A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of Hydrometeorological observation network (eddy covariance system of Daman Superstation, 2016)**

1、Description

This data set contains the observation data of vortex-correlograph in the middle reaches of heihe hydrometeorological observation network from January 1, 2016 to December 31, 2016.The station is located in the daman irrigation district of zhangye city, gansu province.The latitude and longitude of the observation point is 100.37223E, 38.85551N, and the altitude is 1556.06m.The rack height of the vortex correlativity meter is 4.5m, 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 (Li7500A) 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 0.1m/s) were excluded.The average observation period was 30 minutes, 48 data per day, and the missing data was marked as -6999.Due to the power failure from March 3 to 23, the Li7500A of the vortex system was calibrated from April 17 to 25, and the collector problems from October 10 to 24 and December 19 to 31 led to data loss.
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 Liu et al. (2018), 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, the artificial oasis experimental area in the middle reaches, Daman Superstation
Time：2016-01-01 to 2016-12-31, 2016

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：2.7MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.85551 | - |
| west：100.37223 | - | east：100.37223 |
| - | south：38.85551 | - |

5、Time frame:2016-01-14 16:00:00+00:00--2017-01-13 16:00:00+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 Daman Superstation, 2016). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.446.2017.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.

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