A Big Earth Data Platform for Three Poles

**The spatial-temporal distribution of topographic shadows in the upper reaches of Heihe River Basin**

1、Description

The spatial-temporal distribution map of topographic shadows in the upper reaches of Heihe River (2018), which is calculated based on the SRTM DEM and the solar position (http://www.esrl.noaa.gov/gmd/grad/solcalc/azel.html). The spatial resolution is 100 m and the time resolution is 15 min. The datased can be used in the fields of ecological hydrology and remote sensing research. Using the observed solar radiation at several automatic weather stations in the upper reaches of Heihe River, the accuracy of the calculation results is verified. Results show that the dataset can accurately capture the temporal and spatial changes of the topographic shadow at the stations, and the time error is within 20 minutes.

2、Keywords

Theme：soil moisture,Topographic shadow,Evapotranspiration,Radiation,Sunshine,Ground temperature,Freeze thawing,Incoming solar radiation,Hydrology,Frozen Ground  
Discipline：Atmosphere,Terrestrial Surface,Cryosphere  
Places：Heihe River Basin  
Time：2018

3、Data details

1.Scale：None

2.Projection：Lambert\_Conformal\_Conic

3.Filesize：3000.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：40.0 | - |
| west：96.0 | - | east：101.0 |
| - | south：39.0 | - |

5、Time frame:2018-01-10 00:00:00+00:00--2019-01-09 00:00:00+00:00

6、Reference method

References to data:

ZHANG Yanlin. The spatial-temporal distribution of topographic shadows in the upper reaches of Heihe River Basin. A Big Earth Data Platform for Three Poles, 2019

References to articles:

Li, X., Cheng, G.D., Chen, X.Z., & Lu, L. (1999). Modification of solar radiation model over rugged terrain. Chinese Science Bulletin, 44(15), 1345-1350.  
  
Zhang, Y.L., Li, X., Cheng, G.D., Jin, H.J., Yang, D.W., Flerchinger, GN, Chang, X.L., Wang, X., & Liang, J. (2018). Influences of Topographic Shadows on the Thermal and Hydrological Processes in a Cold Region Mountainous Watershed in Northwest China. Journal of Advances in Modeling Earth Systems, 10, 1439-1457, doi: 10.1029/2017MS001264.

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program

8、Data resource provider

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