A Big Earth Data Platform for Three Poles

**HiWATER: 30m month compositing Fraction Vegetation Cover (FVC) product of Heihe River Basin**

1、Description

30m month compositing Fraction Vegetation Cover (FVC) data set of Heihe River Basin provides the results of monthly FVC synthesis in 2011-2014. The data constructs multi-angle observation data sets by using China's domestic satellite HJ/CCD data with high temporal resolution (2 days after networking) and spatial resolution (30m) , and divides the country into different vegetation divisions and land types. The conversion coefficients of NDVI and FVC are calculated respectively, and use the calculated conversion coefficient lookup table and monthly compositing NDVI to produce the regional monthly compositing FVC products. The 30m month compositing FVC product in the Heihe River Basin can directly obtain the vegetation coverage ratio through high-resolution data, and mitigate the influence of low-resolution data heterogeneity; in addition, selecting the typical period of vegetation growth change, by fitting the vegetation index of each pixel time series to obtain the growth curve parameters that correspond to each pixel; then the land use map and the vegetation classification map are combined to find the representative uniform pixels of the region for training the conversion coefficients of the vegetation index. Compared with the ASTER reference FVC results, the 30m/month compositing FVC product in the Heihe River Basin is slightly higher than the ASTER reference result, but the overall deviation is not large, and the maximum value of the root mean square error (RMSE) of the product and the reference value is less than 0.175. In addition, compared with the ground survey data of Huailai experimental site in Hebei Province, the 30 m/month compositing FVC products generally reflect the seasonal variation of vegetation growth, and the deviation from the ground survey data is less than 0.1. At the same time, compared with the ground measurements of vegetation coverage in many watersheds in Northeast, North China and Southeast China, the overall error between the compositing FVC products and the ground measurements is less than 0.2. In all, the 30m/month compositing FVC data set of Heihe River Basin comprehensively utilizes multi-temporal and multi-angle remote sensing data to improve the estimation accuracy and time resolution of FVC parameter products, so as to better serve the application of remote sensing data products.

2、Keywords

Theme：Vegetation coverage data,Ecological remote sensing products,Land-use and land-cover change(LUCC),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：4751.36MB

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:2011-01-11 00:00:00+00:00--2015-01-10 00:00:00+00:00

6、Reference method

References to data:

RUAN Gaiyan, MU Xihan, ZHONG Bo, WU Shanlong, LIU Qinhuo, WU Junjun. HiWATER: 30m month compositing Fraction Vegetation Cover (FVC) product of Heihe River Basin. A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.287.2016.db2016

References to articles:

Xihan Mu; Shuai Huang; Huazhong Ren; Guangjian Yan; Wanjuan Song; Gaiyan Ruan, 2015, Validating GEOV1 Fractional Vegetation Cover derived from coarse-resolution remote sensing images over croplands. IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens., 8: 439–446.  
  
Xihan Mu, Yaokai Liu, Guangjian Yan, Yanjuan Yao, Fractional vegetation cover retrieval using multi-spatial resolution data and plant growth model, IEEE IGARSS’10 , Hawaii, USA, pp:241-244  
  
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)  
National High-tech R&D Program of China (863 Program)

8、Data resource provider

name: ZHONG Bo  
unit:   
email: zhongbo@radi.ac.cn  
  
name: WU Shanlong  
unit: State Key Laboratory of Remote Sensing Science, Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences  
email:   
  
name: RUAN Gaiyan  
unit: State Key Laboratory of Remote Sensing Science, Institute of Remote Sensing Applications of Chinese Academy of Sciences, Beijing Normal University  
email:   
  
name: LIU Qinhuo  
unit: State Key Laboratory of Remote Sensing Science, Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences  
email: qhliu@irsa.ac.cn  
  
name: MU Xihan  
unit: State Key Laboratory of Remote Sensing Science, Institute of Remote Sensing Applications of Chinese Academy of Sciences, Beijing Normal University  
email: muxihan@bnu.edu.cn  
  
name: WU Junjun  
unit:   
email: wujj@radi.ac.cn