A Big Earth Data Platform for Three Poles

**HiWATER: 30m month compositing Fraction of Absorbed Photosynthetically Active Radiation (FAPAR) product of the Heihe River Basin**

1、Description

The 30 m / month synthetic photosynthetic effective radiation absorption ratio (fAPAR) data set of Heihe River basin provides the monthly Lai synthetic products from 2011 to 2014. This data uses the characteristics of HJ / CCD data of China's domestic satellite, which has both high time resolution (2 days after Networking) and spatial resolution (30 m), to construct multi angle observation data set, considering different vegetation types, based on land cover classification map, combined with 30 m /Monthly synthetic leaf area index (LAI) products were produced by fapar-p model based on energy conservation. Based on the principle of energy conservation, the algorithm considers the multiple bounces between vegetation, soil and vegetation, as well as the influence of various factors such as sky scattered light. By analyzing the process of the interaction between photons and canopy, from the point of view that the movement of photons in the canopy is equal to the probability of re collision when multiple scattering occurs, a uniform and continuous vegetation fAPAR model is established. In addition, the effects of various factors on the fAPAR model were analyzed, including soil and leaf reflectance, aggregation index, and G function. The algorithm is highly dynamic, and can get better results for different soil background, vegetation type, radiation conditions, light and observation geometry, weather conditions. Compared with the data of corn canopy par measurement in Yingke irrigation area of Zhangye City, Gansu Province on July 8, 2012, the 30 m / month fAPAR product has a high consistency with the ground observation data, and the error with the observation value is less than 5%. In a word, the 30 m / month synthetic photosynthetic effective radiation absorption ratio (fAPAR) data set of Heihe River Basin comprehensively uses the multi temporal and multi angle observation data to improve the estimation accuracy and time resolution of parameter products, and better serves the application of remote sensing data products.

2、Keywords

Theme：Vegetation coverage data,Ecological remote sensing products,Terrestrial Surface Remote Sensing  
Discipline：Terrestrial Surface  
Places：Heihe River Basin, the artificial oasis experimental area in the middle reaches, the cold region hydrology experimental area in the upper reaches, the natural oasis eco-hydrology experimental area in the lower reaches  
Time：2014, 2011, 2012, 2013

3、Data details

1.Scale：None

2.Projection：WSG-84

3.Filesize：5611.52MB

4.Data format：ENVI标准格式

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：42.69 | - |
| west：97.11 | - | east：101.98 |
| - | south：37.72 | - |

5、Time frame:2011-01-14 00:00:00+00:00--2015-01-13 00:00:00+00:00

6、Reference method

References to data:

ZHONG Bo, WU Shanlong, LIU Qinhuo, WU Junjun, FAN Wenjie. HiWATER: 30m month compositing Fraction of Absorbed Photosynthetically Active Radiation (FAPAR) product of the Heihe River Basin. A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.294.2016.db2016

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Liu, Y., Fan, W.J., Xu, X.R., et al. (2013). The new FAPAR retrieval model for continuous vegetation. IEEE International Geoscience and Remote Sensing Symposium (IGARSS), 3052-3055.  
  
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7、Supporting project information

The CAS (Chinese Academy of Sciences) Action Plan for West Development Project  
National High-tech R&D Program of China (863 Program)  
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