A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of retrieved soil moisture products using PLMR brightness temperatures in the middle reaches of the Heihe River Basin**

1、Description

This dataset includes the retrieved soil moisture products from the airborne PLMR microwave radiometer on 30 June, 7 July, 10 July, 26 July and 2 August, 2012 (UTC+8), in the HiWATER artificial oasis eco-hydrology experimental area of Heihe river basin. The soil moisture (SM), vegetation water content (VWC) and surface roughness (Hr) are simultaneously retrieved based on six brightness temperatures at three incidence angles (7°, 21.5°, 38.5°) and with dual polarization (H and V), by using the Levenberg-Marquardt optimization algorithm. The spatial resolution of the soil moisture products is 700 m, which represent the ~5 cm surface soil moisture according to the L-band observation wavelength. This dataset is in the format of asc, and with UTM projection (47°N). The validation against the eco-hydrological wireless sensor network observations and artificial synchronized observation shows that the total accuracy of this dataset can achieve 0.05 cm^3/cm^3, and that of the products on 7 July and 10 July even less than 0.04 cm^3/cm^3. This dataset can be helpful for the land surface process/hydrological process simulation and data assimilation, surface flux estimation, artificial irrigation management and spatial scaling research.

2、Keywords

Theme：Surface soil moisture,Terrestrial Surface Remote Sensing  
Discipline：Terrestrial Surface  
Places：Heihe River Basin, the artificial oasis experimental area in the middle reaches  
Time：2012-06-30 to 2012-08-02, 2012

3、Data details

1.Scale：0

2.Projection：UTM47°N

3.Filesize：0.027MB

4.Data format：las

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：39.0672 | - |
| west：100.2208 | - | east：100.7339 |
| - | south：38.675 | - |

5、Time frame:2012-07-12 16:04:00+00:00--2012-08-14 16:04:00+00:00

6、Reference method

References to data:

LI Xin, KANG Jian. HiWATER: Dataset of retrieved soil moisture products using PLMR brightness temperatures in the middle reaches of the Heihe River Basin. A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.174.2014.db2017

References to articles:

李大治, 晋锐\*, 车涛, Jeffrey Walker, 高莹, 耶楠, 王树果. 联合机载PLMR微波辐射计和MODIS产品反演黑河中游张掖绿洲土壤水分研究. 地球科学进展, 2014, 29(02):295-305. doi:10.11867/j.issn.1001-8166.2014.02.0295  
  
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

"Heihe Watershed Allied Telemetry Experimental Research (HiWATER)  
Heihe Watershed Allied Telemetry Experimental Research (HiWATER)  
The CAS (Chinese Academy of Sciences) Action Plan for West Development Project

8、Data resource provider

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