A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of hydrometeorological observation network (eddy covariance system of Yakou station, 2016)**

1、Description

This data set contains the observation data of vortex correlativity instrument at yakou station on the upstream of heihe hydrometeorological observation network from January 1, 2016 to December 31, 2016.The station is located in qilian county, qinghai province.The latitude and longitude of the observation point is 100.2421, 38.0142N, and the altitude is 4148 m.The height of the vortex correlation instrument is 3.2m, the sampling frequency is 10Hz, the ultrasonic direction is due to the north, and the distance between the ultrasonic wind speed and temperature instrument (CSAT3) and the CO2/H2O analyzer (Li7500A) is 15cm.  
The original observation data of vorticity correlativity is 10Hz, and the released data is the data of 30 minutes processed by Eddypro software. The main steps of its processing include: outfield value elimination, delay time correction, coordinate rotation (secondary 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.(2) data of 1h before and after precipitation were excluded;(3) the missing rate of 10Hz original data is more than 10% every 30min;(4) the observed data of weak turbulence at night were excluded (u\* less than 0.1m/s).The average period of observation data was 30 minutes, 48 data a day, and the missing data was marked as -6999.Suspicious data caused by instrument drift shall be identified in red.The eddy current correlator will be short of electricity at night in winter, resulting in the loss of data.  
Observations published 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,Carbon dioxide flux mass identification 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 are 2).The meaning of data time, such as 0:30 represents the average between 0:00 and 0:30;The data is stored in \*.xls format.  
Please refer to Liu et al. (2018) for hydrometeorological network or site information, and Liu et al. (2011) for observation data processing.

2、Keywords

Theme：Latent heat flux,Radiation,Carbon dioxide flux,Sensible heat flux  
Discipline：Atmosphere  
Places：Heihe River Basin, the cold region hydrology experimental area in the upper reaches, Yakou station  
Time：2016-01-01 to 2016-12-31, 2016

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：2.13MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.0142 | - |
| west：100.2421 | - | east：100.2421 |
| - | south：38.0142 | - |

5、Time frame:2016-01-11 16:00:00+00:00--2017-01-10 16:00:00+00:00

6、Reference method

References to data:

TAN Junlei, LI Xin, LIU Shaomin, XU Ziwei, CHE Tao, ZHANG Yang. HiWATER: Dataset of hydrometeorological observation network (eddy covariance system of Yakou station, 2016). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.452.2017.db2017

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.  
  
Che, T., Li, X., Liu, S., Li, H., Xu, Z., Tan, J., Zhang, Y., Ren, Z., Xiao, L., Deng, J., Jin, R., Ma, M., Wang, J., & Yang, X. (2019). Integrated hydrometeorological, snow and frozen-ground observations in the alpine region of the Heihe River Basin, China. Earth System Science Data, 11, 1483-1499

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: ZHANG Yang  
unit:   
email: zhangyang@lzb.ac.cn  
  
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