A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of hydrometeorological observation network (eddy covariance system of Populus forest station, 2015)**

1、Description

This data set contains the eddy correlativity observation data of the euphrate poplar forest station downstream of heihe hydrometeorological observation network from January 1, 2015 to December 31, 2015.The station is located in Inner Mongolia ejin banner four bridge, under the surface is the euphorbia poplar forest.The longitude and latitude of the observation point are 101.1236e, 41.9928n and 876m above sea level.The rack height of the vortex correlativity instrument is 22m, the sampling frequency is 10Hz, the ultrasonic orientation is due north, and the distance between the ultrasonic wind speed and temperature meter (CSAT3) and CO2/H2O analyzer (Li7500) is 17cm.  
The original observation data of the vortex correlativity instrument is 10Hz, and the published data is the 30-minute data processed by Eddypro software. The main processing steps include: outliers, delay time correction, coordinate rotation (quadratic coordinate rotation), frequency response correction, ultrasonic virtual temperature correction and density (WPL) correction.Quality assessment for each intercompared to at the same time, mainly is the atmospheric stability (Δ st) and turbulent characteristics of similarity (ITC) test.The 30min pass value output by Eddypro software was also screened :(1) data when instrument error was eliminated;(2) data of 1h before and after precipitation are excluded;(3) remove the data with a missing rate of more than 10% in the original 10Hz data within every 30 minutes;(4) the observation data of weak turbulence at night (u\* less than 0.2m/s) were excluded.The average observation period was 30 minutes, 48 data per day, and the missing data was marked as -6999.Suspicious data caused by instrument drift, etc., shall be marked in red font.On April 22, solstice and April 25, data was missing due to the calibration of the vortex system Li7500.August 17 solstice September 5, due to memory card problems, resulting in intermittent data.  
The published observational data include:Date/Time for the Date/Time, wind Wdir (°), Wnd horizontal wind speed (m/s), standard deviation Std\_Uy lateral wind speed (m/s), ultrasonic virtual temperature Tv (℃), the water vapor density H2O (g/m3), carbon dioxide concentration CO2 (mg/m3), friction velocity Ustar) (m/s), Mr. Hoff length L (m), sensible heat flux Hs (W/m2), latent heat flux LE (W/m2), carbon dioxide flux Fc (mg/(m2s)), the quality of the sensible heat flux identifier QA\_Hs, the quality of the latent heat flux identifier QA\_LE,Quality indicator for co2 flux QA\_Fc.The quality of the sensible heat and latent heat, carbon dioxide flux identification is divided into three (quality id 0: (Δ st < 30, the ITC < 30);1: (Δ st < 100, ITC < 100);The rest is 2).The meaning of data time, such as 0:30 represents the average of 0:00-0:30;The data is stored in \*.xls format.  
For information of hydrometeorological network or station, please refer to Li et al. (2013), and 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, populus forest 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：3.04MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：41.9928 | - |
| west：101.1236 | - | east：101.1236 |
| - | south：41.9928 | - |

5、Time frame:2015-01-13 00:00:00+00:00--2016-01-12 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 hydrometeorological observation network (eddy covariance system of Populus forest station, 2015). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.299.2016.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

name: XU Ziwei  
unit: Beijing Normal University  
email: xuzw@bnu.edu.cn  
  
name: TAN Junlei  
unit:   
email: tanjunlei@163.com  
  
name: REN Zhiguo  
unit: Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences  
email:   
  
name: LI Xin  
unit:   
email: xinli@itpcas.ac.cn  
  
name: LIU Shaomin  
unit: Beijing Normal University  
email: smliu@bnu.edu.cn  
  
name: CHE Tao  
unit:   
email: chetao@lzb.ac.cn