A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of hydrometeorological observation network (eddy covariance system of Shenshawo desert Station, 2015)**

1、Description

This data set includes the eddy correlation data of Shenshawo Desert Station in the middle reaches of Heihe Hydrometeorological Observation Network from January 1, 2015 to April 12, 2015. The site is located in Zhangye City, Gansu Province, and the underlying surface is desert. The latitude and longitude of the observation point is 100.49330E, 38.78917N, and the altitude is 1594.00m. The height of eddy correlator is 4.6 m, the sampling frequency is 10 Hz, the ultrasonic orientation is positive north, and the distance between the ultrasonic wind speed thermometer (CSAT3) and the CO2/H2O analyzer (Li7500) is 15 cm. The original observation data of the eddy correlation meter is 10 Hz, and the released data is 30-minute data processed by Eddypro software. The main steps of the processing include: outlier removal, time-lag correction, coordinate rotation (double rotation), frequency response correction, ultrasonic virtual temperature correction and density (WPL) correction, etc. At the same time, the quality evaluation of each flux value is conducted, it mainly contains atmosphere state stability test(Δst) and integrated turbulence characteristic test(ITC). The 30-min flux value output by Eddypro software was also screened: (1) data from the instrument error was eliminated; (2) data 1 h before and after precipitation was removed; (3) data from the deletion rate greater than 10% within every 30 min of the 10 Hz raw data. (4) eliminating observation data of weak turbulence at night (u\* less than 0.1 m/s). The average time period of observation data is 30 minutes, 48 data per day, and the missing data is labeled -6999. Abnormal data caused by instrument drift and other reasons are marked in red.  
Published observations include: date/time Date/Time, wind direction Wdir(°), horizontal wind speed Wnd(m/s), lateral wind speed standard deviation Std\_Uy(m/s), ultrasonic virtual temperature Tv(°C), water vapor density H2O (g/m3), carbon dioxide concentration CO2 (mg/m3), friction velocity Ustar (m/s), Obukhov length L (m), sensible heat flux Hs (W/m2), latent heat flux LE (W/m2), carbon dioxide flux Fc (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 of 0:00-0:30; the data is stored in \*.xls format.  
For hydrometeorological network or site 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, the artificial oasis experimental area in the middle reaches, Shenshawo desert station  
Time：2015, 2015-01-01 to 2015-12-31

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：0.6MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.78917 | - |
| west：100.4933 | - | east：100.4933 |
| - | south：38.78917 | - |

5、Time frame:2015-01-12 16:00:00+00:00--2016-01-11 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 Shenshawo desert Station, 2015). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.332.2016.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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