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-40m tower, 2016)**

1、Description

The data set contains the observation data of 40m tower vortex correlator on January 1, 2016, solstice, 2016, December 31, 2016.The station is located in east garden town, huailai county, hebei province.The latitude and longitude of the observation point is 115.7923E, 40.3574N, and the altitude is 480m.The acquisition frequency of vortex correlativity instrument is 10Hz, the frame height is 3.5m, the ultrasonic direction is due to the north, and the distance between the ultrasonic anemometer (CSAT3) and the CO2/H2O analyzer (EC150) is 0cm.

The released data is the 30-minute data obtained from the post-processing of the original collected 10Hz data with Eddypro software. The main steps of the 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 after processing was also screened :(1) the data when the instrument was wrong was removed;(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.There are many negative values of water vapor density measured by EC150 in winter, filled with -6999.

The observation data released by vortex correlator 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 (K), the water vapor density H2O (g/m3), carbon dioxide concentration CO2 (mg/m3), friction velocity Ustar) (m/s), the length of cloth hoff, 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.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.The data was missing during the period from May 26 to May 29 due to instrument calibration.

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：2016

3、Data details

1.Scale：None

2.Projection：None

3.Filesize：3.02MB

4.Data format：EXCEL

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：40.3574 | - |
| west：115.792 | - | east：115.792 |
| - | south：40.3574 | - |

5、Time frame:2016-01-09 16:00:00+00:00--2017-01-08 16:00:00+00:00

6、Reference method

References to data:

LIU Shaomin, XU Ziwei, XIAO Qing. Multi-scale surface flux and meteorological elements observation dataset in the Hai River Basin (Huailai station-eddy covariance system-40m tower, 2016). A Big Earth Data Platform for Three Poles, doi:10.3972/haihe.003.2019.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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