A Big Earth Data Platform for Three Poles

**HiWATER: 30m month compositing Leaf Area Index (LAI) product of the Heihe River Basin**

1、Description

The 30 m / month synthetic leaf area index (LAI) data set of Heihe River basin provides the monthly Lai synthetic products from 2011 to 2014. This data uses the domestic satellite HJ / CCD data with high time resolution (2 days after Networking) and spatial resolution (30 m) to construct the multi angle observation data set. Considering the impact of surface classification and terrain fluctuation, the algorithm is selected according to the characteristics of different vegetation types Choosing a suitable parameterization scheme of integrated model, inversion Lai based on look-up table method. The remote sensing data acquired every month can provide more angles and more observations than the single day sensor data, but the quality of multi-phase and multi angle observation data is uneven due to the difference of on orbit operation time and performance of the sensor. Therefore, in order to effectively use multi temporal and multi angle observation data, a data quality inspection scheme is designed. Using the Lai ground observation data of 9 forest quadrats, 20 farmland quadrats and 14 savanna quadrats from dayokou area in the upper reaches of Heihe River and Yingke and Linze areas in the middle reaches to verify the Lai in July, the inversion results are in good agreement with the measurement results, and the average error is less than 1; in addition, the Lai inversion results of the combined multi temporal and multi angle observation data are in good agreement with the ground measurement data （R2=0.9，RMSE=0.42）。 In a word, the 30 m / month synthetic leaf area index (LAI) data set of Heihe River Basin comprehensively uses multi temporal and multi angle observation data to improve the estimation accuracy and time resolution of parameter products, so as to better serve 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  
Time：2014, 2011, 2012, 2013

3、Data details

1.Scale：None

2.Projection：WSG-84

3.Filesize：5939.2MB

4.Data format：ENVI标准格式

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：42.1 | - |
| west：97.8 | - | east：101.8 |
| - | south：37.3 | - |

5、Time frame:2011-01-08 00:00:00+00:00--2015-01-07 00:00:00+00:00

6、Reference method

References to data:

ZHONG Bo, LIU Qinhuo, FAN Wenjie. HiWATER: 30m month compositing Leaf Area Index (LAI) product of the Heihe River Basin. A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.288.2016.db2016

References to articles:

Liao YR, Fan WJ, Xu XR. Algorithm of Leaf Area Index Product for HJ-CCD over Heihe River Basin. IGARSS 2013, 2013: 169-172.  
  
Zhao J, Li J, Liu QH, et al. Leaf Area Index Retrieval Combining HJ1/CCD and Landsat8/OLI Data in the Heihe River Basin, China. Remote sensing, 2015, 7(6): 6862-6885.  
  
Li, X., Liu, S.M., Xiao, Q., Ma, M.G., Jin, R., Che, T., Wang, W.Z., Hu, X.L., Xu, Z.W., Wen, J.G., Wang, L.X. (2017). A multiscale dataset for understanding complex eco-hydrological processes in a heterogeneous oasis system. Scientific Data, 4, 170083. doi:10.1038/sdata.2017.83.

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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8、Data resource provider

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