A Big Earth Data Platform for Three Poles

**Daily average solar radiation dataset of 716 weather stations in China (1961-2010)**

1、Description

This data set contains a total of 717 files, among which the station.txt file mainly describes the site information of 716 stations. Each column corresponds to: longitude, latitude and elevation. The other 716 files named by the station number correspond to the data of 716 stations. The columns in the file are: year, month, day and daily average solar radiation.
The data are based on the estimation of conventional meteorological observation elements by the China Meteorological Administration: temperature, humidity, pressure and sunshine hours. The estimation method is obtained by two models: an artificial neural network model and the Yang hybrid model. The Yang hybrid model takes into account the five decay processes of aerosol scattering and absorption, Rayleigh scattering, water vapor absorption, ozone absorption and uniformly mixed gas absorption in clear weather. The influence of clouds on radiation is parameterized by the sunshine hours in cloudy days. The artificial neural network model, however, uses the ANN model to establish the relationship between radiation and ground conventional meteorological variables at each radiating station. Because the accuracy of the model of the artificial neural network is higher than that of the Yang hybrid model, the estimated value of the model of the artificial neural network is used to dynamically correct the estimated value of the Yang hybrid model on a monthly scale, and the data set is finally obtained.

2、Keywords

Theme：Radiation,Solar radiation
Discipline：Atmosphere
Places：China
Time：1961-2010

3、Data details

1.Scale：None

2.Projection：

3.Filesize：50.422MB

4.Data format：\*.txt

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：53.5 | - |
| west：73.0 | - | east：135.0 |
| - | south：4.25 | - |

5、Time frame:1961-07-19 08:00:00+00:00--2011-07-17 08:00:00+00:00

6、Reference method

References to data:

TANG Wenjun. Daily average solar radiation dataset of 716 weather stations in China (1961-2010). A Big Earth Data Platform for Three Poles, doi:10.11888/AtmosphericPhysics.tpe.249399.file2019

References to articles:

Yang, K., Koike, T., &Ye, B.S. (2006). Improving estimation of hourly, daily, and monthly solar radiation by importing global data sets. Agricultural and Forest Meteorology, 137(137), 43-55.

Tang, W.J., Yang, K., Qin, J., Cheng, C.C.K., &He, J., (2010). Solar radiation trend across China in recent decades: a revisit with quality-controlled data. Atmospheric Chemistry and Physics, 11(1), 393-406.

Tang, W.J., Yang, K., Qin, J., &Min, M. (2013). Development of a 50-year daily surface solar radiation dataset over China. Science China-earth Sciences, 56(9), 1555-1565.

7、Supporting project information

8、Data resource provider

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