A Big Earth Data Platform for Three Poles

**HiWATER: ASTER LST and LSE dataset in the middle reaches of the Heihe River Basin (2012)**

1、Description

This data set contains the surface temperature and surface emissivity products retrieved from 12 ASTER data in the middle reaches of Heihe River Basin in 2012. The 12 scenes ASTER data all cover the ecological and hydrological experimental area of the middle reaches artificial oasis. The acquisition time (Beijing time) is: 2012-05-302012-06-152012-06-242012-07-102012-08-02, 2012-08-112012-08-182012-08-272012-09-03, 2012-09-122012-09-192012-09-28. The transit time of the above data is around 12:15 (Beijing time).   
Firstly, the L1B data is corrected by aster L3 data, and then the L1B data is corrected by MODIS mod07 atmospheric profile product with the same transit time and the atmospheric radiation transfer model MODTRAN. In order to improve the accuracy of atmospheric correction, the water vapor scaling (WVS) atmospheric correction method is used. Finally, the aster temperature emissivity separation (TES) algorithm is used to retrieve the surface temperature and the surface emissivity of five bands. The results show that the average deviation of surface temperature products is less than 0.5K and RMSE is less than 2K. This data set can provide reliable input data for remote sensing estimation of key water and heat variables of heterogeneous surface.

2、Keywords

Theme：Atmosphere Remote Sensing,land surface temperature  
Discipline：Atmosphere  
Places：Heihe River Basin, the artificial oasis experimental area in the middle reaches  
Time：2012-08-18, 2012-08-11, 2012-09-03, 2012-07-10, 2012-09-12, 2012-09-28, 2012-05-30, 2012-06-24, 2012-09-19, 2012-08-02, 2012-08-27, 2012-06-15

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：214.0MB

4.Data format：ENVI标准格式

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：39.2 | - |
| west：100.0 | - | east：101.0 |
| - | south：38.3 | - |

5、Time frame:2012-06-15 03:00:00+00:00--2013-10-14 00:00:00+00:00

6、Reference method

References to data:

LI Hua, WANG Heshun. HiWATER: ASTER LST and LSE dataset in the middle reaches of the Heihe River Basin (2012). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.220.2015.db2017

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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.  
  
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7、Supporting project information

Heihe Watershed Allied Telemetry Experimental Research (HiWATER)  
National High-tech R&D Program of China (863 Program)  
National Natural Science Foundation of China

8、Data resource provider

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