	0.73	0.97	1.36	1.57	1.70	1.67	1.52	1.14	0.80	0.57	0.38	1.07
Vertical North	Gc	0.45	0.69	0.91	1.55	2.34	2.46	2.43	1.66	1.14	0.74	0.53	0.37	1.28
	Dc	0.45	0.69	0.91	1.26	1.47	1.59	1.56	1.38	1.05	0.74	0.53	0.37	1.00

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.40	1.24	1.15	1.07	1.03	1.02	1.02	1.06	1.12	1.23	1.35	1.53	1.11
30 Deg South	Gc/Gmax	2.05	1.65	1.35	1.13	1.03	1.00	1.01	1.09	1.27	1.57	1.93	2.48	1.25
Latitude South	Gc/Gmax	2.48	1.88	1.41	1.09	0.93	0.89	0.91	1.03	1.29	1.73	2.30	3.16	1.26
60 Deg South	Gc/Gmax	2.60	1.92	1.39	1.03	0.85	0.81	0.82	0.96	1.25	1.75	2.39	3.36	1.22
Vertical South	Gc/Gmax	2.51	1.73	1.09	0.70	0.51	0.48	0.49	0.63	0.94	1.51	2.27	3.39	0.93
Vertical SE/SW	Gc/Gmax	1.88	1.38	1.01	0.75	0.62	0.58	0.59	0.69	0.92	1.28	1.75	2.48	0.89
Vertical E/W	Gc/Gmax	0.84	0.77	0.74	0.67	0.65	0.62	0.62	0.63	0.73	0.82	0.87	0.99	0.69
Vertical NE/NW	Gc/Gmax	0.30	0.30	0.36	0.42	0.47	0.45	0.45	0.41	0.40	0.36	0.31	0.25	0.41
Vertical North	Gc/Gmax	0.27	0.22	0.18	0.22	0.29	0.29	0.29	0.23	0.20	0.20	0.25	0.24	0.25

Sunshine data

Mean sunshine	Hours	1.4	2.6	3.3	4.9	5.9	6.5	6.7	6.2	5.3	3.5	1.9	1.4	4.1
Max. sunshine	Hours	7.2	8.8	10.5	12.7	14.1	14.8	14.8	13.6	11.4	9.7	8.4	7.1	11.1

BOSNIA HERCEGOVINA Site No. 243
Inclined surfaces - ground albedo 0.20 assumed.
Latitude 44 47' N

BANJA LUKA

Longitude 17 13' E

Height 153 metres

Computer file BOSNI243.INC
Units kWh/square metre per day
Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.18	2.02	3.14	4.29	5.48	5.76	6.06	5.21	3.87	2.48	1.46	0.92	3.50
	D mean	0.75	1.14	1.77	2.26	2.85	3.04	2.75	2.63	1.88	1.31	0.84	0.60	1.82
10 Deg South	Gm	1.37	2.29	3.39	4.48	5.60	5.82	6.17	5.42	4.17	2.80	1.72	1.08	3.70
	Dm	0.75	1.15	1.79	2.28	2.88	3.06	2.79	2.67	1.92	1.34	0.85	0.61	1.84
30 Deg South	Gm	1.66	2.67	3.67	4.57	5.46	5.55	5.98	5.47	4.48	3.24	2.12	1.31	3.85
	Dm	0.71	1.11	1.74	2.22	2.80	2.96	2.74	2.64	1.90	1.35	0.84	0.58	1.80
Latitude South	Gm	1.77	2.79	3.66	4.38	5.08	5.09	5.53	5.20	4.44	3.37	2.29	1.41	3.76
tilt 44 47' N	Dm	0.66	1.05	1.65	2.10	2.66	2.79	2.62	2.52	1.83	1.31	0.80	0.54	1.71
60 Deg South	Gm	1.80	2.78	3.48	3.98	4.45	4.38	4.80	4.68	4.18	3.32	2.35	1.44	3.47
	Dm	0.60	0.96	1.51	1.93	2.44	2.55	2.43	2.34	1.71	1.23	0.74	0.49	1.58
Vertical South	Gm	1.60	2.35	2.67	2.73	2.82	2.69	2.93	3.12	3.10	2.75	2.09	1.29	2.51
	Dm	0.46	0.76	1.19	1.53	1.92	1.99	1.96	1.87	1.39	1.01	0.60	0.37	1.26
Vertical SE/SW	Gm	1.29	1.97	2.47	2.87	3.12	3.08	3.37	3.28	2.99	2.35	1.70	1.03	2.46
	Dm	0.47	0.76	1.18	1.51	1.90	1.99	1.97	1.85	1.37	0.99	0.60	0.38	1.25
Vertical E/W	Gm	0.78	1.33	1.98	2.65	3.12	3.26	3.50	3.06	2.47	1.62	1.04	0.60	2.12
	Dm	0.47	0.75	1.14	1.48	1.88	2.00	1.97	1.80	1.31	0.92	0.57	0.38	1.23
Vertical NE/NW	Gm	0.47	0.80	1.34	1.99	2.52	2.77	2.82	2.32	1.65	0.96	0.58	0.37	1.55
	Dm	0.45	0.72	1.10	1.44	1.82	1.96	1.90	1.70	1.24	0.84	0.54	0.37	1.18
Vertical North	Gm	0.44	0.70	1.07	1.48	1.97	2.25	2.15	1.74	1.20	0.81	0.52	0.35	1.23
	Dm	0.44	0.70	1.07	1.42	1.79	1.94	1.86	1.65	1.20	0.81	0.52	0.35	1.15

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.16	1.13	1.08	1.04	1.02	1.01	1.02	1.04	1.08	1.13	1.18	1.17	1.06
30 Deg South	Gm/Gmean	1.41	1.32	1.17	1.07	1.00	0.96	0.99	1.05	1.16	1.31	1.45	1.42	1.10
Latitude South	Gm/Gmean	1.50	1.38	1.17	1.02	0.93	0.88	0.91	1.00	1.15	1.36	1.57	1.53	1.07
60 Deg South	Gm/Gmean	1.52	1.38	1.11	0.93	0.81	0.76	0.79	0.90	1.08	1.34	1.61	1.57	0.99
Vertical South	Gm/Gmean	1.36	1.16	0.85	0.64	0.51	0.47	0.48	0.60	0.80	1.11	1.43	1.40	0.72
Vertical SE/SW	Gm/Gmean	1.09	0.98	0.79	0.67	0.57	0.54	0.56	0.63	0.77	0.95	1.16	1.12	0.70
Vertical E/W	Gm/Gmean	0.66	0.66	0.63	0.62	0.57	0.57	0.58	0.59	0.64	0.65	0.71	0.65	0.61
Vertical NE/NW	Gm/Gmean	0.40	0.40	0.43	0.46	0.46	0.48	0.47	0.44	0.43	0.39	0.40	0.40	0.44
Vertical North	Gm/Gmean	0.37	0.35	0.34	0.34	0.36	0.39	0.35	0.33	0.31	0.33	0.36	0.38	0.35

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.50	4.05	6.13	7.37	8.32	8.59	8.47	7.49	6.06	4.58	3.15	1.98	5.73
	D clear	0.36	0.51	0.75	0.90	1.28	1.50	1.41	1.62	1.01	0.96	0.57	0.34	0.94
10 Deg South	Gc	3.40	4.97	6.85	7.79	8.48	8.65	8.56	7.74	6.63	5.33	4.09	2.79	6.28
	Dc	0.39	0.55	0.77	0.96	1.31	1.47	1.41	1.61	1.06	1.00	0.62	0.37	0.96
30 Deg South	Gc	4.93	6.42	7.82	8.05	8.22	8.27	8.22	7.82	7.30	6.52	5.66	4.20	6.95
	Dc	0.49	0.68	0.91	1.08	1.40	1.55	1.49	1.71	1.19	1.17	0.76	0.46	1.08
Latitude South	Gc	5.71	7.04	8.00	7.74	7.57	7.55	7.52	7.41	7.31	6.96	6.43	4.95	7.01
tilt 44 47' N	Dc	0.56	0.76	1.02	1.18	1.47	1.61	1.55	1.76	1.28	1.26	0.84	0.52	1.15
60 Deg South	Gc	6.16	7.24	7.69	6.95	6.48	6.38	6.39	6.56	6.88	6.99	6.81	5.40	6.66
	Dc	0.61	0.84	1.12	1.28	1.53	1.65	1.60	1.78	1.35	1.33	0.91	0.57	1.22
Vertical South	Gc	5.84	6.29	5.75	4.41	3.62	3.49	3.51	4.04	4.88	5.79	6.28	5.25	4.92
	Dc	0.68	0.95	1.27	1.43	1.63	1.71	1.68	1.74	1.41	1.35	0.95	0.61	1.29
Vertical SE/SW	Gc	4.48	5.08	5.51	5.09	4.69	4.56	4.60	4.63	4.86	5.00	4.89	3.87	4.77
	Dc	0.65	0.91	1.25	1.44	1.69	1.78	1.74	1.78	1.39	1.30	0.89	0.57	1.28
Vertical E/W	Gc	2.28	3.03	4.24	4.84	5.15	5.09	5.13	4.46	3.93	3.37	2.60	1.67	3.82
	Dc	0.58	0.83	1.18	1.42	1.73	1.84	1.79	1.76	1.31	1.14	0.75	0.49	1.24
Vertical NE/NW	Gc	0.71	1.14	2.17	3.11	3.81	3.85	3.88	3.01	2.18	1.51	0.87	0.47	2.23
	Dc	0.53	0.75	1.08	1.32	1.62	1.73	1.69	1.59	1.16	0.95	0.65	0.44	1.13
Vertical North	Gc	0.52	0.73	1.03	1.59	2.36	2.46	2.47	1.73	1.08	0.88	0.62	0.44	1.33
	Dc	0.52	0.73	1.03	1.24	1.52	1.62	1.58	1.44	1.08	0.88	0.62	0.44	1.06

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.36	1.23	1.12	1.06	1.02	1.01	1.01	1.03	1.09	1.16	1.30	1.41	1.10
30 Deg South	Gc/Gmax	1.97	1.59	1.28	1.09	0.99	0.96	0.97	1.04	1.21	1.42	1.80	2.12	1.21
Latitude South	Gc/Gmax	2.28	1.74	1.30	1.05	0.91	0.88	0.89	0.99	1.21	1.52	2.04	2.50	1.22
60 Deg South	Gc/Gmax	2.46	1.79	1.25	0.94	0.78	0.74	0.75	0.88	1.13	1.53	2.16	2.73	1.16
Vertical South	Gc/Gmax	2.34	1.55	0.94	0.60	0.44	0.41	0.41	0.54	0.81	1.26	1.99	2.65	0.86
Vertical SE/SW	Gc/Gmax	1.79	1.25	0.90	0.69	0.56	0.53	0.54	0.62	0.80	1.09	1.55	1.96	0.83
Vertical E/W	Gc/Gmax	0.91	0.75	0.69	0.66	0.62	0.59	0.61	0.60	0.65	0.74	0.82	0.84	0.67
Vertical NE/NW	Gc/Gmax	0.28	0.28	0.35	0.42	0.46	0.45	0.46	0.40	0.36	0.33	0.28	0.24	0.39
Vertical North	Gc/Gmax	0.21	0.18	0.17	0.22	0.28	0.29	0.29	0.23	0.18	0.19	0.20	0.22	0.23

Sunshine data

Mean sunshine	Hours	1.6	2.8	3.7	5.1	6.7	6.9	8.5	7.1	5.7	4.5	2.7	1.5	4.7
Max. sunshine	Hours	6.9	8.9	10.7	12.4	13.6	13.8	13.7	12.8	11.0	9.8	8.7	6.4	10.7

BOSNIA HERCEGOVINA Site No. 246

SARAJEVO

Computer file BOSNI246.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 43 50' N

Longitude 18 20' E

Height 503 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.29	2.20	3.17	4.20	5.20	5.55	5.83	5.05	3.73	2.59	1.58	0.94	3.45
	D mean	0.82	1.19	1.73	2.26	2.72	2.83	2.73	2.36	1.76	1.24	0.85	0.65	1.76
10 Deg South	Gm	1.48	2.49	3.43	4.38	5.30	5.59	5.91	5.23	4.00	2.92	1.87	1.07	3.65
	Dm	0.82	1.19	1.75	2.28	2.75	2.85	2.75	2.39	1.77	1.25	0.86	0.65	1.78
30 Deg South	Gm	1.76	2.90	3.69	4.46	5.15	5.31	5.68	5.26	4.25	3.36	2.30	1.24	3.78
	Dm	0.77	1.14	1.69	2.23	2.67	2.76	2.68	2.35	1.73	1.22	0.83	0.61	1.73
Latitude South	Gm	1.86	3.02	3.69	4.28	4.81	4.88	5.26	5.00	4.20	3.49	2.48	1.30	3.69
tilt 43 50' N	Dm	0.71	1.08	1.60	2.12	2.53	2.61	2.56	2.25	1.65	1.16	0.79	0.56	1.64
60 Deg South	Gm	1.88	3.00	3.49	3.86	4.17	4.15	4.51	4.45	3.91	3.43	2.54	1.30	3.39
	Dm	0.63	0.97	1.46	1.93	2.31	2.37	2.35	2.08	1.52	1.07	0.72	0.49	1.49
Vertical South	Gm	1.65	2.52	2.66	2.64	2.62	2.51	2.74	2.92	2.86	2.82	2.26	1.13	2.44
	Dm	0.47	0.76	1.15	1.52	1.81	1.87	1.88	1.69	1.23	0.87	0.58	0.36	1.18
Vertical SE/SW	Gm	1.33	2.12	2.48	2.76	2.93	2.94	3.17	3.17	2.81	2.41	1.83	0.92	2.41
	Dm	0.48	0.78	1.15	1.51	1.80	1.86	1.87	1.67	1.22	0.87	0.58	0.37	1.18
Vertical E/W	Gm	0.81	1.43	2.00	2.55	2.96	3.19	3.30	3.04	2.37	1.69	1.12	0.56	2.09
	Dm	0.49	0.77	1.12	1.48	1.78	1.86	1.87	1.64	1.20	0.85	0.58	0.38	1.17
Vertical NE/NW	Gm	0.50	0.85	1.35	1.93	2.41	2.74	2.70	2.30	1.61	0.99	0.61	0.37	1.53
	Dm	0.48	0.76	1.09	1.43	1.73	1.84	1.82	1.58	1.18	0.83	0.56	0.37	1.14
Vertical North	Gm	0.46	0.74	1.07	1.46	1.88	2.23	2.06	1.67	1.17	0.81	0.54	0.36	1.21
	Dm	0.46	0.74	1.07	1.40	1.71	1.83	1.80	1.54	1.17	0.81	0.54	0.36	1.12

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.15	1.13	1.08	1.04	1.02	1.01	1.01	1.04	1.07	1.13	1.18	1.14	1.06
30 Deg South	Gm/Gmean	1.36	1.32	1.16	1.06	0.99	0.96	0.97	1.04	1.14	1.30	1.46	1.32	1.10
Latitude South	Gm/Gmean	1.44	1.37	1.16	1.02	0.93	0.88	0.90	0.99	1.13	1.35	1.57	1.38	1.07
60 Deg South	Gm/Gmean	1.46	1.36	1.10	0.92	0.80	0.75	0.77	0.88	1.05	1.32	1.61	1.38	0.98
Vertical South	Gm/Gmean	1.28	1.14	0.84	0.63	0.50	0.45	0.47	0.58	0.77	1.09	1.43	1.20	0.71
Vertical SE/SW	Gm/Gmean	1.03	0.96	0.78	0.66	0.56	0.53	0.54	0.63	0.75	0.93	1.16	0.98	0.70
Vertical E/W	Gm/Gmean	0.63	0.65	0.63	0.61	0.57	0.57	0.57	0.60	0.63	0.65	0.71	0.60	0.61
Vertical NE/NW	Gm/Gmean	0.39	0.39	0.43	0.46	0.46	0.49	0.46	0.46	0.43	0.38	0.39	0.39	0.44
Vertical North	Gm/Gmean	0.36	0.34	0.34	0.35	0.36	0.40	0.35	0.33	0.31	0.31	0.34	0.38	0.35

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.54	4.00	5.75	7.15	8.03	8.40	8.30	7.40	5.88	4.45	3.08	1.96	5.59
	D clear	0.15	0.36	0.57	1.02	1.14	1.19	1.12	1.20	0.54	0.44	0.39	0.12	0.69
10 Deg South	Gc	3.48	4.89	6.45	7.50	8.16	8.45	8.38	7.63	6.45	5.27	3.99	2.80	6.13
	Dc	0.17	0.38	0.63	1.05	1.17	1.19	1.14	1.21	0.59	0.49	0.42	0.12	0.71
30 Deg South	Gc	5.06	6.29	7.32	7.73	7.86	8.01	7.98	7.65	7.08	6.48	5.53	4.25	6.77
	Dc	0.23	0.48	0.75	1.17	1.25	1.28	1.22	1.31	0.70	0.60	0.52	0.17	0.81
Latitude South	Gc	5.83	6.87	7.47	7.43	7.26	7.32	7.31	7.25	7.08	6.90	6.24	4.98	6.83
tilt 43 50' N	Dc	0.27	0.55	0.84	1.25	1.32	1.35	1.30	1.37	0.80	0.68	0.59	0.20	0.88
60 Deg South	Gc	6.33	7.07	7.15	6.62	6.12	6.09	6.10	6.33	6.61	6.94	6.65	5.49	6.45
	Dc	0.33	0.64	0.95	1.33	1.40	1.42	1.38	1.44	0.91	0.78	0.66	0.25	0.96
Vertical South	Gc	5.98	6.10	5.29	4.16	3.36	3.23	3.26	3.79	4.60	5.71	6.11	5.32	4.73
	Dc	0.44	0.78	1.12	1.44	1.52	1.56	1.52	1.52	1.09	0.92	0.74	0.33	1.08
Vertical SE/SW	Gc	4.56	4.93	5.13	4.82	4.39	4.43	4.45	4.56	4.72	5.02	4.76	3.88	4.63
	Dc	0.43	0.76	1.11	1.46	1.56	1.61	1.58	1.55	1.09	0.91	0.72	0.32	1.09
Vertical E/W	Gc	2.30	2.96	4.00	4.61	4.75	5.13	5.11	4.56	3.90	3.47	2.57	1.61	3.75
	Dc	0.41	0.72	1.07	1.44	1.58	1.66	1.62	1.54	1.06	0.86	0.65	0.31	1.08
Vertical NE/NW	Gc	0.61	1.08	2.07	2.99	3.46	3.95	3.90	3.11	2.15	1.52	0.85	0.33	2.17
	Dc	0.40	0.68	0.99	1.32	1.49	1.58	1.55	1.42	1.00	0.80	0.60	0.30	1.01
Vertical North	Gc	0.40	0.67	0.96	1.56	2.02	2.53	2.47	1.72	0.97	0.77	0.59	0.30	1.25
	Dc	0.40	0.67	0.96	1.23	1.40	1.50	1.46	1.32	0.97	0.77	0.59	0.30	0.97

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.37	1.22	1.12	1.05	1.02	1.01	1.01	1.03	1.10	1.18	1.29	1.43	1.10
30 Deg South	Gc/Gmax	1.99	1.57	1.27	1.08	0.98	0.95	0.96	1.03	1.20	1.46	1.79	2.17	1.21
Latitude South	Gc/Gmax	2.30	1.72	1.30	1.04	0.90	0.87	0.88	0.98	1.20	1.55	2.03	2.54	1.22
60 Deg South	Gc/Gmax	2.49	1.77	1.24	0.93	0.76	0.73	0.74	0.86	1.12	1.56	2.16	2.80	1.15
Vertical South	Gc/Gmax	2.35	1.52	0.92	0.58	0.42	0.38	0.39	0.51	0.78	1.28	1.98	2.71	0.85
Vertical SE/SW	Gc/Gmax	1.79	1.23	0.89	0.67	0.55	0.53	0.54	0.62	0.80	1.13	1.54	1.98	0.83
Vertical E/W	Gc/Gmax	0.91	0.74	0.70	0.64	0.59	0.61	0.62	0.62	0.66	0.78	0.83	0.82	0.67
Vertical NE/NW	Gc/Gmax	0.24	0.27	0.36	0.42	0.43	0.47	0.47	0.42	0.37	0.34	0.28	0.17	0.39
Vertical North	Gc/Gmax	0.16	0.17	0.17	0.22	0.25	0.30	0.30	0.23	0.17	0.17	0.19	0.15	0.22

Sunshine data

Mean sunshine	Hours	1.4	2.8	3.7	5.1	6.3	6.6	7.5	6.8	4.9	4.0	2.7	1.0	4.4
Max. sunshine	Hours	6.2	8.0	10.2	11.6	12.7	13.1	13.0	11.8	9.9	8.9	7.4	5.1	9.8

BOSNIA HERCEGOVINA Site No. 247

ZLATIBOR

Computer file BOSNI247.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 43 44' N

Longitude 19 43' E

Height 1029 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.53	2.35	3.36	4.37	5.31	5.58	5.80	5.34	4.08	2.98	1.98	1.34	3.68
	D mean	0.79	1.14	1.79	2.28	2.61	2.77	2.77	2.34	1.75	1.19	0.84	0.74	1.75
10 Deg South	Gm	1.85	2.70	3.64	4.57	5.41	5.63	5.89	5.55	4.41	3.42	2.44	1.62	3.93
	Dm	0.78	1.14	1.80	2.31	2.63	2.79	2.79	2.38	1.79	1.21	0.85	0.74	1.77
30 Deg South	Gm	2.34	3.20	3.94	4.65	5.25	5.35	5.68	5.61	4.75	4.03	3.16	2.05	4.17
	Dm	0.73	1.09	1.75	2.26	2.56	2.71	2.73	2.36	1.77	1.19	0.83	0.70	1.73
Latitude South	Gm	2.54	3.36	3.94	4.47	4.90	4.93	5.28	5.35	4.72	4.23	3.48	2.24	4.12
tilt 43 44' N	Dm	0.67	1.03	1.66	2.15	2.44	2.57	2.61	2.28	1.71	1.15	0.80	0.65	1.65
60 Deg South	Gm	2.64	3.37	3.73	4.03	4.24	4.19	4.53	4.76	4.42	4.21	3.64	2.33	3.84
	Dm	0.59	0.93	1.52	1.97	2.23	2.34	2.39	2.12	1.60	1.08	0.74	0.58	1.51
Vertical South	Gm	2.39	2.86	2.85	2.75	2.64	2.52	2.75	3.12	3.25	3.50	3.31	2.12	2.84
	Dm	0.45	0.74	1.20	1.56	1.77	1.85	1.90	1.74	1.33	0.92	0.62	0.45	1.21
Vertical SE/SW	Gm	1.88	2.38	2.66	2.88	2.99	2.95	3.15	3.36	3.17	2.96	2.64	1.65	2.72
	Dm	0.47	0.76	1.20	1.54	1.76	1.85	1.90	1.72	1.31	0.92	0.63	0.46	1.21
Vertical E/W	Gm	1.07	1.57	2.13	2.66	3.05	3.16	3.24	3.18	2.62	2.02	1.54	0.89	2.26
	Dm	0.48	0.75	1.16	1.51	1.74	1.86	1.90	1.69	1.26	0.89	0.62	0.47	1.20
Vertical NE/NW	Gm	0.52	0.87	1.42	2.00	2.46	2.68	2.62	2.36	1.70	1.08	0.70	0.46	1.58
	Dm	0.47	0.74	1.13	1.46	1.70	1.82	1.83	1.61	1.21	0.86	0.60	0.46	1.16
Vertical North	Gm	0.45	0.73	1.10	1.49	1.88	2.15	2.01	1.68	1.18	0.84	0.58	0.44	1.21
	Dm	0.45	0.73	1.10	1.43	1.68	1.81	1.79	1.56	1.18	0.84	0.58	0.44	1.13

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.21	1.15	1.08	1.05	1.02	1.01	1.02	1.04	1.08	1.15	1.23	1.21	1.07
30 Deg South	Gm/Gmean	1.53	1.36	1.17	1.06	0.99	0.96	0.98	1.05	1.16	1.35	1.60	1.53	1.13
Latitude South	Gm/Gmean	1.66	1.43	1.17	1.02	0.92	0.88	0.91	1.00	1.16	1.42	1.76	1.67	1.12
60 Deg South	Gm/Gmean	1.73	1.43	1.11	0.92	0.80	0.75	0.78	0.89	1.08	1.41	1.84	1.74	1.04
Vertical South	Gm/Gmean	1.56	1.22	0.85	0.63	0.50	0.45	0.47	0.58	0.80	1.17	1.67	1.58	0.77
Vertical SE/SW	Gm/Gmean	1.23	1.01	0.79	0.66	0.56	0.53	0.54	0.63	0.78	0.99	1.33	1.23	0.74
Vertical E/W	Gm/Gmean	0.70	0.67	0.63	0.61	0.57	0.57	0.56	0.60	0.64	0.68	0.78	0.66	0.61
Vertical NE/NW	Gm/Gmean	0.34	0.37	0.42	0.46	0.46	0.48	0.45	0.44	0.42	0.36	0.35	0.34	0.43
Vertical North	Gm/Gmean	0.29	0.31	0.33	0.34	0.35	0.38	0.35	0.31	0.29	0.28	0.29	0.33	0.33

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.32	4.21	6.01	7.48	8.36	8.49	8.38	7.72	6.23	4.89	3.54	2.60	5.94
	D clear	-0.05	0.21	0.57	1.01	0.98	1.27	1.31	1.32	0.76	0.45	0.31	0.17	0.70
10 Deg South	Gc	4.64	5.20	6.74	7.86	8.52	8.60	8.54	7.99	6.86	5.78	4.64	3.70	6.60
	Dc	-0.04	0.24	0.63	1.05	1.03	1.32	1.39	1.34	0.84	0.50	0.35	0.17	0.74
30 Deg South	Gc	6.83	6.71	7.65	8.08	8.19	8.17	8.16	8.01	7.50	7.10	6.45	5.62	7.38
	Dc	-0.01	0.32	0.76	1.17	1.12	1.40	1.46	1.44	0.97	0.62	0.44	0.23	0.83
Latitude South	Gc	7.89	7.32	7.80	7.77	7.55	7.48	7.50	7.59	7.49	7.56	7.29	6.57	7.49
tilt 43 44' N	Dc	0.03	0.40	0.85	1.25	1.20	1.46	1.51	1.50	1.05	0.71	0.51	0.28	0.90
60 Deg South	Gc	8.59	7.55	7.46	6.92	6.34	6.21	6.26	6.63	7.00	7.60	7.77	7.24	7.13
	Dc	0.11	0.49	0.97	1.34	1.30	1.52	1.56	1.55	1.15	0.81	0.60	0.34	0.98
Vertical South	Gc	8.13	6.50	5.50	4.33	3.43	3.30	3.36	3.96	4.86	6.25	7.14	7.01	5.31
	Dc	0.28	0.66	1.14	1.47	1.48	1.61	1.63	1.61	1.27	0.96	0.72	0.44	1.11
Vertical SE/SW	Gc	6.16	5.24	5.34	5.01	4.56	4.44	4.46	4.69	4.94	5.48	5.54	5.11	5.08
	Dc	0.29	0.66	1.13	1.49	1.51	1.68	1.70	1.64	1.26	0.95	0.70	0.43	1.12
Vertical E/W	Gc	3.02	3.11	4.15	4.79	4.97	5.04	4.97	4.63	4.04	3.77	2.96	2.12	3.97
	Dc	0.29	0.63	1.08	1.46	1.53	1.73	1.76	1.63	1.20	0.90	0.65	0.41	1.11
Vertical NE/NW	Gc	0.61	1.07	2.13	3.09	3.60	3.83	3.73	3.12	2.22	1.62	0.91	0.44	2.20
	Dc	0.29	0.61	1.00	1.35	1.45	1.65	1.66	1.49	1.08	0.83	0.60	0.40	1.04
Vertical North	Gc	0.29	0.61	0.97	1.59	2.06	2.41	2.32	1.72	1.02	0.80	0.60	0.40	1.24
	Dc	0.29	0.61	0.97	1.26	1.37	1.55	1.55	1.38	1.02	0.80	0.60	0.40	0.99

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.40	1.24	1.12	1.05	1.02	1.01	1.02	1.03	1.10	1.18	1.31	1.42	1.11
30 Deg South	Gc/Gmax	2.06	1.59	1.27	1.08	0.98	0.96	0.97	1.04	1.20	1.45	1.82	2.16	1.24
Latitude South	Gc/Gmax	2.38	1.74	1.30	1.04	0.90	0.88	0.89	0.98	1.20	1.55	2.06	2.53	1.26
60 Deg South	Gc/Gmax	2.59	1.79	1.24	0.93	0.76	0.73	0.75	0.86	1.12	1.55	2.19	2.79	1.20
Vertical South	Gc/Gmax	2.45	1.54	0.92	0.58	0.41	0.39	0.40	0.51	0.78	1.28	2.02	2.70	0.89
Vertical SE/SW	Gc/Gmax	1.86	1.25	0.89	0.67	0.55	0.52	0.53	0.61	0.79	1.12	1.57	1.97	0.86
Vertical E/W	Gc/Gmax	0.91	0.74	0.69	0.64	0.59	0.59	0.59	0.60	0.65	0.77	0.84	0.81	0.67
Vertical NE/NW	Gc/Gmax	0.18	0.25	0.35	0.41	0.43	0.45	0.44	0.40	0.36	0.33	0.26	0.17	0.37
Vertical North	Gc/Gmax	0.09	0.14	0.16	0.21	0.25	0.28	0.28	0.22	0.16	0.16	0.17	0.15	0.21

Sunshine data

Mean sunshine	Hours	2.2	3.3	4.0	5.4	6.6	7.2	8.0	7.6	6.1	5.1	3.9	2.1	5.1
Max. sunshine	Hours	7.5	8.9	10.8	12.3	13.5	14.2	14.5	12.9	11.5	9.7	8.9	7.1	11.0

CROATIA Site No. 242

ZAGREB

Computer file CROAT242.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 45 49' N

Longitude 15 59' E

Height 157 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.94	1.76	2.83	4.17	5.42	5.62	5.92	4.88	3.75	2.40	1.23	0.78	3.32
	D mean	0.65	1.05	1.70	2.27	2.70	2.99	2.73	2.37	1.82	1.25	0.76	0.53	1.74
10 Deg South	Gm	1.08	2.00	3.06	4.38	5.55	5.68	6.04	5.09	4.06	2.73	1.44	0.92	3.51
	Dm	0.66	1.07	1.73	2.30	2.73	3.01	2.77	2.41	1.86	1.29	0.77	0.54	1.76
30 Deg South	Gm	1.27	2.33	3.31	4.50	5.43	5.44	5.88	5.18	4.39	3.18	1.77	1.12	3.66
	Dm	0.64	1.06	1.70	2.26	2.66	2.92	2.73	2.40	1.85	1.31	0.77	0.52	1.74
Latitude South	Gm	1.35	2.45	3.30	4.32	5.03	4.97	5.41	4.93	4.36	3.33	1.91	1.21	3.55
tilt 45 49' N	Dm	0.60	1.01	1.60	2.15	2.52	2.74	2.59	2.30	1.78	1.27	0.73	0.49	1.65
60 Deg South	Gm	1.36	2.44	3.15	3.96	4.46	4.33	4.76	4.48	4.13	3.31	1.94	1.24	3.30
	Dm	0.55	0.94	1.48	1.99	2.33	2.52	2.42	2.16	1.68	1.21	0.69	0.45	1.54
Vertical South	Gm	1.20	2.07	2.43	2.76	2.84	2.68	2.94	3.01	3.09	2.76	1.73	1.11	2.39
	Dm	0.42	0.75	1.17	1.57	1.85	1.96	1.95	1.74	1.37	1.00	0.55	0.35	1.23
Vertical SE/SW	Gm	0.98	1.74	2.22	2.81	3.14	3.03	3.33	3.16	2.95	2.34	1.41	0.89	2.34
	Dm	0.42	0.75	1.15	1.56	1.84	1.96	1.95	1.72	1.35	0.98	0.55	0.35	1.22
Vertical E/W	Gm	0.59	1.16	1.74	2.52	3.13	3.18	3.42	2.92	2.39	1.60	0.87	0.52	2.01
	Dm	0.41	0.70	1.10	1.51	1.82	1.97	1.95	1.67	1.28	0.89	0.51	0.34	1.18
Vertical NE/NW	Gm	0.39	0.71	1.20	1.88	2.50	2.69	2.74	2.16	1.58	0.93	0.50	0.32	1.47
	Dm	0.38	0.65	1.03	1.43	1.76	1.92	1.87	1.57	1.20	0.81	0.47	0.32	1.12
Vertical North	Gm	0.37	0.62	0.99	1.43	1.91	2.19	2.09	1.59	1.16	0.77	0.45	0.31	1.16
	Dm	0.37	0.62	0.99	1.39	1.73	1.90	1.82	1.51	1.16	0.77	0.45	0.31	1.09

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.15	1.14	1.08	1.05	1.02	1.01	1.02	1.04	1.08	1.14	1.17	1.18	1.06
30 Deg South	Gm/Gmean	1.35	1.32	1.17	1.08	1.00	0.97	0.99	1.06	1.17	1.33	1.44	1.44	1.10
Latitude South	Gm/Gmean	1.44	1.39	1.17	1.04	0.93	0.88	0.91	1.01	1.16	1.39	1.55	1.55	1.07
60 Deg South	Gm/Gmean	1.45	1.39	1.11	0.95	0.82	0.77	0.80	0.92	1.10	1.38	1.58	1.59	0.99
Vertical South	Gm/Gmean	1.28	1.18	0.86	0.66	0.52	0.48	0.50	0.62	0.82	1.15	1.41	1.42	0.72
Vertical SE/SW	Gm/Gmean	1.04	0.99	0.78	0.67	0.58	0.54	0.56	0.65	0.79	0.98	1.15	1.14	0.70
Vertical E/W	Gm/Gmean	0.63	0.66	0.62	0.60	0.58	0.57	0.58	0.60	0.64	0.67	0.71	0.67	0.61
Vertical NE/NW	Gm/Gmean	0.41	0.40	0.42	0.45	0.46	0.48	0.46	0.44	0.42	0.39	0.41	0.41	0.44
Vertical North	Gm/Gmean	0.39	0.35	0.35	0.34	0.35	0.39	0.35	0.33	0.31	0.32	0.37	0.40	0.35

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.08	3.61	5.43	7.04	8.17	8.52	8.30	7.14	5.89	4.19	2.57	1.88	5.41
	D clear	0.68	0.80	1.00	1.26	1.20	1.58	1.48	1.58	1.07	0.97	0.64	0.49	1.06
10 Deg South	Gc	2.74	4.40	6.07	7.44	8.35	8.59	8.42	7.43	6.46	4.91	3.37	2.63	5.91
	Dc	0.76	0.87	1.04	1.31	1.24	1.55	1.49	1.61	1.12	1.03	0.75	0.54	1.11
30 Deg South	Gc	3.86	5.66	6.94	7.74	8.12	8.25	8.13	7.55	7.15	6.03	4.64	3.95	6.50
	Dc	0.93	1.03	1.19	1.43	1.33	1.62	1.56	1.71	1.26	1.20	0.90	0.66	1.24
Latitude South	Gc	4.45	6.23	7.12	7.45	7.45	7.51	7.42	7.14	7.18	6.47	5.30	4.69	6.53
tilt 45 49' N	Dc	1.02	1.13	1.28	1.51	1.41	1.68	1.63	1.76	1.35	1.30	0.99	0.74	1.32
60 Deg South	Gc	4.73	6.38	6.88	6.78	6.46	6.45	6.40	6.40	6.80	6.50	5.59	5.08	6.20
	Dc	1.07	1.18	1.34	1.56	1.48	1.72	1.66	1.78	1.41	1.36	1.04	0.78	1.37
Vertical South	Gc	4.47	5.58	5.22	4.41	3.66	3.59	3.59	4.00	4.89	5.43	5.18	4.95	4.57
	Dc	1.04	1.19	1.39	1.60	1.59	1.75	1.71	1.72	1.45	1.35	1.04	0.79	1.39
Vertical SE/SW	Gc	3.44	4.49	4.92	4.88	4.70	4.60	4.57	4.53	4.80	4.63	4.04	3.67	4.44
	Dc	0.94	1.12	1.35	1.62	1.64	1.82	1.77	1.76	1.43	1.29	0.95	0.71	1.37
Vertical E/W	Gc	1.73	2.64	3.73	4.48	5.15	5.05	4.99	4.32	3.82	3.06	2.15	1.59	3.56
	Dc	0.73	0.94	1.24	1.57	1.67	1.87	1.82	1.73	1.33	1.12	0.77	0.55	1.28
Vertical NE/NW	Gc	0.65	1.06	1.93	2.87	3.79	3.79	3.71	2.90	2.10	1.38	0.79	0.49	2.13
	Dc	0.57	0.78	1.08	1.42	1.57	1.76	1.70	1.55	1.17	0.93	0.63	0.47	1.14
Vertical North	Gc	0.54	0.74	1.00	1.55	2.35	2.43	2.35	1.67	1.08	0.85	0.59	0.45	1.30
	Dc	0.54	0.74	1.00	1.30	1.48	1.64	1.59	1.40	1.08	0.85	0.59	0.45	1.06

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.32	1.22	1.12	1.06	1.02	1.01	1.01	1.04	1.10	1.17	1.31	1.40	1.09
30 Deg South	Gc/Gmax	1.86	1.57	1.28	1.10	0.99	0.97	0.98	1.06	1.21	1.44	1.80	2.10	1.20
Latitude South	Gc/Gmax	2.14	1.73	1.31	1.06	0.91	0.88	0.89	1.00	1.22	1.54	2.06	2.49	1.21
60 Deg South	Gc/Gmax	2.27	1.77	1.27	0.96	0.79	0.76	0.77	0.90	1.15	1.55	2.17	2.70	1.15
Vertical South	Gc/Gmax	2.15	1.55	0.96	0.63	0.45	0.42	0.43	0.56	0.83	1.30	2.02	2.63	0.85
Vertical SE/SW	Gc/Gmax	1.65	1.24	0.91	0.69	0.57	0.54	0.55	0.63	0.81	1.11	1.57	1.95	0.82
Vertical E/W	Gc/Gmax	0.83	0.73	0.69	0.64	0.63	0.59	0.60	0.61	0.65	0.73	0.84	0.85	0.66
Vertical NE/NW	Gc/Gmax	0.31	0.29	0.35	0.41	0.46	0.44	0.45	0.41	0.36	0.33	0.31	0.26	0.39
Vertical North	Gc/Gmax	0.26	0.20	0.18	0.22	0.29	0.28	0.28	0.23	0.18	0.20	0.23	0.24	0.24

Sunshine data

Mean sunshine	Hours	1.5	2.9	3.6	5.5	6.9	6.9	8.5	7.4	5.8	4.6	2.4	1.5	4.8
Max. sunshine	Hours	6.8	8.9	10.1	12.2	13.4	13.9	13.8	12.6	10.9	9.4	8.1	7.1	10.6

CROATIA Site No. 248

SPLIT

Computer file CROAT248.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 43 31' N

Longitude 16 26' E

Height 122 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.90	2.70	4.04	5.25	6.64	7.31	7.19	6.37	4.93	3.59	2.15	1.64	4.49
	D mean	0.78	1.21	1.64	2.24	2.53	2.50	2.36	2.11	1.67	1.13	0.89	0.66	1.64
10 Deg South	Gm	2.42	3.16	4.46	5.52	6.79	7.38	7.34	6.68	5.39	4.20	2.66	2.11	4.85
	Dm	0.79	1.23	1.67	2.28	2.57	2.53	2.41	2.17	1.72	1.17	0.91	0.67	1.68
30 Deg South	Gm	3.26	3.83	4.97	5.69	6.63	7.02	7.14	6.84	5.92	5.10	3.46	2.89	5.24
	Dm	0.79	1.24	1.65	2.26	2.54	2.51	2.42	2.22	1.76	1.21	0.92	0.67	1.68
Latitude South	Gm	3.65	4.08	5.05	5.51	6.21	6.47	6.65	6.57	5.95	5.41	3.82	3.25	5.23
tilt 43 31' N	Dm	0.77	1.20	1.60	2.18	2.46	2.44	2.38	2.20	1.75	1.21	0.89	0.65	1.65
60 Deg South	Gm	3.88	4.13	4.85	4.98	5.36	5.43	5.68	5.87	5.63	5.45	4.00	3.48	4.90
	Dm	0.73	1.14	1.49	2.04	2.30	2.30	2.27	2.11	1.68	1.18	0.85	0.61	1.56
Vertical South	Gm	3.62	3.56	3.75	3.38	3.25	3.11	3.32	3.81	4.16	4.58	3.65	3.27	3.62
	Dm	0.63	0.96	1.26	1.69	1.94	1.98	1.96	1.85	1.49	1.08	0.73	0.52	1.34
Vertical SE/SW	Gm	2.83	2.94	3.52	3.61	3.79	3.87	3.93	4.12	4.00	3.81	2.90	2.49	3.49
	Dm	0.63	0.95	1.26	1.67	1.92	1.99	1.98	1.83	1.46	1.06	0.73	0.53	1.34
Vertical E/W	Gm	1.58	1.91	2.77	3.33	3.88	4.31	4.05	3.83	3.22	2.49	1.70	1.23	2.86
	Dm	0.61	0.89	1.22	1.63	1.91	2.00	1.98	1.79	1.38	0.99	0.70	0.52	1.30
Vertical NE/NW	Gm	0.67	1.00	1.68	2.38	3.00	3.51	3.09	2.67	1.95	1.20	0.78	0.51	1.87
	Dm	0.58	0.84	1.19	1.56	1.85	1.96	1.87	1.66	1.29	0.92	0.66	0.50	1.24
Vertical North	Gm	0.56	0.81	1.16	1.63	2.11	2.60	2.12	1.74	1.24	0.89	0.64	0.48	1.33
	Dm	0.56	0.81	1.16	1.52	1.82	1.93	1.80	1.59	1.24	0.89	0.64	0.48	1.21

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.27	1.17	1.10	1.05	1.02	1.01	1.02	1.05	1.09	1.17	1.24	1.29	1.08
30 Deg South	Gm/Gmean	1.72	1.42	1.23	1.08	1.00	0.96	0.99	1.07	1.20	1.42	1.61	1.76	1.17
Latitude South	Gm/Gmean	1.92	1.51	1.25	1.05	0.94	0.88	0.93	1.03	1.21	1.51	1.78	1.98	1.16
60 Deg South	Gm/Gmean	2.04	1.53	1.20	0.95	0.81	0.74	0.79	0.92	1.14	1.52	1.86	2.12	1.09
Vertical South	Gm/Gmean	1.90	1.32	0.93	0.64	0.49	0.43	0.46	0.60	0.84	1.28	1.70	1.99	0.81
Vertical SE/SW	Gm/Gmean	1.49	1.09	0.87	0.69	0.57	0.53	0.55	0.65	0.81	1.06	1.35	1.52	0.78
Vertical E/W	Gm/Gmean	0.83	0.71	0.69	0.63	0.58	0.59	0.56	0.60	0.65	0.69	0.79	0.75	0.64
Vertical NE/NW	Gm/Gmean	0.35	0.37	0.42	0.45	0.45	0.48	0.43	0.42	0.40	0.33	0.36	0.31	0.42
Vertical North	Gm/Gmean	0.29	0.30	0.29	0.31	0.32	0.36	0.29	0.27	0.25	0.25	0.30	0.29	0.30

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.22	4.68	6.38	7.71	8.78	9.09	8.71	7.89	6.66	5.14	3.54	2.60	6.21
	D clear	0.45	0.70	0.50	1.00	1.06	1.26	1.49	1.50	0.99	0.69	0.48	0.33	0.87
10 Deg South	Gc	4.30	5.62	7.14	8.08	8.90	9.12	8.77	8.11	7.23	6.02	4.58	3.64	6.80
	Dc	0.49	0.71	0.54	1.03	1.08	1.24	1.47	1.47	1.01	0.73	0.52	0.36	0.89
30 Deg South	Gc	6.14	7.16	8.10	8.30	8.55	8.63	8.38	8.14	7.91	7.35	6.29	5.44	7.53
	Dc	0.61	0.86	0.67	1.15	1.18	1.33	1.54	1.58	1.15	0.87	0.65	0.45	1.00
Latitude South	Gc	7.01	7.77	8.25	7.98	7.89	7.90	7.71	7.72	7.89	7.81	7.07	6.31	7.61
tilt 43 31' N	Dc	0.68	0.95	0.77	1.24	1.26	1.41	1.59	1.63	1.23	0.97	0.72	0.52	1.08
60 Deg South	Gc	7.57	7.98	7.89	7.09	6.81	6.53	6.43	6.74	7.37	7.83	7.53	6.94	7.20
	Dc	0.76	1.04	0.90	1.34	1.37	1.50	1.65	1.68	1.33	1.06	0.81	0.58	1.17
Vertical South	Gc	7.11	6.86	5.80	4.42	3.57	3.44	3.46	4.04	5.13	6.43	6.90	6.69	5.31
	Dc	0.84	1.14	1.12	1.49	1.56	1.65	1.71	1.71	1.43	1.18	0.89	0.66	1.28
Vertical SE/SW	Gc	5.45	5.54	5.66	5.16	4.76	4.75	4.59	4.76	5.19	5.62	5.37	4.92	5.14
	Dc	0.80	1.08	1.12	1.51	1.59	1.71	1.79	1.75	1.42	1.15	0.85	0.62	1.28
Vertical E/W	Gc	2.78	3.32	4.43	4.96	5.20	5.51	5.13	4.70	4.25	3.86	2.89	2.10	4.10
	Dc	0.70	0.96	1.09	1.49	1.61	1.76	1.85	1.73	1.34	1.05	0.75	0.54	1.24
Vertical NE/NW	Gc	0.85	1.25	2.27	3.21	3.78	4.24	3.87	3.18	2.36	1.69	0.95	0.54	2.35
	Dc	0.63	0.84	1.04	1.38	1.53	1.68	1.74	1.58	1.20	0.94	0.68	0.51	1.15
Vertical North	Gc	0.61	0.81	1.01	1.65	2.17	2.71	2.43	1.79	1.13	0.89	0.66	0.50	1.37
	Dc	0.61	0.81	1.01	1.29	1.45	1.60	1.63	1.45	1.13	0.89	0.66	0.50	1.09

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.34	1.20	1.12	1.05	1.01	1.00	1.01	1.03	1.09	1.17	1.29	1.40	1.10
30 Deg South	Gc/Gmax	1.91	1.53	1.27	1.08	0.97	0.95	0.96	1.03	1.19	1.43	1.78	2.09	1.21
Latitude South	Gc/Gmax	2.18	1.66	1.29	1.03	0.90	0.87	0.88	0.98	1.18	1.52	2.00	2.43	1.23
60 Deg South	Gc/Gmax	2.35	1.71	1.24	0.92	0.75	0.72	0.74	0.85	1.11	1.52	2.13	2.67	1.16
Vertical South	Gc/Gmax	2.21	1.47	0.91	0.57	0.41	0.38	0.40	0.51	0.77	1.25	1.95	2.57	0.86
Vertical SE/SW	Gc/Gmax	1.69	1.18	0.89	0.67	0.54	0.52	0.53	0.60	0.78	1.09	1.52	1.89	0.83
Vertical E/W	Gc/Gmax	0.86	0.71	0.69	0.64	0.59	0.61	0.59	0.60	0.64	0.75	0.82	0.81	0.66
Vertical NE/NW	Gc/Gmax	0.26	0.27	0.36	0.42	0.43	0.47	0.44	0.40	0.35	0.33	0.27	0.21	0.38
Vertical North	Gc/Gmax	0.19	0.17	0.16	0.21	0.25	0.30	0.28	0.23	0.17	0.17	0.19	0.19	0.22

Sunshine data

Mean sunshine	Hours	4.1	4.8	5.7	7.0	8.7	9.9	11.2	9.9	7.9	6.8	4.4	3.9	7.0
Max. sunshine	Hours	8.8	9.8	10.9	12.4	13.7	14.1	14.0	13.0	11.5	10.3	9.1	8.3	11.3

CZECH REPUBLIC Site No. 225 HRADEC KRALOVE Computer file CZECH225.INC
 Inclined surfaces - ground albedo 0.20 assumed. Units kWh/square metre per day
 Latitude 50 11' N Longitude 15 50' E Height 288 metres Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.70	1.29	2.58	3.95	4.99	5.53	5.33	4.60	3.28	1.78	0.78	0.54	2.95
	D mean	0.52	0.87	1.54	2.11	2.60	2.72	2.68	2.32	1.76	1.06	0.55	0.41	1.60
10 Deg South	Gm	0.81	1.46	2.83	4.18	5.13	5.60	5.45	4.83	3.58	2.03	0.91	0.64	3.13
	Dm	0.53	0.89	1.58	2.14	2.62	2.74	2.71	2.37	1.81	1.09	0.56	0.41	1.62
30 Deg South	Gm	0.98	1.71	3.15	4.35	5.07	5.42	5.33	4.96	3.92	2.38	1.09	0.79	3.27
	Dm	0.53	0.88	1.57	2.11	2.56	2.67	2.65	2.34	1.82	1.09	0.55	0.41	1.60
Latitude South	Gm	1.06	1.80	3.18	4.15	4.62	4.82	4.80	4.66	3.91	2.51	1.18	0.88	3.14
tilt 50 11' N	Dm	0.49	0.82	1.48	1.97	2.36	2.46	2.45	2.20	1.72	1.04	0.51	0.38	1.49
60 Deg South	Gm	1.07	1.79	3.10	3.92	4.26	4.39	4.40	4.37	3.78	2.49	1.19	0.89	2.98
	Dm	0.46	0.78	1.41	1.86	2.23	2.33	2.32	2.09	1.65	0.99	0.48	0.35	1.42
Vertical South	Gm	0.96	1.54	2.48	2.81	2.81	2.78	2.84	3.03	2.92	2.12	1.06	0.82	2.18
	Dm	0.36	0.62	1.12	1.48	1.77	1.85	1.84	1.68	1.34	0.81	0.38	0.28	1.13
Vertical SE/SW	Gm	0.78	1.29	2.21	2.85	3.06	3.15	3.15	3.13	2.70	1.79	0.86	0.66	2.14
	Dm	0.36	0.61	1.10	1.46	1.75	1.84	1.83	1.66	1.31	0.79	0.38	0.27	1.12
Vertical E/W	Gm	0.46	0.85	1.67	2.52	3.01	3.30	3.18	2.83	2.12	1.20	0.52	0.37	1.84
	Dm	0.33	0.57	1.03	1.42	1.74	1.83	1.82	1.61	1.22	0.72	0.35	0.26	1.08
Vertical NE/NW	Gm	0.31	0.55	1.10	1.83	2.42	2.75	2.59	2.09	1.39	0.73	0.33	0.24	1.37
	Dm	0.31	0.52	0.95	1.35	1.68	1.80	1.77	1.52	1.12	0.66	0.33	0.24	1.02
Vertical North	Gm	0.29	0.50	0.90	1.37	1.90	2.21	2.05	1.56	1.07	0.63	0.31	0.23	1.09
	Dm	0.29	0.50	0.90	1.31	1.66	1.78	1.74	1.47	1.07	0.63	0.31	0.23	0.99

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.16	1.13	1.10	1.06	1.03	1.01	1.02	1.05	1.09	1.14	1.17	1.18	1.06
30 Deg South	Gm/Gmean	1.40	1.33	1.22	1.10	1.02	0.98	1.00	1.08	1.20	1.34	1.40	1.46	1.11
Latitude South	Gm/Gmean	1.51	1.39	1.23	1.05	0.93	0.87	0.90	1.01	1.19	1.41	1.51	1.63	1.06
60 Deg South	Gm/Gmean	1.53	1.39	1.20	0.99	0.85	0.79	0.83	0.95	1.15	1.40	1.53	1.65	1.01
Vertical South	Gm/Gmean	1.37	1.19	0.96	0.71	0.56	0.50	0.53	0.66	0.89	1.19	1.36	1.52	0.74
Vertical SE/SW	Gm/Gmean	1.11	1.00	0.86	0.72	0.61	0.57	0.59	0.68	0.82	1.01	1.10	1.22	0.73
Vertical E/W	Gm/Gmean	0.66	0.66	0.65	0.64	0.60	0.60	0.60	0.62	0.65	0.67	0.67	0.69	0.62
Vertical NE/NW	Gm/Gmean	0.44	0.43	0.43	0.46	0.49	0.50	0.49	0.45	0.42	0.41	0.42	0.44	0.46
Vertical North	Gm/Gmean	0.41	0.39	0.35	0.35	0.38	0.40	0.38	0.34	0.33	0.35	0.40	0.43	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.56	2.82	4.69	6.59	8.03	8.47	8.10	7.07	5.31	3.46	1.89	1.17	4.94
	D clear	0.68	0.89	1.00	1.11	1.15	1.20	1.17	1.44	1.24	0.87	0.62	0.46	0.99
10 Deg South	Gc	2.08	3.47	5.40	7.04	8.25	8.60	8.29	7.44	5.92	4.22	2.54	1.72	5.42
	Dc	0.77	0.96	1.11	1.16	1.18	1.20	1.22	1.47	1.32	1.00	0.72	0.55	1.06
30 Deg South	Gc	2.97	4.58	6.33	7.48	8.19	8.41	8.15	7.70	6.71	5.34	3.62	2.65	6.02
	Dc	0.94	1.13	1.26	1.28	1.29	1.31	1.32	1.58	1.48	1.18	0.87	0.68	1.19
Latitude South	Gc	3.56	5.21	6.61	7.20	7.42	7.50	7.31	7.25	6.81	5.90	4.32	3.30	6.03
tilt 50 11' N	Dc	1.04	1.24	1.37	1.39	1.41	1.43	1.43	1.67	1.58	1.29	0.97	0.76	1.30
60 Deg South	Gc	3.71	5.31	6.49	6.79	6.78	6.79	6.64	6.76	6.60	5.94	4.49	3.49	5.82
	Dc	1.06	1.27	1.40	1.44	1.46	1.48	1.48	1.69	1.60	1.32	1.00	0.79	1.33
Vertical South	Gc	3.56	4.79	5.14	4.64	4.11	3.98	3.94	4.45	4.99	5.14	4.27	3.48	4.37
	Dc	1.01	1.23	1.40	1.50	1.59	1.63	1.60	1.69	1.56	1.29	0.98	0.76	1.35
Vertical SE/SW	Gc	2.70	3.82	4.67	5.00	4.99	4.97	4.87	4.86	4.78	4.31	3.30	2.59	4.24
	Dc	0.88	1.13	1.35	1.50	1.62	1.66	1.64	1.71	1.55	1.22	0.88	0.66	1.32
Vertical E/W	Gc	1.24	2.16	3.37	4.46	5.23	5.39	5.21	4.46	3.71	2.72	1.67	1.08	3.40
	Dc	0.63	0.90	1.21	1.45	1.63	1.68	1.65	1.66	1.42	1.04	0.68	0.48	1.20
Vertical NE/NW	Gc	0.50	0.89	1.70	2.78	3.78	3.99	3.83	2.90	2.05	1.20	0.63	0.40	2.06
	Dc	0.48	0.72	1.02	1.31	1.53	1.59	1.56	1.48	1.20	0.84	0.54	0.39	1.06
Vertical North	Gc	0.46	0.67	0.94	1.49	2.37	2.57	2.45	1.66	1.13	0.76	0.51	0.37	1.29
	Dc	0.46	0.67	0.94	1.21	1.44	1.50	1.46	1.35	1.08	0.76	0.51	0.37	0.98

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.33	1.23	1.15	1.07	1.03	1.01	1.02	1.05	1.12	1.22	1.34	1.47	1.10
30 Deg South	Gc/Gmax	1.90	1.62	1.35	1.13	1.02	0.99	1.01	1.09	1.26	1.54	1.91	2.27	1.22
Latitude South	Gc/Gmax	2.28	1.85	1.41	1.09	0.92	0.88	0.90	1.02	1.28	1.71	2.29	2.82	1.22
60 Deg South	Gc/Gmax	2.38	1.88	1.38	1.03	0.84	0.80	0.82	0.96	1.24	1.72	2.38	2.98	1.18
Vertical South	Gc/Gmax	2.28	1.70	1.10	0.70	0.51	0.47	0.49	0.63	0.94	1.49	2.26	2.97	0.88
Vertical SE/SW	Gc/Gmax	1.73	1.36	1.00	0.76	0.62	0.59	0.60	0.69	0.90	1.25	1.75	2.21	0.86
Vertical E/W	Gc/Gmax	0.80	0.77	0.72	0.68	0.65	0.64	0.64	0.63	0.70	0.79	0.88	0.92	0.69
Vertical NE/NW	Gc/Gmax	0.32	0.32	0.36	0.42	0.47	0.47	0.47	0.41	0.39	0.35	0.33	0.34	0.42
Vertical North	Gc/Gmax	0.29	0.24	0.20	0.23	0.29	0.30	0.30	0.23	0.21	0.22	0.27	0.32	0.26

Sunshine data

Mean sunshine	Hours	1.4	2.2	4.0	5.4	6.4	7.1	7.1	6.8	5.5	3.5	1.6	1.2	4.4
Max. sunshine	Hours	6.6	7.8	10.3	11.7	13.4	13.8	13.8	12.8	11.1	9.4	6.8	6.0	10.3

DENMARK Site No. 66

HOJBAKKEGARD

Computer file DENMA066.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 55 40' N

Longitude 12 19' E

Height 30 metres

Data period (1.1966-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.39	1.06	2.33	3.91	5.04	6.06	5.28	4.45	2.85	1.47	0.63	0.34	2.83
	D mean	0.31	0.68	1.32	2.15	2.66	2.64	2.81	2.33	1.61	0.88	0.41	0.25	1.51
10 Deg South	Gm	0.46	1.26	2.63	4.20	5.24	6.22	5.45	4.75	3.16	1.73	0.80	0.44	3.04
	Dm	0.31	0.69	1.35	2.20	2.70	2.68	2.85	2.41	1.66	0.90	0.43	0.25	1.54
30 Deg South	Gm	0.58	1.58	3.04	4.49	5.31	6.17	5.46	5.01	3.55	2.11	1.07	0.61	3.26
	Dm	0.31	0.69	1.35	2.20	2.67	2.66	2.82	2.44	1.68	0.90	0.43	0.25	1.54
Latitude South	Gm	0.65	1.77	3.16	4.30	4.77	5.40	4.84	4.73	3.58	2.31	1.27	0.74	3.13
tilt 55 40' N	Dm	0.27	0.62	1.25	2.03	2.43	2.45	2.56	2.28	1.58	0.84	0.40	0.23	1.42
60 Deg South	Gm	0.66	1.78	3.13	4.20	4.62	5.20	4.67	4.61	3.53	2.32	1.29	0.76	3.07
	Dm	0.26	0.61	1.22	1.98	2.37	2.40	2.49	2.24	1.54	0.82	0.39	0.22	1.38
Vertical South	Gm	0.61	1.62	2.62	3.15	3.20	3.44	3.17	3.37	2.84	2.05	1.23	0.74	2.34
	Dm	0.20	0.49	0.99	1.60	1.90	1.98	1.98	1.82	1.26	0.67	0.32	0.18	1.12
Vertical SE/SW	Gm	0.49	1.32	2.32	3.06	3.33	3.76	3.34	3.31	2.56	1.71	0.96	0.57	2.23
	Dm	0.20	0.48	0.98	1.56	1.88	1.98	1.96	1.78	1.23	0.66	0.31	0.17	1.10
Vertical E/W	Gm	0.28	0.80	1.68	2.56	3.13	3.82	3.20	2.82	1.93	1.09	0.50	0.26	1.84
	Dm	0.20	0.46	0.91	1.48	1.83	1.97	1.92	1.67	1.13	0.61	0.29	0.17	1.06
Vertical NE/NW	Gm	0.18	0.46	1.04	1.79	2.42	3.06	2.54	1.99	1.24	0.62	0.27	0.15	1.32
	Dm	0.18	0.42	0.84	1.37	1.73	1.90	1.82	1.51	1.02	0.55	0.26	0.15	0.98
Vertical North	Gm	0.17	0.40	0.81	1.35	1.90	2.44	2.02	1.48	0.96	0.53	0.25	0.15	1.04
	Dm	0.17	0.40	0.81	1.31	1.68	1.86	1.76	1.42	0.96	0.53	0.25	0.15	0.94

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.19	1.13	1.07	1.04	1.03	1.03	1.07	1.11	1.18	1.27	1.29	1.07
30 Deg South	Gm/Gmean	1.49	1.49	1.30	1.15	1.05	1.02	1.03	1.13	1.25	1.43	1.70	1.79	1.15
Latitude South	Gm/Gmean	1.67	1.67	1.36	1.10	0.95	0.89	0.92	1.06	1.26	1.57	2.02	2.18	1.11
60 Deg South	Gm/Gmean	1.69	1.68	1.34	1.07	0.92	0.86	0.88	1.04	1.24	1.58	2.05	2.23	1.09
Vertical South	Gm/Gmean	1.56	1.53	1.12	0.81	0.63	0.57	0.60	0.76	1.00	1.39	1.95	2.18	0.83
Vertical SE/SW	Gm/Gmean	1.26	1.25	1.00	0.78	0.66	0.62	0.63	0.74	0.90	1.16	1.52	1.68	0.79
Vertical E/W	Gm/Gmean	0.72	0.75	0.72	0.65	0.62	0.63	0.61	0.63	0.68	0.74	0.79	0.76	0.65
Vertical NE/NW	Gm/Gmean	0.46	0.43	0.45	0.46	0.48	0.50	0.48	0.45	0.44	0.42	0.43	0.44	0.47
Vertical North	Gm/Gmean	0.44	0.38	0.35	0.34	0.38	0.40	0.38	0.33	0.34	0.36	0.40	0.44	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.06	2.61	4.52	6.71	7.95	8.57	8.11	6.81	5.01	3.15	1.49	0.85	4.75
	D clear	0.38	0.60	0.80	1.48	1.56	1.53	1.67	1.95	1.36	0.73	0.44	0.26	1.07
10 Deg South	Gc	1.64	3.46	5.33	7.22	8.24	8.79	8.36	7.20	5.61	3.98	2.16	1.53	5.30
	Dc	0.48	0.65	0.88	1.46	1.56	1.52	1.66	1.94	1.38	0.81	0.52	0.32	1.10
30 Deg South	Gc	2.61	4.91	6.52	7.88	8.43	8.84	8.46	7.66	6.56	5.32	3.32	2.76	6.11
	Dc	0.59	0.79	1.03	1.61	1.68	1.64	1.77	2.08	1.56	0.97	0.63	0.41	1.23
Latitude South	Gc	3.42	5.98	7.02	7.66	7.59	7.79	7.52	7.24	6.81	6.19	4.25	3.87	6.28
tilt 55 40' N	Dc	0.68	0.91	1.18	1.75	1.80	1.77	1.88	2.15	1.69	1.11	0.73	0.49	1.35
60 Deg South	Gc	3.50	6.06	6.99	7.49	7.32	7.50	7.25	7.05	6.73	6.23	4.34	3.99	6.20
	Dc	0.69	0.92	1.19	1.76	1.81	1.79	1.89	2.14	1.70	1.12	0.74	0.50	1.36
Vertical South	Gc	3.53	5.71	5.79	5.44	4.82	4.79	4.69	4.97	5.36	5.63	4.29	4.20	4.93
	Dc	0.67	0.94	1.25	1.76	1.84	1.86	1.89	2.00	1.64	1.13	0.73	0.51	1.35
Vertical SE/SW	Gc	2.63	4.50	5.18	5.51	5.38	5.50	5.30	5.11	4.96	4.71	3.21	3.05	4.59
	Dc	0.59	0.88	1.20	1.75	1.87	1.89	1.93	2.01	1.60	1.07	0.65	0.43	1.32
Vertical E/W	Gc	1.14	2.42	3.61	4.58	5.21	5.72	5.33	4.45	3.68	2.89	1.43	1.14	3.47
	Dc	0.44	0.72	1.08	1.64	1.84	1.91	1.94	1.92	1.44	0.91	0.50	0.32	1.22
Vertical NE/NW	Gc	0.38	0.85	1.70	2.74	3.64	4.24	3.86	2.86	1.96	1.21	0.46	0.27	2.02
	Dc	0.36	0.61	0.93	1.43	1.69	1.78	1.79	1.66	1.19	0.75	0.42	0.26	1.07
Vertical North	Gc	0.35	0.58	0.87	1.51	2.32	2.98	2.64	1.77	1.12	0.69	0.41	0.25	1.29
	Dc	0.35	0.58	0.87	1.30	1.56	1.68	1.67	1.48	1.07	0.69	0.41	0.25	0.99

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.55	1.33	1.18	1.08	1.04	1.03	1.03	1.06	1.12	1.26	1.45	1.80	1.12
30 Deg South	Gc/Gmax	2.46	1.88	1.44	1.17	1.06	1.03	1.04	1.13	1.31	1.69	2.23	3.25	1.29
Latitude South	Gc/Gmax	3.23	2.29	1.55	1.14	0.95	0.91	0.93	1.06	1.36	1.97	2.85	4.55	1.32
60 Deg South	Gc/Gmax	3.30	2.32	1.55	1.12	0.92	0.88	0.89	1.03	1.34	1.98	2.91	4.69	1.30
Vertical South	Gc/Gmax	3.33	2.19	1.28	0.81	0.61	0.56	0.58	0.73	1.07	1.79	2.88	4.94	1.04
Vertical SE/SW	Gc/Gmax	2.48	1.72	1.15	0.82	0.68	0.64	0.65	0.75	0.99	1.50	2.15	3.59	0.97
Vertical E/W	Gc/Gmax	1.08	0.93	0.80	0.68	0.65	0.67	0.66	0.65	0.74	0.92	0.96	1.34	0.73
Vertical NE/NW	Gc/Gmax	0.36	0.33	0.38	0.41	0.46	0.50	0.48	0.42	0.39	0.38	0.31	0.32	0.43
Vertical North	Gc/Gmax	0.33	0.22	0.19	0.22	0.29	0.35	0.33	0.26	0.22	0.22	0.28	0.29	0.27

Sunshine data

Mean sunshine	Hours	0.9	2.2	4.1	6.2	7.6	9.5	8.1	8.1	5.4	3.2	1.9	1.2	4.9
Max. sunshine	Hours	6.0	8.5	10.7	13.1	14.7	15.5	15.1	14.0	11.2	9.5	6.9	6.1	10.9

DENMARK Site No. 70

JYNDEVAD

Computer file DENMA070.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 54 54' N

Longitude 9 8' E

Height 15 metres

Data period (6.1968-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.43	1.11	2.45	3.54	5.13	5.81	5.09	4.59	2.84	1.53	0.62	0.38	2.80
	D mean	0.33	0.69	1.38	1.87	2.73	2.81	2.81	2.37	1.60	0.96	0.42	0.28	1.53
10 Deg South	Gm	0.51	1.32	2.75	3.79	5.33	5.95	5.24	4.87	3.13	1.77	0.76	0.49	3.00
	Dm	0.34	0.70	1.40	1.91	2.77	2.85	2.85	2.43	1.64	0.98	0.43	0.29	1.55
30 Deg South	Gm	0.64	1.64	3.16	4.03	5.38	5.87	5.23	5.11	3.48	2.11	0.99	0.68	3.20
	Dm	0.33	0.69	1.39	1.89	2.73	2.81	2.80	2.44	1.64	0.98	0.42	0.29	1.54
Latitude South	Gm	0.73	1.82	3.26	3.84	4.85	5.14	4.64	4.79	3.48	2.27	1.14	0.83	3.07
tilt 54 54' N	Dm	0.30	0.62	1.27	1.74	2.49	2.56	2.54	2.27	1.52	0.91	0.38	0.26	1.41
60 Deg South	Gm	0.73	1.83	3.23	3.74	4.66	4.92	4.45	4.65	3.42	2.27	1.16	0.84	3.00
	Dm	0.29	0.60	1.23	1.69	2.42	2.49	2.46	2.21	1.48	0.88	0.37	0.26	1.37
Vertical South	Gm	0.68	1.65	2.67	2.78	3.21	3.24	3.01	3.36	2.72	1.98	1.09	0.83	2.27
	Dm	0.22	0.47	0.99	1.36	1.93	2.00	1.94	1.79	1.20	0.71	0.30	0.21	1.10
Vertical SE/SW	Gm	0.55	1.35	2.38	2.77	3.35	3.53	3.17	3.35	2.49	1.65	0.86	0.64	2.18
	Dm	0.22	0.47	0.98	1.34	1.91	1.99	1.92	1.76	1.17	0.70	0.29	0.20	1.08
Vertical E/W	Gm	0.31	0.83	1.75	2.38	3.16	3.52	3.06	2.91	1.91	1.08	0.47	0.32	1.81
	Dm	0.21	0.46	0.93	1.29	1.87	1.97	1.89	1.68	1.10	0.65	0.28	0.19	1.05
Vertical NE/NW	Gm	0.20	0.48	1.09	1.68	2.46	2.83	2.45	2.08	1.24	0.65	0.27	0.17	1.30
	Dm	0.20	0.44	0.87	1.22	1.77	1.90	1.79	1.54	1.01	0.59	0.26	0.17	0.98
Vertical North	Gm	0.19	0.42	0.84	1.24	1.93	2.25	1.97	1.55	0.97	0.57	0.25	0.16	1.03
	Dm	0.19	0.42	0.84	1.18	1.72	1.85	1.74	1.47	0.97	0.57	0.25	0.16	0.95

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.19	1.19	1.12	1.07	1.04	1.02	1.03	1.06	1.10	1.16	1.23	1.29	1.07
30 Deg South	Gm/Gmean	1.49	1.48	1.29	1.14	1.05	1.01	1.03	1.11	1.23	1.38	1.60	1.79	1.14
Latitude South	Gm/Gmean	1.70	1.64	1.33	1.09	0.94	0.88	0.91	1.04	1.23	1.48	1.84	2.18	1.10
60 Deg South	Gm/Gmean	1.70	1.65	1.32	1.06	0.91	0.85	0.87	1.01	1.20	1.48	1.87	2.21	1.07
Vertical South	Gm/Gmean	1.58	1.49	1.09	0.79	0.63	0.56	0.59	0.73	0.96	1.29	1.76	2.18	0.81
Vertical SE/SW	Gm/Gmean	1.28	1.22	0.97	0.78	0.65	0.61	0.62	0.73	0.88	1.08	1.39	1.68	0.78
Vertical E/W	Gm/Gmean	0.72	0.75	0.71	0.67	0.62	0.61	0.60	0.63	0.67	0.71	0.76	0.84	0.65
Vertical NE/NW	Gm/Gmean	0.47	0.43	0.44	0.47	0.48	0.49	0.48	0.45	0.44	0.43	0.44	0.45	0.46
Vertical North	Gm/Gmean	0.44	0.38	0.34	0.35	0.38	0.39	0.39	0.34	0.34	0.37	0.40	0.42	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.15	2.92	4.32	6.49	7.95	8.36	7.65	6.79	5.06	3.20	1.68	1.02	4.72
	D clear	0.41	0.51	0.70	1.04	1.53	1.57	1.59	1.73	1.18	0.91	0.41	0.33	1.00
10 Deg South	Gc	1.74	3.84	5.09	7.07	8.25	8.60	7.94	7.19	5.70	3.88	2.41	1.71	5.29
	Dc	0.50	0.51	0.78	1.12	1.56	1.58	1.66	1.74	1.22	0.91	0.45	0.34	1.03
30 Deg South	Gc	2.72	5.48	6.20	7.68	8.41	8.62	8.00	7.62	6.66	5.12	3.71	3.04	6.10
	Dc	0.62	0.63	0.92	1.26	1.68	1.69	1.76	1.88	1.39	1.08	0.55	0.44	1.16
Latitude South	Gc	3.53	6.66	6.66	7.43	7.57	7.63	7.13	7.19	6.88	5.90	4.74	4.19	6.29
tilt 54 54' N	Dc	0.70	0.75	1.06	1.41	1.79	1.81	1.84	1.96	1.52	1.22	0.64	0.52	1.27
60 Deg South	Gc	3.62	6.76	6.61	7.23	7.26	7.28	6.82	6.96	6.79	5.94	4.85	4.34	6.20
	Dc	0.71	0.77	1.08	1.43	1.80	1.82	1.85	1.97	1.54	1.24	0.66	0.54	1.29
Vertical South	Gc	3.63	6.36	5.44	5.18	4.74	4.62	4.39	4.86	5.35	5.33	4.79	4.55	4.92
	Dc	0.70	0.83	1.14	1.51	1.83	1.86	1.83	1.88	1.53	1.23	0.67	0.55	1.30
Vertical SE/SW	Gc	2.71	5.00	4.90	5.41	5.32	5.32	4.97	5.09	5.04	4.46	3.57	3.31	4.59
	Dc	0.61	0.79	1.11	1.50	1.86	1.90	1.87	1.89	1.50	1.16	0.61	0.47	1.28
Vertical E/W	Gc	1.18	2.69	3.45	4.63	5.19	5.47	4.92	4.51	3.80	2.74	1.57	1.25	3.45
	Dc	0.46	0.69	1.01	1.43	1.84	1.92	1.86	1.82	1.36	0.97	0.48	0.35	1.19
Vertical NE/NW	Gc	0.40	0.91	1.64	2.79	3.63	4.02	3.51	2.93	2.03	1.18	0.47	0.30	1.99
	Dc	0.38	0.61	0.89	1.28	1.68	1.79	1.70	1.60	1.15	0.78	0.42	0.29	1.05
Vertical North	Gc	0.36	0.60	0.84	1.47	2.31	2.77	2.30	1.79	1.11	0.71	0.41	0.28	1.25
	Dc	0.36	0.60	0.84	1.19	1.55	1.68	1.56	1.44	1.05	0.71	0.41	0.28	0.97

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.51	1.32	1.18	1.09	1.04	1.03	1.04	1.06	1.13	1.21	1.43	1.68	1.12
30 Deg South	Gc/Gmax	2.37	1.88	1.43	1.18	1.06	1.03	1.05	1.12	1.32	1.60	2.21	2.98	1.29
Latitude South	Gc/Gmax	3.07	2.28	1.54	1.14	0.95	0.91	0.93	1.06	1.36	1.84	2.82	4.11	1.33
60 Deg South	Gc/Gmax	3.15	2.32	1.53	1.11	0.91	0.87	0.89	1.02	1.34	1.86	2.89	4.26	1.31
Vertical South	Gc/Gmax	3.16	2.18	1.26	0.80	0.60	0.55	0.57	0.72	1.06	1.67	2.85	4.46	1.04
Vertical SE/SW	Gc/Gmax	2.36	1.71	1.13	0.83	0.67	0.64	0.65	0.75	1.00	1.39	2.13	3.24	0.97
Vertical E/W	Gc/Gmax	1.03	0.92	0.80	0.71	0.65	0.65	0.64	0.66	0.75	0.86	0.94	1.23	0.73
Vertical NE/NW	Gc/Gmax	0.35	0.31	0.38	0.43	0.46	0.48	0.46	0.43	0.40	0.37	0.28	0.29	0.42
Vertical North	Gc/Gmax	0.31	0.20	0.19	0.23	0.29	0.33	0.30	0.26	0.22	0.22	0.24	0.28	0.26

Sunshine data

Mean sunshine	Hours	1.0	2.1	3.9	5.6	7.5	8.6	7.6	7.6	4.9	3.0	1.6	1.2	4.6
Max. sunshine	Hours	6.0	8.1	9.9	12.8	14.8	15.4	14.6	13.5	11.1	8.4	6.7	5.8	10.6

FRANCE Site No. 173

TRAPPE

Computer file FRANC173.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 48 46' N Longitude 2 1' E

Height 168 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.82	1.59	2.70	4.01	4.82	5.57	5.58	4.56	3.48	2.11	1.05	0.66	3.09
	D mean	0.55	0.96	1.57	2.22	2.74	2.90	2.87	2.45	1.81	1.19	0.67	0.46	1.70
10 Deg South	Gm	0.97	1.84	2.97	4.23	4.95	5.66	5.71	4.78	3.79	2.41	1.25	0.79	3.29
	Dm	0.55	0.99	1.60	2.26	2.77	2.92	2.90	2.51	1.86	1.23	0.69	0.47	1.73
30 Deg South	Gm	1.21	2.20	3.29	4.40	4.89	5.48	5.59	4.89	4.16	2.83	1.56	0.99	3.46
	Dm	0.54	1.00	1.61	2.24	2.71	2.85	2.84	2.49	1.88	1.24	0.69	0.45	1.72
Latitude South	Gm	1.33	2.35	3.33	4.21	4.48	4.93	5.08	4.62	4.15	2.99	1.72	1.09	3.36
tilt 48 46' N	Dm	0.50	0.95	1.52	2.11	2.51	2.65	2.66	2.35	1.81	1.19	0.65	0.42	1.61
60 Deg South	Gm	1.35	2.36	3.23	3.95	4.08	4.43	4.60	4.29	3.99	2.97	1.75	1.11	3.18
	Dm	0.47	0.91	1.44	1.98	2.34	2.48	2.49	2.22	1.72	1.14	0.62	0.39	1.52
Vertical South	Gm	1.23	2.05	2.57	2.82	2.69	2.79	2.95	2.97	3.06	2.52	1.59	1.02	2.36
	Dm	0.37	0.74	1.16	1.57	1.82	1.95	1.97	1.77	1.41	0.94	0.50	0.30	1.21
Vertical SE/SW	Gm	0.98	1.70	2.31	2.81	2.87	3.12	3.24	3.02	2.84	2.12	1.28	0.82	2.26
	Dm	0.37	0.72	1.14	1.55	1.81	1.95	1.97	1.74	1.37	0.91	0.49	0.30	1.20
Vertical E/W	Gm	0.56	1.09	1.75	2.46	2.80	3.21	3.23	2.72	2.23	1.42	0.77	0.46	1.90
	Dm	0.35	0.66	1.06	1.49	1.79	1.94	1.95	1.67	1.28	0.83	0.46	0.30	1.15
Vertical NE/NW	Gm	0.34	0.65	1.14	1.80	2.26	2.66	2.61	2.03	1.46	0.84	0.44	0.28	1.38
	Dm	0.33	0.60	0.97	1.40	1.71	1.88	1.87	1.55	1.16	0.75	0.42	0.28	1.08
Vertical North	Gm	0.32	0.57	0.92	1.38	1.82	2.14	2.06	1.55	1.11	0.71	0.39	0.27	1.11
	Dm	0.32	0.57	0.92	1.35	1.67	1.85	1.82	1.48	1.11	0.71	0.39	0.27	1.04

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.16	1.10	1.05	1.03	1.02	1.02	1.05	1.09	1.14	1.19	1.20	1.07
30 Deg South	Gm/Gmean	1.48	1.38	1.22	1.10	1.01	0.98	1.00	1.07	1.20	1.34	1.49	1.50	1.12
Latitude South	Gm/Gmean	1.62	1.48	1.23	1.05	0.93	0.88	0.91	1.01	1.19	1.42	1.64	1.65	1.09
60 Deg South	Gm/Gmean	1.65	1.48	1.20	0.99	0.85	0.80	0.82	0.94	1.15	1.41	1.67	1.68	1.03
Vertical South	Gm/Gmean	1.50	1.29	0.95	0.70	0.56	0.50	0.53	0.65	0.88	1.19	1.51	1.54	0.76
Vertical SE/SW	Gm/Gmean	1.20	1.07	0.86	0.70	0.60	0.56	0.58	0.66	0.82	1.00	1.22	1.24	0.73
Vertical E/W	Gm/Gmean	0.68	0.69	0.65	0.61	0.58	0.58	0.58	0.60	0.64	0.67	0.73	0.70	0.62
Vertical NE/NW	Gm/Gmean	0.41	0.41	0.42	0.45	0.47	0.48	0.47	0.44	0.42	0.40	0.42	0.42	0.45
Vertical North	Gm/Gmean	0.39	0.36	0.34	0.34	0.38	0.38	0.37	0.34	0.32	0.34	0.37	0.41	0.36

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.95	3.30	5.04	6.75	7.75	8.09	8.19	6.89	5.43	3.66	2.21	1.56	5.08
	D clear	0.54	0.90	1.03	1.38	1.51	1.64	1.57	1.75	1.33	0.96	0.66	0.39	1.14
10 Deg South	Gc	2.69	4.04	5.74	7.21	7.99	8.24	8.36	7.26	5.99	4.40	2.94	2.32	5.61
	Dc	0.59	0.95	1.13	1.44	1.56	1.65	1.58	1.82	1.39	1.08	0.76	0.44	1.20
30 Deg South	Gc	4.00	5.29	6.69	7.62	7.90	8.04	8.19	7.49	6.74	5.50	4.14	3.66	6.28
	Dc	0.73	1.13	1.29	1.57	1.64	1.73	1.67	1.92	1.55	1.25	0.92	0.54	1.33
Latitude South	Gc	4.84	5.96	6.94	7.33	7.22	7.25	7.41	7.07	6.81	6.01	4.87	4.55	6.36
tilt 48 46' N	Dc	0.83	1.24	1.40	1.66	1.71	1.78	1.74	1.97	1.64	1.36	1.02	0.62	1.41
60 Deg South	Gc	5.12	6.09	6.78	6.85	6.51	6.48	6.63	6.52	6.56	6.05	5.08	4.87	6.13
	Dc	0.87	1.28	1.44	1.69	1.73	1.80	1.76	1.96	1.67	1.40	1.06	0.64	1.44
Vertical South	Gc	4.97	5.43	5.30	4.63	3.92	3.78	3.90	4.26	4.89	5.17	4.79	4.86	4.65
	Dc	0.87	1.26	1.44	1.68	1.73	1.79	1.78	1.84	1.61	1.36	1.04	0.66	1.42
Vertical SE/SW	Gc	3.80	4.34	4.85	4.93	4.68	4.62	4.75	4.61	4.71	4.35	3.71	3.58	4.41
	Dc	0.79	1.17	1.40	1.69	1.79	1.85	1.83	1.87	1.60	1.29	0.94	0.59	1.40
Vertical E/W	Gc	1.86	2.47	3.54	4.36	4.81	4.89	4.99	4.21	3.69	2.78	1.89	1.48	3.42
	Dc	0.62	0.95	1.26	1.62	1.80	1.88	1.86	1.81	1.47	1.09	0.74	0.46	1.30
Vertical NE/NW	Gc	0.61	0.99	1.80	2.74	3.46	3.61	3.66	2.78	2.06	1.25	0.70	0.42	2.01
	Dc	0.50	0.77	1.07	1.43	1.67	1.75	1.73	1.58	1.24	0.88	0.59	0.40	1.14
Vertical North	Gc	0.47	0.72	0.99	1.52	2.17	2.32	2.33	1.64	1.15	0.80	0.55	0.39	1.26
	Dc	0.47	0.72	0.99	1.30	1.54	1.61	1.60	1.42	1.11	0.80	0.55	0.39	1.04

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.38	1.22	1.14	1.07	1.03	1.02	1.02	1.05	1.10	1.20	1.33	1.49	1.10
30 Deg South	Gc/Gmax	2.05	1.60	1.33	1.13	1.02	0.99	1.00	1.09	1.24	1.50	1.87	2.35	1.24
Latitude South	Gc/Gmax	2.48	1.81	1.38	1.09	0.93	0.90	0.90	1.03	1.25	1.64	2.20	2.92	1.25
60 Deg South	Gc/Gmax	2.63	1.85	1.35	1.01	0.84	0.80	0.81	0.95	1.21	1.65	2.30	3.12	1.21
Vertical South	Gc/Gmax	2.55	1.64	1.05	0.69	0.51	0.47	0.48	0.62	0.90	1.41	2.17	3.12	0.92
Vertical SE/SW	Gc/Gmax	1.95	1.32	0.96	0.73	0.60	0.57	0.58	0.67	0.87	1.19	1.68	2.30	0.87
Vertical E/W	Gc/Gmax	0.95	0.75	0.70	0.65	0.62	0.60	0.61	0.61	0.68	0.76	0.86	0.95	0.67
Vertical NE/NW	Gc/Gmax	0.31	0.30	0.36	0.41	0.45	0.45	0.45	0.40	0.38	0.34	0.32	0.27	0.40
Vertical North	Gc/Gmax	0.24	0.22	0.20	0.22	0.28	0.29	0.28	0.24	0.21	0.22	0.25	0.25	0.25

Sunshine data

Mean sunshine	Hours	1.6	3.1	4.3	5.6	6.1	7.4	7.7	6.9	5.9	4.1	2.2	1.3	4.7
Max. sunshine	Hours	6.8	8.8	10.7	12.5	13.6	14.0	14.1	13.3	11.0	9.5	7.8	6.7	10.7

FRANCE Site No. 175

NANCY

Computer file FRANC175.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 48 41' N

Longitude 6 13' E

Height 217 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.84	1.63	2.66	4.03	4.98	5.52	5.64	4.62	3.53	1.97	0.97	0.66	3.09
	D mean	0.56	0.98	1.56	2.23	2.70	2.87	2.86	2.44	1.84	1.13	0.64	0.47	1.69
10 Deg South	Gm	0.99	1.88	2.91	4.25	5.11	5.60	5.77	4.83	3.84	2.23	1.14	0.79	3.29
	Dm	0.57	1.00	1.59	2.26	2.73	2.89	2.89	2.48	1.89	1.15	0.65	0.47	1.72
30 Deg South	Gm	1.22	2.24	3.20	4.42	5.04	5.41	5.64	4.93	4.18	2.60	1.39	0.99	3.44
	Dm	0.55	0.99	1.57	2.24	2.66	2.81	2.84	2.46	1.88	1.15	0.64	0.46	1.69
Latitude South	Gm	1.34	2.40	3.22	4.22	4.61	4.86	5.13	4.65	4.15	2.73	1.52	1.09	3.33
tilt 48 41' N	Dm	0.50	0.94	1.47	2.10	2.47	2.61	2.65	2.31	1.79	1.09	0.59	0.43	1.58
60 Deg South	Gm	1.35	2.40	3.12	3.95	4.20	4.37	4.64	4.31	3.98	2.70	1.53	1.11	3.14
	Dm	0.47	0.89	1.38	1.98	2.31	2.44	2.49	2.18	1.70	1.03	0.56	0.40	1.49
Vertical South	Gm	1.23	2.09	2.47	2.81	2.75	2.75	2.97	2.97	3.04	2.28	1.38	1.02	2.31
	Dm	0.36	0.71	1.10	1.57	1.81	1.92	1.97	1.74	1.38	0.83	0.44	0.31	1.18
Vertical SE/SW	Gm	0.98	1.74	2.23	2.82	2.98	3.08	3.27	3.05	2.84	1.93	1.12	0.82	2.24
	Dm	0.36	0.70	1.09	1.55	1.80	1.92	1.97	1.71	1.35	0.82	0.44	0.31	1.17
Vertical E/W	Gm	0.56	1.13	1.71	2.48	2.94	3.19	3.28	2.78	2.27	1.32	0.68	0.46	1.90
	Dm	0.36	0.66	1.03	1.49	1.78	1.91	1.96	1.66	1.27	0.76	0.42	0.30	1.14
Vertical NE/NW	Gm	0.35	0.67	1.14	1.82	2.37	2.67	2.65	2.09	1.50	0.80	0.41	0.28	1.40
	Dm	0.34	0.61	0.96	1.40	1.72	1.86	1.88	1.56	1.18	0.71	0.39	0.28	1.08
Vertical North	Gm	0.33	0.58	0.93	1.39	1.89	2.15	2.09	1.58	1.14	0.68	0.37	0.27	1.12
	Dm	0.33	0.58	0.93	1.36	1.69	1.84	1.83	1.50	1.14	0.68	0.37	0.27	1.05

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.15	1.09	1.05	1.03	1.01	1.02	1.04	1.09	1.13	1.17	1.20	1.07
	Gm/Gmean	1.45	1.37	1.20	1.10	1.01	0.98	1.00	1.07	1.18	1.32	1.43	1.50	1.11
Latitude South	Gm/Gmean	1.60	1.47	1.21	1.05	0.93	0.88	0.91	1.01	1.18	1.39	1.57	1.65	1.08
	Gm/Gmean	1.61	1.47	1.17	0.98	0.84	0.79	0.82	0.93	1.13	1.37	1.58	1.68	1.02
60 Deg South	Gm/Gmean	1.46	1.28	0.93	0.70	0.55	0.50	0.53	0.64	0.86	1.16	1.42	1.54	0.75
Vertical South	Gm/Gmean	1.17	1.07	0.84	0.70	0.60	0.56	0.58	0.66	0.81	0.98	1.15	1.24	0.73
Vertical SE/SW	Gm/Gmean	0.67	0.69	0.64	0.62	0.59	0.58	0.58	0.60	0.64	0.67	0.70	0.70	0.62
Vertical E/W	Gm/Gmean	0.42	0.41	0.43	0.45	0.48	0.48	0.47	0.45	0.43	0.41	0.42	0.42	0.45
Vertical NE/NW	Gm/Gmean	0.39	0.36	0.35	0.34	0.38	0.39	0.37	0.34	0.32	0.34	0.38	0.41	0.36

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.89	3.31	4.93	6.69	7.87	8.21	8.20	7.12	5.50	3.72	2.25	1.53	5.11
	D clear	0.44	0.78	0.86	1.32	1.28	1.45	1.47	1.58	1.13	0.82	0.54	0.44	1.01
10 Deg South	Gc	2.65	4.08	5.65	7.13	8.10	8.39	8.38	7.47	6.12	4.48	3.04	2.25	5.65
	Dc	0.50	0.82	0.97	1.37	1.33	1.50	1.51	1.61	1.22	0.90	0.62	0.51	1.07
30 Deg South	Gc	3.97	5.38	6.58	7.53	7.99	8.17	8.20	7.68	6.88	5.63	4.35	3.50	6.32
	Dc	0.62	0.98	1.11	1.49	1.43	1.59	1.59	1.72	1.37	1.06	0.76	0.63	1.20
Latitude South	Gc	4.82	6.07	6.82	7.25	7.29	7.35	7.41	7.25	6.96	6.17	5.14	4.33	6.40
tilt 48 41' N	Dc	0.70	1.09	1.22	1.59	1.52	1.66	1.67	1.79	1.47	1.17	0.85	0.71	1.29
60 Deg South	Gc	5.10	6.22	6.67	6.76	6.55	6.55	6.63	6.67	6.69	6.22	5.39	4.63	6.17
	Dc	0.74	1.13	1.26	1.62	1.56	1.69	1.70	1.80	1.51	1.21	0.89	0.74	1.32
Vertical South	Gc	4.96	5.56	5.19	4.57	3.90	3.79	3.88	4.33	4.97	5.32	5.11	4.60	4.68
	Dc	0.76	1.14	1.30	1.63	1.64	1.73	1.74	1.76	1.50	1.22	0.90	0.74	1.34
Vertical SE/SW	Gc	3.78	4.45	4.82	4.89	4.77	4.70	4.76	4.75	4.85	4.54	3.96	3.40	4.47
	Dc	0.69	1.06	1.27	1.64	1.68	1.79	1.79	1.78	1.49	1.16	0.83	0.65	1.32
Vertical E/W	Gc	1.85	2.56	3.56	4.35	5.02	5.04	5.04	4.39	3.85	2.96	2.04	1.42	3.51
	Dc	0.56	0.88	1.15	1.57	1.70	1.82	1.82	1.73	1.39	1.01	0.67	0.50	1.23
Vertical NE/NW	Gc	0.59	1.00	1.80	2.73	3.65	3.72	3.69	2.89	2.14	1.31	0.71	0.44	2.06
	Dc	0.47	0.73	1.00	1.40	1.58	1.70	1.70	1.54	1.19	0.84	0.55	0.42	1.10
Vertical North	Gc	0.44	0.69	0.93	1.50	2.29	2.38	2.34	1.67	1.14	0.77	0.53	0.40	1.26
	Dc	0.44	0.69	0.93	1.28	1.48	1.58	1.58	1.40	1.08	0.77	0.53	0.40	1.01

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.40	1.23	1.15	1.07	1.03	1.02	1.02	1.05	1.11	1.20	1.35	1.47	1.11
30 Deg South	Gc/Gmax	2.10	1.63	1.34	1.13	1.01	1.00	1.00	1.08	1.25	1.51	1.93	2.29	1.24
Latitude South	Gc/Gmax	2.55	1.83	1.38	1.08	0.93	0.89	0.90	1.02	1.26	1.66	2.28	2.83	1.25
	Gc/Gmax	2.70	1.88	1.35	1.01	0.83	0.80	0.81	0.94	1.22	1.67	2.40	3.03	1.21
60 Deg South	Gc/Gmax	2.62	1.68	1.05	0.68	0.50	0.46	0.47	0.61	0.90	1.43	2.27	3.01	0.92
Vertical South	Gc/Gmax	2.00	1.34	0.98	0.73	0.61	0.57	0.58	0.67	0.88	1.22	1.76	2.22	0.88
Vertical SE/SW	Gc/Gmax	0.98	0.77	0.72	0.65	0.64	0.61	0.62	0.62	0.70	0.80	0.91	0.93	0.69
Vertical E/W	Gc/Gmax	0.31	0.30	0.37	0.41	0.46	0.45	0.45	0.41	0.39	0.35	0.32	0.29	0.40
Vertical NE/NW	Gc/Gmax	0.23	0.21	0.19	0.22	0.29	0.29	0.28	0.23	0.21	0.21	0.24	0.26	0.25

Sunshine data

Mean sunshine	Hours	1.5	2.9	3.8	5.6	6.3	7.2	7.8	6.7	5.5	3.5	1.8	1.4	4.5
Max. sunshine	Hours	6.4	8.4	10.3	12.1	13.5	14.3	14.2	13.0	11.2	9.0	7.5	7.0	10.6

FRANCE Site No. 190

MACON

Computer file FRANC190.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 46 18' N

Longitude 4 48' E

Height 217 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.03	1.79	3.01	4.43	5.27	5.96	6.27	5.04	3.94	2.30	1.17	0.77	3.42
	D mean	0.63	1.06	1.66	2.24	2.69	2.78	2.62	2.36	1.81	1.22	0.73	0.52	1.70
10 Deg South	Gm	1.22	2.05	3.30	4.68	5.41	6.04	6.42	5.27	4.30	2.61	1.37	0.91	3.64
	Dm	0.64	1.09	1.70	2.29	2.73	2.81	2.67	2.41	1.86	1.25	0.74	0.52	1.73
30 Deg South	Gm	1.52	2.42	3.65	4.87	5.32	5.81	6.28	5.38	4.71	3.04	1.68	1.12	3.82
	Dm	0.62	1.10	1.70	2.28	2.67	2.75	2.65	2.41	1.89	1.25	0.74	0.51	1.72
Latitude South	Gm	1.65	2.56	3.69	4.69	4.93	5.29	5.79	5.12	4.71	3.19	1.82	1.22	3.73
tilt 46 18' N	Dm	0.59	1.06	1.63	2.18	2.53	2.60	2.54	2.31	1.84	1.20	0.70	0.48	1.64
60 Deg South	Gm	1.69	2.56	3.55	4.34	4.40	4.63	5.11	4.67	4.49	3.16	1.85	1.25	3.48
	Dm	0.54	1.00	1.53	2.05	2.35	2.42	2.39	2.18	1.75	1.13	0.66	0.44	1.54
Vertical South	Gm	1.53	2.20	2.79	3.04	2.82	2.83	3.15	3.15	3.40	2.64	1.65	1.13	2.53
	Dm	0.43	0.81	1.24	1.65	1.86	1.95	1.97	1.77	1.46	0.93	0.53	0.34	1.25
Vertical SE/SW	Gm	1.21	1.84	2.53	3.08	3.08	3.26	3.57	3.29	3.19	2.24	1.34	0.91	2.46
	Dm	0.43	0.79	1.22	1.63	1.85	1.95	1.98	1.75	1.43	0.92	0.52	0.34	1.24
Vertical E/W	Gm	0.69	1.20	1.94	2.72	3.03	3.43	3.63	3.03	2.53	1.54	0.82	0.52	2.09
	Dm	0.42	0.73	1.14	1.57	1.82	1.96	1.98	1.70	1.33	0.85	0.49	0.34	1.20
Vertical NE/NW	Gm	0.40	0.72	1.26	1.95	2.41	2.83	2.84	2.22	1.61	0.90	0.48	0.32	1.50
	Dm	0.40	0.66	1.05	1.46	1.74	1.90	1.88	1.59	1.22	0.79	0.45	0.32	1.12
Vertical North	Gm	0.38	0.63	1.00	1.44	1.85	2.22	2.10	1.62	1.16	0.75	0.43	0.30	1.16
	Dm	0.38	0.63	1.00	1.40	1.70	1.86	1.82	1.52	1.16	0.75	0.43	0.30	1.08

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.14	1.10	1.06	1.03	1.01	1.02	1.05	1.09	1.13	1.17	1.18	1.06
30 Deg South	Gm/Gmean	1.48	1.35	1.21	1.10	1.01	0.98	1.00	1.07	1.20	1.32	1.44	1.46	1.12
Latitude South	Gm/Gmean	1.60	1.43	1.23	1.06	0.94	0.89	0.92	1.02	1.20	1.39	1.56	1.58	1.09
60 Deg South	Gm/Gmean	1.64	1.43	1.18	0.98	0.83	0.78	0.81	0.93	1.14	1.37	1.58	1.62	1.02
Vertical South	Gm/Gmean	1.49	1.23	0.93	0.69	0.54	0.47	0.50	0.63	0.86	1.15	1.41	1.47	0.74
Vertical SE/SW	Gm/Gmean	1.17	1.03	0.84	0.69	0.58	0.55	0.57	0.65	0.81	0.97	1.14	1.18	0.72
Vertical E/W	Gm/Gmean	0.67	0.67	0.64	0.61	0.57	0.58	0.58	0.60	0.64	0.67	0.70	0.68	0.61
Vertical NE/NW	Gm/Gmean	0.39	0.40	0.42	0.44	0.46	0.47	0.45	0.44	0.41	0.39	0.41	0.42	0.44
Vertical North	Gm/Gmean	0.37	0.35	0.33	0.32	0.35	0.37	0.34	0.32	0.29	0.33	0.37	0.39	0.34

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.24	3.62	5.46	7.06	8.42	8.62	8.44	7.54	5.94	4.14	2.51	1.77	5.49
	D clear	0.49	0.93	1.03	1.38	1.45	1.53	1.52	1.59	1.21	0.83	0.64	0.41	1.08
10 Deg South	Gc	3.08	4.38	6.13	7.49	8.59	8.74	8.60	7.84	6.54	4.94	3.29	2.54	6.02
	Dc	0.58	0.99	1.09	1.43	1.46	1.55	1.55	1.60	1.28	0.93	0.74	0.47	1.14
30 Deg South	Gc	4.47	5.63	7.03	7.82	8.39	8.41	8.32	7.98	7.26	6.11	4.56	3.86	6.66
	Dc	0.71	1.17	1.24	1.55	1.54	1.62	1.63	1.71	1.43	1.09	0.89	0.59	1.26
Latitude South	Gc	5.25	6.21	7.23	7.52	7.71	7.64	7.58	7.54	7.29	6.58	5.24	4.63	6.70
tilt 46 18' N	Dc	0.79	1.27	1.34	1.63	1.62	1.69	1.69	1.77	1.52	1.19	0.98	0.65	1.34
60 Deg South	Gc	5.61	6.36	7.00	6.88	6.73	6.60	6.58	6.79	6.93	6.62	5.52	5.01	6.38
	Dc	0.84	1.32	1.40	1.67	1.66	1.72	1.72	1.79	1.57	1.24	1.03	0.69	1.39
Vertical South	Gc	5.35	5.57	5.34	4.52	3.86	3.69	3.71	4.26	5.02	5.56	5.13	4.90	4.74
	Dc	0.86	1.30	1.43	1.68	1.72	1.76	1.75	1.76	1.56	1.26	1.02	0.71	1.40
Vertical SE/SW	Gc	4.10	4.48	4.98	4.92	4.82	4.70	4.68	4.80	4.95	4.78	4.00	3.63	4.57
	Dc	0.79	1.21	1.39	1.69	1.78	1.83	1.82	1.80	1.56	1.21	0.94	0.64	1.39
Vertical E/W	Gc	2.05	2.61	3.73	4.46	5.12	5.14	5.06	4.55	3.98	3.18	2.12	1.54	3.63
	Dc	0.64	1.00	1.27	1.64	1.82	1.88	1.86	1.77	1.45	1.06	0.75	0.50	1.30
Vertical NE/NW	Gc	0.67	1.06	1.92	2.84	3.71	3.84	3.74	3.03	2.24	1.42	0.77	0.46	2.15
	Dc	0.53	0.81	1.10	1.46	1.69	1.76	1.74	1.58	1.25	0.89	0.62	0.43	1.16
Vertical North	Gc	0.51	0.76	1.02	1.56	2.28	2.45	2.36	1.73	1.18	0.82	0.58	0.42	1.31
	Dc	0.51	0.76	1.02	1.33	1.58	1.64	1.62	1.44	1.13	0.82	0.58	0.42	1.07

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.38	1.21	1.12	1.06	1.02	1.01	1.02	1.04	1.10	1.19	1.31	1.43	1.10
30 Deg South	Gc/Gmax	2.00	1.55	1.29	1.11	1.00	0.98	0.99	1.06	1.22	1.48	1.82	2.18	1.21
Latitude South	Gc/Gmax	2.34	1.72	1.32	1.07	0.92	0.89	0.90	1.00	1.23	1.59	2.09	2.62	1.22
60 Deg South	Gc/Gmax	2.50	1.76	1.28	0.98	0.80	0.77	0.78	0.90	1.17	1.60	2.20	2.83	1.16
Vertical South	Gc/Gmax	2.39	1.54	0.98	0.64	0.46	0.43	0.44	0.56	0.85	1.34	2.04	2.77	0.86
Vertical SE/SW	Gc/Gmax	1.83	1.24	0.91	0.70	0.57	0.55	0.56	0.64	0.83	1.15	1.59	2.05	0.83
Vertical E/W	Gc/Gmax	0.92	0.72	0.68	0.63	0.61	0.60	0.60	0.60	0.67	0.77	0.85	0.87	0.66
Vertical NE/NW	Gc/Gmax	0.30	0.29	0.35	0.40	0.44	0.44	0.44	0.40	0.38	0.34	0.31	0.26	0.39
Vertical North	Gc/Gmax	0.23	0.21	0.19	0.22	0.27	0.28	0.28	0.23	0.20	0.20	0.23	0.24	0.24

Sunshine data

Mean sunshine	Hours	2.0	3.4	4.8	6.6	7.2	8.3	9.6	7.7	6.7	4.2	2.3	1.5	5.4
Max. sunshine	Hours	7.6	9.2	10.6	12.7	14.0	14.6	14.5	13.4	11.7	9.8	7.9	7.0	11.1

FRANCE Site No. 194

LIMOGES

Computer file FRANC194.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 45 52' N

Longitude 1 11' E

Height 402 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.19	1.94	3.07	4.39	5.19	5.90	5.96	4.86	3.86	2.60	1.39	1.01	3.45
	D mean	0.66	1.06	1.58	2.23	2.74	2.81	2.64	2.39	1.78	1.24	0.80	0.57	1.71
10 Deg South	Gm	1.44	2.24	3.36	4.61	5.30	5.96	6.07	5.06	4.20	2.98	1.66	1.26	3.69
	Dm	0.66	1.08	1.60	2.26	2.77	2.83	2.67	2.43	1.83	1.28	0.81	0.58	1.74
30 Deg South	Gm	1.84	2.67	3.70	4.76	5.18	5.70	5.90	5.14	4.56	3.52	2.08	1.65	3.90
	Dm	0.65	1.07	1.57	2.23	2.69	2.75	2.62	2.41	1.83	1.29	0.81	0.57	1.71
Latitude South	Gm	2.03	2.84	3.74	4.57	4.79	5.19	5.43	4.88	4.54	3.71	2.27	1.86	3.83
tilt 45 52' N	Dm	0.61	1.03	1.49	2.11	2.53	2.60	2.50	2.30	1.77	1.25	0.78	0.54	1.63
60 Deg South	Gm	2.09	2.85	3.59	4.19	4.24	4.52	4.76	4.42	4.31	3.69	2.33	1.94	3.58
	Dm	0.56	0.96	1.39	1.97	2.33	2.41	2.33	2.15	1.67	1.18	0.73	0.51	1.52
Vertical South	Gm	1.91	2.45	2.80	2.92	2.72	2.75	2.93	2.97	3.24	3.10	2.10	1.81	2.64
	Dm	0.45	0.78	1.12	1.58	1.83	1.92	1.90	1.73	1.38	0.99	0.60	0.42	1.23
Vertical SE/SW	Gm	1.50	2.04	2.59	3.02	2.99	3.20	3.36	3.13	3.08	2.62	1.70	1.41	2.56
	Dm	0.46	0.77	1.11	1.56	1.81	1.92	1.90	1.71	1.36	0.97	0.59	0.41	1.22
Vertical E/W	Gm	0.83	1.34	2.03	2.74	2.97	3.42	3.48	2.91	2.49	1.77	1.02	0.74	2.15
	Dm	0.45	0.73	1.07	1.52	1.79	1.92	1.90	1.67	1.29	0.90	0.55	0.40	1.18
Vertical NE/NW	Gm	0.44	0.76	1.31	2.01	2.41	2.86	2.79	2.18	1.61	0.99	0.55	0.38	1.53
	Dm	0.43	0.68	1.02	1.45	1.74	1.89	1.84	1.57	1.20	0.83	0.51	0.38	1.13
Vertical North	Gm	0.42	0.65	0.99	1.48	1.88	2.27	2.11	1.61	1.16	0.80	0.49	0.36	1.19
	Dm	0.42	0.65	0.99	1.41	1.72	1.87	1.80	1.52	1.16	0.80	0.49	0.36	1.10

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.21	1.15	1.09	1.05	1.02	1.01	1.02	1.04	1.09	1.15	1.19	1.25	1.07
30 Deg South	Gm/Gmean	1.55	1.38	1.21	1.08	1.00	0.97	0.99	1.06	1.18	1.35	1.50	1.63	1.13
Latitude South	Gm/Gmean	1.71	1.46	1.22	1.04	0.92	0.88	0.91	1.00	1.18	1.43	1.63	1.84	1.11
60 Deg South	Gm/Gmean	1.76	1.47	1.17	0.95	0.82	0.77	0.80	0.91	1.12	1.42	1.68	1.92	1.04
Vertical South	Gm/Gmean	1.61	1.26	0.91	0.67	0.52	0.47	0.49	0.61	0.84	1.19	1.51	1.79	0.76
Vertical SE/SW	Gm/Gmean	1.26	1.05	0.84	0.69	0.58	0.54	0.56	0.64	0.80	1.01	1.22	1.40	0.74
Vertical E/W	Gm/Gmean	0.70	0.69	0.66	0.62	0.57	0.58	0.58	0.60	0.64	0.68	0.73	0.73	0.62
Vertical NE/NW	Gm/Gmean	0.37	0.39	0.43	0.46	0.46	0.49	0.47	0.45	0.42	0.38	0.40	0.38	0.44
Vertical North	Gm/Gmean	0.35	0.34	0.32	0.34	0.36	0.38	0.35	0.33	0.30	0.31	0.35	0.36	0.34

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.37	3.83	5.64	7.34	8.33	8.77	8.49	7.41	5.99	4.34	2.87	2.11	5.63
	D clear	0.38	0.70	0.62	1.09	1.19	1.29	1.26	1.47	1.02	0.79	0.63	0.41	0.91
10 Deg South	Gc	3.30	4.68	6.38	7.77	8.49	8.86	8.64	7.73	6.60	5.15	3.73	3.01	6.20
	Dc	0.47	0.76	0.68	1.14	1.20	1.30	1.31	1.51	1.09	0.87	0.70	0.45	0.96
30 Deg South	Gc	4.82	6.06	7.33	8.08	8.26	8.49	8.33	7.84	7.31	6.36	5.19	4.59	6.89
	Dc	0.59	0.90	0.81	1.26	1.30	1.39	1.40	1.61	1.23	1.02	0.85	0.56	1.08
Latitude South	Gc	5.65	6.69	7.53	7.76	7.58	7.70	7.58	7.41	7.34	6.85	5.95	5.48	6.96
tilt 45 52' N	Dc	0.66	1.00	0.92	1.36	1.39	1.47	1.48	1.67	1.32	1.12	0.94	0.63	1.16
60 Deg South	Gc	6.05	6.87	7.28	7.06	6.56	6.60	6.52	6.64	6.95	6.89	6.28	5.95	6.63
	Dc	0.71	1.06	1.01	1.43	1.46	1.54	1.54	1.70	1.39	1.18	0.99	0.68	1.22
Vertical South	Gc	5.78	6.01	5.50	4.56	3.70	3.63	3.62	4.13	4.99	5.76	5.83	5.82	4.94
	Dc	0.76	1.11	1.16	1.53	1.59	1.66	1.64	1.69	1.43	1.22	1.01	0.71	1.29
Vertical SE/SW	Gc	4.42	4.84	5.24	5.13	4.78	4.77	4.71	4.70	4.90	4.97	4.53	4.29	4.77
	Dc	0.71	1.04	1.15	1.54	1.64	1.72	1.70	1.73	1.41	1.18	0.94	0.65	1.28
Vertical E/W	Gc	2.21	2.85	4.00	4.78	5.24	5.36	5.23	4.50	3.89	3.33	2.38	1.80	3.80
	Dc	0.60	0.90	1.09	1.51	1.67	1.76	1.74	1.70	1.32	1.04	0.77	0.52	1.22
Vertical NE/NW	Gc	0.68	1.09	2.03	3.05	3.85	4.05	3.92	3.01	2.13	1.47	0.83	0.49	2.22
	Dc	0.52	0.76	1.00	1.38	1.57	1.67	1.64	1.54	1.16	0.88	0.64	0.46	1.10
Vertical North	Gc	0.51	0.73	0.96	1.60	2.37	2.60	2.49	1.70	1.08	0.82	0.61	0.45	1.33
	Dc	0.51	0.73	0.96	1.28	1.48	1.57	1.54	1.40	1.08	0.82	0.61	0.45	1.04

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.39	1.22	1.13	1.06	1.02	1.01	1.02	1.04	1.10	1.19	1.30	1.43	1.10
30 Deg South	Gc/Gmax	2.03	1.58	1.30	1.10	0.99	0.97	0.98	1.06	1.22	1.47	1.81	2.17	1.22
Latitude South	Gc/Gmax	2.38	1.75	1.34	1.06	0.91	0.88	0.89	1.00	1.23	1.58	2.07	2.60	1.24
60 Deg South	Gc/Gmax	2.55	1.79	1.29	0.96	0.79	0.75	0.77	0.90	1.16	1.59	2.19	2.82	1.18
Vertical South	Gc/Gmax	2.44	1.57	0.98	0.62	0.44	0.41	0.43	0.56	0.83	1.33	2.03	2.76	0.88
Vertical SE/SW	Gc/Gmax	1.87	1.26	0.93	0.70	0.57	0.54	0.56	0.63	0.82	1.14	1.58	2.03	0.85
Vertical E/W	Gc/Gmax	0.93	0.74	0.71	0.65	0.63	0.61	0.62	0.61	0.65	0.77	0.83	0.85	0.68
Vertical NE/NW	Gc/Gmax	0.29	0.28	0.36	0.42	0.46	0.46	0.46	0.41	0.36	0.34	0.29	0.23	0.39
Vertical North	Gc/Gmax	0.22	0.19	0.17	0.22	0.28	0.30	0.29	0.23	0.18	0.19	0.21	0.21	0.24

Sunshine data

Mean sunshine	Hours	2.5	3.5	4.4	5.9	6.3	7.6	8.5	7.1	6.2	4.9	2.9	2.5	5.2
Max. sunshine	Hours	8.1	9.1	10.5	12.6	13.4	14.2	14.3	13.1	11.4	9.8	8.5	7.8	11.1

FRANCE Site No. 203

MILLAU

Computer file FRANC203.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 44 7' N

Longitude 3 1' E

Height 720 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.44	2.28	3.53	4.60	5.46	6.48	7.09	5.73	4.37	3.03	1.67	1.27	3.92
	D mean	0.74	1.09	1.62	2.16	2.56	2.63	2.24	2.16	1.79	1.23	0.84	0.64	1.64
10 Deg South	Gm	1.77	2.64	3.88	4.82	5.56	6.53	7.23	5.98	4.74	3.49	2.01	1.58	4.19
	Dm	0.74	1.11	1.65	2.18	2.58	2.65	2.27	2.20	1.82	1.26	0.86	0.65	1.67
30 Deg South	Gm	2.29	3.18	4.29	4.94	5.40	6.21	7.00	6.07	5.14	4.14	2.55	2.08	4.45
	Dm	0.73	1.09	1.62	2.14	2.52	2.60	2.28	2.20	1.82	1.27	0.85	0.64	1.65
Latitude South	Gm	2.52	3.37	4.34	4.76	5.03	5.69	6.48	5.79	5.12	4.35	2.78	2.32	4.39
tilt 44 7' N	Dm	0.69	1.05	1.56	2.05	2.39	2.49	2.23	2.14	1.76	1.24	0.82	0.61	1.59
60 Deg South	Gm	2.64	3.40	4.16	4.31	4.36	4.83	5.55	5.18	4.82	4.34	2.87	2.44	4.08
	Dm	0.64	0.98	1.45	1.89	2.20	2.31	2.12	2.02	1.66	1.18	0.77	0.56	1.48
Vertical South	Gm	2.42	2.92	3.22	2.93	2.71	2.84	3.24	3.37	3.55	3.63	2.59	2.27	2.97
	Dm	0.52	0.80	1.19	1.53	1.77	1.91	1.86	1.72	1.40	1.01	0.63	0.46	1.24
Vertical SE/SW	Gm	1.92	2.42	3.00	3.13	3.11	3.46	3.89	3.70	3.45	3.05	2.08	1.75	2.92
	Dm	0.52	0.81	1.18	1.52	1.75	1.90	1.86	1.70	1.38	1.00	0.63	0.46	1.23
Vertical E/W	Gm	1.11	1.59	2.37	2.90	3.18	3.83	4.07	3.51	2.83	2.06	1.25	0.92	2.47
	Dm	0.52	0.78	1.14	1.49	1.74	1.91	1.86	1.67	1.32	0.94	0.61	0.46	1.21
Vertical NE/NW	Gm	0.54	0.87	1.48	2.12	2.56	3.19	3.12	2.53	1.81	1.09	0.64	0.44	1.70
	Dm	0.49	0.74	1.10	1.44	1.70	1.88	1.79	1.59	1.26	0.88	0.57	0.44	1.16
Vertical North	Gm	0.48	0.72	1.07	1.50	1.92	2.45	2.13	1.71	1.22	0.85	0.55	0.42	1.25
	Dm	0.48	0.72	1.07	1.41	1.68	1.87	1.75	1.55	1.22	0.85	0.55	0.42	1.13

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.23	1.16	1.10	1.05	1.02	1.01	1.02	1.04	1.09	1.15	1.20	1.24	1.07
30 Deg South	Gm/Gmean	1.59	1.39	1.22	1.07	0.99	0.96	0.99	1.06	1.18	1.37	1.53	1.64	1.13
Latitude South	Gm/Gmean	1.75	1.48	1.23	1.03	0.92	0.88	0.91	1.01	1.17	1.44	1.66	1.83	1.12
60 Deg South	Gm/Gmean	1.83	1.49	1.18	0.94	0.80	0.75	0.78	0.90	1.10	1.43	1.72	1.92	1.04
Vertical South	Gm/Gmean	1.68	1.28	0.91	0.64	0.50	0.44	0.46	0.59	0.81	1.20	1.55	1.79	0.76
Vertical SE/SW	Gm/Gmean	1.33	1.06	0.85	0.68	0.57	0.53	0.55	0.65	0.79	1.01	1.25	1.38	0.75
Vertical E/W	Gm/Gmean	0.77	0.70	0.67	0.63	0.58	0.59	0.57	0.61	0.65	0.68	0.75	0.72	0.63
Vertical NE/NW	Gm/Gmean	0.38	0.38	0.42	0.46	0.47	0.49	0.44	0.44	0.41	0.36	0.38	0.35	0.43
Vertical North	Gm/Gmean	0.33	0.32	0.30	0.33	0.35	0.38	0.30	0.30	0.28	0.28	0.33	0.33	0.32

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.93	4.44	5.97	7.60	8.57	8.87	8.93	8.04	6.62	4.90	3.35	2.47	6.06
	D clear	0.38	0.51	0.53	0.85	0.89	1.04	1.07	1.14	0.82	0.66	0.49	0.34	0.73
10 Deg South	Gc	3.98	5.43	6.73	8.00	8.73	8.98	9.04	8.34	7.26	5.77	4.37	3.49	6.68
	Dc	0.44	0.56	0.61	0.90	0.94	1.10	1.11	1.18	0.88	0.72	0.55	0.38	0.78
30 Deg South	Gc	5.73	6.98	7.65	8.24	8.39	8.51	8.61	8.37	7.97	7.07	6.03	5.23	7.40
	Dc	0.56	0.69	0.73	1.02	1.04	1.19	1.21	1.29	1.01	0.86	0.68	0.48	0.90
Latitude South	Gc	6.59	7.62	7.81	7.92	7.72	7.76	7.87	7.91	7.96	7.54	6.81	6.12	7.47
tilt 44 7' N	Dc	0.63	0.78	0.83	1.11	1.13	1.27	1.29	1.37	1.11	0.95	0.76	0.54	0.98
60 Deg South	Gc	7.11	7.84	7.49	7.07	6.51	6.45	6.58	6.92	7.45	7.57	7.24	6.70	7.07
	Dc	0.70	0.87	0.94	1.22	1.25	1.37	1.39	1.45	1.20	1.04	0.83	0.60	1.07
Vertical South	Gc	6.70	6.77	5.54	4.42	3.52	3.40	3.51	4.13	5.20	6.24	6.65	6.49	5.20
	Dc	0.77	0.99	1.13	1.40	1.46	1.56	1.57	1.57	1.34	1.14	0.90	0.67	1.21
Vertical SE/SW	Gc	5.13	5.46	5.37	5.17	4.79	4.70	4.79	4.98	5.26	5.43	5.17	4.77	5.08
	Dc	0.73	0.95	1.12	1.41	1.50	1.61	1.62	1.60	1.33	1.11	0.85	0.62	1.21
Vertical E/W	Gc	2.59	3.25	4.17	4.96	5.43	5.46	5.50	4.97	4.29	3.70	2.75	2.02	4.09
	Dc	0.64	0.86	1.08	1.40	1.54	1.65	1.67	1.59	1.26	1.01	0.73	0.53	1.16
Vertical NE/NW	Gc	0.78	1.20	2.13	3.19	4.04	4.19	4.17	3.35	2.34	1.60	0.89	0.52	2.37
	Dc	0.57	0.78	1.00	1.30	1.47	1.58	1.59	1.47	1.14	0.88	0.64	0.48	1.08
Vertical North	Gc	0.56	0.75	0.97	1.60	2.45	2.66	2.62	1.81	1.08	0.83	0.62	0.48	1.37
	Dc	0.56	0.75	0.97	1.23	1.41	1.51	1.51	1.37	1.08	0.83	0.62	0.48	1.03

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.36	1.22	1.13	1.05	1.02	1.01	1.01	1.04	1.10	1.18	1.30	1.41	1.10
30 Deg South	Gc/Gmax	1.96	1.57	1.28	1.08	0.98	0.96	0.96	1.04	1.20	1.44	1.80	2.12	1.22
Latitude South	Gc/Gmax	2.25	1.72	1.31	1.04	0.90	0.88	0.88	0.98	1.20	1.54	2.03	2.48	1.23
60 Deg South	Gc/Gmax	2.43	1.77	1.25	0.93	0.76	0.73	0.74	0.86	1.13	1.54	2.16	2.71	1.17
Vertical South	Gc/Gmax	2.29	1.52	0.93	0.58	0.41	0.38	0.39	0.51	0.79	1.27	1.99	2.63	0.86
Vertical SE/SW	Gc/Gmax	1.75	1.23	0.90	0.68	0.56	0.53	0.54	0.62	0.80	1.11	1.54	1.93	0.84
Vertical E/W	Gc/Gmax	0.88	0.73	0.70	0.65	0.63	0.62	0.62	0.62	0.65	0.75	0.82	0.82	0.68
Vertical NE/NW	Gc/Gmax	0.27	0.27	0.36	0.42	0.47	0.47	0.47	0.42	0.35	0.33	0.27	0.21	0.39
Vertical North	Gc/Gmax	0.19	0.17	0.16	0.21	0.29	0.30	0.29	0.22	0.16	0.17	0.19	0.19	0.23

Sunshine data

Mean sunshine	Hours	2.9	4.0	5.1	6.0	6.8	8.4	10.3	8.3	6.5	5.5	3.4	2.9	5.9
Max. sunshine	Hours	8.7	9.9	11.0	12.4	13.6	14.5	14.4	13.5	11.9	10.2	9.3	8.3	11.5

FRANCE Site No. 204

CARPENTRAS

Computer file FRANC204.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 44 5' N

Longitude 5 3' E

Height 105 metres

Data period (2.1968-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.59	2.54	3.75	5.30	6.29	7.05	7.52	6.23	4.59	3.21	1.88	1.46	4.29
	D mean	0.77	1.14	1.64	2.03	2.55	2.39	2.16	2.03	1.68	1.18	0.90	0.63	1.59
10 Deg South	Gm	2.00	3.00	4.16	5.63	6.46	7.14	7.70	6.56	5.03	3.75	2.31	1.90	4.65
	Dm	0.82	1.20	1.70	2.09	2.59	2.42	2.21	2.10	1.74	1.25	0.96	0.68	1.65
30 Deg South	Gm	2.67	3.70	4.68	5.88	6.35	6.83	7.52	6.75	5.55	4.55	2.99	2.62	5.01
	Dm	0.88	1.26	1.74	2.11	2.57	2.41	2.26	2.16	1.81	1.34	1.02	0.73	1.69
Latitude South	Gm	2.98	3.98	4.78	5.72	5.95	6.28	6.99	6.50	5.59	4.84	3.30	2.98	5.00
tilt 44 5' N	Dm	0.88	1.27	1.71	2.07	2.48	2.35	2.24	2.15	1.80	1.36	1.03	0.74	1.68
60 Deg South	Gm	3.16	4.06	4.62	5.23	5.18	5.32	6.01	5.85	5.31	4.88	3.44	3.19	4.69
	Dm	0.87	1.24	1.63	1.97	2.33	2.23	2.17	2.08	1.74	1.34	1.01	0.73	1.61
Vertical South	Gm	2.94	3.53	3.62	3.58	3.19	3.07	3.49	3.83	3.96	4.12	3.13	3.02	3.46
	Dm	0.76	1.08	1.39	1.68	1.93	1.92	1.94	1.83	1.52	1.20	0.89	0.66	1.40
Vertical SE/SW	Gm	2.32	2.89	3.28	3.73	3.62	3.76	4.15	4.08	3.74	3.42	2.49	2.31	3.32
	Dm	0.73	1.04	1.35	1.66	1.93	1.94	1.96	1.82	1.48	1.15	0.84	0.62	1.38
Vertical E/W	Gm	1.28	1.79	2.48	3.32	3.63	4.09	4.26	3.73	2.95	2.19	1.42	1.13	2.69
	Dm	0.63	0.91	1.25	1.61	1.91	1.96	1.96	1.76	1.38	1.02	0.73	0.54	1.31
Vertical NE/NW	Gm	0.60	0.91	1.49	2.27	2.78	3.28	3.17	2.55	1.78	1.09	0.69	0.48	1.76
	Dm	0.54	0.79	1.14	1.50	1.82	1.89	1.84	1.61	1.25	0.89	0.63	0.47	1.20
Vertical North	Gm	0.50	0.75	1.08	1.51	1.99	2.39	2.10	1.65	1.19	0.84	0.59	0.44	1.25
	Dm	0.50	0.75	1.08	1.44	1.76	1.86	1.75	1.52	1.19	0.84	0.59	0.44	1.15

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.26	1.18	1.11	1.06	1.03	1.01	1.02	1.05	1.10	1.17	1.23	1.30	1.08
30 Deg South	Gm/Gmean	1.68	1.46	1.25	1.11	1.01	0.97	1.00	1.08	1.21	1.42	1.59	1.79	1.17
Latitude South	Gm/Gmean	1.87	1.57	1.27	1.08	0.95	0.89	0.93	1.04	1.22	1.51	1.75	2.04	1.17
60 Deg South	Gm/Gmean	1.99	1.60	1.23	0.99	0.82	0.75	0.80	0.94	1.16	1.52	1.83	2.18	1.09
Vertical South	Gm/Gmean	1.85	1.39	0.96	0.68	0.51	0.44	0.46	0.62	0.86	1.28	1.66	2.07	0.81
Vertical SE/SW	Gm/Gmean	1.46	1.14	0.88	0.70	0.58	0.53	0.55	0.65	0.81	1.07	1.32	1.58	0.77
Vertical E/W	Gm/Gmean	0.81	0.70	0.66	0.63	0.58	0.58	0.57	0.60	0.64	0.68	0.75	0.77	0.63
Vertical NE/NW	Gm/Gmean	0.38	0.36	0.40	0.43	0.44	0.47	0.42	0.41	0.39	0.34	0.37	0.33	0.41
Vertical North	Gm/Gmean	0.31	0.29	0.29	0.28	0.32	0.34	0.28	0.26	0.26	0.26	0.31	0.30	0.29

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.74	4.11	5.86	7.46	8.55	8.89	8.78	7.80	6.39	4.72	3.07	2.17	5.89
	D clear	0.90	1.01	0.99	1.19	1.35	1.39	1.47	1.60	1.19	1.03	0.91	0.65	1.14
10 Deg South	Gc	3.47	4.90	6.53	7.85	8.70	8.96	8.87	8.07	6.97	5.51	3.85	2.92	6.39
	Dc	0.95	1.07	1.05	1.24	1.37	1.40	1.48	1.61	1.25	1.10	0.98	0.72	1.19
30 Deg South	Gc	4.78	6.19	7.40	8.10	8.41	8.53	8.50	8.13	7.64	6.68	5.16	4.22	6.98
	Dc	1.15	1.26	1.20	1.36	1.46	1.48	1.55	1.71	1.39	1.28	1.17	0.88	1.32
Latitude South	Gc	5.41	6.71	7.54	7.80	7.77	7.80	7.80	7.70	7.64	7.09	5.76	4.88	6.99
tilt 44 5' N	Dc	1.25	1.35	1.29	1.44	1.52	1.55	1.61	1.76	1.47	1.37	1.27	0.96	1.40
60 Deg South	Gc	5.77	6.87	7.23	6.98	6.58	6.52	6.55	6.77	7.16	7.10	6.07	5.30	6.57
	Dc	1.32	1.42	1.37	1.51	1.59	1.61	1.66	1.79	1.54	1.44	1.33	1.02	1.47
Vertical South	Gc	5.36	5.91	5.39	4.42	3.64	3.50	3.56	4.11	5.06	5.85	5.52	5.07	4.77
	Dc	1.29	1.41	1.43	1.59	1.68	1.71	1.73	1.77	1.56	1.45	1.30	1.01	1.49
Vertical SE/SW	Gc	4.12	4.77	5.14	5.04	4.74	4.69	4.68	4.76	5.00	5.00	4.30	3.79	4.67
	Dc	1.15	1.31	1.40	1.61	1.74	1.77	1.80	1.81	1.54	1.38	1.18	0.89	1.47
Vertical E/W	Gc	2.05	2.83	3.95	4.76	5.23	5.34	5.19	4.62	4.02	3.33	2.27	1.65	3.77
	Dc	0.88	1.09	1.29	1.58	1.78	1.83	1.86	1.79	1.44	1.21	0.93	0.67	1.36
Vertical NE/NW	Gc	0.77	1.16	2.07	3.08	3.89	4.08	3.90	3.12	2.24	1.50	0.87	0.56	2.28
	Dc	0.68	0.89	1.13	1.44	1.68	1.73	1.75	1.62	1.26	1.00	0.73	0.54	1.21
Vertical North	Gc	0.64	0.83	1.05	1.64	2.41	2.62	2.45	1.78	1.16	0.92	0.69	0.52	1.40
	Dc	0.64	0.83	1.05	1.33	1.57	1.63	1.64	1.48	1.16	0.92	0.69	0.52	1.12

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.27	1.19	1.11	1.05	1.02	1.01	1.01	1.03	1.09	1.17	1.25	1.35	1.09
30 Deg South	Gc/Gmax	1.75	1.51	1.26	1.09	0.98	0.96	0.97	1.04	1.20	1.41	1.68	1.95	1.18
Latitude South	Gc/Gmax	1.97	1.63	1.29	1.05	0.91	0.88	0.89	0.99	1.20	1.50	1.88	2.25	1.19
60 Deg South	Gc/Gmax	2.11	1.67	1.23	0.94	0.77	0.73	0.75	0.87	1.12	1.50	1.98	2.44	1.12
Vertical South	Gc/Gmax	1.96	1.44	0.92	0.59	0.43	0.39	0.41	0.53	0.79	1.24	1.80	2.34	0.81
Vertical SE/SW	Gc/Gmax	1.50	1.16	0.88	0.68	0.55	0.53	0.53	0.61	0.78	1.06	1.40	1.75	0.79
Vertical E/W	Gc/Gmax	0.75	0.69	0.67	0.64	0.61	0.60	0.59	0.59	0.63	0.71	0.74	0.76	0.64
Vertical NE/NW	Gc/Gmax	0.28	0.28	0.35	0.41	0.46	0.46	0.44	0.40	0.35	0.32	0.28	0.26	0.39
Vertical North	Gc/Gmax	0.23	0.20	0.18	0.22	0.28	0.29	0.28	0.23	0.18	0.19	0.22	0.24	0.24

Sunshine data

Mean sunshine	Hours	4.5	5.8	6.5	8.1	8.9	10.2	12.0	10.3	8.0	7.1	5.0	4.7	7.6
Max. sunshine	Hours	9.0	10.1	11.0	12.8	14.1	14.5	14.5	13.6	12.0	10.7	9.4	8.5	11.7

FRANCE Site No. 207

NICE

Computer file FRANC207.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 43 39' N

Longitude 7 12' E

Height 10 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.72	2.46	3.91	5.36	6.10	6.79	7.13	5.92	4.59	3.27	1.99	1.65	4.25
	D mean	0.74	1.14	1.70	2.13	2.62	2.53	2.40	2.25	1.74	1.22	0.86	0.61	1.66
10 Deg South	Gm	2.20	2.88	4.33	5.68	6.25	6.87	7.30	6.21	5.03	3.81	2.47	2.18	4.61
	Dm	0.78	1.19	1.76	2.19	2.66	2.56	2.46	2.31	1.81	1.29	0.91	0.65	1.72
30 Deg South	Gm	2.97	3.51	4.86	5.92	6.13	6.56	7.11	6.37	5.52	4.60	3.25	3.05	5.00
	Dm	0.82	1.24	1.80	2.21	2.63	2.53	2.48	2.36	1.87	1.38	0.96	0.70	1.75
Latitude South	Gm	3.33	3.75	4.96	5.76	5.74	6.05	6.63	6.13	5.55	4.88	3.59	3.47	4.99
tilt 43 39' N	Dm	0.83	1.23	1.77	2.17	2.53	2.45	2.43	2.33	1.86	1.39	0.97	0.71	1.73
60 Deg South	Gm	3.55	3.81	4.78	5.25	4.98	5.12	5.68	5.50	5.26	4.91	3.78	3.74	4.70
	Dm	0.81	1.18	1.69	2.05	2.36	2.30	2.31	2.22	1.80	1.37	0.95	0.71	1.65
Vertical South	Gm	3.32	3.29	3.73	3.59	3.08	2.97	3.33	3.60	3.92	4.13	3.46	3.55	3.50
	Dm	0.72	1.02	1.44	1.74	1.93	1.94	1.99	1.88	1.56	1.23	0.85	0.65	1.41
Vertical SE/SW	Gm	2.60	2.71	3.39	3.72	3.48	3.60	3.90	3.81	3.69	3.43	2.75	2.69	3.32
	Dm	0.69	0.99	1.40	1.72	1.93	1.96	2.01	1.87	1.52	1.18	0.81	0.62	1.39
Vertical E/W	Gm	1.43	1.72	2.57	3.31	3.51	3.90	4.00	3.49	2.92	2.21	1.57	1.29	2.66
	Dm	0.62	0.88	1.30	1.66	1.91	1.98	2.01	1.81	1.41	1.04	0.71	0.54	1.32
Vertical NE/NW	Gm	0.61	0.91	1.55	2.28	2.72	3.16	3.03	2.45	1.78	1.11	0.72	0.50	1.74
	Dm	0.54	0.79	1.18	1.54	1.82	1.92	1.88	1.65	1.28	0.91	0.63	0.48	1.22
Vertical North	Gm	0.51	0.74	1.12	1.55	1.99	2.35	2.08	1.66	1.21	0.86	0.59	0.46	1.26
	Dm	0.51	0.74	1.12	1.48	1.77	1.88	1.79	1.56	1.21	0.86	0.59	0.46	1.17

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.28	1.17	1.11	1.06	1.02	1.01	1.02	1.05	1.10	1.16	1.24	1.32	1.09
30 Deg South	Gm/Gmean	1.73	1.43	1.24	1.10	1.00	0.97	1.00	1.08	1.20	1.41	1.63	1.85	1.18
Latitude South	Gm/Gmean	1.94	1.52	1.27	1.08	0.94	0.89	0.93	1.03	1.21	1.49	1.80	2.10	1.17
60 Deg South	Gm/Gmean	2.06	1.55	1.22	0.98	0.82	0.75	0.80	0.93	1.15	1.50	1.90	2.27	1.11
Vertical South	Gm/Gmean	1.93	1.34	0.95	0.67	0.50	0.44	0.47	0.61	0.85	1.26	1.74	2.15	0.82
Vertical SE/SW	Gm/Gmean	1.51	1.10	0.87	0.69	0.57	0.53	0.55	0.64	0.80	1.05	1.38	1.63	0.78
Vertical E/W	Gm/Gmean	0.83	0.70	0.66	0.62	0.57	0.57	0.56	0.59	0.64	0.68	0.79	0.78	0.63
Vertical NE/NW	Gm/Gmean	0.35	0.37	0.40	0.43	0.45	0.47	0.43	0.41	0.39	0.34	0.36	0.30	0.41
Vertical North	Gm/Gmean	0.30	0.30	0.29	0.29	0.33	0.35	0.29	0.28	0.26	0.26	0.30	0.28	0.30

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.89	4.05	5.90	7.39	8.33	8.56	8.36	7.42	6.21	4.72	3.11	2.31	5.78
	D clear	0.76	0.90	0.99	1.28	1.35	1.46	1.59	1.75	1.25	1.05	0.79	0.58	1.15
10 Deg South	Gc	3.73	4.88	6.58	7.76	8.49	8.65	8.48	7.68	6.77	5.49	3.94	3.14	6.31
	Dc	0.82	1.00	1.07	1.32	1.38	1.48	1.62	1.76	1.32	1.12	0.87	0.64	1.20
30 Deg South	Gc	5.19	6.16	7.43	7.99	8.19	8.23	8.12	7.72	7.40	6.63	5.29	4.57	6.91
	Dc	1.00	1.18	1.21	1.44	1.47	1.55	1.68	1.85	1.46	1.29	1.04	0.78	1.33
Latitude South	Gc	5.87	6.66	7.57	7.70	7.58	7.54	7.47	7.34	7.40	7.02	5.91	5.27	6.94
tilt 43 39' N	Dc	1.09	1.27	1.30	1.51	1.53	1.60	1.72	1.89	1.54	1.39	1.13	0.86	1.40
60 Deg South	Gc	6.29	6.82	7.24	6.87	6.39	6.27	6.26	6.44	6.92	7.03	6.24	5.74	6.54
	Dc	1.16	1.34	1.38	1.58	1.58	1.65	1.74	1.89	1.60	1.46	1.20	0.92	1.46
Vertical South	Gc	5.86	5.85	5.37	4.34	3.52	3.37	3.41	3.92	4.88	5.77	5.68	5.50	4.78
	Dc	1.16	1.34	1.44	1.62	1.66	1.71	1.75	1.80	1.59	1.45	1.19	0.93	1.47
Vertical SE/SW	Gc	4.50	4.73	5.14	4.91	4.54	4.49	4.44	4.49	4.82	4.94	4.43	4.09	4.63
	Dc	1.06	1.25	1.41	1.65	1.71	1.78	1.83	1.85	1.57	1.39	1.10	0.83	1.45
Vertical E/W	Gc	2.26	2.83	3.97	4.62	4.86	5.06	4.89	4.35	3.89	3.31	2.37	1.78	3.69
	Dc	0.84	1.05	1.30	1.62	1.73	1.84	1.89	1.83	1.46	1.21	0.88	0.65	1.36
Vertical NE/NW	Gc	0.80	1.16	2.09	2.99	3.54	3.86	3.69	2.96	2.19	1.50	0.88	0.57	2.19
	Dc	0.68	0.87	1.14	1.46	1.62	1.74	1.77	1.63	1.27	1.01	0.72	0.54	1.21
Vertical North	Gc	0.64	0.81	1.06	1.61	2.08	2.46	2.33	1.73	1.16	0.92	0.68	0.52	1.34
	Dc	0.64	0.81	1.06	1.35	1.51	1.63	1.64	1.47	1.16	0.92	0.68	0.52	1.12

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.29	1.21	1.12	1.05	1.02	1.01	1.01	1.03	1.09	1.16	1.27	1.36	1.09
30 Deg South	Gc/Gmax	1.80	1.52	1.26	1.08	0.98	0.96	0.97	1.04	1.19	1.40	1.70	1.98	1.20
Latitude South	Gc/Gmax	2.03	1.64	1.28	1.04	0.91	0.88	0.89	0.99	1.19	1.49	1.90	2.28	1.20
60 Deg South	Gc/Gmax	2.18	1.68	1.23	0.93	0.77	0.73	0.75	0.87	1.11	1.49	2.01	2.48	1.13
Vertical South	Gc/Gmax	2.03	1.44	0.91	0.59	0.42	0.39	0.41	0.53	0.79	1.22	1.83	2.38	0.83
Vertical SE/SW	Gc/Gmax	1.56	1.17	0.87	0.66	0.55	0.52	0.53	0.61	0.78	1.05	1.42	1.77	0.80
Vertical E/W	Gc/Gmax	0.78	0.70	0.67	0.63	0.58	0.59	0.58	0.59	0.63	0.70	0.76	0.77	0.64
Vertical NE/NW	Gc/Gmax	0.28	0.29	0.35	0.41	0.43	0.45	0.44	0.40	0.35	0.32	0.28	0.25	0.38
Vertical North	Gc/Gmax	0.22	0.20	0.18	0.22	0.25	0.29	0.28	0.23	0.19	0.19	0.22	0.22	0.23

Sunshine data

Mean sunshine	Hours	4.7	5.3	6.6	8.1	8.5	9.8	11.4	9.7	8.0	7.1	5.2	5.1	7.5
Max. sunshine	Hours	9.0	10.1	11.2	12.6	13.8	14.2	14.2	13.1	11.8	10.5	9.1	8.5	11.5

GERMANY Site No. 157

HEILIGENDAMM

Computer file GERMA157.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 54 9' N

Longitude 11 51' E

Height 21 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.46	1.05	2.28	3.81	5.07	5.86	5.19	4.60	2.95	1.48	0.67	0.39	2.83
	D mean	0.34	0.67	1.29	2.10	2.53	2.63	2.76	2.19	1.57	0.88	0.45	0.29	1.48
10 Deg South	Gm	0.56	1.24	2.56	4.06	5.26	6.00	5.34	4.90	3.26	1.72	0.82	0.49	3.03
	Dm	0.35	0.68	1.31	2.13	2.57	2.66	2.79	2.25	1.61	0.90	0.46	0.30	1.51
30 Deg South	Gm	0.71	1.53	2.93	4.28	5.31	5.92	5.32	5.16	3.64	2.07	1.07	0.65	3.22
	Dm	0.35	0.67	1.31	2.11	2.55	2.63	2.75	2.27	1.62	0.90	0.46	0.30	1.50
Latitude South	Gm	0.81	1.69	3.02	4.06	4.80	5.21	4.73	4.87	3.66	2.24	1.23	0.76	3.10
tilt 54 9' N	Dm	0.32	0.62	1.21	1.92	2.34	2.43	2.51	2.15	1.52	0.83	0.42	0.27	1.38
60 Deg South	Gm	0.82	1.69	2.98	3.94	4.59	4.94	4.51	4.71	3.59	2.24	1.24	0.77	3.01
	Dm	0.30	0.60	1.18	1.86	2.27	2.36	2.43	2.10	1.47	0.81	0.41	0.27	1.34
Vertical South	Gm	0.77	1.52	2.47	2.90	3.14	3.23	3.03	3.39	2.85	1.96	1.16	0.74	2.27
	Dm	0.24	0.48	0.95	1.48	1.83	1.94	1.92	1.73	1.21	0.66	0.33	0.21	1.08
Vertical SE/SW	Gm	0.61	1.25	2.20	2.87	3.32	3.56	3.22	3.40	2.61	1.64	0.92	0.58	2.19
	Dm	0.24	0.47	0.94	1.46	1.81	1.93	1.91	1.70	1.18	0.65	0.32	0.21	1.07
Vertical E/W	Gm	0.34	0.77	1.62	2.47	3.17	3.57	3.12	2.95	2.01	1.07	0.50	0.30	1.83
	Dm	0.23	0.45	0.88	1.41	1.78	1.91	1.88	1.62	1.10	0.60	0.30	0.20	1.03
Vertical NE/NW	Gm	0.21	0.45	1.01	1.77	2.45	2.86	2.50	2.07	1.28	0.62	0.29	0.18	1.31
	Dm	0.21	0.42	0.82	1.33	1.69	1.84	1.79	1.48	1.02	0.56	0.28	0.18	0.97
Vertical North	Gm	0.20	0.40	0.79	1.34	1.90	2.22	1.99	1.49	0.98	0.53	0.27	0.17	1.03
	Dm	0.20	0.40	0.79	1.29	1.64	1.79	1.74	1.40	0.98	0.53	0.27	0.17	0.94

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.22	1.18	1.12	1.07	1.04	1.02	1.03	1.07	1.11	1.16	1.22	1.26	1.07
30 Deg South	Gm/Gmean	1.54	1.46	1.28	1.12	1.05	1.01	1.02	1.12	1.23	1.40	1.60	1.67	1.14
Latitude South	Gm/Gmean	1.76	1.61	1.33	1.07	0.95	0.89	0.91	1.06	1.24	1.51	1.84	1.95	1.10
60 Deg South	Gm/Gmean	1.78	1.61	1.31	1.03	0.90	0.84	0.87	1.02	1.22	1.51	1.85	1.97	1.06
Vertical South	Gm/Gmean	1.67	1.45	1.08	0.76	0.62	0.55	0.58	0.74	0.97	1.32	1.73	1.90	0.80
Vertical SE/SW	Gm/Gmean	1.33	1.19	0.96	0.75	0.65	0.61	0.62	0.74	0.88	1.11	1.37	1.49	0.77
Vertical E/W	Gm/Gmean	0.74	0.73	0.71	0.65	0.63	0.61	0.60	0.64	0.68	0.72	0.75	0.77	0.65
Vertical NE/NW	Gm/Gmean	0.46	0.43	0.44	0.47	0.48	0.49	0.48	0.45	0.43	0.42	0.43	0.46	0.46
Vertical North	Gm/Gmean	0.44	0.38	0.35	0.35	0.38	0.38	0.38	0.32	0.33	0.36	0.40	0.44	0.36

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.10	2.37	4.51	6.75	8.03	8.43	7.88	6.64	4.96	3.02	1.62	0.91	4.70
	D clear	0.38	0.49	0.75	1.17	1.36	1.50	1.54	1.55	1.06	0.67	0.44	0.31	0.94
10 Deg South	Gc	1.71	3.21	5.29	7.28	8.32	8.65	8.14	7.13	5.65	3.83	2.38	1.54	5.27
	Dc	0.54	0.63	0.84	1.19	1.40	1.50	1.58	1.67	1.17	0.80	0.55	0.39	1.02
30 Deg South	Gc	2.62	4.47	6.41	7.88	8.44	8.64	8.18	7.52	6.57	5.05	3.64	2.63	6.01
	Dc	0.66	0.76	0.98	1.33	1.52	1.61	1.68	1.80	1.33	0.95	0.68	0.49	1.15
Latitude South	Gc	3.34	5.34	6.84	7.62	7.60	7.64	7.29	7.09	6.77	5.79	4.62	3.55	6.12
tilt 54 9' N	Dc	0.75	0.87	1.12	1.48	1.65	1.73	1.78	1.88	1.45	1.07	0.78	0.57	1.26
60 Deg South	Gc	3.43	5.43	6.79	7.38	7.23	7.24	6.92	6.83	6.66	5.83	4.75	3.70	6.02
	Dc	0.76	0.88	1.14	1.50	1.67	1.75	1.79	1.89	1.47	1.09	0.80	0.58	1.28
Vertical South	Gc	3.41	5.05	5.55	5.26	4.65	4.54	4.40	4.72	5.21	5.21	4.68	3.83	4.70
	Dc	0.73	0.89	1.20	1.58	1.75	1.82	1.81	1.81	1.47	1.09	0.80	0.58	1.30
Vertical SE/SW	Gc	2.55	4.00	5.01	5.49	5.34	5.28	5.05	4.99	4.98	4.39	3.58	2.81	4.46
	Dc	0.64	0.83	1.16	1.57	1.77	1.85	1.84	1.83	1.44	1.04	0.72	0.50	1.27
Vertical E/W	Gc	1.12	2.19	3.54	4.71	5.32	5.37	5.05	4.47	3.83	2.74	1.75	1.11	3.44
	Dc	0.47	0.69	1.05	1.50	1.76	1.85	1.84	1.77	1.32	0.88	0.56	0.37	1.17
Vertical NE/NW	Gc	0.41	0.80	1.69	2.86	3.76	3.88	3.62	2.92	2.08	1.17	0.58	0.31	2.01
	Dc	0.39	0.58	0.92	1.34	1.63	1.72	1.69	1.56	1.12	0.73	0.46	0.30	1.04
Vertical North	Gc	0.37	0.56	0.86	1.52	2.40	2.52	2.35	1.77	1.11	0.67	0.43	0.29	1.24
	Dc	0.37	0.56	0.86	1.24	1.51	1.60	1.56	1.41	1.02	0.67	0.43	0.29	0.96

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.55	1.35	1.17	1.08	1.04	1.03	1.03	1.07	1.14	1.27	1.47	1.69	1.12
30 Deg South	Gc/Gmax	2.38	1.89	1.42	1.17	1.05	1.02	1.04	1.13	1.33	1.67	2.25	2.89	1.28
Latitude South	Gc/Gmax	3.04	2.25	1.52	1.13	0.95	0.91	0.93	1.07	1.37	1.92	2.85	3.90	1.30
60 Deg South	Gc/Gmax	3.12	2.29	1.51	1.09	0.90	0.86	0.88	1.03	1.34	1.93	2.93	4.07	1.28
Vertical South	Gc/Gmax	3.10	2.13	1.23	0.78	0.58	0.54	0.56	0.71	1.05	1.73	2.89	4.21	1.00
Vertical SE/SW	Gc/Gmax	2.32	1.69	1.11	0.81	0.67	0.63	0.64	0.75	1.00	1.45	2.21	3.09	0.95
Vertical E/W	Gc/Gmax	1.02	0.92	0.79	0.70	0.66	0.64	0.64	0.67	0.77	0.91	1.08	1.22	0.73
Vertical NE/NW	Gc/Gmax	0.37	0.34	0.38	0.42	0.47	0.46	0.46	0.44	0.42	0.39	0.36	0.34	0.43
Vertical North	Gc/Gmax	0.34	0.24	0.19	0.22	0.30	0.30	0.30	0.27	0.22	0.22	0.26	0.32	0.26

Sunshine data

Mean sunshine	Hours	1.2	2.2	4.0	5.3	7.7	9.1	7.8	8.2	5.3	3.1	1.8	1.1	4.7
Max. sunshine	Hours	6.8	8.6	10.3	12.6	14.6	15.1	14.6	13.9	11.4	9.2	7.5	6.1	10.9

GERMANY Site No. 89

NORDENEY

Computer file GERMA089.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 53 43' N

Longitude 7 9' E

Height 13 metres

Data period (1.1967-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.57	1.30	2.60	4.27	5.13	6.02	5.45	4.75	3.06	1.66	0.74	0.44	3.01
	D mean	0.40	0.82	1.41	2.16	2.68	2.81	2.81	2.40	1.68	1.00	0.50	0.32	1.59
10 Deg South	Gm	0.70	1.53	2.92	4.56	5.31	6.14	5.59	5.02	3.36	1.91	0.90	0.55	3.22
	Dm	0.40	0.83	1.44	2.19	2.72	2.84	2.84	2.45	1.72	1.03	0.51	0.33	1.61
30 Deg South	Gm	0.90	1.89	3.34	4.83	5.32	6.02	5.53	5.23	3.72	2.28	1.14	0.74	3.42
	Dm	0.39	0.83	1.42	2.16	2.66	2.79	2.78	2.45	1.72	1.02	0.50	0.32	1.59
Latitude South	Gm	1.03	2.09	3.44	4.60	4.79	5.28	4.90	4.91	3.71	2.45	1.30	0.88	3.29
tilt 53 43' N	Dm	0.34	0.76	1.30	1.99	2.43	2.55	2.53	2.28	1.59	0.94	0.46	0.30	1.46
60 Deg South	Gm	1.05	2.10	3.40	4.45	4.56	4.99	4.65	4.72	3.63	2.44	1.31	0.89	3.19
	Dm	0.33	0.73	1.26	1.92	2.34	2.47	2.43	2.21	1.54	0.91	0.44	0.29	1.41
Vertical South	Gm	0.98	1.88	2.80	3.26	3.10	3.24	3.09	3.37	2.87	2.13	1.22	0.86	2.40
	Dm	0.25	0.59	1.02	1.55	1.86	2.00	1.93	1.79	1.25	0.73	0.35	0.23	1.13
Vertical SE/SW	Gm	0.77	1.54	2.51	3.29	3.29	3.59	3.34	3.40	2.63	1.78	0.97	0.67	2.32
	Dm	0.25	0.58	1.01	1.53	1.85	1.98	1.92	1.76	1.22	0.73	0.35	0.22	1.12
Vertical E/W	Gm	0.42	0.96	1.85	2.86	3.17	3.66	3.31	3.00	2.04	1.17	0.54	0.35	1.95
	Dm	0.26	0.55	0.96	1.48	1.82	1.97	1.89	1.69	1.15	0.68	0.33	0.22	1.09
Vertical NE/NW	Gm	0.25	0.55	1.14	2.01	2.50	2.97	2.67	2.16	1.33	0.70	0.31	0.20	1.40
	Dm	0.24	0.51	0.91	1.41	1.75	1.91	1.83	1.57	1.07	0.63	0.31	0.20	1.03
Vertical North	Gm	0.24	0.48	0.88	1.45	1.96	2.35	2.13	1.60	1.03	0.60	0.29	0.19	1.10
	Dm	0.24	0.48	0.88	1.38	1.71	1.88	1.80	1.51	1.03	0.60	0.29	0.19	1.00

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.23	1.18	1.12	1.07	1.03	1.02	1.03	1.06	1.10	1.15	1.22	1.25	1.07
30 Deg South	Gm/Gmean	1.58	1.45	1.28	1.13	1.04	1.00	1.01	1.10	1.22	1.37	1.54	1.68	1.14
Latitude South	Gm/Gmean	1.81	1.61	1.32	1.08	0.93	0.88	0.90	1.03	1.21	1.48	1.76	2.00	1.09
60 Deg South	Gm/Gmean	1.84	1.62	1.31	1.04	0.89	0.83	0.85	0.99	1.19	1.47	1.77	2.02	1.06
Vertical South	Gm/Gmean	1.72	1.45	1.08	0.76	0.60	0.54	0.57	0.71	0.94	1.28	1.65	1.96	0.80
Vertical SE/SW	Gm/Gmean	1.35	1.18	0.96	0.77	0.64	0.60	0.61	0.72	0.86	1.07	1.31	1.52	0.77
Vertical E/W	Gm/Gmean	0.74	0.74	0.71	0.67	0.62	0.61	0.61	0.63	0.67	0.70	0.73	0.80	0.65
Vertical NE/NW	Gm/Gmean	0.44	0.42	0.44	0.47	0.49	0.49	0.49	0.46	0.44	0.42	0.42	0.46	0.47
Vertical North	Gm/Gmean	0.42	0.37	0.34	0.34	0.38	0.39	0.39	0.34	0.34	0.36	0.39	0.43	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.38	2.85	4.91	6.87	8.29	8.78	8.33	6.98	5.24	3.47	1.68	0.96	4.99
	D clear	0.29	0.69	0.70	1.00	1.31	1.33	1.24	1.58	1.12	0.79	0.47	0.31	0.90
10 Deg South	Gc	2.10	3.68	5.72	7.43	8.55	8.98	8.57	7.39	5.90	4.29	2.41	1.58	5.56
	Dc	0.32	0.73	0.74	1.05	1.32	1.34	1.28	1.60	1.17	0.85	0.53	0.36	0.94
30 Deg South	Gc	3.36	5.10	6.92	8.03	8.65	8.94	8.56	7.78	6.84	5.64	3.67	2.70	6.35
	Dc	0.40	0.87	0.88	1.19	1.44	1.46	1.39	1.73	1.33	1.01	0.66	0.46	1.07
Latitude South	Gc	4.37	6.06	7.38	7.75	7.79	7.90	7.61	7.33	7.04	6.45	4.64	3.63	6.50
tilt 53 43' N	Dc	0.47	1.00	1.03	1.34	1.58	1.60	1.54	1.83	1.46	1.15	0.76	0.53	1.19
60 Deg South	Gc	4.52	6.17	7.32	7.49	7.38	7.45	7.18	7.04	6.92	6.50	4.77	3.79	6.38
	Dc	0.49	1.02	1.06	1.38	1.62	1.64	1.57	1.84	1.48	1.17	0.78	0.55	1.22
Vertical South	Gc	4.54	5.73	5.96	5.29	4.71	4.61	4.49	4.84	5.39	5.79	4.70	3.92	4.99
	Dc	0.51	1.03	1.16	1.49	1.73	1.76	1.69	1.80	1.49	1.18	0.78	0.55	1.26
Vertical SE/SW	Gc	3.35	4.53	5.40	5.59	5.46	5.47	5.30	5.15	5.16	4.86	3.60	2.87	4.73
	Dc	0.47	0.96	1.14	1.49	1.75	1.80	1.72	1.82	1.47	1.13	0.71	0.48	1.25
Vertical E/W	Gc	1.43	2.47	3.84	4.85	5.49	5.66	5.47	4.65	3.98	3.01	1.77	1.13	3.65
	Dc	0.40	0.79	1.05	1.43	1.74	1.80	1.72	1.77	1.35	0.96	0.56	0.36	1.16
Vertical NE/NW	Gc	0.40	0.91	1.82	2.93	3.88	4.11	3.95	3.04	2.16	1.27	0.58	0.31	2.12
	Dc	0.37	0.66	0.94	1.29	1.62	1.68	1.61	1.57	1.15	0.79	0.46	0.30	1.04
Vertical North	Gc	0.36	0.63	0.90	1.52	2.46	2.67	2.55	1.82	1.14	0.73	0.43	0.29	1.30
	Dc	0.36	0.63	0.90	1.21	1.51	1.58	1.51	1.42	1.05	0.73	0.43	0.29	0.97

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.52	1.29	1.16	1.08	1.03	1.02	1.03	1.06	1.13	1.24	1.43	1.65	1.11
30 Deg South	Gc/Gmax	2.43	1.79	1.41	1.17	1.04	1.02	1.03	1.12	1.30	1.63	2.18	2.81	1.27
Latitude South	Gc/Gmax	3.17	2.13	1.50	1.13	0.94	0.90	0.91	1.05	1.34	1.86	2.76	3.78	1.30
60 Deg South	Gc/Gmax	3.28	2.16	1.49	1.09	0.89	0.85	0.86	1.01	1.32	1.87	2.84	3.95	1.28
Vertical South	Gc/Gmax	3.29	2.01	1.21	0.77	0.57	0.52	0.54	0.69	1.03	1.67	2.80	4.08	1.00
Vertical SE/SW	Gc/Gmax	2.43	1.59	1.10	0.81	0.66	0.62	0.64	0.74	0.99	1.40	2.14	2.99	0.95
Vertical E/W	Gc/Gmax	1.04	0.87	0.78	0.71	0.66	0.64	0.66	0.67	0.76	0.87	1.05	1.18	0.73
Vertical NE/NW	Gc/Gmax	0.29	0.32	0.37	0.43	0.47	0.47	0.47	0.44	0.41	0.37	0.34	0.32	0.43
Vertical North	Gc/Gmax	0.26	0.22	0.18	0.22	0.30	0.30	0.31	0.26	0.22	0.21	0.26	0.30	0.26

Sunshine data

Mean sunshine	Hours	1.2	2.5	4.1	5.9	7.0	8.3	7.3	7.4	5.0	3.1	1.7	1.2	4.6
Max. sunshine	Hours	5.7	8.6	10.3	12.9	14.5	15.4	14.8	13.5	11.3	9.6	6.7	5.4	10.7

GERMANY Site No. 90

HAMBURG

Computer file GERMA090.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 53 38' N

Longitude 10 0' E

Height 14 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.52	1.13	2.23	3.55	4.69	5.44	4.82	4.34	2.79	1.49	0.67	0.40	2.68
	D mean	0.39	0.74	1.34	2.03	2.60	2.83	2.84	2.36	1.62	0.92	0.46	0.30	1.54
10 Deg South	Gm	0.62	1.32	2.48	3.78	4.86	5.56	4.96	4.60	3.06	1.71	0.81	0.50	2.86
	Dm	0.40	0.76	1.37	2.07	2.64	2.87	2.88	2.42	1.66	0.94	0.47	0.30	1.57
30 Deg South	Gm	0.79	1.60	2.81	4.00	4.88	5.48	4.93	4.80	3.38	2.04	1.02	0.67	3.04
	Dm	0.40	0.75	1.37	2.06	2.60	2.82	2.83	2.43	1.67	0.94	0.47	0.30	1.56
Latitude South	Gm	0.89	1.75	2.88	3.81	4.41	4.84	4.40	4.51	3.37	2.19	1.16	0.79	2.92
tilt 53 38' N	Dm	0.37	0.70	1.28	1.90	2.37	2.58	2.57	2.27	1.56	0.88	0.43	0.28	1.44
60 Deg South	Gm	0.90	1.76	2.83	3.68	4.19	4.58	4.17	4.34	3.29	2.19	1.17	0.81	2.83
	Dm	0.36	0.67	1.24	1.84	2.29	2.48	2.47	2.20	1.51	0.85	0.41	0.27	1.39
Vertical South	Gm	0.84	1.57	2.32	2.72	2.87	3.01	2.81	3.12	2.60	1.90	1.08	0.77	2.14
	Dm	0.29	0.54	1.00	1.46	1.80	1.97	1.91	1.77	1.22	0.69	0.33	0.22	1.10
Vertical SE/SW	Gm	0.67	1.29	2.05	2.65	3.00	3.25	2.94	3.09	2.37	1.59	0.86	0.61	2.03
	Dm	0.28	0.53	0.98	1.44	1.79	1.96	1.90	1.73	1.19	0.68	0.32	0.21	1.09
Vertical E/W	Gm	0.38	0.81	1.50	2.26	2.84	3.21	2.82	2.69	1.83	1.04	0.48	0.31	1.69
	Dm	0.26	0.49	0.91	1.37	1.75	1.94	1.86	1.64	1.10	0.62	0.31	0.20	1.04
Vertical NE/NW	Gm	0.24	0.49	0.97	1.62	2.23	2.60	2.27	1.94	1.21	0.62	0.29	0.18	1.23
	Dm	0.23	0.45	0.83	1.27	1.66	1.85	1.76	1.49	1.01	0.57	0.28	0.18	0.97
Vertical North	Gm	0.22	0.43	0.79	1.25	1.78	2.09	1.86	1.47	0.96	0.54	0.27	0.17	0.99
	Dm	0.22	0.43	0.79	1.22	1.60	1.80	1.69	1.41	0.96	0.54	0.27	0.17	0.93

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.19	1.17	1.11	1.07	1.04	1.02	1.03	1.06	1.10	1.15	1.21	1.25	1.07
30 Deg South	Gm/Gmean	1.52	1.42	1.26	1.13	1.04	1.01	1.02	1.11	1.21	1.37	1.52	1.67	1.13
Latitude South	Gm/Gmean	1.71	1.55	1.29	1.07	0.94	0.89	0.91	1.04	1.21	1.47	1.73	1.98	1.09
60 Deg South	Gm/Gmean	1.73	1.56	1.27	1.04	0.89	0.84	0.87	1.00	1.18	1.47	1.75	2.03	1.06
Vertical South	Gm/Gmean	1.62	1.39	1.04	0.77	0.61	0.55	0.58	0.72	0.93	1.27	1.61	1.92	0.80
Vertical SE/SW	Gm/Gmean	1.29	1.14	0.92	0.75	0.64	0.60	0.61	0.71	0.85	1.07	1.28	1.52	0.76
Vertical E/W	Gm/Gmean	0.73	0.72	0.67	0.64	0.61	0.59	0.58	0.62	0.66	0.70	0.72	0.77	0.63
Vertical NE/NW	Gm/Gmean	0.46	0.43	0.44	0.46	0.47	0.48	0.47	0.45	0.43	0.42	0.43	0.45	0.46
Vertical North	Gm/Gmean	0.42	0.38	0.35	0.35	0.38	0.38	0.39	0.34	0.34	0.36	0.40	0.43	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.26	2.65	4.44	6.23	7.78	8.13	7.50	6.61	4.86	3.04	1.60	0.96	4.60
	D clear	0.56	0.73	0.94	1.39	1.58	1.83	1.84	1.89	1.27	0.83	0.49	0.37	1.15
10 Deg South	Gc	1.77	3.42	5.19	6.76	8.06	8.37	7.79	7.00	5.51	3.77	2.30	1.54	5.13
	Dc	0.65	0.81	1.05	1.47	1.62	1.86	1.91	1.93	1.39	0.93	0.59	0.43	1.22
30 Deg South	Gc	2.64	4.70	6.23	7.30	8.18	8.38	7.83	7.38	6.37	4.90	3.46	2.57	5.83
	Dc	0.80	0.97	1.21	1.61	1.73	1.95	2.00	2.05	1.56	1.10	0.73	0.55	1.36
Latitude South	Gc	3.31	5.56	6.62	7.07	7.39	7.45	7.02	6.97	6.55	5.57	4.35	3.42	5.94
tilt 53 38' N	Dc	0.90	1.09	1.34	1.71	1.82	2.01	2.04	2.11	1.67	1.23	0.84	0.64	1.45
60 Deg South	Gc	3.40	5.65	6.55	6.83	7.00	7.03	6.63	6.69	6.43	5.61	4.47	3.56	5.82
	Dc	0.91	1.10	1.36	1.73	1.84	2.02	2.04	2.10	1.69	1.24	0.86	0.65	1.46
Vertical South	Gc	3.35	5.22	5.34	4.88	4.51	4.42	4.23	4.63	5.03	4.99	4.38	3.67	4.55
	Dc	0.87	1.09	1.36	1.70	1.83	1.95	1.93	1.95	1.61	1.22	0.85	0.64	1.42
Vertical SE/SW	Gc	2.52	4.13	4.80	4.99	5.10	5.05	4.77	4.82	4.70	4.19	3.37	2.70	4.26
	Dc	0.75	1.01	1.31	1.69	1.86	2.00	1.97	1.97	1.58	1.15	0.76	0.55	1.39
Vertical E/W	Gc	1.11	2.25	3.40	4.23	5.00	5.04	4.70	4.27	3.54	2.62	1.66	1.08	3.25
	Dc	0.54	0.82	1.16	1.59	1.85	2.00	1.96	1.89	1.42	0.96	0.59	0.40	1.27
Vertical NE/NW	Gc	0.44	0.86	1.66	2.59	3.52	3.63	3.36	2.78	1.92	1.15	0.58	0.33	1.91
	Dc	0.42	0.66	0.98	1.39	1.69	1.83	1.78	1.63	1.18	0.78	0.47	0.32	1.10
Vertical North	Gc	0.40	0.63	0.91	1.45	2.24	2.38	2.21	1.72	1.10	0.71	0.44	0.31	1.21
	Dc	0.40	0.63	0.91	1.26	1.55	1.68	1.62	1.45	1.06	0.71	0.44	0.31	1.00

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.40	1.29	1.17	1.09	1.04	1.03	1.04	1.06	1.13	1.24	1.44	1.60	1.12
30 Deg South	Gc/Gmax	2.10	1.77	1.40	1.17	1.05	1.03	1.04	1.12	1.31	1.61	2.16	2.68	1.27
Latitude South	Gc/Gmax	2.63	2.10	1.49	1.13	0.95	0.92	0.94	1.05	1.35	1.83	2.72	3.56	1.29
60 Deg South	Gc/Gmax	2.70	2.13	1.48	1.10	0.90	0.87	0.88	1.01	1.32	1.85	2.79	3.71	1.26
Vertical South	Gc/Gmax	2.66	1.97	1.20	0.78	0.58	0.54	0.56	0.70	1.03	1.64	2.74	3.82	0.99
Vertical SE/SW	Gc/Gmax	2.00	1.56	1.08	0.80	0.66	0.62	0.64	0.73	0.97	1.38	2.11	2.81	0.93
Vertical E/W	Gc/Gmax	0.88	0.85	0.77	0.68	0.64	0.62	0.63	0.65	0.73	0.86	1.04	1.13	0.71
Vertical NE/NW	Gc/Gmax	0.35	0.32	0.37	0.42	0.45	0.45	0.45	0.42	0.40	0.38	0.36	0.34	0.41
Vertical North	Gc/Gmax	0.32	0.24	0.20	0.23	0.29	0.29	0.29	0.26	0.23	0.23	0.28	0.32	0.26

Sunshine data

Mean sunshine	Hours	1.3	2.2	3.8	5.4	6.8	8.2	7.1	7.3	4.8	3.0	1.6	1.2	4.4
Max. sunshine	Hours	6.4	8.6	10.5	12.5	14.4	15.5	14.7	13.4	11.4	8.7	7.1	6.0	10.8

GERMANY Site No. 102

BERLIN

Computer file GERMA102.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 52 28' N

Longitude 13 18' E

Height 51 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.61	1.14	2.44	3.49	4.77	5.44	5.26	4.58	3.05	1.59	0.76	0.45	2.81
	D mean	0.44	0.74	1.41	2.07	2.64	2.86	2.97	2.53	1.67	1.05	0.54	0.35	1.61
10 Deg South	Gm	0.73	1.33	2.72	3.70	4.93	5.55	5.40	4.84	3.35	1.80	0.90	0.54	2.99
	Dm	0.45	0.75	1.45	2.11	2.68	2.89	3.01	2.60	1.73	1.09	0.55	0.36	1.64
30 Deg South	Gm	0.92	1.60	3.09	3.88	4.94	5.43	5.35	5.03	3.71	2.11	1.11	0.69	3.16
	Dm	0.45	0.75	1.47	2.09	2.63	2.83	2.95	2.60	1.74	1.10	0.55	0.35	1.63
Latitude South	Gm	1.04	1.74	3.18	3.69	4.47	4.80	4.80	4.73	3.72	2.22	1.23	0.78	3.04
tilt 52 28' N	Dm	0.42	0.69	1.38	1.93	2.42	2.59	2.70	2.44	1.65	1.04	0.51	0.33	1.51
60 Deg South	Gm	1.05	1.74	3.13	3.53	4.22	4.48	4.50	4.52	3.63	2.21	1.24	0.79	2.93
	Dm	0.40	0.66	1.34	1.85	2.31	2.47	2.58	2.35	1.59	1.01	0.49	0.31	1.45
Vertical South	Gm	0.98	1.54	2.56	2.58	2.86	2.92	3.00	3.22	2.85	1.89	1.13	0.74	2.19
	Dm	0.32	0.53	1.09	1.45	1.82	1.95	2.01	1.87	1.30	0.82	0.39	0.25	1.15
Vertical SE/SW	Gm	0.78	1.27	2.26	2.52	3.00	3.18	3.17	3.19	2.60	1.59	0.91	0.59	2.09
	Dm	0.31	0.52	1.07	1.43	1.80	1.94	2.00	1.83	1.27	0.79	0.38	0.24	1.14
Vertical E/W	Gm	0.44	0.81	1.66	2.16	2.86	3.19	3.06	2.78	2.01	1.06	0.53	0.33	1.75
	Dm	0.29	0.49	0.98	1.37	1.77	1.92	1.97	1.74	1.17	0.70	0.35	0.23	1.09
Vertical NE/NW	Gm	0.27	0.49	1.05	1.58	2.26	2.62	2.47	2.02	1.30	0.67	0.33	0.21	1.28
	Dm	0.27	0.45	0.89	1.27	1.68	1.86	1.86	1.58	1.06	0.62	0.32	0.20	1.01
Vertical North	Gm	0.25	0.43	0.84	1.25	1.80	2.12	1.99	1.55	1.01	0.59	0.31	0.20	1.03
	Dm	0.25	0.43	0.84	1.22	1.63	1.82	1.80	1.49	1.01	0.59	0.31	0.20	0.97

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.20	1.17	1.12	1.06	1.03	1.02	1.03	1.06	1.10	1.13	1.18	1.20	1.06
30 Deg South	Gm/Gmean	1.51	1.40	1.27	1.11	1.04	1.00	1.02	1.10	1.22	1.33	1.46	1.53	1.13
Latitude South	Gm/Gmean	1.71	1.53	1.30	1.06	0.94	0.88	0.91	1.03	1.22	1.40	1.62	1.73	1.08
60 Deg South	Gm/Gmean	1.72	1.53	1.28	1.01	0.88	0.82	0.86	0.99	1.19	1.39	1.63	1.76	1.04
Vertical South	Gm/Gmean	1.61	1.35	1.05	0.74	0.60	0.54	0.57	0.70	0.93	1.19	1.49	1.64	0.78
Vertical SE/SW	Gm/Gmean	1.28	1.11	0.93	0.72	0.63	0.58	0.60	0.70	0.85	1.00	1.20	1.31	0.74
Vertical E/W	Gm/Gmean	0.72	0.71	0.68	0.62	0.60	0.59	0.58	0.61	0.66	0.67	0.70	0.73	0.62
Vertical NE/NW	Gm/Gmean	0.44	0.43	0.43	0.45	0.47	0.48	0.47	0.44	0.43	0.42	0.43	0.47	0.46
Vertical North	Gm/Gmean	0.41	0.38	0.34	0.36	0.38	0.39	0.38	0.34	0.33	0.37	0.41	0.44	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.33	2.50	4.54	6.17	7.87	8.28	8.16	7.04	4.95	3.26	1.83	1.00	4.76
	D clear	0.51	0.61	0.97	1.35	1.49	1.61	1.77	2.03	1.22	1.12	0.62	0.41	1.14
10 Deg South	Gc	1.94	3.32	5.31	6.77	8.23	8.56	8.44	7.42	5.66	3.94	2.53	1.55	5.32
	Dc	0.66	0.78	1.11	1.52	1.60	1.70	1.83	2.04	1.39	1.23	0.72	0.51	1.26
30 Deg South	Gc	2.87	4.51	6.33	7.28	8.30	8.51	8.44	7.78	6.50	5.02	3.69	2.48	5.98
	Dc	0.81	0.93	1.28	1.66	1.71	1.80	1.93	2.17	1.56	1.44	0.89	0.64	1.40
Latitude South	Gc	3.56	5.26	6.68	7.03	7.51	7.58	7.56	7.34	6.64	5.61	4.53	3.20	6.04
tilt 52 28' N	Dc	0.91	1.04	1.40	1.75	1.80	1.87	1.99	2.22	1.67	1.57	1.00	0.73	1.50
60 Deg South	Gc	3.68	5.36	6.60	6.74	7.04	7.06	7.06	6.99	6.50	5.65	4.67	3.35	5.89
	Dc	0.92	1.06	1.42	1.77	1.82	1.89	1.99	2.21	1.68	1.59	1.02	0.74	1.51
Vertical South	Gc	3.60	4.92	5.33	4.76	4.45	4.34	4.40	4.77	5.02	4.95	4.51	3.39	4.53
	Dc	0.88	1.04	1.41	1.71	1.82	1.88	1.94	2.03	1.61	1.51	1.00	0.72	1.47
Vertical SE/SW	Gc	2.71	3.92	4.78	4.89	5.10	5.08	5.06	4.98	4.72	4.08	3.46	2.51	4.27
	Dc	0.77	0.96	1.36	1.71	1.86	1.93	1.99	2.05	1.58	1.40	0.89	0.62	1.43
Vertical E/W	Gc	1.20	2.19	3.39	4.17	5.05	5.17	5.05	4.40	3.59	2.48	1.67	1.01	3.29
	Dc	0.55	0.78	1.21	1.61	1.85	1.93	1.99	1.97	1.43	1.13	0.68	0.44	1.30
Vertical NE/NW	Gc	0.46	0.85	1.67	2.56	3.57	3.74	3.62	2.86	1.95	1.12	0.61	0.36	1.95
	Dc	0.44	0.64	1.02	1.40	1.69	1.78	1.81	1.70	1.19	0.86	0.53	0.35	1.12
Vertical North	Gc	0.42	0.61	0.94	1.45	2.25	2.43	2.33	1.76	1.11	0.77	0.49	0.34	1.25
	Dc	0.42	0.61	0.94	1.26	1.56	1.65	1.66	1.51	1.06	0.77	0.49	0.34	1.02

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.46	1.33	1.17	1.10	1.05	1.03	1.03	1.05	1.14	1.21	1.38	1.55	1.12
30 Deg South	Gc/Gmax	2.16	1.80	1.39	1.18	1.05	1.03	1.03	1.11	1.31	1.54	2.02	2.48	1.26
Latitude South	Gc/Gmax	2.68	2.10	1.47	1.14	0.95	0.92	0.93	1.04	1.34	1.72	2.47	3.20	1.27
60 Deg South	Gc/Gmax	2.77	2.14	1.45	1.09	0.89	0.85	0.87	0.99	1.31	1.73	2.55	3.35	1.24
Vertical South	Gc/Gmax	2.71	1.97	1.17	0.77	0.56	0.52	0.54	0.68	1.01	1.52	2.46	3.39	0.95
Vertical SE/SW	Gc/Gmax	2.04	1.57	1.05	0.79	0.65	0.61	0.62	0.71	0.95	1.25	1.89	2.51	0.90
Vertical E/W	Gc/Gmax	0.90	0.88	0.75	0.68	0.64	0.62	0.62	0.63	0.73	0.76	0.91	1.01	0.69
Vertical NE/NW	Gc/Gmax	0.35	0.34	0.37	0.41	0.45	0.45	0.44	0.41	0.39	0.34	0.33	0.36	0.41
Vertical North	Gc/Gmax	0.32	0.24	0.21	0.23	0.29	0.29	0.29	0.25	0.22	0.24	0.27	0.34	0.26

Sunshine data

Mean sunshine	Hours	1.4	2.2	4.4	5.0	6.7	7.5	7.4	7.4	5.4	3.2	1.7	1.1	4.5
Max. sunshine	Hours	7.4	8.9	11.0	13.3	15.4	16.0	15.8	14.4	12.0	9.8	8.0	6.6	11.6

GERMANY Site No. 158

POTSDAM

Computer file GERMA158.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 52 23' N

Longitude 13 6' E

Height 33 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.56	1.06	2.38	3.46	4.74	5.44	5.21	4.49	2.96	1.53	0.72	0.41	2.76
	D mean	0.41	0.69	1.37	2.00	2.57	2.70	2.82	2.44	1.61	1.00	0.50	0.31	1.54
10 Deg South	Gm	0.67	1.23	2.65	3.68	4.91	5.55	5.36	4.75	3.25	1.74	0.86	0.50	2.94
	Dm	0.42	0.70	1.42	2.04	2.61	2.74	2.86	2.51	1.66	1.04	0.52	0.32	1.58
30 Deg South	Gm	0.83	1.49	3.02	3.87	4.92	5.45	5.33	4.95	3.61	2.04	1.07	0.64	3.11
	Dm	0.42	0.70	1.43	2.03	2.57	2.69	2.83	2.53	1.69	1.06	0.52	0.32	1.57
Latitude South	Gm	0.93	1.62	3.10	3.70	4.47	4.83	4.79	4.67	3.63	2.16	1.19	0.74	2.99
tilt 52 23' N	Dm	0.39	0.65	1.36	1.89	2.37	2.48	2.60	2.38	1.60	1.01	0.49	0.30	1.46
60 Deg South	Gm	0.94	1.62	3.05	3.55	4.21	4.51	4.50	4.46	3.54	2.15	1.21	0.75	2.88
	Dm	0.37	0.62	1.31	1.81	2.27	2.38	2.49	2.29	1.55	0.98	0.47	0.29	1.41
Vertical South	Gm	0.86	1.44	2.50	2.60	2.85	2.93	2.99	3.18	2.79	1.84	1.10	0.71	2.15
	Dm	0.29	0.50	1.07	1.44	1.79	1.90	1.96	1.84	1.27	0.80	0.38	0.23	1.13
Vertical SE/SW	Gm	0.69	1.19	2.21	2.54	3.00	3.21	3.17	3.15	2.54	1.55	0.89	0.56	2.06
	Dm	0.29	0.49	1.05	1.42	1.78	1.90	1.96	1.80	1.24	0.77	0.37	0.22	1.11
Vertical E/W	Gm	0.40	0.75	1.62	2.17	2.86	3.22	3.06	2.74	1.96	1.03	0.51	0.31	1.72
	Dm	0.27	0.46	0.96	1.35	1.75	1.88	1.92	1.70	1.14	0.68	0.34	0.21	1.06
Vertical NE/NW	Gm	0.25	0.45	1.02	1.57	2.25	2.62	2.44	1.98	1.26	0.64	0.31	0.19	1.25
	Dm	0.25	0.42	0.87	1.25	1.65	1.80	1.81	1.54	1.03	0.60	0.30	0.19	0.98
Vertical North	Gm	0.24	0.40	0.82	1.22	1.77	2.08	1.94	1.50	0.97	0.57	0.29	0.18	1.00
	Dm	0.24	0.40	0.82	1.19	1.60	1.76	1.74	1.45	0.97	0.57	0.29	0.18	0.94

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.20	1.16	1.11	1.06	1.04	1.02	1.03	1.06	1.10	1.14	1.19	1.22	1.07
30 Deg South	Gm/Gmean	1.48	1.41	1.27	1.12	1.04	1.00	1.02	1.10	1.22	1.33	1.49	1.56	1.13
Latitude South	Gm/Gmean	1.66	1.53	1.30	1.07	0.94	0.89	0.92	1.04	1.23	1.41	1.65	1.80	1.08
60 Deg South	Gm/Gmean	1.68	1.53	1.28	1.03	0.89	0.83	0.86	0.99	1.20	1.40	1.68	1.83	1.04
Vertical South	Gm/Gmean	1.54	1.36	1.05	0.75	0.60	0.54	0.57	0.71	0.94	1.20	1.53	1.73	0.78
Vertical SE/SW	Gm/Gmean	1.23	1.12	0.93	0.73	0.63	0.59	0.61	0.70	0.86	1.01	1.24	1.37	0.75
Vertical E/W	Gm/Gmean	0.71	0.71	0.68	0.63	0.60	0.59	0.59	0.61	0.66	0.67	0.71	0.76	0.62
Vertical NE/NW	Gm/Gmean	0.45	0.43	0.43	0.45	0.47	0.48	0.47	0.44	0.43	0.42	0.43	0.46	0.45
Vertical North	Gm/Gmean	0.43	0.38	0.34	0.35	0.37	0.38	0.37	0.33	0.33	0.37	0.40	0.44	0.36

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.28	2.41	4.35	6.11	7.66	8.24	8.03	6.82	5.16	3.31	1.75	0.92	4.68
	D clear	0.50	0.60	0.96	1.39	1.55	1.72	1.80	2.06	1.32	1.16	0.61	0.37	1.17
10 Deg South	Gc	1.88	3.21	5.09	6.65	7.95	8.42	8.28	7.15	5.78	3.95	2.43	1.48	5.20
	Dc	0.67	0.78	1.12	1.53	1.61	1.71	1.83	2.04	1.39	1.24	0.73	0.51	1.27
30 Deg South	Gc	2.77	4.35	6.06	7.15	8.01	8.36	8.28	7.50	6.64	5.03	3.53	2.35	5.84
	Dc	0.81	0.93	1.28	1.66	1.71	1.80	1.93	2.17	1.57	1.45	0.89	0.64	1.41
Latitude South	Gc	3.42	5.08	6.39	6.91	7.26	7.45	7.42	7.08	6.79	5.62	4.31	3.02	5.90
tilt 52 23' N	Dc	0.91	1.04	1.39	1.75	1.79	1.87	1.98	2.21	1.68	1.58	1.00	0.73	1.50
60 Deg South	Gc	3.54	5.17	6.31	6.62	6.80	6.94	6.93	6.74	6.64	5.66	4.45	3.15	5.75
	Dc	0.92	1.06	1.41	1.76	1.81	1.89	1.99	2.20	1.69	1.60	1.02	0.74	1.51
Vertical South	Gc	3.45	4.74	5.09	4.68	4.31	4.28	4.32	4.61	5.13	4.96	4.30	3.18	4.42
	Dc	0.88	1.04	1.40	1.71	1.80	1.88	1.92	2.01	1.63	1.51	1.00	0.72	1.46
Vertical SE/SW	Gc	2.60	3.78	4.58	4.81	4.94	5.00	4.97	4.81	4.83	4.09	3.30	2.36	4.17
	Dc	0.77	0.96	1.34	1.70	1.84	1.92	1.98	2.03	1.60	1.40	0.89	0.61	1.42
Vertical E/W	Gc	1.16	2.12	3.25	4.11	4.90	5.09	4.96	4.26	3.67	2.49	1.61	0.96	3.22
	Dc	0.55	0.78	1.19	1.61	1.83	1.93	1.97	1.95	1.45	1.13	0.67	0.43	1.29
Vertical NE/NW	Gc	0.45	0.84	1.62	2.53	3.47	3.70	3.56	2.78	2.00	1.12	0.60	0.35	1.92
	Dc	0.43	0.63	1.00	1.40	1.67	1.78	1.80	1.68	1.21	0.87	0.52	0.34	1.11
Vertical North	Gc	0.42	0.60	0.92	1.44	2.20	2.40	2.31	1.72	1.13	0.78	0.49	0.33	1.23
	Dc	0.42	0.60	0.92	1.26	1.54	1.64	1.65	1.49	1.09	0.78	0.49	0.33	1.02

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.47	1.33	1.17	1.09	1.04	1.02	1.03	1.05	1.12	1.19	1.39	1.61	1.11
30 Deg South	Gc/Gmax	2.16	1.80	1.39	1.17	1.05	1.01	1.03	1.10	1.29	1.52	2.02	2.55	1.25
Latitude South	Gc/Gmax	2.67	2.11	1.47	1.13	0.95	0.90	0.92	1.04	1.32	1.70	2.46	3.28	1.26
60 Deg South	Gc/Gmax	2.77	2.14	1.45	1.08	0.89	0.84	0.86	0.99	1.29	1.71	2.54	3.42	1.23
Vertical South	Gc/Gmax	2.69	1.97	1.17	0.77	0.56	0.52	0.54	0.68	0.99	1.50	2.46	3.46	0.94
Vertical SE/SW	Gc/Gmax	2.03	1.57	1.05	0.79	0.64	0.61	0.62	0.70	0.94	1.24	1.89	2.57	0.89
Vertical E/W	Gc/Gmax	0.91	0.88	0.75	0.67	0.64	0.62	0.62	0.63	0.71	0.75	0.92	1.04	0.69
Vertical NE/NW	Gc/Gmax	0.35	0.35	0.37	0.41	0.45	0.45	0.44	0.41	0.39	0.34	0.34	0.38	0.41
Vertical North	Gc/Gmax	0.33	0.25	0.21	0.24	0.29	0.29	0.29	0.25	0.22	0.24	0.28	0.36	0.26

Sunshine data

Mean sunshine	Hours	1.3	2.2	4.4	5.4	7.0	8.2	8.0	7.6	5.5	3.3	1.8	1.2	4.7
Max. sunshine	Hours	7.2	8.7	10.5	12.6	14.1	14.7	15.2	13.5	11.4	9.5	7.7	6.8	11.0

GERMANY Site No. 103

BRAUNSCHWEIG

Computer file GERMA103.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 52 18' N

Longitude 10 27' E

Height 81 metres

Data period (1.1966-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.61	1.16	2.24	3.43	4.65	5.20	4.78	4.21	2.79	1.50	0.70	0.42	2.65
	D mean	0.44	0.76	1.37	2.03	2.61	2.78	2.80	2.42	1.62	0.99	0.50	0.33	1.56
10 Deg South	Gm	0.74	1.34	2.48	3.64	4.81	5.30	4.91	4.44	3.04	1.70	0.83	0.50	2.82
	Dm	0.45	0.77	1.40	2.07	2.64	2.80	2.84	2.49	1.66	1.03	0.51	0.34	1.59
30 Deg South	Gm	0.94	1.61	2.78	3.81	4.80	5.19	4.86	4.59	3.34	1.99	1.03	0.62	2.97
	Dm	0.45	0.76	1.40	2.05	2.60	2.74	2.78	2.49	1.67	1.05	0.51	0.33	1.57
Latitude South	Gm	1.06	1.74	2.82	3.62	4.35	4.59	4.35	4.31	3.32	2.10	1.14	0.69	2.85
tilt 52 18' N	Dm	0.42	0.70	1.31	1.89	2.38	2.50	2.54	2.32	1.56	1.00	0.47	0.31	1.45
60 Deg South	Gm	1.08	1.74	2.77	3.47	4.10	4.28	4.08	4.11	3.22	2.09	1.15	0.70	2.74
	Dm	0.40	0.67	1.26	1.81	2.27	2.39	2.42	2.23	1.50	0.96	0.46	0.29	1.39
Vertical South	Gm	1.00	1.53	2.25	2.54	2.77	2.79	2.72	2.93	2.52	1.79	1.05	0.65	2.05
	Dm	0.32	0.54	1.01	1.43	1.78	1.88	1.87	1.76	1.21	0.78	0.37	0.23	1.01
Vertical SE/SW	Gm	0.80	1.27	1.99	2.48	2.91	3.04	2.87	2.90	2.31	1.51	0.84	0.52	1.96
	Dm	0.31	0.53	0.99	1.41	1.77	1.87	1.86	1.73	1.18	0.76	0.36	0.23	1.09
Vertical E/W	Gm	0.44	0.81	1.47	2.13	2.78	3.05	2.78	2.54	1.80	1.00	0.49	0.30	1.64
	Dm	0.29	0.50	0.92	1.34	1.74	1.86	1.83	1.64	1.10	0.67	0.33	0.21	1.04
Vertical NE/NW	Gm	0.27	0.49	0.97	1.56	2.21	2.51	2.26	1.88	1.20	0.63	0.30	0.19	1.21
	Dm	0.26	0.46	0.84	1.25	1.65	1.79	1.74	1.49	1.00	0.59	0.30	0.19	0.97
Vertical North	Gm	0.25	0.44	0.80	1.22	1.76	2.04	1.84	1.46	0.96	0.56	0.28	0.18	0.99
	Dm	0.25	0.44	0.80	1.20	1.60	1.75	1.68	1.41	0.96	0.56	0.28	0.18	0.93

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.21	1.15	1.11	1.06	1.03	1.02	1.03	1.05	1.09	1.13	1.19	1.19	1.06
30 Deg South	Gm/Gmean	1.54	1.39	1.24	1.11	1.03	1.00	1.02	1.09	1.20	1.33	1.47	1.48	1.12
Latitude South	Gm/Gmean	1.74	1.50	1.26	1.05	0.94	0.88	0.91	1.02	1.19	1.40	1.63	1.64	1.08
60 Deg South	Gm/Gmean	1.77	1.50	1.24	1.01	0.88	0.82	0.85	0.98	1.15	1.39	1.64	1.67	1.03
Vertical South	Gm/Gmean	1.64	1.32	1.00	0.74	0.60	0.54	0.57	0.70	0.90	1.19	1.50	1.55	0.77
Vertical SE/SW	Gm/Gmean	1.31	1.10	0.89	0.72	0.63	0.58	0.60	0.69	0.83	1.01	1.20	1.24	0.74
Vertical E/W	Gm/Gmean	0.72	0.70	0.66	0.62	0.60	0.59	0.58	0.60	0.64	0.67	0.70	0.71	0.62
Vertical NE/NW	Gm/Gmean	0.44	0.42	0.43	0.46	0.47	0.48	0.47	0.45	0.43	0.42	0.43	0.45	0.46
Vertical North	Gm/Gmean	0.41	0.38	0.36	0.36	0.38	0.39	0.38	0.35	0.34	0.37	0.40	0.43	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.42	2.70	4.37	6.21	7.46	7.96	7.70	6.48	4.98	3.21	1.73	0.96	4.61
	D clear	0.60	0.71	1.00	1.47	1.52	1.69	1.79	2.02	1.32	1.13	0.65	0.45	1.20
10 Deg South	Gc	1.94	3.45	5.07	6.67	7.77	8.14	7.93	6.82	5.57	3.86	2.33	1.41	5.09
	Dc	0.67	0.78	1.11	1.52	1.60	1.70	1.83	2.03	1.39	1.23	0.72	0.51	1.26
30 Deg South	Gc	2.87	4.68	6.03	7.17	7.83	8.09	7.92	7.14	6.39	4.90	3.37	2.23	5.72
	Dc	0.81	0.93	1.27	1.65	1.70	1.79	1.91	2.15	1.56	1.44	0.89	0.64	1.40
Latitude South	Gc	3.55	5.47	6.36	6.92	7.09	7.21	7.11	6.75	6.53	5.47	4.11	2.85	5.78
tilt 52 18' N	Dc	0.91	1.05	1.39	1.75	1.78	1.85	1.96	2.19	1.66	1.57	1.00	0.73	1.49
60 Deg South	Gc	3.68	5.57	6.28	6.63	6.63	6.71	6.63	6.42	6.38	5.50	4.24	2.98	5.63
	Dc	0.93	1.07	1.41	1.76	1.79	1.87	1.96	2.17	1.68	1.59	1.02	0.74	1.50
Vertical South	Gc	3.59	5.11	5.07	4.68	4.21	4.14	4.15	4.39	4.93	4.82	4.09	3.01	4.34
	Dc	0.90	1.06	1.39	1.71	1.77	1.84	1.88	1.97	1.61	1.50	0.99	0.72	1.45
Vertical SE/SW	Gc	2.71	4.07	4.55	4.82	4.82	4.84	4.76	4.59	4.65	3.98	3.15	2.24	4.10
	Dc	0.78	0.98	1.34	1.70	1.81	1.89	1.94	1.99	1.58	1.39	0.89	0.62	1.41
Vertical E/W	Gc	1.21	2.28	3.24	4.12	4.79	4.93	4.76	4.07	3.54	2.43	1.55	0.93	3.16
	Dc	0.56	0.80	1.19	1.61	1.81	1.90	1.94	1.91	1.43	1.12	0.67	0.44	1.28
Vertical NE/NW	Gc	0.47	0.88	1.61	2.55	3.39	3.59	3.43	2.68	1.94	1.10	0.59	0.35	1.89
	Dc	0.45	0.66	1.00	1.40	1.65	1.75	1.76	1.64	1.19	0.86	0.52	0.34	1.10
Vertical North	Gc	0.43	0.63	0.92	1.45	2.16	2.34	2.23	1.67	1.11	0.76	0.48	0.33	1.21
	Dc	0.43	0.63	0.92	1.26	1.52	1.61	1.61	1.45	1.07	0.76	0.48	0.33	1.01

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.37	1.28	1.16	1.07	1.04	1.02	1.03	1.05	1.12	1.20	1.35	1.47	1.10
30 Deg South	Gc/Gmax	2.02	1.73	1.38	1.15	1.05	1.02	1.03	1.10	1.28	1.53	1.95	2.32	1.24
Latitude South	Gc/Gmax	2.50	2.03	1.46	1.11	0.95	0.91	0.92	1.04	1.31	1.70	2.38	2.97	1.25
60 Deg South	Gc/Gmax	2.59	2.06	1.44	1.07	0.89	0.84	0.86	0.99	1.28	1.71	2.45	3.10	1.22
Vertical South	Gc/Gmax	2.53	1.89	1.16	0.75	0.56	0.52	0.54	0.68	0.99	1.50	2.36	3.13	0.94
Vertical SE/SW	Gc/Gmax	1.91	1.51	1.04	0.78	0.65	0.61	0.62	0.71	0.93	1.24	1.82	2.33	0.89
Vertical E/W	Gc/Gmax	0.85	0.84	0.74	0.66	0.64	0.62	0.62	0.63	0.71	0.76	0.90	0.97	0.69
Vertical NE/NW	Gc/Gmax	0.33	0.33	0.37	0.41	0.45	0.45	0.44	0.41	0.39	0.34	0.34	0.37	0.41
Vertical North	Gc/Gmax	0.30	0.23	0.21	0.23	0.29	0.29	0.29	0.26	0.22	0.24	0.28	0.34	0.26

Sunshine data

Mean sunshine	Hours	1.5	2.1	3.7	5.0	6.5	7.3	6.8	6.8	4.7	3.2	1.7	1.0	4.2
Max. sunshine	Hours	6.3	8.0	10.0	11.9	13.9	14.2	14.3	12.8	10.8	9.3	6.7	5.2	10.3

GERMANY Site No. 108

BRAUNLAGE

Computer file GERMA108.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 51 43' N

Longitude 10 37' E

Height 601 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.74	1.34	2.40	3.51	4.42	4.95	4.79	4.16	2.78	1.67	0.76	0.51	2.68
	D mean	0.49	0.82	1.38	2.03	2.53	2.80	2.78	2.36	1.57	0.96	0.51	0.36	1.55
10 Deg South	Gm	0.91	1.56	2.65	3.71	4.55	5.04	4.91	4.37	3.02	1.93	0.90	0.63	2.86
	Dm	0.49	0.83	1.40	2.06	2.56	2.82	2.81	2.40	1.60	0.98	0.52	0.37	1.57
30 Deg South	Gm	1.18	1.90	2.97	3.88	4.53	4.91	4.84	4.48	3.29	2.29	1.12	0.83	3.02
	Dm	0.48	0.82	1.37	2.03	2.50	2.74	2.75	2.38	1.59	0.98	0.50	0.36	1.55
Latitude South	Gm	1.35	2.06	3.01	3.68	4.10	4.35	4.34	4.19	3.26	2.45	1.25	0.95	2.92
tilt 51 43' N	Dm	0.43	0.75	1.26	1.87	2.28	2.50	2.51	2.20	1.47	0.92	0.46	0.33	1.42
60 Deg South	Gm	1.38	2.07	2.94	3.51	3.83	4.03	4.04	3.97	3.16	2.45	1.26	0.97	2.80
	Dm	0.41	0.72	1.20	1.79	2.17	2.37	2.38	2.10	1.41	0.89	0.43	0.32	1.35
Vertical South	Gm	1.29	1.83	2.37	2.55	2.58	2.62	2.68	2.80	2.45	2.11	1.15	0.92	2.11
	Dm	0.32	0.57	0.95	1.41	1.69	1.84	1.84	1.66	1.13	0.72	0.34	0.25	1.06
Vertical SE/SW	Gm	1.01	1.51	2.14	2.52	2.73	2.84	2.85	2.82	2.27	1.77	0.92	0.72	2.01
	Dm	0.32	0.57	0.95	1.39	1.68	1.83	1.83	1.63	1.11	0.71	0.34	0.25	1.05
Vertical E/W	Gm	0.54	0.95	1.61	2.18	2.52	2.86	2.78	2.52	1.79	1.17	0.52	0.38	1.66
	Dm	0.32	0.54	0.91	1.34	1.65	1.82	1.81	1.57	1.05	0.66	0.33	0.24	1.02
Vertical NE/NW	Gm	0.31	0.55	1.04	1.60	2.11	2.39	2.27	1.89	1.21	0.69	0.32	0.22	1.22
	Dm	0.30	0.51	0.86	1.26	1.58	1.76	1.73	1.46	0.98	0.61	0.31	0.22	0.97
Vertical North	Gm	0.29	0.49	0.83	1.24	1.70	1.96	1.86	1.47	0.95	0.58	0.30	0.21	0.99
	Dm	0.29	0.49	0.83	1.22	1.55	1.72	1.68	1.41	0.95	0.58	0.30	0.21	0.94

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.23	1.16	1.10	1.06	1.03	1.02	1.02	1.05	1.09	1.16	1.18	1.24	1.07
30 Deg South	Gm/Gmean	1.60	1.42	1.24	1.11	1.02	0.99	1.01	1.08	1.18	1.37	1.47	1.63	1.13
Latitude South	Gm/Gmean	1.82	1.54	1.25	1.05	0.93	0.88	0.91	1.01	1.17	1.47	1.64	1.86	1.09
60 Deg South	Gm/Gmean	1.87	1.54	1.23	1.00	0.87	0.81	0.84	0.95	1.14	1.47	1.66	1.90	1.04
Vertical South	Gm/Gmean	1.74	1.37	0.99	0.73	0.58	0.53	0.56	0.67	0.88	1.26	1.51	1.80	0.79
Vertical SE/SW	Gm/Gmean	1.37	1.13	0.89	0.72	0.62	0.57	0.60	0.68	0.82	1.06	1.21	1.41	0.75
Vertical E/W	Gm/Gmean	0.73	0.71	0.67	0.62	0.59	0.58	0.58	0.61	0.64	0.70	0.68	0.75	0.62
Vertical NE/NW	Gm/Gmean	0.42	0.41	0.43	0.46	0.48	0.48	0.47	0.45	0.44	0.41	0.42	0.43	0.46
Vertical North	Gm/Gmean	0.39	0.37	0.35	0.35	0.38	0.40	0.39	0.35	0.34	0.35	0.40	0.41	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.67	2.94	4.78	6.49	7.54	7.95	7.93	6.74	5.23	3.38	2.03	1.24	4.84
	D clear	0.35	0.55	0.67	1.25	1.39	1.66	1.65	1.64	1.04	0.74	0.41	0.33	0.98
10 Deg South	Gc	2.46	3.81	5.56	6.99	7.81	8.12	8.14	7.13	5.87	4.16	2.89	1.98	5.42
	Dc	0.43	0.63	0.75	1.32	1.44	1.67	1.67	1.69	1.11	0.83	0.48	0.38	1.04
30 Deg South	Gc	3.80	5.21	6.63	7.49	7.83	8.05	8.10	7.44	6.73	5.37	4.33	3.28	6.19
	Dc	0.53	0.76	0.88	1.45	1.54	1.76	1.76	1.81	1.26	0.98	0.60	0.48	1.15
Latitude South	Gc	4.77	6.09	6.98	7.22	7.09	7.18	7.27	7.01	6.87	6.03	5.36	4.28	6.34
tilt 51 43' N	Dc	0.61	0.86	1.01	1.56	1.63	1.82	1.83	1.87	1.38	1.10	0.70	0.56	1.25
60 Deg South	Gc	4.97	6.22	6.89	6.89	6.60	6.64	6.73	6.63	6.70	6.08	5.57	4.51	6.20
	Dc	0.63	0.89	1.05	1.58	1.66	1.83	1.84	1.88	1.40	1.13	0.72	0.58	1.27
Vertical South	Gc	4.91	5.69	5.51	4.80	4.13	4.05	4.14	4.47	5.12	5.33	5.41	4.61	4.84
	Dc	0.65	0.93	1.14	1.60	1.68	1.81	1.81	1.79	1.42	1.14	0.75	0.59	1.28
Vertical SE/SW	Gc	3.64	4.52	5.04	5.03	4.80	4.77	4.84	4.78	4.97	4.50	4.14	3.37	4.53
	Dc	0.58	0.87	1.11	1.60	1.72	1.86	1.86	1.82	1.41	1.08	0.69	0.52	1.26
Vertical E/W	Gc	1.57	2.51	3.64	4.35	4.83	4.88	4.90	4.34	3.89	2.85	2.04	1.34	3.43
	Dc	0.47	0.74	1.02	1.53	1.72	1.87	1.87	1.77	1.30	0.93	0.57	0.40	1.18
Vertical NE/NW	Gc	0.44	0.90	1.75	2.67	3.43	3.55	3.53	2.84	2.13	1.22	0.63	0.35	1.96
	Dc	0.40	0.63	0.91	1.35	1.59	1.72	1.72	1.56	1.12	0.77	0.48	0.34	1.05
Vertical North	Gc	0.39	0.60	0.86	1.46	2.17	2.30	2.27	1.71	1.11	0.71	0.45	0.33	1.20
	Dc	0.39	0.60	0.86	1.23	1.47	1.59	1.58	1.40	1.02	0.71	0.45	0.33	0.97

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.47	1.30	1.16	1.08	1.04	1.02	1.03	1.06	1.12	1.23	1.42	1.60	1.12
30 Deg South	Gc/Gmax	2.28	1.77	1.39	1.15	1.04	1.01	1.02	1.10	1.29	1.59	2.13	2.64	1.28
Latitude South	Gc/Gmax	2.86	2.07	1.46	1.11	0.94	0.90	0.92	1.04	1.31	1.78	2.64	3.45	1.31
60 Deg South	Gc/Gmax	2.98	2.12	1.44	1.06	0.88	0.83	0.85	0.98	1.28	1.80	2.74	3.64	1.28
Vertical South	Gc/Gmax	2.94	1.93	1.15	0.74	0.55	0.51	0.52	0.66	0.98	1.58	2.66	3.72	1.00
Vertical SE/SW	Gc/Gmax	2.18	1.54	1.05	0.77	0.64	0.60	0.61	0.71	0.95	1.33	2.04	2.72	0.94
Vertical E/W	Gc/Gmax	0.94	0.85	0.76	0.67	0.64	0.61	0.62	0.64	0.74	0.84	1.00	1.08	0.71
Vertical NE/NW	Gc/Gmax	0.26	0.31	0.37	0.41	0.46	0.45	0.44	0.42	0.41	0.36	0.31	0.28	0.41
Vertical North	Gc/Gmax	0.23	0.20	0.18	0.22	0.29	0.29	0.29	0.25	0.21	0.21	0.22	0.27	0.25

Sunshine data

Mean sunshine	Hours	1.6	2.4	3.5	5.0	6.0	6.7	6.7	6.2	4.4	3.4	1.6	1.3	4.1
Max. sunshine	Hours	7.2	8.7	10.3	12.4	13.4	14.1	14.3	13.0	10.9	9.0	7.6	6.5	10.6

GERMANY Site No. 159

DRESDEN

Computer file GERMA159.INC

Inclined surfaces - ground albedo 0.20 assumed,

Units kWh/square metre per day

Latitude 51 7' N

Longitude 13 41' E

Height 271 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.72	1.21	2.38	3.44	4.42	5.02	5.05	4.37	3.08	1.72	0.83	0.50	2.74
	D mean	0.47	0.75	1.42	2.03	2.52	2.72	2.77	2.47	1.69	1.08	0.56	0.36	1.57
10 Deg South	Gm	0.89	1.41	2.63	3.64	4.56	5.11	5.19	4.60	3.37	1.96	0.99	0.61	2.92
	Dm	0.49	0.77	1.45	2.07	2.55	2.75	2.81	2.53	1.74	1.12	0.57	0.37	1.61
30 Deg South	Gm	1.16	1.71	2.94	3.80	4.53	4.98	5.13	4.74	3.70	2.30	1.23	0.79	3.09
	Dm	0.50	0.77	1.45	2.05	2.50	2.68	2.76	2.52	1.75	1.15	0.58	0.37	1.59
Latitude South	Gm	1.33	1.85	2.98	3.61	4.12	4.43	4.63	4.46	3.70	2.44	1.37	0.90	2.99
tilt 51 7' N	Dm	0.47	0.72	1.36	1.90	2.29	2.46	2.55	2.36	1.66	1.11	0.54	0.35	1.49
60 Deg South	Gm	1.36	1.86	2.92	3.43	3.84	4.08	4.29	4.22	3.58	2.42	1.39	0.93	2.87
	Dm	0.45	0.69	1.31	1.81	2.17	2.33	2.42	2.26	1.59	1.07	0.52	0.34	1.42
Vertical South	Gm	1.27	1.64	2.35	2.49	2.58	2.63	2.82	2.98	2.79	2.07	1.26	0.87	2.15
	Dm	0.37	0.56	1.05	1.42	1.69	1.82	1.89	1.78	1.29	0.88	0.42	0.27	1.12
Vertical SE/SW	Gm	1.00	1.36	2.09	2.44	2.72	2.88	3.02	2.97	2.56	1.74	1.01	0.69	2.04
	Dm	0.36	0.55	1.03	1.40	1.68	1.82	1.89	1.75	1.26	0.84	0.41	0.26	1.11
Vertical E/W	Gm	0.54	0.86	1.56	2.11	2.61	2.92	2.94	2.62	2.00	1.15	0.58	0.37	1.69
	Dm	0.33	0.51	0.96	1.34	1.66	1.80	1.86	1.67	1.17	0.74	0.38	0.24	1.06
Vertical NE/NW	Gm	0.30	0.51	1.02	1.56	2.09	2.42	2.36	1.94	1.31	0.71	0.35	0.22	1.24
	Dm	0.30	0.47	0.88	1.25	1.58	1.74	1.76	1.53	1.07	0.65	0.34	0.22	0.99
Vertical North	Gm	0.28	0.45	0.83	1.22	1.68	1.97	1.89	1.50	1.02	0.61	0.32	0.21	1.00
	Dm	0.28	0.45	0.83	1.20	1.54	1.71	1.70	1.45	1.02	0.61	0.32	0.21	0.95

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.24	1.16	1.11	1.06	1.03	1.02	1.03	1.05	1.09	1.14	1.19	1.22	1.07
30 Deg South	Gm/Gmean	1.61	1.41	1.24	1.11	1.02	0.99	1.02	1.09	1.20	1.34	1.48	1.58	1.13
Latitude South	Gm/Gmean	1.85	1.53	1.25	1.05	0.93	0.88	0.92	1.02	1.20	1.42	1.65	1.80	1.09
60 Deg South	Gm/Gmean	1.89	1.54	1.23	1.00	0.87	0.81	0.85	0.97	1.16	1.41	1.67	1.86	1.05
Vertical South	Gm/Gmean	1.76	1.36	0.99	0.72	0.58	0.52	0.56	0.68	0.91	1.20	1.52	1.74	0.79
Vertical SE/SW	Gm/Gmean	1.39	1.12	0.88	0.71	0.62	0.57	0.60	0.68	0.83	1.01	1.22	1.38	0.75
Vertical E/W	Gm/Gmean	0.75	0.71	0.65	0.61	0.59	0.58	0.58	0.60	0.65	0.67	0.70	0.74	0.62
Vertical NE/NW	Gm/Gmean	0.42	0.42	0.43	0.45	0.47	0.48	0.47	0.44	0.43	0.41	0.42	0.44	0.45
Vertical North	Gm/Gmean	0.39	0.37	0.35	0.35	0.38	0.39	0.37	0.34	0.33	0.35	0.39	0.42	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.51	2.62	4.34	6.44	7.47	7.94	7.64	6.76	5.15	3.45	1.89	1.17	4.71
	D clear	0.48	0.61	0.93	1.44	1.49	1.62	1.72	1.97	1.26	1.13	0.61	0.43	1.15
10 Deg South	Gc	2.25	3.44	5.07	6.90	7.75	8.13	7.89	7.11	5.79	4.14	2.60	1.79	5.25
	Dc	0.69	0.78	1.10	1.49	1.56	1.65	1.78	1.99	1.37	1.24	0.75	0.54	1.25
30 Deg South	Gc	3.31	4.62	5.98	7.38	7.76	8.03	7.83	7.41	6.59	5.23	3.74	2.82	5.90
	Dc	0.84	0.93	1.26	1.62	1.65	1.74	1.86	2.11	1.53	1.45	0.91	0.67	1.38
Latitude South	Gc	4.04	5.33	6.27	7.11	7.05	7.18	7.05	6.99	6.71	5.79	4.50	3.57	5.97
tilt 51 7' N	Dc	0.93	1.04	1.36	1.72	1.73	1.81	1.91	2.15	1.64	1.58	1.02	0.76	1.47
60 Deg South	Gc	4.21	5.43	6.17	6.76	6.52	6.59	6.49	6.59	6.53	5.82	4.66	3.76	5.79
	Dc	0.95	1.06	1.39	1.74	1.74	1.82	1.91	2.13	1.65	1.60	1.04	0.78	1.49
Vertical South	Gc	4.08	4.94	4.92	4.71	4.06	3.99	3.99	4.44	4.98	5.06	4.46	3.78	4.45
	Dc	0.92	1.05	1.37	1.70	1.73	1.80	1.84	1.95	1.60	1.52	1.02	0.76	1.44
Vertical SE/SW	Gc	3.06	3.94	4.46	4.89	4.72	4.74	4.65	4.68	4.73	4.18	3.43	2.80	4.19
	Dc	0.80	0.97	1.32	1.70	1.78	1.85	1.89	1.98	1.57	1.41	0.91	0.66	1.41
Vertical E/W	Gc	1.35	2.23	3.20	4.23	4.74	4.89	4.71	4.19	3.63	2.57	1.69	1.13	3.22
	Dc	0.58	0.79	1.17	1.61	1.78	1.87	1.90	1.91	1.43	1.15	0.70	0.47	1.28
Vertical NE/NW	Gc	0.49	0.87	1.61	2.62	3.38	3.57	3.40	2.75	1.99	1.15	0.63	0.39	1.91
	Dc	0.46	0.65	0.99	1.41	1.63	1.73	1.74	1.65	1.20	0.89	0.54	0.38	1.11
Vertical North	Gc	0.44	0.62	0.91	1.47	2.14	2.32	2.20	1.70	1.11	0.79	0.51	0.36	1.22
	Dc	0.44	0.62	0.91	1.28	1.50	1.59	1.59	1.46	1.07	0.79	0.51	0.36	1.01

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.49	1.31	1.17	1.07	1.04	1.02	1.03	1.05	1.12	1.20	1.38	1.53	1.12
30 Deg South	Gc/Gmax	2.19	1.76	1.38	1.15	1.04	1.01	1.02	1.10	1.28	1.52	1.98	2.41	1.25
Latitude South	Gc/Gmax	2.67	2.03	1.45	1.10	0.94	0.90	0.92	1.03	1.30	1.68	2.38	3.05	1.27
60 Deg South	Gc/Gmax	2.79	2.07	1.42	1.05	0.87	0.83	0.85	0.98	1.27	1.69	2.47	3.21	1.23
Vertical South	Gc/Gmax	2.70	1.88	1.13	0.73	0.54	0.50	0.52	0.66	0.97	1.47	2.36	3.23	0.94
Vertical SE/SW	Gc/Gmax	2.03	1.50	1.03	0.76	0.63	0.60	0.61	0.69	0.92	1.21	1.82	2.39	0.89
Vertical E/W	Gc/Gmax	0.89	0.85	0.74	0.66	0.63	0.62	0.62	0.62	0.70	0.75	0.89	0.97	0.68
Vertical NE/NW	Gc/Gmax	0.32	0.33	0.37	0.41	0.45	0.45	0.44	0.41	0.39	0.33	0.33	0.33	0.41
Vertical North	Gc/Gmax	0.29	0.24	0.21	0.23	0.29	0.29	0.29	0.25	0.22	0.23	0.27	0.31	0.26

Sunshine data

Mean sunshine	Hours	2.0	2.5	3.9	4.9	6.1	6.9	7.6	6.9	5.3	3.7	2.0	1.4	4.4
Max. sunshine	Hours	9.3	8.9	10.3	12.2	13.6	14.2	14.2	13.3	11.4	9.9	8.0	7.3	11.1

GERMANY Site No. 160

FICHTELBERG

Computer file GERMA160.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 50 26' N

Longitude 12 57' E

Height 1214 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.74	1.15	2.14	3.37	4.09	4.37	4.40	3.98	2.99	1.74	0.79	0.56	2.53
	D mean	0.40	0.68	1.19	1.84	2.28	2.33	2.35	2.02	1.47	0.84	0.48	0.33	1.35
10 Deg South	Gm	0.95	1.34	2.36	3.55	4.20	4.42	4.50	4.17	3.27	2.04	0.96	0.73	2.71
	Dm	0.41	0.68	1.20	1.86	2.30	2.35	2.38	2.05	1.49	0.86	0.48	0.33	1.37
30 Deg South	Gm	1.29	1.61	2.63	3.69	4.14	4.27	4.41	4.26	3.59	2.48	1.21	1.02	2.89
	Dm	0.40	0.66	1.17	1.82	2.23	2.28	2.32	2.02	1.48	0.86	0.47	0.33	1.34
Latitude South	Gm	1.51	1.74	2.66	3.50	3.75	3.79	3.96	3.99	3.58	2.68	1.36	1.21	2.82
tilt 50 26' N	Dm	0.37	0.60	1.08	1.67	2.04	2.08	2.14	1.88	1.38	0.82	0.43	0.30	1.24
60 Deg South	Gm	1.56	1.75	2.59	3.30	3.47	3.46	3.65	3.74	3.46	2.68	1.38	1.26	2.70
	Dm	0.35	0.57	1.02	1.58	1.92	1.96	2.02	1.79	1.32	0.78	0.41	0.29	1.17
Vertical South	Gm	1.49	1.53	2.07	2.36	2.30	2.21	2.38	2.60	2.67	2.33	1.27	1.22	2.04
	Dm	0.28	0.45	0.81	1.25	1.50	1.54	1.59	1.44	1.08	0.65	0.32	0.23	0.93
Vertical SE/SW	Gm	1.15	1.27	1.88	2.40	2.48	2.48	2.60	2.70	2.51	1.94	1.00	0.93	1.95
	Dm	0.29	0.45	0.81	1.24	1.49	1.53	1.58	1.42	1.06	0.65	0.33	0.23	0.93
Vertical E/W	Gm	0.58	0.81	1.43	2.14	2.44	2.58	2.61	2.47	2.00	1.27	0.56	0.46	1.62
	Dm	0.28	0.45	0.78	1.21	1.48	1.52	1.57	1.38	1.02	0.61	0.32	0.23	0.91
Vertical NE/NW	Gm	0.28	0.47	0.93	1.57	1.98	2.18	2.13	1.84	1.29	0.69	0.31	0.22	1.16
	Dm	0.27	0.43	0.75	1.16	1.44	1.49	1.52	1.32	0.97	0.58	0.31	0.22	0.87
Vertical North	Gm	0.26	0.42	0.73	1.18	1.60	1.79	1.71	1.37	0.94	0.56	0.29	0.21	0.92
	Dm	0.26	0.42	0.73	1.14	1.42	1.48	1.49	1.28	0.94	0.56	0.29	0.21	0.85

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.28	1.16	1.10	1.05	1.03	1.01	1.02	1.05	1.09	1.17	1.22	1.30	1.07
30 Deg South	Gm/Gmean	1.74	1.40	1.23	1.10	1.01	0.98	1.00	1.07	1.20	1.42	1.53	1.82	1.14
Latitude South	Gm/Gmean	2.04	1.51	1.24	1.04	0.92	0.87	0.90	1.00	1.20	1.54	1.72	2.16	1.12
60 Deg South	Gm/Gmean	2.11	1.52	1.21	0.98	0.85	0.79	0.83	0.94	1.16	1.54	1.75	2.25	1.07
Vertical South	Gm/Gmean	2.01	1.33	0.97	0.70	0.56	0.51	0.54	0.65	0.89	1.34	1.61	2.18	0.81
Vertical SE/SW	Gm/Gmean	1.55	1.10	0.88	0.71	0.61	0.57	0.59	0.68	0.84	1.12	1.27	1.66	0.77
Vertical E/W	Gm/Gmean	0.78	0.70	0.67	0.63	0.60	0.59	0.59	0.62	0.67	0.73	0.71	0.82	0.64
Vertical NE/NW	Gm/Gmean	0.38	0.41	0.44	0.47	0.48	0.50	0.48	0.46	0.43	0.40	0.39	0.39	0.46
Vertical North	Gm/Gmean	0.35	0.37	0.34	0.35	0.39	0.41	0.39	0.34	0.31	0.32	0.37	0.38	0.36

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.92	2.94	5.08	6.84	7.76	8.18	7.84	7.02	5.45	3.50	2.35	1.53	5.04
	D clear	0.22	0.30	0.48	0.85	0.99	1.01	1.16	1.11	0.71	0.43	0.32	0.20	0.65
10 Deg South	Gc	2.86	3.85	5.88	7.34	8.02	8.35	8.06	7.45	6.16	4.41	3.33	2.51	5.89
	Dc	0.30	0.39	0.54	0.90	1.06	1.07	1.22	1.19	0.81	0.58	0.38	0.26	0.73
30 Deg South	Gc	4.40	5.26	6.97	7.80	7.95	8.17	7.93	7.71	7.02	5.68	4.97	4.17	6.51
	Dc	0.38	0.48	0.66	1.02	1.16	1.17	1.32	1.30	0.94	0.69	0.48	0.33	0.83
Latitude South	Gc	5.46	6.10	7.31	7.49	7.20	7.27	7.11	7.24	7.13	6.34	6.08	5.39	6.68
tilt 50 26' N	Dc	0.45	0.58	0.79	1.16	1.28	1.30	1.42	1.41	1.06	0.80	0.57	0.39	0.94
60 Deg South	Gc	5.74	6.25	7.18	7.06	6.58	6.60	6.47	6.75	6.91	6.41	6.36	5.74	6.50
	Dc	0.48	0.61	0.84	1.22	1.34	1.35	1.46	1.45	1.11	0.84	0.60	0.41	0.98
Vertical South	Gc	5.63	5.68	5.66	4.79	3.98	3.86	3.85	4.41	5.17	5.56	6.14	5.84	5.04
	Dc	0.53	0.69	1.00	1.36	1.48	1.51	1.56	1.52	1.21	0.91	0.66	0.46	1.08
Vertical SE/SW	Gc	4.15	4.51	5.25	5.24	4.86	4.83	4.72	4.90	5.16	4.74	4.70	4.25	4.78
	Dc	0.49	0.67	0.99	1.36	1.51	1.55	1.60	1.53	1.21	0.88	0.62	0.42	1.07
Vertical E/W	Gc	1.78	2.54	3.84	4.69	5.10	5.25	5.01	4.52	4.14	3.05	2.34	1.67	3.67
	Dc	0.43	0.61	0.94	1.32	1.52	1.56	1.62	1.49	1.14	0.80	0.54	0.37	1.03
Vertical NE/NW	Gc	0.45	0.88	1.84	2.89	3.67	3.87	3.67	2.92	2.25	1.26	0.68	0.36	2.07
	Dc	0.40	0.56	0.87	1.21	1.43	1.48	1.51	1.36	1.02	0.69	0.48	0.34	0.95
Vertical North	Gc	0.39	0.55	0.84	1.46	2.28	2.48	2.34	1.60	1.06	0.65	0.47	0.34	1.21
	Dc	0.39	0.55	0.84	1.14	1.35	1.40	1.42	1.25	0.95	0.65	0.47	0.34	0.90

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.49	1.31	1.16	1.07	1.03	1.02	1.03	1.06	1.13	1.26	1.42	1.64	1.13
30 Deg South	Gc/Gmax	2.29	1.79	1.37	1.14	1.02	1.00	1.01	1.10	1.29	1.62	2.12	2.72	1.29
Latitude South	Gc/Gmax	2.84	2.08	1.44	1.10	0.93	0.89	0.91	1.03	1.31	1.81	2.59	3.52	1.33
60 Deg South	Gc/Gmax	2.99	2.13	1.41	1.03	0.85	0.81	0.82	0.96	1.27	1.83	2.71	3.75	1.29
Vertical South	Gc/Gmax	2.93	1.93	1.11	0.70	0.51	0.47	0.49	0.63	0.95	1.59	2.61	3.82	1.00
Vertical SE/SW	Gc/Gmax	2.16	1.53	1.03	0.77	0.63	0.59	0.60	0.70	0.95	1.35	2.00	2.78	0.95
Vertical E/W	Gc/Gmax	0.93	0.86	0.76	0.69	0.66	0.64	0.64	0.64	0.76	0.87	1.00	1.09	0.73
Vertical NE/NW	Gc/Gmax	0.23	0.30	0.36	0.42	0.47	0.47	0.47	0.42	0.41	0.36	0.29	0.23	0.41
Vertical North	Gc/Gmax	0.20	0.19	0.17	0.21	0.29	0.30	0.30	0.23	0.19	0.19	0.20	0.22	0.24

Sunshine data

Mean sunshine	Hours	2.3	2.3	3.4	4.7	5.4	6.0	6.6	6.2	5.1	4.1	2.0	1.9	4.2
Max. sunshine	Hours	8.4	8.8	10.1	12.1	13.3	13.9	13.7	13.0	11.3	10.3	8.1	7.9	10.9

GERMANY Site No. 129

WUERZBURG

Computer file GERMA129.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 49 48' N

Longitude 9 54' E

Height 259 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.82	1.60	2.68	4.04	5.03	5.54	5.34	4.48	3.53	1.94	0.92	0.65	3.05
	D mean	0.57	0.98	1.57	2.25	2.81	2.95	2.99	2.48	1.85	1.09	0.62	0.46	1.72
10 Deg South	Gm	0.96	1.84	2.94	4.27	5.17	5.62	5.47	4.69	3.85	2.21	1.07	0.78	3.25
	Dm	0.57	1.00	1.59	2.28	2.84	2.97	3.03	2.53	1.89	1.11	0.63	0.46	1.75
30 Deg South	Gm	1.17	2.19	3.25	4.44	5.11	5.44	5.37	4.80	4.21	2.59	1.29	0.98	3.41
	Dm	0.54	0.98	1.57	2.25	2.77	2.89	2.96	2.50	1.89	1.10	0.60	0.44	1.71
Latitude South	Gm	1.28	2.34	3.28	4.23	4.67	4.86	4.86	4.51	4.19	2.74	1.39	1.09	3.29
tilt 49 48' N	Dm	0.48	0.90	1.46	2.09	2.56	2.66	2.73	2.34	1.79	1.02	0.55	0.40	1.59
60 Deg South	Gm	1.30	2.34	3.18	3.98	4.29	4.42	4.45	4.22	4.04	2.71	1.40	1.11	3.12
	Dm	0.45	0.85	1.38	1.98	2.41	2.50	2.57	2.22	1.70	0.97	0.51	0.37	1.50
Vertical South	Gm	1.17	2.04	2.53	2.85	2.85	2.81	2.90	2.94	3.11	2.30	1.25	1.03	2.32
	Dm	0.33	0.67	1.09	1.56	1.88	1.96	2.00	1.75	1.38	0.78	0.40	0.28	1.18
Vertical SE/SW	Gm	0.94	1.69	2.29	2.85	3.04	3.12	3.12	2.98	2.89	1.95	1.01	0.82	2.23
	Dm	0.34	0.67	1.08	1.54	1.86	1.95	1.99	1.73	1.36	0.77	0.40	0.29	1.17
Vertical E/W	Gm	0.54	1.09	1.75	2.50	2.95	3.21	3.07	2.69	2.29	1.31	0.60	0.45	1.87
	Dm	0.35	0.64	1.03	1.49	1.84	1.94	1.97	1.66	1.28	0.73	0.39	0.29	1.14
Vertical NE/NW	Gm	0.34	0.66	1.16	1.84	2.38	2.68	2.51	2.02	1.50	0.78	0.38	0.28	1.38
	Dm	0.34	0.60	0.97	1.41	1.77	1.89	1.88	1.55	1.19	0.69	0.37	0.28	1.08
Vertical North	Gm	0.32	0.58	0.93	1.41	1.91	2.18	2.02	1.56	1.14	0.67	0.36	0.27	1.12
	Dm	0.32	0.58	0.93	1.37	1.73	1.87	1.83	1.49	1.14	0.67	0.36	0.27	1.05

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.17	1.15	1.10	1.06	1.03	1.01	1.02	1.05	1.09	1.14	1.16	1.20	1.07
30 Deg South	Gm/Gmean	1.43	1.37	1.21	1.10	1.02	0.98	1.01	1.07	1.19	1.34	1.40	1.51	1.12
Latitude South	Gm/Gmean	1.56	1.46	1.22	1.05	0.93	0.88	0.91	1.01	1.19	1.41	1.51	1.68	1.08
60 Deg South	Gm/Gmean	1.59	1.46	1.19	0.99	0.85	0.80	0.83	0.94	1.14	1.40	1.52	1.71	1.02
Vertical South	Gm/Gmean	1.43	1.27	0.94	0.70	0.57	0.51	0.54	0.66	0.88	1.19	1.36	1.59	0.76
Vertical SE/SW	Gm/Gmean	1.15	1.06	0.85	0.70	0.60	0.56	0.58	0.67	0.82	1.00	1.10	1.26	0.73
Vertical E/W	Gm/Gmean	0.66	0.68	0.65	0.62	0.59	0.58	0.57	0.60	0.65	0.68	0.65	0.69	0.61
Vertical NE/NW	Gm/Gmean	0.41	0.41	0.43	0.46	0.47	0.48	0.47	0.45	0.43	0.40	0.41	0.43	0.45
Vertical North	Gm/Gmean	0.39	0.36	0.35	0.35	0.38	0.39	0.38	0.35	0.32	0.34	0.39	0.41	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.71	3.21	4.90	6.56	7.80	8.25	7.76	6.74	5.43	3.54	2.07	1.45	4.96
	D clear	0.29	0.68	0.85	1.23	1.46	1.48	1.65	1.67	1.15	0.67	0.44	0.29	0.99
10 Deg South	Gc	2.44	4.01	5.60	7.03	8.03	8.42	7.98	7.12	6.04	4.32	2.85	2.25	5.51
	Dc	0.32	0.72	0.90	1.30	1.48	1.50	1.71	1.74	1.21	0.75	0.51	0.34	1.04
30 Deg South	Gc	3.70	5.37	6.57	7.46	7.98	8.25	7.87	7.36	6.84	5.50	4.16	3.65	6.23
	Dc	0.40	0.86	1.04	1.43	1.58	1.59	1.79	1.85	1.37	0.89	0.62	0.43	1.16
Latitude South	Gc	4.54	6.14	6.86	7.18	7.26	7.39	7.10	6.95	6.94	6.09	5.01	4.63	6.34
tilt 49 48' N	Dc	0.46	0.97	1.16	1.53	1.66	1.68	1.84	1.90	1.47	1.00	0.71	0.49	1.24
60 Deg South	Gc	4.79	6.28	6.72	6.76	6.62	6.68	6.44	6.47	6.71	6.15	5.24	4.94	6.15
	Dc	0.49	1.01	1.20	1.56	1.69	1.71	1.85	1.90	1.51	1.03	0.74	0.52	1.27
Vertical South	Gc	4.67	5.67	5.29	4.61	4.03	3.93	3.87	4.27	5.04	5.32	5.01	4.99	4.72
	Dc	0.53	1.03	1.26	1.58	1.72	1.75	1.80	1.80	1.50	1.07	0.76	0.54	1.28
Vertical SE/SW	Gc	3.46	4.52	4.88	4.92	4.79	4.81	4.61	4.60	4.89	4.54	3.87	3.66	4.46
	Dc	0.49	0.97	1.22	1.59	1.76	1.80	1.86	1.82	1.49	1.03	0.71	0.49	1.27
Vertical E/W	Gc	1.53	2.57	3.58	4.35	4.90	5.08	4.75	4.18	3.83	2.95	1.97	1.48	3.43
	Dc	0.43	0.82	1.12	1.53	1.77	1.82	1.88	1.76	1.38	0.90	0.59	0.41	1.20
Vertical NE/NW	Gc	0.44	0.97	1.78	2.71	3.51	3.74	3.46	2.74	2.12	1.27	0.65	0.39	1.99
	Dc	0.40	0.69	0.97	1.36	1.64	1.70	1.73	1.54	1.18	0.77	0.50	0.37	1.07
Vertical North	Gc	0.40	0.66	0.91	1.48	2.20	2.40	2.22	1.62	1.13	0.71	0.48	0.36	1.22
	Dc	0.40	0.66	0.91	1.25	1.52	1.58	1.59	1.38	1.07	0.71	0.48	0.36	0.99

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.43	1.25	1.14	1.07	1.03	1.02	1.03	1.06	1.11	1.22	1.38	1.55	1.11
30 Deg South	Gc/Gmax	2.16	1.67	1.34	1.14	1.02	1.00	1.01	1.09	1.26	1.55	2.01	2.52	1.26
Latitude South	Gc/Gmax	2.65	1.91	1.40	1.10	0.93	0.90	0.92	1.03	1.28	1.72	2.42	3.19	1.28
60 Deg South	Gc/Gmax	2.80	1.96	1.37	1.03	0.85	0.81	0.83	0.96	1.24	1.74	2.53	3.41	1.24
Vertical South	Gc/Gmax	2.73	1.77	1.08	0.70	0.52	0.48	0.50	0.63	0.93	1.50	2.42	3.44	0.95
Vertical SE/SW	Gc/Gmax	2.02	1.41	1.00	0.75	0.61	0.58	0.59	0.68	0.90	1.28	1.87	2.52	0.90
Vertical E/W	Gc/Gmax	0.89	0.80	0.73	0.66	0.63	0.62	0.61	0.62	0.70	0.83	0.95	1.02	0.69
Vertical NE/NW	Gc/Gmax	0.26	0.30	0.36	0.41	0.45	0.45	0.45	0.41	0.39	0.36	0.31	0.27	0.40
Vertical North	Gc/Gmax	0.23	0.21	0.19	0.23	0.28	0.29	0.29	0.24	0.21	0.20	0.23	0.25	0.25

Sunshine data

Mean sunshine	Hours	1.2	2.5	3.7	5.4	6.4	7.0	7.3	6.6	5.5	3.3	1.5	1.2	4.3
Max. sunshine	Hours	5.8	8.2	9.8	12.1	13.4	14.3	14.1	12.9	11.0	8.6	6.8	6.4	10.3

GERMANY Site No. 131

TRIER

Computer file GERMA131.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 49 45' N

Longitude 6 40' E

Height 265 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.72	1.47	2.52	3.88	4.88	5.25	5.27	4.43	3.31	1.79	0.84	0.56	2.92
	D mean	0.51	0.89	1.44	2.14	2.76	2.84	2.88	2.41	1.81	1.04	0.58	0.39	1.65
10 Deg South	Gm	0.84	1.70	2.76	4.10	5.02	5.32	5.39	4.64	3.59	2.03	0.97	0.67	3.09
	Dm	0.51	0.90	1.46	2.18	2.80	2.86	2.91	2.46	1.85	1.06	0.59	0.40	1.67
30 Deg South	Gm	1.03	2.02	3.06	4.26	4.96	5.15	5.29	4.74	3.91	2.36	1.16	0.85	3.24
	Dm	0.49	0.87	1.43	2.14	2.73	2.78	2.85	2.43	1.85	1.05	0.57	0.38	1.63
Latitude South	Gm	1.13	2.17	3.08	4.06	4.52	4.59	4.78	4.45	3.88	2.48	1.24	0.95	3.11
tilt 49 45' N	Dm	0.45	0.81	1.32	1.99	2.52	2.55	2.63	2.27	1.75	0.98	0.52	0.35	1.52
60 Deg South	Gm	1.14	2.17	2.99	3.82	4.16	4.17	4.37	4.15	3.74	2.46	1.25	0.97	2.95
	Dm	0.42	0.76	1.25	1.88	2.36	2.40	2.48	2.15	1.66	0.93	0.48	0.32	1.43
Vertical South	Gm	1.03	1.89	2.38	2.74	2.76	2.66	2.84	2.88	2.87	2.08	1.10	0.90	2.18
	Dm	0.32	0.60	0.99	1.49	1.84	1.87	1.93	1.70	1.34	0.74	0.37	0.25	1.12
Vertical SE/SW	Gm	0.83	1.57	2.16	2.75	2.94	2.95	3.08	2.95	2.67	1.76	0.90	0.71	2.11
	Dm	0.33	0.60	0.98	1.47	1.83	1.86	1.93	1.68	1.31	0.74	0.37	0.25	1.12
Vertical E/W	Gm	0.48	1.01	1.66	2.42	2.86	3.04	3.06	2.67	2.12	1.20	0.54	0.39	1.79
	Dm	0.32	0.58	0.94	1.43	1.80	1.85	1.91	1.62	1.23	0.70	0.37	0.25	1.09
Vertical NE/NW	Gm	0.31	0.61	1.09	1.77	2.31	2.56	2.49	2.01	1.42	0.73	0.35	0.24	1.33
	Dm	0.30	0.55	0.90	1.35	1.73	1.81	1.84	1.53	1.14	0.65	0.35	0.24	1.04
Vertical North	Gm	0.29	0.54	0.87	1.35	1.86	2.09	2.01	1.55	1.10	0.63	0.33	0.23	1.07
	Dm	0.29	0.54	0.87	1.31	1.70	1.79	1.79	1.47	1.10	0.63	0.33	0.23	1.01

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.17	1.16	1.10	1.06	1.03	1.01	1.02	1.05	1.09	1.13	1.15	1.20	1.06
30 Deg South	Gm/Gmean	1.43	1.37	1.21	1.10	1.02	0.98	1.00	1.07	1.18	1.32	1.38	1.52	1.11
Latitude South	Gm/Gmean	1.57	1.48	1.22	1.05	0.93	0.87	0.91	1.00	1.17	1.38	1.48	1.70	1.07
60 Deg South	Gm/Gmean	1.58	1.48	1.19	0.99	0.85	0.79	0.83	0.94	1.13	1.37	1.49	1.73	1.01
Vertical South	Gm/Gmean	1.43	1.29	0.94	0.71	0.57	0.51	0.54	0.65	0.87	1.16	1.31	1.61	0.75
Vertical SE/SW	Gm/Gmean	1.15	1.07	0.86	0.71	0.60	0.56	0.58	0.67	0.81	0.98	1.07	1.27	0.72
Vertical E/W	Gm/Gmean	0.67	0.69	0.66	0.62	0.59	0.58	0.58	0.60	0.64	0.67	0.64	0.70	0.61
Vertical NE/NW	Gm/Gmean	0.43	0.41	0.43	0.46	0.47	0.49	0.47	0.45	0.43	0.41	0.42	0.43	0.46
Vertical North	Gm/Gmean	0.40	0.37	0.34	0.35	0.38	0.40	0.38	0.35	0.33	0.35	0.39	0.41	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.75	3.18	4.92	6.62	7.86	8.29	7.99	6.83	5.34	3.45	2.08	1.39	4.98
	D clear	0.42	0.53	0.64	1.17	1.43	1.38	1.51	1.23	1.17	0.70	0.46	0.27	0.94
10 Deg South	Gc	2.47	4.05	5.69	7.09	8.12	8.49	8.22	7.53	5.96	4.21	2.87	2.18	5.55
	Dc	0.50	0.59	0.74	1.23	1.48	1.43	1.58	1.60	1.27	0.79	0.54	0.32	1.01
30 Deg South	Gc	3.67	5.44	6.69	7.51	8.06	8.31	8.09	7.47	6.75	5.35	4.17	3.53	6.26
	Dc	0.61	0.71	0.87	1.36	1.58	1.53	1.66	1.71	1.42	0.94	0.66	0.40	1.12
Latitude South	Gc	4.47	6.24	6.99	7.23	7.34	7.44	7.29	7.04	6.84	5.92	5.02	4.49	6.36
tilt 49 45' N	Dc	0.69	0.82	0.99	1.46	1.66	1.62	1.73	1.78	1.53	1.04	0.75	0.46	1.21
60 Deg South	Gc	4.69	6.39	6.85	6.79	6.68	6.71	6.61	6.55	6.62	5.97	5.24	4.79	6.15
	Dc	0.71	0.86	1.04	1.50	1.69	1.65	1.75	1.79	1.55	1.08	0.78	0.48	1.24
Vertical South	Gc	4.55	5.77	5.38	4.63	4.06	3.94	3.94	4.30	4.97	5.16	5.02	4.83	4.70
	Dc	0.72	0.91	1.14	1.55	1.72	1.72	1.76	1.74	1.53	1.10	0.80	0.51	1.27
Vertical SE/SW	Gc	3.40	4.60	4.99	4.98	4.83	4.85	4.74	4.68	4.80	4.40	3.87	3.54	4.47
	Dc	0.65	0.86	1.12	1.55	1.77	1.77	1.81	1.76	1.52	1.05	0.74	0.47	1.26
Vertical E/W	Gc	1.52	2.62	3.68	4.45	4.95	5.16	4.94	4.28	3.75	2.86	1.97	1.44	3.47
	Dc	0.52	0.75	1.04	1.49	1.78	1.79	1.83	1.70	1.40	0.92	0.60	0.39	1.19
Vertical NE/NW	Gc	0.48	0.96	1.81	2.79	3.54	3.80	3.60	2.80	2.07	1.25	0.66	0.38	2.02
	Dc	0.44	0.66	0.94	1.34	1.64	1.68	1.70	1.51	1.19	0.77	0.51	0.36	1.06
Vertical North	Gc	0.43	0.63	0.90	1.50	2.22	2.43	2.30	1.63	1.12	0.71	0.48	0.35	1.23
	Dc	0.43	0.63	0.90	1.23	1.52	1.56	1.57	1.36	1.07	0.71	0.48	0.35	0.99

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.41	1.27	1.16	1.07	1.03	1.02	1.03	1.06	1.12	1.22	1.38	1.57	1.11
30 Deg South	Gc/Gmax	2.10	1.71	1.36	1.13	1.02	1.00	1.01	1.09	1.26	1.55	2.01	2.54	1.26
Latitude South	Gc/Gmax	2.55	1.96	1.42	1.09	0.93	0.90	0.91	1.03	1.28	1.72	2.41	3.23	1.28
60 Deg South	Gc/Gmax	2.68	2.01	1.39	1.03	0.85	0.81	0.83	0.96	1.24	1.73	2.52	3.45	1.24
Vertical South	Gc/Gmax	2.60	1.81	1.09	0.70	0.52	0.47	0.49	0.63	0.93	1.50	2.41	3.47	0.94
Vertical SE/SW	Gc/Gmax	1.94	1.45	1.01	0.75	0.62	0.58	0.59	0.69	0.90	1.27	1.86	2.55	0.90
Vertical E/W	Gc/Gmax	0.87	0.82	0.75	0.67	0.63	0.62	0.62	0.63	0.70	0.83	0.95	1.04	0.70
Vertical NE/NW	Gc/Gmax	0.27	0.30	0.37	0.42	0.45	0.46	0.45	0.41	0.39	0.36	0.32	0.27	0.41
Vertical North	Gc/Gmax	0.25	0.20	0.18	0.23	0.28	0.29	0.29	0.24	0.21	0.21	0.23	0.25	0.25

Sunshine data

Mean sunshine	Hours	1.3	2.4	3.5	5.3	6.2	6.6	7.2	6.4	5.2	3.1	1.4	1.2	4.2
Max. sunshine	Hours	6.7	8.4	10.4	12.0	13.9	14.6	14.4	13.0	11.2	8.6	7.1	6.3	10.6

GERMANY Site No. 145

WEIHENSTEPHAN

Computer file GERMA145.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 48 24' N

Longitude 11 44' E

Height 467 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.07	1.83	2.96	4.11	5.07	5.38	5.46	4.60	3.70	2.23	1.18	0.83	3.21
	D mean	0.68	1.06	1.65	2.30	2.77	2.95	2.94	2.49	1.86	1.17	0.70	0.55	1.76
10 Deg South	Gm	1.28	2.11	3.24	4.32	5.21	5.46	5.58	4.81	4.03	2.56	1.41	1.00	3.42
	Dm	0.68	1.07	1.68	2.33	2.81	2.98	2.97	2.53	1.90	1.19	0.71	0.55	1.79
30 Deg South	Gm	1.60	2.52	3.59	4.47	5.13	5.26	5.45	4.90	4.40	3.01	1.78	1.28	3.62
	Dm	0.65	1.04	1.65	2.29	2.74	2.89	2.90	2.51	1.91	1.19	0.68	0.52	1.75
Latitude South	Gm	1.77	2.69	3.62	4.26	4.71	4.74	4.96	4.62	4.38	3.19	1.97	1.43	3.53
tilt 48 24' N	Dm	0.59	0.96	1.54	2.14	2.55	2.67	2.71	2.36	1.82	1.13	0.63	0.47	1.63
60 Deg South	Gm	1.81	2.69	3.50	3.97	4.28	4.25	4.48	4.27	4.20	3.17	2.01	1.46	3.34
	Dm	0.55	0.90	1.45	2.00	2.38	2.49	2.53	2.22	1.72	1.07	0.59	0.43	1.53
Vertical South	Gm	1.65	2.33	2.76	2.81	2.80	2.68	2.87	2.94	3.20	2.69	1.83	1.35	2.49
	Dm	0.42	0.71	1.15	1.57	1.86	1.93	1.97	1.76	1.41	0.87	0.46	0.33	1.21
Vertical SE/SW	Gm	1.30	1.93	2.52	2.83	3.02	2.98	3.14	3.01	3.00	2.27	1.47	1.06	2.38
	Dm	0.43	0.72	1.14	1.56	1.85	1.93	1.97	1.73	1.38	0.86	0.47	0.34	1.20
Vertical E/W	Gm	0.73	1.25	1.94	2.51	2.96	3.07	3.13	2.74	2.38	1.53	0.87	0.57	1.98
	Dm	0.43	0.70	1.09	1.51	1.83	1.92	1.96	1.68	1.30	0.81	0.47	0.34	1.17
Vertical NE/NW	Gm	0.42	0.74	1.27	1.86	2.39	2.58	2.56	2.06	1.56	0.88	0.48	0.33	1.43
	Dm	0.41	0.66	1.04	1.44	1.76	1.87	1.88	1.57	1.21	0.76	0.44	0.33	1.12
Vertical North	Gm	0.40	0.64	1.00	1.43	1.90	2.11	2.04	1.58	1.16	0.73	0.43	0.32	1.15
	Dm	0.40	0.64	1.00	1.40	1.72	1.85	1.83	1.51	1.16	0.73	0.43	0.32	1.08

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.20	1.15	1.10	1.05	1.03	1.01	1.02	1.05	1.09	1.15	1.20	1.21	1.07
30 Deg South	Gm/Gmean	1.50	1.38	1.21	1.09	1.01	0.98	1.00	1.07	1.19	1.35	1.51	1.54	1.13
Latitude South	Gm/Gmean	1.65	1.47	1.22	1.04	0.93	0.88	0.91	1.00	1.18	1.43	1.67	1.72	1.10
60 Deg South	Gm/Gmean	1.69	1.47	1.18	0.97	0.84	0.79	0.82	0.93	1.13	1.42	1.70	1.76	1.04
Vertical South	Gm/Gmean	1.54	1.27	0.93	0.68	0.55	0.50	0.53	0.64	0.87	1.21	1.55	1.63	0.78
Vertical SE/SW	Gm/Gmean	1.22	1.05	0.85	0.69	0.60	0.55	0.57	0.65	0.81	1.02	1.25	1.28	0.74
Vertical E/W	Gm/Gmean	0.68	0.68	0.65	0.61	0.58	0.57	0.57	0.60	0.64	0.69	0.74	0.69	0.62
Vertical NE/NW	Gm/Gmean	0.39	0.40	0.43	0.45	0.47	0.48	0.47	0.45	0.42	0.40	0.41	0.40	0.44
Vertical North	Gm/Gmean	0.37	0.35	0.34	0.35	0.38	0.39	0.37	0.34	0.31	0.33	0.36	0.39	0.36

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes.

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.11	3.53	5.09	6.69	7.78	8.10	7.94	6.89	5.65	3.95	2.55	1.72	5.17
	D clear	0.36	0.57	0.72	1.20	1.34	1.53	1.51	1.62	1.10	0.71	0.36	0.23	0.94
10 Deg South	Gc	3.00	4.40	5.85	7.16	8.06	8.30	8.17	7.26	6.29	4.77	3.51	2.64	5.79
	Dc	0.40	0.59	0.83	1.27	1.44	1.60	1.60	1.70	1.19	0.79	0.41	0.26	1.01
30 Deg South	Gc	4.54	5.85	6.82	7.54	7.95	8.08	7.99	7.47	7.06	6.01	5.10	4.25	6.56
	Dc	0.50	0.71	0.97	1.39	1.53	1.68	1.67	1.81	1.34	0.94	0.52	0.32	1.12
Latitude South	Gc	5.52	6.63	7.07	7.25	7.26	7.28	7.24	7.05	7.13	6.59	6.07	5.31	6.70
tilt 48 24' N	Dc	0.58	0.82	1.08	1.49	1.60	1.73	1.73	1.86	1.44	1.04	0.60	0.38	1.20
60 Deg South	Gc	5.87	6.80	6.90	6.75	6.51	6.47	6.45	6.48	6.85	6.64	6.39	5.72	6.48
	Dc	0.62	0.87	1.13	1.53	1.64	1.75	1.75	1.86	1.48	1.09	0.64	0.41	1.23
Vertical South	Gc	5.71	6.08	5.35	4.53	3.87	3.74	3.77	4.19	5.07	5.68	6.07	5.72	4.97
	Dc	0.67	0.94	1.21	1.56	1.67	1.75	1.74	1.77	1.49	1.14	0.71	0.46	1.26
Vertical SE/SW	Gc	4.34	4.86	4.99	4.89	4.69	4.61	4.60	4.58	4.96	4.86	4.68	4.18	4.68
	Dc	0.63	0.89	1.19	1.57	1.72	1.82	1.80	1.80	1.48	1.09	0.67	0.44	1.26
Vertical E/W	Gc	2.11	2.79	3.70	4.38	4.87	4.91	4.84	4.23	3.93	3.18	2.40	1.69	3.59
	Dc	0.54	0.78	1.09	1.52	1.74	1.85	1.83	1.75	1.38	0.96	0.59	0.39	1.20
Vertical NE/NW	Gc	0.62	1.02	1.84	2.75	3.51	3.63	3.54	2.79	2.18	1.37	0.75	0.40	2.04
	Dc	0.47	0.69	0.97	1.36	1.62	1.72	1.70	1.54	1.19	0.82	0.53	0.37	1.08
Vertical North	Gc	0.45	0.67	0.91	1.49	2.18	2.32	2.25	1.63	1.14	0.76	0.52	0.37	1.23
	Dc	0.45	0.67	0.91	1.25	1.50	1.59	1.57	1.39	1.08	0.76	0.52	0.37	1.01

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.42	1.25	1.15	1.07	1.04	1.02	1.03	1.05	1.11	1.21	1.38	1.53	1.12
30 Deg South	Gc/Gmax	2.15	1.66	1.34	1.13	1.02	1.00	1.01	1.08	1.25	1.52	2.00	2.47	1.27
Latitude South	Gc/Gmax	2.62	1.88	1.39	1.08	0.93	0.90	0.91	1.02	1.26	1.67	2.38	3.09	1.30
60 Deg South	Gc/Gmax	2.78	1.93	1.36	1.01	0.84	0.80	0.81	0.94	1.21	1.68	2.51	3.33	1.25
Vertical South	Gc/Gmax	2.71	1.72	1.05	0.68	0.50	0.46	0.47	0.61	0.90	1.44	2.38	3.33	0.96
Vertical SE/SW	Gc/Gmax	2.06	1.38	0.98	0.73	0.60	0.57	0.58	0.67	0.88	1.23	1.84	2.43	0.90
Vertical E/W	Gc/Gmax	1.00	0.79	0.73	0.65	0.63	0.61	0.61	0.61	0.70	0.81	0.94	0.98	0.69
Vertical NE/NW	Gc/Gmax	0.29	0.29	0.36	0.41	0.45	0.45	0.45	0.41	0.39	0.35	0.29	0.23	0.40
Vertical North	Gc/Gmax	0.21	0.19	0.18	0.22	0.28	0.29	0.28	0.24	0.20	0.19	0.20	0.22	0.24

Sunshine data

Mean sunshine	Hours	1.7	2.7	4.0	5.2	6.5	6.8	7.4	6.7	5.8	4.0	2.1	1.4	4.5
Max. sunshine	Hours	6.9	8.3	10.8	12.2	14.0	14.5	14.4	13.1	11.5	9.4	8.0	6.7	10.8

GERMANY Site No. 152

HOHENPEISSENBURG

Computer file GERMA152.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 47 48' N

Longitude 11 1' E

Height 975 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.37	2.05	3.17	4.15	4.89	5.13	5.40	4.62	3.85	2.61	1.43	1.12	3.32
	D mean	0.62	1.02	1.60	2.16	2.54	2.64	2.67	2.22	1.64	1.07	0.72	0.53	1.62
10 Deg South	Gm	1.76	2.41	3.49	4.36	5.01	5.18	5.51	4.82	4.21	3.06	1.78	1.48	3.60
	Dm	0.63	1.03	1.62	2.19	2.57	2.66	2.70	2.26	1.67	1.10	0.73	0.54	1.64
30 Deg South	Gm	2.41	2.95	3.89	4.50	4.92	4.97	5.36	4.91	4.63	3.73	2.34	2.10	3.90
	Dm	0.62	1.00	1.58	2.14	2.50	2.57	2.63	2.22	1.67	1.10	0.72	0.53	1.61
Latitude South	Gm	2.78	3.20	3.94	4.29	4.51	4.47	4.88	4.63	4.64	4.01	2.65	2.46	3.88
tilt 47 48' N	Dm	0.58	0.94	1.48	2.00	2.33	2.39	2.47	2.10	1.60	1.06	0.68	0.50	1.51
60 Deg South	Gm	2.91	3.23	3.81	3.98	4.06	3.97	4.37	4.25	4.44	4.03	2.74	2.60	3.70
	Dm	0.55	0.88	1.38	1.86	2.16	2.22	2.30	1.98	1.52	1.02	0.64	0.47	1.42
Vertical South	Gm	2.75	2.83	3.01	2.79	2.63	2.47	2.76	2.89	3.37	3.46	2.55	2.51	2.84
	Dm	0.45	0.71	1.11	1.48	1.70	1.74	1.83	1.60	1.27	0.87	0.53	0.39	1.14
Vertical SE/SW	Gm	2.10	2.33	2.76	2.89	2.88	2.83	3.09	3.05	3.22	2.88	2.02	1.90	2.66
	Dm	0.46	0.72	1.11	1.46	1.69	1.73	1.83	1.58	1.26	0.87	0.53	0.39	1.14
Vertical E/W	Gm	1.05	1.48	2.14	2.61	2.84	3.00	3.16	2.83	2.58	1.88	1.15	0.91	2.14
	Dm	0.46	0.71	1.08	1.43	1.67	1.73	1.82	1.54	1.20	0.82	0.52	0.39	1.12
Vertical NE/NW	Gm	0.46	0.79	1.35	1.92	2.28	2.55	2.57	2.11	1.61	0.96	0.55	0.38	1.46
	Dm	0.44	0.68	1.04	1.38	1.62	1.71	1.77	1.47	1.14	0.77	0.49	0.37	1.08
Vertical North	Gm	0.42	0.66	1.02	1.42	1.77	2.07	2.02	1.54	1.11	0.75	0.47	0.36	1.14
	Dm	0.42	0.66	1.02	1.36	1.60	1.70	1.74	1.44	1.11	0.75	0.47	0.36	1.05

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.28	1.18	1.10	1.05	1.02	1.01	1.02	1.04	1.09	1.17	1.25	1.32	1.08
30 Deg South	Gm/Gmean	1.76	1.44	1.23	1.08	1.01	0.97	0.99	1.06	1.20	1.43	1.64	1.88	1.17
Latitude South	Gm/Gmean	2.03	1.56	1.24	1.03	0.92	0.87	0.90	1.00	1.21	1.54	1.85	2.20	1.17
60 Deg South	Gm/Gmean	2.12	1.58	1.20	0.96	0.83	0.77	0.81	0.92	1.15	1.54	1.92	2.32	1.11
Vertical South	Gm/Gmean	2.01	1.38	0.95	0.67	0.54	0.48	0.51	0.63	0.88	1.33	1.78	2.24	0.86
Vertical SE/SW	Gm/Gmean	1.53	1.14	0.87	0.70	0.59	0.55	0.57	0.66	0.84	1.10	1.41	1.70	0.80
Vertical E/W	Gm/Gmean	0.77	0.72	0.68	0.63	0.58	0.58	0.58	0.61	0.67	0.72	0.80	0.81	0.64
Vertical NE/NW	Gm/Gmean	0.34	0.38	0.43	0.46	0.47	0.50	0.48	0.46	0.42	0.37	0.38	0.34	0.44
Vertical North	Gm/Gmean	0.31	0.32	0.32	0.34	0.36	0.40	0.37	0.33	0.29	0.29	0.33	0.32	0.34

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.53	3.94	5.61	7.22	8.36	8.66	8.51	7.47	6.05	4.49	2.81	2.03	5.65
	D clear	0.30	0.39	0.51	0.88	1.02	1.02	1.19	1.17	0.77	0.56	0.37	0.25	0.70
10 Deg South	Gc	3.63	4.97	6.42	7.70	8.59	8.82	8.69	7.83	6.74	5.43	3.84	3.09	6.32
	Dc	0.35	0.43	0.57	0.93	1.07	1.09	1.24	1.22	0.84	0.62	0.43	0.29	0.76
30 Deg South	Gc	5.50	6.63	7.47	8.07	8.41	8.50	8.44	8.01	7.55	6.86	5.56	4.93	7.16
	Dc	0.44	0.53	0.69	1.05	1.18	1.19	1.34	1.33	0.97	0.75	0.53	0.37	0.87
Latitude South	Gc	6.65	7.49	7.74	7.75	7.66	7.64	7.63	7.54	7.61	7.51	6.56	6.10	7.32
tilt 47 48' N	Dc	0.53	0.63	0.82	1.17	1.29	1.30	1.43	1.43	1.09	0.86	0.62	0.43	0.97
60 Deg South	Gc	7.09	7.70	7.54	7.15	6.79	6.70	6.72	6.86	7.28	7.58	6.92	6.59	7.07
	Dc	0.57	0.70	0.90	1.25	1.37	1.38	1.50	1.48	1.16	0.93	0.67	0.47	1.03
Vertical South	Gc	6.89	6.86	5.79	4.70	3.93	3.75	3.82	4.33	5.30	6.44	6.55	6.57	5.40
	Dc	0.65	0.82	1.07	1.40	1.53	1.56	1.62	1.56	1.28	1.04	0.74	0.53	1.15
Vertical SE/SW	Gc	5.22	5.47	5.46	5.26	4.98	4.88	4.87	4.94	5.39	5.53	5.04	4.79	5.15
	Dc	0.62	0.80	1.06	1.41	1.57	1.60	1.67	1.58	1.28	1.01	0.70	0.50	1.15
Vertical E/W	Gc	2.51	3.14	4.09	4.84	5.37	5.46	5.32	4.69	4.41	3.64	2.58	1.93	4.00
	Dc	0.55	0.74	1.02	1.37	1.59	1.62	1.70	1.56	1.22	0.92	0.62	0.43	1.11
Vertical NE/NW	Gc	0.68	1.09	2.01	3.03	3.90	4.08	3.93	3.08	2.44	1.51	0.79	0.44	2.25
	Dc	0.49	0.68	0.95	1.27	1.50	1.55	1.60	1.42	1.09	0.81	0.55	0.41	1.03
Vertical North	Gc	0.48	0.67	0.92	1.53	2.39	2.59	2.47	1.69	1.13	0.77	0.54	0.40	1.30
	Dc	0.48	0.67	0.92	1.19	1.42	1.47	1.50	1.32	1.02	0.77	0.54	0.40	0.98

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.43	1.26	1.14	1.07	1.03	1.02	1.02	1.05	1.11	1.21	1.37	1.52	1.12
30 Deg South	Gc/Gmax	2.17	1.68	1.33	1.12	1.01	0.98	0.99	1.07	1.25	1.53	1.98	2.43	1.27
Latitude South	Gc/Gmax	2.63	1.90	1.38	1.07	0.92	0.88	0.90	1.01	1.26	1.67	2.34	3.01	1.30
60 Deg South	Gc/Gmax	2.80	1.95	1.34	0.99	0.81	0.77	0.79	0.92	1.20	1.69	2.46	3.25	1.25
Vertical South	Gc/Gmax	2.72	1.74	1.03	0.65	0.47	0.43	0.45	0.58	0.88	1.43	2.33	3.24	0.96
Vertical SE/SW	Gc/Gmax	2.06	1.39	0.97	0.73	0.60	0.56	0.57	0.66	0.89	1.23	1.79	2.36	0.91
Vertical E/W	Gc/Gmax	0.99	0.80	0.73	0.67	0.64	0.63	0.63	0.63	0.73	0.81	0.92	0.95	0.71
Vertical NE/NW	Gc/Gmax	0.27	0.28	0.36	0.42	0.47	0.47	0.46	0.41	0.40	0.34	0.28	0.22	0.40
Vertical North	Gc/Gmax	0.19	0.17	0.16	0.21	0.29	0.30	0.29	0.23	0.19	0.17	0.19	0.20	0.23

Sunshine data

Mean sunshine	Hours	3.2	3.4	4.3	5.2	6.2	6.4	7.4	6.7	6.2	5.2	3.1	2.9	5.0
Max. sunshine	Hours	8.5	9.3	10.8	12.5	14.0	14.6	14.5	13.1	11.6	10.3	8.8	8.2	11.4

GREECE Site No. 307

ALIARTOS

Computer file GREEC307.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 38 23' N

Longitude 23 6' E

Height 110 metres

Data period (1.1968-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.41	2.17	3.36	4.84	5.89	6.51	6.27	5.73	4.56	2.92	1.96	1.37	3.92
	D mean	0.88	1.30	1.79	2.32	2.46	2.35	2.34	2.02	1.81	1.46	1.04	0.80	1.72
10 Deg South	Gm	1.61	2.41	3.62	5.06	6.01	6.54	6.36	5.98	4.93	3.26	2.29	1.62	4.15
	Dm	0.91	1.34	1.84	2.37	2.51	2.38	2.38	2.10	1.89	1.53	1.10	0.83	1.77
30 Deg South	Gm	1.90	2.72	3.89	5.14	5.83	6.17	6.10	6.05	5.30	3.72	2.79	1.99	4.31
	Dm	0.92	1.36	1.85	2.37	2.50	2.36	2.38	2.17	1.97	1.59	1.17	0.86	1.79
Latitude South	Gm	1.97	2.78	3.89	5.03	5.60	5.85	5.83	5.90	5.30	3.80	2.92	2.09	4.25
tilt 38 23' N	Dm	0.91	1.34	1.82	2.33	2.45	2.32	2.35	2.17	1.97	1.59	1.17	0.86	1.77
60 Deg South	Gm	2.01	2.72	3.63	4.40	4.61	4.65	4.71	5.07	4.91	3.73	3.02	2.19	3.81
	Dm	0.85	1.24	1.67	2.14	2.25	2.14	2.17	2.07	1.90	1.51	1.14	0.82	1.66
Vertical South	Gm	1.73	2.22	2.71	2.90	2.68	2.49	2.60	3.13	3.51	3.00	2.62	1.95	2.63
	Dm	0.69	1.01	1.35	1.72	1.82	1.79	1.78	1.75	1.62	1.28	0.98	0.69	1.37
Vertical SE/SW	Gm	1.42	1.89	2.51	3.02	3.14	3.18	3.19	3.41	3.34	2.59	2.14	1.57	2.62
	Dm	0.67	0.97	1.32	1.71	1.85	1.84	1.85	1.77	1.57	1.23	0.93	0.66	1.37
Vertical E/W	Gm	0.90	1.32	2.02	2.77	3.22	3.52	3.39	3.23	2.72	1.85	1.31	0.93	2.27
	Dm	0.60	0.87	1.23	1.66	1.86	1.89	1.88	1.72	1.45	1.09	0.78	0.58	1.30
Vertical NE/NW	Gm	0.55	0.84	1.36	2.02	2.52	2.87	2.66	2.24	1.71	1.09	0.71	0.52	1.59
	Dm	0.53	0.78	1.13	1.53	1.73	1.79	1.75	1.53	1.27	0.94	0.66	0.50	1.18
Vertical North	Gm	0.50	0.73	1.07	1.48	1.79	2.05	1.86	1.46	1.18	0.87	0.62	0.47	1.18
	Dm	0.50	0.73	1.07	1.45	1.64	1.72	1.64	1.39	1.18	0.87	0.62	0.47	1.11

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.14	1.11	1.08	1.04	1.02	1.00	1.01	1.04	1.08	1.12	1.17	1.18	1.06
30 Deg South	Gm/Gmean	1.35	1.25	1.16	1.06	0.99	0.95	0.97	1.06	1.16	1.27	1.42	1.45	1.10
Latitude South	Gm/Gmean	1.40	1.28	1.16	1.04	0.95	0.90	0.93	1.03	1.16	1.30	1.49	1.53	1.08
60 Deg South	Gm/Gmean	1.43	1.25	1.08	0.91	0.78	0.71	0.75	0.88	1.08	1.28	1.54	1.60	0.97
Vertical South	Gm/Gmean	1.23	1.02	0.81	0.60	0.46	0.38	0.41	0.55	0.77	1.03	1.34	1.42	0.67
Vertical SE/SW	Gm/Gmean	1.01	0.87	0.75	0.62	0.53	0.49	0.51	0.60	0.73	0.89	1.09	1.15	0.67
Vertical E/W	Gm/Gmean	0.64	0.61	0.60	0.57	0.55	0.54	0.54	0.56	0.60	0.63	0.67	0.68	0.58
Vertical NE/NW	Gm/Gmean	0.39	0.39	0.41	0.42	0.43	0.44	0.42	0.39	0.38	0.37	0.36	0.38	0.41
Vertical North	Gm/Gmean	0.35	0.34	0.32	0.31	0.30	0.31	0.30	0.25	0.26	0.30	0.32	0.34	0.30

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.00	4.02	5.81	6.94	7.72	7.99	7.84	7.14	5.96	4.70	3.36	2.53	5.59
	D clear	1.22	1.38	1.30	1.72	1.86	1.91	1.94	2.13	1.64	1.44	1.26	1.01	1.57
10 Deg South	Gc	3.56	4.59	6.31	7.16	7.76	7.95	7.84	7.26	6.36	5.26	3.95	3.10	5.93
	Dc	1.27	1.44	1.34	1.73	1.87	1.88	1.94	2.10	1.70	1.50	1.32	1.05	1.60
30 Deg South	Gc	4.59	5.51	6.89	7.20	7.35	7.43	7.36	7.14	6.75	6.10	4.99	4.17	6.29
	Dc	1.50	1.66	1.49	1.82	1.90	1.90	1.95	2.15	1.83	1.70	1.55	1.27	1.73
Latitude South	Gc	4.89	5.74	6.93	7.01	6.99	7.01	6.96	6.89	6.71	6.27	5.27	4.50	6.27
tilt 38 23' N	Dc	1.57	1.72	1.53	1.84	1.90	1.89	1.94	2.15	1.86	1.75	1.61	1.33	1.76
60 Deg South	Gc	5.23	5.83	6.45	5.96	5.53	5.45	5.46	5.71	6.07	6.18	5.56	4.95	5.70
	Dc	1.67	1.80	1.60	1.84	1.85	1.85	1.88	2.07	1.88	1.81	1.70	1.43	1.78
Vertical South	Gc	4.66	4.81	4.56	3.56	2.87	2.72	2.76	3.26	4.08	4.86	4.84	4.56	3.96
	Dc	1.56	1.68	1.56	1.72	1.73	1.73	1.74	1.83	1.72	1.69	1.60	1.37	1.66
Vertical SE/SW	Gc	3.65	4.01	4.46	4.12	3.85	3.79	3.79	3.91	4.13	4.23	3.84	3.51	3.94
	Dc	1.39	1.56	1.55	1.78	1.83	1.84	1.86	1.92	1.72	1.61	1.44	1.21	1.64
Vertical E/W	Gc	1.98	2.60	3.60	4.02	4.27	4.35	4.29	3.95	3.50	2.97	2.19	1.76	3.29
	Dc	1.04	1.29	1.43	1.77	1.90	1.93	1.94	1.94	1.61	1.39	1.11	0.90	1.52
Vertical NE/NW	Gc	0.86	1.22	2.02	2.72	3.27	3.43	3.35	2.82	2.11	1.49	0.96	0.72	2.09
	Dc	0.78	0.99	1.23	1.58	1.76	1.81	1.81	1.73	1.37	1.11	0.84	0.68	1.31
Vertical North	Gc	0.72	0.88	1.12	1.56	2.03	2.18	2.12	1.70	1.22	0.98	0.77	0.63	1.33
	Dc	0.72	0.88	1.12	1.41	1.61	1.66	1.65	1.53	1.21	0.98	0.77	0.63	1.18

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.19	1.14	1.09	1.03	1.00	1.00	1.00	1.02	1.07	1.12	1.18	1.23	1.06
30 Deg South	Gc/Gmax	1.53	1.37	1.19	1.04	0.95	0.93	0.94	1.00	1.13	1.30	1.49	1.65	1.13
Latitude South	Gc/Gmax	1.63	1.43	1.19	1.01	0.90	0.88	0.89	0.96	1.13	1.33	1.57	1.78	1.12
60 Deg South	Gc/Gmax	1.74	1.45	1.11	0.86	0.72	0.68	0.70	0.80	1.02	1.32	1.65	1.96	1.02
Vertical South	Gc/Gmax	1.55	1.20	0.79	0.51	0.37	0.34	0.35	0.46	0.69	1.03	1.44	1.80	0.71
Vertical SE/SW	Gc/Gmax	1.22	1.00	0.77	0.59	0.50	0.47	0.48	0.55	0.69	0.90	1.14	1.39	0.70
Vertical E/W	Gc/Gmax	0.66	0.65	0.62	0.58	0.55	0.54	0.55	0.55	0.59	0.63	0.65	0.70	0.59
Vertical NE/NW	Gc/Gmax	0.29	0.30	0.35	0.39	0.42	0.43	0.43	0.40	0.35	0.32	0.29	0.28	0.37
Vertical North	Gc/Gmax	0.24	0.22	0.19	0.22	0.26	0.27	0.27	0.24	0.20	0.21	0.23	0.25	0.24

Sunshine data

Mean sunshine	Hours	2.6	3.6	5.0	7.0	9.3	10.3	10.8	10.5	8.1	5.6	4.7	3.1	6.7
Max. sunshine	Hours	8.0	8.6	10.1	11.5	12.8	13.1	13.1	12.2	10.8	9.6	8.5	7.3	10.5

GREECE Site No. 309

ATHENS

Computer file GREEC309.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 37 58' N

Longitude 23 43' E

Height 107 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.75	2.62	3.82	5.15	6.41	6.84	6.88	6.18	4.86	3.38	2.33	1.69	4.33
	D mean	0.95	1.34	1.81	2.22	2.35	2.19	2.22	1.92	1.67	1.35	1.03	0.82	1.66
10 Deg South	Gm	2.06	2.97	4.15	5.40	6.54	6.87	7.00	6.48	5.28	3.85	2.79	2.06	4.63
	Dm	1.00	1.40	1.87	2.28	2.39	2.23	2.28	2.03	1.76	1.44	1.12	0.88	1.72
30 Deg South	Gm	2.52	3.46	4.51	5.51	6.35	6.47	6.70	6.56	5.72	4.49	3.49	2.65	4.88
	Dm	1.05	1.47	1.90	2.30	2.41	2.22	2.30	2.13	1.88	1.56	1.23	0.95	1.78
Latitude South	Gm	2.64	3.57	4.53	5.41	6.11	6.15	6.41	6.42	5.74	4.63	3.67	2.82	4.85
tilt 37 58' N	Dm	1.05	1.47	1.89	2.28	2.38	2.20	2.29	2.14	1.90	1.59	1.25	0.96	1.78
60 Deg South	Gm	2.76	3.58	4.26	4.74	5.00	4.84	5.14	5.50	5.33	4.62	3.87	3.03	4.39
	Dm	1.01	1.41	1.77	2.11	2.21	2.06	2.14	2.07	1.86	1.58	1.26	0.95	1.70
Vertical South	Gm	2.42	2.96	3.18	3.09	2.84	2.53	2.76	3.35	3.79	3.75	3.40	2.74	3.07
	Dm	0.86	1.19	1.46	1.74	1.84	1.76	1.82	1.80	1.64	1.40	1.13	0.84	1.46
Vertical SE/SW	Gm	1.96	2.48	2.94	3.24	3.38	3.30	3.47	3.68	3.61	3.19	2.73	2.17	3.01
	Dm	0.82	1.14	1.43	1.73	1.88	1.83	1.89	1.82	1.59	1.33	1.05	0.79	1.44
Vertical E/W	Gm	1.18	1.66	2.33	2.96	3.50	3.69	3.72	3.49	2.90	2.18	1.59	1.22	2.54
	Dm	0.71	0.99	1.32	1.68	1.90	1.88	1.94	1.77	1.46	1.15	0.86	0.67	1.36
Vertical NE/NW	Gm	0.65	0.95	1.49	2.10	2.68	2.98	2.87	2.38	1.75	1.16	0.78	0.60	1.70
	Dm	0.61	0.85	1.19	1.53	1.75	1.78	1.79	1.56	1.26	0.96	0.71	0.56	1.21
Vertical North	Gm	0.57	0.79	1.12	1.47	1.82	2.06	1.92	1.48	1.15	0.87	0.66	0.52	1.20
	Dm	0.57	0.79	1.12	1.44	1.64	1.70	1.66	1.41	1.15	0.87	0.66	0.52	1.13

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.13	1.09	1.05	1.02	1.00	1.02	1.05	1.09	1.14	1.20	1.22	1.07
30 Deg South	Gm/Gmean	1.44	1.32	1.18	1.07	0.99	0.95	0.97	1.06	1.18	1.33	1.50	1.57	1.13
Latitude South	Gm/Gmean	1.51	1.36	1.19	1.05	0.95	0.90	0.93	1.04	1.18	1.37	1.58	1.67	1.12
60 Deg South	Gm/Gmean	1.58	1.37	1.12	0.92	0.78	0.71	0.75	0.89	1.10	1.37	1.66	1.79	1.01
Vertical South	Gm/Gmean	1.38	1.13	0.83	0.60	0.44	0.37	0.40	0.54	0.78	1.11	1.46	1.62	0.71
Vertical SE/SW	Gm/Gmean	1.12	0.95	0.77	0.63	0.53	0.48	0.50	0.60	0.74	0.94	1.17	1.28	0.69
Vertical E/W	Gm/Gmean	0.67	0.63	0.61	0.57	0.55	0.54	0.54	0.56	0.60	0.64	0.68	0.72	0.59
Vertical NE/NW	Gm/Gmean	0.37	0.36	0.39	0.41	0.42	0.44	0.42	0.38	0.36	0.34	0.34	0.35	0.39
Vertical North	Gm/Gmean	0.33	0.30	0.29	0.28	0.28	0.30	0.28	0.24	0.24	0.26	0.28	0.31	0.28

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.04	4.06	5.83	6.95	7.72	7.98	7.84	7.15	5.98	4.73	3.40	2.58	5.61
	D clear	1.14	1.25	1.24	1.63	1.82	1.88	1.91	2.04	1.62	1.37	1.17	0.92	1.50
10 Deg South	Gc	3.72	4.78	6.39	7.27	7.81	7.97	7.86	7.35	6.40	5.37	4.12	3.29	6.03
	Dc	1.28	1.45	1.34	1.73	1.87	1.88	1.93	2.10	1.70	1.51	1.33	1.06	1.60
30 Deg South	Gc	4.79	5.73	6.97	7.29	7.38	7.42	7.36	7.21	6.77	6.22	5.19	4.43	6.40
	Dc	1.52	1.67	1.49	1.82	1.89	1.89	1.94	2.15	1.83	1.70	1.56	1.28	1.73
Latitude South	Gc	5.08	5.95	7.00	7.10	7.02	7.02	6.98	6.96	6.73	6.38	5.47	4.76	6.37
tilt 37 58' N	Dc	1.59	1.73	1.53	1.84	1.89	1.89	1.94	2.14	1.86	1.75	1.62	1.35	1.76
60 Deg South	Gc	5.45	6.04	6.50	6.00	5.53	5.43	5.43	5.74	6.07	6.28	5.77	5.24	5.79
	Dc	1.68	1.80	1.60	1.83	1.85	1.84	1.88	2.06	1.87	1.82	1.71	1.45	1.78
Vertical South	Gc	4.83	4.96	4.57	3.55	2.84	2.68	2.72	3.24	4.06	4.91	5.00	4.81	4.01
	Dc	1.58	1.68	1.56	1.71	1.72	1.72	1.74	1.82	1.72	1.69	1.60	1.39	1.66
Vertical SE/SW	Gc	3.78	4.13	4.48	4.14	3.84	3.77	3.77	3.93	4.12	4.28	3.97	3.69	3.99
	Dc	1.40	1.57	1.55	1.78	1.83	1.84	1.86	1.92	1.72	1.62	1.45	1.23	1.65
Vertical E/W	Gc	2.05	2.68	3.63	4.06	4.28	4.35	4.29	3.99	3.51	3.01	2.26	1.84	3.33
	Dc	1.06	1.30	1.44	1.77	1.90	1.93	1.94	1.94	1.62	1.40	1.12	0.91	1.53
Vertical NE/NW	Gc	0.87	1.24	2.05	2.75	3.29	3.44	3.36	2.85	2.13	1.51	0.97	0.74	2.10
	Dc	0.79	1.00	1.24	1.58	1.76	1.81	1.81	1.73	1.37	1.11	0.85	0.69	1.31
Vertical North	Gc	0.73	0.89	1.12	1.57	2.04	2.19	2.13	1.71	1.23	0.99	0.78	0.64	1.34
	Dc	0.73	0.89	1.12	1.41	1.61	1.66	1.66	1.53	1.22	0.99	0.78	0.64	1.19

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.22	1.18	1.10	1.05	1.01	1.00	1.00	1.03	1.07	1.13	1.21	1.27	1.08
30 Deg South	Gc/Gmax	1.58	1.41	1.20	1.05	0.96	0.93	0.94	1.01	1.13	1.32	1.53	1.72	1.14
Latitude South	Gc/Gmax	1.67	1.47	1.20	1.02	0.91	0.88	0.89	0.97	1.13	1.35	1.61	1.85	1.13
60 Deg South	Gc/Gmax	1.79	1.49	1.12	0.86	0.72	0.68	0.69	0.80	1.01	1.33	1.70	2.03	1.03
Vertical South	Gc/Gmax	1.59	1.22	0.78	0.51	0.37	0.34	0.35	0.45	0.68	1.04	1.47	1.86	0.71
Vertical SE/SW	Gc/Gmax	1.24	1.02	0.77	0.60	0.50	0.47	0.48	0.55	0.69	0.90	1.17	1.43	0.71
Vertical E/W	Gc/Gmax	0.67	0.66	0.62	0.58	0.55	0.55	0.55	0.56	0.59	0.64	0.67	0.71	0.59
Vertical NE/NW	Gc/Gmax	0.29	0.31	0.35	0.40	0.43	0.43	0.43	0.40	0.36	0.32	0.28	0.29	0.37
Vertical North	Gc/Gmax	0.24	0.22	0.19	0.23	0.26	0.27	0.27	0.24	0.21	0.21	0.23	0.25	0.24

Sunshine data

Mean sunshine	Hours	4.0	5.3	6.1	7.9	10.4	11.2	12.1	11.6	9.1	7.3	6.1	4.6	8.0
Max. sunshine	Hours	9.1	10.0	10.7	12.4	13.2	13.3	13.3	12.9	11.0	10.3	9.7	8.7	11.2

IRELAND Site No. 56

BIRR

Computer file IRELA056. INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 53 5' N

Longitude 7 54' W

Height 72 metres

Data period (1.1971-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.70	1.37	2.48	3.92	4.73	5.22	4.61	3.89	3.09	1.68	0.92	0.54	2.77
	D mean	0.47	0.81	1.42	2.22	2.69	3.01	2.76	2.31	1.72	1.00	0.55	0.36	1.61
10 Deg South	Gm	0.86	1.63	2.76	4.16	4.86	5.30	4.70	4.06	3.36	1.93	1.15	0.71	2.96
	Dm	0.48	0.82	1.44	2.25	2.71	3.03	2.77	2.34	1.74	1.01	0.56	0.36	1.63
30 Deg South	Gm	1.13	2.03	3.11	4.35	4.82	5.15	4.60	4.13	3.67	2.28	1.51	0.98	3.15
	Dm	0.46	0.81	1.41	2.21	2.63	2.92	2.67	2.27	1.70	0.99	0.55	0.35	1.58
Latitude South	Gm	1.30	2.26	3.17	4.12	4.32	4.50	4.06	3.80	3.62	2.43	1.76	1.18	3.04
tilt 53 5' N	Dm	0.41	0.75	1.29	2.01	2.37	2.62	2.38	2.05	1.54	0.90	0.50	0.31	1.43
60 Deg South	Gm	1.32	2.27	3.12	3.96	4.08	4.22	3.81	3.62	3.52	2.41	1.79	1.21	2.95
	Dm	0.39	0.72	1.24	1.93	2.27	2.50	2.27	1.96	1.48	0.86	0.48	0.30	1.37
Vertical South	Gm	1.25	2.05	2.54	2.89	2.76	2.76	2.54	2.55	2.74	2.08	1.68	1.18	2.25
	Dm	0.30	0.58	0.98	1.52	1.76	1.92	1.74	1.51	1.17	0.68	0.38	0.23	1.07
Vertical SE/SW	Gm	0.98	1.67	2.28	2.86	2.93	2.99	2.70	2.59	2.54	1.75	1.31	0.91	2.13
	Dm	0.30	0.58	0.98	1.50	1.74	1.90	1.72	1.49	1.16	0.68	0.38	0.24	1.06
Vertical E/W	Gm	0.52	1.03	1.70	2.48	2.86	3.02	2.68	2.34	2.02	1.16	0.70	0.44	1.75
	Dm	0.31	0.55	0.94	1.46	1.72	1.89	1.70	1.46	1.12	0.66	0.38	0.24	1.04
Vertical NE/NW	Gm	0.30	0.57	1.09	1.81	2.33	2.56	2.25	1.81	1.35	0.70	0.37	0.23	1.28
	Dm	0.29	0.52	0.89	1.39	1.68	1.86	1.68	1.41	1.08	0.63	0.36	0.22	1.00
Vertical North	Gm	0.28	0.49	0.86	1.39	1.89	2.14	1.89	1.45	1.05	0.60	0.34	0.22	1.05
	Dm	0.28	0.49	0.86	1.35	1.66	1.85	1.67	1.39	1.05	0.60	0.34	0.22	0.98

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.23	1.19	1.11	1.06	1.03	1.01	1.02	1.04	1.09	1.15	1.25	1.32	1.07
30 Deg South	Gm/Gmean	1.61	1.48	1.25	1.11	1.02	0.99	1.00	1.06	1.19	1.36	1.64	1.82	1.14
Latitude South	Gm/Gmean	1.86	1.65	1.28	1.05	0.91	0.86	0.88	0.98	1.17	1.45	1.91	2.18	1.10
60 Deg South	Gm/Gmean	1.89	1.66	1.26	1.01	0.86	0.81	0.83	0.93	1.14	1.43	1.95	2.24	1.07
Vertical South	Gm/Gmean	1.79	1.50	1.02	0.74	0.58	0.53	0.55	0.66	0.89	1.24	1.83	2.18	0.81
Vertical SE/SW	Gm/Gmean	1.40	1.22	0.92	0.73	0.62	0.57	0.59	0.67	0.82	1.04	1.42	1.68	0.77
Vertical E/W	Gm/Gmean	0.74	0.75	0.69	0.63	0.61	0.58	0.58	0.60	0.65	0.69	0.76	0.81	0.63
Vertical NE/NW	Gm/Gmean	0.43	0.42	0.44	0.46	0.49	0.49	0.49	0.47	0.44	0.42	0.40	0.43	0.46
Vertical North	Gm/Gmean	0.40	0.36	0.35	0.35	0.40	0.41	0.41	0.37	0.34	0.36	0.37	0.41	0.38

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.53	2.73	4.56	6.63	7.77	8.16	8.13	6.65	5.33	3.16	1.87	1.08	4.81
	D clear	0.33	0.54	0.65	1.15	1.19	1.28	1.12	1.28	0.87	0.56	0.34	0.20	0.79
10 Deg South	Gc	2.28	3.56	5.34	7.13	7.95	8.38	8.31	7.03	5.96	3.95	2.74	1.87	5.38
	Dc	0.36	0.61	0.74	1.18	1.15	1.33	1.12	1.30	0.87	0.64	0.40	0.25	0.83
30 Deg South	Gc	3.61	4.94	6.43	7.68	8.01	8.32	8.27	7.37	6.91	5.20	4.23	3.27	6.19
	Dc	0.44	0.73	0.87	1.32	1.27	1.44	1.24	1.42	1.01	0.77	0.50	0.31	0.94
Latitude South	Gc	4.64	5.85	6.83	7.42	7.21	7.37	7.35	6.94	7.09	5.93	5.35	4.40	6.36
tilt 53 5' N	Dc	0.52	0.84	1.00	1.45	1.41	1.56	1.38	1.53	1.15	0.88	0.60	0.37	1.06
60 Deg South	Gc	4.81	5.96	6.76	7.13	6.79	6.90	6.89	6.62	6.95	5.98	5.53	4.62	6.24
	Dc	0.53	0.86	1.04	1.49	1.45	1.59	1.43	1.56	1.18	0.91	0.61	0.39	1.09
Vertical South	Gc	4.81	5.52	5.48	5.03	4.30	4.25	4.26	4.50	5.36	5.31	5.44	4.79	4.91
	Dc	0.56	0.90	1.13	1.55	1.58	1.69	1.58	1.59	1.27	0.95	0.65	0.41	1.16
Vertical SE/SW	Gc	3.55	4.37	4.98	5.29	5.06	5.06	5.11	4.94	5.26	4.50	4.16	3.49	4.65
	Dc	0.51	0.84	1.10	1.55	1.60	1.72	1.61	1.61	1.26	0.92	0.61	0.37	1.14
Vertical E/W	Gc	1.51	2.41	3.57	4.59	5.16	5.28	5.34	4.62	4.14	2.85	2.04	1.35	3.58
	Dc	0.43	0.71	1.01	1.48	1.59	1.73	1.61	1.58	1.18	0.81	0.52	0.32	1.08
Vertical NE/NW	Gc	0.43	0.87	1.71	2.81	3.69	3.86	3.88	3.08	2.24	1.20	0.61	0.31	2.06
	Dc	0.39	0.61	0.91	1.32	1.49	1.62	1.51	1.42	1.05	0.70	0.45	0.29	0.98
Vertical North	Gc	0.38	0.58	0.86	1.50	2.34	2.52	2.49	1.86	1.09	0.66	0.43	0.29	1.25
	Dc	0.38	0.58	0.86	1.22	1.40	1.51	1.43	1.31	0.98	0.66	0.43	0.29	0.92

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.49	1.30	1.17	1.08	1.02	1.03	1.02	1.06	1.12	1.25	1.47	1.73	1.12
30 Deg South	Gc/Gmax	2.36	1.81	1.41	1.16	1.03	1.02	1.02	1.11	1.30	1.65	2.26	3.03	1.29
Latitude South	Gc/Gmax	3.03	2.14	1.50	1.12	0.93	0.90	0.90	1.04	1.33	1.88	2.86	4.07	1.32
60 Deg South	Gc/Gmax	3.14	2.18	1.48	1.08	0.87	0.85	0.85	1.00	1.30	1.89	2.96	4.28	1.30
Vertical South	Gc/Gmax	3.14	2.02	1.20	0.76	0.55	0.52	0.52	0.68	1.01	1.68	2.91	4.43	1.02
Vertical SE/SW	Gc/Gmax	2.32	1.60	1.09	0.80	0.65	0.62	0.63	0.74	0.99	1.42	2.22	3.23	0.97
Vertical E/W	Gc/Gmax	0.99	0.88	0.78	0.69	0.66	0.65	0.66	0.69	0.78	0.90	1.09	1.25	0.74
Vertical NE/NW	Gc/Gmax	0.28	0.32	0.38	0.42	0.47	0.47	0.48	0.46	0.42	0.38	0.33	0.29	0.43
Vertical North	Gc/Gmax	0.25	0.21	0.19	0.23	0.30	0.31	0.31	0.28	0.20	0.21	0.23	0.27	0.26

Sunshine data

Mean sunshine	Hours	1.4	2.7	3.6	5.0	5.4	5.6	4.7	4.5	4.0	2.7	2.1	1.4	3.6
Max. sunshine	Hours	6.0	8.1	10.1	12.2	12.4	14.5	13.4	12.0	10.1	8.3	7.4	5.9	10.0

IRELAND Site No. 58

KILKENNY

Computer file IRELA058.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 52 40' N

Longitude 7 16' W

Height 64 metres

Data period (1.1969-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.71	1.45	2.63	4.20	4.84	5.70	5.05	4.15	3.14	1.76	0.97	0.58	2.94
	D mean	0.49	0.86	1.44	2.28	2.59	3.07	2.87	2.34	1.68	1.05	0.59	0.41	1.64
10 Deg South	Gm	0.87	1.72	2.93	4.45	4.97	5.77	5.14	4.33	3.42	2.01	1.20	0.73	3.13
	Dm	0.49	0.87	1.46	2.31	2.61	3.09	2.88	2.36	1.70	1.06	0.60	0.42	1.66
30 Deg South	Gm	1.12	2.13	3.31	4.66	4.92	5.59	5.02	4.40	3.74	2.37	1.57	0.96	3.32
	Dm	0.48	0.86	1.43	2.26	2.53	2.98	2.78	2.29	1.66	1.03	0.59	0.41	1.61
Latitude South	Gm	1.28	2.36	3.38	4.41	4.41	4.88	4.42	4.05	3.69	2.52	1.81	1.12	3.20
tilt 52 40' N	Dm	0.43	0.79	1.30	2.06	2.28	2.67	2.48	2.06	1.51	0.94	0.55	0.37	1.46
60 Deg South	Gm	1.30	2.37	3.32	4.22	4.14	4.55	4.14	3.85	3.59	2.50	1.84	1.15	3.08
	Dm	0.41	0.76	1.25	1.97	2.17	2.55	2.36	1.97	1.44	0.89	0.52	0.35	1.39
Vertical South	Gm	1.21	2.13	2.70	3.06	2.78	2.95	2.73	2.69	2.79	2.15	1.72	1.10	2.33
	Dm	0.31	0.61	0.99	1.56	1.70	1.98	1.82	1.53	1.15	0.71	0.42	0.28	1.09
Vertical SE/SW	Gm	0.96	1.74	2.43	3.09	3.01	3.26	2.96	2.78	2.60	1.81	1.35	0.86	2.24
	Dm	0.32	0.61	0.99	1.54	1.69	1.96	1.80	1.52	1.14	0.71	0.42	0.28	1.08
Vertical E/W	Gm	0.52	1.08	1.82	2.71	2.98	3.36	2.97	2.54	2.07	1.20	0.73	0.44	1.87
	Dm	0.32	0.58	0.96	1.50	1.67	1.94	1.78	1.49	1.11	0.68	0.40	0.27	1.06
Vertical NE/NW	Gm	0.30	0.60	1.15	1.97	2.42	2.84	2.49	1.95	1.38	0.73	0.39	0.25	1.38
	Dm	0.30	0.54	0.92	1.44	1.65	1.93	1.77	1.45	1.08	0.65	0.38	0.25	1.03
Vertical North	Gm	0.29	0.52	0.90	1.47	1.94	2.34	2.06	1.52	1.06	0.63	0.36	0.24	1.11
	Dm	0.29	0.52	0.90	1.41	1.64	1.93	1.76	1.43	1.06	0.63	0.36	0.24	1.02

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.23	1.19	1.11	1.06	1.03	1.01	1.02	1.04	1.09	1.14	1.24	1.26	1.07
30 Deg South	Gm/Gmean	1.58	1.47	1.26	1.11	1.02	0.98	0.99	1.06	1.19	1.35	1.62	1.65	1.13
Latitude South	Gm/Gmean	1.80	1.63	1.28	1.05	0.91	0.86	0.88	0.98	1.17	1.43	1.87	1.93	1.09
60 Deg South	Gm/Gmean	1.83	1.63	1.26	1.00	0.86	0.80	0.82	0.93	1.14	1.42	1.90	1.98	1.05
Vertical South	Gm/Gmean	1.70	1.47	1.03	0.73	0.57	0.52	0.54	0.65	0.89	1.22	1.77	1.90	0.79
Vertical SE/SW	Gm/Gmean	1.35	1.20	0.92	0.74	0.62	0.57	0.59	0.67	0.83	1.03	1.39	1.48	0.76
Vertical E/W	Gm/Gmean	0.73	0.75	0.69	0.64	0.62	0.59	0.59	0.61	0.66	0.68	0.75	0.76	0.64
Vertical NE/NW	Gm/Gmean	0.42	0.41	0.44	0.47	0.50	0.50	0.49	0.47	0.44	0.41	0.40	0.43	0.47
Vertical North	Gm/Gmean	0.41	0.36	0.34	0.35	0.40	0.41	0.41	0.37	0.34	0.36	0.37	0.41	0.38

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.64	2.91	4.72	6.60	7.99	8.63	8.20	6.82	5.35	3.39	1.94	1.08	4.95
	D clear	0.37	0.55	0.55	0.99	0.78	0.95	0.83	1.00	0.74	0.59	0.42	0.30	0.67
10 Deg South	Gc	2.42	3.79	5.53	7.12	8.25	8.85	8.41	7.25	6.00	4.21	2.79	1.79	5.54
	Dc	0.41	0.61	0.63	1.04	0.83	1.02	0.88	1.07	0.74	0.64	0.49	0.37	0.73
30 Deg South	Gc	3.80	5.24	6.65	7.65	8.29	8.75	8.35	7.56	6.94	5.51	4.23	3.01	6.33
	Dc	0.51	0.74	0.75	1.17	0.96	1.14	1.01	1.19	0.88	0.77	0.61	0.46	0.85
Latitude South	Gc	4.84	6.18	7.05	7.37	7.45	7.73	7.43	7.10	7.12	6.27	5.30	3.98	6.48
tilt 52 40' N	Dc	0.59	0.85	0.89	1.31	1.15	1.32	1.19	1.32	1.02	0.89	0.71	0.54	0.98
60 Deg South	Gc	5.03	6.30	6.98	7.07	6.98	7.20	6.93	6.75	6.97	6.33	5.48	4.17	6.35
	Dc	0.61	0.88	0.93	1.35	1.21	1.38	1.25	1.36	1.06	0.92	0.74	0.55	1.02
Vertical South	Gc	5.00	5.82	5.63	4.94	4.35	4.36	4.23	4.53	5.35	5.60	5.36	4.29	4.95
	Dc	0.63	0.92	1.06	1.45	1.45	1.59	1.49	1.46	1.19	0.98	0.76	0.56	1.13
Vertical SE/SW	Gc	3.70	4.60	5.15	5.27	5.25	5.33	5.17	5.08	5.30	4.75	4.10	3.14	4.73
	Dc	0.57	0.86	1.04	1.45	1.46	1.61	1.51	1.48	1.19	0.94	0.70	0.49	1.11
Vertical E/W	Gc	1.58	2.54	3.70	4.62	5.46	5.69	5.49	4.85	4.21	3.01	2.01	1.24	3.70
	Dc	0.46	0.73	0.98	1.39	1.47	1.62	1.51	1.46	1.13	0.84	0.57	0.38	1.05
Vertical NE/NW	Gc	0.44	0.90	1.77	2.83	3.91	4.17	4.00	3.24	2.29	1.26	0.62	0.33	2.15
	Dc	0.41	0.63	0.90	1.26	1.41	1.54	1.45	1.34	1.03	0.73	0.47	0.32	0.96
Vertical North	Gc	0.40	0.60	0.87	1.48	2.45	2.68	2.56	1.91	1.10	0.68	0.45	0.31	1.30
	Dc	0.40	0.60	0.87	1.18	1.36	1.47	1.40	1.25	0.98	0.68	0.45	0.31	0.91

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.48	1.30	1.17	1.08	1.03	1.02	1.03	1.06	1.12	1.24	1.44	1.66	1.12
30 Deg South	Gc/Gmax	2.32	1.80	1.41	1.16	1.04	1.01	1.02	1.11	1.30	1.63	2.18	2.79	1.28
Latitude South	Gc/Gmax	2.95	2.12	1.49	1.12	0.93	0.90	0.91	1.04	1.33	1.85	2.73	3.68	1.31
60 Deg South	Gc/Gmax	3.07	2.16	1.48	1.07	0.87	0.83	0.85	0.99	1.30	1.87	2.83	3.86	1.28
Vertical South	Gc/Gmax	3.05	2.00	1.19	0.75	0.54	0.50	0.52	0.66	1.00	1.65	2.76	3.97	1.00
Vertical SE/SW	Gc/Gmax	2.26	1.58	1.09	0.80	0.66	0.62	0.63	0.75	0.99	1.40	2.11	2.91	0.96
Vertical E/W	Gc/Gmax	0.96	0.87	0.78	0.70	0.68	0.66	0.67	0.71	0.79	0.89	1.04	1.15	0.75
Vertical NE/NW	Gc/Gmax	0.27	0.31	0.38	0.43	0.49	0.48	0.49	0.47	0.43	0.37	0.32	0.31	0.43
Vertical North	Gc/Gmax	0.24	0.21	0.18	0.22	0.31	0.31	0.31	0.28	0.21	0.20	0.23	0.29	0.26

Sunshine data

Mean sunshine	Hours	1.4	2.7	3.7	5.1	5.4	5.8	4.9	4.7	4.1	2.7	2.2	1.3	3.7
Max. sunshine	Hours	6.8	8.6	10.2	12.1	13.2	15.0	13.6	12.4	9.9	8.5	7.6	6.3	10.4

IRELAND Site No. 60

VALENTIA

Computer file IRELA060.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 51 56' N

Longitude 10 15' W

Height 20 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.67	1.44	2.62	3.96	5.09	5.31	4.80	4.15	3.02	1.63	0.86	0.53	2.85
	D mean	0.47	0.83	1.45	2.13	2.68	2.89	2.72	2.31	1.67	0.96	0.56	0.38	1.59
10 Deg South	Gm	0.81	1.70	2.90	4.19	5.23	5.37	4.88	4.33	3.28	1.85	1.03	0.65	3.02
	Dm	0.47	0.84	1.47	2.16	2.71	2.91	2.73	2.33	1.69	0.97	0.57	0.39	1.61
30 Deg South	Gm	1.02	2.10	3.26	4.38	5.16	5.19	4.76	4.39	3.56	2.16	1.29	0.83	3.18
	Dm	0.45	0.82	1.43	2.11	2.62	2.80	2.63	2.26	1.65	0.93	0.55	0.37	1.56
Latitude South	Gm	1.14	2.31	3.32	4.15	4.65	4.55	4.21	4.06	3.50	2.28	1.43	0.95	3.05
tilt 51 56' N	Dm	0.41	0.75	1.31	1.93	2.38	2.53	2.36	2.06	1.50	0.84	0.49	0.33	1.41
60 Deg South	Gm	1.16	2.33	3.25	3.96	4.34	4.21	3.91	3.83	3.39	2.26	1.45	0.97	2.92
	Dm	0.38	0.71	1.25	1.84	2.26	2.39	2.24	1.95	1.43	0.80	0.46	0.31	1.34
Vertical South	Gm	1.07	2.08	2.63	2.86	2.89	2.72	2.57	2.67	2.61	1.93	1.33	0.91	2.19
	Dm	0.29	0.57	0.99	1.46	1.78	1.86	1.73	1.53	1.13	0.62	0.36	0.24	1.05
Vertical SE/SW	Gm	0.85	1.70	2.37	2.90	3.15	3.01	2.79	2.77	2.44	1.62	1.06	0.72	2.12
	Dm	0.30	0.57	0.99	1.44	1.76	1.84	1.71	1.51	1.12	0.63	0.36	0.24	1.04
Vertical E/W	Gm	0.47	1.06	1.79	2.56	3.13	3.11	2.82	2.54	1.95	1.09	0.60	0.38	1.79
	Dm	0.30	0.56	0.96	1.41	1.74	1.83	1.69	1.48	1.09	0.62	0.36	0.25	1.03
Vertical NE/NW	Gm	0.29	0.60	1.14	1.86	2.54	2.64	2.37	1.95	1.32	0.67	0.35	0.23	1.33
	Dm	0.28	0.54	0.92	1.35	1.71	1.81	1.68	1.44	1.05	0.60	0.35	0.23	1.00
Vertical North	Gm	0.27	0.52	0.90	1.39	2.02	2.19	1.96	1.51	1.03	0.59	0.34	0.22	1.08
	Dm	0.27	0.52	0.90	1.33	1.71	1.82	1.68	1.42	1.03	0.59	0.34	0.22	0.99

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.21	1.18	1.11	1.06	1.03	1.01	1.02	1.04	1.09	1.13	1.20	1.23	1.06
30 Deg South	Gm/Gmean	1.52	1.46	1.24	1.11	1.01	0.98	0.99	1.06	1.18	1.33	1.50	1.57	1.12
Latitude South	Gm/Gmean	1.70	1.60	1.27	1.05	0.91	0.86	0.88	0.98	1.16	1.40	1.66	1.79	1.07
60 Deg South	Gm/Gmean	1.73	1.62	1.24	1.00	0.85	0.79	0.81	0.92	1.12	1.39	1.69	1.83	1.02
Vertical South	Gm/Gmean	1.60	1.44	1.00	0.72	0.57	0.51	0.54	0.64	0.86	1.18	1.55	1.72	0.77
Vertical SE/SW	Gm/Gmean	1.27	1.18	0.90	0.73	0.62	0.57	0.58	0.67	0.81	0.99	1.23	1.36	0.74
Vertical E/W	Gm/Gmean	0.70	0.74	0.68	0.65	0.62	0.59	0.59	0.61	0.65	0.67	0.70	0.72	0.63
Vertical NE/NW	Gm/Gmean	0.43	0.42	0.44	0.47	0.50	0.50	0.49	0.47	0.44	0.41	0.41	0.43	0.47
Vertical North	Gm/Gmean	0.40	0.36	0.34	0.35	0.40	0.41	0.41	0.36	0.34	0.36	0.40	0.41	0.38

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.50	2.81	4.94	6.82	8.35	8.55	8.27	7.28	5.47	3.45	1.91	1.06	5.05
	D clear	0.35	0.45	0.59	0.93	0.88	0.88	0.75	1.02	0.78	0.44	0.34	0.25	0.64
10 Deg South	Gc	2.18	3.65	5.73	7.34	8.60	8.73	8.47	7.71	6.14	4.27	2.74	1.73	5.62
	Dc	0.40	0.50	0.64	0.98	0.91	0.93	0.80	1.07	0.82	0.47	0.39	0.30	0.68
30 Deg South	Gc	3.37	5.03	6.86	7.86	8.61	8.60	8.38	8.01	7.07	5.60	4.15	2.89	6.37
	Dc	0.49	0.61	0.76	1.11	1.04	1.06	0.93	1.19	0.95	0.58	0.49	0.37	0.80
Latitude South	Gc	4.24	5.91	7.25	7.57	7.76	7.62	7.46	7.53	7.23	6.35	5.17	3.80	6.49
tilt 51 56' N	Dc	0.56	0.71	0.90	1.26	1.22	1.24	1.12	1.33	1.09	0.69	0.57	0.44	0.93
60 Deg South	Gc	4.42	6.04	7.15	7.22	7.21	7.04	6.90	7.11	7.06	6.42	5.37	4.01	6.33
	Dc	0.58	0.74	0.95	1.31	1.29	1.30	1.19	1.38	1.14	0.73	0.60	0.45	0.97
Vertical South	Gc	4.37	5.55	5.73	5.00	4.45	4.21	4.16	4.72	5.38	5.66	5.24	4.11	4.88
	Dc	0.60	0.80	1.08	1.44	1.52	1.54	1.45	1.50	1.25	0.82	0.64	0.47	1.09
Vertical SE/SW	Gc	3.25	4.41	5.26	5.38	5.39	5.22	5.16	5.34	5.33	4.83	4.02	3.01	4.72
	Dc	0.55	0.76	1.07	1.43	1.54	1.56	1.47	1.52	1.24	0.81	0.60	0.42	1.08
Vertical E/W	Gc	1.42	2.46	3.81	4.76	5.63	5.63	5.53	5.12	4.24	3.10	2.00	1.21	3.75
	Dc	0.45	0.68	1.01	1.39	1.55	1.57	1.48	1.50	1.18	0.76	0.52	0.35	1.04
Vertical NE/NW	Gc	0.43	0.89	1.83	2.92	4.04	4.15	4.05	3.42	2.31	1.28	0.62	0.33	2.20
	Dc	0.40	0.61	0.92	1.27	1.48	1.51	1.43	1.39	1.06	0.69	0.46	0.31	0.96
Vertical North	Gc	0.39	0.59	0.89	1.51	2.52	2.67	2.58	1.99	1.11	0.67	0.45	0.31	1.31
	Dc	0.39	0.59	0.89	1.19	1.42	1.45	1.38	1.30	1.00	0.67	0.45	0.31	0.92

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.45	1.30	1.16	1.08	1.03	1.02	1.02	1.06	1.12	1.24	1.43	1.63	1.11
30 Deg South	Gc/Gmax	2.25	1.79	1.39	1.15	1.03	1.01	1.01	1.10	1.29	1.62	2.17	2.73	1.26
Latitude South	Gc/Gmax	2.83	2.10	1.47	1.11	0.93	0.89	0.90	1.03	1.32	1.84	2.71	3.59	1.28
60 Deg South	Gc/Gmax	2.95	2.15	1.45	1.06	0.86	0.82	0.83	0.98	1.29	1.86	2.81	3.78	1.25
Vertical South	Gc/Gmax	2.91	1.98	1.16	0.73	0.53	0.49	0.50	0.65	0.98	1.64	2.74	3.88	0.97
Vertical SE/SW	Gc/Gmax	2.17	1.57	1.07	0.79	0.65	0.61	0.62	0.73	0.97	1.40	2.11	2.84	0.94
Vertical E/W	Gc/Gmax	0.95	0.88	0.77	0.70	0.67	0.66	0.67	0.70	0.77	0.90	1.05	1.14	0.74
Vertical NE/NW	Gc/Gmax	0.29	0.32	0.37	0.43	0.48	0.49	0.49	0.47	0.42	0.37	0.32	0.31	0.44
Vertical North	Gc/Gmax	0.26	0.21	0.18	0.22	0.30	0.31	0.31	0.27	0.20	0.19	0.24	0.29	0.26

Sunshine data

Mean sunshine	Hours	1.3	2.6	3.6	5.0	5.7	5.4	4.7	4.8	3.9	2.4	1.6	1.1	3.5
Max. sunshine	Hours	5.8	7.7	9.9	12.3	13.7	14.3	13.5	13.0	10.6	7.8	6.7	5.1	10.0

ITALY Site No. 274

BOLZANO

Computer file ITALY274.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 46 28' N

Longitude 11 20' E

Height 241 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.21	1.92	3.17	4.42	4.87	5.38	5.48	4.90	3.94	2.65	1.40	1.04	3.37
	D mean	0.73	1.15	1.64	2.19	2.64	2.75	2.74	2.35	1.80	1.21	0.78	0.58	1.72
10 Deg South	Gm	1.47	2.21	3.49	4.65	4.98	5.43	5.59	5.10	4.28	3.07	1.70	1.32	3.61
	Dm	0.76	1.20	1.68	2.22	2.66	2.77	2.77	2.38	1.83	1.26	0.81	0.62	1.75
30 Deg South	Gm	1.87	2.62	3.88	4.80	4.87	5.19	5.43	5.15	4.65	3.69	2.17	1.79	3.85
	Dm	0.78	1.23	1.68	2.18	2.59	2.68	2.71	2.34	1.83	1.30	0.83	0.66	1.74
Latitude South	Gm	2.07	2.78	3.94	4.60	4.50	4.71	4.98	4.86	4.64	3.93	2.41	2.04	3.79
tilt 46 28' N	Dm	0.76	1.19	1.61	2.06	2.42	2.51	2.55	2.21	1.75	1.28	0.80	0.66	1.65
60 Deg South	Gm	2.13	2.78	3.80	4.24	4.01	4.13	4.40	4.42	4.41	3.93	2.48	2.14	3.58
	Dm	0.73	1.14	1.52	1.92	2.24	2.32	2.37	2.07	1.65	1.24	0.77	0.64	1.55
Vertical South	Gm	1.95	2.40	3.00	2.95	2.58	2.55	2.76	2.96	3.31	3.34	2.26	2.03	2.68
	Dm	0.61	0.94	1.24	1.54	1.75	1.83	1.88	1.67	1.37	1.06	0.64	0.56	1.26
Vertical SE/SW	Gm	1.54	1.99	2.72	3.08	2.82	2.93	3.10	3.18	3.17	2.79	1.82	1.57	2.56
	Dm	0.59	0.91	1.22	1.53	1.73	1.82	1.88	1.65	1.35	1.03	0.63	0.53	1.24
Vertical E/W	Gm	0.85	1.29	2.09	2.80	2.79	3.13	3.17	3.01	2.57	1.83	1.07	0.80	2.12
	Dm	0.52	0.80	1.15	1.49	1.71	1.82	1.88	1.62	1.29	0.93	0.57	0.45	1.19
Vertical NE/NW	Gm	0.47	0.77	1.32	2.04	2.26	2.66	2.59	2.27	1.66	0.98	0.56	0.40	1.50
	Dm	0.46	0.71	1.07	1.43	1.66	1.79	1.81	1.56	1.22	0.83	0.51	0.39	1.12
Vertical North	Gm	0.44	0.67	1.02	1.48	1.79	2.16	2.03	1.66	1.18	0.79	0.48	0.37	1.17
	Dm	0.44	0.67	1.02	1.40	1.64	1.78	1.78	1.53	1.18	0.79	0.48	0.37	1.09

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.22	1.15	1.10	1.05	1.02	1.01	1.02	1.04	1.09	1.16	1.21	1.27	1.07
30 Deg South	Gm/Gmean	1.54	1.37	1.22	1.09	1.00	0.96	0.99	1.05	1.18	1.39	1.55	1.72	1.14
Latitude South	Gm/Gmean	1.71	1.45	1.24	1.04	0.92	0.88	0.91	0.99	1.18	1.48	1.72	1.96	1.13
60 Deg South	Gm/Gmean	1.76	1.45	1.20	0.96	0.82	0.77	0.80	0.90	1.12	1.48	1.77	2.06	1.06
Vertical South	Gm/Gmean	1.61	1.25	0.95	0.67	0.53	0.47	0.50	0.60	0.84	1.26	1.61	1.95	0.80
Vertical SE/SW	Gm/Gmean	1.27	1.04	0.86	0.70	0.58	0.55	0.57	0.65	0.81	1.05	1.30	1.51	0.76
Vertical E/W	Gm/Gmean	0.70	0.67	0.66	0.63	0.57	0.58	0.58	0.61	0.65	0.69	0.76	0.77	0.63
Vertical NE/NW	Gm/Gmean	0.39	0.40	0.42	0.46	0.46	0.49	0.47	0.46	0.42	0.37	0.40	0.38	0.44
Vertical North	Gm/Gmean	0.36	0.35	0.32	0.34	0.37	0.40	0.37	0.34	0.30	0.30	0.34	0.36	0.35

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.02	3.29	4.95	6.59	7.36	7.74	7.43	6.90	5.79	3.89	2.45	1.60	5.01
	D clear	0.87	1.16	0.96	1.04	1.27	1.32	1.47	1.24	1.05	1.01	0.75	0.73	1.07
10 Deg South	Gc	2.55	3.66	5.52	6.91	7.45	7.74	7.47	7.09	6.26	4.51	3.12	2.04	5.38
	Dc	0.92	1.17	0.97	1.02	1.23	1.25	1.41	1.18	0.99	1.02	0.80	0.73	1.06
30 Deg South	Gc	3.53	4.91	6.34	7.20	7.27	7.44	7.23	7.20	6.96	5.56	4.29	2.96	5.91
	Dc	1.12	1.37	1.11	1.14	1.32	1.34	1.48	1.28	1.12	1.18	0.97	0.89	1.19
Latitude South	Gc	4.07	5.39	6.52	6.92	6.67	6.75	6.60	6.79	6.99	5.98	4.91	3.49	5.92
tilt 46 28' N	Dc	1.23	1.47	1.21	1.23	1.39	1.41	1.54	1.36	1.22	1.28	1.06	0.98	1.28
60 Deg South	Gc	4.30	5.51	6.32	6.33	5.84	5.84	5.75	6.11	6.65	6.02	5.16	3.74	5.63
	Dc	1.27	1.51	1.26	1.30	1.44	1.46	1.57	1.42	1.28	1.33	1.11	1.02	1.33
Vertical South	Gc	4.05	4.82	4.83	4.13	3.38	3.28	3.28	3.82	4.81	5.06	4.79	3.62	4.15
	Dc	1.22	1.44	1.30	1.39	1.51	1.55	1.59	1.48	1.35	1.31	1.09	0.98	1.35
Vertical SE/SW	Gc	3.12	3.88	4.54	4.66	4.28	4.26	4.15	4.45	4.91	4.31	3.73	2.73	4.08
	Dc	1.07	1.32	1.27	1.40	1.56	1.60	1.65	1.51	1.35	1.25	0.99	0.85	1.32
Vertical E/W	Gc	1.55	2.28	3.44	4.34	4.64	4.78	4.51	4.33	4.06	2.85	1.96	1.21	3.33
	Dc	0.78	1.05	1.16	1.37	1.59	1.64	1.69	1.49	1.28	1.09	0.78	0.61	1.21
Vertical NE/NW	Gc	0.64	0.99	1.79	2.78	3.43	3.63	3.38	2.91	2.31	1.30	0.75	0.49	2.04
	Dc	0.59	0.82	1.01	1.26	1.49	1.55	1.59	1.36	1.13	0.89	0.63	0.48	1.07
Vertical North	Gc	0.54	0.75	0.94	1.47	2.16	2.37	2.17	1.63	1.14	0.81	0.59	0.46	1.26
	Dc	0.54	0.75	0.94	1.17	1.40	1.46	1.48	1.26	1.05	0.81	0.59	0.46	0.99

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.26	1.17	1.12	1.05	1.01	1.00	1.00	1.03	1.08	1.16	1.27	1.27	1.07
30 Deg South	Gc/Gmax	1.75	1.49	1.28	1.09	0.99	0.96	0.97	1.04	1.20	1.43	1.75	1.85	1.18
Latitude South	Gc/Gmax	2.02	1.64	1.32	1.05	0.91	0.87	0.89	0.98	1.21	1.54	2.00	2.18	1.18
60 Deg South	Gc/Gmax	2.13	1.67	1.28	0.96	0.79	0.75	0.77	0.89	1.15	1.55	2.11	2.34	1.12
Vertical South	Gc/Gmax	2.01	1.47	0.98	0.63	0.46	0.42	0.44	0.55	0.83	1.30	1.96	2.26	0.83
Vertical SE/SW	Gc/Gmax	1.54	1.18	0.92	0.71	0.58	0.55	0.56	0.64	0.85	1.11	1.52	1.71	0.81
Vertical E/W	Gc/Gmax	0.77	0.69	0.69	0.66	0.63	0.62	0.61	0.63	0.70	0.73	0.80	0.76	0.67
Vertical NE/NW	Gc/Gmax	0.32	0.30	0.36	0.42	0.47	0.47	0.46	0.42	0.40	0.33	0.31	0.31	0.41
Vertical North	Gc/Gmax	0.27	0.23	0.19	0.22	0.29	0.31	0.29	0.24	0.20	0.21	0.24	0.29	0.25

Sunshine data

Mean sunshine	Hours	3.1	3.9	5.0	5.7	5.9	6.6	7.5	6.4	5.9	5.6	3.3	3.5	5.2
Max. sunshine	Hours	6.7	7.9	8.8	10.1	11.0	11.4	11.3	10.4	9.3	8.1	7.1	5.7	9.0

ITALY Site No. 276

TRIESTE

Computer file ITALY276.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 45 39' N

Longitude 13 45' E

Height 20 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.14	1.77	2.97	4.18	5.05	5.43	5.75	5.14	3.84	2.64	1.46	1.16	3.39
	D mean	0.69	1.07	1.66	2.18	2.73	2.81	2.72	2.32	1.85	1.22	0.78	0.60	1.72
10 Deg South	Gm	1.36	2.02	3.25	4.41	5.19	5.51	5.89	5.39	4.18	3.05	1.77	1.48	3.63
	Dm	0.72	1.11	1.71	2.22	2.78	2.84	2.77	2.38	1.91	1.28	0.81	0.63	1.77
30 Deg South	Gm	1.71	2.39	3.59	4.56	5.12	5.31	5.77	5.53	4.57	3.64	2.25	1.99	3.88
	Dm	0.73	1.13	1.73	2.21	2.74	2.77	2.74	2.41	1.96	1.33	0.81	0.64	1.77
Latitude South	Gm	1.87	2.52	3.63	4.40	4.78	4.86	5.34	5.29	4.58	3.86	2.48	2.26	3.83
tilt 45 39' N	Dm	0.71	1.10	1.67	2.11	2.60	2.62	2.62	2.33	1.92	1.32	0.79	0.63	1.70
60 Deg South	Gm	1.92	2.52	3.49	4.04	4.25	4.24	4.71	4.82	4.36	3.87	2.56	2.39	3.60
	Dm	0.67	1.05	1.58	1.97	2.40	2.42	2.45	2.21	1.83	1.28	0.75	0.60	1.60
Vertical South	Gm	1.74	2.16	2.73	2.83	2.74	2.61	2.91	3.24	3.30	3.27	2.33	2.25	2.68
	Dm	0.56	0.86	1.28	1.58	1.88	1.89	1.95	1.81	1.52	1.10	0.62	0.51	1.30
Vertical SE/SW	Gm	1.39	1.80	2.47	2.86	2.94	2.95	3.25	3.36	3.07	2.73	1.87	1.73	2.54
	Dm	0.54	0.83	1.25	1.56	1.87	1.91	1.97	1.79	1.48	1.06	0.61	0.50	1.28
Vertical E/W	Gm	0.78	1.18	1.89	2.54	2.85	3.06	3.26	3.06	2.42	1.80	1.11	0.88	2.07
	Dm	0.48	0.74	1.15	1.51	1.84	1.92	1.97	1.73	1.36	0.94	0.57	0.45	1.22
Vertical NE/NW	Gm	0.44	0.71	1.23	1.85	2.26	2.54	2.57	2.20	1.55	0.97	0.57	0.42	1.45
	Dm	0.44	0.66	1.04	1.41	1.72	1.84	1.84	1.58	1.22	0.83	0.52	0.41	1.13
Vertical North	Gm	0.41	0.62	0.98	1.39	1.76	2.02	1.94	1.58	1.15	0.79	0.49	0.39	1.13
	Dm	0.41	0.62	0.98	1.35	1.65	1.79	1.76	1.49	1.15	0.79	0.49	0.39	1.07

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.19	1.14	1.09	1.05	1.03	1.01	1.02	1.05	1.09	1.15	1.21	1.28	1.07
30 Deg South	Gm/Gmean	1.50	1.35	1.21	1.09	1.01	0.98	1.00	1.08	1.19	1.38	1.54	1.72	1.14
Latitude South	Gm/Gmean	1.64	1.42	1.22	1.05	0.95	0.89	0.93	1.03	1.19	1.46	1.70	1.95	1.13
60 Deg South	Gm/Gmean	1.68	1.42	1.17	0.97	0.84	0.78	0.82	0.94	1.13	1.47	1.75	2.06	1.06
Vertical South	Gm/Gmean	1.53	1.22	0.92	0.68	0.54	0.48	0.51	0.63	0.86	1.24	1.60	1.94	0.79
Vertical SE/SW	Gm/Gmean	1.22	1.02	0.83	0.68	0.58	0.54	0.56	0.65	0.80	1.03	1.28	1.49	0.75
Vertical E/W	Gm/Gmean	0.68	0.67	0.64	0.61	0.56	0.56	0.57	0.60	0.63	0.68	0.76	0.76	0.61
Vertical NE/NW	Gm/Gmean	0.39	0.40	0.41	0.44	0.45	0.47	0.45	0.43	0.40	0.37	0.39	0.36	0.43
Vertical North	Gm/Gmean	0.36	0.35	0.33	0.33	0.35	0.37	0.34	0.31	0.30	0.30	0.34	0.34	0.33

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.26	3.54	5.08	6.64	7.39	7.65	7.67	6.93	5.58	4.36	2.87	1.96	5.17
	D clear	0.82	1.10	1.16	1.39	1.87	1.93	1.93	1.82	1.47	1.10	0.67	0.59	1.32
10 Deg South	Gc	2.92	4.22	5.72	7.03	7.54	7.73	7.75	7.19	6.09	5.06	3.71	2.68	5.64
	Dc	0.91	1.17	1.27	1.46	1.88	1.91	1.90	1.83	1.53	1.13	0.73	0.63	1.36
30 Deg South	Gc	4.06	5.35	6.52	7.32	7.39	7.46	7.51	7.30	6.72	6.20	5.13	3.98	6.25
	Dc	1.11	1.37	1.43	1.58	1.94	1.96	1.95	1.92	1.68	1.32	0.88	0.77	1.49
Latitude South	Gc	4.66	5.85	6.68	7.05	6.83	6.82	6.89	6.92	6.74	6.64	5.86	4.70	6.30
tilt 45 39' N	Dc	1.21	1.47	1.51	1.64	1.95	1.96	1.96	1.96	1.76	1.42	0.97	0.85	1.56
60 Deg South	Gc	4.94	5.98	6.45	6.42	5.96	5.88	5.96	6.20	6.39	6.66	6.19	5.08	6.01
	Dc	1.26	1.52	1.56	1.67	1.93	1.94	1.94	1.94	1.78	1.47	1.03	0.90	1.58
Vertical South	Gc	4.63	5.20	4.91	4.20	3.48	3.35	3.41	3.91	4.63	5.56	5.74	4.93	4.49
	Dc	1.22	1.46	1.52	1.64	1.80	1.81	1.82	1.81	1.68	1.45	1.05	0.90	1.51
Vertical SE/SW	Gc	3.56	4.19	4.56	4.59	4.19	4.14	4.20	4.35	4.45	4.72	4.47	3.66	4.26
	Dc	1.09	1.34	1.48	1.66	1.89	1.90	1.91	1.85	1.65	1.38	0.96	0.80	1.49
Vertical E/W	Gc	1.76	2.46	3.42	4.19	4.35	4.44	4.45	4.12	3.50	3.10	2.37	1.58	3.32
	Dc	0.81	1.08	1.33	1.61	1.92	1.96	1.96	1.82	1.50	1.19	0.79	0.60	1.38
Vertical NE/NW	Gc	0.69	1.05	1.81	2.70	3.17	3.34	3.32	2.78	1.98	1.41	0.84	0.52	1.97
	Dc	0.62	0.85	1.12	1.44	1.75	1.81	1.80	1.60	1.26	0.97	0.65	0.50	1.20
Vertical North	Gc	0.58	0.78	1.02	1.51	2.02	2.19	2.15	1.66	1.13	0.89	0.62	0.48	1.26
	Dc	0.58	0.78	1.02	1.30	1.60	1.66	1.65	1.44	1.13	0.89	0.62	0.48	1.10

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.29	1.19	1.13	1.06	1.02	1.01	1.01	1.04	1.09	1.16	1.29	1.37	1.09
30 Deg South	Gc/Gmax	1.80	1.51	1.28	1.10	1.00	0.98	0.98	1.05	1.20	1.42	1.79	2.03	1.21
Latitude South	Gc/Gmax	2.06	1.65	1.32	1.06	0.92	0.89	0.90	1.00	1.21	1.52	2.04	2.40	1.22
60 Deg South	Gc/Gmax	2.19	1.69	1.27	0.97	0.81	0.77	0.78	0.89	1.14	1.53	2.16	2.59	1.16
Vertical South	Gc/Gmax	2.05	1.47	0.97	0.63	0.47	0.44	0.44	0.56	0.83	1.27	2.00	2.52	0.87
Vertical SE/SW	Gc/Gmax	1.58	1.18	0.90	0.69	0.57	0.54	0.55	0.63	0.80	1.08	1.56	1.87	0.82
Vertical E/W	Gc/Gmax	0.78	0.69	0.67	0.63	0.59	0.58	0.58	0.60	0.63	0.71	0.83	0.81	0.64
Vertical NE/NW	Gc/Gmax	0.31	0.30	0.36	0.41	0.43	0.44	0.43	0.40	0.35	0.32	0.29	0.26	0.38
Vertical North	Gc/Gmax	0.26	0.22	0.20	0.23	0.27	0.29	0.28	0.24	0.20	0.20	0.22	0.25	0.24

Sunshine data

Mean sunshine	Hours	2.7	3.6	4.9	6.1	7.5	7.9	9.3	8.4	6.8	5.7	3.2	3.2	5.8
Max. sunshine	Hours	8.0	9.1	10.4	11.8	12.7	12.9	12.9	12.3	10.9	9.7	8.3	7.5	10.6

ITALY Site No.277

VENEZIA

Computer file ITALY277.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 45 30' N

Longitude 12 20' E

Height 6 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.08	1.75	3.25	4.39	5.14	5.87	6.17	5.49	4.07	2.64	1.36	1.06	3.53
	D mean	0.70	1.06	1.78	2.19	2.78	2.81	2.73	2.38	1.90	1.32	0.83	0.61	1.76
10 Deg South	Gm	1.27	2.00	3.56	4.62	5.28	5.95	6.31	5.74	4.42	3.02	1.60	1.31	3.77
	Dm	0.72	1.10	1.83	2.23	2.83	2.83	2.77	2.43	1.95	1.37	0.86	0.64	1.80
30 Deg South	Gm	1.55	2.34	3.93	4.77	5.21	5.71	6.16	5.86	4.81	3.55	1.96	1.72	3.97
	Dm	0.72	1.12	1.84	2.20	2.78	2.77	2.74	2.43	1.97	1.40	0.87	0.65	1.79
Latitude South	Gm	1.67	2.47	3.97	4.60	4.86	5.22	5.70	5.59	4.80	3.73	2.12	1.93	3.90
tilt 45 30' N	Dm	0.69	1.10	1.77	2.11	2.64	2.63	2.63	2.35	1.91	1.38	0.85	0.64	1.73
60 Deg South	Gm	1.70	2.47	3.82	4.22	4.31	4.53	5.00	5.06	4.56	3.71	2.16	2.02	3.64
	Dm	0.65	1.04	1.67	1.96	2.44	2.43	2.46	2.21	1.81	1.31	0.80	0.61	1.62
Vertical South	Gm	1.52	2.11	2.98	2.93	2.77	2.76	3.07	3.38	3.42	3.11	1.93	1.88	2.66
	Dm	0.52	0.85	1.35	1.58	1.90	1.94	1.99	1.83	1.50	1.10	0.66	0.51	1.31
Vertical SE/SW	Gm	1.22	1.76	2.70	3.01	2.98	3.18	3.47	3.57	3.22	2.62	1.57	1.47	2.57
	Dm	0.51	0.82	1.32	1.56	1.90	1.95	2.01	1.81	1.47	1.07	0.64	0.49	1.30
Vertical E/W	Gm	0.71	1.16	2.07	2.70	2.90	3.35	3.52	3.30	2.58	1.76	0.95	0.78	2.15
	Dm	0.47	0.73	1.23	1.52	1.87	1.96	2.01	1.76	1.38	0.97	0.58	0.44	1.25
Vertical NE/NW	Gm	0.43	0.70	1.34	1.97	2.30	2.78	2.77	2.40	1.67	1.00	0.55	0.40	1.53
	Dm	0.43	0.65	1.12	1.44	1.75	1.90	1.90	1.65	1.27	0.87	0.52	0.40	1.16
Vertical North	Gm	0.41	0.62	1.06	1.44	1.79	2.19	2.08	1.70	1.21	0.82	0.49	0.38	1.19
	Dm	0.41	0.62	1.06	1.39	1.68	1.86	1.83	1.59	1.21	0.82	0.49	0.38	1.11

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.14	1.10	1.05	1.03	1.01	1.02	1.05	1.09	1.14	1.18	1.24	1.07
30 Deg South	Gm/Gmean	1.43	1.34	1.21	1.09	1.01	0.97	1.00	1.07	1.18	1.35	1.44	1.62	1.13
Latitude South	Gm/Gmean	1.55	1.41	1.22	1.05	0.95	0.89	0.92	1.02	1.18	1.41	1.56	1.82	1.11
60 Deg South	Gm/Gmean	1.57	1.41	1.17	0.96	0.84	0.77	0.81	0.92	1.12	1.40	1.59	1.91	1.03
Vertical South	Gm/Gmean	1.41	1.21	0.92	0.67	0.54	0.47	0.50	0.62	0.84	1.18	1.42	1.77	0.75
Vertical SE/SW	Gm/Gmean	1.13	1.01	0.83	0.69	0.58	0.54	0.56	0.65	0.79	0.99	1.15	1.39	0.73
Vertical E/W	Gm/Gmean	0.66	0.66	0.64	0.62	0.56	0.57	0.57	0.60	0.63	0.67	0.70	0.74	0.61
Vertical NE/NW	Gm/Gmean	0.40	0.40	0.41	0.45	0.45	0.47	0.45	0.44	0.41	0.38	0.40	0.38	0.43
Vertical North	Gm/Gmean	0.38	0.35	0.33	0.33	0.35	0.37	0.34	0.31	0.30	0.31	0.36	0.36	0.34

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.11	3.35	5.25	6.80	7.21	7.75	7.77	7.23	5.86	4.32	2.58	1.90	5.19
	D clear	0.80	1.05	1.17	1.23	1.84	1.64	1.74	1.58	1.29	1.11	0.84	0.65	1.25
10 Deg South	Gc	2.75	4.05	5.86	7.16	7.39	7.84	7.85	7.48	6.38	5.00	3.27	2.55	5.64
	Dc	0.92	1.17	1.22	1.26	1.88	1.64	1.71	1.57	1.31	1.14	0.93	0.70	1.29
30 Deg South	Gc	3.79	5.12	6.67	7.44	7.24	7.54	7.59	7.58	7.04	6.11	4.42	3.74	6.19
	Dc	1.11	1.37	1.38	1.38	1.94	1.70	1.77	1.67	1.46	1.32	1.11	0.85	1.42
Latitude South	Gc	4.34	5.59	6.84	7.16	6.69	6.88	6.95	7.17	7.06	6.54	5.01	4.39	6.22
tilt 45 30' N	Dc	1.21	1.47	1.47	1.45	1.95	1.74	1.80	1.72	1.54	1.42	1.21	0.94	1.49
60 Deg South	Gc	4.59	5.71	6.60	6.50	5.83	5.90	5.99	6.41	6.68	6.57	5.26	4.74	5.90
	Dc	1.26	1.51	1.52	1.51	1.92	1.75	1.80	1.74	1.59	1.47	1.26	0.98	1.53
Vertical South	Gc	4.30	4.96	5.01	4.22	3.40	3.32	3.40	3.99	4.82	5.47	4.83	4.58	4.35
	Dc	1.21	1.44	1.50	1.55	1.78	1.71	1.75	1.71	1.57	1.45	1.22	0.97	1.49
Vertical SE/SW	Gc	3.32	4.00	4.67	4.72	4.10	4.21	4.25	4.55	4.69	4.65	3.77	3.42	4.20
	Dc	1.07	1.32	1.46	1.56	1.87	1.79	1.83	1.75	1.55	1.38	1.10	0.85	1.46
Vertical E/W	Gc	1.66	2.36	3.52	4.39	4.26	4.60	4.58	4.36	3.72	3.07	1.99	1.49	3.34
	Dc	0.80	1.06	1.33	1.53	1.90	1.84	1.88	1.72	1.43	1.19	0.86	0.63	1.35
Vertical NE/NW	Gc	0.67	1.02	1.85	2.84	3.12	3.47	3.42	2.94	2.08	1.40	0.79	0.53	2.02
	Dc	0.61	0.83	1.13	1.38	1.74	1.72	1.74	1.55	1.23	0.97	0.67	0.51	1.18
Vertical North	Gc	0.57	0.77	1.03	1.54	1.99	2.25	2.20	1.69	1.12	0.88	0.63	0.49	1.27
	Dc	0.57	0.77	1.03	1.27	1.58	1.59	1.61	1.41	1.12	0.88	0.63	0.49	1.08

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.30	1.21	1.12	1.05	1.02	1.01	1.01	1.03	1.09	1.16	1.27	1.34	1.09
30 Deg South	Gc/Gmax	1.80	1.53	1.27	1.09	1.00	0.97	0.98	1.05	1.20	1.41	1.71	1.97	1.19
Latitude South	Gc/Gmax	2.06	1.67	1.30	1.05	0.93	0.89	0.89	0.99	1.21	1.51	1.94	2.31	1.20
60 Deg South	Gc/Gmax	2.17	1.70	1.26	0.96	0.81	0.76	0.77	0.89	1.14	1.52	2.04	2.49	1.14
Vertical South	Gc/Gmax	2.04	1.48	0.95	0.62	0.47	0.43	0.44	0.55	0.82	1.27	1.87	2.41	0.84
Vertical SE/SW	Gc/Gmax	1.57	1.19	0.89	0.69	0.57	0.54	0.55	0.63	0.80	1.08	1.46	1.80	0.81
Vertical E/W	Gc/Gmax	0.79	0.70	0.67	0.65	0.59	0.59	0.59	0.60	0.63	0.71	0.77	0.78	0.64
Vertical NE/NW	Gc/Gmax	0.32	0.30	0.35	0.42	0.43	0.45	0.44	0.41	0.35	0.32	0.31	0.28	0.39
Vertical North	Gc/Gmax	0.27	0.23	0.20	0.23	0.28	0.29	0.28	0.23	0.19	0.20	0.24	0.26	0.25

Sunshine data

Mean sunshine	Hours	2.2	3.5	5.0	6.0	7.5	8.0	9.3	8.0	6.4	5.1	2.8	2.8	5.6
Max. sunshine	Hours	7.5	9.0	10.1	11.4	12.6	12.8	12.7	12.2	10.8	9.5	8.0	7.4	10.3

ITALY Site No. 278

MILANO

Computer file ITALY278.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 45 26' N

Longitude 9 17' E

Height 103 metres

Data period (1.1966-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.92	1.71	3.00	4.49	5.14	5.83	6.07	5.26	3.82	2.45	1.14	0.86	3.40
	D mean	0.62	1.09	1.73	2.24	2.77	2.85	2.78	2.45	1.95	1.30	0.73	0.60	1.76
10 Deg South	Gm	1.06	1.93	3.28	4.73	5.26	5.91	6.21	5.49	4.12	2.78	1.32	1.00	3.60
	Dm	0.63	1.12	1.78	2.28	2.80	2.88	2.83	2.50	2.00	1.34	0.74	0.60	1.80
30 Deg South	Gm	1.27	2.23	3.61	4.89	5.17	5.67	6.06	5.59	4.44	3.23	1.60	1.22	3.76
	Dm	0.62	1.12	1.80	2.26	2.74	2.81	2.79	2.49	2.00	1.37	0.74	0.59	1.78
Latitude South	Gm	1.36	2.32	3.64	4.71	4.80	5.19	5.61	5.32	4.41	3.37	1.71	1.32	3.65
tilt 45 26' N	Dm	0.59	1.08	1.74	2.16	2.59	2.66	2.67	2.39	1.93	1.33	0.71	0.56	1.70
60 Deg South	Gm	1.37	2.30	3.50	4.32	4.25	4.51	4.92	4.81	4.17	3.34	1.74	1.34	3.39
	Dm	0.54	1.02	1.64	2.02	2.39	2.46	2.49	2.24	1.81	1.26	0.66	0.52	1.59
Vertical South	Gm	1.21	1.95	2.74	3.00	2.72	2.75	3.02	3.22	3.12	2.78	1.54	1.21	2.44
	Dm	0.43	0.82	1.33	1.63	1.86	1.95	2.00	1.82	1.47	1.04	0.53	0.41	1.28
Vertical SE/SW	Gm	0.98	1.64	2.46	3.07	2.96	3.15	3.40	3.39	2.94	2.36	1.26	0.97	2.39
	Dm	0.42	0.80	1.29	1.61	1.85	1.96	2.02	1.80	1.44	1.02	0.52	0.41	1.26
Vertical E/W	Gm	0.59	1.10	1.89	2.75	2.91	3.31	3.45	3.13	2.38	1.61	0.78	0.57	2.04
	Dm	0.40	0.72	1.18	1.56	1.83	1.97	2.02	1.75	1.36	0.92	0.49	0.38	1.22
Vertical NE/NW	Gm	0.38	0.70	1.24	2.00	2.33	2.75	2.72	2.31	1.59	0.95	0.47	0.36	1.49
	Dm	0.37	0.65	1.06	1.47	1.75	1.90	1.90	1.64	1.25	0.84	0.45	0.35	1.14
Vertical North	Gm	0.35	0.62	1.00	1.47	1.83	2.17	2.06	1.68	1.20	0.79	0.42	0.34	1.16
	Dm	0.35	0.62	1.00	1.42	1.70	1.87	1.83	1.58	1.20	0.79	0.42	0.34	1.10

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.15	1.13	1.09	1.05	1.02	1.01	1.02	1.04	1.08	1.13	1.16	1.16	1.06
30 Deg South	Gm/Gmean	1.38	1.30	1.20	1.09	1.01	0.97	1.00	1.06	1.16	1.32	1.40	1.42	1.11
Latitude South	Gm/Gmean	1.48	1.36	1.21	1.05	0.93	0.89	0.92	1.01	1.15	1.38	1.50	1.53	1.07
60 Deg South	Gm/Gmean	1.49	1.35	1.17	0.96	0.83	0.77	0.81	0.91	1.09	1.36	1.53	1.56	1.00
Vertical South	Gm/Gmean	1.32	1.14	0.91	0.67	0.53	0.47	0.50	0.61	0.82	1.13	1.35	1.41	0.72
Vertical SE/SW	Gm/Gmean	1.07	0.96	0.82	0.68	0.58	0.54	0.56	0.64	0.77	0.96	1.11	1.13	0.70
Vertical E/W	Gm/Gmean	0.64	0.64	0.63	0.61	0.57	0.57	0.57	0.60	0.62	0.66	0.68	0.66	0.60
Vertical NE/NW	Gm/Gmean	0.41	0.41	0.41	0.44	0.45	0.47	0.45	0.44	0.42	0.39	0.41	0.42	0.44
Vertical North	Gm/Gmean	0.38	0.36	0.33	0.33	0.36	0.37	0.34	0.32	0.31	0.32	0.37	0.40	0.34

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.11	3.48	5.04	6.74	7.51	7.83	7.79	7.25	5.73	3.96	2.48	1.77	5.15
	D clear	0.71	1.05	1.25	1.26	1.55	1.71	1.77	1.61	1.31	1.03	0.69	0.63	1.22
10 Deg South	Gc	2.79	4.20	5.66	7.13	7.70	7.91	7.88	7.52	6.25	4.64	3.24	2.38	5.61
	Dc	0.83	1.16	1.36	1.31	1.60	1.69	1.75	1.62	1.35	1.13	0.83	0.69	1.28
30 Deg South	Gc	3.89	5.32	6.43	7.41	7.51	7.61	7.62	7.62	6.89	5.66	4.40	3.46	6.15
	Dc	1.01	1.36	1.52	1.43	1.67	1.75	1.81	1.72	1.50	1.30	1.00	0.84	1.41
Latitude South	Gc	4.46	5.81	6.58	7.13	6.93	6.94	6.98	7.21	6.91	6.05	4.99	4.05	6.17
tilt 45 26' N	Dc	1.10	1.46	1.60	1.50	1.71	1.78	1.84	1.77	1.58	1.40	1.09	0.93	1.48
60 Deg South	Gc	4.73	5.93	6.35	6.48	6.01	5.95	6.01	6.44	6.54	6.07	5.25	4.37	5.84
	Dc	1.15	1.51	1.64	1.55	1.72	1.78	1.83	1.78	1.62	1.44	1.13	0.97	1.51
Vertical South	Gc	4.44	5.15	4.83	4.21	3.45	3.34	3.41	4.01	4.71	5.06	4.83	4.22	4.30
	Dc	1.12	1.44	1.57	1.57	1.69	1.74	1.77	1.73	1.58	1.40	1.11	0.95	1.47
Vertical SE/SW	Gc	3.42	4.15	4.47	4.66	4.28	4.23	4.26	4.55	4.58	4.30	3.77	3.16	4.15
	Dc	1.00	1.33	1.52	1.59	1.76	1.82	1.85	1.77	1.55	1.33	1.01	0.83	1.45
Vertical E/W	Gc	1.72	2.44	3.35	4.30	4.53	4.60	4.56	4.36	3.63	2.85	2.00	1.39	3.31
	Dc	0.76	1.07	1.37	1.55	1.80	1.87	1.90	1.74	1.43	1.15	0.80	0.61	1.34
Vertical NE/NW	Gc	0.67	1.04	1.78	2.77	3.31	3.47	3.41	2.93	2.03	1.32	0.77	0.51	2.01
	Dc	0.59	0.84	1.14	1.39	1.66	1.74	1.76	1.57	1.22	0.93	0.64	0.49	1.17
Vertical North	Gc	0.55	0.77	1.03	1.51	2.07	2.25	2.19	1.70	1.11	0.84	0.60	0.47	1.26
	Dc	0.55	0.77	1.03	1.28	1.53	1.61	1.62	1.42	1.11	0.84	0.60	0.47	1.07

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.32	1.21	1.12	1.06	1.02	1.01	1.01	1.04	1.09	1.17	1.31	1.35	1.09
30 Deg South	Gc/Gmax	1.84	1.53	1.28	1.10	1.00	0.97	0.98	1.05	1.20	1.43	1.77	1.96	1.19
Latitude South	Gc/Gmax	2.11	1.67	1.31	1.06	0.92	0.89	0.90	0.99	1.21	1.53	2.01	2.29	1.20
60 Deg South	Gc/Gmax	2.24	1.70	1.26	0.96	0.80	0.76	0.77	0.89	1.14	1.53	2.12	2.47	1.13
Vertical South	Gc/Gmax	2.10	1.48	0.96	0.63	0.46	0.43	0.44	0.55	0.82	1.28	1.95	2.38	0.83
Vertical SE/SW	Gc/Gmax	1.62	1.19	0.89	0.69	0.57	0.54	0.55	0.63	0.80	1.09	1.52	1.78	0.81
Vertical E/W	Gc/Gmax	0.81	0.70	0.67	0.64	0.60	0.59	0.58	0.60	0.63	0.72	0.81	0.79	0.64
Vertical NE/NW	Gc/Gmax	0.32	0.30	0.35	0.41	0.44	0.44	0.44	0.40	0.35	0.33	0.31	0.29	0.39
Vertical North	Gc/Gmax	0.26	0.22	0.20	0.22	0.28	0.29	0.28	0.23	0.19	0.21	0.24	0.27	0.25

Sunshine data

Mean sunshine	Hours	1.7	3.0	5.0	6.2	6.8	8.0	9.2	7.6	5.8	4.6	2.2	1.6	5.2
Max. sunshine	Hours	7.4	9.4	10.3	11.7	12.8	12.9	13.0	12.6	10.8	9.1	8.1	6.8	10.4

ITALY Site No. 281

GENOA

Computer file ITALY281.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 44 25' N

Longitude 8 51' E

Height 3 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.37	2.03	3.30	4.54	5.16	5.77	6.20	5.40	4.06	2.79	1.65	1.29	3.64
	D mean	0.77	1.13	1.67	2.20	2.76	2.79	2.72	2.29	1.86	1.34	0.89	0.66	1.76
10 Deg South	Gm	1.68	2.33	3.63	4.79	5.28	5.84	6.34	5.65	4.41	3.20	1.99	1.64	3.91
	Dm	0.80	1.18	1.72	2.24	2.79	2.82	2.77	2.34	1.91	1.40	0.92	0.69	1.80
30 Deg South	Gm	2.16	2.77	4.02	4.95	5.18	5.60	6.18	5.77	4.79	3.79	2.52	2.20	4.17
	Dm	0.83	1.20	1.74	2.24	2.74	2.75	2.75	2.36	1.95	1.47	0.95	0.72	1.81
Latitude South	Gm	2.39	2.93	4.07	4.79	4.84	5.15	5.75	5.53	4.79	3.98	2.75	2.47	4.13
tilt 44 25' N	Dm	0.82	1.18	1.69	2.16	2.60	2.62	2.65	2.30	1.90	1.46	0.94	0.73	1.76
60 Deg South	Gm	2.49	2.94	3.91	4.37	4.25	4.42	4.99	4.98	4.53	3.97	2.85	2.62	3.87
	Dm	0.79	1.12	1.60	2.01	2.39	2.41	2.47	2.17	1.80	1.41	0.90	0.70	1.65
Vertical South	Gm	2.29	2.51	3.05	3.02	2.70	2.67	3.03	3.30	3.38	3.33	2.57	2.46	2.86
	Dm	0.67	0.93	1.31	1.63	1.87	1.91	1.99	1.80	1.51	1.21	0.76	0.61	1.35
Vertical SE/SW	Gm	1.83	2.09	2.78	3.10	2.94	3.09	3.42	3.48	3.19	2.79	2.07	1.90	2.73
	Dm	0.64	0.90	1.29	1.62	1.86	1.93	2.01	1.79	1.47	1.16	0.74	0.58	1.33
Vertical E/W	Gm	1.05	1.37	2.14	2.77	2.91	3.27	3.45	3.21	2.56	1.85	1.23	0.97	2.24
	Dm	0.57	0.81	1.20	1.56	1.84	1.94	2.00	1.73	1.37	1.02	0.66	0.51	1.27
Vertical NE/NW	Gm	0.54	0.79	1.35	2.00	2.33	2.72	2.70	2.31	1.65	1.02	0.64	0.46	1.55
	Dm	0.50	0.72	1.09	1.46	1.75	1.88	1.88	1.60	1.25	0.89	0.58	0.45	1.17
Vertical North	Gm	0.47	0.68	1.04	1.45	1.82	2.14	1.99	1.62	1.19	0.83	0.55	0.43	1.19
	Dm	0.47	0.68	1.04	1.40	1.69	1.84	1.79	1.53	1.19	0.83	0.55	0.43	1.12

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.23	1.15	1.10	1.05	1.02	1.01	1.02	1.05	1.09	1.15	1.21	1.27	1.07
30 Deg South	Gm/Gmean	1.58	1.37	1.22	1.09	1.00	0.97	1.00	1.07	1.18	1.36	1.53	1.71	1.15
Latitude South	Gm/Gmean	1.75	1.44	1.23	1.05	0.94	0.89	0.93	1.02	1.18	1.43	1.67	1.91	1.13
60 Deg South	Gm/Gmean	1.82	1.45	1.18	0.96	0.82	0.77	0.81	0.92	1.12	1.42	1.73	2.03	1.06
Vertical South	Gm/Gmean	1.67	1.24	0.92	0.67	0.52	0.46	0.49	0.61	0.83	1.19	1.56	1.91	0.79
Vertical SE/SW	Gm/Gmean	1.34	1.03	0.84	0.68	0.57	0.54	0.55	0.64	0.79	1.00	1.25	1.47	0.75
Vertical E/W	Gm/Gmean	0.77	0.68	0.65	0.61	0.56	0.57	0.56	0.59	0.63	0.66	0.75	0.75	0.62
Vertical NE/NW	Gm/Gmean	0.39	0.39	0.41	0.44	0.45	0.47	0.44	0.43	0.41	0.37	0.39	0.36	0.43
Vertical North	Gm/Gmean	0.34	0.34	0.31	0.32	0.35	0.37	0.32	0.30	0.29	0.30	0.33	0.33	0.33

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.53	3.85	5.39	6.94	7.70	7.91	7.99	7.20	5.92	4.24	2.91	2.15	5.40
	D clear	0.88	1.06	1.05	1.35	1.66	1.70	1.89	1.69	1.32	1.18	0.85	0.71	1.28
10 Deg South	Gc	3.22	4.58	6.02	7.30	7.84	7.98	8.02	7.45	6.44	4.93	3.67	2.84	5.86
	Dc	0.95	1.12	1.12	1.39	1.67	1.70	1.82	1.70	1.37	1.27	0.92	0.74	1.32
30 Deg South	Gc	4.43	5.78	6.82	7.55	7.62	7.64	7.72	7.52	7.06	5.96	4.94	4.12	6.43
	Dc	1.15	1.31	1.27	1.51	1.74	1.75	1.87	1.79	1.52	1.47	1.10	0.91	1.45
Latitude South	Gc	5.02	6.28	6.97	7.28	7.05	7.00	7.11	7.13	7.07	6.32	5.54	4.77	6.46
tilt 44 25' N	Dc	1.25	1.41	1.36	1.57	1.77	1.78	1.89	1.83	1.59	1.56	1.20	0.99	1.52
60 Deg South	Gc	5.34	6.42	6.69	6.55	6.04	5.92	6.04	6.31	6.65	6.32	5.84	5.17	6.10
	Dc	1.31	1.46	1.42	1.62	1.78	1.78	1.88	1.84	1.64	1.61	1.26	1.05	1.55
Vertical South	Gc	4.97	5.54	5.02	4.20	3.43	3.27	3.38	3.88	4.74	5.22	5.33	4.96	4.49
	Dc	1.27	1.43	1.43	1.63	1.73	1.74	1.80	1.76	1.60	1.54	1.23	1.03	1.52
Vertical SE/SW	Gc	3.83	4.47	4.74	4.68	4.29	4.20	4.26	4.43	4.64	4.43	4.16	3.71	4.32
	Dc	1.13	1.32	1.40	1.65	1.81	1.82	1.89	1.80	1.58	1.46	1.12	0.91	1.49
Vertical E/W	Gc	1.91	2.65	3.62	4.35	4.57	4.62	4.60	4.28	3.71	2.94	2.20	1.62	3.43
	Dc	0.86	1.09	1.29	1.61	1.85	1.88	1.95	1.78	1.46	1.24	0.89	0.68	1.38
Vertical NE/NW	Gc	0.74	1.11	1.91	2.81	3.37	3.51	3.45	2.90	2.09	1.37	0.85	0.56	2.06
	Dc	0.66	0.87	1.11	1.44	1.71	1.76	1.81	1.59	1.25	0.99	0.71	0.55	1.21
Vertical North	Gc	0.62	0.81	1.03	1.54	2.11	2.27	2.22	1.69	1.14	0.90	0.67	0.52	1.30
	Dc	0.62	0.81	1.03	1.32	1.58	1.63	1.66	1.44	1.14	0.90	0.67	0.52	1.11

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.27	1.19	1.12	1.05	1.02	1.01	1.00	1.03	1.09	1.16	1.26	1.32	1.09
30 Deg South	Gc/Gmax	1.75	1.50	1.26	1.09	0.99	0.97	0.97	1.04	1.19	1.41	1.70	1.92	1.19
Latitude South	Gc/Gmax	1.98	1.63	1.29	1.05	0.92	0.88	0.89	0.99	1.19	1.49	1.90	2.22	1.20
60 Deg South	Gc/Gmax	2.11	1.67	1.24	0.94	0.78	0.75	0.76	0.88	1.12	1.49	2.01	2.40	1.13
Vertical South	Gc/Gmax	1.96	1.44	0.93	0.61	0.44	0.41	0.42	0.54	0.80	1.23	1.83	2.31	0.83
Vertical SE/SW	Gc/Gmax	1.51	1.16	0.88	0.67	0.56	0.53	0.53	0.62	0.78	1.04	1.43	1.73	0.80
Vertical E/W	Gc/Gmax	0.75	0.69	0.67	0.63	0.59	0.58	0.58	0.59	0.63	0.69	0.76	0.75	0.63
Vertical NE/NW	Gc/Gmax	0.29	0.29	0.35	0.41	0.44	0.44	0.43	0.40	0.35	0.32	0.29	0.26	0.38
Vertical North	Gc/Gmax	0.25	0.21	0.19	0.22	0.27	0.29	0.28	0.23	0.19	0.21	0.23	0.24	0.24

Sunshine data

Mean sunshine	Hours	3.4	4.1	5.4	6.6	7.0	8.0	9.7	8.5	6.7	5.9	3.8	3.8	6.1
Max. sunshine	Hours	8.4	9.5	10.3	11.9	12.9	13.1	13.0	12.5	11.1	9.9	8.7	8.1	10.8

ITALY Site No. 284

ANCONA

Computer file ITALY284.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 43 37' N

Longitude 13 31' E

Height 104 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.16	1.97	3.35	4.67	5.79	6.22	6.58	5.79	4.33	2.74	1.63	1.13	3.79
	D mean	0.76	1.19	1.72	2.30	2.87	2.76	2.60	2.26	1.94	1.39	0.94	0.70	1.79
10 Deg South	Gm	1.34	2.22	3.65	4.90	5.93	6.29	6.71	6.05	4.69	3.10	1.91	1.34	4.02
	Dm	0.76	1.22	1.75	2.33	2.91	2.79	2.64	2.31	1.99	1.44	0.95	0.71	1.82
30 Deg South	Gm	1.60	2.56	3.99	5.03	5.81	6.00	6.51	6.17	5.06	3.58	2.34	1.65	4.20
	Dm	0.74	1.22	1.72	2.31	2.86	2.73	2.62	2.33	2.01	1.46	0.95	0.69	1.81
Latitude South	Gm	1.70	2.66	4.01	4.86	5.45	5.54	6.06	5.92	5.05	3.72	2.50	1.78	4.11
tilt 43 37' N	Dm	0.71	1.18	1.66	2.22	2.74	2.62	2.54	2.28	1.96	1.43	0.91	0.66	1.75
60 Deg South	Gm	1.72	2.64	3.82	4.40	4.74	4.69	5.20	5.29	4.75	3.68	2.56	1.83	3.78
	Dm	0.64	1.10	1.53	2.05	2.52	2.41	2.38	2.16	1.85	1.35	0.84	0.60	1.62
Vertical South	Gm	1.52	2.21	2.94	3.01	2.97	2.79	3.09	3.46	3.51	3.03	2.26	1.65	2.71
	Dm	0.51	0.89	1.24	1.65	2.00	1.95	1.97	1.82	1.54	1.12	0.68	0.48	1.32
Vertical SE/SW	Gm	1.24	1.86	2.74	3.13	3.28	3.30	3.59	3.71	3.35	2.58	1.85	1.31	2.67
	Dm	0.50	0.87	1.23	1.64	1.99	1.97	1.99	1.81	1.51	1.09	0.68	0.48	1.32
Vertical E/W	Gm	0.77	1.27	2.18	2.85	3.26	3.54	3.70	3.46	2.72	1.78	1.14	0.75	2.29
	Dm	0.49	0.80	1.17	1.59	1.97	1.99	1.99	1.76	1.43	1.00	0.64	0.46	1.28
Vertical NE/NW	Gm	0.47	0.79	1.42	2.08	2.58	2.94	2.89	2.48	1.77	1.04	0.64	0.44	1.63
	Dm	0.46	0.73	1.11	1.51	1.87	1.93	1.88	1.65	1.32	0.91	0.59	0.43	1.20
Vertical North	Gm	0.44	0.70	1.07	1.52	1.97	2.28	2.08	1.70	1.27	0.86	0.57	0.42	1.24
	Dm	0.44	0.70	1.07	1.47	1.81	1.90	1.82	1.57	1.27	0.86	0.57	0.42	1.16

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.15	1.13	1.09	1.05	1.02	1.01	1.02	1.04	1.08	1.13	1.17	1.19	1.06
30 Deg South	Gm/Gmean	1.38	1.30	1.19	1.08	1.00	0.96	0.99	1.07	1.17	1.31	1.44	1.46	1.11
Latitude South	Gm/Gmean	1.47	1.35	1.20	1.04	0.94	0.89	0.92	1.02	1.17	1.36	1.53	1.58	1.08
60 Deg South	Gm/Gmean	1.48	1.34	1.14	0.94	0.82	0.75	0.79	0.91	1.10	1.34	1.57	1.62	1.00
Vertical South	Gm/Gmean	1.31	1.12	0.88	0.64	0.51	0.45	0.47	0.60	0.81	1.11	1.39	1.46	0.71
Vertical SE/SW	Gm/Gmean	1.07	0.94	0.82	0.67	0.57	0.53	0.55	0.64	0.77	0.94	1.13	1.16	0.70
Vertical E/W	Gm/Gmean	0.66	0.64	0.65	0.61	0.56	0.57	0.56	0.60	0.63	0.65	0.70	0.66	0.60
Vertical NE/NW	Gm/Gmean	0.41	0.40	0.42	0.44	0.45	0.47	0.44	0.43	0.41	0.38	0.39	0.39	0.43
Vertical North	Gm/Gmean	0.38	0.35	0.32	0.32	0.34	0.37	0.32	0.29	0.29	0.31	0.35	0.37	0.33

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.40	3.59	5.87	7.00	7.85	8.06	7.97	7.42	5.90	4.44	2.96	1.99	5.46
	D clear	0.65	1.00	0.81	1.21	1.68	1.56	1.56	1.58	1.23	1.11	0.72	0.50	1.13
10 Deg South	Gc	3.15	4.27	6.52	7.34	7.93	8.09	8.02	7.61	6.38	5.07	3.72	2.71	5.91
	Dc	0.75	1.08	0.84	1.24	1.65	1.53	1.54	1.54	1.25	1.11	0.75	0.55	1.15
30 Deg South	Gc	4.38	5.35	7.38	7.56	7.68	7.71	7.67	7.65	6.97	6.13	5.04	3.95	6.46
	Dc	0.90	1.26	0.98	1.35	1.71	1.59	1.60	1.64	1.39	1.28	0.91	0.67	1.27
Latitude South	Gc	4.95	5.77	7.52	7.28	7.12	7.08	7.07	7.26	6.97	6.48	5.64	4.55	6.48
tilt 43 37' N	Dc	0.98	1.34	1.07	1.42	1.74	1.63	1.64	1.69	1.46	1.37	0.99	0.74	1.34
60 Deg South	Gc	5.31	5.90	7.19	6.49	6.04	5.90	5.92	6.36	6.52	6.49	5.97	4.97	6.09
	Dc	1.04	1.40	1.16	1.49	1.76	1.66	1.66	1.72	1.51	1.43	1.05	0.79	1.39
Vertical South	Gc	4.96	5.06	5.32	4.10	3.38	3.20	3.24	3.85	4.60	5.33	5.45	4.77	4.43
	Dc	1.03	1.36	1.28	1.54	1.72	1.67	1.67	1.70	1.51	1.42	1.06	0.80	1.40
Vertical SE/SW	Gc	3.84	4.11	5.13	4.69	4.25	4.22	4.23	4.49	4.56	4.58	4.27	3.55	4.33
	Dc	0.94	1.26	1.26	1.56	1.79	1.75	1.75	1.74	1.49	1.36	0.98	0.72	1.38
Vertical E/W	Gc	2.00	2.48	4.00	4.46	4.49	4.73	4.69	4.40	3.70	3.09	2.33	1.58	3.50
	Dc	0.75	1.04	1.18	1.53	1.81	1.82	1.81	1.72	1.39	1.18	0.81	0.57	1.30
Vertical NE/NW	Gc	0.73	1.07	2.09	2.91	3.28	3.62	3.55	3.00	2.10	1.43	0.86	0.51	2.10
	Dc	0.61	0.84	1.07	1.39	1.67	1.71	1.70	1.56	1.21	0.98	0.67	0.48	1.16
Vertical North	Gc	0.57	0.78	1.01	1.57	1.99	2.33	2.26	1.72	1.11	0.89	0.64	0.47	1.28
	Dc	0.57	0.78	1.01	1.28	1.54	1.60	1.58	1.42	1.11	0.89	0.64	0.47	1.08

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.31	1.19	1.11	1.05	1.01	1.00	1.01	1.03	1.08	1.14	1.26	1.36	1.08
30 Deg South	Gc/Gmax	1.83	1.49	1.26	1.08	0.98	0.96	0.96	1.03	1.18	1.38	1.70	1.99	1.18
Latitude South	Gc/Gmax	2.06	1.61	1.28	1.04	0.91	0.88	0.89	0.98	1.18	1.46	1.90	2.29	1.19
60 Deg South	Gc/Gmax	2.21	1.64	1.23	0.93	0.77	0.73	0.74	0.86	1.11	1.46	2.02	2.50	1.12
Vertical South	Gc/Gmax	2.07	1.41	0.91	0.59	0.43	0.40	0.41	0.52	0.78	1.20	1.84	2.40	0.81
Vertical SE/SW	Gc/Gmax	1.60	1.14	0.87	0.67	0.54	0.52	0.53	0.61	0.77	1.03	1.44	1.78	0.79
Vertical E/W	Gc/Gmax	0.83	0.69	0.68	0.64	0.57	0.59	0.59	0.59	0.63	0.70	0.79	0.79	0.64
Vertical NE/NW	Gc/Gmax	0.30	0.30	0.36	0.42	0.42	0.45	0.44	0.40	0.36	0.32	0.29	0.26	0.38
Vertical North	Gc/Gmax	0.24	0.22	0.17	0.22	0.25	0.29	0.28	0.23	0.19	0.20	0.22	0.24	0.23

Sunshine data

Mean sunshine	Hours	1.8	3.3	4.7	6.3	8.0	8.6	9.9	8.9	6.7	5.0	2.9	2.0	5.7
Max. sunshine	Hours	7.3	8.5	10.2	11.6	12.6	12.8	12.7	12.1	10.4	8.9	7.6	6.6	10.1

ITALY Site No. 285

PIANOSA

Computer file ITALY285.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 42 35' N

Longitude 10 6' E

Height 27 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.68	2.50	3.87	5.50	6.13	6.85	7.08	6.17	4.79	3.48	2.00	1.48	4.30
	D mean	0.90	1.32	1.76	2.08	2.70	2.55	2.43	2.12	1.81	1.30	0.95	0.73	1.72
10 Deg South	Gm	2.04	2.87	4.25	5.80	6.27	6.92	7.22	6.45	5.22	4.03	2.42	1.84	4.62
	Dm	0.94	1.36	1.81	2.12	2.74	2.58	2.48	2.17	1.87	1.37	0.99	0.76	1.77
30 Deg South	Gm	2.60	3.40	4.71	5.98	6.12	6.59	6.99	6.57	5.70	4.82	3.09	2.42	4.92
	Dm	0.97	1.40	1.83	2.11	2.71	2.55	2.48	2.21	1.93	1.45	1.03	0.79	1.79
Latitude South	Gm	2.83	3.57	4.78	5.81	5.76	6.10	6.54	6.33	5.72	5.08	3.35	2.66	4.88
tilt 42 35' N	Dm	0.95	1.38	1.80	2.06	2.61	2.48	2.44	2.19	1.92	1.46	1.03	0.78	1.76
60 Deg South	Gm	2.97	3.59	4.57	5.23	4.95	5.09	5.53	5.61	5.39	5.10	3.50	2.82	4.53
	Dm	0.91	1.31	1.69	1.94	2.41	2.31	2.30	2.09	1.85	1.43	0.99	0.74	1.67
Vertical South	Gm	2.70	3.05	3.53	3.51	3.03	2.92	3.21	3.61	3.97	4.25	3.15	2.61	3.30
	Dm	0.77	1.09	1.41	1.65	1.96	1.95	1.97	1.81	1.60	1.28	0.85	0.64	1.42
Vertical SE/SW	Gm	2.16	2.54	3.24	3.80	3.44	3.58	3.81	3.92	3.77	3.54	2.53	2.02	3.20
	Dm	0.75	1.06	1.39	1.63	1.96	1.97	1.99	1.80	1.56	1.23	0.82	0.61	1.40
Vertical E/W	Gm	1.26	1.67	2.52	3.52	3.49	3.92	3.96	3.69	3.01	2.31	1.50	1.06	2.66
	Dm	0.67	0.95	1.30	1.60	1.95	2.00	2.00	1.76	1.46	1.09	0.74	0.55	1.34
Vertical NE/NW	Gm	0.65	0.95	1.56	2.47	2.73	3.20	3.05	2.60	1.86	1.17	0.74	0.51	1.79
	Dm	0.59	0.85	1.20	1.53	1.66	1.93	1.89	1.64	1.32	0.97	0.66	0.50	1.25
Vertical North	Gm	0.56	0.80	1.15	1.61	2.01	2.38	2.11	1.71	1.26	0.91	0.62	0.48	1.30
	Dm	0.56	0.80	1.15	1.49	1.81	1.90	1.81	1.57	1.26	0.91	0.62	0.48	1.20

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.21	1.15	1.10	1.05	1.02	1.01	1.02	1.04	1.09	1.16	1.21	1.24	1.07
30 Deg South	Gm/Gmean	1.55	1.36	1.22	1.09	1.00	0.96	0.99	1.07	1.19	1.38	1.54	1.63	1.14
Latitude South	Gm/Gmean	1.68	1.43	1.24	1.06	0.94	0.89	0.92	1.03	1.19	1.46	1.67	1.80	1.13
60 Deg South	Gm/Gmean	1.77	1.44	1.18	0.95	0.81	0.74	0.78	0.91	1.13	1.47	1.75	1.90	1.05
Vertical South	Gm/Gmean	1.61	1.22	0.91	0.64	0.49	0.43	0.45	0.58	0.83	1.22	1.58	1.76	0.77
Vertical SE/SW	Gm/Gmean	1.29	1.02	0.84	0.69	0.56	0.52	0.54	0.63	0.79	1.02	1.26	1.37	0.74
Vertical E/W	Gm/Gmean	0.75	0.67	0.65	0.64	0.57	0.57	0.56	0.60	0.63	0.66	0.75	0.72	0.62
Vertical NE/NW	Gm/Gmean	0.39	0.38	0.40	0.45	0.44	0.47	0.43	0.42	0.39	0.34	0.37	0.34	0.44
Vertical North	Gm/Gmean	0.33	0.32	0.30	0.29	0.33	0.35	0.30	0.28	0.26	0.26	0.31	0.32	0.30

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.77	4.09	5.89	7.70	8.03	8.38	8.31	7.72	6.23	4.96	3.15	2.25	5.80
	D clear	0.95	1.10	0.98	0.96	1.47	1.52	1.61	1.54	1.29	1.14	0.83	0.67	1.17
10 Deg South	Gc	3.41	4.80	6.51	8.04	8.10	8.37	8.30	7.89	6.73	5.64	3.92	3.00	6.23
	Dc	0.97	1.14	1.02	0.97	1.45	1.47	1.54	1.48	1.32	1.13	0.89	0.72	1.18
30 Deg South	Gc	4.63	5.98	7.30	8.22	7.79	7.93	7.91	7.89	7.31	6.78	5.22	4.32	6.78
	Dc	1.17	1.33	1.16	1.09	1.52	1.53	1.60	1.58	1.46	1.31	1.06	0.89	1.31
Latitude South	Gc	5.15	6.41	7.42	7.92	7.25	7.31	7.31	7.50	7.29	7.13	5.76	4.93	6.78
tilt 42 35' N	Dc	1.26	1.42	1.24	1.18	1.56	1.57	1.64	1.63	1.53	1.39	1.15	0.97	1.38
60 Deg South	Gc	5.51	6.55	7.06	6.96	6.03	5.99	6.03	6.48	6.78	7.13	6.10	5.40	6.33
	Dc	1.33	1.49	1.33	1.29	1.61	1.62	1.67	1.68	1.59	1.47	1.22	1.05	1.45
Vertical South	Gc	5.07	5.57	5.18	4.28	3.30	3.17	3.24	3.85	4.72	5.80	5.50	5.16	4.56
	Dc	1.29	1.45	1.39	1.46	1.65	1.67	1.69	1.69	1.58	1.48	1.21	1.05	1.47
Vertical SE/SW	Gc	3.93	4.52	5.00	5.08	4.29	4.29	4.31	4.58	4.71	5.00	4.31	3.91	4.49
	Dc	1.16	1.35	1.37	1.48	1.71	1.75	1.78	1.73	1.56	1.42	1.11	0.93	1.45
Vertical E/W	Gc	2.02	2.74	3.92	4.95	4.63	4.89	4.82	4.56	3.85	3.39	2.34	1.84	3.67
	Dc	0.89	1.12	1.27	1.46	1.74	1.82	1.84	1.72	1.46	1.24	0.90	0.72	1.35
Vertical NE/NW	Gc	0.79	1.16	2.08	3.23	3.41	3.77	3.68	3.12	2.20	1.56	0.89	0.63	2.22
	Dc	0.70	0.90	1.12	1.36	1.62	1.72	1.73	1.57	1.27	1.04	0.73	0.57	1.20
Vertical North	Gc	0.65	0.84	1.05	1.65	2.04	2.41	2.33	1.76	1.16	0.95	0.69	0.53	1.34
	Dc	0.65	0.84	1.05	1.28	1.51	1.61	1.62	1.44	1.16	0.95	0.69	0.53	1.11

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.23	1.17	1.11	1.04	1.01	1.00	1.00	1.02	1.08	1.14	1.24	1.33	1.07
30 Deg South	Gc/Gmax	1.67	1.46	1.24	1.07	0.97	0.95	0.95	1.02	1.17	1.37	1.66	1.92	1.17
Latitude South	Gc/Gmax	1.86	1.57	1.26	1.03	0.90	0.87	0.88	0.97	1.17	1.44	1.83	2.19	1.17
60 Deg South	Gc/Gmax	1.99	1.60	1.20	0.90	0.75	0.71	0.73	0.84	1.09	1.44	1.94	2.40	1.09
Vertical South	Gc/Gmax	1.83	1.36	0.88	0.56	0.41	0.38	0.39	0.50	0.76	1.17	1.75	2.29	0.79
Vertical SE/SW	Gc/Gmax	1.42	1.11	0.85	0.66	0.53	0.51	0.52	0.59	0.76	1.01	1.37	1.74	0.77
Vertical E/W	Gc/Gmax	0.73	0.67	0.67	0.64	0.58	0.58	0.58	0.59	0.62	0.68	0.74	0.82	0.63
Vertical NE/NW	Gc/Gmax	0.28	0.28	0.35	0.42	0.43	0.45	0.44	0.40	0.35	0.31	0.28	0.28	0.38
Vertical North	Gc/Gmax	0.23	0.20	0.18	0.21	0.25	0.29	0.28	0.23	0.19	0.19	0.22	0.24	0.23

Sunshine data

Mean sunshine	Hours	3.8	4.8	6.1	7.5	8.4	9.7	10.9	9.5	8.0	7.1	4.6	3.8	7.0
Max. sunshine	Hours	7.8	9.5	10.4	12.0	12.6	12.9	12.8	12.3	11.2	9.9	8.5	7.6	10.6

ITALY Site No.288

ROMA

Computer file ITALY288.1NC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 41 48' N

Longitude 12 35' E

Height 131 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.70	2.54	3.78	4.99	6.03	6.59	6.86	6.16	4.69	3.29	2.02	1.51	4.19
	D mean	0.90	1.33	1.84	2.32	2.60	2.58	2.61	2.15	1.80	1.41	0.98	0.79	1.78
10 Deg South	Gm	2.06	2.90	4.13	5.24	6.15	6.64	6.99	6.44	5.10	3.77	2.43	1.87	4.49
	Dm	0.94	1.38	1.89	2.36	2.63	2.61	2.65	2.21	1.87	1.48	1.03	0.82	1.82
30 Deg South	Gm	2.61	3.42	4.52	5.37	6.00	6.31	6.77	6.55	5.55	4.43	3.06	2.45	4.76
	Dm	0.97	1.41	1.89	2.35	2.60	2.57	2.65	2.26	1.92	1.56	1.07	0.85	1.84
Latitude South	Gm	2.83	3.58	4.56	5.21	5.67	5.87	6.36	6.33	5.56	4.63	3.30	2.68	4.72
tilt 41 48' N	Dm	0.97	1.39	1.85	2.28	2.52	2.49	2.59	2.24	1.91	1.57	1.06	0.84	1.81
60 Deg South	Gm	2.97	3.59	4.33	4.67	4.82	4.86	5.35	5.58	5.22	4.61	3.44	2.86	4.36
	Dm	0.92	1.31	1.72	2.11	2.32	2.30	2.41	2.14	1.84	1.52	1.02	0.80	1.70
Vertical South	Gm	2.68	3.02	3.31	3.15	2.92	2.78	3.10	3.56	3.82	3.81	3.07	2.64	3.16
	Dm	0.78	1.09	1.41	1.72	1.90	1.91	2.00	1.84	1.58	1.32	0.88	0.68	1.43
Vertical SE/SW	Gm	2.15	2.53	3.05	3.28	3.36	3.38	3.65	3.85	3.64	3.19	2.48	2.09	3.06
	Dm	0.76	1.06	1.39	1.70	1.90	1.92	2.04	1.83	1.54	1.27	0.85	0.66	1.41
Vertical E/W	Gm	1.26	1.67	2.40	2.99	3.42	3.65	3.77	3.61	2.92	2.12	1.49	1.17	2.54
	Dm	0.67	0.95	1.31	1.66	1.89	1.94	2.05	1.79	1.44	1.11	0.75	0.59	1.35
Vertical NE/NW	Gm	0.65	0.96	1.53	2.16	2.68	2.98	2.93	2.53	1.81	1.14	0.75	0.57	1.73
	Dm	0.60	0.86	1.21	1.56	1.80	1.88	1.91	1.65	1.31	0.97	0.67	0.53	1.25
Vertical North	Gm	0.56	0.81	1.16	1.55	1.95	2.21	2.07	1.67	1.23	0.91	0.63	0.50	1.27
	Dm	0.56	0.81	1.16	1.50	1.75	1.84	1.82	1.56	1.23	0.91	0.63	0.50	1.19

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.21	1.14	1.09	1.05	1.02	1.01	1.02	1.04	1.09	1.15	1.20	1.24	1.07
30 Deg South	Gm/Gmean	1.53	1.35	1.20	1.08	1.00	0.96	0.99	1.06	1.18	1.35	1.51	1.62	1.14
Latitude South	Gm/Gmean	1.66	1.41	1.21	1.04	0.94	0.89	0.93	1.03	1.19	1.41	1.63	1.77	1.13
60 Deg South	Gm/Gmean	1.75	1.41	1.15	0.94	0.80	0.74	0.78	0.91	1.11	1.40	1.70	1.89	1.04
Vertical South	Gm/Gmean	1.58	1.19	0.88	0.63	0.48	0.42	0.45	0.58	0.81	1.16	1.52	1.75	0.75
Vertical SE/SW	Gm/Gmean	1.26	1.00	0.81	0.66	0.56	0.51	0.53	0.63	0.78	0.97	1.23	1.38	0.73
Vertical E/W	Gm/Gmean	0.74	0.66	0.63	0.60	0.57	0.55	0.55	0.59	0.62	0.64	0.74	0.77	0.61
Vertical NE/NW	Gm/Gmean	0.38	0.38	0.41	0.43	0.44	0.45	0.43	0.41	0.39	0.35	0.37	0.38	0.41
Vertical North	Gm/Gmean	0.33	0.32	0.31	0.31	0.32	0.34	0.30	0.27	0.26	0.28	0.31	0.33	0.30

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes.

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.78	4.02	5.87	7.25	8.02	8.16	8.06	7.53	6.22	4.78	3.33	2.33	5.70
	D clear	0.93	1.07	1.04	1.39	1.45	1.54	1.84	1.72	1.36	1.27	0.92	0.71	1.27
10 Deg South	Gc	3.48	4.73	6.45	7.52	8.08	8.15	8.04	7.68	6.67	5.41	4.09	3.09	6.12
	Dc	1.01	1.14	1.06	1.37	1.43	1.51	1.77	1.67	1.36	1.29	0.96	0.79	1.28
30 Deg South	Gc	4.67	5.85	7.20	7.68	7.74	7.70	7.66	7.66	7.21	6.44	5.39	4.39	6.63
	Dc	1.21	1.33	1.20	1.47	1.50	1.56	1.81	1.75	1.50	1.48	1.14	0.96	1.41
Latitude South	Gc	5.15	6.23	7.30	7.41	7.22	7.12	7.11	7.31	7.18	6.73	5.90	4.95	6.63
tilt 41 48' N	Dc	1.29	1.41	1.27	1.53	1.54	1.59	1.82	1.79	1.56	1.56	1.23	1.04	1.47
60 Deg South	Gc	5.51	6.37	6.92	6.50	5.94	5.79	5.83	6.27	6.65	6.71	6.24	5.43	6.18
	Dc	1.37	1.48	1.36	1.59	1.59	1.63	1.81	1.80	1.62	1.63	1.30	1.12	1.53
Vertical South	Gc	5.04	5.38	5.04	4.02	3.21	3.03	3.12	3.70	4.60	5.42	5.59	5.15	4.44
	Dc	1.32	1.44	1.41	1.61	1.63	1.65	1.75	1.74	1.59	1.58	1.28	1.11	1.51
Vertical SE/SW	Gc	3.91	4.38	4.89	4.61	4.23	4.13	4.08	4.38	4.60	4.65	4.39	3.90	4.34
	Dc	1.18	1.34	1.39	1.64	1.69	1.73	1.83	1.79	1.58	1.50	1.18	0.99	1.49
Vertical E/W	Gc	2.02	2.67	3.85	4.42	4.61	4.72	4.47	4.36	3.79	3.15	2.39	1.85	3.53
	Dc	0.91	1.11	1.29	1.62	1.72	1.81	1.88	1.79	1.48	1.30	0.95	0.75	1.39
Vertical NE/NW	Gc	0.80	1.15	2.07	2.90	3.42	3.66	3.38	3.00	2.18	1.49	0.93	0.65	2.14
	Dc	0.70	0.90	1.14	1.47	1.61	1.71	1.75	1.62	1.28	1.05	0.76	0.59	1.22
Vertical North	Gc	0.66	0.83	1.06	1.58	2.04	2.34	2.11	1.73	1.17	0.95	0.72	0.55	1.31
	Dc	0.66	0.83	1.06	1.35	1.50	1.60	1.61	1.47	1.16	0.95	0.72	0.55	1.12

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.25	1.18	1.10	1.04	1.01	1.00	1.00	1.02	1.07	1.13	1.23	1.33	1.07
30 Deg South	Gc/Gmax	1.68	1.46	1.23	1.06	0.96	0.94	0.95	1.02	1.16	1.35	1.62	1.88	1.16
Latitude South	Gc/Gmax	1.85	1.55	1.24	1.02	0.90	0.87	0.88	0.97	1.15	1.41	1.77	2.12	1.16
60 Deg South	Gc/Gmax	1.98	1.59	1.18	0.90	0.74	0.71	0.72	0.83	1.07	1.40	1.87	2.33	1.08
Vertical South	Gc/Gmax	1.81	1.34	0.86	0.55	0.40	0.37	0.39	0.49	0.74	1.13	1.68	2.21	0.78
Vertical SE/SW	Gc/Gmax	1.41	1.09	0.83	0.64	0.53	0.51	0.51	0.58	0.74	0.97	1.32	1.67	0.76
Vertical E/W	Gc/Gmax	0.73	0.66	0.66	0.61	0.57	0.58	0.56	0.58	0.61	0.66	0.72	0.79	0.62
Vertical NE/NW	Gc/Gmax	0.29	0.29	0.35	0.40	0.43	0.45	0.42	0.40	0.35	0.31	0.28	0.28	0.38
Vertical North	Gc/Gmax	0.24	0.21	0.18	0.22	0.25	0.29	0.26	0.23	0.19	0.20	0.22	0.24	0.23

Sunshine data

Mean sunshine	Hours	3.9	4.7	5.6	6.9	8.4	9.3	10.8	9.8	7.9	6.7	4.6	3.6	6.9
Max. sunshine	Hours	8.4	9.3	10.1	11.5	12.5	12.7	12.8	12.3	10.8	9.9	8.8	8.1	10.6

ITALY Site No. 291

NAPLES

Computer file ITALY291.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 40 51' N

Longitude 14 18' E

Height 72 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.80	2.45	3.72	4.98	5.90	6.66	6.78	6.18	4.71	3.32	2.13	1.53	4.19
	D mean	0.95	1.37	1.80	2.27	2.74	2.77	2.59	2.13	1.84	1.43	1.01	0.80	1.81
10 Deg South	Gm	2.16	2.77	4.04	5.21	6.01	6.71	6.89	6.44	5.10	3.77	2.55	1.88	4.47
	Dm	0.99	1.42	1.84	2.31	2.77	2.80	2.63	2.19	1.90	1.49	1.05	0.83	1.85
30 Deg South	Gm	2.72	3.20	4.40	5.30	5.84	6.36	6.63	6.51	5.49	4.39	3.19	2.43	4.71
	Dm	1.01	1.44	1.83	2.28	2.72	2.75	2.61	2.22	1.94	1.54	1.09	0.84	1.86
Latitude South	Gm	2.92	3.31	4.43	5.15	5.54	5.95	6.25	6.29	5.49	4.56	3.41	2.63	4.67
tilt 40 51' N	Dm	1.00	1.41	1.79	2.22	2.64	2.67	2.55	2.20	1.92	1.54	1.08	0.83	1.82
60 Deg South	Gm	3.06	3.29	4.19	4.57	4.67	4.88	5.18	5.49	5.11	4.52	3.56	2.80	4.28
	Dm	0.95	1.32	1.66	2.04	2.41	2.44	2.37	2.09	1.83	1.48	1.03	0.79	1.70
Vertical South	Gm	2.75	2.74	3.17	3.04	2.83	2.78	2.98	3.46	3.70	3.69	3.16	2.57	3.07
	Dm	0.81	1.08	1.36	1.66	1.93	1.99	1.97	1.81	1.56	1.27	0.88	0.67	1.42
Vertical SE/SW	Gm	2.21	2.31	2.98	3.27	3.24	3.38	3.56	3.81	3.57	3.13	2.56	2.03	3.01
	Dm	0.78	1.05	1.34	1.65	1.93	2.01	1.99	1.80	1.53	1.23	0.86	0.65	1.40
Vertical E/W	Gm	1.31	1.57	2.39	3.05	3.31	3.65	3.75	3.63	2.92	2.13	1.55	1.16	2.54
	Dm	0.70	0.95	1.27	1.62	1.92	2.03	2.01	1.77	1.44	1.11	0.77	0.59	1.35
Vertical NE/NW	Gm	0.68	0.94	1.54	2.24	2.64	3.01	2.96	2.58	1.86	1.17	0.78	0.57	1.75
	Dm	0.63	0.86	1.19	1.54	1.84	1.96	1.90	1.65	1.33	0.97	0.69	0.53	1.26
Vertical North	Gm	0.59	0.81	1.14	1.58	1.97	2.26	2.12	1.70	1.27	0.94	0.66	0.50	1.30
	Dm	0.59	0.81	1.14	1.50	1.79	1.92	1.84	1.57	1.27	0.94	0.66	0.50	1.21

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.20	1.13	1.09	1.05	1.02	1.01	1.02	1.04	1.08	1.14	1.20	1.23	1.07
30 Deg South	Gm/Gmean	1.51	1.31	1.18	1.06	0.99	0.95	0.98	1.05	1.17	1.32	1.50	1.59	1.12
Latitude South	Gm/Gmean	1.62	1.35	1.19	1.03	0.94	0.89	0.92	1.02	1.17	1.37	1.60	1.72	1.12
60 Deg South	Gm/Gmean	1.70	1.34	1.13	0.92	0.79	0.73	0.76	0.89	1.09	1.36	1.67	1.83	1.02
Vertical South	Gm/Gmean	1.53	1.12	0.85	0.61	0.48	0.42	0.44	0.56	0.79	1.11	1.48	1.68	0.73
Vertical SE/SW	Gm/Gmean	1.23	0.94	0.80	0.66	0.55	0.51	0.52	0.62	0.76	0.94	1.20	1.33	0.72
Vertical E/W	Gm/Gmean	0.73	0.64	0.64	0.61	0.56	0.55	0.55	0.59	0.62	0.64	0.73	0.76	0.61
Vertical NE/NW	Gm/Gmean	0.38	0.38	0.41	0.45	0.45	0.45	0.44	0.42	0.40	0.35	0.37	0.37	0.42
Vertical North	Gm/Gmean	0.33	0.33	0.31	0.32	0.33	0.34	0.31	0.28	0.27	0.28	0.31	0.33	0.31

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.02	4.09	6.09	7.29	7.90	8.12	8.02	7.69	6.29	5.14	3.54	2.46	5.81
	D clear	0.98	1.15	0.93	1.17	1.54	1.74	1.66	1.62	1.25	1.20	0.89	0.71	1.24
10 Deg South	Gc	3.71	4.75	6.68	7.56	7.92	8.04	7.98	7.80	6.74	5.80	4.33	3.22	6.22
	Dc	1.01	1.20	0.96	1.17	1.50	1.64	1.58	1.54	1.26	1.18	0.92	0.77	1.23
30 Deg South	Gc	4.96	5.84	7.43	7.67	7.56	7.58	7.54	7.73	7.26	6.88	5.69	4.56	6.73
	Dc	1.21	1.39	1.10	1.28	1.56	1.69	1.63	1.62	1.39	1.36	1.09	0.94	1.35
Latitude South	Gc	5.43	6.17	7.51	7.41	7.09	7.05	7.03	7.39	7.22	7.16	6.18	5.08	6.73
tilt 40 51' N	Dc	1.29	1.47	1.17	1.33	1.59	1.70	1.65	1.66	1.45	1.44	1.17	1.01	1.41
60 Deg South	Gc	5.83	6.30	7.08	6.42	5.77	5.67	5.68	6.26	6.63	7.13	6.56	5.61	6.24
	Dc	1.37	1.54	1.27	1.42	1.63	1.71	1.67	1.70	1.52	1.52	1.25	1.10	1.47
Vertical South	Gc	5.30	5.28	5.09	3.89	3.08	2.94	2.97	3.63	4.53	5.71	5.84	5.29	4.46
	Dc	1.33	1.49	1.36	1.51	1.64	1.69	1.66	1.69	1.53	1.52	1.25	1.09	1.48
Vertical SE/SW	Gc	4.11	4.31	5.00	4.63	4.09	3.99	4.01	4.40	4.60	4.96	4.59	4.02	4.39
	Dc	1.20	1.38	1.34	1.54	1.70	1.77	1.74	1.74	1.52	1.46	1.16	0.98	1.46
Vertical E/W	Gc	2.15	2.66	3.99	4.56	4.49	4.49	4.48	4.46	3.85	3.41	2.53	1.94	3.59
	Dc	0.93	1.15	1.26	1.52	1.74	1.83	1.79	1.74	1.44	1.29	0.95	0.76	1.37
Vertical NE/NW	Gc	0.84	1.16	2.14	3.03	3.37	3.46	3.42	3.09	2.22	1.60	0.97	0.68	2.17
	Dc	0.73	0.92	1.13	1.40	1.63	1.72	1.68	1.59	1.26	1.07	0.78	0.61	1.21
Vertical North	Gc	0.69	0.85	1.06	1.61	2.03	2.17	2.12	1.75	1.16	0.98	0.73	0.57	1.31
	Dc	0.69	0.85	1.06	1.30	1.51	1.60	1.56	1.45	1.16	0.98	0.73	0.57	1.12

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.23	1.16	1.10	1.04	1.00	0.99	1.00	1.01	1.07	1.13	1.22	1.31	1.07
30 Deg South	Gc/Gmax	1.64	1.43	1.22	1.05	0.96	0.93	0.94	1.00	1.15	1.34	1.61	1.85	1.16
Latitude South	Gc/Gmax	1.80	1.51	1.23	1.02	0.90	0.87	0.88	0.96	1.15	1.39	1.75	2.07	1.16
60 Deg South	Gc/Gmax	1.93	1.54	1.16	0.88	0.73	0.70	0.71	0.81	1.05	1.39	1.85	2.28	1.07
Vertical South	Gc/Gmax	1.75	1.29	0.84	0.53	0.39	0.36	0.37	0.47	0.72	1.11	1.65	2.15	0.77
Vertical SE/SW	Gc/Gmax	1.36	1.05	0.82	0.63	0.52	0.49	0.50	0.57	0.73	0.96	1.30	1.63	0.76
Vertical E/W	Gc/Gmax	0.71	0.65	0.65	0.63	0.57	0.55	0.56	0.58	0.61	0.66	0.71	0.79	0.62
Vertical NE/NW	Gc/Gmax	0.28	0.28	0.35	0.42	0.43	0.43	0.43	0.40	0.35	0.31	0.27	0.28	0.37
Vertical North	Gc/Gmax	0.23	0.21	0.17	0.22	0.26	0.27	0.26	0.23	0.18	0.19	0.21	0.23	0.22

Sunshine data

Mean sunshine	Hours	3.9	4.3	5.4	6.6	8.0	9.2	10.1	9.5	7.5	6.3	4.6	3.5	6.6
Max. sunshine	Hours	8.3	9.1	10.3	11.3	12.1	12.3	12.2	11.9	10.7	10.0	8.8	7.8	10.4

ITALY Site No. 292

BRINDISI

Computer file ITALY292.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 40 39' N

Longitude 17 57' E

Height 10 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.82	2.54	3.76	5.19	6.40	7.02	7.14	6.60	4.84	3.30	2.28	1.67	4.39
	D mean	1.00	1.44	1.95	2.48	2.69	2.53	2.35	1.91	1.92	1.53	1.05	0.86	1.81
10 Deg South	Gm	2.17	2.86	4.07	5.42	6.52	7.06	7.25	6.86	5.24	3.73	2.74	2.05	4.67
	Dm	1.03	1.49	1.99	2.52	2.72	2.56	2.39	1.96	1.98	1.60	1.10	0.88	1.85
30 Deg South	Gm	2.70	3.30	4.40	5.52	6.34	6.67	6.96	6.94	5.65	4.32	3.45	2.65	4.92
	Dm	1.06	1.51	1.98	2.49	2.69	2.53	2.39	2.01	2.03	1.67	1.14	0.90	1.87
Latitude South	Gm	2.88	3.41	4.41	5.36	6.01	6.24	6.55	6.70	5.65	4.47	3.69	2.87	4.86
tilt 40 39' N	Dm	1.05	1.48	1.93	2.42	2.62	2.47	2.35	2.00	2.02	1.67	1.14	0.89	1.84
60 Deg South	Gm	3.01	3.39	4.15	4.75	5.05	5.07	5.40	5.82	5.26	4.42	3.86	3.06	4.44
	Dm	0.99	1.39	1.77	2.22	2.41	2.29	2.22	1.93	1.92	1.60	1.09	0.83	1.72
Vertical South	Gm	2.69	2.81	3.14	3.16	3.02	2.83	3.05	3.62	3.81	3.61	3.43	2.80	3.17
	Dm	0.83	1.14	1.44	1.79	1.98	1.94	1.92	1.74	1.64	1.37	0.95	0.70	1.45
Vertical SE/SW	Gm	2.17	2.38	2.92	3.34	3.51	3.55	3.75	4.13	3.65	3.05	2.77	2.22	3.12
	Dm	0.80	1.10	1.41	1.77	1.98	1.95	1.94	1.73	1.60	1.31	0.92	0.69	1.43
Vertical E/W	Gm	1.31	1.62	2.34	3.09	3.61	3.90	3.99	4.02	2.97	2.08	1.67	1.27	2.66
	Dm	0.72	0.99	1.34	1.73	1.97	1.97	1.95	1.71	1.50	1.16	0.82	0.63	1.38
Vertical NE/NW	Gm	0.70	0.98	1.55	2.27	2.84	3.19	3.12	2.83	1.88	1.18	0.82	0.62	1.84
	Dm	0.65	0.89	1.25	1.65	1.89	1.91	1.86	1.61	1.37	1.02	0.73	0.57	1.29
Vertical North	Gm	0.61	0.84	1.20	1.65	2.05	2.32	2.16	1.77	1.30	0.95	0.69	0.54	1.34
	Dm	0.61	0.84	1.20	1.60	1.83	1.88	1.80	1.55	1.30	0.95	0.69	0.54	1.23

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.19	1.13	1.08	1.04	1.02	1.01	1.01	1.04	1.08	1.13	1.20	1.23	1.06
30 Deg South	Gm/Gmean	1.48	1.30	1.17	1.06	0.99	0.95	0.98	1.05	1.17	1.31	1.51	1.59	1.12
Latitude South	Gm/Gmean	1.58	1.34	1.17	1.03	0.94	0.89	0.92	1.01	1.17	1.36	1.62	1.72	1.11
60 Deg South	Gm/Gmean	1.65	1.34	1.10	0.92	0.79	0.72	0.76	0.88	1.09	1.34	1.69	1.83	1.01
Vertical South	Gm/Gmean	1.48	1.11	0.83	0.61	0.47	0.40	0.43	0.55	0.79	1.09	1.50	1.68	0.72
Vertical SE/SW	Gm/Gmean	1.19	0.94	0.78	0.64	0.55	0.51	0.52	0.63	0.75	0.92	1.22	1.33	0.71
Vertical E/W	Gm/Gmean	0.72	0.64	0.62	0.60	0.56	0.56	0.56	0.61	0.61	0.63	0.73	0.76	0.61
Vertical NE/NW	Gm/Gmean	0.38	0.39	0.41	0.44	0.44	0.45	0.44	0.43	0.39	0.36	0.36	0.37	0.42
Vertical North	Gm/Gmean	0.34	0.33	0.32	0.32	0.32	0.33	0.30	0.27	0.29	0.29	0.30	0.32	0.31

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.99	4.16	6.11	7.37	8.18	8.45	8.29	7.97	6.44	4.79	3.45	2.77	5.92
	D clear	1.00	1.22	1.05	1.33	1.49	1.45	1.45	1.33	1.42	1.33	0.90	0.75	1.23
10 Deg South	Gc	3.67	4.81	6.69	7.62	8.19	8.38	8.25	8.09	6.83	5.40	4.23	3.59	6.32
	Dc	1.05	1.25	1.08	1.31	1.44	1.38	1.39	1.26	1.38	1.37	0.96	0.75	1.22
30 Deg South	Gc	4.88	5.89	7.42	7.74	7.80	7.86	7.78	7.99	7.34	6.37	5.53	5.12	6.81
	Dc	1.25	1.45	1.22	1.42	1.51	1.44	1.45	1.36	1.52	1.56	1.14	0.92	1.35
Latitude South	Gc	5.33	6.22	7.50	7.48	7.32	7.31	7.25	7.63	7.31	6.62	5.99	5.72	6.81
tilt 40 39' N	Dc	1.33	1.52	1.29	1.47	1.55	1.48	1.49	1.41	1.58	1.63	1.21	0.99	1.41
60 Deg South	Gc	5.72	6.34	7.06	6.48	5.93	5.82	5.81	6.42	6.71	6.57	6.35	6.34	6.29
	Dc	1.41	1.60	1.38	1.54	1.60	1.54	1.55	1.50	1.64	1.69	1.30	1.08	1.48
Vertical South	Gc	5.19	5.30	5.08	3.93	3.14	2.95	2.99	3.65	4.59	5.26	5.65	6.00	4.47
	Dc	1.36	1.53	1.44	1.59	1.64	1.62	1.61	1.59	1.62	1.62	1.28	1.10	1.50
Vertical SE/SW	Gc	4.03	4.33	4.97	4.61	4.22	4.14	4.14	4.61	4.63	4.54	4.45	4.56	4.44
	Dc	1.23	1.42	1.42	1.62	1.71	1.69	1.68	1.63	1.61	1.55	1.18	0.99	1.48
Vertical E/W	Gc	2.11	2.68	3.96	4.48	4.66	4.75	4.69	4.78	3.86	3.11	2.46	2.22	3.65
	Dc	0.95	1.18	1.33	1.61	1.75	1.74	1.73	1.63	1.51	1.33	0.96	0.78	1.38
Vertical NE/NW	Gc	0.84	1.18	2.15	2.97	3.49	3.66	3.58	3.33	2.25	1.50	0.96	0.74	2.23
	Dc	0.74	0.94	1.17	1.47	1.64	1.65	1.64	1.52	1.32	1.08	0.78	0.64	1.22
Vertical North	Gc	0.69	0.86	1.09	1.60	2.09	2.25	2.19	1.83	1.20	0.97	0.73	0.60	1.34
	Dc	0.69	0.86	1.09	1.35	1.53	1.55	1.53	1.41	1.20	0.97	0.73	0.60	1.13

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.23	1.16	1.10	1.03	1.00	0.99	1.00	1.01	1.06	1.13	1.23	1.30	1.07
30 Deg South	Gc/Gmax	1.63	1.42	1.21	1.05	0.95	0.93	0.94	1.00	1.14	1.33	1.60	1.85	1.15
Latitude South	Gc/Gmax	1.78	1.50	1.23	1.01	0.89	0.87	0.88	0.96	1.13	1.38	1.74	2.07	1.15
60 Deg South	Gc/Gmax	1.91	1.52	1.15	0.88	0.73	0.69	0.70	0.81	1.04	1.37	1.84	2.29	1.06
Vertical South	Gc/Gmax	1.74	1.27	0.83	0.53	0.38	0.35	0.36	0.46	0.71	1.10	1.64	2.17	0.75
Vertical SE/SW	Gc/Gmax	1.35	1.04	0.81	0.63	0.52	0.49	0.50	0.58	0.72	0.95	1.29	1.65	0.75
Vertical E/W	Gc/Gmax	0.71	0.64	0.65	0.61	0.57	0.56	0.57	0.60	0.60	0.65	0.71	0.80	0.62
Vertical NE/NW	Gc/Gmax	0.28	0.28	0.35	0.40	0.43	0.43	0.43	0.42	0.35	0.31	0.28	0.27	0.38
Vertical North	Gc/Gmax	0.23	0.21	0.18	0.22	0.26	0.27	0.26	0.23	0.19	0.20	0.21	0.22	0.23

Sunshine data

Mean sunshine	Hours	3.8	4.4	5.2	6.6	8.7	9.6	10.6	9.8	7.8	6.4	5.0	3.6	6.8
Max. sunshine	Hours	8.4	9.2	10.5	11.5	12.4	12.5	12.4	11.9	10.7	9.9	8.9	8.0	10.5

ITALY Site No. 293

ALGHERO

Computer file ITALY293.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 40 38' N

Longitude 8 17' E

Height 40 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.90	2.53	3.81	5.30	6.23	6.98	7.46	6.65	5.20	3.50	2.20	1.65	4.46
	D mean	0.92	1.28	1.76	2.23	2.68	2.43	2.11	1.95	1.69	1.35	1.00	0.81	1.69
10 Deg South	Gm	2.31	2.89	4.16	5.56	6.36	7.03	7.58	6.94	5.66	4.01	2.65	2.04	4.78
	Dm	0.95	1.34	1.80	2.28	2.72	2.47	2.16	2.00	1.75	1.41	1.04	0.83	1.73
30 Deg South	Gm	2.94	3.41	4.56	5.69	6.19	6.65	7.28	7.04	6.16	4.71	3.35	2.66	5.06
	Dm	0.97	1.38	1.82	2.28	2.69	2.45	2.19	2.07	1.82	1.48	1.09	0.85	1.76
Latitude South	Gm	3.16	3.55	4.60	5.55	5.88	6.23	6.86	6.82	6.18	4.90	3.59	2.89	5.03
tilt 40 38' N	Dm	0.96	1.37	1.79	2.23	2.62	2.40	2.17	2.07	1.82	1.49	1.09	0.84	1.74
60 Deg South	Gm	3.34	3.57	4.37	4.92	4.95	5.07	5.64	5.94	5.78	4.89	3.77	3.09	4.62
	Dm	0.91	1.30	1.67	2.07	2.41	2.24	2.09	2.01	1.77	1.45	1.06	0.79	1.65
Vertical South	Gm	3.02	3.00	3.32	3.27	2.96	2.81	3.14	3.71	4.18	4.01	3.35	2.85	3.30
	Dm	0.78	1.10	1.39	1.72	1.96	1.91	1.87	1.80	1.58	1.28	0.92	0.67	1.42
Vertical SE/SW	Gm	2.41	2.51	3.08	3.48	3.42	3.52	3.91	4.13	4.03	3.37	2.70	2.24	3.24
	Dm	0.76	1.06	1.37	1.71	1.97	1.93	1.90	1.80	1.54	1.23	0.89	0.66	1.40
Vertical E/W	Gm	1.42	1.67	2.43	3.21	3.49	3.86	4.18	3.93	3.26	2.26	1.62	1.27	2.72
	Dm	0.69	0.94	1.28	1.66	1.96	1.95	1.92	1.76	1.45	1.10	0.79	0.61	1.34
Vertical NE/NW	Gm	0.70	0.94	1.54	2.30	2.74	3.13	3.21	2.73	1.97	1.19	0.79	0.60	1.82
	Dm	0.63	0.84	1.19	1.57	1.86	1.88	1.82	1.64	1.33	0.98	0.70	0.55	1.25
Vertical North	Gm	0.60	0.79	1.13	1.59	1.99	2.25	2.13	1.71	1.27	0.93	0.66	0.53	1.30
	Dm	0.60	0.79	1.13	1.52	1.80	1.84	1.75	1.56	1.27	0.93	0.66	0.53	1.20

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.22	1.14	1.09	1.05	1.02	1.01	1.02	1.04	1.09	1.15	1.21	1.24	1.07
30 Deg South	Gm/Gmean	1.55	1.35	1.20	1.07	0.99	0.95	0.98	1.06	1.18	1.35	1.52	1.61	1.13
Latitude South	Gm/Gmean	1.66	1.40	1.21	1.05	0.94	0.89	0.92	1.03	1.19	1.40	1.63	1.75	1.13
60 Deg South	Gm/Gmean	1.76	1.41	1.15	0.93	0.80	0.73	0.76	0.89	1.11	1.40	1.71	1.87	1.04
Vertical South	Gm/Gmean	1.59	1.19	0.87	0.62	0.47	0.40	0.42	0.56	0.80	1.15	1.52	1.73	0.74
Vertical SE/SW	Gm/Gmean	1.27	0.99	0.81	0.66	0.55	0.50	0.52	0.62	0.77	0.96	1.23	1.36	0.73
Vertical E/W	Gm/Gmean	0.75	0.66	0.64	0.61	0.56	0.55	0.56	0.59	0.63	0.65	0.74	0.77	0.61
Vertical NE/NW	Gm/Gmean	0.37	0.37	0.40	0.43	0.44	0.45	0.43	0.41	0.38	0.34	0.36	0.36	0.41
Vertical North	Gm/Gmean	0.32	0.31	0.30	0.30	0.32	0.32	0.29	0.26	0.24	0.27	0.30	0.32	0.29

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.06	4.20	5.91	7.37	8.10	8.47	8.42	7.87	6.52	5.04	3.38	2.60	5.92
	D clear	0.83	1.11	0.98	1.21	1.59	1.57	1.40	1.50	1.20	1.13	0.87	0.63	1.17
10 Deg South	Gc	3.83	4.90	6.48	7.67	8.15	8.42	8.42	8.04	6.99	5.71	4.17	3.46	6.36
	Dc	0.88	1.17	1.02	1.24	1.57	1.51	1.38	1.47	1.20	1.15	0.96	0.69	1.19
30 Deg South	Gc	5.15	6.02	7.19	7.78	7.78	7.91	7.93	7.96	7.51	6.77	5.45	4.95	6.87
	Dc	1.06	1.36	1.16	1.35	1.63	1.56	1.45	1.56	1.34	1.32	1.14	0.85	1.31
Latitude South	Gc	5.64	6.36	7.26	7.52	7.30	7.36	7.39	7.60	7.48	7.05	5.91	5.54	6.87
tilt 40 38' N	Dc	1.13	1.43	1.22	1.40	1.66	1.60	1.49	1.61	1.40	1.39	1.21	0.92	1.37
60 Deg South	Gc	6.08	6.49	6.84	6.50	5.93	5.87	5.92	6.42	6.86	7.01	6.26	6.14	6.36
	Dc	1.22	1.51	1.32	1.48	1.68	1.64	1.55	1.66	1.48	1.48	1.29	1.00	1.44
Vertical South	Gc	5.54	5.43	4.92	3.93	3.15	2.99	3.03	3.68	4.66	5.61	5.57	5.81	4.52
	Dc	1.21	1.47	1.38	1.55	1.68	1.67	1.62	1.68	1.52	1.48	1.27	1.02	1.46
Vertical SE/SW	Gc	4.30	4.43	4.83	4.66	4.18	4.15	4.21	4.52	4.76	4.88	4.38	4.42	4.48
	Dc	1.10	1.37	1.36	1.58	1.75	1.75	1.69	1.73	1.51	1.42	1.17	0.92	1.45
Vertical E/W	Gc	2.26	2.74	3.86	4.59	4.59	4.72	4.77	4.61	3.99	3.38	2.43	2.16	3.68
	Dc	0.88	1.14	1.28	1.57	1.80	1.81	1.74	1.73	1.43	1.26	0.95	0.74	1.36
Vertical NE/NW	Gc	0.85	1.19	2.09	3.05	3.44	3.64	3.64	3.20	2.30	1.59	0.94	0.71	2.23
	Dc	0.71	0.93	1.13	1.44	1.68	1.70	1.64	1.59	1.27	1.05	0.77	0.60	1.21
Vertical North	Gc	0.68	0.86	1.05	1.63	2.08	2.25	2.21	1.79	1.18	0.96	0.73	0.57	1.34
	Dc	0.68	0.86	1.05	1.33	1.55	1.59	1.54	1.46	1.17	0.96	0.73	0.57	1.13

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.25	1.17	1.10	1.04	1.01	0.99	1.00	1.02	1.07	1.13	1.23	1.33	1.07
30 Deg South	Gc/Gmax	1.68	1.43	1.22	1.06	0.96	0.93	0.94	1.01	1.15	1.34	1.61	1.90	1.16
Latitude South	Gc/Gmax	1.84	1.51	1.23	1.02	0.90	0.87	0.88	0.97	1.15	1.40	1.75	2.13	1.16
60 Deg South	Gc/Gmax	1.99	1.54	1.16	0.88	0.73	0.69	0.70	0.82	1.05	1.39	1.85	2.36	1.07
Vertical South	Gc/Gmax	1.81	1.29	0.83	0.53	0.39	0.35	0.36	0.47	0.71	1.11	1.65	2.23	0.76
Vertical SE/SW	Gc/Gmax	1.40	1.05	0.82	0.63	0.52	0.49	0.50	0.57	0.73	0.97	1.30	1.70	0.76
Vertical E/W	Gc/Gmax	0.74	0.65	0.65	0.62	0.57	0.56	0.57	0.59	0.61	0.67	0.72	0.83	0.62
Vertical NE/NW	Gc/Gmax	0.28	0.28	0.35	0.41	0.43	0.43	0.43	0.41	0.35	0.31	0.28	0.27	0.38
Vertical North	Gc/Gmax	0.22	0.20	0.18	0.22	0.26	0.27	0.26	0.23	0.18	0.19	0.22	0.22	0.23

Sunshine data

Mean sunshine	Hours	4.1	5.1	6.0	7.4	8.9	10.2	11.6	10.4	8.5	6.9	5.1	3.7	7.3
Max. sunshine	Hours	8.2	9.4	10.1	11.9	12.9	13.0	13.1	12.6	11.0	9.9	9.0	8.1	10.8

ITALY Site No. 298

MESSINA

Computer file ITALY298. INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 38 12' N

Longitude 15 33' E

Height 50 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	2.07	2.86	3.87	5.20	6.09	6.69	6.96	6.38	5.05	3.53	2.54	1.79	4.43
	D mean	1.00	1.46	1.95	2.39	2.81	2.66	2.36	2.06	1.84	1.39	1.08	0.89	1.82
10 Deg South	Gm	2.46	3.22	4.17	5.42	6.18	6.71	7.04	6.61	5.44	4.00	3.02	2.16	4.71
	Dm	1.03	1.50	2.00	2.43	2.84	2.69	2.40	2.11	1.90	1.44	1.11	0.91	1.86
30 Deg South	Gm	3.06	3.71	4.48	5.47	5.96	6.31	6.70	6.63	5.81	4.63	3.76	2.73	4.94
	Dm	1.04	1.51	2.00	2.40	2.80	2.64	2.39	2.15	1.94	1.49	1.14	0.91	1.87
Latitude South	Gm	3.22	3.81	4.49	5.35	5.72	5.98	6.39	6.45	5.81	4.76	3.95	2.88	4.91
tilt 38 12' N	Dm	1.02	1.49	1.97	2.36	2.73	2.59	2.36	2.14	1.93	1.49	1.14	0.89	1.84
60 Deg South	Gm	3.38	3.78	4.19	4.65	4.70	4.75	5.13	5.48	5.34	4.72	4.15	3.07	4.45
	Dm	0.95	1.38	1.81	2.15	2.47	2.36	2.21	2.04	1.85	1.42	1.08	0.82	1.71
Vertical South	Gm	2.99	3.11	3.12	3.03	2.77	2.60	2.81	3.34	3.78	3.81	3.63	2.76	3.14
	Dm	0.80	1.14	1.47	1.74	1.97	1.94	1.88	1.79	1.60	1.24	0.93	0.69	1.43
Vertical SE/SW	Gm	2.42	2.63	2.92	3.25	3.23	3.29	3.53	3.78	3.69	3.35	2.94	2.20	3.10
	Dm	0.79	1.11	1.44	1.73	1.98	1.96	1.92	1.79	1.57	1.22	0.92	0.68	1.43
Vertical E/W	Gm	1.48	1.82	2.37	3.06	3.36	3.65	3.83	3.70	3.08	2.43	1.81	1.30	2.66
	Dm	0.74	1.03	1.36	1.70	1.99	2.00	1.95	1.77	1.48	1.12	0.84	0.65	1.39
Vertical NE/NW	Gm	0.76	1.07	1.58	2.26	2.71	3.05	3.05	2.84	1.96	1.34	0.89	0.66	1.83
	Dm	0.68	0.94	1.26	1.61	1.89	1.94	1.86	1.65	1.37	1.02	0.77	0.61	1.30
Vertical North	Gm	0.65	0.90	1.21	1.62	2.02	2.26	2.12	1.70	1.30	0.96	0.73	0.58	1.34
	Dm	0.65	0.90	1.21	1.56	1.83	1.89	1.79	1.57	1.30	0.96	0.73	0.58	1.25

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.19	1.13	1.08	1.04	1.01	1.00	1.01	1.04	1.08	1.13	1.19	1.21	1.06
30 Deg South	Gm/Gmean	1.48	1.30	1.16	1.05	0.98	0.94	0.96	1.04	1.15	1.31	1.48	1.52	1.12
Latitude South	Gm/Gmean	1.56	1.33	1.16	1.03	0.94	0.89	0.92	1.01	1.15	1.35	1.55	1.61	1.11
60 Deg South	Gm/Gmean	1.63	1.32	1.08	0.89	0.77	0.71	0.74	0.86	1.06	1.34	1.63	1.72	1.00
Vertical South	Gm/Gmean	1.44	1.09	0.81	0.58	0.46	0.39	0.40	0.52	0.75	1.08	1.43	1.54	0.71
Vertical SE/SW	Gm/Gmean	1.17	0.92	0.75	0.63	0.53	0.49	0.51	0.59	0.73	0.95	1.16	1.23	0.70
Vertical E/W	Gm/Gmean	0.71	0.64	0.61	0.59	0.55	0.55	0.55	0.58	0.61	0.69	0.71	0.73	0.60
Vertical NE/NW	Gm/Gmean	0.37	0.37	0.41	0.44	0.44	0.46	0.44	0.41	0.39	0.38	0.35	0.37	0.41
Vertical North	Gm/Gmean	0.31	0.31	0.31	0.31	0.33	0.34	0.31	0.27	0.26	0.27	0.29	0.32	0.30

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.51	4.48	6.09	7.46	7.96	8.03	8.25	7.69	6.58	5.18	4.05	2.88	6.02
	D clear	0.82	1.02	1.09	1.32	1.69	1.70	1.58	1.59	1.25	0.99	0.82	0.58	1.20
10 Deg South	Gc	4.34	5.20	6.63	7.66	7.92	7.93	8.16	7.78	7.01	5.86	4.91	3.78	6.44
	Dc	0.84	1.07	1.14	1.29	1.62	1.63	1.50	1.53	1.27	1.02	0.84	0.64	1.20
30 Deg South	Gc	5.76	6.34	7.25	7.68	7.48	7.38	7.61	7.62	7.43	6.86	6.35	5.30	6.92
	Dc	1.02	1.25	1.28	1.40	1.67	1.66	1.55	1.61	1.40	1.18	1.00	0.78	1.32
Latitude South	Gc	6.18	6.61	7.29	7.47	7.10	6.97	7.19	7.34	7.39	7.06	6.76	5.76	6.93
tilt 38 12' N	Dc	1.07	1.31	1.33	1.44	1.68	1.67	1.57	1.63	1.44	1.24	1.06	0.84	1.36
60 Deg South	Gc	6.71	6.76	6.77	6.29	5.59	5.39	5.57	6.02	6.65	6.98	7.21	6.46	6.36
	Dc	1.18	1.41	1.43	1.52	1.69	1.68	1.61	1.67	1.53	1.34	1.18	0.94	1.43
Vertical South	Gc	6.03	5.59	4.75	3.67	2.86	2.65	2.74	3.33	4.40	5.47	6.32	6.02	4.48
	Dc	1.20	1.41	1.47	1.57	1.66	1.65	1.63	1.66	1.54	1.38	1.22	0.98	1.45
Vertical SE/SW	Gc	4.71	4.74	4.71	4.49	3.94	3.80	3.95	4.23	4.58	4.90	5.01	4.60	4.47
	Dc	1.11	1.35	1.45	1.62	1.75	1.74	1.72	1.72	1.54	1.34	1.14	0.90	1.45
Vertical E/W	Gc	2.57	3.15	3.84	4.54	4.44	4.42	4.59	4.42	3.95	3.54	2.86	2.32	3.72
	Dc	0.91	1.17	1.37	1.62	1.82	1.82	1.79	1.75	1.47	1.21	0.96	0.74	1.39
Vertical NE/NW	Gc	0.95	1.40	2.14	3.07	3.40	3.49	3.59	3.14	2.34	1.70	1.07	0.75	2.26
	Dc	0.76	0.96	1.20	1.48	1.70	1.72	1.69	1.60	1.31	1.04	0.81	0.62	1.24
Vertical North	Gc	0.72	0.88	1.11	1.65	2.08	2.20	2.21	1.77	1.21	0.96	0.78	0.60	1.35
	Dc	0.72	0.88	1.11	1.36	1.57	1.60	1.58	1.47	1.20	0.96	0.78	0.60	1.15

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.24	1.16	1.09	1.03	1.00	0.99	0.99	1.01	1.07	1.13	1.21	1.31	1.07
30 Deg South	Gc/Gmax	1.64	1.41	1.19	1.03	0.94	0.92	0.92	0.99	1.13	1.32	1.57	1.84	1.15
Latitude South	Gc/Gmax	1.76	1.48	1.20	1.00	0.89	0.87	0.87	0.95	1.12	1.36	1.67	2.00	1.15
60 Deg South	Gc/Gmax	1.91	1.51	1.11	0.84	0.70	0.67	0.68	0.78	1.01	1.35	1.78	2.24	1.06
Vertical South	Gc/Gmax	1.72	1.25	0.78	0.49	0.36	0.33	0.33	0.43	0.67	1.06	1.56	2.09	0.74
Vertical SE/SW	Gc/Gmax	1.34	1.06	0.77	0.60	0.50	0.47	0.48	0.55	0.70	0.95	1.24	1.60	0.74
Vertical E/W	Gc/Gmax	0.73	0.70	0.63	0.61	0.56	0.55	0.56	0.57	0.60	0.68	0.71	0.81	0.62
Vertical NE/NW	Gc/Gmax	0.27	0.31	0.35	0.41	0.43	0.44	0.44	0.41	0.36	0.33	0.26	0.26	0.38
Vertical North	Gc/Gmax	0.20	0.20	0.18	0.22	0.26	0.27	0.27	0.23	0.18	0.19	0.19	0.21	0.22

Sunshine data

Mean sunshine	Hours	4.0	4.7	5.6	6.9	8.4	9.5	10.7	9.9	8.0	6.4	5.1	3.5	6.9
Max. sunshine	Hours	8.4	9.1	10.4	11.4	12.1	12.2	12.3	11.9	11.0	9.6	9.0	7.9	10.4

ITALY Site No. 299

TRAPANI

Computer file ITALY299.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 37 55' N

Longitude 12 30' E

Height 14 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	2.30	3.03	4.25	5.56	6.58	7.00	7.36	7.03	5.37	3.86	2.75	2.06	4.77
	D mean	1.06	1.47	1.90	2.40	2.64	2.59	2.44	1.86	1.74	1.33	1.14	0.90	1.79
10 Deg South	Gm	2.76	3.43	4.61	5.80	6.68	7.02	7.44	7.29	5.79	4.40	3.28	2.53	5.10
	Dm	1.10	1.52	1.95	2.44	2.68	2.62	2.48	1.91	1.79	1.39	1.20	0.93	1.83
30 Deg South	Gm	3.46	3.98	5.00	5.88	6.45	6.59	7.10	7.30	6.21	5.15	4.10	3.26	5.38
	Dm	1.13	1.54	1.96	2.43	2.66	2.58	2.48	1.96	1.85	1.46	1.25	0.94	1.85
Latitude South	Gm	3.64	4.09	5.02	5.76	6.20	6.26	6.78	7.10	6.21	5.31	4.31	3.47	5.35
tilt 37 55' N	Dm	1.12	1.53	1.94	2.40	2.61	2.54	2.46	1.97	1.85	1.47	1.25	0.93	1.84
60 Deg South	Gm	3.86	4.09	4.71	5.00	5.06	4.94	5.42	6.00	5.70	5.30	4.53	3.75	4.87
	Dm	1.06	1.43	1.80	2.20	2.39	2.33	2.30	1.92	1.78	1.43	1.21	0.88	1.73
Vertical South	Gm	3.42	3.37	3.50	3.24	2.91	2.66	2.94	3.59	4.01	4.29	3.97	3.40	3.44
	Dm	0.91	1.20	1.50	1.81	1.97	1.94	1.96	1.77	1.58	1.28	1.07	0.75	1.48
Vertical SE/SW	Gm	2.75	2.84	3.29	3.48	3.48	3.41	3.70	4.18	3.96	3.75	3.21	2.69	3.40
	Dm	0.89	1.17	1.47	1.80	1.98	1.98	2.01	1.77	1.55	1.26	1.03	0.74	1.47
Vertical E/W	Gm	1.66	1.94	2.66	3.26	3.64	3.81	4.01	4.14	3.30	2.67	1.95	1.55	2.89
	Dm	0.81	1.07	1.39	1.76	1.99	2.02	2.05	1.75	1.48	1.15	0.92	0.70	1.43
Vertical NE/NW	Gm	0.82	1.11	1.70	2.37	2.88	3.16	3.17	2.91	2.06	1.40	0.94	0.72	1.94
	Dm	0.73	0.97	1.30	1.66	1.90	1.95	1.93	1.65	1.37	1.04	0.82	0.65	1.33
Vertical North	Gm	0.70	0.92	1.24	1.66	2.05	2.30	2.17	1.77	1.31	0.97	0.78	0.63	1.38
	Dm	0.70	0.92	1.24	1.60	1.83	1.90	1.85	1.58	1.31	0.97	0.78	0.63	1.28

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.20	1.13	1.09	1.04	1.01	1.00	1.01	1.04	1.08	1.14	1.19	1.23	1.07
30 Deg South	Gm/Gmean	1.50	1.31	1.18	1.06	0.98	0.94	0.96	1.04	1.16	1.33	1.49	1.58	1.13
Latitude South	Gm/Gmean	1.58	1.35	1.18	1.04	0.94	0.89	0.92	1.01	1.16	1.38	1.57	1.68	1.12
60 Deg South	Gm/Gmean	1.68	1.35	1.11	0.90	0.77	0.71	0.74	0.85	1.06	1.37	1.65	1.82	1.02
Vertical South	Gm/Gmean	1.49	1.11	0.82	0.58	0.44	0.38	0.40	0.51	0.75	1.11	1.44	1.65	0.72
Vertical SE/SW	Gm/Gmean	1.20	0.94	0.77	0.63	0.53	0.49	0.50	0.60	0.74	0.97	1.17	1.31	0.71
Vertical E/W	Gm/Gmean	0.72	0.64	0.63	0.59	0.55	0.54	0.55	0.59	0.62	0.69	0.71	0.75	0.61
Vertical NE/NW	Gm/Gmean	0.36	0.37	0.40	0.43	0.44	0.45	0.43	0.41	0.38	0.36	0.34	0.35	0.41
Vertical North	Gm/Gmean	0.30	0.30	0.29	0.30	0.31	0.33	0.29	0.25	0.24	0.25	0.28	0.31	0.29

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.46	4.72	6.36	7.66	8.10	8.47	8.20	8.12	6.83	5.37	4.07	3.06	6.21
	D clear	0.92	1.09	1.02	1.42	1.59	1.72	1.67	1.36	1.18	1.01	1.00	0.59	1.21
10 Deg South	Gc	4.25	5.45	6.89	7.83	8.08	8.35	8.15	8.23	7.24	6.06	4.86	4.01	6.62
	Dc	0.97	1.12	1.03	1.37	1.56	1.63	1.64	1.32	1.15	1.03	1.01	0.65	1.21
30 Deg South	Gc	5.58	6.61	7.53	7.84	7.61	7.76	7.61	8.03	7.67	7.08	6.23	5.62	7.10
	Dc	1.16	1.31	1.17	1.47	1.61	1.67	1.68	1.42	1.28	1.19	1.19	0.79	1.33
Latitude South	Gc	5.95	6.88	7.57	7.63	7.24	7.33	7.21	7.74	7.62	7.28	6.60	6.09	7.09
tilt 37 55' N	Dc	1.22	1.37	1.22	1.51	1.63	1.68	1.69	1.45	1.33	1.24	1.25	0.85	1.37
60 Deg South	Gc	6.44	7.03	7.01	6.41	5.66	5.63	5.57	6.29	6.84	7.19	7.02	6.84	6.49
	Dc	1.33	1.48	1.34	1.58	1.65	1.70	1.70	1.54	1.44	1.36	1.37	0.96	1.45
Vertical South	Gc	5.75	5.78	4.89	3.73	2.86	2.73	2.75	3.42	4.49	5.62	6.12	6.36	4.53
	Dc	1.32	1.48	1.42	1.62	1.65	1.69	1.68	1.61	1.50	1.40	1.37	1.00	1.48
Vertical SE/SW	Gc	4.49	4.86	4.91	4.52	4.00	3.96	3.92	4.48	4.73	5.04	4.84	4.85	4.55
	Dc	1.21	1.41	1.41	1.67	1.74	1.79	1.77	1.67	1.51	1.36	1.27	0.92	1.48
Vertical E/W	Gc	2.44	3.19	4.04	4.53	4.54	4.63	4.54	4.74	4.11	3.64	2.76	2.45	3.80
	Dc	0.97	1.22	1.33	1.67	1.80	1.87	1.85	1.69	1.44	1.23	1.05	0.76	1.41
Vertical NE/NW	Gc	0.94	1.40	2.24	3.06	3.48	3.66	3.55	3.38	2.42	1.75	1.08	0.78	2.32
	Dc	0.79	1.00	1.19	1.53	1.69	1.77	1.74	1.57	1.30	1.06	0.86	0.64	1.26
Vertical North	Gc	0.74	0.91	1.11	1.65	2.11	2.29	2.21	1.85	1.22	0.98	0.81	0.62	1.38
	Dc	0.74	0.91	1.11	1.41	1.56	1.65	1.61	1.46	1.20	0.98	0.81	0.62	1.17

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.23	1.15	1.08	1.02	1.00	0.99	0.99	1.01	1.06	1.13	1.19	1.31	1.07
30 Deg South	Gc/Gmax	1.61	1.40	1.18	1.02	0.94	0.92	0.93	0.99	1.12	1.32	1.53	1.84	1.14
Latitude South	Gc/Gmax	1.72	1.46	1.19	1.00	0.89	0.87	0.88	0.95	1.12	1.36	1.62	1.99	1.14
60 Deg South	Gc/Gmax	1.86	1.49	1.10	0.84	0.70	0.67	0.68	0.77	1.00	1.34	1.73	2.23	1.04
Vertical South	Gc/Gmax	1.66	1.23	0.77	0.49	0.35	0.32	0.34	0.42	0.66	1.05	1.50	2.08	0.73
Vertical SE/SW	Gc/Gmax	1.30	1.03	0.77	0.59	0.49	0.47	0.48	0.55	0.69	0.94	1.19	1.59	0.73
Vertical E/W	Gc/Gmax	0.70	0.68	0.63	0.59	0.56	0.55	0.55	0.58	0.60	0.68	0.68	0.80	0.61
Vertical NE/NW	Gc/Gmax	0.27	0.30	0.35	0.40	0.43	0.43	0.43	0.42	0.35	0.33	0.26	0.25	0.37
Vertical North	Gc/Gmax	0.21	0.19	0.17	0.22	0.26	0.27	0.27	0.23	0.18	0.18	0.20	0.20	0.22

Sunshine data

Mean sunshine	Hours	4.6	5.2	6.2	7.5	9.3	10.0	11.3	10.4	8.3	7.1	5.7	4.2	7.5
Max. sunshine	Hours	8.8	9.6	10.3	11.5	12.5	12.9	12.9	12.4	10.8	9.8	9.3	8.4	10.8

ITALY Site No. 301

PANTELLERIA

Computer file ITALY301.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 36 49' N

Longitude 11 58' E

Height 170 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	2.22	2.92	4.24	5.35	6.40	6.90	7.21	6.77	4.99	3.73	2.71	1.90	4.62
	D mean	1.13	1.49	1.91	2.34	2.66	2.62	2.40	2.06	1.92	1.50	1.11	0.95	1.84
10 Deg South	Gm	2.60	3.27	4.58	5.56	6.48	6.89	7.26	7.00	5.35	4.20	3.21	2.27	4.90
	Dm	1.16	1.53	1.96	2.37	2.70	2.65	2.43	2.11	1.98	1.56	1.16	0.98	1.88
30 Deg South	Gm	3.18	3.74	4.93	5.59	6.22	6.43	6.87	6.97	5.66	4.82	3.97	2.85	5.11
	Dm	1.17	1.54	1.97	2.35	2.66	2.60	2.42	2.15	2.01	1.60	1.20	0.99	1.89
Latitude South	Gm	3.31	3.82	4.95	5.48	6.00	6.15	6.59	6.81	5.65	4.92	4.14	2.99	5.07
tilt 36 49' N	Dm	1.16	1.53	1.94	2.31	2.62	2.56	2.40	2.15	2.00	1.60	1.20	0.98	1.87
60 Deg South	Gm	3.46	3.79	4.61	4.71	4.83	4.78	5.18	5.70	5.14	4.86	4.36	3.19	4.55
	Dm	1.08	1.41	1.79	2.11	2.37	2.33	2.23	2.06	1.89	1.53	1.15	0.92	1.74
Vertical South	Gm	3.02	3.08	3.39	3.02	2.77	2.55	2.77	3.39	3.59	3.88	3.79	2.84	3.17
	Dm	0.90	1.17	1.49	1.72	1.94	1.93	1.91	1.82	1.61	1.33	1.01	0.78	1.47
Vertical SE/SW	Gm	2.46	2.62	3.22	3.24	3.34	3.32	3.58	3.93	3.54	3.43	3.07	2.28	3.17
	Dm	0.89	1.14	1.46	1.71	1.95	1.95	1.94	1.83	1.58	1.30	0.98	0.76	1.46
Vertical E/W	Gm	1.53	1.83	2.63	3.05	3.54	3.76	3.96	3.89	3.00	2.50	1.90	1.36	2.75
	Dm	0.81	1.05	1.39	1.67	1.96	1.99	1.98	1.81	1.51	1.19	0.89	0.70	1.41
Vertical NE/NW	Gm	0.82	1.09	1.70	2.23	2.85	3.17	3.19	2.78	1.95	1.40	0.93	0.69	1.90
	Dm	0.74	0.96	1.30	1.59	1.88	1.94	1.90	1.70	1.39	1.08	0.80	0.64	1.33
Vertical North	Gm	0.71	0.92	1.25	1.58	2.06	2.33	2.21	1.76	1.32	1.02	0.77	0.61	1.38
	Dm	0.71	0.92	1.25	1.55	1.83	1.91	1.84	1.62	1.32	1.02	0.77	0.61	1.28

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.17	1.12	1.08	1.04	1.01	1.00	1.01	1.03	1.07	1.13	1.18	1.20	1.06
30 Deg South	Gm/Gmean	1.43	1.28	1.16	1.04	0.97	0.93	0.95	1.03	1.13	1.29	1.47	1.50	1.11
Latitude South	Gm/Gmean	1.49	1.31	1.17	1.02	0.94	0.89	0.91	1.01	1.13	1.32	1.53	1.57	1.10
60 Deg South	Gm/Gmean	1.56	1.30	1.09	0.88	0.75	0.69	0.72	0.84	1.03	1.30	1.61	1.68	0.99
Vertical South	Gm/Gmean	1.36	1.05	0.80	0.56	0.43	0.37	0.38	0.50	0.72	1.04	1.40	1.50	0.69
Vertical SE/SW	Gm/Gmean	1.11	0.90	0.76	0.61	0.52	0.48	0.50	0.58	0.71	0.92	1.13	1.20	0.69
Vertical E/W	Gm/Gmean	0.69	0.63	0.62	0.57	0.55	0.55	0.55	0.57	0.60	0.67	0.70	0.72	0.60
Vertical NE/NW	Gm/Gmean	0.37	0.37	0.40	0.42	0.44	0.46	0.44	0.41	0.39	0.38	0.34	0.36	0.41
Vertical North	Gm/Gmean	0.32	0.31	0.29	0.29	0.32	0.34	0.31	0.26	0.26	0.27	0.28	0.32	0.30

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.74	4.72	6.41	7.50	7.98	8.20	8.24	7.92	6.58	5.35	4.15	3.14	6.17
	D clear	1.03	1.07	0.99	1.21	1.47	1.50	1.47	1.58	1.30	1.09	0.90	0.79	1.20
10 Deg South	Gc	4.48	5.44	6.94	7.70	7.96	8.11	8.14	7.97	6.97	6.01	4.97	3.96	6.56
	Dc	1.02	1.12	1.02	1.21	1.46	1.47	1.41	1.50	1.31	1.12	0.93	0.82	1.20
30 Deg South	Gc	5.83	6.55	7.54	7.66	7.46	7.48	7.54	7.75	7.33	6.96	6.34	5.41	6.99
	Dc	1.22	1.31	1.16	1.31	1.51	1.51	1.46	1.58	1.44	1.29	1.11	1.00	1.32
Latitude South	Gc	6.16	6.78	7.56	7.47	7.13	7.11	7.18	7.50	7.29	7.12	6.66	5.78	6.98
tilt 36 49' N	Dc	1.27	1.36	1.20	1.35	1.53	1.52	1.48	1.60	1.48	1.33	1.16	1.06	1.36
60 Deg South	Gc	6.67	6.91	6.96	6.18	5.47	5.35	5.43	6.03	6.49	7.00	7.10	6.46	6.33
	Dc	1.39	1.48	1.33	1.44	1.57	1.56	1.54	1.65	1.56	1.45	1.28	1.18	1.45
Vertical South	Gc	5.91	5.63	4.78	3.51	2.69	2.51	2.57	3.25	4.23	5.42	6.14	5.94	4.37
	Dc	1.38	1.47	1.41	1.52	1.59	1.59	1.59	1.65	1.56	1.46	1.31	1.19	1.48
Vertical SE/SW	Gc	4.63	4.76	4.86	4.43	3.88	3.80	3.87	4.25	4.45	4.84	4.88	4.54	4.43
	Dc	1.27	1.41	1.40	1.57	1.68	1.69	1.67	1.73	1.57	1.42	1.22	1.08	1.48
Vertical E/W	Gc	2.54	3.17	4.05	4.56	4.49	4.55	4.60	4.51	3.90	3.50	2.82	2.31	3.75
	Dc	1.02	1.23	1.33	1.58	1.74	1.76	1.75	1.76	1.50	1.29	1.03	0.87	1.41
Vertical NE/NW	Gc	0.99	1.41	2.26	3.13	3.49	3.63	3.64	3.24	2.34	1.71	1.09	0.81	2.32
	Dc	0.83	1.01	1.19	1.46	1.65	1.68	1.66	1.63	1.33	1.09	0.85	0.71	1.26
Vertical North	Gc	0.78	0.92	1.11	1.65	2.10	2.26	2.23	1.82	1.23	1.00	0.81	0.67	1.38
	Dc	0.78	0.92	1.11	1.35	1.53	1.57	1.55	1.49	1.21	1.00	0.81	0.67	1.17

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.20	1.15	1.08	1.03	1.00	0.99	0.99	1.01	1.06	1.12	1.20	1.26	1.06
30 Deg South	Gc/Gmax	1.56	1.39	1.18	1.02	0.94	0.91	0.92	0.98	1.11	1.30	1.53	1.72	1.13
Latitude South	Gc/Gmax	1.65	1.44	1.18	1.00	0.89	0.87	0.87	0.95	1.11	1.33	1.61	1.84	1.13
60 Deg South	Gc/Gmax	1.78	1.46	1.09	0.82	0.69	0.65	0.66	0.76	0.99	1.31	1.71	2.06	1.03
Vertical South	Gc/Gmax	1.58	1.19	0.75	0.47	0.34	0.31	0.31	0.41	0.64	1.01	1.48	1.89	0.71
Vertical SE/SW	Gc/Gmax	1.24	1.01	0.76	0.59	0.49	0.46	0.47	0.54	0.68	0.90	1.18	1.45	0.72
Vertical E/W	Gc/Gmax	0.68	0.67	0.63	0.61	0.56	0.56	0.56	0.57	0.59	0.65	0.68	0.74	0.61
Vertical NE/NW	Gc/Gmax	0.26	0.30	0.35	0.42	0.44	0.44	0.44	0.41	0.36	0.32	0.26	0.26	0.38
Vertical North	Gc/Gmax	0.21	0.19	0.17	0.22	0.26	0.28	0.27	0.23	0.19	0.19	0.19	0.21	0.22

Sunshine data

Mean sunshine	Hours	4.1	4.8	6.1	7.0	8.7	9.3	10.4	10.1	7.7	6.5	5.5	3.9	7.0
Max. sunshine	Hours	8.6	9.5	10.4	11.4	12.3	12.5	12.2	12.0	10.8	9.9	9.2	8.2	10.6

NETHERLANDS Site No. 72

GRONINGENVELDE

Computer file NETHE072.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 53 8' N

Longitude 6 35' E

Height 5 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.57	1.27	2.35	3.72	4.71	5.42	4.94	4.47	2.97	1.65	0.76	0.44	2.78
	D mean	0.42	0.81	1.41	2.10	2.72	2.94	2.82	2.49	1.71	1.02	0.51	0.33	1.61
10 Deg South	Gm	0.68	1.48	2.60	3.95	4.86	5.52	5.06	4.71	3.23	1.89	0.92	0.54	2.96
	Dm	0.43	0.82	1.44	2.13	2.75	2.97	2.85	2.54	1.75	1.04	0.52	0.33	1.64
30 Deg South	Gm	0.85	1.79	2.92	4.14	4.83	5.40	4.98	4.86	3.54	2.23	1.16	0.70	3.12
	Dm	0.41	0.80	1.42	2.10	2.68	2.89	2.77	2.52	1.73	1.03	0.51	0.32	1.60
Latitude South	Gm	0.95	1.95	2.96	3.92	4.34	4.74	4.43	4.54	3.50	2.37	1.32	0.80	2.99
tilt 53 8' N	Dm	0.36	0.73	1.30	1.92	2.42	2.62	2.50	2.33	1.59	0.95	0.46	0.29	1.46
60 Deg South	Gm	0.95	1.95	2.91	3.77	4.11	4.46	4.17	4.34	3.41	2.36	1.33	0.81	2.88
	Dm	0.35	0.70	1.25	1.84	2.32	2.51	2.40	2.24	1.53	0.91	0.45	0.27	1.40
Vertical South	Gm	0.88	1.73	2.37	2.75	2.79	2.92	2.78	3.09	2.67	2.03	1.23	0.77	2.17
	Dm	0.27	0.55	0.99	1.46	1.80	1.96	1.86	1.78	1.22	0.73	0.35	0.21	1.10
Vertical SE/SW	Gm	0.70	1.43	2.12	2.73	2.93	3.17	2.97	3.10	2.45	1.71	0.98	0.61	2.08
	Dm	0.27	0.55	0.98	1.44	1.78	1.95	1.85	1.75	1.20	0.72	0.35	0.21	1.09
Vertical E/W	Gm	0.40	0.90	1.58	2.37	2.82	3.19	2.92	2.74	1.93	1.14	0.55	0.32	1.74
	Dm	0.27	0.53	0.93	1.39	1.76	1.93	1.83	1.68	1.14	0.67	0.34	0.21	1.06
Vertical NE/NW	Gm	0.25	0.54	1.04	1.72	2.27	2.64	2.40	2.04	1.30	0.69	0.32	0.20	1.29
	Dm	0.25	0.50	0.87	1.32	1.69	1.88	1.77	1.56	1.07	0.63	0.31	0.20	1.01
Vertical North	Gm	0.24	0.48	0.84	1.32	1.85	2.16	1.96	1.57	1.03	0.60	0.30	0.19	1.05
	Dm	0.24	0.48	0.84	1.28	1.66	1.85	1.73	1.50	1.03	0.60	0.30	0.19	0.98

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.19	1.16	1.11	1.06	1.03	1.02	1.02	1.05	1.09	1.14	1.21	1.23	1.07
30 Deg South	Gm/Gmean	1.49	1.41	1.24	1.11	1.02	1.00	1.01	1.09	1.19	1.35	1.53	1.59	1.12
Latitude South	Gm/Gmean	1.67	1.53	1.26	1.05	0.92	0.88	0.90	1.02	1.18	1.44	1.74	1.82	1.08
60 Deg South	Gm/Gmean	1.67	1.53	1.24	1.01	0.87	0.82	0.84	0.97	1.15	1.43	1.75	1.84	1.04
Vertical South	Gm/Gmean	1.54	1.36	1.01	0.74	0.59	0.54	0.56	0.69	0.90	1.23	1.62	1.75	0.78
Vertical SE/SW	Gm/Gmean	1.23	1.13	0.90	0.73	0.62	0.58	0.60	0.69	0.82	1.04	1.29	1.39	0.75
Vertical E/W	Gm/Gmean	0.70	0.71	0.67	0.64	0.60	0.59	0.59	0.61	0.65	0.69	0.72	0.73	0.63
Vertical NE/NW	Gm/Gmean	0.44	0.43	0.44	0.46	0.48	0.49	0.49	0.46	0.44	0.42	0.42	0.46	0.46
Vertical North	Gm/Gmean	0.42	0.38	0.36	0.35	0.39	0.40	0.40	0.35	0.35	0.36	0.40	0.43	0.38

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.30	2.70	4.58	6.63	7.76	8.29	7.83	6.81	4.96	3.31	1.76	1.00	4.75
	D clear	0.37	0.55	0.83	1.15	1.38	1.58	1.38	1.76	1.10	0.78	0.45	0.26	0.97
10 Deg South	Gc	1.92	3.53	5.32	7.15	8.01	8.47	8.05	7.15	5.58	4.09	2.51	1.67	5.20
	Dc	0.43	0.61	0.90	1.19	1.39	1.57	1.42	1.73	1.17	0.86	0.51	0.30	1.01
30 Deg South	Gc	2.98	4.89	6.39	7.70	8.09	8.44	8.05	7.51	6.45	5.34	3.80	2.87	6.05
	Dc	0.53	0.74	1.05	1.33	1.51	1.67	1.53	1.86	1.33	1.02	0.64	0.38	1.13
Latitude South	Gc	3.80	5.79	6.78	7.43	7.30	7.49	7.18	7.08	6.61	6.06	4.77	3.85	6.18
tilt 53 8' N	Dc	0.61	0.85	1.18	1.46	1.62	1.77	1.64	1.94	1.45	1.15	0.74	0.45	1.24
60 Deg South	Gc	3.93	5.90	6.70	7.16	6.88	7.03	6.75	6.77	6.49	6.11	4.93	4.03	6.05
	Dc	0.62	0.87	1.21	1.49	1.65	1.79	1.66	1.94	1.47	1.17	0.75	0.46	1.26
Vertical South	Gc	3.91	5.46	5.44	5.05	4.38	4.36	4.22	4.65	5.03	5.42	4.83	4.17	4.74
	Dc	0.62	0.90	1.25	1.56	1.71	1.83	1.71	1.85	1.46	1.17	0.77	0.47	1.28
Vertical SE/SW	Gc	2.91	4.32	4.93	5.31	5.07	5.10	4.95	4.92	4.84	4.56	3.70	3.05	4.47
	Dc	0.56	0.84	1.21	1.55	1.74	1.87	1.75	1.88	1.44	1.11	0.70	0.42	1.26
Vertical E/W	Gc	1.27	2.38	3.51	4.60	5.10	5.21	5.08	4.42	3.75	2.86	1.83	1.20	3.44
	Dc	0.44	0.71	1.10	1.48	1.73	1.87	1.75	1.82	1.32	0.95	0.56	0.34	1.17
Vertical NE/NW	Gc	0.40	0.86	1.70	2.81	3.64	3.78	3.68	2.90	2.06	1.23	0.59	0.31	2.00
	Dc	0.37	0.61	0.95	1.33	1.60	1.73	1.62	1.60	1.12	0.78	0.46	0.30	1.04
Vertical North	Gc	0.36	0.58	0.89	1.50	2.33	2.46	2.40	1.77	1.11	0.72	0.44	0.29	1.24
	Dc	0.36	0.58	0.89	1.23	1.49	1.61	1.51	1.44	1.02	0.72	0.44	0.29	0.97

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.48	1.31	1.16	1.08	1.03	1.02	1.03	1.05	1.13	1.24	1.43	1.67	1.11
30 Deg South	Gc/Gmax	2.29	1.81	1.39	1.16	1.04	1.02	1.03	1.10	1.30	1.61	2.16	2.87	1.27
Latitude South	Gc/Gmax	2.92	2.14	1.48	1.12	0.94	0.90	0.92	1.04	1.33	1.83	2.71	3.85	1.30
60 Deg South	Gc/Gmax	3.02	2.18	1.46	1.08	0.89	0.85	0.86	0.99	1.31	1.85	2.80	4.03	1.27
Vertical South	Gc/Gmax	3.01	2.02	1.19	0.76	0.56	0.53	0.54	0.68	1.01	1.64	2.74	4.17	1.00
Vertical SE/SW	Gc/Gmax	2.24	1.60	1.08	0.80	0.65	0.62	0.63	0.72	0.98	1.38	2.10	3.05	0.94
Vertical E/W	Gc/Gmax	0.98	0.88	0.77	0.69	0.66	0.63	0.65	0.65	0.76	0.86	1.04	1.20	0.72
Vertical NE/NW	Gc/Gmax	0.31	0.32	0.37	0.42	0.47	0.46	0.47	0.43	0.41	0.37	0.34	0.31	0.42
Vertical North	Gc/Gmax	0.28	0.22	0.19	0.23	0.30	0.30	0.31	0.26	0.22	0.22	0.25	0.29	0.26

Sunshine data

Mean sunshine	Hours	1.1	2.1	3.5	5.0	5.8	7.1	6.3	6.6	4.4	2.9	1.7	1.0	4.0
Max. sunshine	Hours	5.5	8.0	10.0	12.4	13.6	14.6	14.0	12.8	10.6	9.1	6.7	5.2	10.2

NETHERLANDS Site No. 73

DEN HELDEN/DE KOOG

Computer file NETHE073.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 52 55' N

Longitude 4 47' E

Height 2 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.60	1.32	2.64	3.99	5.30	5.89	5.20	4.54	3.10	1.73	0.79	0.50	2.97
	D mean	0.44	0.81	1.43	2.10	2.79	2.98	2.89	2.46	1.66	1.02	0.52	0.35	1.63
10 Deg South	Gm	0.71	1.55	2.95	4.24	5.48	6.00	5.32	4.79	3.40	1.99	0.95	0.63	3.18
	Dm	0.44	0.82	1.46	2.13	2.82	3.01	2.92	2.51	1.70	1.04	0.53	0.35	1.65
30 Deg South	Gm	0.89	1.90	3.36	4.47	5.47	5.87	5.25	4.96	3.75	2.37	1.21	0.85	3.37
	Dm	0.42	0.81	1.44	2.09	2.76	2.94	2.85	2.50	1.69	1.03	0.52	0.33	1.62
Latitude South	Gm	1.00	2.09	3.45	4.25	4.94	5.17	4.67	4.64	3.73	2.54	1.37	1.01	3.24
tilt 52 55' N	Dm	0.37	0.74	1.33	1.92	2.52	2.68	2.59	2.32	1.56	0.95	0.47	0.30	1.48
60 Deg South	Gm	1.00	2.10	3.40	4.08	4.66	4.84	4.39	4.44	3.64	2.53	1.39	1.03	3.13
	Dm	0.36	0.71	1.28	1.85	2.42	2.57	2.47	2.24	1.50	0.91	0.45	0.28	1.42
Vertical South	Gm	0.93	1.87	2.78	2.97	3.15	3.15	2.92	3.16	2.85	2.19	1.28	0.99	2.36
	Dm	0.27	0.56	1.03	1.48	1.92	2.04	1.93	1.79	1.22	0.73	0.35	0.22	1.13
Vertical SE/SW	Gm	0.74	1.54	2.50	3.01	3.36	3.46	3.13	3.17	2.65	1.83	1.02	0.77	2.27
	Dm	0.27	0.56	1.02	1.46	1.90	2.03	1.92	1.76	1.20	0.73	0.35	0.22	1.12
Vertical E/W	Gm	0.42	0.96	1.86	2.63	3.24	3.50	3.08	2.80	2.08	1.21	0.57	0.39	1.90
	Dm	0.28	0.54	0.97	1.42	1.87	2.01	1.89	1.68	1.14	0.68	0.34	0.22	1.09
Vertical NE/NW	Gm	0.26	0.56	1.16	1.88	2.57	2.88	2.52	2.06	1.36	0.72	0.33	0.21	1.38
	Dm	0.26	0.51	0.92	1.35	1.80	1.96	1.83	1.56	1.07	0.64	0.32	0.21	1.04
Vertical North	Gm	0.25	0.49	0.89	1.38	2.02	2.31	2.05	1.57	1.03	0.61	0.31	0.20	1.10
	Dm	0.25	0.49	0.89	1.32	1.77	1.93	1.80	1.50	1.03	0.61	0.31	0.20	1.01

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.17	1.12	1.06	1.03	1.02	1.02	1.05	1.10	1.15	1.20	1.26	1.07
30 Deg South	Gm/Gmean	1.48	1.44	1.27	1.12	1.03	1.00	1.01	1.09	1.21	1.37	1.53	1.70	1.13
Latitude South	Gm/Gmean	1.67	1.58	1.31	1.07	0.93	0.88	0.90	1.02	1.20	1.47	1.73	2.02	1.09
60 Deg South	Gm/Gmean	1.67	1.59	1.29	1.02	0.88	0.82	0.84	0.98	1.17	1.46	1.76	2.06	1.05
Vertical South	Gm/Gmean	1.55	1.42	1.05	0.74	0.59	0.54	0.56	0.70	0.92	1.27	1.62	1.98	0.80
Vertical SE/SW	Gm/Gmean	1.23	1.17	0.95	0.75	0.63	0.59	0.60	0.70	0.86	1.06	1.29	1.54	0.76
Vertical E/W	Gm/Gmean	0.70	0.73	0.70	0.66	0.61	0.59	0.59	0.62	0.67	0.70	0.72	0.78	0.64
Vertical NE/NW	Gm/Gmean	0.43	0.42	0.44	0.47	0.49	0.49	0.49	0.45	0.44	0.42	0.42	0.42	0.47
Vertical North	Gm/Gmean	0.42	0.37	0.34	0.35	0.38	0.39	0.39	0.35	0.33	0.35	0.39	0.40	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.39	2.83	4.82	6.72	7.96	8.32	7.90	6.65	5.08	3.15	1.72	1.06	4.81
	D clear	0.34	0.57	0.69	1.00	1.30	1.48	1.38	1.69	0.97	0.69	0.40	0.20	0.89
10 Deg South	Gc	2.06	3.66	5.60	7.25	8.21	8.52	8.12	7.05	5.75	3.91	2.46	1.82	5.37
	Dc	0.39	0.61	0.75	1.05	1.32	1.50	1.42	1.73	1.06	0.77	0.46	0.23	0.94
30 Deg South	Gc	3.23	5.07	6.74	7.80	8.27	8.47	8.11	7.39	6.63	5.10	3.74	3.16	6.15
	Dc	0.48	0.74	0.88	1.18	1.43	1.60	1.53	1.85	1.20	0.92	0.58	0.29	1.06
Latitude South	Gc	4.12	5.99	7.15	7.53	7.46	7.52	7.24	6.97	6.80	5.79	4.70	4.25	6.29
tilt 52 55' N	Dc	0.55	0.85	1.02	1.33	1.56	1.71	1.64	1.93	1.33	1.04	0.67	0.35	1.17
60 Deg South	Gc	4.28	6.11	7.08	7.23	7.02	7.04	6.79	6.65	6.66	5.84	4.86	4.47	6.17
	Dc	0.56	0.88	1.06	1.37	1.59	1.73	1.66	1.93	1.36	1.06	0.69	0.36	1.19
Vertical South	Gc	4.26	5.65	5.72	5.07	4.44	4.34	4.23	4.56	5.15	5.17	4.76	4.63	4.82
	Dc	0.58	0.91	1.16	1.47	1.68	1.79	1.72	1.83	1.38	1.07	0.71	0.39	1.23
Vertical SE/SW	Gc	3.16	4.47	5.21	5.39	5.18	5.12	4.97	4.83	5.01	4.37	3.65	3.37	4.56
	Dc	0.53	0.86	1.13	1.47	1.71	1.83	1.75	1.86	1.37	1.02	0.65	0.36	1.21
Vertical E/W	Gc	1.37	2.47	3.73	4.71	5.25	5.26	5.11	4.35	3.92	2.77	1.81	1.31	3.51
	Dc	0.43	0.73	1.04	1.41	1.70	1.83	1.75	1.80	1.26	0.88	0.53	0.31	1.14
Vertical NE/NW	Gc	0.41	0.89	1.79	2.87	3.74	3.82	3.71	2.86	2.14	1.19	0.58	0.30	2.03
	Dc	0.38	0.62	0.94	1.28	1.58	1.71	1.63	1.58	1.09	0.74	0.45	0.29	1.03
Vertical North	Gc	0.37	0.60	0.89	1.50	2.38	2.48	2.42	1.74	1.10	0.68	0.42	0.29	1.24
	Dc	0.37	0.60	0.89	1.19	1.48	1.59	1.52	1.42	1.00	0.68	0.42	0.29	0.96

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.48	1.29	1.16	1.08	1.03	1.02	1.03	1.06	1.13	1.24	1.43	1.72	1.12
30 Deg South	Gc/Gmax	2.32	1.79	1.40	1.16	1.04	1.02	1.03	1.11	1.30	1.62	2.17	2.98	1.28
Latitude South	Gc/Gmax	2.96	2.12	1.48	1.12	0.94	0.90	0.92	1.05	1.34	1.84	2.73	4.01	1.31
60 Deg South	Gc/Gmax	3.08	2.16	1.47	1.08	0.88	0.85	0.86	1.00	1.31	1.85	2.83	4.22	1.28
Vertical South	Gc/Gmax	3.07	2.00	1.19	0.75	0.56	0.52	0.54	0.69	1.01	1.64	2.77	4.37	1.00
Vertical SE/SW	Gc/Gmax	2.27	1.58	1.08	0.80	0.65	0.62	0.63	0.73	0.99	1.39	2.12	3.18	0.95
Vertical E/W	Gc/Gmax	0.99	0.87	0.77	0.70	0.66	0.63	0.65	0.65	0.77	0.88	1.05	1.24	0.73
Vertical NE/NW	Gc/Gmax	0.29	0.31	0.37	0.43	0.47	0.46	0.47	0.43	0.42	0.38	0.34	0.28	0.42
Vertical North	Gc/Gmax	0.27	0.21	0.19	0.22	0.30	0.30	0.31	0.26	0.22	0.22	0.24	0.27	0.26

Sunshine data

Mean sunshine	Hours	1.1	2.4	4.1	5.5	6.9	7.8	6.7	7.0	4.9	3.1	1.7	1.2	4.4
Max. sunshine	Hours	5.7	8.0	10.1	12.4	13.8	14.8	14.1	13.0	10.9	8.4	6.4	5.3	10.3

NETHERLANDS Site No. 74

DEBILT

Computer file NETHE074.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 52 6' N

Longitude 5 11' E

Height 40 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.60	1.27	2.25	3.57	4.67	5.24	4.65	4.29	2.94	1.72	0.79	0.51	2.72
	D mean	0.43	0.82	1.40	2.08	2.69	2.87	2.76	2.41	1.69	1.01	0.53	0.35	1.59
10 Deg South	Gm	0.72	1.47	2.48	3.78	4.82	5.33	4.77	4.51	3.20	1.98	0.94	0.65	2.89
	Dm	0.44	0.84	1.43	2.12	2.72	2.90	2.79	2.47	1.74	1.04	0.55	0.36	1.62
30 Deg South	Gm	0.90	1.77	2.76	3.96	4.80	5.21	4.70	4.66	3.51	2.35	1.19	0.87	3.06
	Dm	0.43	0.84	1.42	2.10	2.67	2.83	2.73	2.45	1.73	1.04	0.54	0.35	1.60
Latitude South	Gm	1.01	1.91	2.79	3.77	4.35	4.61	4.20	4.37	3.48	2.52	1.33	1.02	2.95
tilt 52 6' N	Dm	0.39	0.77	1.32	1.94	2.44	2.58	2.48	2.28	1.62	0.97	0.50	0.33	1.47
60 Deg South	Gm	1.03	1.91	2.73	3.60	4.08	4.29	3.93	4.15	3.38	2.51	1.34	1.04	2.84
	Dm	0.37	0.74	1.27	1.86	2.32	2.45	2.35	2.19	1.56	0.94	0.48	0.31	1.41
Vertical South	Gm	0.95	1.68	2.20	2.63	2.76	2.79	2.61	2.94	2.63	2.16	1.23	1.00	2.13
	Dm	0.29	0.59	1.01	1.46	1.81	1.92	1.81	1.73	1.25	0.76	0.38	0.25	1.11
Vertical SE/SW	Gm	0.76	1.39	1.96	2.58	2.90	3.03	2.76	2.95	2.42	1.82	0.98	0.78	2.03
	Dm	0.29	0.58	0.99	1.44	1.79	1.91	1.81	1.70	1.22	0.75	0.38	0.25	1.10
Vertical E/W	Gm	0.42	0.89	1.46	2.22	2.77	3.05	2.69	2.61	1.89	1.20	0.56	0.40	1.68
	Dm	0.28	0.55	0.92	1.38	1.76	1.89	1.78	1.63	1.14	0.69	0.35	0.24	1.05
Vertical NE/NW	Gm	0.26	0.54	0.97	1.62	2.21	2.53	2.21	1.94	1.27	0.71	0.33	0.22	1.24
	Dm	0.26	0.50	0.85	1.29	1.68	1.83	1.70	1.51	1.05	0.63	0.32	0.22	0.99
Vertical North	Gm	0.25	0.48	0.81	1.27	1.79	2.07	1.83	1.50	1.01	0.61	0.31	0.21	1.01
	Dm	0.25	0.48	0.81	1.24	1.64	1.79	1.66	1.44	1.01	0.61	0.31	0.21	0.96

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.20	1.16	1.10	1.06	1.03	1.02	1.03	1.05	1.09	1.15	1.19	1.27	1.06
30 Deg South	Gm/Gmean	1.50	1.39	1.23	1.11	1.03	0.99	1.01	1.09	1.19	1.37	1.51	1.71	1.13
Latitude South	Gm/Gmean	1.68	1.50	1.24	1.06	0.93	0.88	0.90	1.02	1.18	1.47	1.68	2.00	1.09
60 Deg South	Gm/Gmean	1.72	1.50	1.21	1.01	0.87	0.82	0.85	0.97	1.15	1.46	1.70	2.04	1.04
Vertical South	Gm/Gmean	1.58	1.32	0.98	0.74	0.59	0.53	0.56	0.69	0.89	1.26	1.56	1.96	0.78
Vertical SE/SW	Gm/Gmean	1.27	1.09	0.87	0.72	0.62	0.58	0.59	0.69	0.82	1.06	1.24	1.53	0.75
Vertical E/W	Gm/Gmean	0.70	0.70	0.65	0.62	0.59	0.58	0.58	0.61	0.64	0.70	0.71	0.78	0.62
Vertical NE/NW	Gm/Gmean	0.43	0.43	0.43	0.45	0.47	0.48	0.47	0.45	0.43	0.41	0.42	0.43	0.46
Vertical North	Gm/Gmean	0.42	0.38	0.36	0.36	0.38	0.40	0.39	0.35	0.34	0.35	0.39	0.41	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.39	2.68	4.39	6.39	7.53	7.94	7.45	6.51	4.75	3.32	1.74	1.16	4.61
	D clear	0.47	0.75	1.00	1.38	1.56	1.65	1.60	1.76	1.21	0.83	0.57	0.32	1.09
10 Deg South	Gc	1.99	3.40	5.09	6.90	7.80	8.16	7.73	6.93	5.37	4.07	2.40	1.88	5.15
	Dc	0.56	0.83	1.12	1.46	1.60	1.70	1.70	1.85	1.34	0.92	0.66	0.38	1.18
30 Deg South	Gc	3.00	4.60	6.04	7.41	7.85	8.10	7.71	7.25	6.15	5.24	3.52	3.12	5.84
	Dc	0.68	0.99	1.28	1.60	1.70	1.79	1.79	1.97	1.50	1.08	0.81	0.48	1.31
Latitude South	Gc	3.74	5.34	6.36	7.15	7.11	7.22	6.91	6.84	6.28	5.89	4.31	4.09	5.94
tilt 52 6' N	Dc	0.77	1.10	1.39	1.70	1.78	1.86	1.84	2.02	1.60	1.20	0.91	0.55	1.39
60 Deg South	Gc	3.88	5.44	6.28	6.84	6.64	6.71	6.44	6.49	6.13	5.94	4.46	4.31	5.80
	Dc	0.78	1.13	1.42	1.72	1.80	1.87	1.85	2.01	1.62	1.23	0.93	0.57	1.41
Vertical South	Gc	3.81	4.98	5.06	4.81	4.20	4.12	4.00	4.42	4.73	5.22	4.32	4.41	4.50
	Dc	0.77	1.11	1.40	1.69	1.78	1.84	1.80	1.87	1.55	1.22	0.92	0.58	1.38
Vertical SE/SW	Gc	2.86	3.95	4.55	4.98	4.82	4.83	4.64	4.67	4.48	4.41	3.33	3.23	4.23
	Dc	0.68	1.02	1.35	1.69	1.82	1.89	1.85	1.90	1.52	1.16	0.82	0.51	1.35
Vertical E/W	Gc	1.29	2.20	3.24	4.27	4.80	4.93	4.69	4.20	3.44	2.78	1.68	1.28	3.24
	Dc	0.51	0.83	1.19	1.60	1.81	1.90	1.85	1.83	1.38	0.98	0.64	0.39	1.24
Vertical NE/NW	Gc	0.45	0.87	1.62	2.63	3.41	3.59	3.39	2.76	1.90	1.22	0.61	0.35	1.91
	Dc	0.42	0.68	1.00	1.40	1.66	1.75	1.69	1.60	1.16	0.80	0.51	0.33	1.09
Vertical North	Gc	0.41	0.64	0.92	1.47	2.17	2.34	2.21	1.70	1.08	0.73	0.47	0.32	1.21
	Dc	0.41	0.64	0.92	1.27	1.53	1.61	1.55	1.43	1.04	0.73	0.47	0.32	1.00

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.43	1.27	1.16	1.08	1.04	1.03	1.04	1.07	1.13	1.23	1.38	1.62	1.12
30 Deg South	Gc/Gmax	2.16	1.72	1.38	1.16	1.04	1.02	1.03	1.11	1.29	1.58	2.02	2.69	1.27
Latitude South	Gc/Gmax	2.69	1.99	1.45	1.12	0.94	0.91	0.93	1.05	1.32	1.77	2.48	3.53	1.29
60 Deg South	Gc/Gmax	2.79	2.03	1.43	1.07	0.88	0.85	0.86	1.00	1.29	1.79	2.56	3.72	1.26
Vertical South	Gc/Gmax	2.74	1.86	1.15	0.75	0.56	0.52	0.54	0.68	1.00	1.57	2.48	3.80	0.98
Vertical SE/SW	Gc/Gmax	2.06	1.47	1.04	0.78	0.64	0.61	0.62	0.72	0.94	1.33	1.91	2.78	0.92
Vertical E/W	Gc/Gmax	0.93	0.82	0.74	0.67	0.64	0.62	0.63	0.64	0.72	0.84	0.97	1.10	0.70
Vertical NE/NW	Gc/Gmax	0.32	0.32	0.37	0.41	0.45	0.45	0.46	0.42	0.40	0.37	0.35	0.30	0.41
Vertical North	Gc/Gmax	0.29	0.24	0.21	0.23	0.29	0.29	0.30	0.26	0.23	0.22	0.27	0.28	0.26

Sunshine data

Mean sunshine	Hours	1.3	2.3	3.5	5.1	6.2	7.0	6.2	6.6	4.7	3.3	1.8	1.4	4.1
Max. sunshine	Hours	6.1	8.0	10.0	12.6	13.6	14.6	14.1	13.2	10.6	8.9	6.7	6.3	10.4

NETHERLANDS Site No. 75

VLISSINGEN

Computer file NETHE075.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 51 27' N

Longitude 3 36' E

Height 22 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.68	1.36	2.49	3.79	4.92	5.48	5.00	4.34	3.12	1.83	0.88	0.54	2.88
	D mean	0.47	0.87	1.52	2.20	2.82	2.93	2.87	2.51	1.74	1.08	0.58	0.38	1.67
10 Deg South	Gm	0.81	1.57	2.74	4.01	5.07	5.58	5.12	4.55	3.40	2.10	1.05	0.67	3.06
	Dm	0.48	0.89	1.55	2.24	2.85	2.96	2.90	2.56	1.78	1.10	0.59	0.39	1.70
30 Deg South	Gm	1.02	1.88	3.04	4.18	5.04	5.44	5.03	4.68	3.73	2.48	1.30	0.87	3.23
	Dm	0.46	0.87	1.53	2.21	2.79	2.89	2.83	2.53	1.78	1.10	0.58	0.38	1.67
Latitude South	Gm	1.14	2.02	3.07	3.97	4.56	4.82	4.51	4.38	3.71	2.63	1.44	1.00	3.11
tilt 51 27' N	Dm	0.41	0.80	1.42	2.04	2.55	2.64	2.58	2.35	1.67	1.03	0.52	0.35	1.53
60 Deg South	Gm	1.16	2.02	3.00	3.78	4.26	4.46	4.19	4.14	3.60	2.62	1.46	1.02	2.98
	Dm	0.39	0.76	1.35	1.94	2.42	2.51	2.44	2.24	1.60	0.99	0.50	0.33	1.46
Vertical South	Gm	1.07	1.77	2.41	2.74	2.86	2.88	2.76	2.92	2.80	2.25	1.33	0.96	2.23
	Dm	0.30	0.61	1.07	1.53	1.88	1.97	1.89	1.76	1.29	0.80	0.39	0.26	1.15
Vertical SE/SW	Gm	0.85	1.47	2.15	2.70	3.02	3.16	2.96	2.93	2.58	1.90	1.06	0.76	2.13
	Dm	0.30	0.60	1.06	1.51	1.86	1.96	1.88	1.73	1.27	0.79	0.39	0.26	1.14
Vertical E/W	Gm	0.47	0.94	1.62	2.34	2.91	3.20	2.91	2.61	2.03	1.27	0.61	0.40	1.78
	Dm	0.30	0.57	1.00	1.45	1.84	1.95	1.86	1.66	1.19	0.73	0.38	0.25	1.10
Vertical NE/NW	Gm	0.29	0.57	1.08	1.73	2.34	2.65	2.39	1.96	1.34	0.76	0.36	0.24	1.31
	Dm	0.29	0.53	0.93	1.36	1.76	1.89	1.79	1.55	1.09	0.67	0.36	0.23	1.04
Vertical North	Gm	0.28	0.51	0.89	1.35	1.89	2.16	1.96	1.54	1.05	0.65	0.34	0.23	1.07
	Dm	0.28	0.51	0.89	1.32	1.72	1.85	1.76	1.48	1.05	0.65	0.34	0.23	1.01

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.19	1.15	1.10	1.06	1.03	1.02	1.02	1.05	1.09	1.15	1.19	1.24	1.06
30 Deg South	Gm/Gmean	1.50	1.38	1.22	1.10	1.02	0.99	1.01	1.08	1.20	1.36	1.48	1.61	1.12
Latitude South	Gm/Gmean	1.68	1.49	1.23	1.05	0.93	0.88	0.90	1.01	1.19	1.44	1.64	1.85	1.08
60 Deg South	Gm/Gmean	1.71	1.49	1.21	1.00	0.87	0.81	0.84	0.95	1.15	1.43	1.66	1.89	1.03
Vertical South	Gm/Gmean	1.57	1.30	0.97	0.72	0.58	0.53	0.55	0.67	0.90	1.23	1.51	1.78	0.77
Vertical SE/SW	Gm/Gmean	1.25	1.08	0.86	0.71	0.61	0.58	0.59	0.68	0.83	1.04	1.21	1.41	0.74
Vertical E/W	Gm/Gmean	0.69	0.69	0.65	0.62	0.59	0.58	0.58	0.60	0.65	0.69	0.69	0.74	0.62
Vertical NE/NW	Gm/Gmean	0.43	0.42	0.43	0.46	0.48	0.48	0.48	0.45	0.43	0.41	0.41	0.44	0.46
Vertical North	Gm/Gmean	0.41	0.38	0.36	0.36	0.38	0.39	0.39	0.35	0.34	0.35	0.39	0.43	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.54	2.84	4.71	6.73	7.70	8.01	7.71	6.55	5.03	3.27	1.91	1.17	4.77
	D clear	0.35	0.68	0.95	1.36	1.48	1.59	1.48	1.79	1.21	0.81	0.44	0.32	1.04
10 Deg South	Gc	2.24	3.62	5.41	7.21	7.97	8.21	7.96	6.93	5.64	4.02	2.70	1.66	5.32
	Dc	0.40	0.76	1.02	1.40	1.53	1.62	1.56	1.85	1.29	0.93	0.52	0.38	1.11
30 Deg South	Gc	3.43	4.89	6.41	7.72	7.99	8.12	7.90	7.22	6.44	5.15	4.01	3.05	6.03
	Dc	0.50	0.91	1.17	1.53	1.63	1.72	1.65	1.96	1.45	1.09	0.64	0.47	1.23
Latitude South	Gc	4.29	5.67	6.73	7.44	7.25	7.26	7.09	6.82	6.56	5.75	4.92	3.96	6.14
tilt 51 27' N	Dc	0.57	1.02	1.29	1.64	1.72	1.79	1.73	2.01	1.56	1.21	0.73	0.54	1.32
60 Deg South	Gc	4.48	5.79	6.63	7.09	6.73	6.69	6.55	6.43	6.39	5.80	5.12	4.18	5.99
	Dc	0.59	1.04	1.32	1.67	1.74	1.81	1.75	2.00	1.58	1.23	0.76	0.56	1.34
Vertical South	Gc	4.41	5.28	5.31	4.93	4.20	4.06	4.01	4.35	4.89	5.07	4.95	4.25	4.64
	Dc	0.61	1.05	1.35	1.68	1.75	1.80	1.75	1.86	1.54	1.22	0.77	0.57	1.33
Vertical SE/SW	Gc	3.28	4.21	4.83	5.16	4.89	4.82	4.74	4.62	4.67	4.29	3.81	3.12	4.37
	Dc	0.55	0.97	1.30	1.68	1.79	1.85	1.79	1.89	1.52	1.16	0.71	0.50	1.31
Vertical E/W	Gc	1.44	2.37	3.49	4.47	4.91	4.98	4.87	4.18	3.61	2.73	1.91	1.26	3.36
	Dc	0.45	0.81	1.17	1.60	1.79	1.87	1.80	1.83	1.39	0.98	0.58	0.39	1.22
Vertical NE/NW	Gc	0.44	0.91	1.73	2.76	3.50	3.64	3.53	2.76	1.99	1.21	0.63	0.35	1.96
	Dc	0.40	0.67	1.00	1.42	1.65	1.73	1.67	1.60	1.17	0.80	0.48	0.33	1.08
Vertical North	Gc	0.39	0.64	0.93	1.52	2.21	2.37	2.28	1.70	1.10	0.73	0.46	0.33	1.22
	Dc	0.39	0.64	0.93	1.29	1.53	1.60	1.54	1.43	1.05	0.73	0.46	0.33	1.00

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.46	1.27	1.15	1.07	1.03	1.02	1.03	1.06	1.12	1.23	1.41	1.59	1.12
30 Deg South	Gc/Gmax	2.23	1.72	1.36	1.15	1.04	1.01	1.02	1.10	1.28	1.58	2.10	2.61	1.26
Latitude South	Gc/Gmax	2.79	2.00	1.43	1.11	0.94	0.91	0.92	1.04	1.30	1.76	2.58	3.38	1.29
60 Deg South	Gc/Gmax	2.91	2.04	1.41	1.05	0.87	0.83	0.85	0.98	1.27	1.77	2.68	3.57	1.26
Vertical South	Gc/Gmax	2.86	1.86	1.13	0.73	0.55	0.51	0.52	0.66	0.97	1.55	2.59	3.63	0.97
Vertical SE/SW	Gc/Gmax	2.13	1.48	1.02	0.77	0.63	0.60	0.62	0.70	0.93	1.31	2.00	2.67	0.92
Vertical E/W	Gc/Gmax	0.94	0.83	0.74	0.66	0.64	0.62	0.63	0.64	0.72	0.83	1.00	1.08	0.70
Vertical NE/NW	Gc/Gmax	0.29	0.32	0.37	0.41	0.46	0.45	0.46	0.42	0.40	0.37	0.33	0.30	0.41
Vertical North	Gc/Gmax	0.25	0.22	0.20	0.23	0.29	0.30	0.30	0.26	0.22	0.22	0.24	0.28	0.26

Sunshine data

Mean sunshine	Hours	1.3	2.3	3.6	5.1	6.2	7.3	6.5	6.4	5.1	3.4	1.7	1.3	4.2
Max. sunshine	Hours	6.0	8.2	10.0	12.6	13.9	14.4	14.1	12.8	10.7	8.9	7.1	5.9	10.4

NETHERLANDS Site No. 76

Maastricht/BEEK

Computer file NETHE076.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 50 55' N

Longitude 5 46' E

Height 116 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.69	1.34	2.29	3.61	4.75	5.00	4.82	4.26	3.06	1.76	0.88	0.54	2.76
	D mean	0.49	0.86	1.42	2.10	2.70	2.85	2.85	2.45	1.76	1.09	0.59	0.40	1.63
10 Deg South	Gm	0.81	1.54	2.50	3.81	4.89	5.07	4.93	4.46	3.32	1.99	1.04	0.65	2.92
	Dm	0.50	0.88	1.44	2.13	2.73	2.87	2.88	2.50	1.80	1.12	0.60	0.40	1.66
30 Deg South	Gm	1.01	1.83	2.75	3.96	4.84	4.92	4.83	4.56	3.62	2.32	1.30	0.82	3.07
	Dm	0.48	0.86	1.42	2.10	2.66	2.78	2.80	2.47	1.79	1.12	0.59	0.39	1.63
Latitude South	Gm	1.11	1.95	2.76	3.76	4.40	4.37	4.34	4.27	3.58	2.44	1.44	0.93	2.95
tilt 50 55' N	Dm	0.44	0.79	1.31	1.93	2.44	2.53	2.55	2.29	1.68	1.06	0.55	0.36	1.50
60 Deg South	Gm	1.12	1.95	2.69	3.56	4.08	4.02	4.01	4.02	3.46	2.42	1.45	0.94	2.81
	Dm	0.41	0.75	1.24	1.84	2.31	2.39	2.41	2.18	1.61	1.01	0.53	0.34	1.42
Vertical South	Gm	1.02	1.70	2.14	2.57	2.73	2.60	2.64	2.82	2.68	2.06	1.32	0.88	2.10
	Dm	0.32	0.59	0.97	1.44	1.79	1.84	1.85	1.71	1.29	0.81	0.42	0.26	1.11
Vertical SE/SW	Gm	0.82	1.41	1.92	2.55	2.90	2.83	2.82	2.85	2.47	1.74	1.06	0.70	2.01
	Dm	0.32	0.59	0.97	1.42	1.78	1.83	1.84	1.68	1.26	0.80	0.41	0.26	1.10
Vertical E/W	Gm	0.47	0.91	1.46	2.23	2.81	2.88	2.77	2.55	1.95	1.17	0.61	0.38	1.69
	Dm	0.31	0.56	0.92	1.37	1.76	1.82	1.82	1.62	1.18	0.73	0.39	0.26	1.06
Vertical NE/NW	Gm	0.30	0.56	0.99	1.65	2.27	2.43	2.29	1.93	1.32	0.73	0.36	0.24	1.26
	Dm	0.29	0.52	0.86	1.30	1.69	1.78	1.76	1.51	1.09	0.67	0.36	0.24	1.01
Vertical North	Gm	0.28	0.50	0.83	1.29	1.83	2.01	1.89	1.52	1.05	0.64	0.34	0.23	1.04
	Dm	0.28	0.50	0.83	1.26	1.66	1.76	1.72	1.46	1.05	0.64	0.34	0.23	0.98

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.17	1.15	1.09	1.05	1.03	1.01	1.02	1.05	1.09	1.13	1.18	1.20	1.06
30 Deg South	Gm/Gmean	1.46	1.37	1.20	1.10	1.02	0.98	1.00	1.07	1.18	1.32	1.48	1.52	1.11
Latitude South	Gm/Gmean	1.61	1.46	1.21	1.04	0.93	0.87	0.90	1.00	1.17	1.39	1.64	1.72	1.07
60 Deg South	Gm/Gmean	1.62	1.46	1.17	0.99	0.86	0.80	0.83	0.94	1.13	1.38	1.65	1.74	1.02
Vertical South	Gm/Gmean	1.48	1.27	0.93	0.71	0.57	0.52	0.55	0.66	0.88	1.17	1.50	1.63	0.76
Vertical SE/SW	Gm/Gmean	1.19	1.05	0.84	0.71	0.61	0.57	0.58	0.67	0.81	0.99	1.21	1.30	0.73
Vertical E/W	Gm/Gmean	0.68	0.68	0.64	0.62	0.59	0.58	0.57	0.60	0.64	0.67	0.69	0.70	0.61
Vertical NE/NW	Gm/Gmean	0.44	0.42	0.43	0.46	0.48	0.49	0.47	0.45	0.43	0.41	0.41	0.44	0.46
Vertical North	Gm/Gmean	0.41	0.37	0.36	0.36	0.38	0.40	0.39	0.36	0.34	0.36	0.39	0.43	0.38

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.68	2.92	4.66	6.47	7.32	7.74	7.64	6.48	5.01	3.30	1.93	1.27	4.71
	D clear	0.50	0.72	0.88	1.28	1.37	1.50	1.55	1.69	1.25	0.93	0.58	0.39	1.06
10 Deg South	Gc	2.35	3.65	5.36	6.93	7.59	7.92	7.87	6.87	5.60	4.01	2.64	1.95	5.24
	Dc	0.55	0.76	0.96	1.32	1.44	1.53	1.61	1.76	1.34	1.05	0.68	0.44	1.12
30 Deg South	Gc	3.52	4.92	6.33	7.39	7.58	7.81	7.80	7.14	6.37	5.08	3.83	3.14	5.91
	Dc	0.67	0.91	1.11	1.45	1.53	1.62	1.70	1.88	1.50	1.23	0.83	0.55	1.25
Latitude South	Gc	4.34	5.67	6.64	7.12	6.89	6.98	7.01	6.74	6.48	5.64	4.64	4.03	6.01
tilt 50 55' N	Dc	0.76	1.02	1.23	1.56	1.62	1.70	1.76	1.93	1.60	1.34	0.94	0.63	1.34
60 Deg South	Gc	4.53	5.79	6.53	6.76	6.35	6.40	6.44	6.33	6.30	5.68	4.82	4.26	5.85
	Dc	0.78	1.05	1.26	1.58	1.64	1.72	1.78	1.92	1.61	1.37	0.96	0.65	1.36
Vertical South	Gc	4.43	5.27	5.20	4.68	3.94	3.86	3.93	4.25	4.80	4.94	4.62	4.31	4.51
	Dc	0.78	1.05	1.29	1.60	1.66	1.73	1.76	1.80	1.56	1.32	0.95	0.65	1.35
Vertical SE/SW	Gc	3.31	4.20	4.76	4.93	4.63	4.62	4.64	4.52	4.58	4.13	3.58	3.18	4.26
	Dc	0.70	0.98	1.25	1.60	1.70	1.77	1.81	1.82	1.54	1.25	0.86	0.57	1.32
Vertical E/W	Gc	1.48	2.38	3.45	4.32	4.71	4.83	4.77	4.06	3.54	2.59	1.81	1.30	3.27
	Dc	0.54	0.81	1.13	1.53	1.71	1.79	1.82	1.75	1.40	1.05	0.67	0.43	1.22
Vertical NE/NW	Gc	0.48	0.92	1.72	2.68	3.38	3.55	3.47	2.66	1.96	1.16	0.65	0.38	1.92
	Dc	0.45	0.68	0.97	1.36	1.58	1.66	1.68	1.53	1.18	0.84	0.53	0.36	1.07
Vertical North	Gc	0.43	0.64	0.91	1.47	2.14	2.31	2.24	1.58	1.10	0.75	0.50	0.35	1.20
	Dc	0.43	0.64	0.91	1.25	1.46	1.54	1.55	1.36	1.06	0.75	0.50	0.35	0.99

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.40	1.25	1.15	1.07	1.04	1.02	1.03	1.06	1.12	1.22	1.37	1.53	1.11
30 Deg South	Gc/Gmax	2.10	1.68	1.36	1.14	1.04	1.01	1.02	1.10	1.27	1.54	1.98	2.47	1.25
Latitude South	Gc/Gmax	2.58	1.94	1.42	1.10	0.94	0.90	0.92	1.04	1.29	1.71	2.40	3.17	1.28
60 Deg South	Gc/Gmax	2.70	1.98	1.40	1.04	0.87	0.83	0.84	0.98	1.26	1.72	2.50	3.35	1.24
Vertical South	Gc/Gmax	2.64	1.80	1.12	0.72	0.54	0.50	0.51	0.66	0.96	1.50	2.39	3.39	0.96
Vertical SE/SW	Gc/Gmax	1.97	1.44	1.02	0.76	0.63	0.60	0.61	0.70	0.91	1.25	1.86	2.50	0.90
Vertical E/W	Gc/Gmax	0.88	0.81	0.74	0.67	0.64	0.62	0.62	0.63	0.71	0.79	0.94	1.02	0.69
Vertical NE/NW	Gc/Gmax	0.29	0.31	0.37	0.41	0.46	0.46	0.45	0.41	0.39	0.35	0.34	0.30	0.41
Vertical North	Gc/Gmax	0.26	0.22	0.19	0.23	0.29	0.30	0.29	0.24	0.22	0.23	0.26	0.28	0.25

Sunshine data

Mean sunshine	Hours	1.3	2.2	3.1	4.8	6.0	6.1	6.1	6.1	4.8	3.2	1.9	1.2	3.9
Max. sunshine	Hours	6.5	7.7	9.8	11.8	13.0	13.5	13.8	12.6	10.6	8.9	7.3	6.2	10.1

POLAND Site No. 161

KOŁOBRZEG

Computer file POLAN161.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 54 11' N

Longitude 15 35' E

Height 16 metres

Data period (1.1966-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.50	1.07	2.44	3.98	5.23	6.11	5.73	5.02	3.12	1.54	0.65	0.36	2.99
	D mean	0.38	0.71	1.23	2.08	2.68	2.81	2.87	2.26	1.54	0.90	0.47	0.28	1.52
10 Deg South	Gm	0.59	1.25	2.75	4.23	5.40	6.23	5.88	5.33	3.45	1.78	0.78	0.44	3.19
	Dm	0.39	0.72	1.24	2.10	2.71	2.84	2.90	2.31	1.57	0.92	0.48	0.29	1.54
30 Deg South	Gm	0.74	1.51	3.16	4.47	5.41	6.13	5.85	5.59	3.85	2.14	0.97	0.57	3.38
	Dm	0.38	0.71	1.19	2.06	2.65	2.79	2.85	2.32	1.55	0.90	0.47	0.29	1.52
Latitude South	Gm	0.83	1.65	3.27	4.23	4.85	5.37	5.19	5.26	3.87	2.30	1.09	0.65	3.22
tilt 54 11' N	Dm	0.34	0.64	1.06	1.87	2.41	2.55	2.60	2.17	1.43	0.82	0.43	0.26	1.39
60 Deg South	Gm	0.84	1.65	3.23	4.10	4.63	5.09	4.94	5.07	3.79	2.30	1.10	0.66	3.12
	Dm	0.33	0.62	1.02	1.80	2.33	2.47	2.51	2.11	1.38	0.79	0.42	0.26	1.34
Vertical South	Gm	0.78	1.47	2.66	3.00	3.15	3.32	3.30	3.63	3.00	2.01	1.01	0.63	2.33
	Dm	0.26	0.49	0.82	1.44	1.85	2.01	2.01	1.75	1.13	0.63	0.33	0.20	1.08
Vertical SE/SW	Gm	0.62	1.21	2.39	3.03	3.37	3.67	3.55	3.70	2.79	1.68	0.81	0.50	2.28
	Dm	0.25	0.49	0.83	1.42	1.84	2.00	2.00	1.72	1.12	0.63	0.32	0.20	1.07
Vertical E/W	Gm	0.35	0.76	1.76	2.64	3.29	3.72	3.49	3.26	2.17	1.10	0.46	0.27	1.95
	Dm	0.25	0.46	0.82	1.39	1.81	1.98	1.97	1.66	1.08	0.61	0.31	0.19	1.05
Vertical NE/NW	Gm	0.23	0.46	1.06	1.88	2.60	3.01	2.78	2.30	1.37	0.64	0.28	0.17	1.40
	Dm	0.23	0.43	0.81	1.34	1.75	1.92	1.89	1.56	1.03	0.57	0.28	0.17	1.00
Vertical North	Gm	0.22	0.41	0.79	1.38	2.05	2.37	2.20	1.63	1.00	0.55	0.27	0.16	1.09
	Dm	0.22	0.41	0.79	1.31	1.72	1.89	1.85	1.51	1.00	0.55	0.27	0.16	0.98

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.17	1.13	1.06	1.03	1.02	1.03	1.06	1.11	1.16	1.20	1.22	1.07
30 Deg South	Gm/Gmean	1.48	1.41	1.29	1.12	1.03	1.00	1.02	1.11	1.23	1.39	1.49	1.58	1.13
Latitude South	Gm/Gmean	1.66	1.54	1.34	1.06	0.93	0.88	0.91	1.05	1.24	1.49	1.68	1.81	1.08
60 Deg South	Gm/Gmean	1.68	1.54	1.32	1.03	0.88	0.83	0.86	1.01	1.22	1.49	1.69	1.83	1.04
Vertical South	Gm/Gmean	1.56	1.37	1.09	0.75	0.60	0.54	0.58	0.72	0.96	1.30	1.55	1.75	0.78
Vertical SE/SW	Gm/Gmean	1.24	1.13	0.98	0.76	0.64	0.60	0.62	0.74	0.89	1.09	1.25	1.39	0.76
Vertical E/W	Gm/Gmean	0.70	0.71	0.72	0.66	0.63	0.61	0.61	0.65	0.70	0.71	0.71	0.75	0.65
Vertical NE/NW	Gm/Gmean	0.46	0.43	0.43	0.47	0.50	0.49	0.49	0.46	0.44	0.42	0.43	0.47	0.47
Vertical North	Gm/Gmean	0.44	0.38	0.32	0.35	0.39	0.39	0.38	0.32	0.32	0.36	0.41	0.44	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.25	2.40	4.66	6.90	8.34	8.85	8.45	7.24	5.26	3.42	1.56	0.82	4.94
	D clear	0.49	0.57	0.22	0.88	1.12	1.32	1.35	1.35	0.76	0.59	0.51	0.37	0.79
10 Deg South	Gc	1.81	3.18	5.52	7.46	8.64	9.07	8.67	7.70	5.97	4.29	2.23	1.30	5.50
	Dc	0.56	0.68	0.25	0.91	1.17	1.34	1.36	1.39	0.81	0.63	0.61	0.43	0.85
30 Deg South	Gc	2.77	4.43	6.75	8.08	8.75	9.05	8.70	8.11	6.98	5.70	3.37	2.13	6.24
	Dc	0.69	0.81	0.34	1.05	1.29	1.46	1.47	1.52	0.95	0.76	0.75	0.55	0.97
Latitude South	Gc	3.54	5.28	7.24	7.81	7.85	7.98	7.73	7.64	7.20	6.58	4.26	2.84	6.33
tilt 54 11' N	Dc	0.79	0.92	0.49	1.22	1.46	1.61	1.61	1.65	1.10	0.89	0.87	0.64	1.10
60 Deg South	Gc	3.64	5.37	7.18	7.56	7.47	7.56	7.33	7.35	7.08	6.64	4.37	2.94	6.21
	Dc	0.80	0.94	0.52	1.26	1.50	1.65	1.64	1.68	1.13	0.91	0.88	0.65	1.13
Vertical South	Gc	3.62	5.00	5.84	5.36	4.76	4.71	4.62	5.04	5.52	5.95	4.30	3.02	4.81
	Dc	0.77	0.94	0.72	1.42	1.65	1.78	1.75	1.72	1.23	0.98	0.87	0.63	1.21
Vertical SE/SW	Gc	2.71	3.96	5.33	5.68	5.56	5.55	5.40	5.46	5.39	5.01	3.30	2.23	4.63
	Dc	0.68	0.87	0.72	1.42	1.67	1.81	1.78	1.73	1.22	0.94	0.78	0.54	1.18
Vertical E/W	Gc	1.17	2.18	3.78	4.94	5.62	5.73	5.51	5.04	4.22	3.13	1.62	0.89	3.66
	Dc	0.50	0.72	0.71	1.37	1.66	1.81	1.77	1.69	1.16	0.84	0.60	0.38	1.10
Vertical NE/NW	Gc	0.42	0.81	1.68	2.98	3.97	4.15	3.96	3.32	2.26	1.28	0.57	0.31	2.15
	Dc	0.41	0.60	0.69	1.26	1.55	1.69	1.65	1.52	1.04	0.72	0.47	0.30	0.99
Vertical North	Gc	0.39	0.57	0.68	1.52	2.50	2.69	2.56	1.99	1.10	0.68	0.44	0.29	1.29
	Dc	0.39	0.57	0.68	1.19	1.46	1.59	1.55	1.40	0.97	0.68	0.44	0.29	0.94

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.45	1.33	1.18	1.08	1.04	1.02	1.03	1.06	1.13	1.25	1.43	1.59	1.11
30 Deg South	Gc/Gmax	2.22	1.85	1.45	1.17	1.05	1.02	1.03	1.12	1.33	1.67	2.16	2.60	1.26
Latitude South	Gc/Gmax	2.83	2.20	1.55	1.13	0.94	0.90	0.92	1.05	1.37	1.92	2.73	3.46	1.28
60 Deg South	Gc/Gmax	2.91	2.24	1.54	1.10	0.90	0.85	0.87	1.01	1.35	1.94	2.80	3.59	1.26
Vertical South	Gc/Gmax	2.90	2.08	1.25	0.78	0.57	0.53	0.55	0.70	1.05	1.74	2.76	3.68	0.97
Vertical SE/SW	Gc/Gmax	2.17	1.65	1.14	0.82	0.67	0.63	0.64	0.75	1.02	1.47	2.12	2.72	0.94
Vertical E/W	Gc/Gmax	0.94	0.91	0.81	0.72	0.67	0.65	0.65	0.70	0.80	0.92	1.04	1.09	0.74
Vertical NE/NW	Gc/Gmax	0.34	0.34	0.36	0.43	0.48	0.47	0.47	0.46	0.43	0.37	0.37	0.38	0.44
Vertical North	Gc/Gmax	0.31	0.24	0.15	0.22	0.30	0.30	0.30	0.28	0.21	0.20	0.28	0.35	0.26

Sunshine data

Mean sunshine	Hours	1.1	2.0	3.6	5.2	6.8	8.5	7.9	7.9	5.0	2.8	1.5	1.0	4.5
Max. sunshine	Hours	6.2	8.0	9.6	12.5	14.9	15.8	14.9	14.0	10.9	8.9	6.9	5.2	10.7

POLAND Site No. 162

SUWALKI

Computer file POLAN162.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 54 8' N

Longitude 22 57' E

Height 184 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.61	1.20	2.55	3.48	5.05	5.79	5.59	4.83	3.13	1.48	0.62	0.41	2.90
	D mean	0.43	0.80	1.41	2.00	2.66	2.72	2.73	2.36	1.67	0.92	0.46	0.30	1.54
10 Deg South	Gm	0.75	1.39	2.86	3.69	5.23	5.91	5.75	5.13	3.45	1.70	0.72	0.52	3.10
	Dm	0.44	0.81	1.43	2.03	2.69	2.76	2.76	2.42	1.71	0.93	0.46	0.31	1.57
30 Deg South	Gm	0.98	1.68	3.27	3.88	5.25	5.81	5.72	5.37	3.83	2.01	0.88	0.69	3.29
	Dm	0.43	0.78	1.41	1.99	2.65	2.71	2.72	2.43	1.70	0.92	0.44	0.30	1.54
Latitude South	Gm	1.14	1.82	3.36	3.67	4.73	5.10	5.08	5.06	3.84	2.14	0.97	0.82	3.15
tilt 54 8' N	Dm	0.39	0.70	1.29	1.81	2.41	2.48	2.49	2.27	1.57	0.83	0.39	0.27	1.41
60 Deg South	Gm	1.16	1.82	3.32	3.55	4.52	4.83	4.83	4.88	3.76	2.13	0.98	0.83	3.06
	Dm	0.38	0.68	1.24	1.75	2.33	2.40	2.41	2.21	1.53	0.81	0.37	0.26	1.37
Vertical South	Gm	1.09	1.62	2.73	2.61	3.08	3.16	3.23	3.50	2.98	1.85	0.89	0.80	2.30
	Dm	0.30	0.53	1.00	1.38	1.85	1.94	1.94	1.81	1.24	0.64	0.28	0.21	1.10
Vertical SE/SW	Gm	0.86	1.33	2.45	2.58	3.26	3.48	3.48	3.52	2.74	1.55	0.72	0.63	2.22
	Dm	0.29	0.53	0.99	1.36	1.84	1.93	1.93	1.78	1.22	0.64	0.28	0.20	1.09
Vertical E/W	Gm	0.46	0.84	1.80	2.22	3.12	3.52	3.42	3.06	2.11	1.02	0.42	0.32	1.87
	Dm	0.28	0.51	0.95	1.31	1.80	1.91	1.90	1.70	1.15	0.60	0.28	0.20	1.05
Vertical NE/NW	Gm	0.27	0.51	1.12	1.62	2.45	2.85	2.72	2.18	1.36	0.62	0.27	0.19	1.35
	Dm	0.26	0.48	0.90	1.25	1.73	1.85	1.83	1.57	1.07	0.56	0.27	0.18	1.00
Vertical North	Gm	0.25	0.46	0.87	1.25	1.92	2.25	2.13	1.59	1.03	0.54	0.26	0.18	1.06
	Dm	0.25	0.46	0.87	1.21	1.69	1.82	1.79	1.50	1.03	0.54	0.26	0.18	0.97

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.23	1.16	1.12	1.06	1.04	1.02	1.03	1.06	1.10	1.15	1.16	1.27	1.07
30 Deg South	Gm/Gmean	1.61	1.40	1.28	1.12	1.04	1.00	1.02	1.11	1.22	1.36	1.42	1.68	1.13
Latitude South	Gm/Gmean	1.87	1.52	1.32	1.05	0.94	0.88	0.91	1.05	1.23	1.45	1.57	2.00	1.09
60 Deg South	Gm/Gmean	1.90	1.52	1.30	1.02	0.89	0.83	0.86	1.01	1.20	1.44	1.58	2.02	1.05
Vertical South	Gm/Gmean	1.79	1.35	1.07	0.75	0.61	0.55	0.58	0.73	0.95	1.25	1.43	1.95	0.79
Vertical SE/SW	Gm/Gmean	1.41	1.11	0.96	0.74	0.65	0.60	0.62	0.73	0.88	1.05	1.16	1.54	0.77
Vertical E/W	Gm/Gmean	0.75	0.70	0.71	0.64	0.62	0.61	0.61	0.63	0.67	0.69	0.68	0.78	0.64
Vertical NE/NW	Gm/Gmean	0.44	0.43	0.44	0.47	0.49	0.49	0.49	0.45	0.44	0.42	0.44	0.46	0.47
Vertical North	Gm/Gmean	0.41	0.38	0.34	0.36	0.38	0.39	0.38	0.33	0.33	0.37	0.42	0.44	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.36	2.78	4.44	6.36	8.17	8.59	8.41	7.10	5.04	3.25	1.66	0.98	4.86
	D clear	0.43	0.58	0.65	1.07	1.36	1.36	1.28	1.65	1.03	0.67	0.32	0.28	0.89
10 Deg South	Gc	2.03	3.64	5.21	6.94	8.44	8.83	8.67	7.50	5.70	4.06	2.47	1.67	5.44
	Dc	0.51	0.63	0.72	1.17	1.37	1.39	1.33	1.64	1.10	0.74	0.38	0.32	0.94
30 Deg South	Gc	3.18	5.10	6.33	7.51	8.56	8.81	8.69	7.91	6.63	5.37	3.86	2.91	6.24
	Dc	0.63	0.76	0.85	1.30	1.49	1.51	1.45	1.77	1.25	0.89	0.48	0.41	1.07
Latitude South	Gc	4.10	6.12	6.76	7.26	7.71	7.78	7.72	7.46	6.83	6.17	4.95	3.97	6.40
tilt 54 8' N	Dc	0.72	0.87	0.99	1.44	1.63	1.64	1.59	1.87	1.38	1.01	0.57	0.48	1.18
60 Deg South	Gc	4.23	6.22	6.71	7.03	7.33	7.37	7.32	7.18	6.73	6.22	5.10	4.13	6.30
	Dc	0.73	0.89	1.02	1.46	1.66	1.67	1.62	1.88	1.40	1.03	0.59	0.50	1.21
Vertical South	Gc	4.22	5.80	5.48	5.01	4.71	4.60	4.60	4.96	5.26	5.56	5.06	4.30	4.96
	Dc	0.72	0.92	1.10	1.52	1.74	1.77	1.73	1.84	1.42	1.06	0.62	0.51	1.25
Vertical SE/SW	Gc	3.14	4.58	4.96	5.23	5.41	5.40	5.38	5.24	5.05	4.68	3.86	3.14	4.67
	Dc	0.64	0.86	1.08	1.51	1.77	1.80	1.76	1.86	1.40	1.01	0.57	0.44	1.23
Vertical E/W	Gc	1.35	2.49	3.52	4.50	5.40	5.55	5.50	4.70	3.89	2.92	1.88	1.21	3.58
	Dc	0.48	0.73	0.99	1.44	1.76	1.80	1.75	1.80	1.28	0.87	0.49	0.34	1.15
Vertical NE/NW	Gc	0.43	0.88	1.67	2.73	3.81	4.02	3.96	3.05	2.10	1.22	0.57	0.30	2.07
	Dc	0.40	0.62	0.88	1.29	1.63	1.68	1.64	1.59	1.10	0.73	0.42	0.28	1.02
Vertical North	Gc	0.39	0.59	0.84	1.46	2.42	2.62	2.55	1.83	1.11	0.68	0.40	0.28	1.27
	Dc	0.39	0.59	0.84	1.19	1.51	1.58	1.53	1.44	1.01	0.68	0.40	0.28	0.96

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.49	1.31	1.17	1.09	1.03	1.03	1.03	1.06	1.13	1.25	1.49	1.70	1.12
30 Deg South	Gc/Gmax	2.34	1.84	1.43	1.18	1.05	1.03	1.03	1.11	1.32	1.65	2.33	2.97	1.28
Latitude South	Gc/Gmax	3.02	2.20	1.52	1.14	0.94	0.91	0.92	1.05	1.36	1.90	2.98	4.05	1.32
60 Deg South	Gc/Gmax	3.11	2.24	1.51	1.11	0.90	0.86	0.87	1.01	1.34	1.91	3.07	4.21	1.30
Vertical South	Gc/Gmax	3.10	2.09	1.23	0.79	0.58	0.54	0.55	0.70	1.04	1.71	3.05	4.39	1.02
Vertical SE/SW	Gc/Gmax	2.31	1.65	1.12	0.82	0.66	0.63	0.64	0.74	1.00	1.44	2.33	3.20	0.96
Vertical E/W	Gc/Gmax	0.99	0.90	0.79	0.71	0.66	0.65	0.65	0.66	0.77	0.90	1.13	1.24	0.74
Vertical NE/NW	Gc/Gmax	0.32	0.32	0.38	0.43	0.47	0.47	0.47	0.43	0.42	0.38	0.34	0.31	0.43
Vertical North	Gc/Gmax	0.29	0.21	0.19	0.23	0.30	0.31	0.30	0.26	0.22	0.21	0.24	0.29	0.26

Sunshine data

Mean sunshine	Hours	1.4	1.9	3.9	4.8	7.1	8.4	8.1	7.9	5.1	2.6	1.1	1.1	4.5
Max. sunshine	Hours	6.9	8.4	9.8	12.8	14.6	15.6	15.3	13.7	10.9	8.9	6.6	5.6	10.8

POLAND Site No. 163

WARSZAWA

Computer file POLAN163.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 52 16' N

Longitude 20 59' E

Height 130 metres

Data period (1.1966-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.53	0.97	2.31	3.32	4.56	5.36	5.05	4.57	2.89	1.41	0.59	0.37	2.67
	D mean	0.40	0.70	1.35	1.96	2.58	2.75	2.63	2.24	1.59	0.87	0.43	0.29	1.49
10 Deg South	Gm	0.63	1.10	2.56	3.52	4.72	5.48	5.20	4.85	3.17	1.61	0.69	0.45	2.84
	Dm	0.41	0.72	1.38	2.00	2.62	2.78	2.67	2.31	1.63	0.89	0.45	0.29	1.52
30 Deg South	Gm	0.79	1.28	2.89	3.69	4.72	5.38	5.16	5.07	3.50	1.91	0.85	0.57	2.99
	Dm	0.42	0.73	1.38	1.98	2.58	2.74	2.64	2.34	1.65	0.90	0.45	0.30	1.51
Latitude South	Gm	0.88	1.35	2.95	3.51	4.29	4.77	4.64	4.81	3.50	2.03	0.93	0.64	2.87
tilt 52 16' N	Dm	0.40	0.68	1.29	1.83	2.37	2.52	2.44	2.22	1.55	0.85	0.43	0.28	1.41
60 Deg South	Gm	0.89	1.34	2.89	3.36	4.04	4.45	4.35	4.59	3.41	2.02	0.94	0.65	2.75
	Dm	0.39	0.66	1.24	1.76	2.26	2.41	2.34	2.15	1.50	0.82	0.41	0.27	1.35
Vertical South	Gm	0.82	1.16	2.35	2.46	2.74	2.89	2.88	3.26	2.68	1.74	0.85	0.61	2.04
	Dm	0.31	0.52	1.00	1.38	1.77	1.91	1.85	1.75	1.22	0.67	0.33	0.22	1.08
Vertical SE/SW	Gm	0.66	0.97	2.09	2.40	2.86	3.15	3.08	3.27	2.45	1.46	0.69	0.49	1.97
	Dm	0.30	0.51	0.98	1.36	1.76	1.91	1.85	1.72	1.19	0.65	0.32	0.21	1.07
Vertical E/W	Gm	0.37	0.63	1.55	2.06	2.71	3.15	3.00	2.84	1.90	0.97	0.41	0.27	1.66
	Dm	0.27	0.46	0.91	1.30	1.72	1.89	1.82	1.63	1.10	0.59	0.29	0.19	1.02
Vertical NE/NW	Gm	0.24	0.42	0.99	1.50	2.14	2.56	2.39	2.01	1.24	0.59	0.26	0.17	1.21
	Dm	0.24	0.41	0.84	1.21	1.63	1.81	1.72	1.48	1.01	0.54	0.26	0.17	0.95
Vertical North	Gm	0.23	0.39	0.80	1.18	1.71	2.04	1.88	1.47	0.96	0.51	0.24	0.16	0.97
	Dm	0.23	0.39	0.80	1.16	1.57	1.75	1.66	1.40	0.96	0.51	0.24	0.16	0.91

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.19	1.13	1.11	1.06	1.03	1.02	1.03	1.06	1.10	1.14	1.17	1.22	1.06
30 Deg South	Gm/Gmean	1.49	1.32	1.25	1.11	1.03	1.00	1.02	1.11	1.21	1.36	1.44	1.54	1.12
Latitude South	Gm/Gmean	1.66	1.39	1.28	1.06	0.94	0.89	0.92	1.05	1.21	1.44	1.58	1.73	1.08
60 Deg South	Gm/Gmean	1.68	1.38	1.25	1.01	0.89	0.83	0.86	1.00	1.18	1.43	1.59	1.76	1.03
Vertical South	Gm/Gmean	1.55	1.20	1.02	0.74	0.60	0.54	0.57	0.71	0.93	1.23	1.44	1.65	0.76
Vertical SE/SW	Gm/Gmean	1.25	1.00	0.90	0.72	0.63	0.59	0.61	0.72	0.85	1.03	1.17	1.32	0.74
Vertical E/W	Gm/Gmean	0.70	0.65	0.67	0.62	0.59	0.59	0.59	0.62	0.66	0.69	0.69	0.73	0.62
Vertical NE/NW	Gm/Gmean	0.45	0.43	0.43	0.45	0.47	0.48	0.47	0.44	0.43	0.42	0.44	0.46	0.45
Vertical North	Gm/Gmean	0.43	0.40	0.35	0.35	0.38	0.38	0.37	0.32	0.33	0.36	0.41	0.43	0.36

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.26	2.30	4.45	6.00	7.57	8.01	7.94	6.82	4.78	3.18	1.56	0.96	4.58
	D clear	0.65	0.93	0.94	1.41	1.67	1.80	1.66	1.82	1.22	0.89	0.65	0.44	1.17
10 Deg South	Gc	1.71	2.91	5.12	6.50	7.86	8.22	8.16	7.19	5.39	3.89	2.13	1.43	5.05
	Dc	0.76	1.08	1.00	1.51	1.73	1.83	1.69	1.84	1.33	0.99	0.79	0.52	1.26
30 Deg South	Gc	2.45	3.84	6.09	6.98	7.93	8.18	8.15	7.52	6.17	4.99	3.04	2.25	5.64
	Dc	0.93	1.28	1.15	1.65	1.83	1.91	1.78	1.96	1.49	1.16	0.96	0.65	1.40
Latitude South	Gc	2.98	4.41	6.43	6.74	7.19	7.30	7.30	7.10	6.31	5.60	3.68	2.88	5.67
tilt 52 16' N	Dc	1.04	1.40	1.27	1.73	1.89	1.97	1.85	2.02	1.59	1.28	1.08	0.74	1.49
60 Deg South	Gc	3.07	4.47	6.35	6.46	6.73	6.79	6.80	6.74	6.17	5.65	3.79	3.01	5.51
	Dc	1.05	1.41	1.30	1.74	1.90	1.97	1.86	2.02	1.61	1.30	1.09	0.76	1.50
Vertical South	Gc	2.97	4.06	5.12	4.56	4.27	4.19	4.23	4.59	4.76	4.96	3.63	3.03	4.20
	Dc	0.99	1.32	1.31	1.68	1.85	1.90	1.84	1.89	1.55	1.27	1.05	0.73	1.45
Vertical SE/SW	Gc	2.26	3.24	4.64	4.70	4.86	4.86	4.90	4.85	4.51	4.14	2.80	2.26	4.01
	Dc	0.85	1.19	1.27	1.68	1.89	1.96	1.89	1.92	1.52	1.20	0.92	0.63	1.41
Vertical E/W	Gc	1.04	1.81	3.33	4.02	4.78	4.92	4.95	4.36	3.45	2.58	1.39	0.93	3.14
	Dc	0.58	0.91	1.13	1.59	1.88	1.97	1.89	1.86	1.38	1.00	0.68	0.44	1.28
Vertical NE/NW	Gc	0.45	0.80	1.65	2.49	3.38	3.57	3.57	2.85	1.90	1.14	0.57	0.35	1.90
	Dc	0.44	0.69	0.97	1.38	1.71	1.80	1.74	1.62	1.15	0.80	0.51	0.35	1.10
Vertical North	Gc	0.42	0.63	0.90	1.42	2.15	2.33	2.30	1.74	1.08	0.73	0.47	0.33	1.21
	Dc	0.42	0.63	0.90	1.24	1.56	1.65	1.60	1.45	1.03	0.73	0.47	0.33	1.00

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.36	1.26	1.15	1.08	1.04	1.03	1.03	1.05	1.13	1.22	1.37	1.49	1.10
30 Deg South	Gc/Gmax	1.94	1.67	1.37	1.16	1.05	1.02	1.03	1.10	1.29	1.57	1.95	2.34	1.23
Latitude South	Gc/Gmax	2.37	1.92	1.45	1.12	0.95	0.91	0.92	1.04	1.32	1.76	2.36	3.00	1.24
60 Deg South	Gc/Gmax	2.44	1.94	1.43	1.08	0.89	0.85	0.86	0.99	1.29	1.78	2.43	3.13	1.20
Vertical South	Gc/Gmax	2.36	1.76	1.15	0.76	0.56	0.52	0.53	0.67	1.00	1.56	2.33	3.16	0.92
Vertical SE/SW	Gc/Gmax	1.79	1.41	1.04	0.78	0.64	0.61	0.62	0.71	0.94	1.30	1.79	2.35	0.88
Vertical E/W	Gc/Gmax	0.82	0.79	0.75	0.67	0.63	0.61	0.62	0.64	0.72	0.81	0.89	0.97	0.69
Vertical NE/NW	Gc/Gmax	0.36	0.35	0.37	0.41	0.45	0.45	0.45	0.42	0.40	0.36	0.37	0.37	0.41
Vertical North	Gc/Gmax	0.33	0.27	0.20	0.24	0.28	0.29	0.29	0.25	0.23	0.23	0.30	0.34	0.26

Sunshine data

Mean sunshine	Hours	1.5	1.9	3.8	4.9	6.7	8.1	7.9	8.0	5.1	3.0	1.6	1.1	4.5
Max. sunshine	Hours	6.2	7.7	9.4	11.9	14.2	14.9	14.5	13.3	10.5	8.7	6.8	5.6	10.3

POLAND Site No. 164

ZAKOPANE

Computer file POLAN164.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 49 18' N

Longitude 19 57' E

Height 857 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.92	1.58	2.95	3.66	4.28	4.44	4.34	3.99	3.02	2.00	1.10	0.72	2.76
	D mean	0.59	0.93	1.57	2.03	2.37	2.52	2.39	2.12	1.54	1.03	0.66	0.47	1.52
10 Deg South	Gm	1.12	1.83	3.25	3.85	4.39	4.49	4.42	4.16	3.28	2.30	1.32	0.89	2.95
	Dm	0.61	0.94	1.58	2.06	2.39	2.53	2.41	2.15	1.56	1.05	0.67	0.49	1.54
30 Deg South	Gm	1.42	2.20	3.63	3.98	4.31	4.33	4.30	4.22	3.56	2.74	1.67	1.16	3.13
	Dm	0.60	0.92	1.55	2.01	2.32	2.44	2.34	2.10	1.53	1.04	0.66	0.48	1.50
Latitude South	Gm	1.60	2.36	3.68	3.78	3.93	3.86	3.88	3.95	3.53	2.91	1.86	1.33	3.06
tilt 49 18' N	Dm	0.57	0.86	1.44	1.86	2.14	2.24	2.15	1.96	1.43	0.98	0.62	0.45	1.39
60 Deg South	Gm	1.63	2.36	3.57	3.54	3.59	3.49	3.52	3.66	3.38	2.90	1.90	1.37	2.91
	Dm	0.54	0.81	1.35	1.75	2.00	2.09	2.01	1.84	1.36	0.93	0.58	0.43	1.31
Vertical South	Gm	1.51	2.06	2.84	2.51	2.37	2.22	2.27	2.52	2.58	2.48	1.73	1.28	2.20
	Dm	0.43	0.64	1.08	1.37	1.56	1.61	1.57	1.46	1.09	0.76	0.47	0.34	1.03
Vertical SE/SW	Gm	1.19	1.71	2.59	2.55	2.57	2.47	2.50	2.63	2.44	2.08	1.37	1.01	2.09
	Dm	0.42	0.64	1.08	1.36	1.55	1.60	1.56	1.44	1.08	0.76	0.46	0.34	1.03
Vertical E/W	Gm	0.66	1.10	1.98	2.28	2.56	2.55	2.54	2.44	1.98	1.39	0.77	0.53	1.74
	Dm	0.40	0.61	1.04	1.32	1.54	1.59	1.55	1.41	1.04	0.72	0.44	0.32	1.00
Vertical NE/NW	Gm	0.37	0.64	1.26	1.70	2.09	2.18	2.12	1.85	1.31	0.79	0.42	0.30	1.26
	Dm	0.36	0.58	1.00	1.27	1.50	1.57	1.52	1.35	1.00	0.68	0.41	0.29	0.96
Vertical North	Gm	0.35	0.56	0.97	1.30	1.69	1.81	1.73	1.41	0.97	0.65	0.39	0.28	1.01
	Dm	0.35	0.56	0.97	1.25	1.48	1.56	1.50	1.32	0.97	0.65	0.39	0.28	0.94

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.22	1.16	1.10	1.05	1.03	1.01	1.02	1.04	1.09	1.15	1.20	1.24	1.07
30 Deg South	Gm/Gmean	1.54	1.39	1.23	1.09	1.01	0.98	0.99	1.06	1.18	1.37	1.52	1.61	1.13
Latitude South	Gm/Gmean	1.74	1.49	1.25	1.03	0.92	0.87	0.89	0.99	1.17	1.46	1.69	1.85	1.11
60 Deg South	Gm/Gmean	1.77	1.49	1.21	0.97	0.84	0.79	0.81	0.92	1.12	1.45	1.73	1.90	1.05
Vertical South	Gm/Gmean	1.64	1.30	0.96	0.69	0.55	0.50	0.52	0.63	0.85	1.24	1.57	1.78	0.80
Vertical SE/SW	Gm/Gmean	1.29	1.08	0.88	0.70	0.60	0.56	0.58	0.66	0.81	1.04	1.25	1.40	0.76
Vertical E/W	Gm/Gmean	0.72	0.70	0.67	0.62	0.60	0.57	0.58	0.61	0.66	0.69	0.70	0.74	0.63
Vertical NE/NW	Gm/Gmean	0.40	0.41	0.43	0.46	0.49	0.49	0.49	0.46	0.43	0.40	0.38	0.42	0.46
Vertical North	Gm/Gmean	0.38	0.35	0.33	0.35	0.40	0.41	0.40	0.35	0.32	0.32	0.35	0.39	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.92	3.09	5.10	6.90	7.90	8.31	8.13	7.16	5.32	3.76	2.37	1.43	5.13
	D clear	0.67	0.60	0.59	0.96	1.05	1.19	1.04	1.13	0.73	0.61	0.54	0.50	0.80
10 Deg South	Gc	2.54	3.87	5.84	7.38	8.13	8.42	8.29	7.54	5.95	4.56	3.19	2.01	5.65
	Dc	0.68	0.63	0.63	1.01	1.10	1.19	1.07	1.17	0.80	0.66	0.57	0.51	0.84
30 Deg South	Gc	3.72	5.16	6.86	7.80	8.02	8.20	8.09	7.75	6.74	5.81	4.62	3.13	6.33
	Dc	0.84	0.76	0.75	1.14	1.20	1.29	1.17	1.29	0.92	0.79	0.70	0.63	0.96
Latitude South	Gc	4.49	5.88	7.15	7.50	7.28	7.34	7.27	7.29	6.82	6.42	5.52	3.88	6.40
tilt 49 18' N	Dc	0.95	0.86	0.87	1.26	1.32	1.40	1.29	1.39	1.03	0.90	0.80	0.72	1.07
60 Deg South	Gc	4.72	6.03	7.00	7.01	6.58	6.57	6.52	6.73	6.58	6.48	5.78	4.13	6.18
	Dc	0.98	0.90	0.94	1.32	1.38	1.45	1.35	1.44	1.09	0.94	0.84	0.74	1.12
Vertical South	Gc	4.57	5.42	5.47	4.71	3.92	3.79	3.79	4.34	4.87	5.58	5.51	4.12	4.67
	Dc	0.98	0.94	1.07	1.43	1.51	1.59	1.51	1.52	1.18	1.00	0.86	0.74	1.20
Vertical SE/SW	Gc	3.47	4.33	5.10	5.17	4.84	4.79	4.79	4.88	4.92	4.77	4.25	3.05	4.53
	Dc	0.87	0.88	1.06	1.43	1.55	1.63	1.54	1.54	1.18	0.97	0.79	0.65	1.18
Vertical E/W	Gc	1.64	2.47	3.77	4.66	5.14	5.22	5.21	4.58	3.99	3.10	2.16	1.26	3.60
	Dc	0.66	0.75	1.00	1.39	1.56	1.65	1.56	1.50	1.12	0.87	0.65	0.48	1.10
Vertical NE/NW	Gc	0.58	0.92	1.85	2.91	3.72	3.88	3.84	2.99	2.20	1.31	0.71	0.41	2.12
	Dc	0.51	0.64	0.91	1.27	1.47	1.56	1.48	1.37	1.01	0.75	0.54	0.40	0.99
Vertical North	Gc	0.48	0.62	0.88	1.50	2.31	2.49	2.43	1.64	1.04	0.70	0.51	0.39	1.25
	Dc	0.48	0.62	0.88	1.18	1.38	1.47	1.40	1.27	0.94	0.70	0.51	0.39	0.94

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.32	1.25	1.14	1.07	1.03	1.01	1.02	1.05	1.12	1.21	1.35	1.41	1.10
30 Deg South	Gc/Gmax	1.94	1.67	1.35	1.13	1.01	0.99	1.00	1.08	1.27	1.54	1.95	2.19	1.23
Latitude South	Gc/Gmax	2.34	1.90	1.40	1.09	0.92	0.88	0.89	1.02	1.28	1.71	2.33	2.71	1.25
60 Deg South	Gc/Gmax	2.46	1.95	1.37	1.02	0.83	0.79	0.80	0.94	1.24	1.72	2.44	2.89	1.21
Vertical South	Gc/Gmax	2.38	1.75	1.07	0.68	0.50	0.46	0.47	0.61	0.92	1.48	2.33	2.88	0.91
Vertical SE/SW	Gc/Gmax	1.81	1.40	1.00	0.75	0.61	0.58	0.59	0.68	0.93	1.27	1.79	2.13	0.88
Vertical E/W	Gc/Gmax	0.85	0.80	0.74	0.68	0.65	0.63	0.64	0.64	0.75	0.82	0.91	0.88	0.70
Vertical NE/NW	Gc/Gmax	0.30	0.30	0.36	0.42	0.47	0.47	0.47	0.42	0.41	0.35	0.30	0.29	0.41
Vertical North	Gc/Gmax	0.25	0.20	0.17	0.22	0.29	0.30	0.30	0.23	0.19	0.19	0.22	0.27	0.24

Sunshine data

Mean sunshine	Hours	2.1	2.7	4.0	4.7	5.5	5.4	5.7	5.6	4.7	3.8	2.4	1.8	4.0
Max. sunshine	Hours	6.6	7.6	9.6	12.2	13.2	13.4	13.3	12.5	10.2	8.6	7.4	5.7	10.0

PORTUGAL Site No. 254

PORTO

Computer file PORTU254.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 41 8' N

Longitude 8 36' W

Height 93 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.70	2.68	4.22	5.63	6.46	7.01	7.33	6.45	4.73	3.41	2.29	1.99	4.50
	D mean	0.86	1.31	1.60	2.14	2.75	2.81	2.60	2.32	1.96	1.36	0.99	0.69	1.78
10 Deg South	Gm	2.05	3.07	4.67	5.93	6.59	7.06	7.44	6.73	5.11	3.90	2.78	2.61	4.84
	Dm	0.88	1.35	1.65	2.19	2.78	2.84	2.64	2.38	2.02	1.41	1.03	0.73	1.83
30 Deg South	Gm	2.60	3.63	5.22	6.12	6.41	6.68	7.16	6.81	5.49	4.57	3.55	3.62	5.16
	Dm	0.89	1.36	1.70	2.21	2.75	2.79	2.63	2.41	2.05	1.46	1.07	0.78	1.84
Latitude South	Gm	2.80	3.80	5.31	5.97	6.07	6.23	6.74	6.58	5.48	4.75	3.83	4.03	5.14
tilt 41 8' N	Dm	0.87	1.34	1.69	2.17	2.67	2.70	2.58	2.38	2.03	1.45	1.07	0.78	1.81
60 Deg South	Gm	2.94	3.82	5.10	5.33	5.12	5.12	5.59	5.76	5.10	4.73	4.02	4.41	4.76
	Dm	0.82	1.26	1.62	2.04	2.45	2.48	2.41	2.26	1.91	1.40	1.03	0.78	1.71
Vertical South	Gm	2.65	3.22	3.91	3.55	3.07	2.91	3.20	3.66	3.70	3.88	3.60	4.16	3.46
	Dm	0.69	1.06	1.41	1.74	2.01	2.05	2.04	1.93	1.61	1.22	0.90	0.71	1.45
Vertical SE/SW	Gm	2.12	2.70	3.63	3.77	3.56	3.56	3.85	3.97	3.56	3.28	2.89	3.21	3.35
	Dm	0.68	1.03	1.38	1.73	2.00	2.06	2.06	1.92	1.58	1.18	0.88	0.69	1.43
Vertical E/W	Gm	1.26	1.80	2.81	3.44	3.64	3.86	4.05	3.74	2.92	2.22	1.71	1.69	2.77
	Dm	0.63	0.95	1.28	1.68	2.00	2.07	2.07	1.88	1.49	1.08	0.79	0.63	1.38
Vertical NE/NW	Gm	0.64	1.00	1.66	2.39	2.87	3.18	3.18	2.66	1.88	1.18	0.81	0.65	1.85
	Dm	0.58	0.87	1.18	1.58	1.91	2.01	1.97	1.74	1.37	0.98	0.71	0.57	1.29
Vertical North	Gm	0.55	0.83	1.12	1.60	2.08	2.37	2.23	1.78	1.31	0.93	0.67	0.54	1.34
	Dm	0.55	0.83	1.12	1.52	1.86	1.98	1.91	1.65	1.31	0.93	0.67	0.54	1.24

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.21	1.15	1.11	1.05	1.02	1.01	1.01	1.04	1.08	1.14	1.21	1.31	1.08
30 Deg South	Gm/Gmean	1.53	1.35	1.24	1.09	0.99	0.95	0.98	1.06	1.16	1.34	1.55	1.82	1.15
Latitude South	Gm/Gmean	1.65	1.42	1.26	1.06	0.94	0.89	0.92	1.02	1.16	1.39	1.67	2.03	1.14
60 Deg South	Gm/Gmean	1.73	1.42	1.21	0.95	0.79	0.73	0.76	0.89	1.08	1.39	1.75	2.22	1.06
Vertical South	Gm/Gmean	1.56	1.20	0.93	0.63	0.47	0.41	0.44	0.57	0.78	1.14	1.57	2.09	0.77
Vertical SE/SW	Gm/Gmean	1.25	1.01	0.86	0.67	0.55	0.51	0.52	0.62	0.75	0.96	1.26	1.61	0.74
Vertical E/W	Gm/Gmean	0.74	0.67	0.67	0.61	0.56	0.55	0.55	0.58	0.62	0.65	0.75	0.85	0.62
Vertical NE/NW	Gm/Gmean	0.38	0.37	0.39	0.43	0.44	0.45	0.43	0.41	0.40	0.35	0.35	0.33	0.41
Vertical North	Gm/Gmean	0.32	0.31	0.26	0.28	0.32	0.34	0.30	0.28	0.28	0.27	0.29	0.27	0.30

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.10	4.55	6.53	7.84	8.83	9.32	8.94	7.96	6.67	5.21	3.61	2.78	6.29
	D clear	0.73	0.94	0.97	1.30	1.54	1.71	1.69	1.80	1.34	1.04	0.82	0.58	1.21
10 Deg South	Gc	3.95	5.36	7.14	8.08	8.80	9.14	8.80	8.04	7.12	5.94	4.47	3.74	6.72
	Dc	0.79	0.98	0.96	1.24	1.43	1.51	1.51	1.67	1.31	1.04	0.87	0.61	1.16
30 Deg South	Gc	5.39	6.64	7.95	8.21	8.40	8.59	8.32	7.99	7.68	7.08	5.91	5.42	7.30
	Dc	0.96	1.15	1.10	1.35	1.51	1.57	1.58	1.76	1.46	1.21	1.04	0.76	1.29
Latitude South	Gc	5.95	7.06	8.04	7.93	7.85	7.97	7.74	7.63	7.64	7.40	6.44	6.12	7.31
tilt 41 8' N	Dc	1.03	1.23	1.18	1.41	1.56	1.61	1.62	1.79	1.52	1.29	1.12	0.83	1.35
60 Deg South	Gc	6.43	7.22	7.59	6.89	6.39	6.40	6.25	6.50	7.04	7.38	6.84	6.79	6.81
	Dc	1.11	1.32	1.29	1.51	1.62	1.68	1.67	1.82	1.59	1.38	1.21	0.92	1.43
Vertical South	Gc	5.90	6.08	5.47	4.19	3.38	3.27	3.24	3.79	4.82	5.93	6.12	6.47	4.88
	Dc	1.12	1.35	1.41	1.60	1.70	1.76	1.73	1.78	1.60	1.42	1.22	0.96	1.47
Vertical SE/SW	Gc	4.58	4.95	5.36	4.95	4.54	4.52	4.42	4.53	4.86	5.21	4.80	4.90	4.80
	Dc	1.03	1.27	1.39	1.63	1.77	1.83	1.80	1.83	1.59	1.37	1.13	0.88	1.46
Vertical E/W	Gc	2.41	3.03	4.26	4.84	4.99	5.11	4.94	4.54	4.03	3.63	2.63	2.36	3.90
	Dc	0.84	1.09	1.30	1.61	1.80	1.89	1.85	1.83	1.50	1.22	0.93	0.71	1.38
Vertical NE/NW	Gc	0.86	1.24	2.27	3.19	3.71	3.91	3.75	3.13	2.32	1.68	0.98	0.72	2.32
	Dc	0.69	0.91	1.17	1.48	1.70	1.78	1.75	1.66	1.31	1.03	0.77	0.59	1.24
Vertical North	Gc	0.66	0.86	1.10	1.69	2.20	2.39	2.29	1.79	1.21	0.96	0.73	0.57	1.37
	Dc	0.66	0.86	1.10	1.37	1.58	1.67	1.63	1.51	1.20	0.96	0.73	0.57	1.15

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.27	1.18	1.09	1.03	1.00	0.98	0.98	1.01	1.07	1.14	1.24	1.35	1.07
30 Deg South	Gc/Gmax	1.74	1.46	1.22	1.05	0.95	0.92	0.93	1.00	1.15	1.36	1.64	1.95	1.16
Latitude South	Gc/Gmax	1.92	1.55	1.23	1.01	0.89	0.86	0.87	0.96	1.14	1.42	1.78	2.20	1.16
60 Deg South	Gc/Gmax	2.07	1.59	1.16	0.88	0.72	0.69	0.70	0.82	1.05	1.42	1.89	2.44	1.08
Vertical South	Gc/Gmax	1.90	1.34	0.84	0.53	0.38	0.35	0.36	0.48	0.72	1.14	1.70	2.33	0.78
Vertical SE/SW	Gc/Gmax	1.48	1.09	0.82	0.63	0.51	0.49	0.49	0.57	0.73	1.00	1.33	1.76	0.76
Vertical E/W	Gc/Gmax	0.78	0.67	0.65	0.62	0.56	0.55	0.55	0.57	0.60	0.70	0.73	0.85	0.62
Vertical NE/NW	Gc/Gmax	0.28	0.27	0.35	0.41	0.42	0.42	0.42	0.39	0.35	0.32	0.27	0.26	0.37
Vertical North	Gc/Gmax	0.21	0.19	0.17	0.22	0.25	0.26	0.26	0.22	0.18	0.18	0.20	0.20	0.22

Sunshine data

Mean sunshine	Hours	3.6	4.8	7.1	8.1	8.6	9.2	10.5	9.7	7.3	6.4	5.1	5.2	7.1
Max. sunshine	Hours	8.5	9.9	10.7	11.8	13.0	13.1	12.8	12.4	11.3	10.1	9.4	8.4	10.9

PORTUGAL Site No. 256

COIMBRA

Computer file PORTU256.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 40 12' N

Longitude 8 25' W

Height 141 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.98	2.90	4.38	5.45	6.07	6.42	6.81	6.23	4.70	3.55	2.46	2.17	4.44
	D mean	0.95	1.38	1.86	2.42	2.70	2.74	2.60	2.19	1.96	1.48	1.03	0.72	1.84
10 Deg South	Gm	2.40	3.32	4.80	5.71	6.17	6.44	6.90	6.48	5.07	4.04	2.98	2.83	4.77
	Dm	0.98	1.42	1.91	2.46	2.74	2.77	2.64	2.25	2.01	1.53	1.08	0.76	1.88
30 Deg South	Gm	3.05	3.91	5.27	5.82	5.98	6.08	6.62	6.55	5.42	4.71	3.78	3.91	5.10
	Dm	0.99	1.44	1.93	2.44	2.69	2.71	2.62	2.29	2.04	1.58	1.12	0.82	1.89
Latitude South	Gm	3.26	4.07	5.32	5.66	5.69	5.70	6.25	6.35	5.41	4.88	4.04	4.31	5.09
tilt 40 12' N	Dm	0.98	1.42	1.89	2.39	2.62	2.62	2.56	2.27	2.02	1.57	1.12	0.83	1.86
60 Deg South	Gm	3.45	4.09	5.05	5.00	4.76	4.64	5.14	5.51	5.01	4.85	4.25	4.73	4.71
	Dm	0.92	1.33	1.77	2.20	2.39	2.39	2.37	2.16	1.90	1.50	1.08	0.83	1.74
Vertical South	Gm	3.10	3.42	3.82	3.32	2.85	2.65	2.94	3.46	3.61	3.97	3.79	4.44	3.45
	Dm	0.78	1.12	1.49	1.80	1.93	1.94	1.97	1.85	1.60	1.30	0.94	0.77	1.46
Vertical SE/SW	Gm	2.48	2.87	3.58	3.52	3.31	3.24	3.55	3.79	3.49	3.46	3.04	3.43	3.32
	Dm	0.77	1.09	1.47	1.79	1.93	1.95	1.99	1.85	1.57	1.27	0.92	0.75	1.45
Vertical E/W	Gm	1.47	1.93	2.84	3.25	3.41	3.54	3.77	3.61	2.88	2.46	1.81	1.80	2.74
	Dm	0.71	1.01	1.39	1.75	1.93	1.97	2.01	1.81	1.48	1.16	0.83	0.67	1.40
Vertical NE/NW	Gm	0.72	1.07	1.76	2.36	2.72	2.97	3.00	2.56	1.87	1.35	0.86	0.69	1.83
	Dm	0.65	0.92	1.29	1.65	1.85	1.92	1.92	1.67	1.37	1.05	0.74	0.60	1.30
Vertical North	Gm	0.62	0.88	1.24	1.66	2.01	2.25	2.15	1.70	1.31	0.99	0.71	0.57	1.34
	Dm	0.62	0.88	1.24	1.60	1.80	1.89	1.86	1.59	1.31	0.99	0.71	0.57	1.26

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.21	1.14	1.10	1.05	1.02	1.00	1.01	1.04	1.08	1.14	1.21	1.30	1.07
30 Deg South	Gm/Gmean	1.54	1.35	1.20	1.07	0.99	0.95	0.97	1.05	1.15	1.33	1.54	1.80	1.15
Latitude South	Gm/Gmean	1.65	1.40	1.22	1.04	0.94	0.89	0.92	1.02	1.15	1.38	1.64	1.99	1.15
60 Deg South	Gm/Gmean	1.74	1.41	1.15	0.92	0.78	0.72	0.75	0.88	1.07	1.37	1.73	2.18	1.06
Vertical South	Gm/Gmean	1.57	1.18	0.87	0.61	0.47	0.41	0.43	0.56	0.77	1.12	1.54	2.05	0.78
Vertical SE/SW	Gm/Gmean	1.25	0.99	0.82	0.65	0.55	0.50	0.52	0.61	0.74	0.98	1.24	1.58	0.75
Vertical E/W	Gm/Gmean	0.74	0.67	0.65	0.60	0.56	0.55	0.55	0.58	0.61	0.69	0.74	0.83	0.62
Vertical NE/NW	Gm/Gmean	0.36	0.37	0.40	0.43	0.45	0.46	0.44	0.41	0.40	0.38	0.35	0.32	0.41
Vertical North	Gm/Gmean	0.31	0.30	0.28	0.31	0.33	0.35	0.32	0.27	0.28	0.28	0.29	0.26	0.30

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.42	4.82	6.72	7.89	8.69	8.84	8.54	7.83	6.60	5.42	3.86	3.01	6.31
	D clear	0.82	0.97	0.99	1.38	1.50	1.52	1.59	1.76	1.31	1.12	0.85	0.64	1.21
10 Deg South	Gc	4.28	5.62	7.30	8.08	8.66	8.73	8.47	7.92	7.06	6.11	4.74	3.98	6.75
	Dc	0.85	0.98	0.96	1.29	1.42	1.43	1.50	1.66	1.31	1.09	0.88	0.66	1.17
30 Deg South	Gc	5.77	6.93	8.08	8.19	8.23	8.17	7.97	7.84	7.57	7.23	6.21	5.70	7.33
	Dc	1.02	1.16	1.10	1.41	1.49	1.49	1.56	1.74	1.45	1.27	1.06	0.81	1.30
Latitude South	Gc	6.30	7.32	8.16	7.92	7.72	7.62	7.45	7.50	7.53	7.51	6.72	6.36	7.34
tilt 40 12' N	Dc	1.09	1.23	1.17	1.46	1.53	1.53	1.59	1.77	1.50	1.34	1.13	0.88	1.35
60 Deg South	Gc	6.81	7.48	7.66	6.82	6.21	6.03	5.94	6.32	6.88	7.47	7.15	7.08	6.82
	Dc	1.19	1.33	1.30	1.55	1.60	1.59	1.63	1.79	1.58	1.44	1.23	0.98	1.43
Vertical South	Gc	6.20	6.25	5.46	4.09	3.24	3.02	3.03	3.62	4.66	5.95	6.35	6.70	4.87
	Dc	1.20	1.37	1.42	1.63	1.67	1.67	1.68	1.75	1.59	1.47	1.25	1.02	1.48
Vertical SE/SW	Gc	4.80	5.10	5.39	4.84	4.41	4.27	4.20	4.41	4.75	5.20	4.99	5.08	4.78
	Dc	1.11	1.29	1.40	1.66	1.74	1.74	1.75	1.81	1.58	1.42	1.16	0.93	1.47
Vertical E/W	Gc	2.52	3.16	4.33	4.74	4.91	4.91	4.76	4.46	3.98	3.62	2.76	2.47	3.89
	Dc	0.90	1.12	1.32	1.65	1.78	1.80	1.81	1.81	1.49	1.27	0.96	0.76	1.39
Vertical NE/NW	Gc	0.90	1.29	2.32	3.14	3.68	3.79	3.64	3.11	2.31	1.68	1.02	0.76	2.31
	Dc	0.74	0.94	1.19	1.51	1.68	1.71	1.70	1.65	1.31	1.07	0.80	0.63	1.25
Vertical North	Gc	0.70	0.89	1.12	1.67	2.18	2.33	2.23	1.77	1.21	0.99	0.76	0.60	1.37
	Dc	0.70	0.89	1.12	1.40	1.57	1.60	1.59	1.50	1.20	0.99	0.76	0.60	1.16

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.25	1.17	1.09	1.02	1.00	0.99	0.99	1.01	1.07	1.13	1.23	1.32	1.07
30 Deg South	Gc/Gmax	1.69	1.44	1.20	1.04	0.95	0.92	0.93	1.00	1.15	1.33	1.61	1.89	1.16
Latitude South	Gc/Gmax	1.84	1.52	1.21	1.00	0.89	0.86	0.87	0.96	1.14	1.39	1.74	2.11	1.16
60 Deg South	Gc/Gmax	1.99	1.55	1.14	0.86	0.71	0.68	0.70	0.81	1.04	1.38	1.85	2.35	1.08
Vertical South	Gc/Gmax	1.81	1.30	0.81	0.52	0.37	0.34	0.35	0.46	0.71	1.10	1.64	2.23	0.77
Vertical SE/SW	Gc/Gmax	1.40	1.06	0.80	0.61	0.51	0.48	0.49	0.56	0.72	0.96	1.29	1.69	0.76
Vertical E/W	Gc/Gmax	0.74	0.66	0.64	0.60	0.56	0.56	0.56	0.57	0.60	0.67	0.71	0.82	0.62
Vertical NE/NW	Gc/Gmax	0.26	0.27	0.34	0.40	0.42	0.43	0.43	0.40	0.35	0.31	0.26	0.25	0.37
Vertical North	Gc/Gmax	0.20	0.19	0.17	0.21	0.25	0.26	0.26	0.23	0.18	0.18	0.20	0.20	0.22

Sunshine data

Mean sunshine	Hours	4.1	5.0	6.4	7.2	8.2	8.5	9.9	9.8	7.3	6.3	5.3	5.6	7.0
Max. sunshine	Hours	8.9	10.0	10.6	11.7	12.9	13.0	12.8	12.3	11.3	10.1	9.6	8.6	11.0

PORTUGAL Site No. 257

LISBOA

Computer file PORTU257.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 38 43' N

Longitude 9 9' W

Height 77 metres

Data period (1.1966-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.99	2.96	4.28	5.50	6.67	7.18	7.54	6.96	5.22	3.70	2.51	2.15	4.73
	D mean	0.90	1.36	1.89	2.03	2.51	2.52	2.22	1.90	1.83	1.25	0.88	0.74	1.67
10 Deg South	Gm	2.40	3.38	4.66	5.78	6.78	7.20	7.63	7.26	5.65	4.25	3.07	2.75	5.08
	Dm	0.93	1.40	1.94	2.08	2.54	2.55	2.26	1.96	1.90	1.32	0.93	0.78	1.72
30 Deg South	Gm	3.05	3.97	5.07	5.92	6.56	6.76	7.29	7.34	6.08	5.02	3.94	3.72	5.40
	Dm	0.95	1.43	1.95	2.10	2.53	2.52	2.28	2.05	1.97	1.41	1.01	0.84	1.75
Latitude South	Gm	3.24	4.11	5.10	5.80	6.27	6.39	6.94	7.14	6.08	5.20	4.20	4.03	5.38
tilt 38 43' N	Dm	0.94	1.41	1.92	2.08	2.49	2.48	2.27	2.07	1.97	1.42	1.02	0.85	1.74
60 Deg South	Gm	3.44	4.13	4.81	5.09	5.15	5.08	5.58	6.12	5.62	5.23	4.48	4.43	4.94
	Dm	0.89	1.33	1.79	1.96	2.30	2.29	2.16	2.03	1.90	1.41	1.02	0.84	1.66
Vertical South	Gm	3.08	3.43	3.60	3.31	2.97	2.74	3.02	3.73	4.00	4.27	3.98	4.11	3.52
	Dm	0.77	1.13	1.50	1.68	1.93	1.95	1.91	1.84	1.66	1.28	0.94	0.77	1.45
Vertical SE/SW	Gm	2.46	2.88	3.37	3.56	3.57	3.53	3.83	4.18	3.87	3.69	3.18	3.19	3.45
	Dm	0.75	1.10	1.47	1.67	1.94	1.97	1.95	1.85	1.62	1.25	0.90	0.75	1.44
Vertical E/W	Gm	1.47	1.94	2.69	3.30	3.74	3.94	4.15	4.02	3.17	2.58	1.86	1.72	2.89
	Dm	0.69	1.01	1.39	1.63	1.94	2.00	1.98	1.82	1.52	1.12	0.79	0.68	1.38
Vertical NE/NW	Gm	0.71	1.07	1.70	2.30	2.93	3.24	3.23	2.75	1.97	1.33	0.82	0.69	1.90
	Dm	0.63	0.92	1.29	1.52	1.86	1.94	1.87	1.66	1.38	0.99	0.70	0.61	1.28
Vertical North	Gm	0.61	0.88	1.24	1.53	2.05	2.34	2.16	1.68	1.30	0.91	0.66	0.58	1.33
	Dm	0.61	0.88	1.24	1.46	1.80	1.90	1.79	1.55	1.30	0.91	0.66	0.58	1.22

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.21	1.14	1.09	1.05	1.02	1.00	1.01	1.04	1.08	1.15	1.22	1.28	1.07
30 Deg South	Gm/Gmean	1.53	1.34	1.18	1.08	0.98	0.94	0.97	1.05	1.16	1.36	1.57	1.73	1.14
Latitude South	Gm/Gmean	1.63	1.39	1.19	1.05	0.94	0.89	0.92	1.03	1.16	1.40	1.67	1.87	1.14
60 Deg South	Gm/Gmean	1.73	1.39	1.12	0.93	0.77	0.71	0.74	0.88	1.08	1.41	1.78	2.06	1.04
Vertical South	Gm/Gmean	1.55	1.16	0.84	0.60	0.44	0.38	0.40	0.54	0.77	1.15	1.59	1.91	0.74
Vertical SE/SW	Gm/Gmean	1.24	0.97	0.79	0.65	0.54	0.49	0.51	0.60	0.74	1.00	1.27	1.48	0.73
Vertical E/W	Gm/Gmean	0.74	0.65	0.63	0.60	0.56	0.55	0.55	0.58	0.61	0.70	0.74	0.80	0.61
Vertical NE/NW	Gm/Gmean	0.36	0.36	0.40	0.42	0.44	0.45	0.43	0.40	0.38	0.36	0.33	0.32	0.40
Vertical North	Gm/Gmean	0.31	0.30	0.29	0.28	0.31	0.33	0.29	0.24	0.25	0.25	0.26	0.27	0.28

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.35	4.63	6.38	7.52	8.65	8.87	8.64	8.05	6.67	5.29	3.76	2.97	6.24
	D clear	0.74	0.93	1.00	1.28	1.49	1.61	1.58	1.76	1.38	1.05	0.80	0.59	1.19
10 Deg South	Gc	4.23	5.45	6.95	7.76	8.61	8.72	8.55	8.12	7.09	6.01	4.65	3.97	6.68
	Dc	0.83	1.01	1.02	1.29	1.42	1.49	1.50	1.66	1.38	1.12	0.91	0.69	1.19
30 Deg South	Gc	5.65	6.68	7.63	7.81	8.12	8.12	7.99	7.98	7.54	7.05	6.01	5.58	7.18
	Dc	1.00	1.19	1.16	1.40	1.49	1.55	1.56	1.74	1.51	1.28	1.09	0.85	1.32
Latitude South	Gc	6.08	6.99	7.67	7.57	7.68	7.63	7.53	7.67	7.50	7.27	6.41	6.11	7.18
tilt 38 43' N	Dc	1.06	1.25	1.22	1.44	1.52	1.57	1.58	1.77	1.56	1.35	1.15	0.91	1.37
60 Deg South	Gc	6.60	7.16	7.15	6.42	6.05	5.91	5.87	6.34	6.78	7.19	6.82	6.83	6.59
	Dc	1.16	1.36	1.34	1.52	1.59	1.63	1.63	1.79	1.63	1.45	1.25	1.01	1.45
Vertical South	Gc	5.95	5.94	5.02	3.77	3.06	2.88	2.90	3.54	4.52	5.66	5.99	6.38	4.63
	Dc	1.18	1.38	1.42	1.58	1.66	1.69	1.68	1.75	1.62	1.47	1.26	1.04	1.48
Vertical SE/SW	Gc	4.64	5.02	5.01	4.58	4.29	4.18	4.15	4.42	4.66	4.99	4.73	4.86	4.63
	Dc	1.08	1.32	1.41	1.62	1.73	1.77	1.76	1.82	1.62	1.42	1.17	0.95	1.47
Vertical E/W	Gc	2.52	3.31	4.09	4.59	4.87	4.88	4.79	4.55	3.97	3.53	2.67	2.42	3.85
	Dc	0.89	1.15	1.33	1.62	1.78	1.84	1.82	1.84	1.53	1.27	0.97	0.77	1.40
Vertical NE/NW	Gc	0.92	1.44	2.24	3.09	3.70	3.82	3.72	3.21	2.34	1.68	1.02	0.78	2.33
	Dc	0.74	0.96	1.18	1.48	1.69	1.75	1.73	1.68	1.35	1.07	0.80	0.64	1.26
Vertical North	Gc	0.70	0.88	1.11	1.66	2.20	2.35	2.28	1.81	1.24	0.99	0.76	0.62	1.39
	Dc	0.70	0.88	1.11	1.36	1.57	1.63	1.61	1.53	1.23	0.99	0.76	0.62	1.17

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.26	1.18	1.09	1.03	1.00	0.98	0.99	1.01	1.06	1.14	1.24	1.34	1.07
30 Deg South	Gc/Gmax	1.69	1.44	1.20	1.04	0.94	0.92	0.93	0.99	1.13	1.33	1.60	1.88	1.15
Latitude South	Gc/Gmax	1.82	1.51	1.20	1.01	0.89	0.86	0.87	0.95	1.12	1.37	1.71	2.06	1.15
60 Deg South	Gc/Gmax	1.97	1.55	1.12	0.85	0.70	0.67	0.68	0.79	1.02	1.36	1.81	2.30	1.06
Vertical South	Gc/Gmax	1.78	1.28	0.79	0.50	0.35	0.32	0.34	0.44	0.68	1.07	1.59	2.15	0.74
Vertical SE/SW	Gc/Gmax	1.38	1.08	0.79	0.61	0.50	0.47	0.48	0.55	0.70	0.94	1.26	1.64	0.74
Vertical E/W	Gc/Gmax	0.75	0.71	0.64	0.61	0.56	0.55	0.55	0.56	0.60	0.67	0.71	0.81	0.62
Vertical NE/NW	Gc/Gmax	0.28	0.31	0.35	0.41	0.43	0.43	0.43	0.40	0.35	0.32	0.27	0.26	0.37
Vertical North	Gc/Gmax	0.21	0.19	0.17	0.22	0.25	0.26	0.26	0.22	0.19	0.19	0.20	0.21	0.22

Sunshine data

Mean sunshine	Hours	4.4	5.3	6.3	8.4	9.4	10.0	11.7	11.5	8.5	7.5	6.3	5.5	7.9
Max. sunshine	Hours	9.0	10.0	10.6	11.9	12.9	13.0	13.0	12.6	11.3	10.5	9.8	9.4	11.2

PORTUGAL Site No. 259

FARO

Computer file PORTU259.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 37 1' N

Longitude 7 55' W

Height 14 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	2.22	3.12	4.36	5.71	7.22	7.60	7.69	6.80	5.51	3.98	2.71	2.31	4.95
	D mean	0.91	1.32	1.78	1.96	2.32	2.20	2.11	1.83	1.77	1.39	1.00	0.68	1.61
10 Deg South	Gm	2.68	3.57	4.74	5.99	7.32	7.60	7.76	7.07	5.95	4.52	3.26	2.96	5.29
	Dm	0.95	1.37	1.84	2.01	2.36	2.23	2.15	1.90	1.85	1.46	1.06	0.74	1.66
30 Deg South	Gm	3.41	4.20	5.16	6.10	7.05	7.09	7.36	7.11	6.38	5.27	4.09	4.00	5.61
	Dm	0.99	1.42	1.87	2.05	2.37	2.23	2.19	2.00	1.93	1.55	1.12	0.82	1.71
Latitude South	Gm	3.58	4.32	5.19	6.00	6.79	6.76	7.06	6.95	6.38	5.41	4.29	4.27	5.59
tilt 37 1' N	Dm	0.99	1.42	1.86	2.04	2.35	2.21	2.18	2.01	1.94	1.56	1.13	0.84	1.71
60 Deg South	Gm	3.84	4.37	4.88	5.20	5.46	5.22	5.54	5.87	5.86	5.39	4.55	4.75	5.08
	Dm	0.96	1.36	1.75	1.93	2.21	2.10	2.09	1.98	1.89	1.54	1.11	0.86	1.65
Vertical South	Gm	3.41	3.61	3.61	3.31	3.02	2.66	2.89	3.49	4.11	4.33	3.98	4.38	3.57
	Dm	0.84	1.18	1.48	1.67	1.91	1.86	1.87	1.79	1.68	1.38	1.00	0.82	1.46
Vertical SE/SW	Gm	2.73	3.02	3.40	3.55	3.77	3.62	3.81	3.99	4.01	3.75	3.21	3.40	3.52
	Dm	0.82	1.15	1.45	1.66	1.94	1.90	1.92	1.81	1.64	1.34	0.97	0.79	1.45
Vertical E/W	Gm	1.63	2.03	2.73	3.28	4.01	4.15	4.22	3.89	3.32	2.64	1.93	1.82	2.98
	Dm	0.74	1.03	1.37	1.61	1.95	1.95	1.97	1.79	1.55	1.21	0.86	0.69	1.40
Vertical NE/NW	Gm	0.76	1.09	1.71	2.26	3.11	3.39	3.31	2.69	2.05	1.39	0.90	0.70	1.95
	Dm	0.67	0.93	1.27	1.50	1.86	1.88	1.87	1.63	1.40	1.07	0.77	0.61	1.29
Vertical North	Gm	0.64	0.88	1.21	1.47	2.09	2.34	2.18	1.63	1.31	1.00	0.73	0.57	1.34
	Dm	0.64	0.88	1.21	1.43	1.79	1.83	1.78	1.51	1.31	1.00	0.73	0.57	1.23

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.21	1.14	1.09	1.05	1.01	1.00	1.01	1.04	1.08	1.14	1.20	1.28	1.07
30 Deg South	Gm/Gmean	1.54	1.35	1.18	1.07	0.98	0.93	0.96	1.05	1.16	1.32	1.51	1.73	1.13
Latitude South	Gm/Gmean	1.61	1.38	1.19	1.05	0.94	0.89	0.92	1.02	1.16	1.36	1.58	1.85	1.13
60 Deg South	Gm/Gmean	1.73	1.40	1.12	0.91	0.76	0.69	0.72	0.86	1.06	1.35	1.68	2.06	1.03
Vertical South	Gm/Gmean	1.54	1.16	0.83	0.58	0.42	0.35	0.38	0.51	0.75	1.09	1.47	1.90	0.72
Vertical SE/SW	Gm/Gmean	1.23	0.97	0.78	0.62	0.52	0.48	0.50	0.59	0.73	0.94	1.18	1.47	0.71
Vertical E/W	Gm/Gmean	0.73	0.65	0.63	0.57	0.56	0.55	0.55	0.57	0.60	0.66	0.71	0.79	0.60
Vertical NE/NW	Gm/Gmean	0.34	0.35	0.39	0.40	0.43	0.45	0.43	0.40	0.37	0.35	0.33	0.30	0.39
Vertical North	Gm/Gmean	0.29	0.28	0.28	0.26	0.29	0.31	0.28	0.24	0.24	0.25	0.27	0.25	0.27

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.38	4.56	6.08	7.28	8.62	8.74	8.54	7.71	6.56	5.30	3.72	3.05	6.14
	D clear	0.75	0.94	0.94	1.22	1.48	1.58	1.56	1.75	1.33	1.10	0.79	0.63	1.17
10 Deg South	Gc	4.27	5.38	6.65	7.55	8.56	8.59	8.44	7.82	6.99	6.00	4.60	4.02	6.58
	Dc	0.91	1.09	1.03	1.29	1.42	1.49	1.50	1.73	1.39	1.18	0.94	0.77	1.23
30 Deg South	Gc	5.59	6.49	7.23	7.53	8.02	7.93	7.83	7.62	7.37	6.95	5.86	5.53	7.00
	Dc	1.09	1.27	1.17	1.39	1.49	1.54	1.55	1.80	1.52	1.35	1.12	0.93	1.35
Latitude South	Gc	5.91	6.72	7.25	7.34	7.65	7.53	7.45	7.37	7.32	7.11	6.16	5.93	6.98
tilt 37 1' N	Dc	1.14	1.32	1.21	1.42	1.51	1.56	1.57	1.81	1.55	1.40	1.17	0.98	1.39
60 Deg South	Gc	6.41	6.85	6.69	6.10	5.87	5.68	5.65	5.97	6.54	7.00	6.56	6.65	6.33
	Dc	1.25	1.44	1.33	1.50	1.58	1.61	1.62	1.81	1.62	1.51	1.28	1.10	1.47
Vertical South	Gc	5.69	5.60	4.61	3.49	2.87	2.66	2.70	3.27	4.27	5.42	5.68	6.13	4.36
	Dc	1.25	1.43	1.39	1.54	1.65	1.66	1.65	1.73	1.60	1.51	1.28	1.12	1.48
Vertical SE/SW	Gc	4.46	4.73	4.67	4.35	4.18	4.02	4.01	4.15	4.47	4.83	4.52	4.70	4.42
	Dc	1.15	1.37	1.38	1.60	1.73	1.75	1.75	1.82	1.61	1.46	1.19	1.02	1.49
Vertical E/W	Gc	2.45	3.15	3.89	4.45	4.84	4.80	4.73	4.35	3.89	3.48	2.61	2.39	3.76
	Dc	0.94	1.20	1.31	1.60	1.79	1.83	1.82	1.85	1.54	1.31	0.99	0.83	1.42
Vertical NE/NW	Gc	0.93	1.40	2.18	3.05	3.74	3.82	3.73	3.13	2.34	1.70	1.03	0.81	2.33
	Dc	0.77	0.98	1.17	1.47	1.70	1.75	1.73	1.69	1.35	1.10	0.82	0.68	1.27
Vertical North	Gc	0.73	0.90	1.09	1.63	2.23	2.36	2.29	1.80	1.24	1.01	0.77	0.65	1.39
	Dc	0.73	0.90	1.09	1.35	1.58	1.63	1.61	1.53	1.23	1.01	0.77	0.65	1.17

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.26	1.18	1.09	1.04	0.99	0.98	0.99	1.01	1.07	1.13	1.24	1.32	1.07
30 Deg South	Gc/Gmax	1.65	1.42	1.19	1.03	0.93	0.91	0.92	0.99	1.12	1.31	1.58	1.81	1.14
Latitude South	Gc/Gmax	1.75	1.47	1.19	1.01	0.89	0.86	0.87	0.96	1.12	1.34	1.66	1.94	1.14
60 Deg South	Gc/Gmax	1.90	1.50	1.10	0.84	0.68	0.65	0.66	0.77	1.00	1.32	1.76	2.18	1.03
Vertical South	Gc/Gmax	1.68	1.23	0.76	0.48	0.33	0.30	0.32	0.42	0.65	1.02	1.53	2.01	0.71
Vertical SE/SW	Gc/Gmax	1.32	1.04	0.77	0.60	0.49	0.46	0.47	0.54	0.68	0.91	1.22	1.54	0.72
Vertical E/W	Gc/Gmax	0.73	0.69	0.64	0.61	0.56	0.55	0.55	0.56	0.59	0.66	0.70	0.78	0.61
Vertical NE/NW	Gc/Gmax	0.28	0.31	0.36	0.42	0.43	0.44	0.44	0.41	0.36	0.32	0.28	0.27	0.38
Vertical North	Gc/Gmax	0.22	0.20	0.18	0.22	0.26	0.27	0.27	0.23	0.19	0.19	0.21	0.21	0.23

Sunshine data

Mean sunshine	Hours	5.1	6.0	6.8	8.8	10.4	11.2	12.1	11.8	9.0	7.5	6.1	6.4	8.4
Max. sunshine	Hours	9.5	10.3	10.6	12.0	12.9	13.0	12.9	12.6	11.4	10.5	9.8	9.5	11.3

SLOVAKIA Site No. 233

BRATISLAVA

Computer file SLOVA233.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 48 10' N

Longitude 17 6' E

Height 288 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.75	1.52	2.73	4.36	5.63	5.86	5.70	4.91	3.60	2.24	1.03	0.67	3.26
	D mean	0.51	0.92	1.59	2.20	2.62	2.67	2.63	2.30	1.75	1.21	0.63	0.45	1.63
10 Deg South	Gm	0.88	1.74	2.99	4.61	5.80	5.92	5.83	5.15	3.93	2.57	1.23	0.81	3.46
	Dm	0.51	0.94	1.62	2.24	2.65	2.69	2.67	2.34	1.79	1.26	0.65	0.46	1.66
30 Deg South	Gm	1.08	2.06	3.30	4.80	5.73	5.69	5.69	5.28	4.30	3.03	1.55	1.04	3.64
	Dm	0.50	0.93	1.60	2.22	2.61	2.63	2.62	2.33	1.80	1.28	0.64	0.46	1.64
Latitude South	Gm	1.17	2.19	3.32	4.61	5.28	5.11	5.18	4.99	4.30	3.21	1.71	1.16	3.53
tilt 48 10' N	Dm	0.46	0.88	1.51	2.10	2.46	2.46	2.47	2.22	1.73	1.24	0.61	0.43	1.55
60 Deg South	Gm	1.19	2.19	3.21	4.31	4.78	4.55	4.66	4.62	4.12	3.20	1.74	1.19	3.32
	Dm	0.43	0.82	1.43	1.98	2.32	2.31	2.32	2.11	1.64	1.19	0.57	0.41	1.46
Vertical South	Gm	1.07	1.89	2.54	3.05	3.09	2.81	2.94	3.16	3.15	2.72	1.59	1.11	2.43
	Dm	0.33	0.66	1.14	1.59	1.87	1.87	1.88	1.72	1.36	0.99	0.46	0.32	1.19
Vertical SE/SW	Gm	0.86	1.58	2.29	3.10	3.39	3.28	3.31	3.29	2.95	2.28	1.28	0.87	2.38
	Dm	0.33	0.65	1.12	1.57	1.86	1.86	1.88	1.70	1.33	0.96	0.46	0.32	1.17
Vertical E/W	Gm	0.50	1.03	1.76	2.74	3.31	3.51	3.38	3.01	2.35	1.52	0.76	0.48	2.03
	Dm	0.33	0.61	1.06	1.52	1.83	1.85	1.87	1.65	1.25	0.87	0.43	0.30	1.13
Vertical NE/NW	Gm	0.31	0.62	1.16	1.97	2.58	2.93	2.72	2.20	1.52	0.88	0.43	0.28	1.47
	Dm	0.31	0.57	0.98	1.44	1.76	1.82	1.80	1.55	1.16	0.78	0.40	0.28	1.07
Vertical North	Gm	0.30	0.55	0.94	1.44	1.93	2.31	2.09	1.60	1.11	0.74	0.38	0.26	1.14
	Dm	0.30	0.55	0.94	1.39	1.72	1.81	1.77	1.49	1.11	0.74	0.38	0.26	1.04

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.17	1.14	1.10	1.06	1.03	1.01	1.02	1.05	1.09	1.15	1.19	1.21	1.06
30 Deg South	Gm/Gmean	1.44	1.36	1.21	1.10	1.02	0.97	1.00	1.08	1.19	1.35	1.50	1.55	1.12
Latitude South	Gm/Gmean	1.56	1.44	1.22	1.06	0.94	0.87	0.91	1.02	1.19	1.43	1.66	1.73	1.08
60 Deg South	Gm/Gmean	1.59	1.44	1.18	0.99	0.85	0.78	0.82	0.94	1.14	1.43	1.69	1.78	1.02
Vertical South	Gm/Gmean	1.43	1.24	0.93	0.70	0.55	0.48	0.52	0.64	0.88	1.21	1.54	1.66	0.75
Vertical SE/SW	Gm/Gmean	1.15	1.04	0.84	0.71	0.60	0.56	0.58	0.67	0.82	1.02	1.24	1.30	0.73
Vertical E/W	Gm/Gmean	0.67	0.68	0.64	0.63	0.59	0.60	0.59	0.61	0.65	0.68	0.74	0.72	0.62
Vertical NE/NW	Gm/Gmean	0.41	0.41	0.43	0.45	0.46	0.50	0.48	0.45	0.42	0.39	0.42	0.42	0.45
Vertical North	Gm/Gmean	0.40	0.36	0.34	0.33	0.34	0.39	0.37	0.33	0.31	0.33	0.37	0.39	0.35

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.76	3.23	4.94	7.06	8.32	8.80	8.34	7.40	5.68	3.82	2.43	1.58	5.29
	D clear	0.44	0.71	0.91	1.20	1.24	1.12	1.24	1.48	1.11	0.99	0.55	0.48	0.96
10 Deg South	Gc	2.47	4.01	5.63	7.48	8.49	8.89	8.50	7.70	6.28	4.53	3.26	2.28	5.80
	Dc	0.53	0.78	1.01	1.22	1.24	1.11	1.28	1.46	1.15	1.07	0.63	0.54	1.00
30 Deg South	Gc	3.65	5.27	6.54	7.87	8.34	8.59	8.28	7.89	7.05	5.64	4.65	3.51	6.44
	Dc	0.66	0.93	1.16	1.35	1.34	1.22	1.37	1.58	1.30	1.25	0.77	0.66	1.13
Latitude South	Gc	4.38	5.93	6.77	7.57	7.61	7.71	7.48	7.44	7.11	6.14	5.47	4.30	6.49
tilt 48 10' N	Dc	0.74	1.03	1.26	1.45	1.45	1.34	1.47	1.66	1.40	1.36	0.86	0.74	1.23
60 Deg South	Gc	4.64	6.07	6.60	7.03	6.79	6.80	6.63	6.81	6.82	6.18	5.75	4.61	6.22
	Dc	0.77	1.07	1.31	1.51	1.51	1.42	1.53	1.69	1.45	1.40	0.90	0.77	1.28
Vertical South	Gc	4.49	5.41	5.12	4.69	3.99	3.84	3.81	4.37	5.04	5.26	5.43	4.56	4.66
	Dc	0.78	1.09	1.34	1.57	1.63	1.60	1.64	1.70	1.47	1.37	0.92	0.77	1.32
Vertical SE/SW	Gc	3.44	4.34	4.75	5.13	4.97	4.97	4.82	4.88	5.00	4.43	4.20	3.38	4.52
	Dc	0.71	1.02	1.30	1.58	1.67	1.64	1.68	1.72	1.46	1.30	0.84	0.68	1.30
Vertical E/W	Gc	1.71	2.51	3.53	4.64	5.30	5.54	5.24	4.56	4.03	2.85	2.17	1.43	3.63
	Dc	0.57	0.85	1.18	1.53	1.69	1.66	1.71	1.68	1.37	1.11	0.69	0.51	1.21
Vertical NE/NW	Gc	0.57	0.98	1.80	2.93	3.86	4.14	3.88	3.01	2.26	1.28	0.74	0.45	2.26
	Dc	0.47	0.71	1.02	1.38	1.59	1.58	1.61	1.52	1.19	0.89	0.57	0.43	1.08
Vertical North	Gc	0.44	0.68	0.94	1.57	2.40	2.64	2.47	1.70	1.17	0.81	0.54	0.42	1.32
	Dc	0.44	0.68	0.94	1.27	1.49	1.50	1.51	1.39	1.08	0.81	0.54	0.42	1.01

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.40	1.24	1.14	1.06	1.02	1.01	1.02	1.04	1.11	1.19	1.34	1.44	1.10
30 Deg South	Gc/Gmax	2.07	1.63	1.32	1.12	1.00	0.98	0.99	1.07	1.24	1.48	1.91	2.22	1.22
Latitude South	Gc/Gmax	2.49	1.84	1.37	1.07	0.92	0.88	0.90	1.00	1.25	1.61	2.25	2.72	1.23
60 Deg South	Gc/Gmax	2.64	1.88	1.34	1.00	0.82	0.77	0.80	0.92	1.20	1.62	2.37	2.92	1.18
Vertical South	Gc/Gmax	2.55	1.67	1.04	0.66	0.48	0.44	0.46	0.59	0.89	1.38	2.23	2.89	0.88
Vertical SE/SW	Gc/Gmax	1.96	1.34	0.96	0.73	0.60	0.56	0.58	0.66	0.88	1.16	1.73	2.14	0.85
Vertical E/W	Gc/Gmax	0.97	0.78	0.71	0.66	0.64	0.63	0.63	0.62	0.71	0.75	0.89	0.90	0.69
Vertical NE/NW	Gc/Gmax	0.32	0.30	0.36	0.41	0.46	0.47	0.47	0.41	0.40	0.34	0.31	0.28	0.41
Vertical North	Gc/Gmax	0.25	0.21	0.19	0.22	0.29	0.30	0.30	0.23	0.21	0.21	0.22	0.27	0.25

Sunshine data

Mean sunshine	Hours	1.5	2.7	4.1	6.2	7.7	7.6	8.1	7.5	6.0	4.6	2.3	1.7	5.0
Max. sunshine	Hours	6.2	8.3	10.2	12.2	13.4	13.8	14.0	12.7	11.0	9.3	7.9	6.9	10.5

SLOVENIA Site No. 241

LJUBLJANA

Computer file SLOVE241.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 46 4' N

Longitude 14 31' E

Height 299 metres

Data period (1.1966-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.77	1.58	2.63	3.73	5.03	5.20	5.43	4.45	3.28	2.05	0.97	0.64	2.99
	D mean	0.57	0.97	1.54	2.15	2.67	2.74	2.73	2.29	1.75	1.18	0.64	0.47	1.64
10 Deg South	Gm	0.86	1.79	2.86	3.92	5.17	5.26	5.56	4.64	3.54	2.31	1.12	0.73	3.15
	Dm	0.57	0.99	1.58	2.19	2.71	2.76	2.77	2.34	1.78	1.22	0.66	0.47	1.67
30 Deg South	Gm	0.99	2.09	3.12	4.04	5.09	5.05	5.43	4.72	3.80	2.67	1.34	0.86	3.27
	Dm	0.55	0.99	1.56	2.17	2.66	2.69	2.73	2.33	1.78	1.24	0.65	0.45	1.65
Latitude South	Gm	1.03	2.19	3.13	3.88	4.73	4.60	5.01	4.49	3.76	2.78	1.43	0.92	3.17
tilt 46 4' N	Dm	0.51	0.94	1.49	2.07	2.51	2.52	2.59	2.23	1.70	1.20	0.62	0.41	1.57
60 Deg South	Gm	1.02	2.18	3.00	3.58	4.21	4.03	4.43	4.09	3.56	2.75	1.44	0.92	2.94
	Dm	0.46	0.88	1.39	1.92	2.33	2.33	2.41	2.08	1.59	1.14	0.58	0.37	1.46
Vertical South	Gm	0.88	1.85	2.34	2.52	2.71	2.50	2.77	2.77	2.66	2.29	1.27	0.82	2.12
	Dm	0.35	0.71	1.11	1.51	1.83	1.82	1.90	1.66	1.28	0.94	0.46	0.28	1.16
Vertical SE/SW	Gm	0.73	1.56	2.12	2.51	2.93	2.83	3.07	2.87	2.52	1.94	1.05	0.67	2.07
	Dm	0.35	0.70	1.09	1.49	1.82	1.82	1.91	1.64	1.26	0.91	0.46	0.29	1.15
Vertical E/W	Gm	0.47	1.03	1.65	2.22	2.87	2.96	3.09	2.64	2.06	1.34	0.66	0.40	1.79
	Dm	0.34	0.65	1.02	1.43	1.79	1.83	1.91	1.59	1.19	0.82	0.43	0.29	1.11
Vertical NE/NW	Gm	0.33	0.64	1.11	1.66	2.28	2.49	2.47	1.98	1.40	0.82	0.41	0.28	1.33
	Dm	0.33	0.59	0.95	1.33	1.70	1.78	1.80	1.48	1.11	0.73	0.39	0.27	1.04
Vertical North	Gm	0.31	0.57	0.91	1.29	1.77	2.01	1.91	1.48	1.07	0.69	0.37	0.26	1.06
	Dm	0.31	0.57	0.91	1.27	1.64	1.75	1.73	1.42	1.07	0.69	0.37	0.26	1.00

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.12	1.13	1.09	1.05	1.03	1.01	1.02	1.04	1.08	1.13	1.15	1.14	1.05
	Gm/Gmean	1.29	1.32	1.19	1.08	1.01	0.97	1.00	1.06	1.16	1.30	1.38	1.34	1.09
Latitude South	Gm/Gmean	1.34	1.39	1.19	1.04	0.94	0.88	0.92	1.01	1.15	1.36	1.47	1.44	1.06
60 Deg South	Gm/Gmean	1.33	1.38	1.14	0.96	0.84	0.77	0.82	0.92	1.09	1.34	1.49	1.44	0.98
Vertical South	Gm/Gmean	1.14	1.17	0.89	0.68	0.54	0.48	0.51	0.62	0.81	1.12	1.31	1.28	0.71
Vertical SE/SW	Gm/Gmean	0.95	0.99	0.81	0.67	0.58	0.54	0.56	0.64	0.77	0.95	1.08	1.05	0.69
Vertical E/W	Gm/Gmean	0.61	0.65	0.63	0.60	0.57	0.57	0.57	0.59	0.63	0.65	0.68	0.63	0.60
Vertical NE/NW	Gm/Gmean	0.43	0.41	0.42	0.44	0.45	0.48	0.46	0.44	0.43	0.40	0.42	0.44	0.44
Vertical North	Gm/Gmean	0.40	0.36	0.35	0.35	0.35	0.39	0.35	0.33	0.33	0.34	0.38	0.41	0.35

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.87	3.34	5.15	6.55	7.60	7.90	7.56	6.81	5.32	3.64	2.41	1.75	5.00
	D clear	0.58	0.88	0.99	1.51	1.55	1.54	1.71	1.64	1.14	1.01	0.70	0.35	1.14
10 Deg South	Gc	2.52	4.04	5.81	6.97	7.84	8.05	7.76	7.15	5.86	4.35	3.13	2.52	5.51
	Dc	0.68	0.94	1.08	1.61	1.64	1.60	1.79	1.72	1.21	1.18	0.81	0.40	1.22
30 Deg South	Gc	3.57	5.17	6.65	7.28	7.67	7.75	7.52	7.27	6.49	5.31	4.28	3.83	6.07
	Dc	0.83	1.11	1.23	1.72	1.71	1.67	1.84	1.82	1.35	1.36	0.97	0.50	1.34
Latitude South	Gc	4.14	5.70	6.82	7.01	7.06	7.06	6.88	6.88	6.51	5.68	4.89	4.59	6.10
tilt 46 4' N	Dc	0.91	1.20	1.32	1.78	1.75	1.71	1.86	1.85	1.43	1.45	1.06	0.56	1.41
60 Deg South	Gc	4.41	5.83	6.60	6.41	6.17	6.09	5.97	6.19	6.18	5.70	5.14	4.98	5.80
	Dc	0.96	1.25	1.37	1.79	1.76	1.72	1.85	1.85	1.47	1.49	1.10	0.60	1.43
Vertical South	Gc	4.18	5.10	5.03	4.22	3.57	3.42	3.42	3.90	4.48	4.77	4.75	4.88	4.30
	Dc	0.94	1.23	1.39	1.71	1.72	1.71	1.76	1.75	1.45	1.42	1.08	0.63	1.40
Vertical SE/SW	Gc	3.24	4.11	4.70	4.54	4.38	4.33	4.21	4.36	4.36	4.04	3.70	3.60	4.13
	Dc	0.85	1.14	1.36	1.73	1.79	1.78	1.84	1.78	1.43	1.34	0.98	0.57	1.38
Vertical E/W	Gc	1.66	2.42	3.53	4.09	4.59	4.72	4.48	4.12	3.45	2.65	1.95	1.54	3.27
	Dc	0.66	0.95	1.24	1.67	1.82	1.83	1.89	1.75	1.32	1.14	0.78	0.47	1.29
Vertical NE/NW	Gc	0.62	1.00	1.83	2.62	3.34	3.54	3.32	2.77	1.93	1.23	0.75	0.44	1.95
	Dc	0.53	0.77	1.06	1.46	1.68	1.71	1.74	1.55	1.14	0.90	0.62	0.42	1.13
Vertical North	Gc	0.50	0.72	0.98	1.49	2.08	2.28	2.14	1.63	1.04	0.81	0.59	0.41	1.23
	Dc	0.50	0.72	0.98	1.32	1.55	1.59	1.60	1.39	1.04	0.81	0.59	0.41	1.04

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.35	1.21	1.13	1.06	1.03	1.02	1.03	1.05	1.10	1.20	1.30	1.44	1.10
30 Deg South	Gc/Gmax	1.91	1.55	1.29	1.11	1.01	0.98	1.00	1.07	1.22	1.46	1.78	2.19	1.21
Latitude South	Gc/Gmax	2.21	1.71	1.32	1.07	0.93	0.89	0.91	1.01	1.22	1.56	2.03	2.62	1.22
60 Deg South	Gc/Gmax	2.36	1.75	1.28	0.98	0.81	0.77	0.79	0.91	1.16	1.57	2.13	2.85	1.16
Vertical South	Gc/Gmax	2.23	1.53	0.98	0.64	0.47	0.43	0.45	0.57	0.84	1.31	1.97	2.79	0.86
Vertical SE/SW	Gc/Gmax	1.73	1.23	0.91	0.69	0.58	0.55	0.56	0.64	0.82	1.11	1.53	2.06	0.83
Vertical E/W	Gc/Gmax	0.89	0.73	0.69	0.62	0.60	0.60	0.59	0.61	0.65	0.73	0.81	0.88	0.65
Vertical NE/NW	Gc/Gmax	0.33	0.30	0.35	0.40	0.44	0.45	0.44	0.41	0.36	0.34	0.31	0.25	0.39
Vertical North	Gc/Gmax	0.27	0.22	0.19	0.23	0.27	0.29	0.28	0.24	0.19	0.22	0.25	0.23	0.25

Sunshine data

Mean sunshine	Hours	1.0	2.8	3.9	5.5	7.2	7.0	8.5	7.0	5.1	4.1	1.9	1.0	4.6
Max. sunshine	Hours	6.1	8.1	10.2	12.2	13.6	13.7	13.6	12.6	10.1	9.2	7.6	6.4	10.3

SWITZERLAND Site No. 216

ZUERICH

Computer file SWITZ216.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 47 27' N

Longitude 8 33' E

Height 440 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.83	1.61	2.72	3.93	5.03	5.45	5.80	4.56	3.58	2.01	1.00	0.66	3.11
	D mean	0.63	1.01	1.59	2.18	2.62	2.71	2.78	2.41	1.81	1.16	0.69	0.52	1.68
10 Deg South	Gm	0.93	1.82	2.95	4.12	5.14	5.49	5.91	4.74	3.88	2.26	1.14	0.74	3.27
	Dm	0.64	1.03	1.61	2.20	2.64	2.73	2.81	2.44	1.85	1.18	0.70	0.52	1.70
30 Deg South	Gm	1.05	2.12	3.22	4.24	5.02	5.25	5.74	4.79	4.19	2.59	1.33	0.85	3.37
	Dm	0.60	1.00	1.58	2.16	2.55	2.64	2.75	2.39	1.83	1.15	0.68	0.50	1.66
Latitude South	Gm	1.10	2.22	3.22	4.05	4.60	4.72	5.23	4.50	4.15	2.68	1.41	0.89	3.24
tilt 47 27' N	Dm	0.55	0.94	1.48	2.02	2.38	2.45	2.58	2.25	1.73	1.08	0.62	0.45	1.55
60 Deg South	Gm	1.08	2.21	3.10	3.75	4.13	4.17	4.66	4.12	3.96	2.64	1.41	0.88	3.01
	Dm	0.50	0.87	1.37	1.88	2.20	2.28	2.41	2.09	1.63	1.01	0.57	0.41	1.44
Vertical South	Gm	0.93	1.88	2.42	2.63	2.66	2.58	2.93	2.80	2.98	2.19	1.23	0.77	2.17
	Dm	0.37	0.69	1.08	1.48	1.73	1.80	1.92	1.66	1.32	0.80	0.44	0.31	1.14
Vertical SE/SW	Gm	0.78	1.58	2.21	2.69	2.94	2.99	3.32	2.94	2.84	1.87	1.02	0.64	2.15
	Dm	0.38	0.68	1.07	1.46	1.71	1.79	1.92	1.64	1.30	0.80	0.44	0.31	1.13
Vertical E/W	Gm	0.50	1.05	1.73	2.43	2.93	3.22	3.42	2.74	2.31	1.30	0.64	0.40	1.89
	Dm	0.38	0.65	1.03	1.43	1.69	1.78	1.91	1.60	1.24	0.76	0.43	0.31	1.10
Vertical NE/NW	Gm	0.36	0.66	1.17	1.81	2.37	2.73	2.79	2.10	1.54	0.81	0.42	0.29	1.42
	Dm	0.36	0.61	0.98	1.37	1.66	1.76	1.86	1.54	1.18	0.72	0.41	0.29	1.06
Vertical North	Gm	0.35	0.59	0.95	1.39	1.85	2.21	2.17	1.60	1.14	0.70	0.39	0.28	1.14
	Dm	0.35	0.59	0.95	1.33	1.65	1.77	1.84	1.50	1.14	0.70	0.39	0.28	1.04

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.12	1.13	1.09	1.05	1.02	1.01	1.02	1.04	1.08	1.12	1.14	1.12	1.05
30 Deg South	Gm/Gmean	1.26	1.32	1.18	1.08	1.00	0.96	0.99	1.05	1.17	1.29	1.33	1.29	1.08
Latitude South	Gm/Gmean	1.33	1.38	1.18	1.03	0.92	0.87	0.90	0.99	1.16	1.33	1.41	1.35	1.04
60 Deg South	Gm/Gmean	1.30	1.37	1.14	0.95	0.82	0.76	0.80	0.90	1.11	1.31	1.41	1.33	0.97
Vertical South	Gm/Gmean	1.12	1.17	0.89	0.67	0.53	0.47	0.50	0.61	0.83	1.09	1.23	1.17	0.70
Vertical SE/SW	Gm/Gmean	0.94	0.98	0.81	0.68	0.58	0.55	0.57	0.64	0.79	0.93	1.02	0.97	0.69
Vertical E/W	Gm/Gmean	0.60	0.65	0.64	0.62	0.58	0.59	0.59	0.60	0.64	0.65	0.64	0.61	0.61
Vertical NE/NW	Gm/Gmean	0.43	0.41	0.43	0.46	0.47	0.50	0.48	0.46	0.43	0.40	0.42	0.44	0.46
Vertical North	Gm/Gmean	0.42	0.37	0.35	0.35	0.37	0.41	0.37	0.35	0.32	0.35	0.39	0.42	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.85	3.32	5.06	6.94	8.07	8.41	8.41	7.18	5.79	3.88	2.16	1.41	5.22
	D clear	0.51	0.69	0.76	1.10	0.88	0.86	1.12	1.23	0.97	0.68	0.50	0.43	0.81
10 Deg South	Gc	2.55	4.13	5.75	7.36	8.26	8.58	8.58	7.55	6.40	4.66	2.90	2.02	5.74
	Dc	0.60	0.78	0.84	1.13	0.93	0.94	1.18	1.30	1.02	0.76	0.59	0.49	0.88
30 Deg South	Gc	3.71	5.40	6.66	7.72	8.07	8.25	8.30	7.70	7.15	5.84	4.08	3.06	6.33
	Dc	0.74	0.93	0.97	1.26	1.04	1.06	1.27	1.41	1.16	0.90	0.72	0.61	1.01
Latitude South	Gc	4.40	6.04	6.88	7.42	7.36	7.42	7.51	7.26	7.20	6.36	4.76	3.71	6.36
tilt 47 27' N	Dc	0.83	1.02	1.08	1.36	1.16	1.18	1.37	1.49	1.26	1.00	0.80	0.68	1.10
60 Deg South	Gc	4.67	6.19	6.69	6.84	6.50	6.48	6.59	6.59	6.88	6.41	5.01	3.98	6.07
	Dc	0.87	1.07	1.14	1.42	1.25	1.27	1.44	1.53	1.32	1.05	0.84	0.71	1.16
Vertical South	Gc	4.49	5.48	5.14	4.52	3.74	3.60	3.72	4.17	5.02	5.44	4.70	3.92	4.49
	Dc	0.86	1.09	1.21	1.50	1.46	1.49	1.59	1.58	1.38	1.09	0.85	0.70	1.23
Vertical SE/SW	Gc	3.45	4.40	4.82	5.00	4.81	4.76	4.80	4.74	5.07	4.68	3.66	2.91	4.42
	Dc	0.78	1.02	1.18	1.51	1.49	1.52	1.63	1.60	1.38	1.06	0.78	0.62	1.21
Vertical E/W	Gc	1.73	2.56	3.62	4.58	5.26	5.40	5.31	4.51	4.14	3.10	1.93	1.27	3.62
	Dc	0.61	0.86	1.09	1.47	1.51	1.54	1.66	1.58	1.30	0.94	0.64	0.48	1.14
Vertical NE/NW	Gc	0.60	1.00	1.83	2.90	3.86	4.06	3.95	2.99	2.33	1.35	0.68	0.42	2.17
	Dc	0.50	0.72	0.97	1.33	1.44	1.48	1.57	1.43	1.14	0.80	0.53	0.40	1.03
Vertical North	Gc	0.47	0.68	0.91	1.54	2.38	2.59	2.50	1.66	1.15	0.75	0.51	0.39	1.30
	Dc	0.47	0.68	0.91	1.24	1.37	1.42	1.48	1.32	1.05	0.75	0.51	0.39	0.97

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.38	1.24	1.14	1.06	1.02	1.02	1.02	1.05	1.11	1.20	1.34	1.43	1.10
30 Deg South	Gc/Gmax	2.01	1.63	1.32	1.11	1.00	0.98	0.99	1.07	1.24	1.50	1.89	2.17	1.21
Latitude South	Gc/Gmax	2.38	1.82	1.36	1.07	0.91	0.88	0.89	1.01	1.24	1.64	2.20	2.63	1.22
60 Deg South	Gc/Gmax	2.52	1.86	1.32	0.99	0.81	0.77	0.78	0.92	1.19	1.65	2.32	2.82	1.16
Vertical South	Gc/Gmax	2.43	1.65	1.02	0.65	0.46	0.43	0.44	0.58	0.87	1.40	2.18	2.78	0.86
Vertical SE/SW	Gc/Gmax	1.87	1.33	0.95	0.72	0.60	0.57	0.57	0.66	0.88	1.21	1.69	2.06	0.85
Vertical E/W	Gc/Gmax	0.94	0.77	0.71	0.66	0.65	0.64	0.63	0.63	0.71	0.80	0.89	0.90	0.69
Vertical NE/NW	Gc/Gmax	0.32	0.30	0.36	0.42	0.48	0.48	0.47	0.42	0.40	0.35	0.31	0.30	0.42
Vertical North	Gc/Gmax	0.25	0.20	0.18	0.22	0.29	0.31	0.30	0.23	0.20	0.19	0.24	0.28	0.25

Sunshine data

Mean sunshine	Hours	0.9	2.4	3.5	5.0	5.8	6.4	7.5	5.9	5.3	3.1	1.4	0.8	4.0
Max. sunshine	Hours	6.4	8.7	9.9	11.9	12.9	14.2	14.1	12.8	10.9	8.9	6.8	5.5	10.3

SWITZERLAND Site No. 217

DAVOS

Computer file SWITZ217.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 46 48' N

Longitude 9 49' E

Height 1590 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.55	2.45	3.99	5.23	5.66	5.48	5.56	4.74	4.09	2.88	1.67	1.35	3.73
	D mean	0.76	1.14	1.68	2.36	2.66	2.68	2.53	2.13	1.57	1.11	0.76	0.60	1.67
10 Deg South	Gm	1.94	2.89	4.42	5.49	5.78	5.51	5.64	4.92	4.47	3.36	2.09	1.78	4.03
	Dm	0.76	1.14	1.69	2.37	2.67	2.69	2.55	2.15	1.58	1.12	0.77	0.61	1.68
30 Deg South	Gm	2.57	3.53	4.96	5.66	5.61	5.23	5.42	4.96	4.88	4.06	2.75	2.50	4.35
	Dm	0.74	1.10	1.62	2.29	2.57	2.59	2.47	2.09	1.54	1.09	0.74	0.59	1.62
Latitude South	Gm	2.90	3.81	5.05	5.40	5.14	4.71	4.93	4.66	4.87	4.33	3.10	2.90	4.32
tilt 46 48' N	Dm	0.69	1.02	1.50	2.14	2.40	2.40	2.31	1.96	1.46	1.03	0.69	0.55	1.51
60 Deg South	Gm	3.02	3.85	4.88	4.96	4.56	4.11	4.34	4.23	4.64	4.34	3.22	3.07	4.10
	Dm	0.65	0.94	1.39	1.98	2.22	2.21	2.15	1.83	1.37	0.97	0.64	0.52	1.41
Vertical South	Gm	2.81	3.36	3.83	3.40	2.87	2.51	2.68	2.81	3.46	3.68	2.98	2.95	3.11
	Dm	0.52	0.76	1.13	1.60	1.77	1.75	1.73	1.49	1.16	0.82	0.52	0.43	1.14
Vertical SE/SW	Gm	2.17	2.75	3.55	3.65	3.27	2.95	3.14	3.09	3.37	3.07	2.35	2.23	2.97
	Dm	0.53	0.77	1.14	1.59	1.75	1.72	1.71	1.47	1.16	0.83	0.53	0.43	1.14
Vertical E/W	Gm	1.12	1.74	2.75	3.37	3.32	3.21	3.37	2.96	2.75	2.03	1.33	1.07	2.42
	Dm	0.53	0.77	1.14	1.58	1.73	1.71	1.71	1.45	1.14	0.82	0.53	0.43	1.13
Vertical NE/NW	Gm	0.52	0.90	1.63	2.43	2.66	2.75	2.78	2.23	1.71	1.02	0.60	0.43	1.64
	Dm	0.51	0.76	1.13	1.57	1.73	1.72	1.69	1.43	1.13	0.80	0.52	0.42	1.12
Vertical North	Gm	0.49	0.74	1.12	1.69	2.01	2.22	2.16	1.59	1.12	0.79	0.50	0.41	1.24
	Dm	0.49	0.74	1.12	1.57	1.74	1.74	1.70	1.43	1.12	0.79	0.50	0.41	1.11

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.25	1.18	1.11	1.05	1.02	1.00	1.01	1.04	1.09	1.17	1.25	1.32	1.08
30 Deg South	Gm/Gmean	1.66	1.44	1.24	1.08	0.99	0.95	0.98	1.05	1.19	1.41	1.65	1.85	1.17
Latitude South	Gm/Gmean	1.87	1.55	1.27	1.03	0.91	0.86	0.89	0.98	1.19	1.50	1.86	2.15	1.16
60 Deg South	Gm/Gmean	1.95	1.57	1.22	0.95	0.81	0.75	0.78	0.89	1.13	1.51	1.93	2.27	1.10
Vertical South	Gm/Gmean	1.81	1.37	0.96	0.65	0.51	0.46	0.48	0.59	0.85	1.28	1.78	2.18	0.83
Vertical SE/SW	Gm/Gmean	1.40	1.12	0.89	0.70	0.58	0.54	0.56	0.65	0.82	1.07	1.41	1.65	0.80
Vertical E/W	Gm/Gmean	0.72	0.71	0.69	0.64	0.59	0.59	0.61	0.62	0.67	0.70	0.80	0.79	0.65
Vertical NE/NW	Gm/Gmean	0.34	0.37	0.41	0.47	0.47	0.50	0.50	0.47	0.42	0.35	0.36	0.32	0.44
Vertical North	Gm/Gmean	0.32	0.30	0.28	0.32	0.35	0.41	0.39	0.34	0.27	0.27	0.30	0.30	0.33

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.48	3.96	6.03	7.71	8.77	9.02	8.73	7.71	6.12	4.41	2.83	1.91	5.82
	D clear	0.42	0.26	0.12	0.37	0.40	0.41	0.59	0.63	0.35	0.30	0.22	0.25	0.36
10 Deg South	Gc	3.37	4.94	6.86	8.16	8.93	9.10	8.85	8.05	6.78	5.30	3.82	2.79	6.42
	Dc	0.39	0.25	0.13	0.39	0.42	0.43	0.61	0.65	0.37	0.30	0.22	0.24	0.37
30 Deg South	Gc	5.01	6.56	7.96	8.51	8.65	8.66	8.49	8.15	7.58	6.69	5.52	4.39	7.18
	Dc	0.49	0.33	0.21	0.51	0.55	0.56	0.74	0.77	0.47	0.39	0.29	0.31	0.47
Latitude South	Gc	5.96	7.36	8.21	8.14	7.86	7.77	7.67	7.65	7.62	7.29	6.48	5.35	7.28
tilt 46 48' N	Dc	0.57	0.41	0.33	0.66	0.71	0.72	0.88	0.90	0.59	0.48	0.36	0.36	0.58
60 Deg South	Gc	6.38	7.58	7.95	7.42	6.83	6.67	6.63	6.86	7.24	7.36	6.87	5.81	6.96
	Dc	0.62	0.49	0.44	0.79	0.86	0.88	1.02	1.01	0.70	0.56	0.41	0.40	0.68
Vertical South	Gc	6.14	6.71	5.98	4.73	3.76	3.55	3.61	4.19	5.16	6.21	6.47	5.75	5.18
	Dc	0.68	0.64	0.72	1.11	1.23	1.26	1.34	1.27	0.95	0.74	0.52	0.46	0.91
Vertical SE/SW	Gc	4.67	5.35	5.75	5.54	5.11	4.96	4.91	5.06	5.44	5.39	4.98	4.21	5.11
	Dc	0.64	0.64	0.72	1.11	1.24	1.27	1.36	1.28	0.96	0.74	0.51	0.44	0.91
Vertical E/W	Gc	2.29	3.08	4.35	5.26	5.79	5.82	5.64	5.00	4.58	3.61	2.56	1.72	4.15
	Dc	0.55	0.61	0.72	1.11	1.26	1.29	1.38	1.27	0.95	0.71	0.48	0.39	0.89
Vertical NE/NW	Gc	0.66	1.02	2.02	3.28	4.23	4.39	4.21	3.30	2.52	1.46	0.72	0.40	2.36
	Dc	0.49	0.59	0.71	1.09	1.24	1.27	1.35	1.22	0.91	0.68	0.46	0.37	0.87
Vertical North	Gc	0.47	0.58	0.71	1.53	2.52	2.74	2.61	1.69	1.04	0.66	0.45	0.37	1.28
	Dc	0.47	0.58	0.71	1.07	1.22	1.25	1.31	1.17	0.89	0.66	0.45	0.37	0.85

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.36	1.25	1.14	1.06	1.02	1.01	1.01	1.04	1.11	1.20	1.35	1.46	1.10
30 Deg South	Gc/Gmax	2.02	1.66	1.32	1.10	0.99	0.96	0.97	1.06	1.24	1.52	1.95	2.30	1.23
Latitude South	Gc/Gmax	2.40	1.86	1.36	1.06	0.90	0.86	0.88	0.99	1.25	1.65	2.29	2.80	1.25
60 Deg South	Gc/Gmax	2.57	1.91	1.32	0.96	0.78	0.74	0.76	0.89	1.18	1.67	2.43	3.04	1.20
Vertical South	Gc/Gmax	2.48	1.69	0.99	0.61	0.43	0.39	0.41	0.54	0.84	1.41	2.29	3.01	0.89
Vertical SE/SW	Gc/Gmax	1.88	1.35	0.95	0.72	0.58	0.55	0.56	0.66	0.89	1.22	1.76	2.20	0.88
Vertical E/W	Gc/Gmax	0.92	0.78	0.72	0.68	0.66	0.64	0.65	0.65	0.75	0.82	0.90	0.90	0.71
Vertical NE/NW	Gc/Gmax	0.27	0.26	0.34	0.43	0.48	0.49	0.48	0.43	0.41	0.33	0.25	0.21	0.41
Vertical North	Gc/Gmax	0.19	0.15	0.12	0.20	0.29	0.30	0.30	0.22	0.17	0.15	0.16	0.19	0.22

Sunshine data

Mean sunshine	Hours	2.9	3.4	4.5	5.2	5.6	5.4	6.5	5.9	5.7	4.7	3.1	3.0	4.7
Max. sunshine	Hours	6.2	7.4	9.0	11.4	12.4	12.9	13.0	12.0	10.0	7.9	6.5	5.7	9.5

SWITZERLAND Site No.218

LOCARNO MONTI

Computer file SWITZ218.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 46 10' N

Longitude 8 47' E

Height 380 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.44	2.14	3.58	4.71	5.19	6.02	6.30	5.20	3.95	2.85	1.53	1.32	3.69
	D mean	0.67	1.04	1.53	2.11	2.51	2.59	2.50	2.25	1.66	1.10	0.73	0.55	1.61
10 Deg South	Gm	1.82	2.53	3.99	4.98	5.30	6.08	6.43	5.43	4.31	3.34	1.91	1.77	4.00
	Dm	0.69	1.07	1.57	2.15	2.53	2.62	2.54	2.29	1.70	1.14	0.75	0.58	1.64
30 Deg South	Gm	2.45	3.10	4.52	5.18	5.18	5.79	6.25	5.52	4.71	4.07	2.52	2.52	4.32
	Dm	0.71	1.09	1.58	2.14	2.46	2.55	2.51	2.28	1.70	1.18	0.78	0.62	1.64
Latitude South	Gm	2.77	3.35	4.63	5.00	4.78	5.26	5.74	5.24	4.71	4.37	2.83	2.95	4.31
tilt 46 10' N	Dm	0.69	1.06	1.53	2.05	2.32	2.42	2.40	2.18	1.65	1.17	0.76	0.63	1.57
60 Deg South	Gm	2.91	3.40	4.50	4.61	4.23	4.57	5.04	4.76	4.49	4.40	2.95	3.15	4.09
	Dm	0.66	1.01	1.45	1.93	2.15	2.25	2.27	2.05	1.56	1.14	0.73	0.62	1.49
Vertical South	Gm	2.72	2.97	3.56	3.21	2.69	2.76	3.08	3.19	3.37	3.75	2.73	3.03	3.09
	Dm	0.57	0.85	1.22	1.59	1.72	1.84	1.89	1.70	1.31	1.00	0.63	0.55	1.24
Vertical SE/SW	Gm	2.09	2.45	3.27	3.35	3.02	3.29	3.59	3.42	3.23	3.12	2.17	2.29	2.94
	Dm	0.56	0.84	1.21	1.57	1.70	1.83	1.89	1.68	1.29	0.98	0.62	0.53	1.23
Vertical E/W	Gm	1.08	1.56	2.50	3.02	3.05	3.61	3.74	3.20	2.62	2.03	1.24	1.09	2.40
	Dm	0.52	0.77	1.15	1.53	1.68	1.83	1.89	1.64	1.24	0.89	0.56	0.47	1.18
Vertical NE/NW	Gm	0.49	0.82	1.48	2.15	2.44	3.01	2.97	2.35	1.65	1.02	0.58	0.43	1.62
	Dm	0.48	0.70	1.08	1.45	1.65	1.81	1.83	1.56	1.17	0.81	0.51	0.42	1.12
Vertical North	Gm	0.46	0.67	1.04	1.50	1.86	2.36	2.20	1.66	1.13	0.78	0.48	0.40	1.21
	Dm	0.46	0.67	1.04	1.41	1.64	1.80	1.80	1.52	1.13	0.78	0.48	0.40	1.10

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.26	1.18	1.12	1.06	1.02	1.01	1.02	1.04	1.09	1.17	1.25	1.34	1.08
30 Deg South	Gm/Gmean	1.70	1.45	1.26	1.10	1.00	0.96	0.99	1.06	1.19	1.43	1.65	1.91	1.17
Latitude South	Gm/Gmean	1.92	1.57	1.29	1.06	0.92	0.87	0.91	1.01	1.19	1.53	1.85	2.23	1.17
60 Deg South	Gm/Gmean	2.02	1.59	1.26	0.98	0.81	0.76	0.80	0.92	1.14	1.54	1.93	2.39	1.11
Vertical South	Gm/Gmean	1.89	1.39	0.99	0.68	0.52	0.46	0.49	0.61	0.85	1.32	1.78	2.30	0.84
Vertical SE/SW	Gm/Gmean	1.45	1.14	0.91	0.71	0.58	0.55	0.57	0.66	0.82	1.10	1.42	1.74	0.80
Vertical E/W	Gm/Gmean	0.75	0.73	0.70	0.64	0.59	0.60	0.59	0.62	0.66	0.71	0.81	0.83	0.65
Vertical NE/NW	Gm/Gmean	0.34	0.38	0.41	0.46	0.47	0.50	0.47	0.45	0.42	0.36	0.38	0.33	0.44
Vertical North	Gm/Gmean	0.32	0.31	0.29	0.32	0.36	0.39	0.35	0.32	0.29	0.27	0.31	0.30	0.33

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.51	3.94	5.74	7.46	8.51	8.78	8.68	7.74	6.30	4.49	2.88	1.94	5.76
	D clear	0.60	0.75	0.67	1.03	0.90	1.00	1.19	1.23	0.85	0.76	0.61	0.56	0.85
10 Deg South	Gc	3.36	4.81	6.51	7.89	8.69	8.86	8.77	8.05	6.96	5.33	3.76	2.66	6.31
	Dc	0.64	0.80	0.75	1.07	0.93	1.01	1.17	1.23	0.91	0.82	0.66	0.58	0.88
30 Deg South	Gc	4.86	6.24	7.48	8.21	8.43	8.46	8.43	8.16	7.73	6.61	5.25	4.00	6.99
	Dc	0.79	0.95	0.88	1.20	1.04	1.12	1.27	1.35	1.05	0.97	0.80	0.71	1.01
Latitude South	Gc	5.70	6.91	7.69	7.89	7.72	7.65	7.67	7.70	7.76	7.14	6.05	4.76	7.05
tilt 46 10' N	Dc	0.88	1.05	0.99	1.30	1.16	1.23	1.37	1.44	1.15	1.07	0.89	0.79	1.11
60 Deg South	Gc	6.08	7.09	7.45	7.18	6.69	6.56	6.61	6.89	7.36	7.18	6.38	5.14	6.71
	Dc	0.93	1.12	1.07	1.38	1.27	1.33	1.45	1.50	1.23	1.14	0.94	0.83	1.18
Vertical South	Gc	5.80	6.21	5.64	4.65	3.75	3.58	3.67	4.26	5.27	6.03	5.95	5.02	4.98
	Dc	0.95	1.16	1.21	1.51	1.49	1.54	1.60	1.59	1.35	1.20	0.97	0.84	1.28
Vertical SE/SW	Gc	4.44	4.99	5.36	5.25	4.94	4.81	4.81	4.96	5.23	5.19	4.62	3.72	4.86
	Dc	0.87	1.09	1.19	1.52	1.52	1.57	1.65	1.62	1.33	1.16	0.90	0.75	1.26
Vertical E/W	Gc	2.21	2.92	4.07	4.89	5.49	5.50	5.40	4.80	4.17	3.47	2.42	1.58	3.91
	Dc	0.70	0.93	1.13	1.48	1.55	1.61	1.68	1.60	1.25	1.03	0.74	0.57	1.19
Vertical NE/NW	Gc	0.72	1.12	2.05	3.11	4.04	4.17	4.04	3.20	2.25	1.51	0.82	0.50	2.30
	Dc	0.58	0.79	1.02	1.36	1.48	1.54	1.60	1.47	1.13	0.88	0.63	0.48	1.08
Vertical North	Gc	0.55	0.75	0.98	1.61	2.46	2.65	2.56	1.75	1.06	0.82	0.60	0.46	1.36
	Dc	0.55	0.75	0.98	1.27	1.42	1.47	1.51	1.36	1.06	0.82	0.60	0.46	1.02

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.34	1.22	1.13	1.06	1.02	1.01	1.01	1.04	1.11	1.19	1.31	1.37	1.10
30 Deg South	Gc/Gmax	1.94	1.58	1.30	1.10	0.99	0.96	0.97	1.05	1.23	1.47	1.82	2.06	1.21
Latitude South	Gc/Gmax	2.27	1.75	1.34	1.06	0.91	0.87	0.88	1.00	1.23	1.59	2.10	2.45	1.22
60 Deg South	Gc/Gmax	2.42	1.80	1.30	0.96	0.79	0.75	0.76	0.89	1.17	1.60	2.21	2.65	1.16
Vertical South	Gc/Gmax	2.31	1.58	0.98	0.62	0.44	0.41	0.42	0.55	0.84	1.34	2.07	2.59	0.87
Vertical SE/SW	Gc/Gmax	1.77	1.27	0.93	0.70	0.58	0.55	0.55	0.64	0.83	1.16	1.60	1.92	0.84
Vertical E/W	Gc/Gmax	0.88	0.74	0.71	0.65	0.64	0.63	0.62	0.62	0.66	0.77	0.84	0.81	0.68
Vertical NE/NW	Gc/Gmax	0.29	0.28	0.36	0.42	0.47	0.47	0.47	0.41	0.36	0.34	0.28	0.26	0.40
Vertical North	Gc/Gmax	0.22	0.19	0.17	0.22	0.29	0.30	0.29	0.23	0.17	0.18	0.21	0.24	0.24

Sunshine data

Mean sunshine	Hours	3.8	4.5	5.9	6.8	6.5	7.8	9.0	7.5	6.4	6.1	4.0	4.4	6.1
Max. sunshine	Hours	7.8	9.5	11.0	12.6	13.3	13.6	13.5	12.9	11.8	10.0	8.3	7.1	11.0

SWEDEN Site No. 2

KARLSTAD

Computer file SWED002.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 59 22' N

Longitude 13 28' E

Height 46 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.29	1.03	2.38	3.89	5.26	6.68	5.73	4.61	2.65	1.20	0.40	0.21	2.87
	D mean	0.21	0.61	1.20	1.87	2.53	2.57	2.74	2.19	1.39	0.72	0.29	0.16	1.38
10 Deg South	Gm	0.39	1.30	2.77	4.22	5.47	6.88	5.93	4.95	2.98	1.45	0.52	0.31	3.11
	Dm	0.22	0.62	1.22	1.90	2.57	2.61	2.78	2.25	1.43	0.74	0.30	0.18	1.41
30 Deg South	Gm	0.56	1.73	3.35	4.58	5.58	6.91	5.99	5.30	3.43	1.84	0.72	0.47	3.38
	Dm	0.21	0.61	1.21	1.89	2.53	2.61	2.75	2.28	1.44	0.75	0.31	0.20	1.40
Latitude South	Gm	0.70	2.06	3.61	4.40	4.95	5.98	5.23	4.98	3.52	2.10	0.88	0.63	3.26
tilt 59 22' N	Dm	0.19	0.55	1.09	1.70	2.26	2.42	2.47	2.10	1.31	0.69	0.29	0.20	1.28
60 Deg South	Gm	0.70	2.06	3.60	4.38	4.92	5.95	5.21	4.97	3.51	2.10	0.89	0.63	3.25
	Dm	0.19	0.54	1.09	1.69	2.25	2.41	2.46	2.10	1.31	0.69	0.29	0.20	1.27
Vertical South	Gm	0.70	1.95	3.12	3.35	3.47	4.03	3.61	3.70	2.89	1.92	0.87	0.65	2.52
	Dm	0.15	0.44	0.90	1.39	1.83	2.06	2.00	1.74	1.08	0.56	0.24	0.18	1.05
Vertical SE/SW	Gm	0.54	1.52	2.74	3.32	3.66	4.38	3.82	3.70	2.62	1.58	0.67	0.49	2.42
	Dm	0.15	0.44	0.90	1.37	1.81	2.05	1.98	1.71	1.06	0.55	0.23	0.16	1.04
Vertical E/W	Gm	0.24	0.82	1.92	2.80	3.48	4.44	3.74	3.20	1.95	0.97	0.35	0.21	2.02
	Dm	0.15	0.42	0.86	1.32	1.77	2.02	1.96	1.64	0.99	0.51	0.21	0.13	1.00
Vertical NE/NW	Gm	0.13	0.41	1.09	1.88	2.68	3.52	2.97	2.23	1.20	0.53	0.19	0.10	1.42
	Dm	0.13	0.39	0.81	1.26	1.70	1.95	1.88	1.51	0.92	0.46	0.18	0.10	0.94
Vertical North	Gm	0.13	0.38	0.78	1.32	2.06	2.82	2.38	1.62	0.88	0.44	0.17	0.10	1.09
	Dm	0.13	0.38	0.78	1.23	1.67	1.91	1.85	1.45	0.88	0.44	0.17	0.10	0.92

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.35	1.26	1.16	1.09	1.04	1.03	1.03	1.07	1.13	1.21	1.30	1.48	1.08
30 Deg South	Gm/Gmean	1.93	1.68	1.41	1.18	1.06	1.03	1.04	1.15	1.29	1.53	1.80	2.24	1.18
Latitude South	Gm/Gmean	2.41	2.00	1.52	1.13	0.94	0.89	0.91	1.08	1.33	1.75	2.20	3.00	1.14
60 Deg South	Gm/Gmean	2.41	2.00	1.51	1.13	0.94	0.89	0.91	1.08	1.33	1.75	2.22	3.00	1.13
Vertical South	Gm/Gmean	2.41	1.89	1.31	0.86	0.66	0.60	0.63	0.80	1.09	1.60	2.17	3.10	0.88
Vertical SE/SW	Gm/Gmean	1.86	1.48	1.15	0.85	0.70	0.66	0.67	0.80	0.99	1.32	1.67	2.33	0.84
Vertical E/W	Gm/Gmean	0.83	0.80	0.81	0.72	0.66	0.67	0.65	0.69	0.74	0.81	0.88	1.00	0.70
Vertical NE/NW	Gm/Gmean	0.45	0.40	0.46	0.48	0.51	0.53	0.52	0.48	0.45	0.44	0.47	0.48	0.50
Vertical North	Gm/Gmean	0.45	0.37	0.33	0.34	0.39	0.42	0.41	0.35	0.33	0.37	0.43	0.48	0.38

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	0.93	2.26	4.69	6.76	8.15	8.81	8.33	6.82	4.87	2.75	1.14	0.55	4.68
	D clear	0.28	0.44	0.58	0.87	1.09	1.42	1.33	1.53	0.96	0.64	0.43	0.32	0.83
10 Deg South	Gc	1.62	3.19	5.63	7.43	8.50	9.05	8.59	7.31	5.62	3.59	1.73	0.86	5.27
	Dc	0.32	0.49	0.59	0.91	1.12	1.40	1.33	1.56	1.02	0.72	0.50	0.30	0.86
30 Deg South	Gc	2.88	4.79	7.13	8.27	8.79	9.21	8.79	7.92	6.76	4.99	2.77	1.55	6.16
	Dc	0.40	0.60	0.72	1.05	1.26	1.54	1.46	1.70	1.18	0.86	0.62	0.38	0.98
Latitude South	Gc	4.10	6.15	7.92	8.08	7.84	8.06	7.75	7.48	7.15	6.04	3.72	2.24	6.38
tilt 59 22' N	Dc	0.49	0.72	0.91	1.27	1.48	1.73	1.65	1.84	1.34	1.00	0.72	0.46	1.14
60 Deg South	Gc	4.12	6.17	7.91	8.05	7.80	8.02	7.71	7.45	7.14	6.05	3.73	2.25	6.36
	Dc	0.49	0.72	0.91	1.27	1.48	1.73	1.65	1.84	1.34	1.00	0.72	0.46	1.14
Vertical South	Gc	4.31	6.00	6.76	6.00	5.30	5.34	5.17	5.41	5.83	5.63	3.78	2.39	5.15
	Dc	0.50	0.76	1.04	1.44	1.65	1.86	1.77	1.83	1.38	1.02	0.70	0.46	1.20
Vertical SE/SW	Gc	3.15	4.67	6.00	6.28	5.93	5.99	5.79	5.59	5.50	4.67	2.81	1.74	4.84
	Dc	0.43	0.71	1.02	1.43	1.66	1.88	1.79	1.83	1.35	0.96	0.62	0.37	1.17
Vertical E/W	Gc	1.24	2.41	4.06	5.48	6.01	6.17	5.92	4.87	4.11	2.78	1.19	0.55	3.74
	Dc	0.33	0.60	0.96	1.39	1.65	1.87	1.79	1.75	1.23	0.81	0.46	0.24	1.09
Vertical NE/NW	Gc	0.30	0.78	1.81	3.36	4.34	4.55	4.35	3.11	2.15	1.12	0.40	0.19	2.21
	Dc	0.28	0.52	0.88	1.28	1.56	1.75	1.67	1.54	1.06	0.67	0.37	0.19	0.98
Vertical North	Gc	0.27	0.51	0.85	1.86	3.03	3.28	3.11	1.89	1.09	0.62	0.36	0.19	1.43
	Dc	0.27	0.51	0.85	1.21	1.48	1.66	1.58	1.40	0.98	0.62	0.36	0.19	0.93

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.74	1.41	1.20	1.10	1.04	1.03	1.03	1.07	1.15	1.30	1.52	1.56	1.13
30 Deg South	Gc/Gmax	3.10	2.12	1.52	1.22	1.08	1.04	1.05	1.16	1.39	1.82	2.43	2.82	1.32
Latitude South	Gc/Gmax	4.41	2.72	1.69	1.20	0.96	0.92	0.93	1.10	1.47	2.20	3.26	4.07	1.36
60 Deg South	Gc/Gmax	4.43	2.73	1.69	1.19	0.96	0.91	0.93	1.09	1.47	2.20	3.27	4.09	1.36
Vertical South	Gc/Gmax	4.63	2.65	1.44	0.89	0.65	0.61	0.62	0.79	1.20	2.05	3.32	4.34	1.10
Vertical SE/SW	Gc/Gmax	3.39	2.07	1.28	0.93	0.73	0.68	0.69	0.82	1.13	1.70	2.46	3.16	1.03
Vertical E/W	Gc/Gmax	1.33	1.07	0.87	0.81	0.74	0.70	0.71	0.71	0.84	1.01	1.04	1.00	0.80
Vertical NE/NW	Gc/Gmax	0.32	0.34	0.39	0.50	0.53	0.52	0.52	0.46	0.44	0.41	0.35	0.34	0.47
Vertical North	Gc/Gmax	0.29	0.23	0.18	0.28	0.37	0.37	0.37	0.28	0.22	0.22	0.32	0.34	0.31

Sunshine data

Mean sunshine	Hours	1.1	2.5	4.4	6.1	7.6	10.8	8.7	8.2	5.2	3.1	1.5	1.4	5.1
Max. sunshine	Hours	5.8	8.4	10.6	13.6	15.3	16.3	15.5	14.4	11.7	9.3	6.9	5.5	11.1

SWEDEN Site No. 3

STOCKHOLM

Computer file SWEDE003.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 59 21' N

Longitude 17 57' E

Height 12 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.32	0.95	2.24	3.68	5.29	6.58	5.59	4.52	2.70	1.24	0.46	0.23	2.83
	D mean	0.23	0.57	1.23	1.94	2.55	2.57	2.79	2.18	1.63	0.82	0.32	0.16	1.42
10 Deg South	Gm	0.43	1.19	2.59	3.99	5.54	6.80	5.82	4.87	3.00	1.46	0.61	0.35	3.06
	Dm	0.24	0.59	1.26	1.99	2.60	2.62	2.85	2.24	1.67	0.85	0.34	0.17	1.46
30 Deg South	Gm	0.60	1.59	3.10	4.34	5.71	6.87	5.91	5.22	3.38	1.79	0.87	0.57	3.34
	Dm	0.24	0.59	1.28	1.99	2.60	2.64	2.84	2.28	1.68	0.86	0.35	0.18	1.47
Latitude South	Gm	0.76	1.89	3.32	4.16	5.12	5.98	5.20	4.94	3.40	1.98	1.09	0.77	3.22
tilt 59 21' N	Dm	0.21	0.54	1.17	1.81	2.37	2.46	2.57	2.13	1.52	0.78	0.32	0.17	1.34
60 Deg South	Gm	0.76	1.89	3.32	4.15	5.10	5.95	5.18	4.92	3.40	1.99	1.09	0.78	3.22
	Dm	0.21	0.54	1.17	1.80	2.36	2.45	2.56	2.12	1.51	0.78	0.32	0.17	1.34
Vertical South	Gm	0.75	1.79	2.86	3.19	3.62	4.05	3.61	3.68	2.77	1.78	1.08	0.81	2.50
	Dm	0.17	0.44	0.97	1.47	1.94	2.09	2.07	1.76	1.22	0.63	0.27	0.14	1.10
Vertical SE/SW	Gm	0.58	1.40	2.51	3.08	3.74	4.35	3.76	3.64	2.48	1.47	0.83	0.60	2.37
	Dm	0.16	0.43	0.95	1.44	1.91	2.09	2.06	1.73	1.19	0.62	0.26	0.13	1.08
Vertical E/W	Gm	0.26	0.75	1.75	2.55	3.45	4.28	3.57	3.11	1.85	0.92	0.42	0.23	1.93
	Dm	0.16	0.40	0.88	1.37	1.85	2.05	2.01	1.64	1.10	0.56	0.23	0.12	1.03
Vertical NE/NW	Gm	0.15	0.38	1.02	1.74	2.58	3.33	2.78	2.15	1.20	0.55	0.21	0.11	1.36
	Dm	0.15	0.37	0.81	1.27	1.74	1.96	1.90	1.50	1.00	0.50	0.20	0.11	0.96
Vertical North	Gm	0.14	0.35	0.77	1.28	1.97	2.60	2.21	1.56	0.96	0.48	0.19	0.10	1.05
	Dm	0.14	0.35	0.77	1.22	1.67	1.90	1.83	1.42	0.96	0.48	0.19	0.10	0.92

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.34	1.25	1.16	1.08	1.05	1.03	1.04	1.08	1.11	1.18	1.33	1.52	1.08
30 Deg South	Gm/Gmean	1.88	1.67	1.38	1.18	1.08	1.04	1.06	1.15	1.25	1.44	1.89	2.48	1.18
Latitude South	Gm/Gmean	2.38	1.99	1.48	1.13	0.97	0.91	0.93	1.09	1.26	1.60	2.37	3.35	1.14
60 Deg South	Gm/Gmean	2.38	1.99	1.48	1.13	0.96	0.90	0.93	1.09	1.26	1.61	2.37	3.39	1.14
Vertical South	Gm/Gmean	2.34	1.88	1.28	0.87	0.68	0.62	0.65	0.81	1.03	1.43	2.35	3.52	0.88
Vertical SE/SW	Gm/Gmean	1.81	1.47	1.12	0.84	0.71	0.66	0.67	0.81	0.92	1.18	1.80	2.61	0.84
Vertical E/W	Gm/Gmean	0.81	0.79	0.78	0.69	0.65	0.65	0.64	0.69	0.69	0.74	0.91	1.00	0.68
Vertical NE/NW	Gm/Gmean	0.47	0.40	0.46	0.47	0.49	0.51	0.50	0.48	0.44	0.44	0.46	0.48	0.48
Vertical North	Gm/Gmean	0.44	0.37	0.34	0.35	0.37	0.40	0.40	0.34	0.36	0.39	0.41	0.44	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	0.83	2.24	4.14	6.48	7.91	8.68	8.26	6.97	4.63	2.75	1.21	0.53	4.56
	D clear	0.28	0.54	0.78	1.24	1.50	1.66	1.72	1.71	1.29	0.91	0.45	0.19	1.03
10 Deg South	Gc	1.44	3.10	4.97	7.09	8.27	8.95	8.56	7.43	5.30	3.40	1.82	1.08	5.13
	Dc	0.34	0.59	0.85	1.27	1.53	1.65	1.72	1.70	1.35	0.90	0.50	0.22	1.05
30 Deg South	Gc	2.52	4.62	6.25	7.89	8.58	9.14	8.79	8.05	6.35	4.66	2.92	2.08	5.99
	Dc	0.44	0.72	1.00	1.43	1.66	1.78	1.85	1.85	1.53	1.08	0.62	0.29	1.19
Latitude South	Gc	3.56	5.90	6.90	7.72	7.69	8.02	7.77	7.61	6.69	5.58	3.94	3.10	6.20
tilt 59 21' N	Dc	0.52	0.84	1.16	1.60	1.81	1.93	1.97	1.98	1.68	1.23	0.72	0.35	1.32
60 Deg South	Gc	3.57	5.91	6.90	7.70	7.65	7.98	7.73	7.58	6.68	5.59	3.95	3.11	6.19
	Dc	0.52	0.84	1.16	1.60	1.81	1.93	1.97	1.98	1.68	1.23	0.72	0.35	1.32
Vertical South	Gc	3.73	5.74	5.89	5.77	5.24	5.34	5.23	5.52	5.48	5.18	4.01	3.34	5.03
	Dc	0.52	0.86	1.20	1.65	1.86	1.98	1.98	1.93	1.62	1.21	0.71	0.35	1.32
Vertical SE/SW	Gc	2.74	4.47	5.20	5.89	5.72	5.90	5.72	5.65	5.01	4.23	2.98	2.41	4.66
	Dc	0.45	0.80	1.16	1.64	1.88	2.01	2.01	1.93	1.57	1.13	0.62	0.30	1.29
Vertical E/W	Gc	1.10	2.32	3.51	5.02	5.63	5.90	5.62	4.88	3.62	2.46	1.25	0.73	3.51
	Dc	0.34	0.65	1.03	1.57	1.86	2.00	2.00	1.83	1.39	0.93	0.46	0.21	1.19
Vertical NE/NW	Gc	0.30	0.78	1.62	3.08	4.02	4.29	4.04	3.10	1.89	1.02	0.41	0.18	2.07
	Dc	0.28	0.55	0.88	1.39	1.71	1.85	1.84	1.60	1.15	0.73	0.38	0.18	1.05
Vertical North	Gc	0.27	0.52	0.83	1.77	2.81	3.02	2.82	1.89	1.08	0.66	0.37	0.18	1.36
	Dc	0.27	0.52	0.83	1.28	1.60	1.74	1.71	1.45	1.03	0.66	0.37	0.18	0.97

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.74	1.38	1.20	1.09	1.05	1.03	1.04	1.07	1.14	1.24	1.50	2.04	1.13
30 Deg South	Gc/Gmax	3.04	2.06	1.51	1.22	1.09	1.05	1.06	1.15	1.37	1.70	2.41	3.92	1.31
Latitude South	Gc/Gmax	4.29	2.63	1.67	1.19	0.97	0.92	0.94	1.09	1.45	2.03	3.26	5.85	1.36
60 Deg South	Gc/Gmax	4.30	2.64	1.67	1.19	0.97	0.92	0.94	1.09	1.44	2.03	3.26	5.87	1.36
Vertical South	Gc/Gmax	4.49	2.56	1.42	0.89	0.66	0.62	0.63	0.79	1.18	1.88	3.31	6.30	1.10
Vertical SE/SW	Gc/Gmax	3.30	2.00	1.26	0.91	0.72	0.68	0.69	0.81	1.08	1.54	2.46	4.55	1.02
Vertical E/W	Gc/Gmax	1.33	1.04	0.85	0.77	0.71	0.68	0.68	0.70	0.78	0.89	1.03	1.38	0.77
Vertical NE/NW	Gc/Gmax	0.36	0.35	0.39	0.47	0.51	0.49	0.49	0.44	0.41	0.37	0.34	0.34	0.45
Vertical North	Gc/Gmax	0.32	0.23	0.20	0.27	0.35	0.35	0.34	0.27	0.23	0.24	0.31	0.34	0.30

Sunshine data

Mean sunshine	Hours	1.1	2.6	4.5	6.2	8.8	11.4	9.4	8.5	4.7	2.8	1.7	1.1	5.2
Max. sunshine	Hours	5.7	8.5	10.6	13.7	15.6	16.9	16.4	14.8	11.8	8.5	7.1	4.8	11.2

SWEDEN Site No. 5

TORSLANDA

Computer file SWED005.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 57 43' N

Longitude 11 47' E

Height 5 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.33	0.99	2.41	3.87	5.13	6.41	5.67	4.76	2.87	1.35	0.48	0.26	2.89
	D mean	0.25	0.64	1.21	1.95	2.52	2.57	2.61	2.22	1.48	0.78	0.35	0.19	1.40
10 Deg South	Gm	0.42	1.21	2.79	4.19	5.34	6.60	5.88	5.11	3.22	1.62	0.60	0.37	3.12
	Dm	0.26	0.65	1.25	2.00	2.56	2.61	2.66	2.29	1.53	0.80	0.36	0.20	1.44
30 Deg South	Gm	0.57	1.55	3.35	4.56	5.43	6.60	5.93	5.46	3.70	2.05	0.81	0.55	3.39
	Dm	0.26	0.65	1.26	2.01	2.53	2.61	2.64	2.33	1.55	0.81	0.37	0.21	1.44
Latitude South	Gm	0.69	1.78	3.59	4.39	4.85	5.75	5.23	5.17	3.78	2.31	0.97	0.71	3.28
tilt 57 43' N	Dm	0.24	0.59	1.17	1.85	2.29	2.42	2.41	2.19	1.45	0.75	0.34	0.20	1.33
60 Deg South	Gm	0.70	1.79	3.58	4.35	4.77	5.63	5.14	5.11	3.76	2.32	0.97	0.71	3.24
	Dm	0.23	0.59	1.16	1.83	2.26	2.40	2.38	2.17	1.43	0.75	0.34	0.20	1.32
Vertical South	Gm	0.68	1.66	3.07	3.31	3.33	3.78	3.52	3.77	3.07	2.10	0.93	0.72	2.50
	Dm	0.19	0.48	0.97	1.51	1.83	2.02	1.96	1.81	1.19	0.62	0.28	0.17	1.09
Vertical SE/SW	Gm	0.53	1.34	2.71	3.22	3.51	4.11	3.75	3.75	2.78	1.73	0.73	0.55	2.40
	Dm	0.18	0.47	0.96	1.48	1.81	2.01	1.94	1.78	1.16	0.61	0.27	0.15	1.07
Vertical E/W	Gm	0.27	0.80	1.91	2.67	3.31	4.15	3.67	3.22	2.06	1.07	0.39	0.23	1.99
	Dm	0.17	0.44	0.89	1.40	1.77	2.00	1.92	1.69	1.08	0.56	0.24	0.14	1.03
Vertical NE/NW	Gm	0.15	0.44	1.09	1.81	2.55	3.29	2.88	2.23	1.26	0.58	0.22	0.12	1.39
	Dm	0.15	0.40	0.82	1.30	1.69	1.92	1.83	1.54	0.98	0.51	0.22	0.12	0.96
Vertical North	Gm	0.15	0.38	0.78	1.30	1.96	2.60	2.28	1.61	0.94	0.48	0.21	0.12	1.07
	Dm	0.15	0.38	0.78	1.25	1.65	1.88	1.79	1.47	0.94	0.48	0.21	0.12	0.93

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.27	1.22	1.16	1.08	1.04	1.03	1.04	1.07	1.12	1.20	1.25	1.42	1.08
30 Deg South	Gm/Gmean	1.73	1.57	1.39	1.18	1.06	1.03	1.05	1.15	1.29	1.52	1.69	2.12	1.17
Latitude South	Gm/Gmean	2.09	1.80	1.49	1.13	0.94	0.90	0.92	1.09	1.32	1.71	2.02	2.73	1.13
60 Deg South	Gm/Gmean	2.12	1.81	1.49	1.12	0.93	0.88	0.91	1.07	1.31	1.72	2.02	2.73	1.12
Vertical South	Gm/Gmean	2.06	1.68	1.27	0.86	0.65	0.59	0.62	0.79	1.07	1.56	1.94	2.77	0.87
Vertical SE/SW	Gm/Gmean	1.61	1.35	1.12	0.83	0.68	0.64	0.66	0.79	0.97	1.28	1.52	2.12	0.83
Vertical E/W	Gm/Gmean	0.82	0.81	0.79	0.69	0.64	0.65	0.65	0.68	0.72	0.79	0.81	0.88	0.69
Vertical NE/NW	Gm/Gmean	0.46	0.44	0.45	0.47	0.50	0.51	0.51	0.47	0.44	0.43	0.46	0.46	0.48
Vertical North	Gm/Gmean	0.46	0.38	0.32	0.34	0.38	0.41	0.40	0.34	0.33	0.36	0.44	0.46	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.01	2.33	4.44	6.53	8.05	8.78	8.42	6.98	4.94	3.03	1.28	0.65	4.72
	D clear	0.40	0.60	0.69	1.22	1.24	1.51	1.41	1.74	1.07	0.68	0.49	0.29	0.95
10 Deg South	Gc	1.57	3.15	5.31	7.14	8.39	8.99	8.66	7.37	5.67	3.88	1.86	1.10	5.27
	Dc	0.45	0.65	0.76	1.27	1.27	1.47	1.40	1.69	1.15	0.75	0.56	0.32	0.98
30 Deg South	Gc	2.60	4.57	6.61	7.88	8.62	9.10	8.81	7.92	6.75	5.31	2.89	1.94	6.09
	Dc	0.56	0.79	0.90	1.42	1.40	1.60	1.52	1.84	1.32	0.90	0.69	0.41	1.11
Latitude South	Gc	3.53	5.69	7.23	7.68	7.71	7.99	7.78	7.48	7.07	6.32	3.78	2.75	6.25
tilt 57 43' N	Dc	0.66	0.92	1.06	1.58	1.58	1.76	1.69	1.95	1.47	1.04	0.79	0.48	1.25
60 Deg South	Gc	3.58	5.73	7.21	7.59	7.57	7.84	7.64	7.38	7.03	6.34	3.81	2.79	6.21
	Dc	0.66	0.92	1.07	1.59	1.59	1.78	1.70	1.96	1.48	1.05	0.79	0.48	1.26
Vertical South	Gc	3.67	5.48	6.07	5.60	5.07	5.13	5.03	5.29	5.68	5.83	3.81	2.93	4.96
	Dc	0.65	0.93	1.15	1.64	1.71	1.88	1.80	1.91	1.48	1.07	0.77	0.47	1.29
Vertical SE/SW	Gc	2.72	4.30	5.41	5.77	5.70	5.81	5.69	5.46	5.33	4.85	2.85	2.13	4.67
	Dc	0.56	0.86	1.12	1.64	1.72	1.90	1.83	1.91	1.45	1.01	0.68	0.40	1.26
Vertical E/W	Gc	1.14	2.27	3.71	4.97	5.79	5.99	5.86	4.77	3.99	2.92	1.24	0.69	3.62
	Dc	0.41	0.70	1.01	1.56	1.72	1.91	1.83	1.83	1.31	0.86	0.50	0.27	1.16
Vertical NE/NW	Gc	0.36	0.80	1.70	3.06	4.18	4.42	4.31	3.05	2.11	1.19	0.43	0.23	2.16
	Dc	0.34	0.58	0.89	1.39	1.61	1.79	1.71	1.60	1.12	0.71	0.41	0.23	1.03
Vertical North	Gc	0.33	0.55	0.85	1.76	2.90	3.15	3.05	1.86	1.12	0.66	0.39	0.23	1.41
	Dc	0.33	0.55	0.85	1.28	1.52	1.68	1.61	1.45	1.02	0.66	0.39	0.23	0.97

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.55	1.35	1.20	1.09	1.04	1.02	1.03	1.06	1.15	1.28	1.45	1.69	1.12
30 Deg South	Gc/Gmax	2.57	1.96	1.49	1.21	1.07	1.04	1.05	1.13	1.37	1.75	2.26	2.98	1.29
Latitude South	Gc/Gmax	3.49	2.44	1.63	1.18	0.96	0.91	0.92	1.07	1.43	2.09	2.95	4.23	1.32
60 Deg South	Gc/Gmax	3.55	2.46	1.62	1.16	0.94	0.89	0.91	1.06	1.42	2.09	2.98	4.29	1.32
Vertical South	Gc/Gmax	3.63	2.35	1.37	0.86	0.63	0.58	0.60	0.76	1.15	1.92	2.98	4.51	1.05
Vertical SE/SW	Gc/Gmax	2.69	1.85	1.22	0.88	0.71	0.66	0.68	0.78	1.08	1.60	2.23	3.28	0.99
Vertical E/W	Gc/Gmax	1.13	0.97	0.84	0.76	0.72	0.68	0.70	0.68	0.81	0.96	0.97	1.06	0.77
Vertical NE/NW	Gc/Gmax	0.36	0.34	0.38	0.47	0.52	0.50	0.51	0.44	0.43	0.39	0.34	0.35	0.46
Vertical North	Gc/Gmax	0.33	0.24	0.19	0.27	0.36	0.36	0.36	0.27	0.23	0.22	0.31	0.35	0.30

Sunshine data

Mean sunshine	Hours	1.1	2.3	4.9	6.7	7.7	10.4	9.1	8.7	5.7	3.4	1.6	1.3	5.3
Max. sunshine	Hours	5.9	8.4	10.9	13.6	15.0	15.8	15.3	13.9	12.0	9.5	7.0	5.7	11.1

SWEDEN Site No. 6

VISBY

Computer file SWEDE006.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 57 40' N

Longitude 18 21' E

Height 28 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.39	1.02	2.55	4.00	5.49	6.87	5.93	4.73	2.90	1.41	0.52	0.29	3.02
	D mean	0.30	0.66	1.28	1.94	2.60	2.59	2.69	2.26	1.50	0.83	0.37	0.21	1.44
10 Deg South	Gm	0.49	1.23	2.95	4.32	5.73	7.10	6.16	5.08	3.25	1.69	0.66	0.39	3.26
	Dm	0.31	0.67	1.31	1.97	2.64	2.64	2.74	2.33	1.54	0.85	0.38	0.22	1.47
30 Deg South	Gm	0.65	1.57	3.51	4.67	5.86	7.14	6.24	5.42	3.72	2.12	0.88	0.57	3.54
	Dm	0.30	0.66	1.30	1.96	2.63	2.66	2.74	2.37	1.56	0.86	0.38	0.22	1.47
Latitude South	Gm	0.78	1.80	3.75	4.47	5.25	6.24	5.53	5.13	3.79	2.38	1.05	0.72	3.42
tilt 57 40' N	Dm	0.27	0.59	1.19	1.78	2.39	2.50	2.52	2.23	1.44	0.80	0.34	0.19	1.36
60 Deg South	Gm	0.78	1.80	3.74	4.42	5.16	6.12	5.43	5.07	3.76	2.38	1.06	0.72	3.38
	Dm	0.26	0.58	1.18	1.76	2.36	2.48	2.49	2.21	1.43	0.79	0.34	0.19	1.34
Vertical South	Gm	0.75	1.66	3.19	3.34	3.61	4.10	3.73	3.74	3.07	2.15	1.01	0.72	2.59
	Dm	0.21	0.47	0.97	1.44	1.93	2.12	2.05	1.83	1.18	0.66	0.27	0.15	1.11
Vertical SE/SW	Gm	0.59	1.35	2.82	3.33	3.79	4.44	3.94	3.71	2.78	1.77	0.79	0.55	2.49
	Dm	0.20	0.46	0.96	1.42	1.91	2.12	2.04	1.80	1.15	0.64	0.27	0.15	1.10
Vertical E/W	Gm	0.31	0.80	2.00	2.82	3.55	4.41	3.80	3.17	2.08	1.11	0.42	0.24	2.07
	Dm	0.20	0.44	0.92	1.37	1.86	2.09	2.01	1.70	1.08	0.59	0.25	0.15	1.06
Vertical NE/NW	Gm	0.18	0.45	1.15	1.92	2.70	3.42	2.94	2.20	1.28	0.61	0.23	0.13	1.44
	Dm	0.18	0.41	0.86	1.30	1.77	2.00	1.90	1.55	0.99	0.53	0.23	0.13	0.99
Vertical North	Gm	0.17	0.39	0.83	1.35	2.05	2.64	2.29	1.60	0.95	0.51	0.22	0.13	1.10
	Dm	0.17	0.39	0.83	1.27	1.72	1.94	1.84	1.47	0.95	0.51	0.22	0.13	0.96

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.26	1.21	1.16	1.08	1.04	1.03	1.04	1.07	1.12	1.20	1.27	1.35	1.08
30 Deg South	Gm/Gmean	1.67	1.54	1.38	1.17	1.07	1.04	1.05	1.15	1.28	1.50	1.69	1.97	1.17
Latitude South	Gm/Gmean	2.00	1.76	1.47	1.12	0.96	0.91	0.93	1.09	1.31	1.69	2.02	2.48	1.13
60 Deg South	Gm/Gmean	2.00	1.76	1.47	1.11	0.94	0.89	0.92	1.07	1.30	1.69	2.04	2.48	1.12
Vertical South	Gm/Gmean	1.92	1.63	1.25	0.83	0.66	0.60	0.63	0.79	1.06	1.52	1.94	2.48	0.86
Vertical SE/SW	Gm/Gmean	1.51	1.32	1.11	0.83	0.69	0.65	0.66	0.78	0.96	1.25	1.52	1.90	0.82
Vertical E/W	Gm/Gmean	0.80	0.78	0.78	0.70	0.65	0.64	0.64	0.67	0.72	0.79	0.81	0.83	0.69
Vertical NE/NW	Gm/Gmean	0.46	0.44	0.45	0.48	0.49	0.50	0.50	0.47	0.44	0.43	0.44	0.45	0.48
Vertical North	Gm/Gmean	0.44	0.38	0.32	0.34	0.37	0.38	0.39	0.34	0.33	0.36	0.42	0.45	0.36

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes.

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	0.99	2.31	4.44	6.58	8.06	8.62	8.27	6.90	5.01	2.92	1.35	0.68	4.69
	D clear	0.34	0.51	0.61	0.92	1.29	1.63	1.51	1.74	1.08	0.71	0.42	0.19	0.92
10 Deg South	Gc	1.62	3.17	5.29	7.22	8.41	8.88	8.58	7.36	5.68	3.74	2.02	1.31	5.28
	Dc	0.41	0.58	0.66	0.98	1.34	1.62	1.55	1.76	1.10	0.78	0.47	0.23	0.96
30 Deg South	Gc	2.71	4.62	6.61	7.95	8.66	9.01	8.74	7.91	6.76	5.09	3.21	2.43	6.15
	Dc	0.51	0.71	0.79	1.12	1.47	1.75	1.67	1.90	1.26	0.94	0.58	0.29	1.08
Latitude South	Gc	3.70	5.78	7.23	7.73	7.75	7.92	7.73	7.46	7.09	6.04	4.25	3.51	6.35
tilt 57 40' N	Dc	0.60	0.83	0.95	1.31	1.64	1.88	1.81	2.01	1.41	1.08	0.68	0.35	1.21
60 Deg South	Gc	3.75	5.82	7.21	7.64	7.61	7.76	7.58	7.36	7.05	6.07	4.30	3.57	6.31
	Dc	0.60	0.83	0.96	1.32	1.65	1.89	1.82	2.01	1.42	1.08	0.68	0.35	1.22
Vertical South	Gc	3.85	5.57	6.08	5.60	5.09	5.09	5.01	5.28	5.69	5.57	4.32	3.79	5.07
	Dc	0.60	0.85	1.07	1.45	1.75	1.94	1.87	1.94	1.45	1.09	0.68	0.36	1.26
Vertical SE/SW	Gc	2.84	4.36	5.43	5.90	5.70	5.71	5.61	5.43	5.36	4.64	3.21	2.73	4.74
	Dc	0.52	0.79	1.04	1.45	1.77	1.97	1.90	1.94	1.41	1.03	0.60	0.31	1.23
Vertical E/W	Gc	1.18	2.30	3.73	5.19	5.75	5.77	5.69	4.71	4.03	2.80	1.40	0.84	3.62
	Dc	0.39	0.66	0.96	1.40	1.77	1.98	1.90	1.85	1.29	0.87	0.46	0.23	1.15
Vertical NE/NW	Gc	0.35	0.79	1.71	3.21	4.15	4.21	4.16	3.01	2.13	1.15	0.43	0.21	2.13
	Dc	0.32	0.55	0.87	1.28	1.64	1.84	1.76	1.61	1.10	0.71	0.39	0.21	1.03
Vertical North	Gc	0.31	0.53	0.84	1.78	2.88	2.94	2.93	1.84	1.12	0.65	0.38	0.21	1.37
	Dc	0.31	0.53	0.84	1.20	1.55	1.72	1.65	1.45	1.01	0.65	0.38	0.21	0.96

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.64	1.37	1.19	1.10	1.04	1.03	1.04	1.07	1.13	1.28	1.50	1.93	1.13
30 Deg South	Gc/Gmax	2.74	2.00	1.49	1.21	1.07	1.04	1.06	1.15	1.35	1.74	2.38	3.57	1.31
Latitude South	Gc/Gmax	3.74	2.50	1.63	1.17	0.96	0.92	0.94	1.08	1.41	2.07	3.15	5.16	1.35
60 Deg South	Gc/Gmax	3.79	2.52	1.62	1.16	0.94	0.90	0.92	1.07	1.41	2.08	3.18	5.25	1.35
Vertical South	Gc/Gmax	3.89	2.41	1.37	0.85	0.63	0.59	0.61	0.76	1.14	1.91	3.20	5.57	1.08
Vertical SE/SW	Gc/Gmax	2.87	1.89	1.22	0.90	0.71	0.66	0.68	0.79	1.07	1.59	2.38	4.01	1.01
Vertical E/W	Gc/Gmax	1.19	1.00	0.84	0.79	0.71	0.67	0.69	0.68	0.80	0.96	1.04	1.24	0.77
Vertical NE/NW	Gc/Gmax	0.35	0.34	0.38	0.49	0.51	0.49	0.50	0.44	0.43	0.39	0.32	0.31	0.45
Vertical North	Gc/Gmax	0.31	0.23	0.19	0.27	0.36	0.34	0.35	0.27	0.22	0.22	0.28	0.31	0.29

Sunshine data

Mean sunshine	Hours	1.0	2.1	4.6	6.2	8.4	11.5	9.8	8.7	5.5	3.4	1.5	1.0	5.3
Max. sunshine	Hours	6.2	8.4	10.2	13.2	15.4	16.4	16.0	14.6	11.2	9.3	6.8	5.6	11.1

SWEDEN Site No. 9

SVALOEV

Computer file SWEDE009.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 55 55' N

Longitude 13 7' E

Height 72 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.39	0.98	2.30	3.80	4.97	6.06	5.22	4.47	2.77	1.42	0.59	0.34	2.78
	D mean	0.32	0.63	1.29	2.09	2.60	2.82	2.76	2.32	1.56	0.85	0.43	0.26	1.50
10 Deg South	Gm	0.45	1.16	2.59	4.07	5.16	6.21	5.38	4.76	3.06	1.66	0.72	0.42	2.98
	Dm	0.32	0.65	1.32	2.13	2.64	2.86	2.80	2.39	1.60	0.87	0.44	0.27	1.53
30 Deg South	Gm	0.55	1.45	2.99	4.35	5.22	6.14	5.39	5.02	3.42	2.03	0.92	0.56	3.18
	Dm	0.31	0.63	1.30	2.12	2.60	2.82	2.76	2.41	1.60	0.86	0.44	0.26	1.51
Latitude South	Gm	0.60	1.62	3.10	4.14	4.68	5.36	4.77	4.72	3.44	2.22	1.05	0.65	3.04
tilt 55 55' N	Dm	0.27	0.57	1.17	1.94	2.36	2.57	2.50	2.24	1.48	0.79	0.40	0.23	1.38
60 Deg South	Gm	0.60	1.62	3.07	4.06	4.53	5.17	4.61	4.61	3.39	2.21	1.06	0.66	2.97
	Dm	0.26	0.56	1.15	1.90	2.30	2.51	2.44	2.20	1.45	0.77	0.39	0.22	1.35
Vertical South	Gm	0.55	1.47	2.56	3.04	3.14	3.43	3.14	3.36	2.72	1.96	0.99	0.63	2.25
	Dm	0.19	0.44	0.92	1.52	1.84	2.04	1.94	1.79	1.18	0.62	0.31	0.17	1.08
Vertical SE/SW	Gm	0.44	1.20	2.28	2.96	3.29	3.73	3.31	3.32	2.47	1.63	0.79	0.50	2.16
	Dm	0.19	0.44	0.92	1.49	1.82	2.03	1.93	1.75	1.15	0.62	0.30	0.17	1.07
Vertical E/W	Gm	0.26	0.73	1.66	2.50	3.12	3.78	3.18	2.85	1.88	1.04	0.44	0.25	1.81
	Dm	0.20	0.42	0.87	1.43	1.78	2.02	1.89	1.65	1.07	0.58	0.28	0.17	1.03
Vertical NE/NW	Gm	0.18	0.43	1.02	1.76	2.43	3.07	2.52	2.02	1.22	0.60	0.26	0.16	1.31
	Dm	0.18	0.39	0.82	1.33	1.70	1.96	1.80	1.51	0.99	0.54	0.26	0.16	0.97
Vertical North	Gm	0.18	0.38	0.79	1.33	1.90	2.48	2.01	1.50	0.95	0.51	0.25	0.15	1.04
	Dm	0.18	0.38	0.79	1.29	1.65	1.92	1.74	1.43	0.95	0.51	0.25	0.15	0.94

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.15	1.18	1.13	1.07	1.04	1.02	1.03	1.07	1.11	1.17	1.22	1.24	1.07
30 Deg South	Gm/Gmean	1.41	1.48	1.30	1.14	1.05	1.01	1.03	1.12	1.24	1.43	1.56	1.65	1.14
Latitude South	Gm/Gmean	1.54	1.65	1.35	1.09	0.94	0.88	0.91	1.06	1.24	1.56	1.78	1.91	1.09
60 Deg South	Gm/Gmean	1.54	1.65	1.34	1.07	0.91	0.85	0.88	1.03	1.22	1.56	1.80	1.94	1.07
Vertical South	Gm/Gmean	1.41	1.50	1.11	0.80	0.63	0.57	0.60	0.75	0.98	1.38	1.68	1.85	0.81
Vertical SE/SW	Gm/Gmean	1.13	1.22	0.99	0.78	0.66	0.62	0.63	0.74	0.89	1.15	1.34	1.47	0.78
Vertical E/W	Gm/Gmean	0.67	0.75	0.72	0.66	0.63	0.62	0.61	0.64	0.68	0.73	0.75	0.74	0.65
Vertical NE/NW	Gm/Gmean	0.46	0.44	0.44	0.46	0.49	0.51	0.48	0.45	0.44	0.42	0.44	0.47	0.47
Vertical North	Gm/Gmean	0.46	0.39	0.34	0.35	0.38	0.41	0.38	0.34	0.34	0.36	0.42	0.44	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.08	2.54	4.62	6.50	8.02	8.54	7.96	6.69	4.90	3.03	1.49	0.93	4.70
	D clear	0.34	0.51	0.67	1.28	1.38	1.56	1.58	1.78	1.15	0.65	0.55	0.30	0.98
10 Deg South	Gc	1.67	3.41	5.46	7.06	8.32	8.73	8.21	7.12	5.55	3.85	2.07	1.63	5.27
	Dc	0.38	0.57	0.72	1.32	1.40	1.52	1.59	1.81	1.21	0.73	0.58	0.29	1.01
30 Deg South	Gc	2.72	4.89	6.71	7.71	8.51	8.79	8.31	7.58	6.53	5.17	3.15	2.98	6.09
	Dc	0.47	0.69	0.86	1.47	1.53	1.64	1.70	1.94	1.38	0.87	0.71	0.38	1.14
Latitude South	Gc	3.63	5.98	7.26	7.49	7.64	7.75	7.38	7.15	6.78	6.04	4.02	4.22	6.28
tilt 55 55' N	Dc	0.55	0.81	1.01	1.61	1.67	1.77	1.81	2.03	1.51	1.00	0.82	0.46	1.26
60 Deg South	Gc	3.71	6.06	7.22	7.33	7.39	7.47	7.13	6.98	6.71	6.08	4.09	4.34	6.21
	Dc	0.56	0.82	1.03	1.63	1.69	1.78	1.82	2.03	1.52	1.01	0.82	0.47	1.27
Vertical South	Gc	3.77	5.73	5.99	5.33	4.86	4.79	4.63	4.93	5.34	5.51	4.04	4.59	4.95
	Dc	0.56	0.85	1.13	1.65	1.76	1.85	1.84	1.92	1.51	1.04	0.81	0.48	1.29
Vertical SE/SW	Gc	2.79	4.50	5.38	5.44	5.48	5.49	5.23	5.10	5.00	4.62	3.03	3.33	4.62
	Dc	0.50	0.80	1.10	1.64	1.78	1.89	1.87	1.93	1.48	0.99	0.71	0.41	1.26
Vertical E/W	Gc	1.18	2.41	3.75	4.55	5.38	5.70	5.29	4.46	3.74	2.84	1.34	1.23	3.49
	Dc	0.39	0.67	1.01	1.55	1.76	1.90	1.89	1.85	1.34	0.85	0.54	0.31	1.17
Vertical NE/NW	Gc	0.35	0.83	1.74	2.72	3.77	4.22	3.85	2.88	1.99	1.17	0.47	0.27	2.03
	Dc	0.33	0.57	0.90	1.36	1.62	1.78	1.75	1.61	1.13	0.70	0.44	0.26	1.04
Vertical North	Gc	0.32	0.55	0.86	1.48	2.41	2.98	2.64	1.77	1.09	0.65	0.42	0.25	1.29
	Dc	0.32	0.55	0.86	1.25	1.51	1.68	1.63	1.44	1.03	0.65	0.42	0.25	0.97

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.55	1.34	1.18	1.09	1.04	1.02	1.03	1.06	1.13	1.27	1.39	1.75	1.12
30 Deg South	Gc/Gmax	2.52	1.92	1.45	1.19	1.06	1.03	1.04	1.13	1.33	1.71	2.11	3.20	1.30
Latitude South	Gc/Gmax	3.36	2.35	1.57	1.15	0.95	0.91	0.93	1.07	1.38	1.99	2.70	4.54	1.34
60 Deg South	Gc/Gmax	3.43	2.39	1.56	1.13	0.92	0.88	0.90	1.04	1.37	2.01	2.74	4.67	1.32
Vertical South	Gc/Gmax	3.49	2.26	1.30	0.82	0.61	0.56	0.58	0.74	1.09	1.82	2.71	4.93	1.05
Vertical SE/SW	Gc/Gmax	2.58	1.77	1.16	0.84	0.68	0.64	0.66	0.76	1.02	1.52	2.03	3.58	0.98
Vertical E/W	Gc/Gmax	1.09	0.95	0.81	0.70	0.67	0.67	0.67	0.67	0.76	0.94	0.90	1.32	0.74
Vertical NE/NW	Gc/Gmax	0.32	0.33	0.38	0.42	0.47	0.49	0.48	0.43	0.41	0.39	0.31	0.29	0.43
Vertical North	Gc/Gmax	0.30	0.22	0.19	0.23	0.30	0.35	0.33	0.26	0.22	0.22	0.28	0.27	0.27

Sunshine data

Mean sunshine	Hours	0.7	2.0	3.7	5.8	7.3	8.9	8.0	7.8	4.9	2.9	1.5	0.9	4.5
Max. sunshine	Hours	5.1	8.3	10.4	13.0	14.7	15.1	14.7	13.8	11.1	8.9	6.6	5.1	10.6

SPAIN Site No. 261

LOGRONO

Computer file SPAIN261.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 42 27' N

Longitude 2 20' W

Height 353 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.74	2.66	3.59	4.69	5.63	6.48	6.81	5.99	4.42	3.25	1.91	1.47	4.06
	D mean	0.86	1.25	1.84	2.40	2.81	2.68	2.48	2.18	1.87	1.31	0.97	0.74	1.79
10 Deg South	Gm	2.13	3.08	3.91	4.91	5.75	6.54	6.93	6.26	4.78	3.73	2.28	1.81	4.35
	Dm	0.88	1.29	1.89	2.44	2.84	2.71	2.52	2.24	1.93	1.36	0.99	0.76	1.82
30 Deg South	Gm	2.75	3.70	4.28	5.02	5.60	6.22	6.69	6.36	5.16	4.40	2.85	2.34	4.62
	Dm	0.89	1.32	1.89	2.41	2.78	2.66	2.51	2.27	1.95	1.40	1.00	0.75	1.82
Latitude South	Gm	3.01	3.91	4.31	4.85	5.26	5.77	6.26	6.12	5.15	4.60	3.07	2.56	4.58
tilt 42 27' N	Dm	0.87	1.30	1.84	2.33	2.67	2.57	2.45	2.23	1.92	1.39	0.98	0.73	1.78
60 Deg South	Gm	3.16	3.95	4.10	4.36	4.52	4.81	5.28	5.41	4.83	4.59	3.18	2.70	4.24
	Dm	0.82	1.23	1.71	2.14	2.43	2.37	2.30	2.12	1.81	1.33	0.92	0.68	1.66
Vertical South	Gm	2.89	3.37	3.14	2.96	2.79	2.79	3.08	3.48	3.54	3.80	2.83	2.48	3.09
	Dm	0.69	1.04	1.40	1.71	1.92	1.94	1.94	1.81	1.52	1.15	0.77	0.56	1.37
Vertical SE/SW	Gm	2.30	2.81	2.89	3.06	3.14	3.38	3.66	3.78	3.39	3.20	2.29	1.93	2.99
	Dm	0.68	1.02	1.37	1.69	1.92	1.96	1.95	1.80	1.49	1.13	0.75	0.56	1.36
Vertical E/W	Gm	1.33	1.83	2.27	2.79	3.17	3.68	3.82	3.56	2.77	2.16	1.39	1.03	2.49
	Dm	0.64	0.93	1.29	1.65	1.91	1.99	1.96	1.76	1.41	1.03	0.70	0.54	1.32
Vertical NE/NW	Gm	0.65	0.99	1.47	2.06	2.55	3.04	2.99	2.53	1.78	1.15	0.72	0.51	1.71
	Dm	0.58	0.85	1.19	1.55	1.83	1.93	1.87	1.64	1.31	0.94	0.64	0.50	1.24
Vertical North	Gm	0.56	0.81	1.14	1.54	1.95	2.32	2.11	1.70	1.25	0.90	0.62	0.48	1.28
	Dm	0.56	0.81	1.14	1.50	1.79	1.90	1.81	1.57	1.25	0.90	0.62	0.48	1.20

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.22	1.16	1.09	1.05	1.02	1.01	1.02	1.04	1.08	1.15	1.19	1.23	1.07
30 Deg South	Gm/Gmean	1.58	1.39	1.19	1.07	1.00	0.96	0.98	1.06	1.17	1.35	1.49	1.59	1.14
Latitude South	Gm/Gmean	1.73	1.47	1.20	1.03	0.93	0.89	0.92	1.02	1.16	1.41	1.61	1.74	1.13
60 Deg South	Gm/Gmean	1.82	1.49	1.14	0.93	0.80	0.74	0.77	0.90	1.09	1.41	1.66	1.84	1.04
Vertical South	Gm/Gmean	1.66	1.27	0.88	0.63	0.50	0.43	0.45	0.58	0.80	1.17	1.48	1.69	0.76
Vertical SE/SW	Gm/Gmean	1.32	1.06	0.81	0.65	0.56	0.52	0.54	0.63	0.77	0.99	1.20	1.31	0.74
Vertical E/W	Gm/Gmean	0.76	0.69	0.63	0.60	0.56	0.57	0.56	0.59	0.63	0.67	0.73	0.70	0.61
Vertical NE/NW	Gm/Gmean	0.37	0.37	0.41	0.44	0.45	0.47	0.44	0.42	0.40	0.35	0.38	0.35	0.42
Vertical North	Gm/Gmean	0.32	0.31	0.32	0.33	0.35	0.36	0.31	0.28	0.28	0.28	0.32	0.33	0.31

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.70	3.92	5.85	7.51	8.36	8.50	8.20	7.39	6.01	4.62	3.05	2.33	5.71
	D clear	0.63	0.80	1.05	1.46	1.51	1.53	1.42	1.49	1.12	0.86	0.64	0.47	1.08
10 Deg South	Gc	3.56	4.76	6.46	7.77	8.42	8.49	8.25	7.63	6.57	5.40	3.91	3.24	6.21
	Dc	0.75	0.94	1.09	1.40	1.47	1.48	1.42	1.50	1.22	0.96	0.76	0.54	1.13
30 Deg South	Gc	4.92	5.96	7.25	7.96	8.09	8.04	7.84	7.62	7.13	6.50	5.25	4.78	6.78
	Dc	0.92	1.11	1.24	1.52	1.54	1.55	1.49	1.60	1.36	1.12	0.91	0.68	1.25
Latitude South	Gc	5.50	6.39	7.36	7.68	7.53	7.42	7.25	7.25	7.12	6.85	5.80	5.49	6.80
tilt 42 27' N	Dc	0.99	1.19	1.32	1.58	1.59	1.59	1.53	1.64	1.43	1.20	0.99	0.75	1.32
60 Deg South	Gc	5.93	6.55	7.00	6.78	6.25	6.07	5.96	6.26	6.61	6.85	6.16	6.07	6.37
	Dc	1.07	1.26	1.40	1.64	1.64	1.64	1.58	1.68	1.49	1.28	1.06	0.82	1.38
Vertical South	Gc	5.49	5.57	5.14	4.23	3.40	3.20	3.17	3.71	4.59	5.57	5.57	5.84	4.62
	Dc	1.07	1.27	1.45	1.67	1.68	1.68	1.63	1.66	1.50	1.31	1.08	0.86	1.41
Vertical SE/SW	Gc	4.25	4.52	4.93	4.81	4.43	4.34	4.28	4.42	4.60	4.87	4.38	4.41	4.52
	Dc	0.98	1.19	1.42	1.71	1.75	1.77	1.72	1.71	1.49	1.27	1.00	0.78	1.40
Vertical E/W	Gc	2.22	2.75	3.84	4.56	4.79	4.94	4.84	4.40	3.78	3.37	2.40	2.11	3.67
	Dc	0.79	1.01	1.32	1.68	1.79	1.85	1.79	1.71	1.40	1.13	0.82	0.63	1.33
Vertical NE/NW	Gc	0.79	1.13	2.05	2.98	3.52	3.80	3.70	3.02	2.16	1.55	0.88	0.63	2.19
	Dc	0.64	0.84	1.16	1.52	1.67	1.75	1.69	1.56	1.22	0.96	0.68	0.52	1.19
Vertical North	Gc	0.61	0.79	1.07	1.62	2.10	2.42	2.34	1.72	1.12	0.88	0.65	0.50	1.32
	Dc	0.61	0.79	1.07	1.39	1.55	1.63	1.58	1.42	1.12	0.88	0.65	0.50	1.10

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.32	1.21	1.10	1.03	1.01	1.00	1.01	1.03	1.09	1.17	1.28	1.39	1.09
30 Deg South	Gc/Gmax	1.82	1.52	1.24	1.06	0.97	0.95	0.96	1.03	1.19	1.41	1.72	2.05	1.19
Latitude South	Gc/Gmax	2.04	1.63	1.26	1.02	0.90	0.87	0.88	0.98	1.18	1.48	1.90	2.36	1.19
60 Deg South	Gc/Gmax	2.20	1.67	1.20	0.90	0.75	0.71	0.73	0.85	1.10	1.48	2.02	2.61	1.12
Vertical South	Gc/Gmax	2.03	1.42	0.88	0.56	0.41	0.38	0.39	0.50	0.76	1.21	1.83	2.51	0.81
Vertical SE/SW	Gc/Gmax	1.57	1.15	0.84	0.64	0.53	0.51	0.52	0.60	0.76	1.05	1.44	1.89	0.79
Vertical E/W	Gc/Gmax	0.82	0.70	0.66	0.61	0.57	0.58	0.59	0.60	0.63	0.73	0.79	0.91	0.64
Vertical NE/NW	Gc/Gmax	0.29	0.29	0.35	0.40	0.42	0.45	0.45	0.41	0.36	0.34	0.29	0.27	0.38
Vertical North	Gc/Gmax	0.23	0.20	0.18	0.22	0.25	0.28	0.28	0.23	0.19	0.19	0.21	0.22	0.23

Sunshine data

Mean sunshine	Hours	3.7	5.0	5.4	6.3	7.4	9.0	10.1	9.2	7.0	6.1	3.8	3.2	6.4
Max. sunshine	Hours	8.5	9.9	10.5	11.8	13.0	13.2	13.0	12.4	11.3	10.0	8.7	7.7	10.8

SPAIN Site No. 262

ZARAGOZA

Computer file SPAIN262.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 41 40' N

Longitude 1 1' W

Height 258 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.91	2.94	4.02	5.27	6.35	6.87	7.45	6.62	4.79	3.55	2.21	1.69	4.48
	D mean	0.87	1.23	1.80	2.29	2.60	2.51	2.20	1.92	1.77	1.25	0.96	0.74	1.68
10 Deg South	Gm	2.36	3.44	4.42	5.55	6.49	6.93	7.58	6.93	5.21	4.10	2.69	2.15	4.83
	Dm	0.90	1.28	1.86	2.34	2.64	2.54	2.24	1.98	1.83	1.31	0.99	0.77	1.72
30 Deg South	Gm	3.06	4.18	4.89	5.71	6.34	6.58	7.32	7.07	5.66	4.88	3.44	2.90	5.18
	Dm	0.92	1.32	1.89	2.35	2.62	2.51	2.27	2.05	1.88	1.37	1.02	0.78	1.75
Latitude South	Gm	3.34	4.42	4.95	5.56	6.00	6.12	6.87	6.84	5.67	5.12	3.72	3.21	5.16
tilt 41 40' N	Dm	0.91	1.32	1.86	2.30	2.55	2.45	2.25	2.06	1.87	1.37	1.01	0.77	1.73
60 Deg South	Gm	3.54	4.50	4.73	4.99	5.10	5.05	5.73	6.02	5.31	5.13	3.90	3.46	4.79
	Dm	0.86	1.27	1.76	2.14	2.37	2.28	2.16	2.01	1.79	1.34	0.97	0.73	1.64
Vertical South	Gm	3.23	3.85	3.63	3.36	3.06	2.85	3.23	3.80	3.88	4.24	3.50	3.24	3.49
	Dm	0.74	1.10	1.48	1.77	1.95	1.92	1.91	1.80	1.55	1.19	0.84	0.64	1.41
Vertical SE/SW	Gm	2.56	3.18	3.33	3.49	3.53	3.51	3.95	4.17	3.71	3.56	2.81	2.52	3.36
	Dm	0.72	1.07	1.44	1.75	1.95	1.94	1.94	1.80	1.52	1.16	0.82	0.63	1.40
Vertical E/W	Gm	1.47	2.04	2.57	3.16	3.59	3.81	4.17	3.92	3.00	2.36	1.66	1.38	2.77
	Dm	0.67	0.97	1.34	1.70	1.94	1.96	1.95	1.76	1.43	1.05	0.75	0.59	1.34
Vertical NE/NW	Gm	0.69	1.04	1.59	2.23	2.78	3.09	3.18	2.69	1.86	1.19	0.79	0.60	1.82
	Dm	0.61	0.87	1.23	1.58	1.85	1.89	1.84	1.62	1.31	0.95	0.68	0.54	1.25
Vertical North	Gm	0.58	0.83	1.17	1.57	1.99	2.24	2.13	1.68	1.25	0.91	0.65	0.52	1.30
	Dm	0.58	0.83	1.17	1.52	1.78	1.85	1.77	1.53	1.25	0.91	0.65	0.52	1.20

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.24	1.17	1.10	1.05	1.02	1.01	1.02	1.05	1.09	1.15	1.22	1.27	1.08
30 Deg South	Gm/Gmean	1.60	1.42	1.22	1.08	1.00	0.96	0.98	1.07	1.18	1.38	1.56	1.72	1.16
Latitude South	Gm/Gmean	1.75	1.50	1.23	1.05	0.94	0.89	0.92	1.03	1.18	1.44	1.68	1.90	1.15
60 Deg South	Gm/Gmean	1.85	1.53	1.18	0.95	0.80	0.74	0.77	0.91	1.11	1.45	1.76	2.05	1.07
Vertical South	Gm/Gmean	1.69	1.31	0.90	0.64	0.48	0.41	0.43	0.57	0.81	1.19	1.58	1.92	0.78
Vertical SE/SW	Gm/Gmean	1.34	1.08	0.83	0.66	0.56	0.51	0.53	0.63	0.77	1.00	1.27	1.49	0.75
Vertical E/W	Gm/Gmean	0.77	0.69	0.64	0.60	0.56	0.56	0.56	0.59	0.63	0.67	0.75	0.82	0.62
Vertical NE/NW	Gm/Gmean	0.36	0.35	0.40	0.42	0.44	0.45	0.43	0.41	0.39	0.34	0.36	0.35	0.41
Vertical North	Gm/Gmean	0.30	0.28	0.29	0.30	0.31	0.33	0.29	0.25	0.26	0.26	0.29	0.31	0.29

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.78	4.00	5.91	7.55	8.36	8.50	8.20	7.42	6.06	4.69	3.13	2.42	5.76
	D clear	0.63	0.78	1.05	1.47	1.51	1.54	1.45	1.49	1.12	0.85	0.63	0.48	1.09
10 Deg South	Gc	3.67	4.87	6.52	7.79	8.42	8.47	8.22	7.64	6.62	5.48	4.02	3.34	6.26
	Dc	0.77	0.96	1.11	1.42	1.48	1.49	1.42	1.51	1.23	0.97	0.77	0.56	1.14
30 Deg South	Gc	5.02	6.05	7.27	7.95	8.06	7.99	7.78	7.60	7.16	6.56	5.35	4.88	6.81
	Dc	0.93	1.12	1.25	1.52	1.55	1.54	1.49	1.60	1.36	1.13	0.92	0.69	1.26
Latitude South	Gc	5.56	6.45	7.36	7.68	7.52	7.39	7.22	7.24	7.13	6.88	5.87	5.53	6.82
tilt 41 40' N	Dc	1.00	1.20	1.32	1.58	1.59	1.58	1.53	1.64	1.43	1.20	0.99	0.76	1.32
60 Deg South	Gc	6.00	6.60	6.98	6.72	6.18	5.99	5.87	6.20	6.58	6.86	6.23	6.14	6.36
	Dc	1.07	1.27	1.41	1.64	1.63	1.63	1.57	1.67	1.49	1.28	1.07	0.83	1.38
Vertical South	Gc	5.52	5.57	5.07	4.15	3.31	3.10	3.08	3.63	4.53	5.54	5.60	5.87	4.58
	Dc	1.08	1.27	1.45	1.66	1.68	1.67	1.62	1.65	1.50	1.31	1.08	0.87	1.40
Vertical SE/SW	Gc	4.28	4.53	4.89	4.75	4.37	4.27	4.16	4.35	4.57	4.86	4.41	4.44	4.49
	Dc	0.99	1.20	1.42	1.70	1.74	1.75	1.69	1.70	1.48	1.27	1.00	0.79	1.39
Vertical E/W	Gc	2.25	2.78	3.84	4.53	4.76	4.89	4.65	4.38	3.78	3.38	2.44	2.14	3.66
	Dc	0.79	1.02	1.32	1.67	1.78	1.83	1.73	1.70	1.40	1.13	0.83	0.64	1.32
Vertical NE/NW	Gc	0.81	1.14	2.06	2.97	3.53	3.79	3.52	3.01	2.17	1.56	0.90	0.65	2.18
	Dc	0.65	0.85	1.15	1.51	1.66	1.73	1.63	1.55	1.22	0.96	0.69	0.54	1.18
Vertical North	Gc	0.62	0.80	1.07	1.62	2.10	2.41	2.15	1.71	1.13	0.89	0.66	0.51	1.31
	Dc	0.62	0.80	1.07	1.38	1.54	1.62	1.52	1.41	1.12	0.89	0.66	0.51	1.10

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.32	1.22	1.10	1.03	1.01	1.00	1.00	1.03	1.09	1.17	1.28	1.38	1.09
30 Deg South	Gc/Gmax	1.81	1.51	1.23	1.05	0.96	0.94	0.95	1.02	1.18	1.40	1.71	2.02	1.18
Latitude South	Gc/Gmax	2.00	1.61	1.25	1.02	0.90	0.87	0.88	0.98	1.18	1.47	1.88	2.29	1.18
60 Deg South	Gc/Gmax	2.16	1.65	1.18	0.89	0.74	0.70	0.72	0.84	1.09	1.46	1.99	2.54	1.10
Vertical South	Gc/Gmax	1.99	1.39	0.86	0.55	0.40	0.37	0.38	0.49	0.75	1.18	1.79	2.43	0.80
Vertical SE/SW	Gc/Gmax	1.54	1.13	0.83	0.63	0.52	0.50	0.51	0.59	0.75	1.04	1.41	1.84	0.78
Vertical E/W	Gc/Gmax	0.81	0.69	0.65	0.60	0.57	0.57	0.57	0.59	0.62	0.72	0.78	0.88	0.63
Vertical NE/NW	Gc/Gmax	0.29	0.28	0.35	0.39	0.42	0.45	0.43	0.41	0.36	0.33	0.29	0.27	0.38
Vertical North	Gc/Gmax	0.22	0.20	0.18	0.22	0.25	0.28	0.26	0.23	0.19	0.19	0.21	0.21	0.23

Sunshine data

Mean sunshine	Hours	4.2	5.8	6.5	7.7	9.1	9.9	11.6	10.7	7.9	6.9	4.8	4.0	7.4
Max. sunshine	Hours	8.9	10.4	10.6	11.8	13.1	13.1	12.8	12.4	11.5	10.3	9.2	8.0	11.0

SPAIN Site No. 264

SALAMANCA

Computer file SPAIN264.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 40 57' N

Longitude 5 30' W

Height 793 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.80	2.86	3.80	5.23	6.30	6.89	7.63	6.84	4.87	3.42	2.19	1.57	4.46
	D mean	0.91	1.27	1.85	2.27	2.56	2.42	2.01	1.74	1.71	1.31	0.98	0.79	1.65
10 Deg South	Gm	2.16	3.31	4.14	5.49	6.42	6.94	7.76	7.16	5.29	3.91	2.63	1.93	4.77
	Dm	0.93	1.31	1.89	2.31	2.59	2.45	2.06	1.80	1.77	1.36	1.01	0.81	1.69
30 Deg South	Gm	2.73	3.96	4.51	5.63	6.25	6.56	7.47	7.30	5.74	4.59	3.32	2.49	5.05
	Dm	0.93	1.33	1.90	2.31	2.57	2.43	2.09	1.88	1.82	1.39	1.03	0.80	1.71
Latitude South	Gm	2.93	4.15	4.54	5.49	5.92	6.13	7.02	7.06	5.75	4.77	3.55	2.70	5.01
tilt 40 57' N	Dm	0.91	1.32	1.86	2.26	2.50	2.37	2.09	1.90	1.81	1.38	1.01	0.78	1.68
60 Deg South	Gm	3.07	4.20	4.30	4.89	4.99	5.00	5.78	6.17	5.37	4.75	3.72	2.88	4.59
	Dm	0.84	1.25	1.72	2.10	2.31	2.21	2.02	1.88	1.74	1.33	0.96	0.72	1.59
Vertical South	Gm	2.75	3.56	3.26	3.26	2.97	2.78	3.20	3.84	3.89	3.89	3.30	2.63	3.27
	Dm	0.70	1.06	1.41	1.73	1.90	1.87	1.84	1.74	1.52	1.16	0.82	0.60	1.36
Vertical SE/SW	Gm	2.21	2.96	3.02	3.42	3.46	3.48	4.00	4.27	3.74	3.29	2.66	2.08	3.22
	Dm	0.69	1.04	1.39	1.72	1.91	1.89	1.87	1.74	1.49	1.13	0.81	0.60	1.36
Vertical E/W	Gm	1.31	1.94	2.39	3.12	3.55	3.81	4.26	4.05	3.04	2.24	1.61	1.19	2.71
	Dm	0.65	0.95	1.31	1.67	1.90	1.91	1.89	1.70	1.40	1.04	0.74	0.57	1.31
Vertical NE/NW	Gm	0.67	1.03	1.53	2.22	2.77	3.09	3.24	2.73	1.87	1.18	0.78	0.58	1.81
	Dm	0.61	0.87	1.21	1.56	1.81	1.85	1.79	1.57	1.29	0.95	0.68	0.53	1.23
Vertical North	Gm	0.58	0.83	1.16	1.56	1.97	2.23	2.11	1.64	1.23	0.91	0.65	0.51	1.28
	Dm	0.58	0.83	1.16	1.50	1.76	1.81	1.71	1.48	1.23	0.91	0.65	0.51	1.18

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.20	1.16	1.09	1.05	1.02	1.01	1.02	1.05	1.09	1.14	1.20	1.23	1.07
30 Deg South	Gm/Gmean	1.52	1.38	1.19	1.08	0.99	0.95	0.98	1.07	1.18	1.34	1.52	1.59	1.13
Latitude South	Gm/Gmean	1.63	1.45	1.20	1.05	0.94	0.89	0.92	1.03	1.18	1.39	1.62	1.72	1.12
60 Deg South	Gm/Gmean	1.71	1.47	1.13	0.94	0.79	0.73	0.76	0.90	1.10	1.39	1.70	1.83	1.03
Vertical South	Gm/Gmean	1.53	1.25	0.86	0.62	0.47	0.40	0.42	0.56	0.80	1.14	1.51	1.67	0.73
Vertical SE/SW	Gm/Gmean	1.23	1.03	0.80	0.65	0.55	0.50	0.52	0.62	0.77	0.96	1.22	1.33	0.72
Vertical E/W	Gm/Gmean	0.73	0.68	0.63	0.60	0.56	0.55	0.56	0.59	0.62	0.65	0.74	0.76	0.61
Vertical NE/NW	Gm/Gmean	0.37	0.36	0.40	0.42	0.44	0.45	0.43	0.40	0.38	0.34	0.36	0.37	0.41
Vertical North	Gm/Gmean	0.32	0.29	0.31	0.30	0.31	0.32	0.28	0.24	0.25	0.27	0.30	0.32	0.29

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.25	4.54	6.47	7.70	8.76	9.09	9.05	8.00	6.47	4.99	3.61	3.01	6.25
	D clear	0.71	0.85	1.08	1.40	1.47	1.54	1.49	1.50	1.10	0.85	0.67	0.56	1.10
10 Deg South	Gc	4.13	5.39	7.03	7.93	8.75	8.96	8.93	8.14	7.01	5.77	4.52	4.01	6.72
	Dc	0.74	0.91	1.04	1.33	1.39	1.40	1.34	1.43	1.16	0.92	0.74	0.54	1.08
30 Deg South	Gc	5.65	6.68	7.82	8.06	8.34	8.41	8.41	8.06	7.55	6.88	6.01	5.84	7.31
	Dc	0.90	1.07	1.19	1.44	1.46	1.46	1.41	1.52	1.30	1.07	0.89	0.68	1.20
Latitude South	Gc	6.23	7.10	7.90	7.79	7.80	7.80	7.82	7.69	7.51	7.18	6.56	6.59	7.33
tilt 40 57' N	Dc	0.97	1.15	1.26	1.50	1.51	1.51	1.46	1.56	1.36	1.14	0.96	0.74	1.26
60 Deg South	Gc	6.74	7.26	7.46	6.76	6.33	6.23	6.27	6.51	6.90	7.16	6.98	7.34	6.83
	Dc	1.06	1.24	1.37	1.57	1.58	1.58	1.54	1.62	1.44	1.24	1.05	0.84	1.34
Vertical South	Gc	6.18	6.10	5.37	4.11	3.32	3.15	3.20	3.73	4.69	5.74	6.25	6.99	4.90
	Dc	1.09	1.28	1.45	1.62	1.66	1.67	1.65	1.65	1.48	1.29	1.09	0.90	1.40
Vertical SE/SW	Gc	4.79	4.96	5.21	4.77	4.48	4.40	4.45	4.57	4.77	5.05	4.91	5.27	4.80
	Dc	1.00	1.21	1.43	1.65	1.72	1.74	1.72	1.70	1.47	1.25	1.01	0.83	1.39
Vertical E/W	Gc	2.51	3.04	4.12	4.60	4.94	5.01	5.03	4.64	3.98	3.53	2.71	2.52	3.89
	Dc	0.82	1.04	1.34	1.64	1.76	1.79	1.76	1.71	1.39	1.12	0.85	0.69	1.33
Vertical NE/NW	Gc	0.87	1.22	2.19	3.02	3.67	3.83	3.81	3.20	2.27	1.62	0.97	0.72	2.29
	Dc	0.68	0.88	1.18	1.49	1.66	1.70	1.67	1.57	1.23	0.96	0.72	0.59	1.20
Vertical North	Gc	0.65	0.83	1.10	1.61	2.16	2.33	2.29	1.77	1.14	0.89	0.69	0.56	1.34
	Dc	0.65	0.83	1.10	1.37	1.55	1.60	1.57	1.44	1.14	0.89	0.69	0.56	1.12

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.27	1.19	1.09	1.03	1.00	0.99	0.99	1.02	1.08	1.16	1.25	1.33	1.08
30 Deg South	Gc/Gmax	1.74	1.47	1.21	1.05	0.95	0.93	0.93	1.01	1.17	1.38	1.66	1.94	1.17
Latitude South	Gc/Gmax	1.92	1.56	1.22	1.01	0.89	0.86	0.86	0.96	1.16	1.44	1.82	2.19	1.17
60 Deg South	Gc/Gmax	2.07	1.60	1.15	0.88	0.72	0.69	0.69	0.81	1.07	1.43	1.93	2.44	1.09
Vertical South	Gc/Gmax	1.90	1.34	0.83	0.53	0.38	0.35	0.35	0.47	0.73	1.15	1.73	2.32	0.78
Vertical SE/SW	Gc/Gmax	1.47	1.09	0.81	0.62	0.51	0.48	0.49	0.57	0.74	1.01	1.36	1.75	0.77
Vertical E/W	Gc/Gmax	0.77	0.67	0.64	0.60	0.56	0.55	0.56	0.58	0.62	0.71	0.75	0.84	0.62
Vertical NE/NW	Gc/Gmax	0.27	0.27	0.34	0.39	0.42	0.42	0.42	0.40	0.35	0.32	0.27	0.24	0.37
Vertical North	Gc/Gmax	0.20	0.18	0.17	0.21	0.25	0.26	0.25	0.22	0.18	0.18	0.19	0.19	0.21

Sunshine data

Mean sunshine	Hours	3.5	5.3	5.7	7.5	8.9	9.9	12.0	11.2	8.0	6.3	4.5	3.2	7.2
Max. sunshine	Hours	8.5	10.1	10.5	11.8	13.1	13.0	12.7	12.4	11.6	10.1	9.2	7.9	10.9

SPAIN Site No. 265

TORTOSA

Computer file SPAIN265.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 40 49' N

Longitude 0 30' E

Height 44 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	2.18	3.04	4.05	5.12	6.06	6.48	6.94	5.99	4.60	3.49	2.40	1.99	4.37
	D mean	0.85	1.27	1.86	2.38	2.75	2.71	2.47	2.26	1.91	1.34	0.96	0.70	1.79
10 Deg South	Gm	2.73	3.54	4.43	5.37	6.17	6.52	7.04	6.23	4.96	3.99	2.93	2.59	4.72
	Dm	0.89	1.32	1.91	2.43	2.79	2.74	2.51	2.31	1.97	1.39	1.00	0.74	1.84
30 Deg South	Gm	3.61	4.28	4.87	5.49	6.00	6.17	6.77	6.28	5.33	4.68	3.76	3.58	5.07
	Dm	0.93	1.36	1.94	2.42	2.74	2.69	2.50	2.33	2.00	1.44	1.04	0.78	1.85
Latitude South	Gm	3.94	4.51	4.92	5.34	5.69	5.77	6.38	6.06	5.31	4.87	4.05	3.97	5.07
tilt 40 49' N	Dm	0.93	1.36	1.91	2.36	2.66	2.61	2.45	2.29	1.97	1.44	1.04	0.78	1.82
60 Deg South	Gm	4.23	4.58	4.68	4.75	4.80	4.73	5.27	5.28	4.94	4.85	4.27	4.34	4.73
	Dm	0.91	1.31	1.80	2.18	2.43	2.39	2.29	2.16	1.86	1.38	1.01	0.77	1.71
Vertical South	Gm	3.88	3.90	3.57	3.18	2.90	2.71	3.01	3.35	3.57	3.98	3.83	4.09	3.50
	Dm	0.81	1.14	1.50	1.77	1.96	1.95	1.94	1.83	1.57	1.21	0.89	0.70	1.44
Vertical SE/SW	Gm	3.05	3.23	3.28	3.32	3.33	3.30	3.65	3.68	3.45	3.36	3.06	3.16	3.32
	Dm	0.79	1.10	1.47	1.76	1.96	1.96	1.96	1.82	1.53	1.18	0.87	0.69	1.43
Vertical E/W	Gm	1.72	2.09	2.57	3.04	3.40	3.58	3.87	3.51	2.85	2.28	1.81	1.68	2.70
	Dm	0.71	1.00	1.37	1.71	1.95	1.98	1.98	1.79	1.45	1.08	0.79	0.63	1.37
Vertical NE/NW	Gm	0.74	1.07	1.61	2.20	2.70	2.97	3.05	2.54	1.84	1.21	0.83	0.66	1.79
	Dm	0.65	0.90	1.25	1.60	1.87	1.92	1.89	1.67	1.34	0.98	0.71	0.58	1.28
Vertical North	Gm	0.62	0.86	1.19	1.59	2.00	2.24	2.14	1.73	1.28	0.93	0.68	0.55	1.32
	Dm	0.62	0.86	1.19	1.54	1.81	1.89	1.82	1.60	1.28	0.93	0.68	0.55	1.23

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.25	1.16	1.09	1.05	1.02	1.01	1.01	1.04	1.08	1.14	1.22	1.30	1.08
30 Deg South	Gm/Gmean	1.66	1.41	1.20	1.07	0.99	0.95	0.98	1.05	1.16	1.34	1.57	1.80	1.16
Latitude South	Gm/Gmean	1.81	1.48	1.22	1.04	0.94	0.89	0.92	1.01	1.15	1.39	1.69	2.00	1.16
60 Deg South	Gm/Gmean	1.94	1.51	1.16	0.93	0.79	0.73	0.76	0.88	1.07	1.39	1.78	2.18	1.08
Vertical South	Gm/Gmean	1.78	1.28	0.88	0.62	0.48	0.42	0.43	0.56	0.78	1.14	1.60	2.06	0.80
Vertical SE/SW	Gm/Gmean	1.40	1.06	0.81	0.65	0.55	0.51	0.53	0.61	0.75	0.96	1.27	1.59	0.76
Vertical E/W	Gm/Gmean	0.79	0.69	0.63	0.59	0.56	0.55	0.56	0.59	0.62	0.65	0.75	0.84	0.62
Vertical NE/NW	Gm/Gmean	0.34	0.35	0.40	0.43	0.45	0.46	0.44	0.42	0.40	0.35	0.35	0.33	0.41
Vertical North	Gm/Gmean	0.28	0.28	0.29	0.31	0.33	0.35	0.31	0.29	0.28	0.27	0.28	0.28	0.30

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes.

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.88	4.08	5.98	7.58	8.36	8.50	8.20	7.44	6.11	4.77	3.22	2.52	5.81
	D clear	0.63	0.81	1.09	1.50	1.55	1.58	1.46	1.53	1.16	0.89	0.64	0.49	1.11
10 Deg South	Gc	3.79	4.94	6.57	7.80	8.38	8.45	8.21	7.64	6.64	5.54	4.12	3.46	6.30
	Dc	0.80	0.99	1.13	1.44	1.50	1.51	1.45	1.54	1.26	1.00	0.80	0.59	1.17
30 Deg South	Gc	5.15	6.10	7.29	7.93	8.00	7.94	7.75	7.57	7.14	6.60	5.44	4.99	6.83
	Dc	0.96	1.15	1.28	1.55	1.57	1.57	1.51	1.63	1.39	1.16	0.95	0.73	1.29
Latitude South	Gc	5.66	6.47	7.37	7.67	7.50	7.38	7.22	7.23	7.11	6.88	5.92	5.60	6.84
tilt 40 49' N	Dc	1.03	1.22	1.34	1.60	1.61	1.60	1.54	1.66	1.45	1.23	1.02	0.79	1.34
60 Deg South	Gc	6.11	6.61	6.95	6.66	6.09	5.91	5.81	6.13	6.53	6.85	6.29	6.23	6.35
	Dc	1.11	1.31	1.43	1.66	1.65	1.64	1.59	1.69	1.52	1.31	1.10	0.87	1.41
Vertical South	Gc	5.59	5.54	5.02	4.06	3.23	3.02	3.00	3.55	4.45	5.49	5.62	5.92	4.54
	Dc	1.11	1.30	1.47	1.68	1.68	1.68	1.63	1.67	1.51	1.34	1.11	0.91	1.42
Vertical SE/SW	Gc	4.34	4.52	4.86	4.69	4.31	4.17	4.12	4.31	4.52	4.84	4.43	4.49	4.47
	Dc	1.02	1.23	1.45	1.71	1.75	1.75	1.70	1.72	1.51	1.29	1.03	0.83	1.42
Vertical E/W	Gc	2.31	2.80	3.85	4.52	4.74	4.74	4.64	4.36	3.78	3.40	2.47	2.18	3.65
	Dc	0.82	1.04	1.35	1.69	1.79	1.81	1.75	1.72	1.42	1.15	0.86	0.67	1.34
Vertical NE/NW	Gc	0.83	1.17	2.08	2.99	3.54	3.64	3.54	3.03	2.19	1.59	0.92	0.68	2.19
	Dc	0.67	0.87	1.18	1.53	1.68	1.71	1.65	1.57	1.24	0.98	0.71	0.56	1.20
Vertical North	Gc	0.64	0.81	1.09	1.63	2.12	2.25	2.17	1.72	1.15	0.91	0.68	0.54	1.31
	Dc	0.64	0.81	1.09	1.40	1.56	1.59	1.54	1.43	1.14	0.91	0.68	0.54	1.11

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.32	1.21	1.10	1.03	1.00	0.99	1.00	1.03	1.09	1.16	1.28	1.37	1.08
30 Deg South	Gc/Gmax	1.79	1.50	1.22	1.05	0.96	0.93	0.94	1.02	1.17	1.38	1.69	1.98	1.18
Latitude South	Gc/Gmax	1.97	1.59	1.23	1.01	0.90	0.87	0.88	0.97	1.16	1.44	1.84	2.22	1.18
60 Deg South	Gc/Gmax	2.12	1.62	1.16	0.88	0.73	0.69	0.71	0.82	1.07	1.44	1.95	2.47	1.09
Vertical South	Gc/Gmax	1.94	1.36	0.84	0.54	0.39	0.35	0.37	0.48	0.73	1.15	1.75	2.35	0.78
Vertical SE/SW	Gc/Gmax	1.51	1.11	0.81	0.62	0.52	0.49	0.50	0.58	0.74	1.01	1.38	1.78	0.77
Vertical E/W	Gc/Gmax	0.80	0.69	0.64	0.60	0.57	0.56	0.57	0.59	0.62	0.71	0.77	0.87	0.63
Vertical NE/NW	Gc/Gmax	0.29	0.29	0.35	0.39	0.42	0.43	0.43	0.41	0.36	0.33	0.29	0.27	0.38
Vertical North	Gc/Gmax	0.22	0.20	0.18	0.22	0.25	0.26	0.26	0.23	0.19	0.19	0.21	0.21	0.22

Sunshine data

Mean sunshine	Hours	5.1	5.9	6.4	7.2	8.3	8.9	10.3	9.0	7.2	6.5	5.3	5.1	7.1
Max. sunshine	Hours	9.4	10.4	10.6	11.8	13.0	13.0	12.9	12.3	11.3	10.2	9.5	8.4	11.1

SPAIN Site No. 266

MADRID

Computer file SPAIN266.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 40 27' N

Longitude 3 43' W

Height 669 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.73	2.63	4.15	5.45	6.17	6.69	7.22	6.49	4.80	3.16	1.99	1.77	4.36
	D mean	0.88	1.27	1.48	1.39	1.69	1.60	1.17	1.43	1.48	1.09	0.86	0.63	1.25
10 Deg South	Gm	2.09	3.03	4.58	5.74	6.27	6.71	7.31	6.79	5.24	3.64	2.41	2.29	4.68
	Dm	0.93	1.33	1.51	1.41	1.72	1.63	1.21	1.49	1.54	1.14	0.91	0.67	1.29
30 Deg South	Gm	2.64	3.60	5.08	5.90	6.05	6.28	6.97	6.91	5.72	4.32	3.07	3.15	4.98
	Dm	0.97	1.39	1.51	1.41	1.73	1.65	1.29	1.58	1.61	1.20	0.96	0.70	1.33
Latitude South	Gm	2.83	3.76	5.15	5.75	5.73	5.85	6.55	6.70	5.74	4.50	3.29	3.47	4.95
tilt 40 27' N	Dm	0.97	1.39	1.49	1.40	1.71	1.65	1.33	1.61	1.62	1.21	0.96	0.71	1.34
60 Deg South	Gm	2.98	3.80	4.91	5.06	4.74	4.69	5.30	5.82	5.37	4.51	3.46	3.80	4.54
	Dm	0.94	1.34	1.41	1.35	1.65	1.61	1.39	1.63	1.59	1.19	0.93	0.70	1.31
Vertical South	Gm	2.68	3.20	3.73	3.25	2.70	2.48	2.81	3.58	3.88	3.71	3.09	3.57	3.22
	Dm	0.81	1.14	1.23	1.25	1.51	1.52	1.44	1.56	1.44	1.07	0.82	0.63	1.20
Vertical SE/SW	Gm	2.14	2.66	3.53	3.76	3.45	3.37	3.81	4.08	3.75	3.12	2.49	2.76	3.25
	Dm	0.77	1.10	1.22	1.25	1.50	1.52	1.45	1.56	1.40	1.04	0.79	0.62	1.19
Vertical E/W	Gm	1.25	1.74	2.81	3.62	3.72	3.86	4.24	3.93	3.03	2.09	1.48	1.48	2.78
	Dm	0.68	0.96	1.18	1.24	1.50	1.53	1.47	1.54	1.32	0.94	0.70	0.57	1.14
Vertical NE/NW	Gm	0.64	0.95	1.67	2.47	2.86	3.10	3.20	2.65	1.81	1.06	0.71	0.59	1.81
	Dm	0.59	0.84	1.13	1.23	1.47	1.50	1.41	1.43	1.20	0.84	0.62	0.52	1.07
Vertical North	Gm	0.56	0.79	1.11	1.42	1.86	2.09	1.95	1.54	1.14	0.80	0.59	0.49	1.20
	Dm	0.56	0.79	1.11	1.23	1.46	1.49	1.37	1.35	1.14	0.80	0.59	0.49	1.03

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.21	1.15	1.10	1.05	1.02	1.00	1.01	1.05	1.09	1.15	1.21	1.29	1.07
30 Deg South	Gm/Gmean	1.53	1.37	1.22	1.08	0.98	0.94	0.96	1.07	1.19	1.37	1.54	1.78	1.14
Latitude South	Gm/Gmean	1.64	1.43	1.24	1.05	0.93	0.87	0.91	1.03	1.20	1.42	1.65	1.96	1.13
60 Deg South	Gm/Gmean	1.72	1.45	1.18	0.93	0.77	0.70	0.73	0.90	1.12	1.43	1.74	2.15	1.04
Vertical South	Gm/Gmean	1.55	1.22	0.90	0.60	0.44	0.37	0.39	0.55	0.81	1.17	1.55	2.02	0.74
Vertical SE/SW	Gm/Gmean	1.24	1.01	0.85	0.69	0.56	0.50	0.53	0.63	0.78	0.99	1.25	1.56	0.75
Vertical E/W	Gm/Gmean	0.72	0.66	0.68	0.66	0.60	0.58	0.59	0.61	0.63	0.66	0.74	0.84	0.64
Vertical NE/NW	Gm/Gmean	0.37	0.36	0.40	0.45	0.46	0.46	0.44	0.41	0.38	0.34	0.36	0.33	0.41
Vertical North	Gm/Gmean	0.32	0.30	0.27	0.26	0.30	0.31	0.27	0.24	0.24	0.25	0.30	0.28	0.28

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes.

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.92	4.12	6.01	7.59	8.37	8.50	8.20	7.45	6.13	4.80	3.26	2.56	5.83
	D clear	0.90	1.03	0.48	0.26	0.56	0.73	0.77	1.18	0.99	0.81	0.72	0.46	0.74
10 Deg South	Gc	3.68	4.91	6.69	7.92	8.46	8.52	8.24	7.69	6.71	5.60	4.13	3.51	6.34
	Dc	1.03	1.18	0.56	0.31	0.63	0.79	0.82	1.24	1.12	0.94	0.87	0.56	0.84
30 Deg South	Gc	4.89	6.02	7.43	7.99	7.99	7.92	7.70	7.59	7.20	6.65	5.41	5.06	6.82
	Dc	1.23	1.37	0.68	0.42	0.75	0.89	0.92	1.33	1.25	1.09	1.04	0.69	0.97
Latitude South	Gc	5.33	6.35	7.51	7.69	7.46	7.34	7.16	7.25	7.17	6.92	5.85	5.66	6.81
tilt 40 27' N	Dc	1.30	1.44	0.75	0.51	0.83	0.96	0.99	1.38	1.31	1.15	1.10	0.75	1.04
60 Deg South	Gc	5.71	6.47	7.06	6.55	5.94	5.76	5.66	6.09	6.55	6.89	6.21	6.30	6.26
	Dc	1.38	1.51	0.89	0.70	1.01	1.12	1.14	1.45	1.38	1.25	1.18	0.83	1.15
Vertical South	Gc	5.17	5.40	5.02	3.77	2.98	2.80	2.80	3.44	4.43	5.50	5.52	5.98	4.40
	Dc	1.33	1.46	1.09	1.03	1.31	1.38	1.37	1.51	1.42	1.28	1.18	0.87	1.27
Vertical SE/SW	Gc	4.01	4.40	5.02	4.86	4.37	4.20	4.13	4.33	4.55	4.86	4.34	4.53	4.47
	Dc	1.20	1.36	1.08	1.04	1.34	1.41	1.40	1.55	1.42	1.24	1.09	0.80	1.24
Vertical E/W	Gc	2.09	2.71	4.07	4.99	5.04	4.97	4.83	4.47	3.82	3.42	2.41	2.20	3.76
	Dc	0.92	1.13	1.06	1.05	1.35	1.44	1.43	1.56	1.34	1.12	0.89	0.65	1.16
Vertical NE/NW	Gc	0.82	1.16	2.15	3.25	3.77	3.83	3.70	3.11	2.20	1.59	0.91	0.67	2.27
	Dc	0.72	0.90	1.00	1.03	1.32	1.40	1.38	1.45	1.19	0.95	0.73	0.55	1.05
Vertical North	Gc	0.67	0.84	0.97	1.49	2.13	2.27	2.18	1.70	1.11	0.88	0.69	0.53	1.29
	Dc	0.67	0.84	0.97	1.02	1.28	1.35	1.33	1.34	1.10	0.88	0.69	0.53	1.00

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.26	1.19	1.11	1.04	1.01	1.00	1.00	1.03	1.10	1.17	1.27	1.37	1.09
30 Deg South	Gc/Gmax	1.67	1.46	1.24	1.05	0.95	0.93	0.94	1.02	1.17	1.38	1.66	1.98	1.17
Latitude South	Gc/Gmax	1.83	1.54	1.25	1.01	0.89	0.86	0.87	0.97	1.17	1.44	1.79	2.21	1.17
60 Deg South	Gc/Gmax	1.96	1.57	1.17	0.86	0.71	0.68	0.69	0.82	1.07	1.43	1.90	2.46	1.07
Vertical South	Gc/Gmax	1.77	1.31	0.83	0.50	0.36	0.33	0.34	0.46	0.72	1.15	1.69	2.34	0.75
Vertical SE/SW	Gc/Gmax	1.37	1.07	0.83	0.64	0.52	0.49	0.50	0.58	0.74	1.01	1.33	1.77	0.77
Vertical E/W	Gc/Gmax	0.72	0.66	0.68	0.66	0.60	0.58	0.59	0.60	0.62	0.71	0.74	0.86	0.64
Vertical NE/NW	Gc/Gmax	0.28	0.28	0.36	0.43	0.45	0.45	0.45	0.42	0.36	0.33	0.28	0.26	0.39
Vertical North	Gc/Gmax	0.23	0.20	0.16	0.20	0.25	0.27	0.27	0.23	0.18	0.18	0.21	0.21	0.22

Sunshine data

Mean sunshine	Hours	4.4	5.7	6.5	8.0	9.3	10.5	12.5	11.4	8.7	7.0	5.2	5.0	7.9
Max. sunshine	Hours	9.0	10.3	10.6	11.7	13.0	13.0	12.6	12.4	11.7	10.4	9.5	8.4	11.1

UNITED KINGDOM Site No. 13 LERWICK Computer file UKING013.INC
 Inclined surfaces - ground albedo 0.20 assumed. Units kWh/square metre per day
 Latitude 60 8' N Longitude 1 11' W Height 82 metres Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.21	0.78	1.75	3.27	3.94	4.80	4.15	3.35	2.06	1.02	0.37	0.14	2.16
	D mean	0.18	0.51	1.08	1.91	2.30	2.69	2.56	2.06	1.29	0.68	0.28	0.12	1.31
10 Deg South	Gm	0.25	0.96	1.98	3.51	4.07	4.89	4.26	3.53	2.26	1.20	0.47	0.17	2.30
	Dm	0.18	0.52	1.09	1.94	2.31	2.71	2.57	2.09	1.31	0.69	0.29	0.13	1.32
30 Deg South	Gm	0.32	1.25	2.30	3.76	4.10	4.83	4.22	3.66	2.51	1.47	0.63	0.22	2.44
	Dm	0.18	0.52	1.07	1.90	2.23	2.63	2.48	2.03	1.28	0.68	0.29	0.12	1.29
Latitude South	Gm	0.37	1.47	2.39	3.53	3.55	4.07	3.59	3.31	2.47	1.63	0.76	0.25	2.28
tilt 60 8' N	Dm	0.15	0.47	0.93	1.66	1.91	2.25	2.10	1.75	1.10	0.59	0.26	0.11	1.11
60 Deg South	Gm	0.37	1.47	2.39	3.54	3.56	4.07	3.60	3.31	2.48	1.63	0.76	0.25	2.29
	Dm	0.15	0.47	0.93	1.67	1.91	2.26	2.10	1.75	1.10	0.59	0.26	0.11	1.11
Vertical South	Gm	0.35	1.38	2.03	2.70	2.50	2.78	2.49	2.44	2.00	1.46	0.74	0.24	1.76
	Dm	0.12	0.38	0.73	1.31	1.48	1.76	1.61	1.36	0.86	0.47	0.20	0.08	0.87
Vertical SE/SW	Gm	0.28	1.09	1.78	2.62	2.59	2.96	2.58	2.42	1.81	1.21	0.58	0.19	1.68
	Dm	0.12	0.37	0.73	1.30	1.46	1.74	1.59	1.34	0.85	0.47	0.20	0.08	0.86
Vertical E/W	Gm	0.15	0.60	1.26	2.20	2.45	2.99	2.51	2.15	1.37	0.76	0.30	0.10	1.41
	Dm	0.11	0.35	0.70	1.25	1.44	1.72	1.57	1.31	0.82	0.44	0.19	0.08	0.83
Vertical NE/NW	Gm	0.11	0.33	0.80	1.56	1.97	2.53	2.11	1.65	0.93	0.45	0.17	0.07	1.06
	Dm	0.11	0.32	0.67	1.19	1.42	1.70	1.55	1.26	0.78	0.41	0.17	0.07	0.81
Vertical North	Gm	0.10	0.31	0.64	1.21	1.62	2.17	1.82	1.34	0.76	0.40	0.16	0.07	0.89
	Dm	0.10	0.31	0.64	1.16	1.41	1.69	1.54	1.24	0.76	0.40	0.16	0.07	0.79

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.19	1.23	1.13	1.07	1.03	1.02	1.03	1.05	1.10	1.18	1.27	1.21	1.07
30 Deg South	Gm/Gmean	1.52	1.60	1.31	1.15	1.04	1.01	1.02	1.09	1.22	1.44	1.70	1.57	1.13
Latitude South	Gm/Gmean	1.76	1.88	1.37	1.08	0.90	0.85	0.87	0.99	1.20	1.60	2.05	1.79	1.06
60 Deg South	Gm/Gmean	1.76	1.88	1.37	1.08	0.90	0.85	0.87	0.99	1.20	1.60	2.05	1.79	1.06
Vertical South	Gm/Gmean	1.67	1.77	1.16	0.83	0.63	0.58	0.60	0.73	0.97	1.43	2.00	1.71	0.81
Vertical SE/SW	Gm/Gmean	1.33	1.40	1.02	0.80	0.66	0.62	0.62	0.72	0.88	1.19	1.57	1.36	0.78
Vertical E/W	Gm/Gmean	0.71	0.77	0.72	0.67	0.62	0.62	0.61	0.64	0.67	0.75	0.81	0.71	0.65
Vertical NE/NW	Gm/Gmean	0.52	0.42	0.46	0.48	0.50	0.53	0.51	0.49	0.45	0.44	0.46	0.50	0.49
Vertical North	Gm/Gmean	0.48	0.40	0.37	0.37	0.41	0.45	0.44	0.40	0.37	0.39	0.43	0.50	0.41

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	0.64	1.86	3.68	5.60	7.35	8.04	7.40	6.27	4.19	2.40	0.95	0.35	4.07
	D clear	0.26	0.50	0.58	1.08	0.80	1.10	1.05	1.30	0.85	0.57	0.35	0.13	0.72
10 Deg South	Gc	1.11	2.62	4.46	6.14	7.71	8.32	7.67	6.72	4.85	3.12	1.48	0.77	4.59
	Dc	0.32	0.57	0.63	1.12	0.87	1.15	1.10	1.33	0.89	0.62	0.39	0.18	0.76
30 Deg South	Gc	1.93	3.92	5.67	6.85	7.99	8.48	7.86	7.30	5.86	4.36	2.43	1.50	5.35
	Dc	0.41	0.69	0.76	1.26	1.00	1.29	1.23	1.47	1.03	0.75	0.49	0.23	0.88
Latitude South	Gc	2.74	5.04	6.31	6.71	7.13	7.40	6.92	6.89	6.22	5.30	3.33	2.26	5.52
tilt 60 8' N	Dc	0.49	0.81	0.91	1.42	1.24	1.49	1.43	1.62	1.18	0.87	0.57	0.28	1.03
60 Deg South	Gc	2.74	5.03	6.31	6.71	7.14	7.41	6.93	6.90	6.23	5.30	3.33	2.26	5.52
	Dc	0.49	0.81	0.91	1.42	1.24	1.49	1.43	1.62	1.18	0.87	0.57	0.28	1.03
Vertical South	Gc	2.87	4.90	5.43	5.07	4.90	4.97	4.69	5.04	5.12	4.94	3.40	2.44	4.48
	Dc	0.48	0.81	0.98	1.46	1.45	1.65	1.57	1.64	1.22	0.88	0.56	0.28	1.08
Vertical SE/SW	Gc	2.11	3.83	4.81	5.22	5.49	5.60	5.27	5.27	4.85	3.95	2.53	1.76	4.22
	Dc	0.41	0.75	0.96	1.45	1.46	1.66	1.58	1.63	1.19	0.82	0.49	0.24	1.05
Vertical E/W	Gc	0.86	1.99	3.26	4.50	5.61	5.81	5.43	4.69	3.64	2.22	1.09	0.55	3.31
	Dc	0.30	0.60	0.88	1.39	1.46	1.66	1.57	1.57	1.09	0.69	0.38	0.17	0.98
Vertical NE/NW	Gc	0.26	0.69	1.50	2.78	4.09	4.32	4.02	3.04	1.92	0.84	0.34	0.15	2.00
	Dc	0.25	0.50	0.79	1.23	1.40	1.56	1.48	1.40	0.94	0.58	0.32	0.15	0.89
Vertical North	Gc	0.24	0.48	0.75	1.61	2.90	3.13	2.91	1.87	0.98	0.56	0.31	0.15	1.33
	Dc	0.24	0.48	0.75	1.14	1.35	1.49	1.41	1.29	0.87	0.56	0.31	0.15	0.84

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.73	1.41	1.21	1.10	1.05	1.03	1.04	1.07	1.16	1.30	1.56	2.20	1.13
30 Deg South	Gc/Gmax	3.02	2.11	1.54	1.22	1.09	1.05	1.06	1.16	1.40	1.82	2.56	4.29	1.31
Latitude South	Gc/Gmax	4.28	2.71	1.72	1.20	0.97	0.92	0.94	1.10	1.48	2.21	3.51	6.46	1.36
60 Deg South	Gc/Gmax	4.28	2.70	1.72	1.20	0.97	0.92	0.94	1.10	1.49	2.21	3.51	6.46	1.36
Vertical South	Gc/Gmax	4.48	2.63	1.48	0.90	0.67	0.62	0.63	0.80	1.22	2.06	3.58	6.97	1.10
Vertical SE/SW	Gc/Gmax	3.30	2.06	1.31	0.93	0.75	0.70	0.71	0.84	1.16	1.65	2.66	5.03	1.04
Vertical E/W	Gc/Gmax	1.34	1.07	0.89	0.80	0.76	0.72	0.73	0.75	0.87	0.93	1.15	1.57	0.81
Vertical NE/NW	Gc/Gmax	0.41	0.37	0.41	0.50	0.56	0.54	0.54	0.49	0.46	0.35	0.36	0.43	0.49
Vertical North	Gc/Gmax	0.38	0.26	0.20	0.29	0.40	0.39	0.39	0.30	0.23	0.23	0.33	0.43	0.33

Sunshine data

Mean sunshine	Hours	0.6	2.1	2.8	4.6	4.5	5.9	4.3	4.2	2.9	2.1	1.1	0.4	3.0
Max. sunshine	Hours	4.1	7.5	9.1	11.4	13.8	15.3	13.8	12.7	9.7	7.6	4.9	3.2	9.4

UNITED KINGDOM Site No. 22 ESKDALEMUIR Computer file UKING022.1NC
 Inclined surfaces - ground albedo 0.20 assumed. Units kWh/square metre per day
 Latitude 55 19' N Longitude 3 12' W Height 242 metres Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes. kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.38	1.12	2.01	3.24	3.90	4.67	4.06	3.42	2.31	1.29	0.65	0.34	2.29
	D mean	0.30	0.70	1.23	1.92	2.36	2.71	2.54	2.14	1.46	0.82	0.44	0.25	1.41
10 Deg South	Gm	0.45	1.34	2.23	3.45	4.02	4.76	4.16	3.58	2.51	1.48	0.81	0.44	2.44
	Dm	0.30	0.72	1.25	1.95	2.38	2.74	2.56	2.17	1.48	0.83	0.45	0.25	1.43
30 Deg South	Gm	0.56	1.69	2.52	3.62	4.01	4.66	4.10	3.67	2.72	1.76	1.07	0.60	2.58
	Dm	0.30	0.71	1.23	1.92	2.32	2.65	2.48	2.12	1.45	0.82	0.45	0.25	1.39
Latitude South	Gm	0.63	1.90	2.57	3.42	3.56	4.04	3.59	3.36	2.67	1.89	1.26	0.72	2.47
tilt 55 19' N	Dm	0.26	0.65	1.11	1.73	2.06	2.35	2.18	1.89	1.30	0.74	0.41	0.23	1.25
60 Deg South	Gm	0.63	1.91	2.54	3.33	3.43	3.88	3.45	3.26	2.62	1.88	1.27	0.73	2.41
	Dm	0.26	0.63	1.08	1.68	1.99	2.28	2.11	1.83	1.26	0.72	0.40	0.22	1.21
Vertical South	Gm	0.59	1.74	2.09	2.47	2.36	2.58	2.34	2.34	2.05	1.64	1.20	0.71	1.84
	Dm	0.20	0.51	0.85	1.32	1.53	1.76	1.61	1.42	0.99	0.57	0.32	0.18	0.94
Vertical SE/SW	Gm	0.47	1.42	1.86	2.21	2.45	2.76	2.44	2.32	1.87	1.37	0.95	0.55	1.74
	Dm	0.20	0.50	0.85	1.30	1.52	1.75	1.60	1.39	0.97	0.57	0.32	0.17	0.93
Vertical E/W	Gm	0.27	0.86	1.37	2.06	2.33	2.78	2.35	2.06	1.46	0.90	0.51	0.26	1.44
	Dm	0.19	0.48	0.81	1.25	1.49	1.74	1.57	1.35	0.93	0.54	0.30	0.17	0.90
Vertical NE/NW	Gm	0.18	0.48	0.89	1.50	1.89	2.35	1.96	1.59	1.02	0.55	0.28	0.15	1.07
	Dm	0.18	0.44	0.76	1.19	1.45	1.70	1.53	1.28	0.88	0.50	0.27	0.15	0.86
Vertical North	Gm	0.17	0.42	0.73	1.18	1.57	2.00	1.66	1.29	0.85	0.48	0.26	0.15	0.90
	Dm	0.17	0.42	0.73	1.15	1.42	1.69	1.51	1.25	0.85	0.48	0.26	0.15	0.84

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.20	1.11	1.07	1.03	1.02	1.02	1.05	1.09	1.15	1.25	1.29	1.07
30 Deg South	Gm/Gmean	1.47	1.51	1.25	1.12	1.03	1.00	1.01	1.07	1.18	1.36	1.65	1.76	1.13
Latitude South	Gm/Gmean	1.66	1.70	1.28	1.06	0.91	0.87	0.88	0.98	1.16	1.47	1.94	2.12	1.08
60 Deg South	Gm/Gmean	1.66	1.71	1.26	1.03	0.88	0.83	0.85	0.95	1.13	1.46	1.95	2.15	1.05
Vertical South	Gm/Gmean	1.55	1.55	1.04	0.76	0.61	0.55	0.58	0.68	0.89	1.27	1.85	2.09	0.80
Vertical SE/SW	Gm/Gmean	1.24	1.27	0.93	0.74	0.63	0.59	0.60	0.68	0.81	1.06	1.46	1.62	0.76
Vertical E/W	Gm/Gmean	0.71	0.77	0.68	0.64	0.60	0.60	0.58	0.60	0.63	0.70	0.79	0.76	0.63
Vertical NE/NW	Gm/Gmean	0.47	0.43	0.44	0.46	0.49	0.50	0.48	0.47	0.44	0.43	0.43	0.44	0.47
Vertical North	Gm/Gmean	0.45	0.38	0.36	0.36	0.40	0.43	0.41	0.38	0.37	0.37	0.40	0.44	0.39

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes. kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.08	2.45	4.18	6.06	7.13	7.82	7.39	6.36	4.70	2.90	1.55	0.82	4.38
	D clear	0.37	0.56	0.73	1.16	1.19	1.42	1.36	1.49	1.04	0.63	0.43	0.26	0.89
10 Deg South	Gc	1.66	3.27	4.93	6.61	7.46	8.09	7.65	6.82	5.36	3.68	2.26	1.46	4.94
	Dc	0.45	0.64	0.81	1.23	1.29	1.48	1.41	1.57	1.14	0.72	0.51	0.32	0.97
30 Deg South	Gc	2.63	4.62	6.02	7.20	7.60	8.12	7.72	7.23	6.28	4.91	3.46	2.60	5.70
	Dc	0.56	0.78	0.95	1.37	1.41	1.59	1.51	1.70	1.29	0.86	0.63	0.42	1.09
Latitude South	Gc	3.45	5.59	6.47	6.98	6.83	7.17	6.85	6.82	6.50	5.70	4.42	3.60	5.86
tilt 55 19' N	Dc	0.64	0.89	1.08	1.50	1.53	1.70	1.62	1.79	1.42	0.98	0.72	0.50	1.20
60 Deg South	Gc	3.54	5.67	6.43	6.81	6.58	6.88	6.58	6.62	6.42	5.74	4.52	3.72	5.79
	Dc	0.65	0.90	1.10	1.52	1.55	1.71	1.64	1.80	1.43	1.00	0.73	0.51	1.21
Vertical South	Gc	3.56	5.33	5.31	4.92	4.30	4.39	4.24	4.63	5.08	5.18	4.45	3.90	4.60
	Dc	0.64	0.92	1.15	1.55	1.61	1.75	1.68	1.74	1.43	1.01	0.73	0.51	1.23
Vertical SE/SW	Gc	2.65	4.20	4.77	5.06	4.89	5.05	4.86	4.88	4.83	4.35	3.33	2.84	4.31
	Dc	0.56	0.85	1.11	1.53	1.63	1.79	1.71	1.75	1.40	0.97	0.65	0.44	1.20
Vertical E/W	Gc	1.15	2.27	3.35	4.28	4.85	5.27	5.04	4.37	3.69	2.70	1.48	1.08	3.30
	Dc	0.42	0.70	1.00	1.45	1.61	1.81	1.72	1.69	1.27	0.83	0.50	0.32	1.11
Vertical NE/NW	Gc	0.37	0.82	1.59	2.58	3.43	3.92	3.73	2.85	1.99	1.13	0.46	0.27	1.93
	Dc	0.35	0.59	0.87	1.29	1.49	1.69	1.60	1.49	1.08	0.69	0.42	0.26	0.99
Vertical North	Gc	0.34	0.56	0.82	1.40	2.21	2.76	2.62	1.73	1.07	0.63	0.41	0.25	1.24
	Dc	0.34	0.56	0.82	1.18	1.38	1.59	1.51	1.35	0.99	0.63	0.41	0.25	0.92

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.54	1.34	1.18	1.09	1.05	1.03	1.03	1.07	1.14	1.27	1.46	1.78	1.13
30 Deg South	Gc/Gmax	2.43	1.89	1.44	1.19	1.07	1.04	1.04	1.14	1.34	1.69	2.23	3.17	1.30
Latitude South	Gc/Gmax	3.19	2.28	1.55	1.15	0.96	0.92	0.93	1.07	1.38	1.97	2.85	4.39	1.34
60 Deg South	Gc/Gmax	3.28	2.31	1.54	1.12	0.92	0.88	0.89	1.04	1.37	1.98	2.92	4.54	1.32
Vertical South	Gc/Gmax	3.30	2.18	1.27	0.81	0.60	0.56	0.57	0.73	1.08	1.79	2.87	4.76	1.05
Vertical SE/SW	Gc/Gmax	2.45	1.71	1.14	0.83	0.69	0.65	0.66	0.77	1.03	1.50	2.15	3.46	0.98
Vertical E/W	Gc/Gmax	1.07	0.93	0.80	0.71	0.68	0.67	0.68	0.69	0.79	0.93	0.95	1.32	0.75
Vertical NE/NW	Gc/Gmax	0.34	0.34	0.38	0.43	0.48	0.50	0.50	0.45	0.42	0.39	0.30	0.33	0.44
Vertical North	Gc/Gmax	0.31	0.23	0.20	0.23	0.31	0.35	0.35	0.27	0.23	0.22	0.26	0.31	0.28

Sunshine data														
Mean sunshine	Hours	0.9	2.4	3.1	4.5	4.8	5.9	4.7	4.4	3.2	2.4	1.8	1.2	3.3
Max. sunshine	Hours	5.6	8.2	9.7	12.1	13.5	14.6	13.5	12.9	10.8	8.5	7.3	5.8	10.2

UNITED KINGDOM Site No. 24 ALDERGROVE Computer file UKING024.INC
 Inclined surfaces - ground albedo 0.20 assumed. Units kWh/square metre per day
 Latitude 54 39' N Longitude 6 13' W Height 68 metres Data period (1.1968-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.48	1.15	2.17	3.62	4.35	5.23	4.33	3.59	2.64	1.38	0.72	0.39	2.51
	D mean	0.35	0.73	1.31	2.17	2.62	2.93	2.69	2.20	1.61	0.90	0.47	0.28	1.53
10 Deg South	Gm	0.59	1.37	2.41	3.86	4.49	5.33	4.43	3.76	2.87	1.58	0.90	0.50	2.68
	Dm	0.36	0.75	1.34	2.22	2.65	2.96	2.71	2.23	1.64	0.92	0.48	0.29	1.55
30 Deg South	Gm	0.77	1.71	2.73	4.09	4.49	5.23	4.37	3.85	3.14	1.87	1.20	0.69	2.85
	Dm	0.35	0.76	1.33	2.21	2.59	2.88	2.63	2.18	1.61	0.92	0.48	0.29	1.52
Latitude South	Gm	0.88	1.91	2.79	3.89	4.01	4.55	3.84	3.53	3.09	1.99	1.41	0.84	2.73
tilt 54 39' N	Dm	0.31	0.70	1.22	2.03	2.32	2.57	2.33	1.95	1.47	0.85	0.44	0.27	1.37
60 Deg South	Gm	0.89	1.92	2.76	3.78	3.85	4.34	3.67	3.41	3.03	1.98	1.43	0.85	2.66
	Dm	0.30	0.69	1.18	1.98	2.24	2.48	2.24	1.88	1.42	0.82	0.43	0.26	1.33
Vertical South	Gm	0.85	1.74	2.27	2.81	2.65	2.87	2.48	2.43	2.38	1.72	1.35	0.83	2.03
	Dm	0.24	0.56	0.95	1.56	1.73	1.93	1.71	1.46	1.12	0.66	0.35	0.21	1.04
Vertical SE/SW	Gm	0.67	1.43	2.02	2.71	2.74	3.09	2.59	2.43	2.17	1.44	1.06	0.64	1.92
	Dm	0.24	0.55	0.93	1.53	1.71	1.92	1.70	1.44	1.10	0.65	0.34	0.20	1.03
Vertical E/W	Gm	0.36	0.87	1.49	2.28	2.59	3.07	2.50	2.16	1.69	0.95	0.56	0.32	1.57
	Dm	0.23	0.50	0.88	1.45	1.68	1.90	1.67	1.39	1.05	0.60	0.32	0.19	0.99
Vertical NE/NW	Gm	0.22	0.50	0.96	1.64	2.09	2.55	2.08	1.66	1.16	0.59	0.30	0.18	1.16
	Dm	0.21	0.46	0.81	1.33	1.61	1.85	1.62	1.33	0.98	0.55	0.29	0.17	0.94
Vertical North	Gm	0.20	0.43	0.78	1.29	1.72	2.11	1.76	1.35	0.94	0.52	0.28	0.17	0.96
	Dm	0.20	0.43	0.78	1.27	1.57	1.82	1.60	1.30	0.94	0.52	0.28	0.17	0.91

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.23	1.19	1.11	1.07	1.03	1.02	1.02	1.05	1.09	1.14	1.25	1.28	1.07
30 Deg South	Gm/Gmean	1.60	1.49	1.26	1.13	1.03	1.00	1.01	1.07	1.19	1.36	1.67	1.77	1.13
Latitude South	Gm/Gmean	1.83	1.66	1.29	1.08	0.92	0.87	0.89	0.98	1.17	1.44	1.96	2.15	1.09
60 Deg South	Gm/Gmean	1.85	1.67	1.27	1.04	0.88	0.83	0.85	0.95	1.15	1.43	1.99	2.18	1.06
Vertical South	Gm/Gmean	1.77	1.51	1.05	0.78	0.61	0.55	0.57	0.68	0.90	1.25	1.88	2.13	0.81
Vertical SE/SW	Gm/Gmean	1.40	1.24	0.93	0.75	0.63	0.59	0.60	0.68	0.82	1.04	1.47	1.64	0.76
Vertical E/W	Gm/Gmean	0.75	0.76	0.69	0.63	0.60	0.59	0.58	0.60	0.64	0.69	0.78	0.82	0.63
Vertical NE/NW	Gm/Gmean	0.46	0.44	0.44	0.45	0.48	0.49	0.48	0.46	0.44	0.43	0.42	0.46	0.46
Vertical North	Gm/Gmean	0.42	0.37	0.36	0.36	0.40	0.40	0.41	0.38	0.36	0.38	0.39	0.44	0.38

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.19	2.30	4.09	6.01	7.21	8.18	7.50	6.32	5.01	2.87	1.54	0.87	4.43
	D clear	0.38	0.66	0.81	1.57	1.45	1.58	1.49	1.46	1.17	0.83	0.45	0.29	1.01
10 Deg South	Gc	1.79	3.04	4.84	6.51	7.55	8.39	7.71	6.75	5.65	3.59	2.21	1.49	4.97
	Dc	0.45	0.79	0.94	1.64	1.55	1.57	1.50	1.53	1.22	0.95	0.53	0.35	1.09
30 Deg South	Gc	2.83	4.21	5.86	7.08	7.69	8.41	7.77	7.13	6.58	4.69	3.34	2.60	5.69
	Dc	0.55	0.94	1.08	1.79	1.65	1.68	1.61	1.65	1.38	1.12	0.65	0.44	1.21
Latitude South	Gc	3.68	5.01	6.26	6.86	6.94	7.44	6.92	6.72	6.80	5.37	4.22	3.55	5.82
tilt 54 39' N	Dc	0.64	1.05	1.21	1.88	1.75	1.78	1.70	1.74	1.51	1.25	0.74	0.52	1.31
60 Deg South	Gc	3.78	5.08	6.21	6.68	6.64	7.09	6.60	6.50	6.70	5.40	4.32	3.68	5.72
	Dc	0.65	1.07	1.23	1.89	1.76	1.80	1.72	1.75	1.53	1.26	0.75	0.53	1.33
Vertical South	Gc	3.80	4.73	5.11	4.83	4.33	4.49	4.23	4.52	5.27	4.83	4.24	3.84	4.51
	Dc	0.64	1.04	1.24	1.79	1.75	1.83	1.74	1.71	1.51	1.23	0.75	0.54	1.31
Vertical SE/SW	Gc	2.82	3.74	4.59	4.86	4.87	5.18	4.84	4.80	4.97	4.01	3.17	2.80	4.22
	Dc	0.57	0.96	1.19	1.78	1.78	1.87	1.77	1.72	1.48	1.15	0.67	0.46	1.28
Vertical E/W	Gc	1.22	2.03	3.24	4.05	4.76	5.34	4.85	4.33	3.76	2.45	1.43	1.08	3.22
	Dc	0.43	0.77	1.06	1.66	1.76	1.90	1.76	1.67	1.35	0.96	0.52	0.34	1.18
Vertical NE/NW	Gc	0.39	0.79	1.57	2.47	3.35	3.94	3.48	2.84	2.02	1.07	0.47	0.29	1.90
	Dc	0.36	0.62	0.91	1.42	1.60	1.77	1.62	1.48	1.15	0.76	0.43	0.28	1.03
Vertical North	Gc	0.35	0.59	0.84	1.43	2.15	2.71	2.28	1.73	1.10	0.69	0.42	0.27	1.22
	Dc	0.35	0.59	0.84	1.27	1.48	1.66	1.50	1.34	1.04	0.69	0.42	0.27	0.96

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.50	1.32	1.18	1.08	1.05	1.03	1.03	1.07	1.13	1.25	1.43	1.71	1.12
30 Deg South	Gc/Gmax	2.38	1.83	1.43	1.18	1.07	1.03	1.04	1.13	1.31	1.63	2.17	2.99	1.28
Latitude South	Gc/Gmax	3.09	2.18	1.53	1.14	0.96	0.91	0.92	1.06	1.36	1.87	2.74	4.08	1.31
60 Deg South	Gc/Gmax	3.18	2.21	1.52	1.11	0.92	0.87	0.88	1.03	1.34	1.88	2.81	4.23	1.29
Vertical South	Gc/Gmax	3.19	2.06	1.25	0.80	0.60	0.55	0.56	0.71	1.05	1.68	2.75	4.41	1.02
Vertical SE/SW	Gc/Gmax	2.37	1.63	1.12	0.81	0.68	0.63	0.64	0.76	0.99	1.40	2.06	3.22	0.95
Vertical E/W	Gc/Gmax	1.02	0.88	0.79	0.67	0.66	0.65	0.65	0.69	0.75	0.85	0.93	1.24	0.73
Vertical NE/NW	Gc/Gmax	0.33	0.34	0.38	0.41	0.47	0.48	0.46	0.45	0.40	0.37	0.31	0.33	0.43
Vertical North	Gc/Gmax	0.29	0.26	0.20	0.24	0.30	0.33	0.30	0.27	0.22	0.24	0.27	0.31	0.28

Sunshine data														
Mean sunshine	Hours	1.2	2.6	3.5	5.6	5.5	6.6	5.0	4.5	3.8	2.7	2.0	1.2	3.7
Max. sunshine	Hours	5.6	8.2	9.9	12.4	13.9	14.7	13.3	12.4	11.0	8.7	6.9	5.6	10.2

UNITED KINGDOM Site No.26

CAWOOD

Computer file UKING026.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 53 50' N

Longitude 1 8' W

Height 6 metres

Data period (7.1968-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.54	1.14	2.08	3.31	4.38	5.09	4.34	3.66	2.64	1.53	0.88	0.54	2.52
	D mean	0.41	0.79	1.33	2.12	2.78	2.87	2.75	2.28	1.65	0.99	0.57	0.36	1.58
10 Deg South	Gm	0.64	1.31	2.29	3.49	4.52	5.18	4.44	3.84	2.86	1.74	1.09	0.71	2.68
	Dm	0.42	0.81	1.35	2.15	2.82	2.90	2.77	2.31	1.68	1.01	0.58	0.36	1.60
30 Deg South	Gm	0.80	1.56	2.54	3.64	4.52	5.07	4.37	3.93	3.11	2.04	1.43	1.00	2.84
	Dm	0.41	0.80	1.32	2.11	2.75	2.81	2.69	2.28	1.66	1.00	0.58	0.35	1.57
Latitude South	Gm	0.89	1.68	2.55	3.42	4.06	4.44	3.86	3.63	3.05	2.16	1.65	1.22	2.72
tilt 53 50' N	Dm	0.37	0.73	1.20	1.91	2.48	2.53	2.39	2.07	1.51	0.91	0.54	0.31	1.42
60 Deg South	Gm	0.90	1.68	2.51	3.30	3.86	4.20	3.66	3.49	2.97	2.15	1.68	1.25	2.64
	Dm	0.35	0.71	1.15	1.84	2.38	2.43	2.29	1.99	1.46	0.88	0.52	0.30	1.36
Vertical South	Gm	0.83	1.48	2.03	2.42	2.66	2.77	2.46	2.49	2.32	1.85	1.58	1.22	2.01
	Dm	0.27	0.56	0.90	1.42	1.82	1.89	1.74	1.54	1.15	0.70	0.42	0.23	1.06
Vertical SE/SW	Gm	0.67	1.22	1.80	2.34	2.72	2.98	2.57	2.47	2.12	1.55	1.24	0.94	1.89
	Dm	0.27	0.55	0.90	1.40	1.80	1.87	1.73	1.52	1.13	0.69	0.41	0.24	1.04
Vertical E/W	Gm	0.38	0.78	1.34	2.00	2.55	2.98	2.48	2.19	1.66	1.03	0.67	0.45	1.55
	Dm	0.26	0.51	0.85	1.34	1.76	1.86	1.70	1.46	1.06	0.65	0.39	0.24	1.01
Vertical NE/NW	Gm	0.24	0.49	0.91	1.50	2.06	2.48	2.07	1.68	1.15	0.65	0.36	0.23	1.15
	Dm	0.24	0.47	0.80	1.26	1.67	1.80	1.65	1.37	0.99	0.60	0.35	0.22	0.95
Vertical North	Gm	0.23	0.45	0.77	1.23	1.72	2.06	1.75	1.36	0.95	0.57	0.34	0.22	0.97
	Dm	0.23	0.45	0.77	1.22	1.62	1.78	1.62	1.32	0.95	0.57	0.34	0.22	0.93

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.15	1.10	1.05	1.03	1.02	1.02	1.05	1.08	1.14	1.24	1.32	1.06
30 Deg South	Gm/Gmean	1.48	1.37	1.22	1.10	1.03	1.00	1.01	1.07	1.18	1.33	1.63	1.85	1.13
Latitude South	Gm/Gmean	1.65	1.47	1.23	1.03	0.93	0.87	0.89	0.99	1.15	1.41	1.88	2.26	1.08
60 Deg South	Gm/Gmean	1.67	1.47	1.21	1.00	0.88	0.82	0.84	0.95	1.13	1.40	1.91	2.32	1.05
Vertical South	Gm/Gmean	1.54	1.30	0.98	0.73	0.61	0.54	0.57	0.68	0.88	1.21	1.79	2.26	0.80
Vertical SE/SW	Gm/Gmean	1.24	1.07	0.87	0.71	0.62	0.58	0.59	0.68	0.80	1.01	1.41	1.74	0.75
Vertical E/W	Gm/Gmean	0.70	0.68	0.64	0.60	0.58	0.58	0.57	0.60	0.63	0.67	0.76	0.83	0.62
Vertical NE/NW	Gm/Gmean	0.44	0.43	0.44	0.45	0.47	0.49	0.48	0.46	0.44	0.43	0.41	0.43	0.46
Vertical North	Gm/Gmean	0.43	0.40	0.37	0.37	0.39	0.41	0.40	0.37	0.36	0.37	0.39	0.41	0.38

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.35	2.62	4.38	5.87	7.19	8.02	7.33	6.21	4.69	3.13	1.74	1.09	4.48
	D clear	0.53	0.88	0.86	1.49	1.82	1.52	1.62	1.73	1.23	0.89	0.56	0.22	1.11
10 Deg South	Gc	1.90	3.24	5.12	6.39	7.51	8.27	7.55	6.61	5.32	3.81	2.43	1.90	5.01
	Dc	0.57	0.88	0.95	1.59	1.90	1.57	1.65	1.80	1.34	0.93	0.62	0.24	1.17
30 Deg South	Gc	2.91	4.43	6.16	6.91	7.64	8.26	7.59	6.97	6.15	4.97	3.67	3.38	5.76
	Dc	0.70	1.04	1.10	1.73	1.99	1.68	1.74	1.92	1.50	1.10	0.76	0.31	1.30
Latitude South	Gc	3.70	5.23	6.56	6.69	6.91	7.32	6.78	6.58	6.32	5.67	4.62	4.63	5.92
tilt 53 50' N	Dc	0.80	1.17	1.23	1.82	2.04	1.77	1.81	1.98	1.61	1.23	0.88	0.37	1.39
60 Deg South	Gc	3.81	5.31	6.50	6.48	6.57	6.92	6.42	6.32	6.22	5.71	4.76	4.84	5.82
	Dc	0.81	1.19	1.25	1.83	2.03	1.79	1.82	1.98	1.63	1.25	0.89	0.38	1.40
Vertical South	Gc	3.78	4.92	5.31	4.65	4.29	4.33	4.09	4.39	4.87	5.09	4.67	5.05	4.62
	Dc	0.79	1.16	1.27	1.74	1.91	1.81	1.78	1.84	1.56	1.23	0.89	0.41	1.37
Vertical SE/SW	Gc	2.83	3.89	4.79	4.72	4.75	5.03	4.68	4.60	4.57	4.27	3.58	3.67	4.28
	Dc	0.69	1.06	1.23	1.73	1.95	1.85	1.82	1.86	1.53	1.16	0.79	0.37	1.34
Vertical E/W	Gc	1.23	2.12	3.39	3.97	4.57	5.11	4.67	4.10	3.46	2.66	1.75	1.40	3.21
	Dc	0.51	0.85	1.10	1.62	1.93	1.85	1.82	1.79	1.38	0.97	0.61	0.32	1.23
Vertical NE/NW	Gc	0.44	0.85	1.65	2.44	3.21	3.69	3.37	2.70	1.89	1.17	0.60	0.31	1.87
	Dc	0.42	0.68	0.94	1.39	1.73	1.71	1.66	1.56	1.15	0.78	0.49	0.29	1.07
Vertical North	Gc	0.40	0.64	0.88	1.41	2.08	2.41	2.21	1.67	1.08	0.71	0.46	0.29	1.19
	Dc	0.40	0.64	0.88	1.25	1.57	1.58	1.53	1.39	1.03	0.71	0.46	0.29	0.98

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.41	1.24	1.17	1.09	1.04	1.03	1.03	1.06	1.13	1.22	1.40	1.74	1.12
30 Deg South	Gc/Gmax	2.16	1.69	1.41	1.18	1.06	1.03	1.03	1.12	1.31	1.59	2.11	3.10	1.29
Latitude South	Gc/Gmax	2.74	2.00	1.50	1.14	0.96	0.91	0.93	1.06	1.35	1.81	2.65	4.25	1.32
60 Deg South	Gc/Gmax	2.82	2.03	1.48	1.10	0.91	0.86	0.88	1.02	1.33	1.82	2.74	4.44	1.30
Vertical South	Gc/Gmax	2.80	1.88	1.21	0.79	0.60	0.54	0.56	0.71	1.04	1.63	2.68	4.63	1.03
Vertical SE/SW	Gc/Gmax	2.10	1.49	1.09	0.80	0.66	0.63	0.64	0.74	0.97	1.36	2.06	3.37	0.95
Vertical E/W	Gc/Gmax	0.91	0.81	0.77	0.68	0.64	0.64	0.64	0.66	0.74	0.85	1.01	1.28	0.72
Vertical NE/NW	Gc/Gmax	0.33	0.32	0.38	0.42	0.45	0.46	0.46	0.44	0.40	0.37	0.34	0.28	0.42
Vertical North	Gc/Gmax	0.30	0.24	0.20	0.24	0.29	0.30	0.30	0.27	0.23	0.23	0.26	0.27	0.27

Sunshine data

Mean sunshine	Hours	1.1	2.0	2.8	4.1	5.6	6.4	4.9	5.0	3.7	2.6	2.1	1.3	3.5
Max. sunshine	Hours	6.1	7.5	10.0	12.1	14.0	14.9	13.3	12.4	10.7	8.3	7.1	5.5	10.2

UNITED KINGDOM Site No. 30 SUTTON BONNINGTON Computer file UKING030.INC
 Inclined surfaces - ground albedo 0.20 assumed. Units kWh/square metre per day
 Latitude 52 50' N Longitude 1 15' W Height 118 metres Data period (9.1968-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes. kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.54	1.06	1.91	3.03	4.21	4.86	4.35	3.68	2.68	1.52	0.79	0.45	2.43
	D mean	0.40	0.76	1.22	1.96	2.52	2.78	2.69	2.32	1.64	0.96	0.53	0.33	1.51
10 Deg South	Gm	0.64	1.21	2.10	3.20	4.35	4.96	4.46	3.86	2.91	1.74	0.96	0.56	2.59
	Dm	0.40	0.79	1.24	2.00	2.55	2.80	2.72	2.37	1.68	0.99	0.55	0.34	1.54
30 Deg South	Gm	0.81	1.43	2.33	3.34	4.34	4.85	4.40	3.97	3.18	2.06	1.23	0.73	2.73
	Dm	0.40	0.80	1.23	1.98	2.50	2.73	2.65	2.36	1.69	1.00	0.56	0.33	1.52
Latitude South	Gm	0.91	1.52	2.35	3.16	3.92	4.27	3.92	3.70	3.15	2.19	1.40	0.84	2.62
tilt 52 50' N	Dm	0.36	0.75	1.14	1.82	2.27	2.47	2.39	2.17	1.57	0.94	0.53	0.30	1.40
60 Deg South	Gm	0.92	1.52	2.30	3.03	3.71	4.00	3.69	3.53	3.07	2.18	1.42	0.86	2.52
	Dm	0.35	0.73	1.09	1.74	2.17	2.35	2.28	2.08	1.52	0.91	0.51	0.29	1.34
Vertical South	Gm	0.85	1.32	1.86	2.22	2.53	2.62	2.47	2.52	2.40	1.88	1.31	0.81	1.90
	Dm	0.27	0.59	0.87	1.35	1.68	1.82	1.74	1.61	1.21	0.74	0.42	0.23	1.05
Vertical SE/SW	Gm	0.68	1.10	1.65	2.13	2.62	2.82	2.59	2.48	2.18	1.58	1.04	0.64	1.80
	Dm	0.27	0.57	0.85	1.33	1.67	1.82	1.73	1.58	1.18	0.72	0.40	0.22	1.03
Vertical E/W	Gm	0.38	0.71	1.22	1.81	2.47	2.81	2.49	2.18	1.69	1.03	0.58	0.34	1.48
	Dm	0.26	0.50	0.80	1.26	1.63	1.80	1.70	1.50	1.09	0.65	0.36	0.22	0.98
Vertical NE/NW	Gm	0.24	0.46	0.82	1.36	1.98	2.34	2.06	1.65	1.15	0.63	0.33	0.20	1.10
	Dm	0.24	0.44	0.73	1.16	1.55	1.74	1.63	1.38	0.99	0.58	0.33	0.20	0.92
Vertical North	Gm	0.23	0.42	0.70	1.12	1.62	1.93	1.71	1.34	0.94	0.55	0.31	0.19	0.92
	Dm	0.23	0.42	0.70	1.11	1.50	1.70	1.58	1.31	0.94	0.55	0.31	0.19	0.88

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.14	1.10	1.06	1.03	1.02	1.02	1.05	1.09	1.14	1.22	1.24	1.07
30 Deg South	Gm/Gmean	1.50	1.35	1.22	1.10	1.03	1.00	1.01	1.08	1.19	1.36	1.56	1.62	1.12
Latitude South	Gm/Gmean	1.68	1.43	1.23	1.04	0.93	0.88	0.90	1.00	1.17	1.44	1.77	1.87	1.08
60 Deg South	Gm/Gmean	1.70	1.43	1.20	1.00	0.88	0.82	0.85	0.96	1.15	1.43	1.80	1.91	1.04
Vertical South	Gm/Gmean	1.57	1.25	0.97	0.73	0.60	0.54	0.57	0.69	0.90	1.24	1.66	1.80	0.78
Vertical SE/SW	Gm/Gmean	1.26	1.04	0.86	0.70	0.62	0.58	0.60	0.67	0.81	1.04	1.32	1.42	0.74
Vertical E/W	Gm/Gmean	0.70	0.67	0.64	0.60	0.59	0.58	0.57	0.59	0.63	0.68	0.73	0.76	0.61
Vertical NE/NW	Gm/Gmean	0.44	0.43	0.43	0.45	0.47	0.48	0.47	0.45	0.43	0.41	0.42	0.44	0.45
Vertical North	Gm/Gmean	0.43	0.40	0.37	0.37	0.38	0.40	0.39	0.36	0.35	0.36	0.39	0.42	0.38

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes, kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.37	2.28	4.22	5.52	6.76	7.89	7.31	6.18	4.47	3.15	1.69	0.96	4.33
	D clear	0.52	0.98	0.97	1.74	1.65	1.82	1.84	2.09	1.36	1.01	0.66	0.32	1.25
10 Deg South	Gc	1.94	2.87	4.93	5.94	7.06	8.02	7.48	6.56	5.10	3.80	2.27	1.56	4.80
	Dc	0.61	1.12	1.10	1.82	1.74	1.76	1.82	2.15	1.53	1.09	0.73	0.39	1.32
30 Deg South	Gc	2.92	3.79	5.89	6.40	7.14	7.99	7.50	6.88	5.84	4.87	3.31	2.59	5.44
	Dc	0.75	1.33	1.26	1.95	1.83	1.85	1.91	2.27	1.71	1.27	0.90	0.50	1.46
Latitude South	Gc	3.65	4.36	6.22	6.19	6.47	7.12	6.73	6.51	5.98	5.48	4.06	3.41	5.52
tilt 52 50' N	Dc	0.84	1.46	1.38	2.01	1.87	1.91	1.95	2.29	1.80	1.40	1.01	0.57	1.54
60 Deg South	Gc	3.77	4.42	6.15	5.96	6.10	6.67	6.31	6.22	5.86	5.52	4.18	3.57	5.40
	Dc	0.86	1.47	1.40	2.00	1.87	1.92	1.95	2.26	1.80	1.42	1.03	0.59	1.55
Vertical South	Gc	3.71	4.03	4.99	4.27	3.93	4.16	3.99	4.30	4.55	4.86	4.04	3.66	4.21
	Dc	0.83	1.37	1.38	1.82	1.78	1.87	1.85	2.01	1.67	1.36	1.00	0.58	1.46
Vertical SE/SW	Gc	2.79	3.21	4.47	4.30	4.42	4.81	4.55	4.43	4.24	4.03	3.10	2.69	3.92
	Dc	0.73	1.23	1.32	1.81	1.82	1.92	1.90	2.03	1.62	1.28	0.89	0.50	1.42
Vertical E/W	Gc	1.23	1.78	3.17	3.62	4.33	4.86	4.54	3.90	3.20	2.48	1.51	1.09	2.98
	Dc	0.53	0.92	1.17	1.69	1.80	1.92	1.90	1.93	1.45	1.05	0.67	0.38	1.29
Vertical NE/NW	Gc	0.45	0.79	1.57	2.26	3.08	3.53	3.27	2.56	1.77	1.11	0.58	0.32	1.78
	Dc	0.43	0.69	0.98	1.42	1.63	1.77	1.72	1.64	1.18	0.82	0.51	0.31	1.09
Vertical North	Gc	0.41	0.63	0.90	1.37	2.00	2.32	2.16	1.62	1.06	0.74	0.48	0.30	1.17
	Dc	0.41	0.63	0.90	1.25	1.48	1.62	1.57	1.44	1.04	0.74	0.48	0.30	0.99

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.42	1.26	1.17	1.08	1.04	1.02	1.02	1.06	1.14	1.21	1.34	1.63	1.11
30 Deg South	Gc/Gmax	2.13	1.66	1.40	1.16	1.06	1.01	1.03	1.11	1.31	1.55	1.96	2.70	1.26
Latitude South	Gc/Gmax	2.66	1.91	1.47	1.12	0.96	0.90	0.92	1.05	1.34	1.74	2.40	3.55	1.27
60 Deg South	Gc/Gmax	2.75	1.94	1.46	1.08	0.90	0.85	0.86	1.01	1.31	1.75	2.47	3.72	1.25
Vertical South	Gc/Gmax	2.71	1.77	1.18	0.77	0.58	0.53	0.55	0.70	1.02	1.54	2.39	3.81	0.97
Vertical SE/SW	Gc/Gmax	2.04	1.41	1.06	0.78	0.65	0.61	0.62	0.72	0.95	1.28	1.83	2.80	0.90
Vertical E/W	Gc/Gmax	0.90	0.78	0.75	0.66	0.64	0.62	0.62	0.63	0.72	0.79	0.89	1.13	0.69
Vertical NE/NW	Gc/Gmax	0.33	0.35	0.37	0.41	0.46	0.45	0.45	0.41	0.40	0.35	0.34	0.33	0.41
Vertical North	Gc/Gmax	0.30	0.28	0.21	0.25	0.30	0.29	0.29	0.26	0.24	0.23	0.28	0.31	0.27

Sunshine data														
Mean sunshine	Hours	1.2	2.2	2.9	4.2	5.7	6.3	5.6	5.5	4.3	3.1	2.1	1.1	3.7
Max. sunshine	Hours	6.5	7.9	10.0	10.9	12.6	13.7	13.0	12.7	10.7	8.6	6.8	5.5	9.9

UNITED KINGDOM Site No. 32
Inclined surfaces - ground albedo 0.20 assumed.
Latitude 52 13' N Longitude 0 6' E

CAMBRIDGE

Height 23 metres

Computer file UKING032.1NC
Units kWh/square metre per day
Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.63	1.25	2.31	3.29	4.54	5.23	4.66	3.80	2.93	1.70	0.89	0.53	2.65
	D mean	0.44	0.81	1.37	2.04	2.71	2.88	2.77	2.26	1.66	1.01	0.57	0.36	1.58
10 Deg South	Gm	0.76	1.45	2.55	3.47	4.68	5.33	4.77	3.98	3.19	1.95	1.09	0.67	2.83
	Dm	0.45	0.82	1.40	2.07	2.74	2.91	2.80	2.30	1.70	1.03	0.59	0.36	1.60
30 Deg South	Gm	0.97	1.75	2.86	3.62	4.66	5.21	4.69	4.07	3.50	2.31	1.40	0.91	3.00
	Dm	0.44	0.82	1.39	2.04	2.68	2.84	2.72	2.26	1.69	1.03	0.59	0.36	1.58
Latitude South	Gm	1.10	1.89	2.91	3.42	4.22	4.61	4.18	3.78	3.47	2.47	1.60	1.08	2.90
tilt 52 13' N	Dm	0.40	0.75	1.29	1.88	2.44	2.59	2.47	2.07	1.57	0.96	0.56	0.33	1.45
60 Deg South	Gm	1.12	1.89	2.85	3.27	3.96	4.29	3.91	3.59	3.38	2.46	1.63	1.10	2.79
	Dm	0.38	0.72	1.24	1.79	2.33	2.46	2.34	1.98	1.51	0.92	0.54	0.31	1.38
Vertical South	Gm	1.04	1.67	2.31	2.38	2.69	2.80	2.60	2.54	2.63	2.12	1.51	1.06	2.11
	Dm	0.30	0.58	0.99	1.40	1.80	1.92	1.80	1.55	1.22	0.74	0.44	0.25	1.08
Vertical SE/SW	Gm	0.83	1.38	2.06	2.33	2.80	3.04	2.76	2.55	2.43	1.78	1.19	0.82	2.00
	Dm	0.30	0.57	0.98	1.37	1.79	1.92	1.79	1.52	1.19	0.73	0.43	0.25	1.07
Vertical E/W	Gm	0.46	0.88	1.54	2.01	2.67	3.05	2.70	2.29	1.90	1.18	0.66	0.42	1.65
	Dm	0.29	0.53	0.92	1.32	1.75	1.90	1.77	1.47	1.12	0.68	0.39	0.24	1.03
Vertical NE/NW	Gm	0.27	0.53	1.00	1.50	2.15	2.53	2.24	1.75	1.27	0.71	0.37	0.23	1.22
	Dm	0.27	0.49	0.85	1.23	1.67	1.84	1.71	1.39	1.04	0.63	0.36	0.23	0.98
Vertical North	Gm	0.26	0.47	0.82	1.21	1.76	2.07	1.85	1.39	1.00	0.60	0.34	0.22	1.00
	Dm	0.26	0.47	0.82	1.19	1.62	1.80	1.67	1.34	1.00	0.60	0.34	0.22	0.95

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.21	1.16	1.10	1.05	1.03	1.02	1.02	1.05	1.09	1.15	1.23	1.26	1.07
30 Deg South	Gm/Gmean	1.54	1.40	1.24	1.10	1.03	1.00	1.01	1.07	1.20	1.36	1.57	1.72	1.13
Latitude South	Gm/Gmean	1.75	1.51	1.26	1.04	0.93	0.88	0.90	1.00	1.18	1.45	1.80	2.04	1.09
60 Deg South	Gm/Gmean	1.78	1.51	1.23	0.99	0.87	0.82	0.84	0.94	1.15	1.45	1.83	2.08	1.05
Vertical South	Gm/Gmean	1.65	1.34	1.00	0.72	0.59	0.54	0.56	0.67	0.90	1.25	1.70	2.00	0.80
Vertical SE/SW	Gm/Gmean	1.32	1.10	0.89	0.71	0.62	0.58	0.59	0.67	0.83	1.05	1.34	1.55	0.75
Vertical E/W	Gm/Gmean	0.73	0.70	0.67	0.61	0.59	0.58	0.58	0.60	0.65	0.69	0.74	0.79	0.62
Vertical NE/NW	Gm/Gmean	0.43	0.42	0.43	0.46	0.47	0.48	0.48	0.46	0.43	0.42	0.42	0.43	0.46
Vertical North	Gm/Gmean	0.41	0.38	0.35	0.37	0.39	0.40	0.40	0.37	0.34	0.35	0.38	0.41	0.38

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.52	2.69	4.49	6.11	7.45	7.90	7.48	6.48	4.81	3.28	1.89	1.10	4.61
	D clear	0.42	0.70	0.86	1.43	1.67	1.66	1.50	1.57	1.12	0.78	0.62	0.27	1.05
10 Deg South	Gc	2.22	3.45	5.22	6.62	7.68	8.12	7.72	6.90	5.43	4.04	2.57	1.81	5.16
	Dc	0.50	0.79	0.96	1.53	1.68	1.71	1.56	1.65	1.23	0.87	0.68	0.33	1.13
30 Deg South	Gc	3.39	4.69	6.22	7.11	7.74	8.06	7.69	7.21	6.23	5.22	3.77	3.05	5.87
	Dc	0.61	0.94	1.11	1.66	1.77	1.80	1.66	1.77	1.39	1.03	0.84	0.41	1.25
Latitude South	Gc	4.26	5.47	6.56	6.87	7.02	7.19	6.89	6.80	6.37	5.87	4.62	4.02	6.00
tilt 52 13' N	Dc	0.70	1.05	1.23	1.75	1.84	1.86	1.73	1.84	1.50	1.15	0.95	0.48	1.34
60 Deg South	Gc	4.44	5.57	6.47	6.57	6.57	6.68	6.42	6.46	6.23	5.92	4.77	4.23	5.86
	Dc	0.72	1.08	1.26	1.76	1.85	1.87	1.75	1.85	1.52	1.17	0.97	0.50	1.36
Vertical South	Gc	4.38	5.11	5.21	4.64	4.17	4.12	3.99	4.38	4.80	5.21	4.62	4.34	4.58
	Dc	0.72	1.07	1.29	1.71	1.81	1.84	1.74	1.76	1.48	1.17	0.96	0.51	1.34
Vertical SE/SW	Gc	3.26	4.07	4.74	4.78	4.76	4.81	4.66	4.69	4.58	4.41	3.54	3.18	4.29
	Dc	0.64	0.99	1.24	1.70	1.85	1.89	1.78	1.79	1.46	1.12	0.87	0.45	1.32
Vertical E/W	Gc	1.43	2.27	3.40	4.08	4.71	4.91	4.75	4.27	3.54	2.79	1.73	1.26	3.27
	Dc	0.49	0.81	1.12	1.61	1.84	1.90	1.78	1.74	1.34	0.95	0.67	0.36	1.22
Vertical NE/NW	Gc	0.45	0.88	1.68	2.53	3.34	3.57	3.45	2.82	1.95	1.22	0.62	0.33	1.91
	Dc	0.42	0.66	0.96	1.40	1.68	1.75	1.65	1.54	1.13	0.78	0.53	0.32	1.07
Vertical North	Gc	0.41	0.63	0.89	1.44	2.14	2.34	2.24	1.72	1.08	0.72	0.49	0.31	1.20
	Dc	0.41	0.63	0.89	1.26	1.54	1.61	1.52	1.39	1.02	0.72	0.49	0.31	0.98

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.46	1.28	1.16	1.08	1.03	1.03	1.03	1.07	1.13	1.23	1.36	1.64	1.12
30 Deg South	Gc/Gmax	2.23	1.74	1.38	1.16	1.04	1.02	1.03	1.11	1.29	1.59	2.00	2.77	1.27
Latitude South	Gc/Gmax	2.80	2.03	1.46	1.12	0.94	0.91	0.92	1.05	1.32	1.79	2.44	3.65	1.30
60 Deg South	Gc/Gmax	2.92	2.07	1.44	1.08	0.88	0.85	0.86	1.00	1.29	1.80	2.52	3.85	1.27
Vertical South	Gc/Gmax	2.88	1.90	1.16	0.76	0.56	0.52	0.53	0.68	1.00	1.59	2.44	3.94	0.99
Vertical SE/SW	Gc/Gmax	2.14	1.51	1.06	0.78	0.64	0.61	0.62	0.72	0.95	1.35	1.87	2.89	0.93
Vertical E/W	Gc/Gmax	0.94	0.84	0.76	0.67	0.63	0.62	0.63	0.66	0.74	0.85	0.92	1.14	0.71
Vertical NE/NW	Gc/Gmax	0.30	0.33	0.37	0.41	0.45	0.45	0.46	0.44	0.41	0.37	0.33	0.30	0.41
Vertical North	Gc/Gmax	0.27	0.23	0.20	0.24	0.29	0.30	0.30	0.26	0.22	0.22	0.26	0.28	0.26

Sunshine data

Mean sunshine	Hours	1.4	2.3	3.7	4.5	6.0	7.1	5.9	5.3	4.7	3.2	2.3	1.4	4.0
Max. sunshine	Hours	6.7	8.2	10.0	12.2	13.2	14.5	13.6	12.7	10.5	8.8	7.3	5.9	10.3

UNITED KINGDOM Site No. 33 ABERPORTH Computer file UKING033.INC
 Inclined surfaces - ground albedo 0.20 assumed. Units kWh/square metre per day
 Latitude 52 8' N Longitude 4 34' W Height 133 metres Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.62	1.36	2.57	4.00	4.88	5.54	5.11	4.06	3.07	1.71	0.83	0.52	2.86
	D mean	0.46	0.87	1.45	2.22	2.71	2.82	2.80	2.38	1.75	1.03	0.57	0.38	1.62
10 Deg South	Gm	0.73	1.58	2.86	4.24	5.03	5.63	5.22	4.25	3.34	1.96	0.99	0.64	3.05
	Dm	0.47	0.89	1.48	2.26	2.75	2.85	2.82	2.42	1.79	1.05	0.58	0.39	1.65
30 Deg South	Gm	0.91	1.92	3.22	4.45	5.01	5.49	5.13	4.35	3.66	2.31	1.24	0.84	3.22
	Dm	0.46	0.90	1.47	2.23	2.68	2.78	2.74	2.38	1.78	1.05	0.58	0.38	1.62
Latitude South	Gm	1.01	2.09	3.29	4.23	4.53	4.85	4.57	4.04	3.63	2.46	1.39	0.96	3.09
tilt 52 8' N	Dm	0.42	0.84	1.37	2.06	2.45	2.54	2.49	2.18	1.65	0.98	0.54	0.35	1.49
60 Deg South	Gm	1.02	2.09	3.23	4.05	4.25	4.50	4.26	3.83	3.52	2.44	1.41	0.98	2.97
	Dm	0.40	0.81	1.31	1.97	2.34	2.42	2.37	2.08	1.59	0.94	0.52	0.34	1.43
Vertical South	Gm	0.94	1.85	2.63	2.95	2.87	2.91	2.81	2.70	2.74	2.10	1.29	0.93	2.23
	Dm	0.31	0.66	1.05	1.56	1.83	1.92	1.85	1.62	1.27	0.75	0.41	0.27	1.13
Vertical SE/SW	Gm	0.75	1.53	2.36	2.92	3.03	3.22	3.04	2.72	2.52	1.77	1.03	0.73	2.14
	Dm	0.31	0.64	1.04	1.54	1.82	1.91	1.84	1.60	1.25	0.74	0.41	0.26	1.12
Vertical E/W	Gm	0.43	0.96	1.76	2.52	2.92	3.29	3.03	2.44	1.98	1.18	0.59	0.39	1.79
	Dm	0.30	0.59	0.98	1.48	1.79	1.89	1.82	1.55	1.17	0.69	0.38	0.25	1.08
Vertical NE/NW	Gm	0.27	0.57	1.12	1.82	2.33	2.72	2.49	1.86	1.32	0.71	0.35	0.23	1.32
	Dm	0.27	0.53	0.92	1.40	1.72	1.85	1.77	1.46	1.09	0.64	0.34	0.23	1.02
Vertical North	Gm	0.26	0.51	0.88	1.39	1.87	2.19	2.02	1.48	1.05	0.61	0.33	0.22	1.07
	Dm	0.26	0.51	0.88	1.36	1.68	1.82	1.75	1.42	1.05	0.61	0.33	0.22	0.99

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.16	1.11	1.06	1.03	1.02	1.02	1.05	1.09	1.15	1.19	1.23	1.07
30 Deg South	Gm/Gmean	1.47	1.41	1.25	1.11	1.03	0.99	1.00	1.07	1.19	1.35	1.49	1.62	1.13
Latitude South	Gm/Gmean	1.63	1.54	1.28	1.06	0.93	0.88	0.89	1.00	1.18	1.44	1.67	1.85	1.08
60 Deg South	Gm/Gmean	1.64	1.54	1.26	1.01	0.87	0.81	0.83	0.94	1.15	1.43	1.70	1.88	1.04
Vertical South	Gm/Gmean	1.52	1.36	1.02	0.74	0.59	0.52	0.55	0.67	0.89	1.23	1.55	1.79	0.78
Vertical SE/SW	Gm/Gmean	1.21	1.13	0.92	0.73	0.62	0.58	0.60	0.67	0.82	1.03	1.24	1.40	0.75
Vertical E/W	Gm/Gmean	0.69	0.71	0.69	0.63	0.60	0.59	0.59	0.60	0.64	0.69	0.71	0.75	0.63
Vertical NE/NW	Gm/Gmean	0.44	0.42	0.44	0.46	0.48	0.49	0.49	0.46	0.43	0.41	0.42	0.44	0.46
Vertical North	Gm/Gmean	0.42	0.38	0.34	0.35	0.38	0.40	0.40	0.37	0.34	0.36	0.40	0.42	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.37	2.83	4.75	6.68	7.91	8.45	8.19	6.81	5.25	3.35	1.70	1.04	4.87
	D clear	0.56	0.84	0.82	1.30	1.43	1.35	1.20	1.62	1.24	0.85	0.59	0.38	1.01
10 Deg South	Gc	1.91	3.55	5.50	7.16	8.16	8.64	8.41	7.18	5.85	4.07	2.34	1.65	5.38
	Dc	0.65	0.90	0.90	1.32	1.44	1.39	1.25	1.64	1.28	0.91	0.70	0.47	1.07
30 Deg South	Gc	2.82	4.79	6.56	7.68	8.20	8.55	8.34	7.50	6.71	5.25	3.40	2.66	6.04
	Dc	0.79	1.07	1.04	1.45	1.55	1.50	1.36	1.76	1.44	1.07	0.86	0.59	1.21
Latitude South	Gc	3.48	5.56	6.93	7.41	7.42	7.60	7.45	7.07	6.86	5.90	4.15	3.45	6.11
tilt 52 8' N	Dc	0.89	1.19	1.17	1.57	1.66	1.61	1.49	1.84	1.56	1.20	0.97	0.67	1.32
60 Deg South	Gc	3.60	5.66	6.84	7.09	6.92	7.04	6.91	6.71	6.70	5.95	4.28	3.62	5.94
	Dc	0.90	1.21	1.21	1.60	1.69	1.65	1.53	1.84	1.58	1.22	0.99	0.69	1.34
Vertical South	Gc	3.52	5.18	5.49	4.96	4.35	4.28	4.22	4.54	5.16	5.24	4.13	3.68	4.56
	Dc	0.87	1.19	1.26	1.63	1.74	1.74	1.65	1.78	1.56	1.21	0.96	0.68	1.36
Vertical SE/SW	Gc	2.65	4.10	5.00	5.19	5.06	5.14	5.09	4.87	4.91	4.42	3.17	2.72	4.36
	Dc	0.76	1.09	1.22	1.63	1.77	1.78	1.68	1.81	1.53	1.15	0.86	0.58	1.32
Vertical E/W	Gc	1.19	2.26	3.59	4.49	5.09	5.39	5.33	4.44	3.76	2.79	1.57	1.12	3.42
	Dc	0.55	0.88	1.10	1.56	1.77	1.79	1.68	1.76	1.40	0.98	0.66	0.42	1.21
Vertical NE/NW	Gc	0.46	0.89	1.75	2.76	3.61	3.95	3.88	2.92	2.05	1.22	0.59	0.36	2.04
	Dc	0.44	0.70	0.96	1.38	1.64	1.67	1.58	1.56	1.19	0.80	0.51	0.34	1.07
Vertical North	Gc	0.42	0.66	0.90	1.50	2.28	2.57	2.50	1.76	1.13	0.73	0.48	0.33	1.28
	Dc	0.42	0.66	0.90	1.27	1.52	1.56	1.48	1.41	1.07	0.73	0.48	0.33	0.99

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.39	1.25	1.16	1.07	1.03	1.02	1.03	1.05	1.11	1.22	1.38	1.59	1.11
30 Deg South	Gc/Gmax	2.06	1.69	1.38	1.15	1.04	1.01	1.02	1.10	1.28	1.57	2.00	2.56	1.24
Latitude South	Gc/Gmax	2.54	1.97	1.46	1.11	0.94	0.90	0.91	1.04	1.31	1.76	2.44	3.32	1.25
60 Deg South	Gc/Gmax	2.63	2.00	1.44	1.06	0.88	0.83	0.84	0.99	1.28	1.78	2.52	3.48	1.22
Vertical South	Gc/Gmax	2.57	1.83	1.16	0.74	0.55	0.51	0.51	0.67	0.98	1.56	2.43	3.54	0.94
Vertical SE/SW	Gc/Gmax	1.93	1.45	1.05	0.78	0.64	0.61	0.62	0.71	0.94	1.32	1.87	2.62	0.89
Vertical E/W	Gc/Gmax	0.87	0.80	0.76	0.67	0.64	0.64	0.65	0.65	0.72	0.83	0.92	1.08	0.70
Vertical NE/NW	Gc/Gmax	0.34	0.31	0.37	0.41	0.46	0.47	0.47	0.43	0.39	0.36	0.35	0.35	0.42
Vertical North	Gc/Gmax	0.31	0.23	0.19	0.22	0.29	0.30	0.31	0.26	0.22	0.22	0.28	0.32	0.26

Sunshine data

Mean sunshine	Hours	1.3	2.7	4.0	5.4	6.3	7.2	6.2	5.4	4.7	3.1	1.9	1.3	4.1
Max. sunshine	Hours	6.2	8.5	10.3	12.3	13.8	14.9	14.4	12.8	10.9	8.6	7.0	6.3	10.5

UNITED KINGDOM Site No. 39

LONDON

Computer file UKING039.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 51 31' N

Longitude 0 7' W

Height 77 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.56	1.10	2.07	3.04	4.12	4.99	4.38	3.62	2.71	1.56	0.81	0.47	2.46
	D mean	0.42	0.75	1.32	1.86	2.46	2.63	2.62	2.16	1.56	0.97	0.56	0.34	1.47
10 Deg South	Gm	0.66	1.27	2.28	3.22	4.27	5.10	4.50	3.81	2.96	1.79	0.97	0.58	2.62
	Dm	0.44	0.78	1.37	1.91	2.50	2.67	2.65	2.22	1.61	1.01	0.58	0.36	1.51
30 Deg South	Gm	0.80	1.51	2.56	3.38	4.28	5.00	4.45	3.93	3.26	2.11	1.22	0.75	2.78
	Dm	0.44	0.80	1.40	1.90	2.47	2.62	2.60	2.22	1.64	1.04	0.60	0.36	1.51
Latitude South	Gm	0.88	1.63	2.60	3.23	3.91	4.46	4.01	3.70	3.26	2.25	1.37	0.86	2.68
tilt 51 31' N	Dm	0.41	0.77	1.33	1.78	2.28	2.42	2.38	2.07	1.56	1.00	0.58	0.35	1.41
60 Deg South	Gm	0.89	1.63	2.54	3.08	3.66	4.13	3.73	3.50	3.17	2.24	1.39	0.88	2.57
	Dm	0.39	0.74	1.28	1.70	2.17	2.30	2.26	1.98	1.50	0.97	0.57	0.34	1.35
Vertical South	Gm	0.81	1.43	2.06	2.25	2.48	2.67	2.48	2.49	2.48	1.92	1.27	0.83	1.93
	Dm	0.31	0.61	1.04	1.33	1.68	1.81	1.73	1.55	1.22	0.80	0.47	0.28	1.07
Vertical SE/SW	Gm	0.66	1.18	1.81	2.17	2.56	2.91	2.60	2.46	2.25	1.61	1.02	0.65	1.83
	Dm	0.30	0.59	1.00	1.31	1.67	1.81	1.73	1.52	1.18	0.77	0.45	0.26	1.05
Vertical E/W	Gm	0.38	0.74	1.32	1.84	2.40	2.90	2.51	2.16	1.73	1.05	0.57	0.35	1.50
	Dm	0.28	0.51	0.89	1.23	1.62	1.80	1.70	1.44	1.08	0.67	0.38	0.24	0.99
Vertical NE/NW	Gm	0.25	0.47	0.87	1.35	1.89	2.36	2.03	1.61	1.14	0.64	0.34	0.21	1.10
	Dm	0.25	0.45	0.78	1.12	1.51	1.71	1.60	1.31	0.96	0.59	0.33	0.21	0.90
Vertical North	Gm	0.24	0.42	0.73	1.08	1.52	1.89	1.66	1.27	0.90	0.55	0.32	0.20	0.90
	Dm	0.24	0.42	0.73	1.06	1.44	1.65	1.54	1.23	0.90	0.55	0.32	0.20	0.86

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.15	1.10	1.06	1.04	1.02	1.03	1.05	1.09	1.15	1.20	1.23	1.07
30 Deg South	Gm/Gmean	1.43	1.37	1.24	1.11	1.04	1.00	1.02	1.09	1.20	1.35	1.51	1.60	1.13
Latitude South	Gm/Gmean	1.57	1.48	1.26	1.06	0.95	0.89	0.92	1.02	1.20	1.44	1.69	1.83	1.09
60 Deg South	Gm/Gmean	1.59	1.48	1.23	1.01	0.89	0.83	0.85	0.97	1.17	1.44	1.72	1.87	1.04
Vertical South	Gm/Gmean	1.45	1.30	1.00	0.74	0.60	0.54	0.57	0.69	0.92	1.23	1.57	1.77	0.79
Vertical SE/SW	Gm/Gmean	1.18	1.07	0.87	0.71	0.62	0.58	0.59	0.68	0.83	1.03	1.26	1.38	0.74
Vertical E/W	Gm/Gmean	0.68	0.67	0.64	0.61	0.58	0.58	0.57	0.60	0.64	0.67	0.70	0.75	0.61
Vertical NE/NW	Gm/Gmean	0.45	0.43	0.42	0.44	0.46	0.47	0.46	0.44	0.42	0.41	0.42	0.45	0.45
Vertical North	Gm/Gmean	0.43	0.38	0.35	0.35	0.37	0.38	0.38	0.35	0.33	0.35	0.40	0.43	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.34	2.41	4.27	5.80	7.14	7.57	7.46	6.21	4.71	3.18	1.75	1.08	4.42
	D clear	0.67	1.00	1.37	1.66	2.00	1.89	1.94	2.02	1.48	1.11	0.81	0.52	1.37
10 Deg South	Gc	1.81	3.03	4.88	6.33	7.42	7.81	7.73	6.63	5.27	3.85	2.27	1.54	4.89
	Dc	0.79	1.16	1.49	1.82	2.06	1.96	2.02	2.15	1.59	1.25	0.91	0.58	1.48
30 Deg South	Gc	2.58	3.96	5.73	6.77	7.48	7.75	7.70	6.93	6.00	4.86	3.18	2.38	5.45
	Dc	0.96	1.37	1.68	1.96	2.14	2.04	2.09	2.27	1.77	1.46	1.10	0.72	1.63
Latitude South	Gc	3.12	4.51	6.00	6.54	6.81	6.94	6.94	6.54	6.11	5.39	3.79	3.00	5.48
tilt 51 31' N	Dc	1.07	1.49	1.78	2.01	2.16	2.06	2.11	2.28	1.86	1.58	1.23	0.82	1.70
60 Deg South	Gc	3.22	4.58	5.91	6.24	6.34	6.42	6.43	6.19	5.96	5.42	3.91	3.14	5.32
	Dc	1.09	1.51	1.79	2.01	2.13	2.04	2.09	2.25	1.86	1.60	1.25	0.84	1.71
Vertical South	Gc	3.11	4.13	4.75	4.40	4.04	3.95	4.00	4.21	4.58	4.72	3.72	3.14	4.06
	Dc	1.03	1.41	1.66	1.84	1.95	1.91	1.93	1.99	1.72	1.50	1.19	0.81	1.58
Vertical SE/SW	Gc	2.36	3.30	4.22	4.46	4.51	4.57	4.57	4.39	4.28	3.91	2.87	2.35	3.82
	Dc	0.88	1.26	1.58	1.83	2.01	1.98	2.00	2.02	1.68	1.39	1.04	0.69	1.53
Vertical E/W	Gc	1.09	1.85	2.98	3.79	4.38	4.61	4.55	3.90	3.25	2.41	1.42	0.97	2.94
	Dc	0.61	0.95	1.36	1.72	1.99	1.98	2.00	1.93	1.50	1.13	0.75	0.48	1.37
Vertical NE/NW	Gc	0.47	0.82	1.54	2.37	3.10	3.36	3.28	2.57	1.81	1.10	0.59	0.38	1.79
	Dc	0.46	0.71	1.08	1.45	1.78	1.80	1.80	1.64	1.22	0.86	0.55	0.37	1.15
Vertical North	Gc	0.43	0.65	0.97	1.41	2.02	2.21	2.15	1.62	1.09	0.77	0.51	0.36	1.19
	Dc	0.43	0.65	0.97	1.28	1.60	1.64	1.63	1.44	1.07	0.77	0.51	0.36	1.03

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.35	1.26	1.14	1.09	1.04	1.03	1.04	1.07	1.12	1.21	1.30	1.43	1.11
30 Deg South	Gc/Gmax	1.92	1.64	1.34	1.17	1.05	1.02	1.03	1.12	1.27	1.53	1.82	2.20	1.23
Latitude South	Gc/Gmax	2.33	1.87	1.40	1.13	0.95	0.92	0.93	1.05	1.30	1.70	2.17	2.78	1.24
60 Deg South	Gc/Gmax	2.40	1.90	1.38	1.08	0.89	0.85	0.86	1.00	1.26	1.70	2.23	2.91	1.20
Vertical South	Gc/Gmax	2.32	1.71	1.11	0.76	0.57	0.52	0.54	0.68	0.97	1.48	2.13	2.91	0.92
Vertical SE/SW	Gc/Gmax	1.76	1.37	0.99	0.77	0.63	0.60	0.61	0.71	0.91	1.23	1.64	2.18	0.86
Vertical E/W	Gc/Gmax	0.81	0.77	0.70	0.65	0.61	0.61	0.61	0.63	0.69	0.76	0.81	0.90	0.67
Vertical NE/NW	Gc/Gmax	0.35	0.34	0.36	0.41	0.43	0.44	0.44	0.41	0.38	0.35	0.34	0.35	0.41
Vertical North	Gc/Gmax	0.32	0.27	0.23	0.24	0.28	0.29	0.29	0.26	0.23	0.24	0.29	0.33	0.27

Sunshine data

Mean sunshine	Hours	1.3	2.5	3.8	4.7	6.3	7.5	6.3	5.9	4.9	3.4	2.3	1.4	4.2
Max. sunshine	Hours	6.5	8.2	9.9	12.3	13.7	14.4	14.4	13.1	10.5	9.4	7.3	6.1	10.5

UNITED KINGDOM Site No. 40 KEW Computer file UKING040.INC
 Inclined surfaces - ground albedo 0.20 assumed. Units kWh/square metre per day
 Latitude 51 28' N Longitude 0 19' W Height 5 metres Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.59	1.20	2.23	3.21	4.33	5.09	4.56	3.84	2.87	1.65	0.87	0.50	2.58
	D mean	0.44	0.80	1.37	1.95	2.58	2.79	2.73	2.31	1.66	1.00	0.58	0.35	1.55
10 Deg South	Gm	0.69	1.38	2.46	3.40	4.48	5.19	4.68	4.03	3.13	1.89	1.05	0.62	2.76
	Dm	0.45	0.83	1.41	1.99	2.63	2.82	2.77	2.37	1.72	1.04	0.60	0.36	1.59
30 Deg South	Gm	0.85	1.65	2.76	3.56	4.47	5.08	4.62	4.15	3.44	2.23	1.34	0.82	2.92
	Dm	0.45	0.84	1.42	1.98	2.58	2.76	2.71	2.36	1.74	1.05	0.62	0.36	1.58
Latitude South	Gm	0.94	1.78	2.81	3.40	4.08	4.53	4.16	3.89	3.43	2.37	1.50	0.95	2.82
tilt 51 28' N	Dm	0.41	0.80	1.35	1.85	2.38	2.54	2.48	2.20	1.64	1.01	0.59	0.34	1.47
60 Deg South	Gm	0.95	1.78	2.75	3.24	3.81	4.20	3.87	3.69	3.33	2.36	1.53	0.97	2.71
	Dm	0.40	0.77	1.29	1.76	2.26	2.41	2.35	2.09	1.58	0.97	0.58	0.33	1.40
Vertical South	Gm	0.86	1.56	2.23	2.36	2.58	2.72	2.57	2.61	2.60	2.03	1.41	0.93	2.04
	Dm	0.31	0.62	1.04	1.39	1.75	1.88	1.81	1.64	1.28	0.80	0.48	0.26	1.11
Vertical SE/SW	Gm	0.70	1.29	1.97	2.30	2.68	2.95	2.70	2.59	2.37	1.70	1.12	0.73	1.93
	Dm	0.31	0.60	1.02	1.36	1.74	1.88	1.80	1.61	1.24	0.77	0.46	0.26	1.09
Vertical E/W	Gm	0.40	0.82	1.45	1.96	2.52	2.94	2.61	2.28	1.84	1.12	0.62	0.38	1.58
	Dm	0.29	0.54	0.93	1.29	1.70	1.87	1.77	1.53	1.14	0.69	0.40	0.24	1.03
Vertical NE/NW	Gm	0.26	0.51	0.95	1.44	2.01	2.41	2.13	1.72	1.22	0.68	0.36	0.22	1.16
	Dm	0.26	0.48	0.83	1.18	1.59	1.78	1.67	1.40	1.03	0.62	0.35	0.22	0.95
Vertical North	Gm	0.25	0.46	0.79	1.14	1.63	1.95	1.75	1.36	0.97	0.59	0.34	0.21	0.96
	Dm	0.25	0.46	0.79	1.13	1.52	1.73	1.61	1.32	0.97	0.59	0.34	0.21	0.91

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.17	1.15	1.10	1.06	1.03	1.02	1.03	1.05	1.09	1.14	1.21	1.24	1.07
30 Deg South	Gm/Gmean	1.44	1.38	1.24	1.11	1.03	1.00	1.01	1.08	1.20	1.35	1.54	1.64	1.13
Latitude South	Gm/Gmean	1.59	1.48	1.26	1.06	0.94	0.89	0.91	1.01	1.20	1.44	1.72	1.90	1.09
60 Deg South	Gm/Gmean	1.61	1.48	1.23	1.01	0.88	0.82	0.85	0.96	1.16	1.43	1.76	1.94	1.05
Vertical South	Gm/Gmean	1.46	1.30	1.00	0.74	0.60	0.53	0.56	0.68	0.91	1.23	1.62	1.86	0.79
Vertical SE/SW	Gm/Gmean	1.19	1.08	0.88	0.72	0.62	0.58	0.59	0.67	0.83	1.03	1.29	1.46	0.75
Vertical E/W	Gm/Gmean	0.68	0.68	0.65	0.61	0.58	0.58	0.57	0.59	0.64	0.68	0.71	0.76	0.61
Vertical NE/NW	Gm/Gmean	0.44	0.43	0.43	0.45	0.46	0.47	0.47	0.45	0.43	0.41	0.41	0.44	0.45
Vertical North	Gm/Gmean	0.42	0.38	0.35	0.35	0.38	0.38	0.38	0.35	0.34	0.36	0.39	0.42	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.41	2.64	4.42	5.99	7.39	7.73	7.56	6.40	4.85	3.26	1.82	1.11	4.56
	D clear	0.62	0.93	1.18	1.60	1.93	1.94	1.89	2.04	1.49	0.99	0.75	0.43	1.32
10 Deg South	Gc	1.93	3.31	5.05	6.49	7.63	7.94	7.82	6.76	5.38	3.97	2.39	1.68	5.04
	Dc	0.73	1.05	1.27	1.72	1.95	1.98	1.96	2.10	1.56	1.12	0.84	0.51	1.40
30 Deg South	Gc	2.79	4.38	5.96	6.94	7.67	7.88	7.79	7.06	6.13	5.04	3.39	2.65	5.65
	Dc	0.89	1.25	1.44	1.85	2.03	2.05	2.04	2.22	1.73	1.31	1.02	0.64	1.54
Latitude South	Gc	3.39	5.02	6.25	6.70	6.98	7.06	7.01	6.67	6.24	5.61	4.07	3.39	5.70
tilt 51 28' N	Dc	0.99	1.37	1.56	1.92	2.06	2.07	2.07	2.24	1.82	1.43	1.14	0.72	1.62
60 Deg South	Gc	3.52	5.10	6.16	6.39	6.49	6.52	6.49	6.31	6.09	5.64	4.21	3.56	5.54
	Dc	1.01	1.39	1.57	1.92	2.05	2.06	2.05	2.21	1.83	1.45	1.17	0.74	1.62
Vertical South	Gc	3.41	4.62	4.95	4.49	4.12	4.01	4.03	4.29	4.68	4.92	4.01	3.59	4.26
	Dc	0.96	1.32	1.52	1.80	1.92	1.94	1.92	1.98	1.71	1.39	1.12	0.72	1.53
Vertical SE/SW	Gc	2.58	3.68	4.43	4.59	4.64	4.64	4.62	4.48	4.39	4.09	3.09	2.66	3.99
	Dc	0.83	1.20	1.45	1.79	1.98	2.00	1.98	2.01	1.67	1.31	0.99	0.63	1.49
Vertical E/W	Gc	1.18	2.05	3.16	3.92	4.54	4.69	4.62	4.00	3.33	2.54	1.53	1.09	3.06
	Dc	0.59	0.93	1.27	1.68	1.97	2.01	1.98	1.93	1.49	1.08	0.73	0.45	1.34
Vertical NE/NW	Gc	0.48	0.87	1.60	2.44	3.22	3.41	3.34	2.64	1.86	1.14	0.61	0.38	1.84
	Dc	0.46	0.72	1.05	1.44	1.77	1.83	1.80	1.65	1.22	0.85	0.55	0.37	1.14
Vertical North	Gc	0.44	0.67	0.95	1.43	2.08	2.24	2.18	1.66	1.11	0.76	0.51	0.35	1.20
	Dc	0.44	0.67	0.95	1.28	1.60	1.66	1.63	1.46	1.08	0.76	0.51	0.35	1.03

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.37	1.25	1.14	1.08	1.03	1.03	1.03	1.06	1.11	1.22	1.31	1.51	1.11
30 Deg South	Gc/Gmax	1.98	1.66	1.35	1.16	1.04	1.02	1.03	1.10	1.26	1.55	1.86	2.39	1.24
Latitude South	Gc/Gmax	2.40	1.90	1.41	1.12	0.94	0.91	0.93	1.04	1.29	1.72	2.24	3.05	1.25
60 Deg South	Gc/Gmax	2.50	1.93	1.39	1.07	0.88	0.84	0.86	0.99	1.26	1.73	2.31	3.21	1.22
Vertical South	Gc/Gmax	2.42	1.75	1.12	0.75	0.56	0.52	0.53	0.67	0.96	1.51	2.20	3.23	0.93
Vertical SE/SW	Gc/Gmax	1.83	1.39	1.00	0.77	0.63	0.60	0.61	0.70	0.90	1.25	1.70	2.40	0.88
Vertical E/W	Gc/Gmax	0.84	0.78	0.71	0.65	0.61	0.61	0.61	0.63	0.69	0.78	0.84	0.98	0.67
Vertical NE/NW	Gc/Gmax	0.34	0.33	0.36	0.41	0.44	0.44	0.44	0.41	0.38	0.35	0.34	0.34	0.40
Vertical North	Gc/Gmax	0.31	0.25	0.22	0.24	0.28	0.29	0.29	0.26	0.23	0.23	0.28	0.31	0.26

Sunshine data

Mean sunshine	Hours	1.3	2.5	3.9	4.9	6.3	7.4	6.5	6.0	5.0	3.4	2.4	1.4	4.3
Max. sunshine	Hours	6.5	8.5	9.8	12.2	13.6	14.5	14.5	12.9	10.4	9.3	7.3	6.2	10.5

UNITED KINGDOM Site No. 41

BRACKNELL

Computer file UKING041.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 51 23' N

Longitude 0 47' W

Height 73 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.62	1.24	2.31	3.32	4.41	5.20	4.71	3.88	2.94	1.71	0.91	0.53	2.66
	D mean	0.45	0.81	1.37	2.05	2.65	2.80	2.84	2.30	1.71	1.06	0.59	0.38	1.59
10 Deg South	Gm	0.73	1.43	2.55	3.51	4.55	5.30	4.83	4.07	3.20	1.95	1.10	0.65	2.83
	Dm	0.46	0.83	1.40	2.09	2.69	2.83	2.88	2.34	1.76	1.09	0.61	0.39	1.62
30 Deg South	Gm	0.90	1.71	2.85	3.66	4.53	5.17	4.75	4.17	3.49	2.28	1.40	0.84	2.98
	Dm	0.45	0.83	1.39	2.07	2.63	2.77	2.80	2.32	1.76	1.10	0.62	0.39	1.60
Latitude South	Gm	0.99	1.84	2.89	3.47	4.12	4.60	4.26	3.89	3.47	2.40	1.57	0.96	2.88
tilt 51 23' N	Dm	0.41	0.78	1.30	1.91	2.41	2.54	2.56	2.15	1.66	1.04	0.59	0.36	1.48
60 Deg South	Gm	1.00	1.84	2.83	3.30	3.84	4.25	3.96	3.68	3.36	2.39	1.60	0.98	2.76
	Dm	0.39	0.75	1.24	1.82	2.29	2.41	2.42	2.04	1.59	0.99	0.56	0.34	1.41
Vertical South	Gm	0.91	1.61	2.29	2.40	2.60	2.75	2.62	2.60	2.61	2.04	1.47	0.92	2.07
	Dm	0.30	0.60	1.00	1.42	1.76	1.89	1.85	1.60	1.28	0.80	0.46	0.27	1.10
Vertical SE/SW	Gm	0.73	1.33	2.04	2.34	2.70	3.00	2.77	2.60	2.39	1.72	1.17	0.72	1.96
	Dm	0.30	0.59	0.98	1.40	1.75	1.88	1.85	1.57	1.25	0.79	0.45	0.27	1.09
Vertical E/W	Gm	0.42	0.85	1.52	2.01	2.57	3.02	2.70	2.32	1.87	1.14	0.65	0.39	1.63
	Dm	0.29	0.54	0.92	1.33	1.72	1.87	1.82	1.51	1.16	0.72	0.41	0.25	1.05
Vertical NE/NW	Gm	0.27	0.52	0.99	1.50	2.06	2.50	2.22	1.76	1.26	0.71	0.37	0.23	1.20
	Dm	0.27	0.49	0.85	1.24	1.63	1.80	1.74	1.41	1.06	0.65	0.37	0.23	0.98
Vertical North	Gm	0.26	0.47	0.81	1.20	1.69	2.02	1.84	1.40	1.01	0.62	0.35	0.22	0.99
	Dm	0.26	0.47	0.81	1.19	1.58	1.76	1.69	1.35	1.01	0.62	0.35	0.22	0.94

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.15	1.10	1.06	1.03	1.02	1.02	1.05	1.09	1.14	1.21	1.23	1.06
30 Deg South	Gm/Gmean	1.45	1.38	1.23	1.10	1.03	0.99	1.01	1.08	1.19	1.33	1.54	1.59	1.12
Latitude South	Gm/Gmean	1.60	1.48	1.25	1.04	0.93	0.88	0.90	1.00	1.18	1.40	1.73	1.81	1.08
60 Deg South	Gm/Gmean	1.61	1.48	1.23	0.99	0.87	0.82	0.84	0.95	1.14	1.40	1.76	1.85	1.04
Vertical South	Gm/Gmean	1.47	1.30	0.99	0.72	0.59	0.53	0.56	0.67	0.89	1.19	1.62	1.74	0.78
Vertical SE/SW	Gm/Gmean	1.18	1.07	0.88	0.70	0.61	0.58	0.59	0.67	0.81	1.01	1.29	1.36	0.74
Vertical E/W	Gm/Gmean	0.68	0.69	0.66	0.61	0.58	0.58	0.57	0.60	0.64	0.67	0.71	0.74	0.61
Vertical NE/NW	Gm/Gmean	0.44	0.42	0.43	0.45	0.47	0.48	0.47	0.45	0.43	0.41	0.41	0.43	0.45
Vertical North	Gm/Gmean	0.42	0.38	0.35	0.36	0.38	0.39	0.39	0.36	0.34	0.36	0.38	0.41	0.37

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.54	2.76	4.64	6.14	7.30	8.05	7.82	6.42	4.81	3.31	1.91	1.11	4.66
	D clear	0.52	0.81	0.95	1.56	1.76	1.75	1.85	1.74	1.33	0.99	0.68	0.42	1.20
10 Deg South	Gc	2.16	3.50	5.32	6.61	7.55	8.22	7.98	6.84	5.40	3.99	2.55	1.67	5.16
	Dc	0.60	0.92	1.01	1.65	1.80	1.76	1.82	1.84	1.44	1.08	0.75	0.50	1.27
30 Deg South	Gc	3.21	4.67	6.29	7.07	7.59	8.14	7.94	7.13	6.15	5.08	3.66	2.66	5.80
	Dc	0.73	1.09	1.17	1.78	1.89	1.84	1.90	1.95	1.61	1.27	0.92	0.62	1.40
Latitude South	Gc	3.95	5.38	6.61	6.83	6.90	7.28	7.14	6.73	6.27	5.65	4.43	3.39	5.88
tilt 51 23' N	Dc	0.82	1.20	1.28	1.86	1.93	1.90	1.95	2.00	1.70	1.39	1.03	0.70	1.48
60 Deg South	Gc	4.12	5.48	6.51	6.51	6.41	6.71	6.60	6.35	6.11	5.69	4.58	3.57	5.72
	Dc	0.84	1.23	1.32	1.86	1.93	1.91	1.95	1.99	1.72	1.41	1.05	0.72	1.49
Vertical South	Gc	4.02	4.98	5.21	4.56	4.04	4.09	4.08	4.29	4.68	4.96	4.39	3.60	4.40
	Dc	0.83	1.19	1.33	1.77	1.84	1.87	1.88	1.84	1.62	1.36	1.03	0.70	1.44
Vertical SE/SW	Gc	3.01	3.96	4.75	4.69	4.61	4.81	4.73	4.56	4.42	4.14	3.38	2.66	4.14
	Dc	0.73	1.10	1.29	1.76	1.89	1.92	1.94	1.87	1.59	1.28	0.92	0.61	1.41
Vertical E/W	Gc	1.34	2.21	3.43	4.01	4.55	4.92	4.77	4.13	3.39	2.58	1.67	1.09	3.18
	Dc	0.55	0.88	1.16	1.66	1.89	1.93	1.94	1.82	1.44	1.06	0.70	0.45	1.29
Vertical NE/NW	Gc	0.48	0.89	1.71	2.50	3.24	3.59	3.45	2.73	1.88	1.16	0.63	0.37	1.89
	Dc	0.45	0.70	0.99	1.44	1.71	1.78	1.77	1.58	1.19	0.84	0.55	0.36	1.12
Vertical North	Gc	0.43	0.66	0.92	1.44	2.08	2.34	2.24	1.68	1.09	0.76	0.51	0.35	1.21
	Dc	0.43	0.66	0.92	1.28	1.56	1.64	1.62	1.41	1.06	0.76	0.51	0.35	1.02

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.40	1.27	1.15	1.08	1.03	1.02	1.02	1.07	1.12	1.21	1.34	1.50	1.11
30 Deg South	Gc/Gmax	2.08	1.69	1.36	1.15	1.04	1.01	1.01	1.11	1.28	1.53	1.92	2.40	1.25
Latitude South	Gc/Gmax	2.57	1.95	1.42	1.11	0.94	0.90	0.91	1.05	1.30	1.71	2.32	3.05	1.26
60 Deg South	Gc/Gmax	2.67	1.99	1.40	1.06	0.88	0.83	0.84	0.99	1.27	1.72	2.40	3.22	1.23
Vertical South	Gc/Gmax	2.61	1.80	1.12	0.74	0.55	0.51	0.52	0.67	0.97	1.50	2.30	3.24	0.94
Vertical SE/SW	Gc/Gmax	1.96	1.43	1.02	0.76	0.63	0.60	0.61	0.71	0.92	1.25	1.77	2.40	0.89
Vertical E/W	Gc/Gmax	0.87	0.80	0.74	0.65	0.62	0.61	0.61	0.64	0.70	0.78	0.87	0.98	0.68
Vertical NE/NW	Gc/Gmax	0.31	0.32	0.37	0.41	0.44	0.45	0.44	0.43	0.39	0.35	0.33	0.33	0.41
Vertical North	Gc/Gmax	0.28	0.24	0.20	0.23	0.28	0.29	0.29	0.26	0.23	0.23	0.27	0.31	0.26

Sunshine data

Mean sunshine	Hours	1.2	2.4	3.7	4.7	6.0	7.3	6.2	5.7	4.8	3.2	2.3	1.3	4.1
Max. sunshine	Hours	6.5	8.6	9.7	12.1	13.3	14.4	13.8	12.9	10.6	8.9	7.2	5.9	10.3

UNITED KINGDOM Site No. 48

JERSEY

Computer file UKING048.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 49 13' N

Longitude 2 12' W

Height 83 metres

Data period (1.1968-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	0.81	1.60	2.88	4.30	5.34	5.99	5.61	4.55	3.38	2.13	0.99	0.65	3.19
	D mean	0.54	0.94	1.51	2.21	2.71	2.92	2.86	2.40	1.73	1.16	0.62	0.43	1.67
10 Deg South	Gm	0.97	1.86	3.20	4.56	5.51	6.09	5.75	4.77	3.69	2.45	1.18	0.80	3.41
	Dm	0.54	0.97	1.55	2.26	2.75	2.96	2.90	2.45	1.78	1.20	0.64	0.44	1.71
30 Deg South	Gm	1.21	2.25	3.60	4.78	5.47	5.92	5.64	4.88	4.04	2.91	1.47	1.05	3.61
	Dm	0.53	0.97	1.55	2.25	2.71	2.90	2.84	2.44	1.79	1.22	0.64	0.43	1.69
Latitude South	Gm	1.33	2.44	3.68	4.60	5.02	5.32	5.13	4.61	4.03	3.10	1.63	1.20	3.51
tilt 49 13' N	Dm	0.49	0.93	1.47	2.13	2.53	2.70	2.66	2.30	1.70	1.18	0.60	0.40	1.59
60 Deg South	Gm	1.36	2.45	3.59	4.33	4.60	4.81	4.67	4.29	3.88	3.09	1.65	1.23	3.33
	Dm	0.45	0.88	1.40	2.02	2.39	2.55	2.50	2.18	1.63	1.13	0.57	0.38	1.51
Vertical South	Gm	1.24	2.15	2.88	3.10	3.03	3.02	3.00	2.98	2.99	2.64	1.50	1.16	2.47
	Dm	0.36	0.72	1.15	1.63	1.90	2.03	1.98	1.74	1.33	0.94	0.46	0.31	1.21
Vertical SE/SW	Gm	0.99	1.78	2.61	3.10	3.27	3.39	3.29	3.04	2.78	2.22	1.20	0.91	2.38
	Dm	0.36	0.71	1.13	1.61	1.90	2.03	1.98	1.71	1.30	0.92	0.46	0.30	1.20
Vertical E/W	Gm	0.56	1.14	1.98	2.70	3.18	3.48	3.27	2.75	2.20	1.47	0.69	0.48	2.00
	Dm	0.35	0.65	1.06	1.54	1.87	2.02	1.97	1.65	1.22	0.83	0.42	0.29	1.16
Vertical NE/NW	Gm	0.34	0.66	1.24	1.93	2.51	2.85	2.63	2.04	1.43	0.85	0.40	0.27	1.43
	Dm	0.33	0.60	0.98	1.44	1.78	1.95	1.88	1.54	1.13	0.75	0.39	0.27	1.09
Vertical North	Gm	0.32	0.57	0.94	1.43	1.94	2.25	2.07	1.55	1.08	0.71	0.37	0.26	1.13
	Dm	0.32	0.57	0.94	1.38	1.74	1.91	1.82	1.48	1.08	0.71	0.37	0.26	1.05

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.20	1.16	1.11	1.06	1.03	1.02	1.02	1.05	1.09	1.15	1.19	1.23	1.07
30 Deg South	Gm/Gmean	1.49	1.41	1.25	1.11	1.02	0.99	1.00	1.07	1.20	1.37	1.49	1.62	1.13
Latitude South	Gm/Gmean	1.64	1.52	1.28	1.07	0.94	0.89	0.91	1.01	1.19	1.46	1.65	1.85	1.10
60 Deg South	Gm/Gmean	1.68	1.53	1.25	1.01	0.86	0.80	0.83	0.94	1.15	1.45	1.67	1.89	1.04
Vertical South	Gm/Gmean	1.53	1.34	1.00	0.72	0.57	0.50	0.54	0.65	0.88	1.24	1.51	1.78	0.77
Vertical SE/SW	Gm/Gmean	1.22	1.11	0.91	0.72	0.61	0.57	0.59	0.67	0.82	1.04	1.21	1.40	0.75
Vertical E/W	Gm/Gmean	0.69	0.71	0.69	0.63	0.60	0.58	0.58	0.60	0.65	0.69	0.70	0.74	0.63
Vertical NE/NW	Gm/Gmean	0.42	0.41	0.43	0.45	0.47	0.48	0.47	0.45	0.42	0.40	0.40	0.41	0.45
Vertical North	Gm/Gmean	0.40	0.36	0.33	0.33	0.36	0.38	0.37	0.34	0.32	0.33	0.37	0.40	0.35

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	1.79	3.29	5.39	6.87	8.03	8.40	8.15	7.14	5.60	4.11	2.32	1.42	5.22
	D clear	0.42	0.81	0.87	1.33	1.45	1.62	1.52	1.65	1.19	1.02	0.68	0.38	1.08
10 Deg South	Gc	2.59	4.09	6.14	7.34	8.29	8.60	8.39	7.52	6.20	4.86	3.05	2.14	5.78
	Dc	0.52	0.88	0.92	1.39	1.50	1.67	1.60	1.70	1.24	1.04	0.72	0.46	1.14
30 Deg South	Gc	3.89	5.40	7.19	7.77	8.22	8.41	8.24	7.76	6.99	6.11	4.36	3.38	6.48
	Dc	0.65	1.04	1.07	1.52	1.60	1.75	1.69	1.81	1.39	1.22	0.88	0.56	1.27
Latitude South	Gc	4.74	6.12	7.48	7.48	7.49	7.56	7.44	7.32	7.08	6.72	5.17	4.22	6.57
tilt 49 13' N	Dc	0.74	1.15	1.19	1.62	1.68	1.82	1.76	1.88	1.50	1.34	0.98	0.64	1.36
60 Deg South	Gc	5.01	6.25	7.32	7.01	6.78	6.79	6.70	6.77	6.83	6.77	5.40	4.50	6.34
	Dc	0.77	1.19	1.25	1.65	1.71	1.84	1.78	1.89	1.53	1.38	1.02	0.66	1.39
Vertical South	Gc	4.89	5.60	5.73	4.76	4.09	3.98	3.96	4.43	5.10	5.81	5.13	4.50	4.83
	Dc	0.78	1.19	1.32	1.67	1.75	1.83	1.79	1.81	1.53	1.38	1.02	0.67	1.40
Vertical SE/SW	Gc	3.72	4.47	5.30	5.07	4.89	4.84	4.80	4.81	4.96	4.88	3.97	3.32	4.59
	Dc	0.71	1.11	1.29	1.67	1.79	1.89	1.84	1.84	1.52	1.31	0.92	0.59	1.37
Vertical E/W	Gc	1.81	2.54	3.89	4.48	5.03	5.10	5.02	4.41	3.91	3.09	2.03	1.38	3.56
	Dc	0.57	0.91	1.18	1.61	1.81	1.92	1.86	1.78	1.41	1.12	0.73	0.46	1.28
Vertical NE/NW	Gc	0.58	0.99	1.93	2.80	3.61	3.75	3.66	2.89	2.17	1.35	0.73	0.41	2.08
	Dc	0.46	0.75	1.03	1.43	1.68	1.78	1.73	1.58	1.21	0.92	0.59	0.39	1.13
Vertical North	Gc	0.44	0.71	0.97	1.53	2.25	2.40	2.33	1.68	1.15	0.84	0.56	0.38	1.27
	Dc	0.44	0.71	0.97	1.30	1.55	1.65	1.60	1.42	1.10	0.84	0.56	0.38	1.04

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.45	1.24	1.14	1.07	1.03	1.02	1.03	1.05	1.11	1.18	1.32	1.51	1.11
30 Deg South	Gc/Gmax	2.17	1.64	1.33	1.13	1.02	1.00	1.01	1.09	1.25	1.49	1.88	2.38	1.24
Latitude South	Gc/Gmax	2.65	1.86	1.39	1.09	0.93	0.90	0.91	1.02	1.26	1.63	2.23	2.97	1.26
60 Deg South	Gc/Gmax	2.80	1.90	1.36	1.02	0.84	0.81	0.82	0.95	1.22	1.65	2.33	3.17	1.22
Vertical South	Gc/Gmax	2.73	1.70	1.06	0.69	0.51	0.47	0.49	0.62	0.91	1.41	2.21	3.17	0.93
Vertical SE/SW	Gc/Gmax	2.08	1.36	0.98	0.74	0.61	0.58	0.59	0.67	0.89	1.19	1.71	2.34	0.88
Vertical E/W	Gc/Gmax	1.01	0.77	0.72	0.65	0.63	0.61	0.62	0.62	0.70	0.75	0.88	0.97	0.68
Vertical NE/NW	Gc/Gmax	0.32	0.30	0.36	0.41	0.45	0.45	0.45	0.41	0.39	0.33	0.31	0.29	0.40
Vertical North	Gc/Gmax	0.25	0.22	0.18	0.22	0.28	0.29	0.29	0.23	0.20	0.20	0.24	0.27	0.24

Sunshine data

Mean sunshine	Hours	1.6	3.2	4.8	6.4	7.5	8.3	8.0	6.9	5.7	4.4	2.3	1.7	5.1
Max. sunshine	Hours	7.2	9.0	10.8	12.7	14.3	15.2	14.9	13.6	11.1	9.8	7.5	6.7	11.1

YUGOSLAVIA Site No. 244

BEOGRAD

Computer file YUGOS244.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 44 47' N

Longitude 20 32' E

Height 243 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.49	2.24	3.47	4.72	5.80	6.19	6.27	5.59	4.26	2.92	1.74	1.06	3.82
	D mean	0.78	1.18	1.72	2.25	2.65	2.79	2.64	2.30	1.88	1.24	0.86	0.64	1.75
10 Deg South	Gm	1.83	2.58	3.80	4.96	5.94	6.26	6.39	5.85	4.63	3.37	2.12	1.27	4.09
	Dm	0.79	1.20	1.75	2.29	2.69	2.82	2.67	2.35	1.93	1.28	0.88	0.65	1.78
30 Deg South	Gm	2.38	3.07	4.19	5.11	5.81	5.98	6.20	5.97	5.03	4.01	2.73	1.59	4.35
	Dm	0.78	1.19	1.72	2.26	2.64	2.76	2.64	2.36	1.95	1.30	0.88	0.62	1.76
Latitude South	Gm	2.63	3.24	4.23	4.92	5.41	5.49	5.74	5.71	5.02	4.23	3.00	1.74	4.28
tilt 44 47' N	Dm	0.74	1.14	1.65	2.16	2.52	2.63	2.54	2.30	1.90	1.27	0.85	0.58	1.69
60 Deg South	Gm	2.75	3.25	4.06	4.49	4.74	4.71	4.98	5.15	4.75	4.23	3.12	1.79	4.00
	Dm	0.69	1.06	1.53	2.01	2.34	2.43	2.37	2.17	1.79	1.22	0.80	0.53	1.58
Vertical South	Gm	2.53	2.78	3.15	3.09	2.97	2.83	3.02	3.41	3.54	3.55	2.83	1.63	2.94
	Dm	0.56	0.86	1.25	1.62	1.89	1.97	1.94	1.81	1.50	1.04	0.67	0.41	1.30
Vertical SE/SW	Gm	2.01	2.32	2.92	3.24	3.34	3.32	3.49	3.62	3.36	2.99	2.27	1.29	2.85
	Dm	0.57	0.86	1.24	1.61	1.88	1.97	1.95	1.80	1.47	1.02	0.67	0.42	1.29
Vertical E/W	Gm	1.15	1.53	2.30	2.96	3.36	3.55	3.63	3.36	2.71	2.00	1.34	0.71	2.39
	Dm	0.55	0.81	1.18	1.57	1.86	1.98	1.96	1.75	1.39	0.95	0.63	0.42	1.26
Vertical NE/NW	Gm	0.57	0.87	1.47	2.16	2.65	2.95	2.89	2.42	1.74	1.06	0.66	0.41	1.66
	Dm	0.52	0.76	1.13	1.50	1.79	1.93	1.88	1.63	1.29	0.87	0.59	0.40	1.19
Vertical North	Gm	0.50	0.73	1.09	1.54	1.97	2.30	2.15	1.68	1.24	0.84	0.56	0.39	1.25
	Dm	0.50	0.73	1.09	1.46	1.76	1.90	1.84	1.57	1.24	0.84	0.56	0.39	1.16

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.23	1.15	1.10	1.05	1.02	1.01	1.02	1.05	1.09	1.15	1.22	1.20	1.07
30 Deg South	Gm/Gmean	1.60	1.37	1.21	1.08	1.00	0.97	0.99	1.07	1.18	1.37	1.57	1.50	1.14
Latitude South	Gm/Gmean	1.76	1.45	1.22	1.04	0.93	0.89	0.92	1.02	1.18	1.45	1.72	1.64	1.12
60 Deg South	Gm/Gmean	1.85	1.45	1.17	0.95	0.82	0.76	0.79	0.92	1.12	1.45	1.79	1.69	1.05
Vertical South	Gm/Gmean	1.70	1.24	0.91	0.65	0.51	0.46	0.48	0.61	0.83	1.22	1.63	1.54	0.77
Vertical SE/SW	Gm/Gmean	1.35	1.04	0.84	0.69	0.58	0.54	0.56	0.65	0.79	1.02	1.30	1.22	0.75
Vertical E/W	Gm/Gmean	0.77	0.68	0.66	0.63	0.58	0.57	0.58	0.60	0.64	0.69	0.77	0.67	0.63
Vertical NE/NW	Gm/Gmean	0.38	0.39	0.42	0.46	0.46	0.48	0.46	0.43	0.41	0.36	0.38	0.39	0.44
Vertical North	Gm/Gmean	0.34	0.33	0.31	0.33	0.34	0.37	0.34	0.30	0.29	0.29	0.32	0.37	0.33

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	2.90	4.00	5.97	7.38	8.40	8.61	8.43	7.56	6.13	4.64	3.27	2.21	5.80
	D clear	0.49	0.66	0.72	1.01	1.17	1.45	1.35	1.51	1.11	0.78	0.56	0.33	0.93
10 Deg South	Gc	3.91	4.89	6.69	7.81	8.57	8.70	8.57	7.84	6.71	5.47	4.26	3.15	6.39
	Dc	0.53	0.73	0.76	1.09	1.21	1.46	1.39	1.53	1.17	0.85	0.61	0.37	0.98
30 Deg South	Gc	5.63	6.28	7.63	8.08	8.29	8.31	8.22	7.92	7.39	6.72	5.90	4.76	7.10
	Dc	0.66	0.88	0.90	1.21	1.31	1.53	1.47	1.63	1.31	1.00	0.75	0.46	1.09
Latitude South	Gc	6.51	6.88	7.81	7.76	7.64	7.58	7.53	7.50	7.40	7.18	6.71	5.62	7.18
tilt 44 47' N	Dc	0.74	0.97	1.00	1.30	1.39	1.59	1.54	1.69	1.40	1.09	0.84	0.52	1.17
60 Deg South	Gc	7.00	7.06	7.51	6.98	6.52	6.41	6.39	6.64	6.97	7.21	7.12	6.14	6.83
	Dc	0.81	1.04	1.10	1.38	1.47	1.64	1.59	1.72	1.46	1.17	0.90	0.58	1.24
Vertical South	Gc	6.63	6.13	5.61	4.44	3.62	3.50	3.51	4.07	4.95	5.98	6.57	5.97	5.08
	Dc	0.87	1.10	1.24	1.50	1.59	1.71	1.67	1.71	1.49	1.23	0.96	0.63	1.31
Vertical SE/SW	Gc	5.07	4.95	5.38	5.08	4.75	4.58	4.59	4.69	4.89	5.18	5.10	4.39	4.89
	Dc	0.81	1.04	1.23	1.51	1.65	1.78	1.73	1.75	1.47	1.19	0.90	0.59	1.31
Vertical E/W	Gc	2.55	2.94	4.14	4.81	5.26	5.11	5.13	4.54	3.91	3.51	2.70	1.87	3.88
	Dc	0.69	0.90	1.16	1.48	1.68	1.83	1.78	1.73	1.37	1.06	0.76	0.51	1.25
Vertical NE/NW	Gc	0.78	1.13	2.12	3.09	3.89	3.87	3.87	3.06	2.17	1.55	0.89	0.50	2.25
	Dc	0.59	0.78	1.06	1.36	1.59	1.73	1.68	1.56	1.20	0.91	0.65	0.47	1.13
Vertical North	Gc	0.57	0.74	1.01	1.60	2.40	2.46	2.47	1.73	1.11	0.85	0.63	0.46	1.34
	Dc	0.57	0.74	1.01	1.27	1.50	1.62	1.57	1.43	1.11	0.85	0.63	0.46	1.06

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.35	1.22	1.12	1.06	1.02	1.01	1.02	1.04	1.10	1.18	1.30	1.42	1.10
30 Deg South	Gc/Gmax	1.94	1.57	1.28	1.10	0.99	0.96	0.98	1.05	1.21	1.45	1.80	2.15	1.22
Latitude South	Gc/Gmax	2.24	1.72	1.31	1.05	0.91	0.88	0.89	0.99	1.21	1.55	2.05	2.54	1.24
60 Deg South	Gc/Gmax	2.41	1.76	1.26	0.95	0.78	0.74	0.76	0.88	1.14	1.55	2.18	2.78	1.18
Vertical South	Gc/Gmax	2.29	1.53	0.94	0.60	0.43	0.41	0.42	0.54	0.81	1.29	2.01	2.70	0.88
Vertical SE/SW	Gc/Gmax	1.75	1.24	0.90	0.69	0.56	0.53	0.54	0.62	0.80	1.12	1.56	1.99	0.84
Vertical E/W	Gc/Gmax	0.88	0.74	0.69	0.65	0.63	0.59	0.61	0.60	0.64	0.76	0.83	0.85	0.67
Vertical NE/NW	Gc/Gmax	0.27	0.28	0.35	0.42	0.46	0.45	0.46	0.41	0.35	0.33	0.27	0.23	0.39
Vertical North	Gc/Gmax	0.20	0.19	0.17	0.22	0.29	0.29	0.29	0.23	0.18	0.18	0.19	0.21	0.23

Sunshine data

Mean sunshine	Hours	2.9	3.7	4.9	6.3	7.7	8.4	9.1	8.6	6.7	5.6	3.7	1.9	5.8
Max. sunshine	Hours	8.5	9.5	10.7	12.8	13.8	14.2	14.2	13.1	11.5	10.1	9.2	7.6	11.3

YUGOSLAVIA Site No. 245

NEGOTIN

Computer file YUGOS245.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 44 14' N

Longitude 22 33' E

Height 42 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.45	2.11	3.65	4.86	6.47	6.83	7.07	6.11	4.74	3.23	1.60	1.24	4.13
	D mean	0.83	1.10	1.67	2.15	2.58	2.58	2.44	2.19	1.66	1.20	0.77	0.73	1.66
10 Deg South	Gm	1.72	2.41	4.00	5.10	6.60	6.88	7.20	6.38	5.16	3.73	1.93	1.49	4.40
	Dm	0.83	1.10	1.68	2.18	2.61	2.60	2.48	2.23	1.68	1.22	0.77	0.74	1.68
30 Deg South	Gm	2.14	2.82	4.40	5.23	6.42	6.54	6.95	6.50	5.63	4.44	2.44	1.89	4.63
	Dm	0.79	1.05	1.63	2.13	2.56	2.56	2.46	2.25	1.67	1.20	0.74	0.72	1.65
Latitude South	Gm	2.32	2.96	4.43	5.03	5.98	5.99	6.42	6.22	5.63	4.69	2.66	2.06	4.54
tilt 44 14' N	Dm	0.73	0.98	1.55	2.03	2.46	2.46	2.39	2.20	1.62	1.15	0.69	0.69	1.58
60 Deg South	Gm	2.39	2.95	4.24	4.56	5.18	5.08	5.51	5.57	5.31	4.68	2.75	2.14	4.20
	Dm	0.66	0.89	1.42	1.88	2.29	2.30	2.26	2.09	1.54	1.08	0.63	0.63	1.48
Vertical South	Gm	2.14	2.49	3.27	3.09	3.17	2.96	3.25	3.64	3.91	3.91	2.48	1.96	3.03
	Dm	0.51	0.69	1.15	1.54	1.90	1.93	1.94	1.80	1.33	0.93	0.50	0.51	1.23
Vertical SE/SW	Gm	1.71	2.08	3.06	3.34	3.72	3.66	3.89	3.97	3.84	3.29	1.98	1.54	3.01
	Dm	0.52	0.71	1.16	1.53	1.88	1.93	1.93	1.78	1.33	0.94	0.51	0.51	1.23
Vertical E/W	Gm	1.00	1.38	2.44	3.12	3.83	4.09	4.08	3.74	3.16	2.22	1.17	0.85	2.60
	Dm	0.53	0.71	1.15	1.51	1.87	1.94	1.93	1.75	1.30	0.92	0.51	0.49	1.22
Vertical NE/NW	Gm	0.55	0.80	1.54	2.28	3.00	3.39	3.18	2.67	1.96	1.14	0.57	0.47	1.80
	Dm	0.51	0.70	1.13	1.48	1.83	1.91	1.87	1.66	1.27	0.90	0.50	0.46	1.19
Vertical North	Gm	0.50	0.68	1.12	1.58	2.15	2.58	2.23	1.78	1.26	0.88	0.49	0.45	1.31
	Dm	0.50	0.68	1.12	1.47	1.82	1.90	1.84	1.60	1.26	0.88	0.49	0.45	1.17

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.19	1.14	1.10	1.05	1.02	1.01	1.02	1.04	1.09	1.15	1.21	1.20	1.07
30 Deg South	Gm/Gmean	1.48	1.34	1.21	1.08	0.99	0.96	0.98	1.06	1.19	1.38	1.52	1.52	1.12
Latitude South	Gm/Gmean	1.60	1.40	1.21	1.03	0.92	0.88	0.91	1.02	1.19	1.45	1.66	1.66	1.10
60 Deg South	Gm/Gmean	1.65	1.40	1.16	0.94	0.80	0.74	0.78	0.91	1.12	1.45	1.72	1.73	1.02
Vertical South	Gm/Gmean	1.48	1.18	0.90	0.64	0.49	0.43	0.46	0.60	0.82	1.21	1.55	1.58	0.73
Vertical SE/SW	Gm/Gmean	1.18	0.99	0.84	0.69	0.57	0.54	0.55	0.65	0.81	1.02	1.24	1.24	0.73
Vertical E/W	Gm/Gmean	0.69	0.65	0.67	0.64	0.59	0.60	0.58	0.61	0.67	0.69	0.73	0.69	0.63
Vertical NE/NW	Gm/Gmean	0.38	0.38	0.42	0.47	0.46	0.50	0.45	0.44	0.41	0.35	0.36	0.38	0.44
Vertical North	Gm/Gmean	0.34	0.32	0.31	0.32	0.33	0.38	0.31	0.29	0.27	0.27	0.31	0.36	0.32

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes.

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.03	4.25	6.33	7.82	9.34	9.28	9.04	8.04	6.77	5.24	3.37	2.40	6.25
	D clear	0.25	0.21	0.33	0.64	0.88	1.06	1.08	1.30	0.55	0.41	0.16	0.52	0.62
10 Deg South	Gc	4.15	5.25	7.11	8.23	9.45	9.31	9.10	8.27	7.40	6.19	4.48	3.26	6.86
	Dc	0.28	0.24	0.35	0.67	0.86	1.04	1.06	1.27	0.56	0.41	0.17	0.52	0.62
30 Deg South	Gc	6.04	6.81	8.10	8.48	9.08	8.82	8.67	8.31	8.15	7.65	6.31	4.84	7.61
	Dc	0.36	0.32	0.46	0.80	0.98	1.15	1.17	1.38	0.68	0.53	0.24	0.64	0.73
Latitude South	Gc	6.98	7.47	8.28	8.15	8.36	8.04	7.92	7.86	8.15	8.18	7.19	5.65	7.69
tilt 44 14' N	Dc	0.42	0.40	0.57	0.92	1.10	1.25	1.26	1.46	0.80	0.62	0.30	0.71	0.82
60 Deg South	Gc	7.55	7.70	7.93	7.27	7.05	6.69	6.63	6.90	7.63	8.23	7.67	6.17	7.28
	Dc	0.49	0.49	0.70	1.07	1.25	1.36	1.37	1.53	0.93	0.74	0.38	0.77	0.93
Vertical South	Gc	7.15	6.66	5.85	4.54	3.82	3.54	3.54	4.15	5.32	6.80	7.09	5.96	5.36
	Dc	0.61	0.66	0.97	1.33	1.54	1.59	1.58	1.63	1.17	0.93	0.52	0.81	1.11
Vertical SE/SW	Gc	5.46	5.36	5.71	5.38	5.22	4.91	4.86	4.96	5.44	5.96	5.48	4.40	5.26
	Dc	0.59	0.66	0.96	1.34	1.58	1.64	1.62	1.66	1.17	0.93	0.52	0.73	1.12
Vertical E/W	Gc	2.75	3.17	4.44	5.21	5.94	5.73	5.60	4.93	4.47	4.10	2.88	1.90	4.27
	Dc	0.56	0.64	0.95	1.34	1.61	1.68	1.66	1.65	1.14	0.89	0.50	0.59	1.10
Vertical NE/NW	Gc	0.77	1.08	2.21	3.36	4.43	4.40	4.25	3.34	2.43	1.73	0.81	0.54	2.45
	Dc	0.53	0.62	0.92	1.29	1.56	1.61	1.59	1.52	1.09	0.85	0.49	0.51	1.05
Vertical North	Gc	0.52	0.62	0.91	1.67	2.69	2.80	2.67	1.84	1.06	0.83	0.49	0.50	1.39
	Dc	0.52	0.62	0.91	1.24	1.50	1.54	1.52	1.41	1.06	0.83	0.49	0.50	1.01

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.37	1.24	1.12	1.05	1.01	1.00	1.01	1.03	1.09	1.18	1.33	1.36	1.10
30 Deg South	Gc/Gmax	1.99	1.60	1.28	1.08	0.97	0.95	0.96	1.03	1.20	1.46	1.87	2.02	1.22
Latitude South	Gc/Gmax	2.30	1.76	1.31	1.04	0.89	0.87	0.88	0.98	1.20	1.56	2.13	2.35	1.23
60 Deg South	Gc/Gmax	2.49	1.81	1.25	0.93	0.75	0.72	0.73	0.86	1.13	1.57	2.28	2.57	1.16
Vertical South	Gc/Gmax	2.36	1.57	0.92	0.58	0.41	0.38	0.39	0.52	0.79	1.30	2.10	2.48	0.86
Vertical SE/SW	Gc/Gmax	1.80	1.26	0.90	0.69	0.56	0.53	0.54	0.62	0.80	1.14	1.63	1.83	0.84
Vertical E/W	Gc/Gmax	0.91	0.75	0.70	0.67	0.64	0.62	0.62	0.61	0.66	0.78	0.86	0.79	0.68
Vertical NE/NW	Gc/Gmax	0.25	0.25	0.35	0.43	0.47	0.47	0.47	0.41	0.36	0.33	0.24	0.22	0.39
Vertical North	Gc/Gmax	0.17	0.15	0.14	0.21	0.29	0.30	0.29	0.23	0.16	0.16	0.14	0.21	0.22

Sunshine data

Mean sunshine	Hours	2.0	2.8	4.5	5.9	7.8	8.7	9.5	8.8	6.6	5.2	2.9	2.3	5.6
Max. sunshine	Hours	7.9	8.6	10.2	12.0	13.5	13.9	13.7	12.8	10.7	9.4	8.0	7.4	10.7

YUGOSLAVIA Site No. 249

PRISTINA

Computer file YUGOS249.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 42 39' N

Longitude 21 9' E

Height 573 metres

Data period (1.1968-12.1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.61	2.46	3.80	4.97	6.02	6.52	6.69	5.99	4.58	3.33	2.06	1.42	4.13
	D mean	0.90	1.24	1.86	2.42	2.82	2.91	2.52	2.07	1.70	1.18	0.91	0.82	1.78
10 Deg South	Gm	1.90	2.81	4.13	5.19	6.14	6.57	6.79	6.25	4.97	3.84	2.50	1.68	4.41
	Dm	0.90	1.25	1.88	2.45	2.85	2.93	2.55	2.12	1.74	1.20	0.92	0.82	1.80
30 Deg South	Gm	2.33	3.30	4.50	5.29	5.96	6.23	6.52	6.35	5.39	4.56	3.18	2.08	4.65
	Dm	0.85	1.22	1.83	2.40	2.78	2.86	2.52	2.14	1.75	1.21	0.89	0.78	1.77
Latitude South	Gm	2.50	3.45	4.52	5.11	5.60	5.76	6.07	6.11	5.38	4.78	3.45	2.24	4.59
tilt 42 39' N	Dm	0.80	1.17	1.76	2.31	2.67	2.74	2.44	2.11	1.72	1.18	0.85	0.73	1.71
60 Deg South	Gm	2.57	3.44	4.28	4.57	4.80	4.82	5.12	5.40	5.05	4.77	3.59	2.31	4.23
	Dm	0.71	1.07	1.61	2.11	2.44	2.50	2.27	2.01	1.63	1.12	0.79	0.65	1.58
Vertical South	Gm	2.28	2.90	3.26	3.08	2.95	2.83	3.00	3.47	3.69	3.95	3.22	2.07	3.06
	Dm	0.54	0.86	1.30	1.69	1.96	2.02	1.91	1.74	1.40	0.98	0.65	0.50	1.30
Vertical SE/SW	Gm	1.83	2.43	3.07	3.28	3.36	3.40	3.60	3.80	3.60	3.33	2.58	1.63	2.99
	Dm	0.56	0.87	1.29	1.68	1.95	2.02	1.91	1.73	1.38	0.98	0.66	0.51	1.30
Vertical E/W	Gm	1.09	1.64	2.47	3.05	3.43	3.71	3.80	3.60	2.96	2.26	1.55	0.91	2.54
	Dm	0.57	0.85	1.26	1.65	1.93	2.04	1.91	1.69	1.32	0.95	0.66	0.52	1.28
Vertical NE/NW	Gm	0.59	0.94	1.60	2.26	2.74	3.12	3.02	2.55	1.86	1.16	0.74	0.51	1.76
	Dm	0.55	0.82	1.22	1.59	1.87	2.00	1.85	1.59	1.25	0.91	0.64	0.50	1.23
Vertical North	Gm	0.54	0.79	1.19	1.64	2.05	2.43	2.17	1.68	1.21	0.89	0.62	0.49	1.31
	Dm	0.54	0.79	1.19	1.56	1.84	1.99	1.82	1.53	1.21	0.89	0.62	0.49	1.21

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.14	1.09	1.04	1.02	1.01	1.01	1.04	1.09	1.15	1.21	1.18	1.07
30 Deg South	Gm/Gmean	1.45	1.34	1.18	1.06	0.99	0.96	0.98	1.06	1.18	1.37	1.54	1.47	1.13
Latitude South	Gm/Gmean	1.55	1.40	1.19	1.03	0.93	0.88	0.91	1.02	1.17	1.43	1.67	1.58	1.11
60 Deg South	Gm/Gmean	1.60	1.40	1.13	0.92	0.80	0.74	0.76	0.90	1.10	1.43	1.74	1.63	1.02
Vertical South	Gm/Gmean	1.42	1.18	0.86	0.62	0.49	0.43	0.45	0.58	0.81	1.19	1.56	1.46	0.74
Vertical SE/SW	Gm/Gmean	1.14	0.99	0.81	0.66	0.56	0.52	0.54	0.63	0.79	1.00	1.25	1.15	0.72
Vertical E/W	Gm/Gmean	0.68	0.67	0.65	0.61	0.57	0.57	0.57	0.60	0.65	0.68	0.75	0.64	0.62
Vertical NE/NW	Gm/Gmean	0.37	0.38	0.42	0.46	0.46	0.48	0.45	0.43	0.41	0.35	0.36	0.36	0.43
Vertical North	Gm/Gmean	0.34	0.32	0.31	0.33	0.34	0.37	0.32	0.28	0.26	0.27	0.30	0.34	0.32

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.13	4.45	6.27	7.59	8.57	8.98	8.79	7.89	6.42	5.20	3.46	2.55	6.12
	D clear	0.20	0.50	0.57	1.00	1.25	1.38	1.11	1.34	0.85	0.49	0.29	0.24	0.77
10 Deg South	Gc	4.22	5.38	7.00	7.95	8.65	8.95	8.85	8.13	6.99	6.11	4.51	3.64	6.70
	Dc	0.22	0.54	0.62	1.04	1.23	1.32	1.12	1.34	0.90	0.54	0.34	0.26	0.79
30 Deg South	Gc	6.05	6.84	7.88	8.13	8.30	8.46	8.37	8.12	7.60	7.44	6.20	5.52	7.41
	Dc	0.29	0.66	0.75	1.16	1.32	1.40	1.21	1.44	1.02	0.67	0.43	0.34	0.89
Latitude South	Gc	6.87	7.38	8.01	7.83	7.70	7.78	7.71	7.71	7.58	7.87	6.93	6.40	7.48
tilt 42 39' N	Dc	0.34	0.74	0.84	1.24	1.38	1.45	1.28	1.50	1.11	0.75	0.50	0.40	0.96
60 Deg South	Gc	7.47	7.59	7.62	6.89	6.38	6.36	6.31	6.65	7.03	7.89	7.40	7.13	7.06
	Dc	0.42	0.84	0.97	1.34	1.47	1.53	1.38	1.56	1.20	0.87	0.58	0.47	1.05
Vertical South	Gc	6.99	6.48	5.56	4.24	3.43	3.31	3.29	3.91	4.84	6.43	6.75	6.92	5.17
	Dc	0.55	0.96	1.17	1.47	1.59	1.65	1.55	1.62	1.32	1.03	0.70	0.56	1.18
Vertical SE/SW	Gc	5.35	5.25	5.44	5.00	4.56	4.58	4.61	4.71	4.95	5.67	5.26	5.18	5.05
	Dc	0.54	0.93	1.16	1.49	1.64	1.72	1.61	1.66	1.31	1.02	0.68	0.54	1.19
Vertical E/W	Gc	2.73	3.19	4.29	4.85	4.97	5.31	5.37	4.72	4.10	3.95	2.85	2.43	4.07
	Dc	0.51	0.85	1.12	1.47	1.67	1.79	1.66	1.66	1.25	0.96	0.64	0.49	1.17
Vertical NE/NW	Gc	0.75	1.20	2.22	3.16	3.64	4.11	4.12	3.21	2.29	1.72	0.90	0.61	2.33
	Dc	0.49	0.78	1.04	1.36	1.57	1.70	1.59	1.52	1.13	0.89	0.60	0.46	1.10
Vertical North	Gc	0.49	0.76	1.01	1.62	2.12	2.62	2.59	1.77	1.07	0.86	0.60	0.45	1.33
	Dc	0.49	0.76	1.01	1.27	1.48	1.61	1.51	1.41	1.07	0.86	0.60	0.45	1.04

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.35	1.21	1.12	1.05	1.01	1.00	1.01	1.03	1.09	1.17	1.30	1.43	1.10
30 Deg South	Gc/Gmax	1.93	1.54	1.26	1.07	0.97	0.94	0.95	1.03	1.18	1.43	1.79	2.16	1.21
Latitude South	Gc/Gmax	2.19	1.66	1.28	1.03	0.90	0.87	0.88	0.98	1.18	1.51	2.00	2.51	1.22
60 Deg South	Gc/Gmax	2.39	1.71	1.22	0.91	0.74	0.71	0.72	0.84	1.10	1.52	2.14	2.80	1.15
Vertical South	Gc/Gmax	2.23	1.46	0.89	0.56	0.40	0.37	0.37	0.50	0.75	1.24	1.95	2.71	0.85
Vertical SE/SW	Gc/Gmax	1.71	1.18	0.87	0.66	0.53	0.51	0.52	0.60	0.77	1.09	1.52	2.03	0.82
Vertical E/W	Gc/Gmax	0.87	0.72	0.68	0.64	0.58	0.59	0.61	0.60	0.64	0.76	0.82	0.95	0.67
Vertical NE/NW	Gc/Gmax	0.24	0.27	0.35	0.42	0.43	0.46	0.47	0.41	0.36	0.33	0.26	0.24	0.38
Vertical North	Gc/Gmax	0.16	0.17	0.16	0.21	0.25	0.29	0.29	0.22	0.17	0.17	0.17	0.18	0.22

Sunshine data

Mean sunshine	Hours	2.1	3.6	4.7	6.0	7.5	8.1	9.1	9.2	7.1	5.8	3.7	2.0	5.8
Max. sunshine	Hours	7.5	9.2	10.8	12.3	13.2	13.5	13.6	12.9	11.1	10.2	8.9	7.3	10.9

YUGOSLAVIA Site No. 250

BAR

Computer file YUGOS250.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 42 6' N

Longitude 19 6' E

Height 6 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.86	2.51	3.86	4.96	6.43	7.14	7.36	6.40	4.87	3.54	2.08	1.59	4.39
	D mean	0.78	1.20	1.71	2.22	2.58	2.48	2.28	2.15	1.64	1.16	0.88	0.69	1.65
10 Deg South	Gm	2.32	2.88	4.22	5.19	6.56	7.21	7.49	6.70	5.31	4.10	2.54	1.99	4.72
	Dm	0.79	1.22	1.74	2.25	2.61	2.52	2.32	2.22	1.70	1.21	0.89	0.71	1.68
30 Deg South	Gm	3.07	3.42	4.65	5.30	6.39	6.84	7.24	6.83	5.80	4.91	3.25	2.64	5.04
	Dm	0.78	1.20	1.72	2.22	2.58	2.50	2.34	2.27	1.75	1.26	0.89	0.70	1.69
Latitude South	Gm	3.37	3.58	4.69	5.13	6.02	6.35	6.78	6.59	5.82	5.17	3.53	2.90	5.00
tilt 42 6' N	Dm	0.76	1.16	1.67	2.14	2.51	2.44	2.31	2.26	1.74	1.26	0.87	0.68	1.65
60 Deg South	Gm	3.59	3.60	4.47	4.58	5.13	5.26	5.69	5.82	5.47	5.19	3.70	3.10	4.64
	Dm	0.72	1.08	1.55	1.98	2.33	2.28	2.21	2.16	1.68	1.22	0.82	0.64	1.56
Vertical South	Gm	3.30	3.05	3.41	3.07	3.09	2.97	3.25	3.73	4.00	4.31	3.33	2.86	3.37
	Dm	0.61	0.89	1.29	1.62	1.94	1.95	1.94	1.88	1.49	1.10	0.70	0.54	1.33
Vertical SE/SW	Gm	2.60	2.55	3.21	3.32	3.60	3.71	3.94	4.04	3.87	3.61	2.67	2.20	3.28
	Dm	0.61	0.89	1.28	1.60	1.93	1.97	1.96	1.87	1.46	1.08	0.70	0.54	1.33
Vertical E/W	Gm	1.48	1.71	2.57	3.11	3.70	4.09	4.14	3.77	3.14	2.39	1.60	1.14	2.74
	Dm	0.60	0.85	1.23	1.57	1.92	2.00	1.97	1.83	1.38	1.00	0.68	0.53	1.30
Vertical NE/NW	Gm	0.66	0.95	1.61	2.27	2.88	3.34	3.17	2.63	1.91	1.19	0.75	0.52	1.83
	Dm	0.58	0.82	1.18	1.51	1.85	1.95	1.87	1.68	1.27	0.93	0.65	0.51	1.24
Vertical North	Gm	0.56	0.79	1.15	1.58	2.06	2.45	2.15	1.72	1.22	0.89	0.63	0.49	1.31
	Dm	0.56	0.79	1.15	1.48	1.81	1.92	1.80	1.59	1.22	0.89	0.63	0.49	1.20

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.25	1.15	1.09	1.05	1.02	1.01	1.02	1.05	1.09	1.16	1.22	1.25	1.08
30 Deg South	Gm/Gmean	1.65	1.36	1.21	1.07	0.99	0.96	0.98	1.07	1.19	1.39	1.56	1.66	1.15
Latitude South	Gm/Gmean	1.81	1.43	1.22	1.03	0.94	0.89	0.92	1.03	1.20	1.46	1.70	1.82	1.14
60 Deg South	Gm/Gmean	1.93	1.43	1.16	0.92	0.80	0.74	0.77	0.91	1.12	1.47	1.78	1.95	1.06
Vertical South	Gm/Gmean	1.77	1.22	0.88	0.62	0.48	0.42	0.44	0.58	0.82	1.22	1.60	1.80	0.77
Vertical SE/SW	Gm/Gmean	1.40	1.02	0.83	0.67	0.56	0.52	0.54	0.63	0.80	1.02	1.28	1.38	0.75
Vertical E/W	Gm/Gmean	0.80	0.68	0.67	0.63	0.57	0.57	0.56	0.59	0.64	0.68	0.77	0.72	0.62
Vertical NE/NW	Gm/Gmean	0.35	0.38	0.42	0.46	0.45	0.47	0.43	0.41	0.39	0.34	0.36	0.33	0.42
Vertical North	Gm/Gmean	0.30	0.31	0.30	0.32	0.32	0.34	0.29	0.27	0.25	0.25	0.30	0.31	0.30

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes,

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.37	4.72	6.44	7.66	8.47	8.75	8.51	7.68	6.57	5.21	3.65	2.70	6.15
	D clear	0.43	0.61	0.63	0.94	1.21	1.41	1.39	1.65	1.05	0.76	0.46	0.38	0.91
10 Deg South	Gc	4.45	5.66	7.16	8.00	8.56	8.76	8.56	7.87	7.11	6.05	4.67	3.78	6.72
	Dc	0.47	0.64	0.68	0.97	1.23	1.39	1.40	1.62	1.08	0.80	0.50	0.42	0.94
30 Deg South	Gc	6.26	7.14	8.04	8.16	8.19	8.27	8.12	7.85	7.70	7.30	6.34	5.62	7.42
	Dc	0.59	0.77	0.81	1.09	1.32	1.47	1.47	1.71	1.22	0.95	0.62	0.53	1.05
Latitude South	Gc	7.03	7.67	8.16	7.87	7.61	7.63	7.51	7.48	7.68	7.68	7.03	6.45	7.48
tilt 42 6' N	Dc	0.65	0.85	0.90	1.17	1.38	1.51	1.51	1.75	1.29	1.03	0.69	0.60	1.11
60 Deg South	Gc	7.63	7.88	7.74	6.88	6.27	6.20	6.13	6.44	7.10	7.68	7.50	7.17	7.05
	Dc	0.74	0.96	1.03	1.29	1.46	1.58	1.57	1.78	1.38	1.13	0.78	0.67	1.20
Vertical South	Gc	7.09	6.69	5.62	4.20	3.35	3.22	3.23	3.81	4.88	6.22	6.80	6.91	5.16
	Dc	0.83	1.08	1.23	1.45	1.59	1.67	1.65	1.74	1.46	1.23	0.88	0.75	1.30
Vertical SE/SW	Gc	5.46	5.43	5.52	5.02	4.50	4.47	4.36	4.51	4.98	5.47	5.32	5.20	5.02
	Dc	0.80	1.04	1.22	1.47	1.64	1.74	1.71	1.79	1.45	1.20	0.85	0.70	1.30
Vertical E/W	Gc	2.83	3.31	4.38	4.92	4.96	5.19	4.85	4.48	4.14	3.81	2.91	2.48	4.02
	Dc	0.71	0.94	1.17	1.46	1.66	1.81	1.75	1.78	1.37	1.09	0.76	0.61	1.26
Vertical NE/NW	Gc	0.88	1.27	2.29	3.22	3.67	4.03	3.65	3.08	2.34	1.70	0.98	0.69	2.32
	Dc	0.65	0.84	1.10	1.36	1.57	1.72	1.65	1.62	1.22	0.96	0.69	0.55	1.16
Vertical North	Gc	0.63	0.82	1.06	1.65	2.15	2.59	2.21	1.76	1.15	0.90	0.68	0.53	1.35
	Dc	0.63	0.82	1.06	1.28	1.48	1.62	1.55	1.47	1.14	0.90	0.68	0.53	1.10

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.32	1.20	1.11	1.04	1.01	1.00	1.01	1.02	1.08	1.16	1.28	1.40	1.09
30 Deg South	Gc/Gmax	1.86	1.51	1.25	1.07	0.97	0.94	0.95	1.02	1.17	1.40	1.74	2.08	1.21
Latitude South	Gc/Gmax	2.09	1.63	1.27	1.03	0.90	0.87	0.88	0.97	1.17	1.47	1.93	2.39	1.22
60 Deg South	Gc/Gmax	2.26	1.67	1.20	0.90	0.74	0.71	0.72	0.84	1.08	1.47	2.06	2.66	1.15
Vertical South	Gc/Gmax	2.10	1.42	0.87	0.55	0.40	0.37	0.38	0.50	0.74	1.19	1.86	2.56	0.84
Vertical SE/SW	Gc/Gmax	1.62	1.15	0.86	0.65	0.53	0.51	0.51	0.59	0.76	1.05	1.46	1.93	0.82
Vertical E/W	Gc/Gmax	0.84	0.70	0.68	0.64	0.59	0.59	0.57	0.58	0.63	0.73	0.80	0.92	0.65
Vertical NE/NW	Gc/Gmax	0.26	0.27	0.36	0.42	0.43	0.46	0.43	0.40	0.36	0.33	0.27	0.26	0.38
Vertical North	Gc/Gmax	0.19	0.17	0.17	0.22	0.25	0.30	0.26	0.23	0.17	0.17	0.19	0.20	0.22

Sunshine data

Mean sunshine	Hours	4.0	4.2	5.5	6.5	8.7	10.1	11.3	10.2	8.1	6.8	4.3	3.7	7.0
Max. sunshine	Hours	8.7	9.6	11.0	12.1	13.3	13.8	13.6	12.7	11.4	10.3	9.0	8.3	11.2

YUGOSLAVIA Site No. 251

BITOLA

Computer file YUGOS251.INC

Inclined surfaces - ground albedo 0.20 assumed.

Units kWh/square metre per day

Latitude 41 3' N

Longitude 21 22' E

Height 586 metres

Data period (1966-1975)

Estimated monthly means of daily global radiation Gm and diffuse radiation Dm on inclined planes.

kWh/m² per day.

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Horizontal	G mean	1.89	2.71	3.92	5.02	6.43	6.99	7.08	6.36	4.96	3.41	2.25	1.57	4.39
	D mean	1.00	1.29	1.84	2.36	2.66	2.53	2.33	2.12	1.70	1.31	1.00	0.85	1.75
10 Deg South	Gm	2.23	3.08	4.26	5.24	6.55	7.03	7.19	6.63	5.38	3.89	2.70	1.88	4.68
	Dm	0.99	1.30	1.86	2.40	2.69	2.56	2.37	2.18	1.75	1.35	1.02	0.84	1.78
30 Deg South	Gm	2.73	3.59	4.62	5.32	6.36	6.65	6.90	6.72	5.83	4.54	3.40	2.36	4.93
	Dm	0.93	1.25	1.83	2.36	2.65	2.53	2.37	2.22	1.79	1.36	1.01	0.79	1.76
Latitude South	Gm	2.90	3.73	4.64	5.16	6.02	6.20	6.49	6.49	5.83	4.71	3.64	2.53	4.87
tilt 41 3' N	Dm	0.87	1.19	1.77	2.29	2.58	2.47	2.33	2.20	1.77	1.34	0.98	0.75	1.71
60 Deg South	Gm	3.00	3.72	4.37	4.58	5.07	5.07	5.36	5.67	5.44	4.68	3.80	2.65	4.45
	Dm	0.76	1.07	1.61	2.09	2.37	2.29	2.19	2.10	1.70	1.27	0.92	0.66	1.59
Vertical South	Gm	2.65	3.10	3.30	3.05	3.02	2.84	3.04	3.58	3.93	3.82	3.38	2.39	3.17
	Dm	0.59	0.86	1.31	1.69	1.95	1.93	1.90	1.83	1.49	1.09	0.77	0.51	1.33
Vertical SE/SW	Gm	2.12	2.60	3.13	3.27	3.54	3.54	3.73	3.93	3.84	3.24	2.73	1.89	3.13
	Dm	0.60	0.88	1.31	1.68	1.95	1.94	1.91	1.82	1.46	1.08	0.77	0.52	1.33
Vertical E/W	Gm	1.26	1.77	2.54	3.06	3.64	3.87	3.96	3.72	3.16	2.23	1.66	1.09	2.67
	Dm	0.61	0.87	1.27	1.64	1.95	1.96	1.92	1.79	1.39	1.02	0.74	0.53	1.31
Vertical NE/NW	Gm	0.66	1.00	1.64	2.26	2.87	3.16	3.10	2.62	1.95	1.19	0.81	0.56	1.82
	Dm	0.60	0.85	1.23	1.57	1.87	1.90	1.84	1.66	1.30	0.96	0.71	0.52	1.25
Vertical North	Gm	0.58	0.84	1.20	1.62	2.06	2.29	2.14	1.71	1.25	0.92	0.68	0.50	1.32
	Dm	0.58	0.84	1.20	1.54	1.83	1.87	1.78	1.58	1.25	0.92	0.68	0.50	1.22

Monthly mean values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gm/Gmean	1.18	1.14	1.09	1.04	1.02	1.01	1.02	1.04	1.09	1.14	1.20	1.20	1.07
30 Deg South	Gm/Gmean	1.44	1.33	1.18	1.06	0.99	0.95	0.98	1.06	1.17	1.33	1.51	1.50	1.12
Latitude South	Gm/Gmean	1.53	1.38	1.18	1.03	0.94	0.89	0.92	1.02	1.17	1.38	1.62	1.61	1.11
60 Deg South	Gm/Gmean	1.59	1.37	1.12	0.91	0.79	0.73	0.76	0.89	1.10	1.37	1.69	1.69	1.01
Vertical South	Gm/Gmean	1.40	1.14	0.84	0.61	0.47	0.41	0.43	0.56	0.79	1.12	1.50	1.52	0.72
Vertical SE/SW	Gm/Gmean	1.12	0.96	0.80	0.65	0.55	0.51	0.53	0.62	0.77	0.95	1.21	1.20	0.71
Vertical E/W	Gm/Gmean	0.67	0.65	0.65	0.61	0.57	0.55	0.56	0.58	0.64	0.65	0.74	0.69	0.61
Vertical NE/NW	Gm/Gmean	0.35	0.37	0.42	0.45	0.45	0.45	0.44	0.41	0.39	0.35	0.36	0.36	0.41
Vertical North	Gm/Gmean	0.31	0.31	0.31	0.32	0.32	0.33	0.30	0.27	0.25	0.27	0.30	0.32	0.30

Estimated clear day means of daily global radiation Gc and diffuse radiation Dc on inclined planes.

kWh/m² per day.

Assumed dates		Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4	Mean
Horizontal	Gmax	3.49	4.71	6.41	7.67	8.63	8.91	8.69	7.98	6.72	5.23	3.80	2.94	6.27
	D clear	0.06	0.29	0.57	1.06	1.28	1.36	1.27	1.54	0.97	0.70	0.51	0.12	0.81
10 Deg South	Gc	4.68	5.69	7.12	8.01	8.71	8.93	8.75	8.18	7.26	6.06	4.81	4.16	6.87
	Dc	0.07	0.33	0.63	1.10	1.29	1.36	1.31	1.53	1.01	0.75	0.56	0.14	0.84
30 Deg South	Gc	6.63	7.17	7.94	8.13	8.29	8.38	8.24	8.12	7.83	7.27	6.45	6.24	7.56
	Dc	0.13	0.43	0.76	1.22	1.37	1.43	1.38	1.61	1.15	0.89	0.68	0.20	0.94
Latitude South	Gc	7.40	7.66	8.03	7.85	7.75	7.76	7.66	7.74	7.79	7.60	7.07	7.10	7.62
tilt 41 3' N	Dc	0.17	0.50	0.84	1.28	1.42	1.48	1.43	1.65	1.21	0.97	0.75	0.24	1.00
60 Deg South	Gc	8.10	7.88	7.58	6.80	6.28	6.20	6.15	6.57	7.14	7.59	7.55	7.97	7.15
	Dc	0.26	0.62	0.98	1.38	1.50	1.55	1.50	1.70	1.32	1.08	0.85	0.32	1.09
Vertical South	Gc	7.49	6.63	5.42	4.10	3.29	3.13	3.14	3.78	4.84	6.08	6.78	7.66	5.19
	Dc	0.42	0.80	1.18	1.50	1.61	1.65	1.61	1.70	1.42	1.18	0.94	0.45	1.21
Vertical SE/SW	Gc	5.73	5.39	5.39	4.89	4.47	4.39	4.36	4.59	4.99	5.39	5.31	5.73	5.05
	Dc	0.42	0.79	1.17	1.53	1.67	1.72	1.67	1.75	1.41	1.16	0.89	0.45	1.22
Vertical E/W	Gc	2.93	3.31	4.32	4.81	4.96	5.00	4.94	4.63	4.20	3.78	2.93	2.71	4.05
	Dc	0.42	0.76	1.13	1.52	1.70	1.76	1.72	1.76	1.34	1.06	0.79	0.43	1.20
Vertical NE/NW	Gc	0.72	1.20	2.27	3.17	3.68	3.82	3.74	3.19	2.38	1.70	0.99	0.61	2.29
	Dc	0.41	0.73	1.06	1.40	1.61	1.67	1.63	1.60	1.21	0.93	0.70	0.41	1.12
Vertical North	Gc	0.41	0.72	1.03	1.64	2.15	2.32	2.24	1.78	1.14	0.88	0.68	0.41	1.29
	Dc	0.41	0.72	1.03	1.30	1.51	1.57	1.53	1.47	1.13	0.88	0.68	0.41	1.05

Monthly clear day values of ratio (daily global irradiation on slope/daily horizontal surface global irradiation).

Horizontal		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 Deg South	Gc/Gmax	1.34	1.21	1.11	1.04	1.01	1.00	1.01	1.02	1.08	1.16	1.27	1.41	1.10
30 Deg South	Gc/Gmax	1.90	1.52	1.24	1.06	0.96	0.94	0.95	1.02	1.16	1.39	1.70	2.12	1.21
Latitude South	Gc/Gmax	2.12	1.63	1.25	1.02	0.90	0.87	0.88	0.97	1.16	1.45	1.86	2.41	1.22
60 Deg South	Gc/Gmax	2.32	1.67	1.18	0.89	0.73	0.70	0.71	0.82	1.06	1.45	1.99	2.71	1.14
Vertical South	Gc/Gmax	2.15	1.41	0.85	0.54	0.38	0.35	0.36	0.47	0.72	1.16	1.78	2.61	0.83
Vertical SE/SW	Gc/Gmax	1.64	1.14	0.84	0.64	0.52	0.49	0.50	0.57	0.74	1.03	1.40	1.95	0.81
Vertical E/W	Gc/Gmax	0.84	0.70	0.67	0.63	0.57	0.56	0.57	0.58	0.63	0.72	0.77	0.92	0.65
Vertical NE/NW	Gc/Gmax	0.21	0.25	0.35	0.41	0.43	0.43	0.43	0.40	0.35	0.32	0.26	0.21	0.37
Vertical North	Gc/Gmax	0.12	0.15	0.16	0.21	0.25	0.26	0.26	0.22	0.17	0.17	0.18	0.14	0.21

Sunshine data

Mean sunshine	Hours	2.3	3.6	5.0	6.4	8.6	9.7	10.5	9.9	7.8	5.9	4.2	2.2	6.4
Max. sunshine	Hours	8.2	9.5	11.0	12.5	13.6	14.2	14.1	13.2	11.6	10.2	9.2	7.6	11.3

Section 23 Maps of horizontal surface global radiation

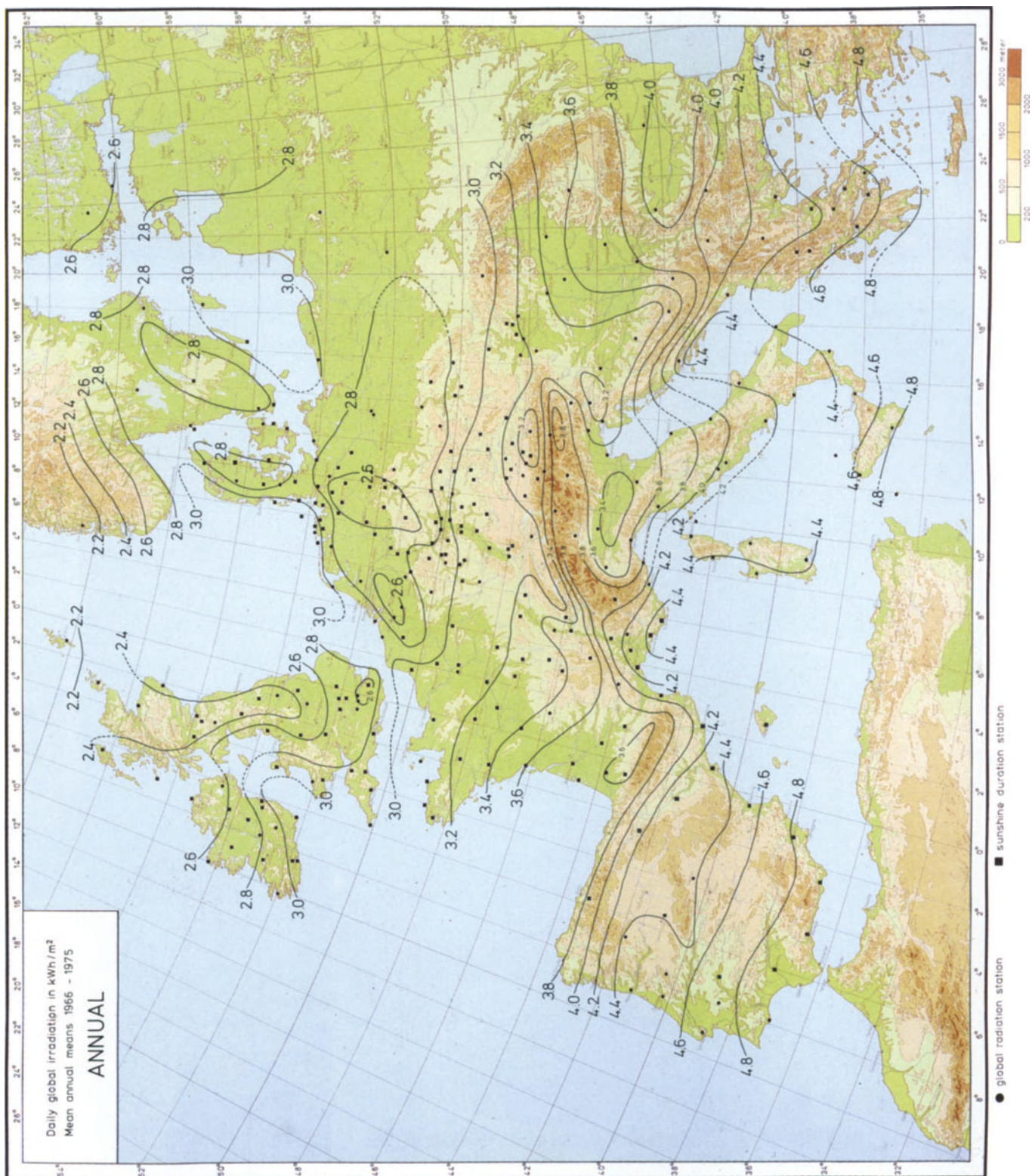
The isopyrs indicate means of daily energy per unit area

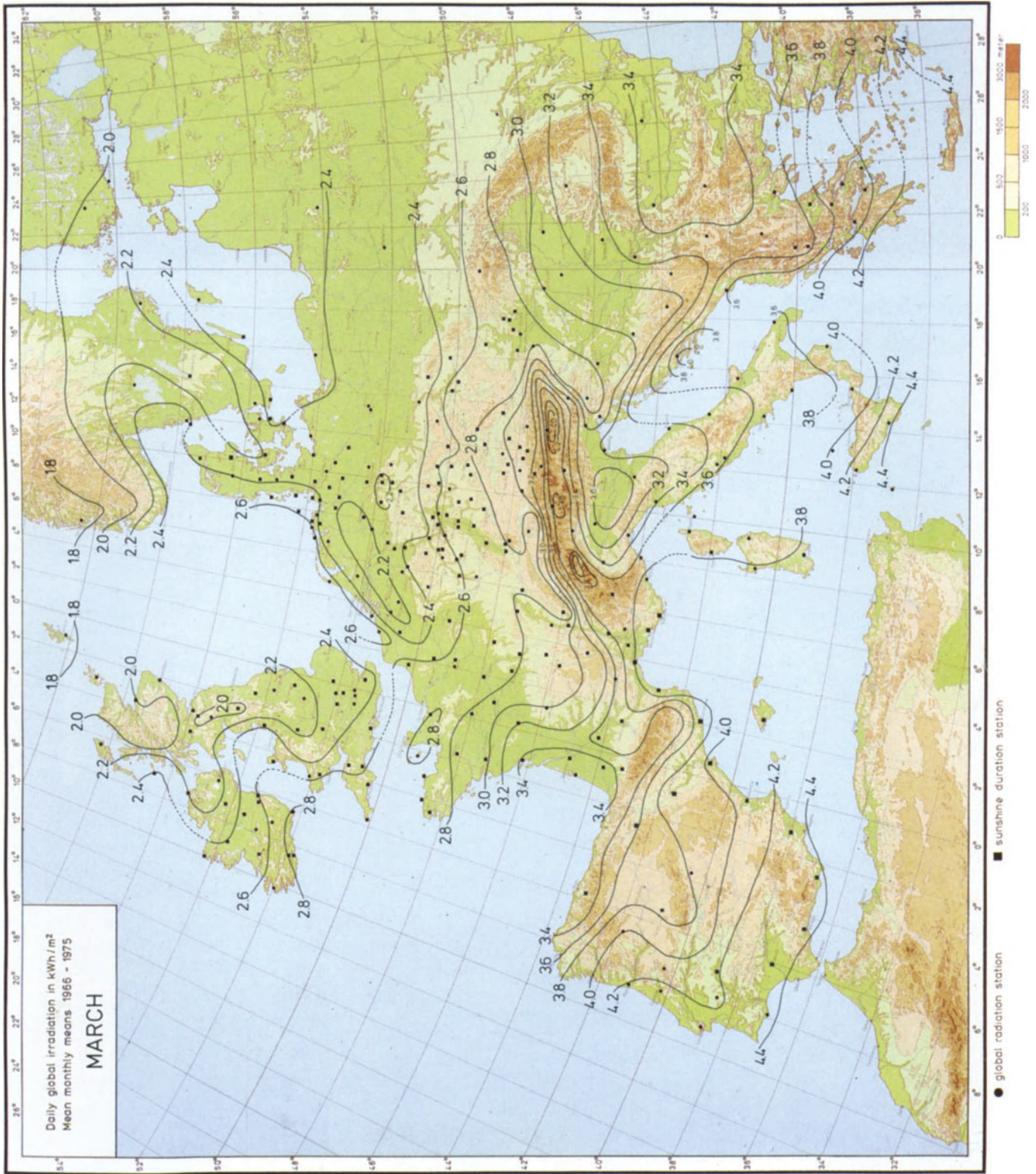
All radiation values are given in kWh. m⁻² per day .

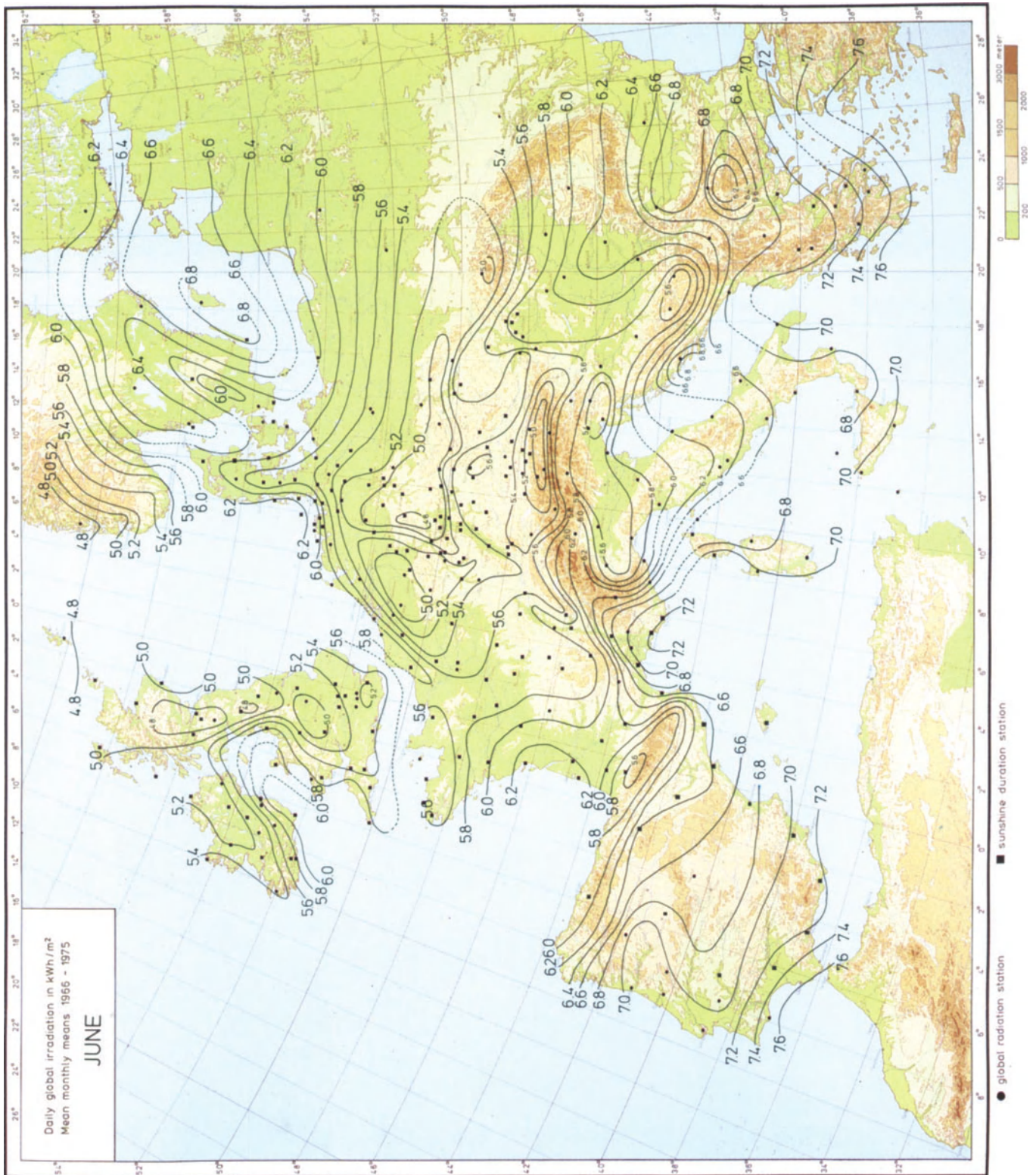
1. The first pair of maps shows the location of the 340 sites by site number.
2. The second pair of maps gives mean annual isopyrs.
3. The next 4 sets of maps give the mean isopyrs for the following months, arranged in annual sequence:
 - i) March,
 - ii) June,
 - iii) September,
 - iv) December.

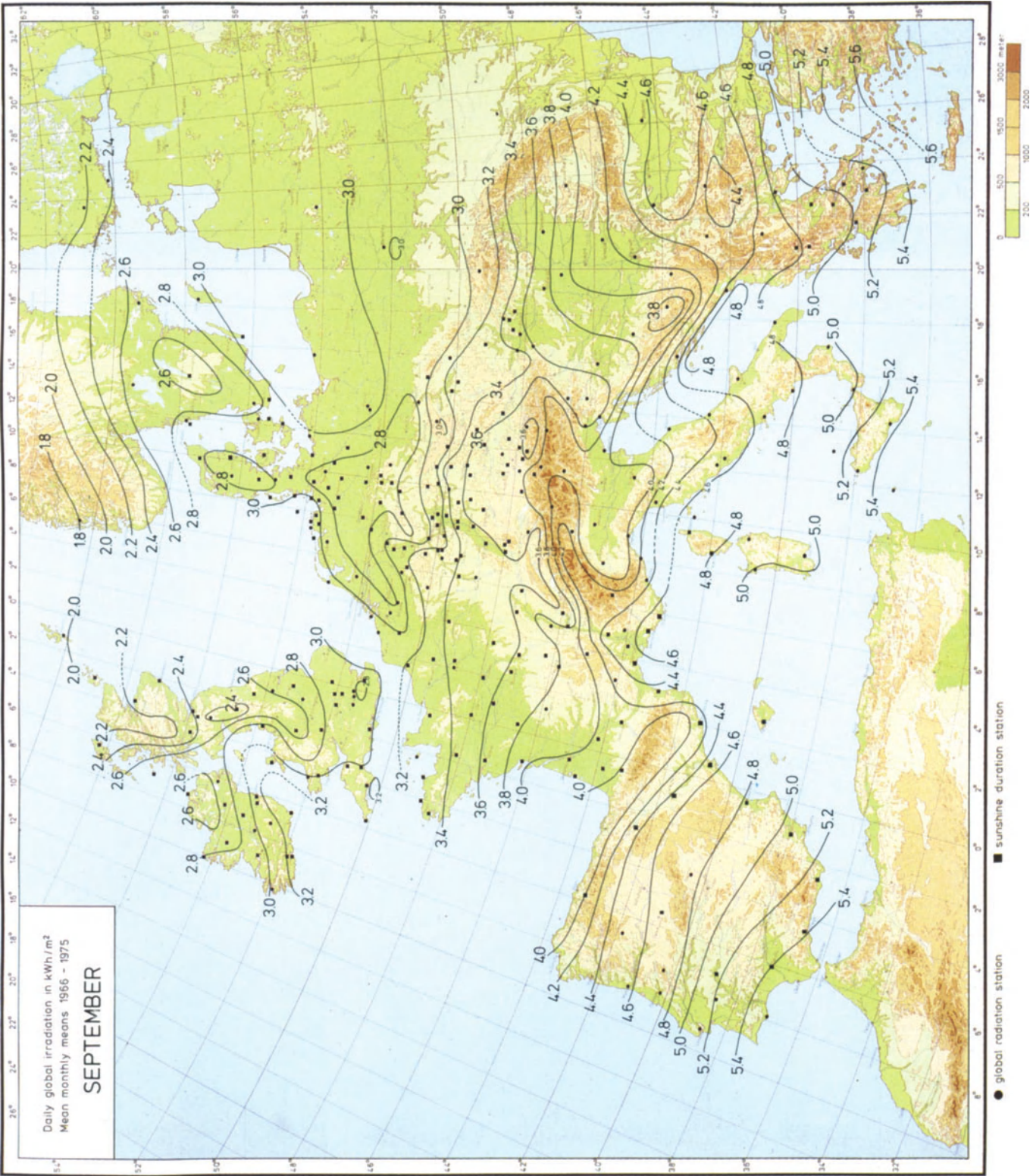
Note. Caution should be particularly exercised in using the data from the maps close to the coast and in mountainous areas. Refer to the main text.

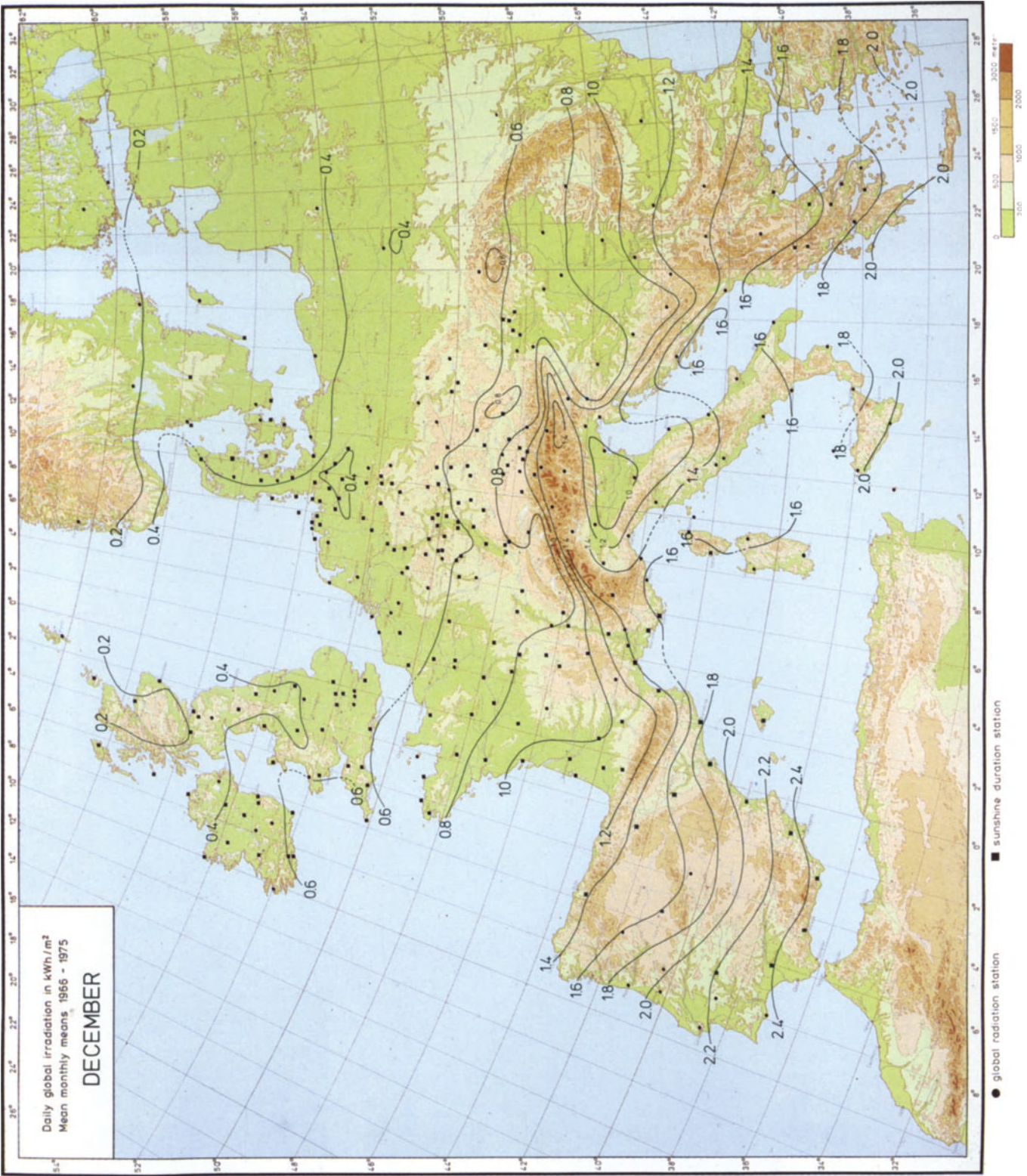












Some practical comments on using the data disks.

These comments are based on the assumption the reader already has adequate knowledge of the day to day operation of the microcomputer facility in use in his/her organization at the word processor level and at the spreadsheet level. The notes cover PC Compatible Computer and Apple Macintosh Compatible Computer applications. The procedures work in a very straightforward way when working in a Microsoft Environment. They may not format properly when working in other environments. Some expert advice may be needed in such environments.

There are two data disks. Their detailed data structures are discussed in Appendices 6 & 7.

There are three levels of data presentation:

- i) Word Processor level (Developed for use with Microsoft Word, Version 5).
- ii) Spreadsheet level. (Developed for use with Microsoft Excel, not tested for other spreadsheets)
- iii) Computer programme support level.

Processing the data files at the first two levels only are discussed here. Users experienced in numerical programming and wanting to work at level iii should use Appendices 6 and 7 for guidance at the detailed computer programme support level.

As there are a very large number of computer systems with many different interface procedures, using different software, only typical guidance can be given. Users need to apply some understanding of their own computer software procedures to make effective use of the data on the disks. With a little initial patience, this should not prove difficult for most users. There is just some initial learning to be done, especially concerning formatting with the correct type face at the correct font size. Margin issues for presentation in print may also need resolution. The disks have been provided as an additional facility to the Atlas. *Please note there is not a disk support advice service available with this publication.* Users unable to master using the disks in their personal computing system environment must seek their own professional advice on the resolution of such difficulties. Neither the authors nor the publishers can offer any support help.

Typical word processor procedures for extracting selected horizontal surface tables to place in reports for printing.

PC system in a Windows Environment . Use European Solar Radiation Atlas data disk 1.

Switch on.

Using file manager, select printer.

Using File Manager load Word Processor File, for example Word for Windows.

Insert European Solar Radiation Atlas data disk 1 in drive A

Open Drive A in normal way.

Select List all files.

(Refer to Appendix 6 for the index to the Paget files)

Double click on required Paget file (Files Paget.1 to Paget.6).

Select Select all.

Enter type face choice box, select Courier (or other equispaced font).

Enter type size box, select type size as 8 (First trial).

Examine first site file on screen to see format is satisfactory, and vertical alignment achieved.

High light the specific data file(s) to copy on the screen using the Mouse.

Select copy & copy selected data to temporary memory.

Close Paget file.

Open New.

Paste selected data file from memory.

Set correct font and size for vertical tabulation, as above.

Adjust margins if necessary.

Check satisfactory table layout on screen.

If table is to be published in a report, add footnote as indicated in appendix 6 on origin of data.

Save file with required name.

Print file.

Check print. Adjust format if necessary.

Record experience with local computer set up to speed up future use.

Save file for incorporation in document.

Typical word processor procedures for an Apple Macintosh Environment.

Use European Solar Radiation Atlas data disk 1.

Switch on.

Select Apple File Exchange.

Insert European Solar Radiation Atlas data disk 1 in external disk drive.

Translate required Paget Files from PC Format into Apple Macintosh format on Hard Disk.

Quit Apple File Exchange.

List files on Hard Disk.

(Refer to Appendix 6 for the index to the Paget files).

Double click on required Paget file (Files Paget.1 to Paget.6) to load Paget file.

Implement Select all.

Select font, choose Courier or other equispaced font.

Select font size as 8 (First trial).

Examine first site file to see format is satisfactory, and vertical alignment achieved.

Adjust margins as required.

Highlight files on screen to copy using Mouse.

Select Copy and copy selected file(s) to Clipboard.

Close Paget file.

Open New.

Paste file from clipboard.

Implement Select all.

Select font, choose Courier (or other equispaced font).

Select type size as 8 (First trial).

Examine site file to see format is satisfactory, and vertical alignment achieved.

Adjust margins as necessary.

If table is to be published in a report, add footnote as indicated in appendix 6 on origin of data.

Select Print Layout. Choose vertical format, and reduce print size to about 70%.

Save file with required file name.

Print file.

If layout not satisfactory, adjust margins and font size, and reprint.

Save again when satisfactory.

Record experience with local computer set up to speed up future use.

Edit selected site file(s) into word processor documents as required.

Loading to Spreadsheet for drawing of graphs, taking out ratios. Use European Solar Radiation Atlas data disk 2.

These procedures will enable the user to produce site specific graphs for the 101 sites for which data has been prepared. Refer for example Figure 1, Figure 2 , Figure 3, Figure 4 and Figure 5. in main text .

This section assumes some existing knowledge of spreadsheet use.

Note these data are only available for 101 sites out of the 340 sites in the Atlas. These sites are indicated by a * in Table 2.

Typical Spreadsheet procedure for PC compatible systems. Use European Solar Radiation Atlas data disk 2.

Switch on and use File Manager or other means to load spreadsheet.

Put European Solar Radiation Atlas Data disk 2 into external disk drive a.

Find drives file and double click on a:

Double click Select all files.

Select country folder and double click. (Refer Appendix 7 for a list of country slope file directories)

Select site file for either average (.INM) or clear conditions (.INC), as required, and double click.

Data as detailed in Appendix 7 should appear in first column of the spreadsheet, as a vertical column of 405 entries. Note each sub section of vertical numeric data is headed. Using printed tables as a guide, select detailed sections to be handled within the spreadsheet. Devise a spreadsheet structure in which to assemble selected parts of the vertical columnar data. For example one might want to compare graphically vertical south data and horizontal for mean monthly conditions.

Proceed to copy and paste into required structure of data. A twelve month basis is suggested.

For example, working in monthly data sets, first entering column 1 at correct location, select, copy and paste monthly data sets across spreadsheet as required, arranged in vertical columns of 12 monthly aligned values, starting in column 8. (Columns 2 to 7 are left blank to import more data later if required). First copy and paste the 12 monthly names. Set January in row 3 of column 8.

In order to plot an annual time series, for example refer Figure 1 of text, it is necessary manually to enter day in year aligned with the month name. These monthly dates are different for Gmax files and Gmean files. Enter these dates in column 9, choosing correct values for file selected.

The calculation days in the year are:

Monthly mean values from .INM files.

Jan 17	Feb 15	Mar 16	Apr 15	May 15	Jun 11	Jul 17	Aug 16	Sep 16	Oct 16	Nov 15	Dec 11
17	46	75	105	135	162	198	228	259	289	319	345

Monthly cloudless day values from .INC files.

Jan 29	Feb 26	Mar 29	Apr 28	May 29	Jun 21	Jul 4	Aug 4	Sep 4	Oct 4	Nov 4	Dec 4
29	57	89	119	150	173	186	217	248	278	309	339

Then copy and paste radiation data in kWh per square metre per day as follows:

Copy and paste monthly horizontal global data first, with headers set in rows 1 & 2 in column 10.

Copy and paste monthly horizontal diffuse data next with headers set in rows 1 & 2 in column 11.

(It is best not to copy the annual data into the same column as the monthly data).

Repeat copy and paste G & D for various slope files as required in corresponding columns to right of column 11.

Compute arithmetically any monthly ratios as required, like D/G.

It is easy to convert the daily radiation data to other units arithmetically within the spreadsheet. For example to convert radiation in kWh/m² per day into MJ/m² per day, one simply multiplies by 3.6, using standard spreadsheet procedures. The data will of course emerge into new vertical columns. Monthly integral values can be achieved by multiplying G_m & D_m by the number of days in each month.

When basic numeric operations are complete:

Prepare and edit required graphs using standard procedures.

Print and check graphs as outputs. Amend as needed.

Save graphs for incorporation in word processor document.

Save spreadsheet data file with an appropriate name for future use.

Typical spreadsheet procedures for an Apple Macintosh Computing Environment. Use European Solar Radiation Atlas data disk 2.

Switch on.

Select Apple File Exchange.

Insert disk 2 in external disk drive.

Translate required slope files from PC Format to Apple Macintosh format on Hard Disk.

Quit Apple File Exchange.

Then broadly proceed as above.

The files can also be loaded using Apple Macintosh Teach Text, which will produce a vertical column of 405 entries, which using Select All can be copied and pasted into any other suitable file. This procedure makes it easy to load the spreadsheet with data from different sites.

Other uses of spreadsheets.

Spreadsheets also provide a convenient way of estimating mean monthly daily global radiation in specific years from the Angstrom formula: $G_m/G_{om} = a + b S_m/S_{om}$

The values of Angstrom a & b can be entered from disk 2, obtaining b by numerical subtraction of Angstrom a from the monthly value of Angstrom $(a + b)$ using the .INM files. Monthly values of G_{om} and S_{om} are then entered manually from the printed horizontal tables for the specific site. Entering monthly mean values of S_m for a specific year, one can arrange the spreadsheet arithmetically to produce estimated values of G_m . The monthly data for a specific year can then be plotted in a graphical form with the long term values of G_m on the same graph. This is useful when reporting annual monitoring results against long term assessments.

Many other applications using the European Solar Radiation Atlas Disk 2 will become evident to experienced spreadsheet users.

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