A Big Earth Data Platform for Three Poles

**HiWATER: WATERNET observation dataset in the middle of Heihe River Basin (2012)**

1、Description

This dataset includes soil moisture, soil temperature and land surface temperature observations of 50 WATERNET wireless sensor network (WSN) nodes during the period from May to September 2012, which is one type of WSN nodes in the Heihe eco-hydrological wireless sensor network (WSN). The WATERNET located in the 4×4 MODIS grids in the observation matrix in the Zhangye oasis. Each WATERNET node observes the soil moisture, soil temperature, soil conductivity and complex dielectric constant at 4 cm and 10 cm depths by the Hydra Probe II sensor. There are 29 nodes among the WATERNET with the SI-111 sensor at 4 m height to measure the surface radiance temperature. The operational observation interval is 10 minutes, and the intensive observation mode with 1 minute is activated during 00:00-04:30, 08:00-18:00 and 21:00-24:00 (UTC+8), in order to synchronize with airborne or satellite-borne remote sensors. This dataset can be used in the estimation of surface hydrothermal variables and their validation, eco-hydrological research, irrigation management and so on.  
The detail description please refers to "WATERNET\_Data\_Document\_HRBMiddle.docx”.

2、Keywords

Theme：Soil,Surface radiation temperature,Soil salinity,Earth SurFace Processes,Soil temperature,Soil moisture/Water content  
Discipline：Terrestrial Surface  
Places：Heihe River Basin, the artificial oasis experimental area in the middle reaches, flux observation matrix  
Time：2012

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：1415.0MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.9055 | - |
| west：100.3215 | - | east：100.4097 |
| - | south：38.8369 | - |

5、Time frame:2012-06-06 08:00:00+00:00--2013-01-17 09:00:00+00:00

6、Reference method

References to data:

MA Mingguo, LI Xin, Dong Cunhui. HiWATER: WATERNET observation dataset in the middle of Heihe River Basin (2012). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.118.2013.db2015

References to articles:

Rui Jin, Xin Li, Baoping Yan, Xiuhong Li, Wanmin Luo, Minguo Ma, Jianwen Guo, Jian Kang, Zhongli Zhu. 2014. A Nested Eco-hydrological Wireless Sensor Network for Capturing Surface Heterogeneity in the Middle-reach of Heihe River Basin, China. IEEE Geoscience and Remote Sensing Letters, 11(11), DOI:10.1109/LGRS.2014.2319085  
  
Jin, R., Li, X., Yan, B.P., Li, X.H., Luo, W.M., Ma, M.G., Guo, J.W., Kang, J., Zhu, Z.L. (2014). A Nested Eco-hydrological Wireless Sensor Network for Capturing Surface Heterogeneity in the Middle-reach of Heihe River Basin, China. IEEE Geoscience and Remote Sensing Letters, 11(11), 2015-2019, DOI:10.1109/LGRS.2014.2319085  
  
Kang, J.; Li, X.; Jin, R., et al. Hybrid optimal design of the eco-hydrological wireless sensor network in the middle reach of the Heihe River Basin, China. Sensors, 2014, 14(10): 19095-19114.  
  
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)  
National High-tech R&D Program of China (863 Program)  
National Development and Reform Commission Project

8、Data resource provider

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