A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of hydro-meteorological observation network (eddy covariance system of Barren-land Station, 2015)**

1、Description

The data set contains eddy covariance System observation data of Barren-land Station which is located in the lower reaches of the Heihe Hydro-meteorological Observation Network from January 1, 2015 to December 31, 2015. The site is located in Sidaoqiao, Ejina Banner, Inner Mongolia, and the underlying surface is barren land. The latitude and longitude of the observation point is 101.1326E, 41.9993N, and the altitude is 878m. The mount height of the Eddy Covariance System is 3.5 m, the sampling frequency is 10 Hz, the ultrasonic orientation is north, and the distance between the ultrasonic wind speed temperature meter (CSAT3) and the CO2/H2O analyzer (Li7500) is 15 cm.  
The original observation data of the Eddy Covariance System is 10 Hz, and the released data is a 30-minute data processed by Eddypro software. The main steps of the processing include: outlier eliminating, delay time correction, coordinates rotation (secondary coordinates rotation), frequency response correction, ultrasonic virtual temperature correction and density (WPL) correction, etc. Meanwhile, the quality evaluation of each flux value was performed,mainly includes atmospheric stability (Δst) test and turbulence similarity (ITC) test. The 30-min flux value output of Eddypro software was also screened: (1) Data from the instrument error was eliminated; (2) Data obtained with one hour before and after precipitation was removed; (3) Data with a deletion rate greater than 10% of the 10 Hz raw data every 30 minutes was eliminated; (4) Observation data of weak turbulence at night (u\* less than 0.1 m/s) was excluded. The average period of observation data is 30 minutes, 48 data per day, and the missing data is marked as -6999. The data was missing due to Li7500 calibration of the eddy system on April 7 and 8; the suspicious data caused by instrument drift and other reasons was marked by red fonts.  
Published observation data include: date/time Date/Time, wind direction(°), horizontal wind speed(m/s), lateral wind speed standard deviation(m/s), ultrasonic virtual temperature (°C), water vapor density (g/m3), carbon dioxide concentration(mg/m3), friction velocity (m/s), length (m), sensible heat flux(W/m2), latent heat flux (W/m2), carbon dioxide flux (mg/(m2s)), sensible heat flux quality identification QA\_Hs, latent heat flux quality identification QA\_LE, carbon dioxide flux quality identification QA\_Fc. The quality identification of sensible heat, latent heat, and carbon dioxide flux is divided into three levels (quality mark 0: (Δst <30, ITC<30); 1: (Δst <100, ITC<100); the rest is 2). The meaning of the data time, such as 0:30 represents an average data of 0:00-0:30; the data is stored in \*.xls format.  
For hydro-meteorological network or station information, please refer to Li et al. (2013). For observation data processing, please refer to Liu et al. (2011).

2、Keywords

Theme：Latent heat flux,Radiation,Carbon dioxide flux,Sensible heat flux  
Discipline：Atmosphere  
Places：Heihe River Basin, barren-land station, the natural oasis eco-hydrology experimental area in the lower reaches  
Time：2015, 2015-01-01 to 2015-12-31

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：2.89MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：41.9993 | - |
| west：101.1326 | - | east：101.1326 |
| - | south：41.9993 | - |

5、Time frame:2015-01-11 16:40:00+00:00--2016-01-10 00:00:00+00:00

6、Reference method

References to data:

TAN Junlei, LI Xin, LIU Shaomin, XU Ziwei, CHE Tao, REN Zhiguo. HiWATER: Dataset of hydro-meteorological observation network (eddy covariance system of Barren-land Station, 2015). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.302.2016.db2016

References to articles:

Liu, S.M., Xu, Z.W., Wang, W.Z., Bai, J., Jia, Z., Zhu, M., & Wang, J.M. (2011). A comparison of eddy-covariance and large aperture scintillometer measurements with respect to the energy balance closure problem. Hydrology and Earth System Sciences, 15(4), 1291-1306.  
  
Liu, S.M., Li, X., Xu, Z.W., Che, T., Xiao, Q., Ma, M.G., Liu, Q.H., Jin, R., Guo, J.W., Wang, L.X., Wang, W.Z., Qi, Y., Li, H.Y., Xu, T.R., Ran, Y.H., Hu, X.L., Shi, S.J., Zhu, Z.L., Tan, J.L., Zhang, Y., & Ren, Z.G. (2018). The Heihe Integrated Observatory Network: A Basin-Scale Land Surface Processes Observatory in China. Vadose Zone Journal, 17(1), 180072. doi:10.2136/vzj2018.04.0072.

7、Supporting project information

8、Data resource provider

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