

DATA SET DESCRIPTION

Gridded annual sum of incoming shortwave radiation (global radiation) in kWh/m² for Germany

Version v21.3 & recent

Cite data set as: DWD Climate Data Center (CDC): Gridded annual sum of incoming shortwave radiation (global radiation) in kWh/m² for Germany, version v21.3.

Dataset-ID: urn:x-wmo:md:de.dwd.cdc::GRD_DEU_P1Y_RAD-G

INTENT OF THE DATASET

The gridded data of incoming shortwave radiation (global radiation) are generated from quality-proofed ground measurements at DWD-stations and from satellite-derived values of radiation.

POINT OF CONTACT

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DATA DESCRIPTION

Spatial coverage Germany

Temporal coverage 1991-01-01 until - last year

Spatial resolution 1km x 1km

Temporal resolution annual

Projection ETRS89 LCC / EPSG:3034

Units annual sum of global radiation (kWh/m²)

Uncertainties If given grid values were computed by a uniform method. The method was developed within an EU research project, including an estimation of uncertainty (see: The European Solar Radiation Atlas, 2000). Further studies done by DWD showed a mean uncertainty of $\pm 6\%$.

DATA ORIGIN

Merging of ground measurements and satellite derived radiation data. Ground measurements are quality proved measurements at DWD-stations. Satellite input data: 1991 til 2014 according to the modell of Möser/Raschke (1984). Since 2015 operational CM-SAFproducts, since 2018 new version www.cmsaf.eu

VALIDATION AND UNCERTAINTY ESTIMATE

CONSIDERATIONS FOR APPLICATIONS

Values of global radiation are valid for a surrounding, in which the elevation angle of natural obstacles is below 5°. In case, the elevation angle of obstacles is greater than 5° especially in the east or the west, the values of global radiation may be less.

REFERENCES

www.cmsaf.eu; www.cmsaf.eu]

The European Solar Radiation Atlas, Vol. 1+2, Ecole des Mines de Paris, 2000.

Czeplak, G. et al.: An assessment of a statistical method to estimate solar irradiance at the earth's surface from geostationary satellite data. *Renewable Energy*, 1, 6-6, pp. 737-743, 1991.

Möser, W., Raschke, E.: Incident solar radiation over Europe estimated from METEOSAT-data. *J. Appl. Meteor.* 23, pp. 166-170, 1984.

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REVISION HISTORY

This document is maintained by the Climate Data Centre of the DWD, last edited at 2021-11-01.