A Big Earth Data Platform for Three Poles

**Multi-scale surface flux and meteorological elements observation dataset in the Hai River Basin (Huailai station-eddy covariance system-10m tower, 2017)**

1、Description

This data set contains the observation data of 10 m tower eddy covariance instrument from January 1, 2017 to December 31, 2017. The site is located in donghuayuan Town, Huailai County, Hebei Province. The longitude and latitude of the observation point are 115.7880e, 40.3491n and 480m above sea level. The acquisition frequency of the eddy correlator is 10Hz, the height of the frame is 5m, the ultrasonic direction is due north, and the distance between the ultrasonic anemometer (csat3) and the CO2 / H2O analyzer (li7500a) is 15cm.
The released data is 30 minutes data obtained by post-processing the original collected 10Hz data by eddypro software. The main processing steps include: outlier value elimination, delay time correction, coordinate rotation (secondary coordinate rotation), frequency response correction, ultrasonic virtual temperature correction and density (WPL) correction. At the same time, the quality evaluation of each flux value is mainly the test of atmospheric stability (Δ st) and turbulence similarity characteristics (ITC). The 30 min flux values output after processing were also screened: (1) the data of instrument error; (2) the data of 1 h before and after precipitation; (3) the data of 10 Hz original data missing more than 10% every 30 min; (4) the observation data of weak turbulence at night (U \* less than 0.1 M / s) were eliminated. The average period of observation data is 30 minutes. There are 48 data in a day, and the missing data is marked as - 6999. From May 27 to July 22, the data was missing due to problems with the ultrasonic anemometer.
The observational data released by eddy correlator include date / time, wind direction WDIR (°), horizontal wind speed wnd (M / s) and standard deviation of lateral wind speed STD\_ Uy (M / s), ultrasonic virtual temperature TV (k), water vapor density H2O (g / m3), carbon dioxide concentration CO2 (mg / m3), friction velocity ustar (M / s), obuhof length, sensible heat flux HS (w / m2), latent heat flux Le (w / M2), carbon dioxide flux FC (mg / (M2S)), quality identification of sensible heat flux QA\_ HS, quality identification of latent heat flux QA\_ LE。 The quality identification of sensible heat, latent heat and carbon dioxide flux can be divided into three levels (quality mark 0: (Δ st < 30, ITC < 30); 1: (Δ st < 100, ITC < 100); the rest are 2). The meaning of data time, for example, 0:30 represents the average of 0:00-0:30; the data is stored in \*. XLS format.
Guo et al, 2020 is used for site introduction and Liu et al, 2013 for data processing

2、Keywords

Theme：Latent heat flux,Radiation,Sensible heat flux
Discipline：Atmosphere
Places：Huailai, Hebei, Haihe river basin
Time：2017

3、Data details

1.Scale：None

2.Projection：None

3.Filesize：3.02MB

4.Data format：EXCEL

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：40.3491 | - |
| west：115.788 | - | east：115.788 |
| - | south：40.3491 | - |

5、Time frame:2017-01-17 08:00:00+00:00--2018-01-16 08:00:00+00:00

6、Reference method

References to data:

LIU Shaomin, XU Ziwei. Multi-scale surface flux and meteorological elements observation dataset in the Hai River Basin (Huailai station-eddy covariance system-10m tower, 2017). A Big Earth Data Platform for Three Poles, doi:10.3972/haihe.008.2019.db2019

References to articles:

Liu, S.M., Xu, Z.W., Zhu, Z.L., Jia, Z.Z., & Zhu, M.J. (2013). Measurements of evapotranspiration from eddy-covariance systems and large aperture scintillometers in the Hai River Basin, China. Journal of Hydrology, 487, 24-38.

Guo, A.L., Liu, S.M., Zhu, Z.L., Xu, Z.W., Xiao, Q., Ju, Q., Zhang, Y., & Yang, X.F. (2020). Impact of Lake/Reservoir Expansion and Shrinkage on Energy and Water Vapor Fluxes in the Surrounding Area. Journal of Geophysical Research: Atmospheres, 125, e2020JD032833. https://doi.org/10.1029/2020JD032833.

7、Supporting project information

8、Data resource provider

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