A Big Earth Data Platform for Three Poles

**The diurnal（hourly）albedo product coupling topographic effects and combining multi-sensory data over the Tibet Plateau (2016-2019)**

1、Description

This diurnal (hourly) land surface albedo product is with a spatial resolution of 0.02 ° x 0.02 ° over the Tibet Plateau from 2016-2019. Multi-sensory data is used to retrieve the Extended Multi-Sensor Combined BRDF Inversion model (EMCBI) developed from a kernel-driven BRDF model and coupled with topographic effects, and prior knowledge is introduced for quality control inversion. The high-precision BRDF / albedo of good spatial-temporal continuity is retrieved by combining MODIS reflectance data (a polar orbiting satellite) and himiwarri-8 AHI land surface reflectance (a geostationary satellite ). MODIS land surface reflectance data and AHI TOA reflectance data are downloaded from the official websites. After registration, atmospheric correction and other processing, the daily resolution BRDF is synthesized with a period of 5 days, and then the albedo is estimated. The black sky albedo is calculated hourly from 9:00 to 18:00 at Beijing Time (UTM zone 8). The validation results show that it meets the accuracy requirements of albedo application, and agreed well with the in situ albedo inner-daily variation.Tt has more advantages in capturing rapidly changing surface features, especially the inner-daily variations, and has better temporal and spatial continuity. It can effectively support the study of radiation energy balance and environmental change in the Tibet Plateau.

2、Keywords

Theme：Albedo,Terrestrial Surface Remote Sensing  
Discipline：Terrestrial Surface  
Places：Qinghai-Tibet Plateau  
Time：2016-2019, dinural variation

3、Data details

1.Scale：None

2.Projection：WGS84

3.Filesize：80.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：40.0 | - |
| west：73.0 | - | east：105.0 |
| - | south：25.0 | - |

5、Time frame:2015-12-31 16:00:00+00:00--2019-12-30 16:00:00+00:00

6、Reference method

References to data:

YOU Dongqin, YOU Dongqin, WEN Jianguang , TANG Yong, TANG Yong, HAN Yuan , HAN Yuan. The diurnal（hourly）albedo product coupling topographic effects and combining multi-sensory data over the Tibet Plateau (2016-2019). A Big Earth Data Platform for Three Poles, doi:10.11888/Terre.tpdc.2720502022

References to articles:

Wen, J., You, D., Han, Y., Lin, X., Wu, S., Tang, Y., Xiao, Q., & Liu, Q. (2022). Estimating Surface BRDF/Albedo Over Rugged Terrain Using an Extended Multisensor Combined BRDF Inversion (EMCBI) Mode. IEEE Geosci. Remote Sens. Lett., 19, 1-5.

7、Supporting project information

the Second Tibetan Plateau Scientific Expedition and Research Program (STEP)  
Development of Tibetan BRDF/Albedo retriveal algorithm coupling topographic effects and combining multi-sensory data in snow or snow-free cases repectively

8、Data resource provider

name: YOU Dongqin  
unit:   
email: youdq@aircas.ac.cn  
  
name: TANG Yong  
unit:   
email: tangyong@aircas.ac.cn  
  
name: WEN Jianguang   
unit: Aerospace Information Research Institute  
email: wenjg@aircas.ac.cn  
  
name: HAN Yuan   
unit: Aerospace Information Research Institute, Chinese Academic of Sciences  
email: hanyuan@aircas.ac.cn  
  
name: YOU Dongqin  
unit: Aerospace Information Research Institute, Chinese Academic of Sciences and University of Chinese Academic of Sciences  
email: youdq@aircas.ac.cn  
  
name: TANG Yong  
unit: Aerospace Information Research Institute, Chinese Academic of Sciences and University of Chinese Academic of Sciences  
email: tangyong@aircas.ac.cn  
  
name: HAN Yuan  
unit: Aerospace Information Research Institute, Chinese Academic of Sciences and University of Chinese Academic of Sciences  
email: hanyuan@aircas.ac.cn  
  
name: TANG Yong  
unit: Aerospace Information Research Institute, Chinese Academic of Sciences and University of Chinese Academic of Sciences  
email: tangyong@aircas.ac.cn