A Big Earth Data Platform for Three Poles

**Homogeneous grid dataset of Chinaese land surface observation(surface solar radiation, surface wind speed, relative humidity and land surface evapotranspiration)**

1、Description

The reconstruction of sunshine hours can better reflect the long-term change trend of surface solar radiation, but only the station data. Therefore, in order to obtain high-resolution grid point data and ensure its accuracy in long-term changes, it is necessary to fuse a variety of surface solar radiation related data. Using the geographic weighted regression (GWR) method, the MODIS 0.1 ° resolution cloud and aerosol retrieval and the surface sunshine hours are combined to reconstruct the surface solar radiation station data. By adding the combination judgment of adjacent point schemes, the accuracy of downscaling results of geographical weighted regression is effectively improved, and the multi-year average value and long-term trend of China are basically consistent with the observation and satellite remote sensing inversion results. Using geographic weighted regression and other methods, the surface wind speed and relative humidity data of 0.1 degree grid are generated; The improved Penman formula is used to calculate the land surface evapotranspiration data.

2、Keywords

Theme：Radiation,Winds,Evaporation,Solar radiation,wind speed,Atmospheric Water Vapor  
Discipline：Atmosphere  
Places：China, land surface  
Time：1979, daily,

3、Data details

1.Scale：None

2.Projection：

3.Filesize：655.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：55.0 | - |
| west：73.0 | - | east：135.0 |
| - | south：18.0 | - |

5、Time frame:None--None

6、Reference method

References to data:

WANG Kaicun . Homogeneous grid dataset of Chinaese land surface observation(surface solar radiation, surface wind speed, relative humidity and land surface evapotranspiration). A Big Earth Data Platform for Three Poles, doi:10.11888/Atmos.tpdc.2728172022

References to articles:

Feng, F., Wang, K.C. (2018). Merging satellite retrievals and reanalyses to produce global long-term and consistent surface incident solar radiation datasets. Remote Sensing, 10, 115, doi:10.3390/rs10010115  
  
Feng, Fei., Wang, K.C. (2021). Merging ground-based sunshine duration observations with satellite cloud and aerosol retrievals to produce high-resolution long-term surface solar radiation over China. Earth System Science Data, 13, 907-922.  
  
Mao, Y.N., Wang, K.C., Liu, X.M., & Liu, C.M. (2016). Water storage in reservoirs built from 1997 to 2014 significantly altered the calculated evapotranspiration trends over China. Journal of Geophysical Research-Atmospheres, 121, 10097-10112.  
  
Mao, Y.N., Wang, K.C. (2017). Comparison of Evapotranspiration Estimates based on the Surface Water Balance, Modified Penman-Monteith Model, and Reanalysis Datasets for Continental China. Journal of Geophysical Research-Atmospheres, 122(6), 3228-3244.

7、Supporting project information

National key research and development program

8、Data resource provider

name: WANG Kaicun   
unit: Peking University  
email: kcwang@pku.edu.cn