A Big Earth Data Platform for Three Poles

**Multi-scale surface flux and meteorological elements observation dataset in the Hai River Basin (Huailai station-large aperture scintillometer, 2016)**

1、Description

The data set contains the observation data of large aperture scintillator from January 1, 2016 to December 31, 2016. Two large aperture scintillation meters, bls450 and zzlas, are installed respectively. 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 effective height of the large aperture scintillator is 14m, the optical path length is 1870m, the longitude and latitude of the transmitter are 115.8023e, 40.3596n, and the longitude and latitude of the receiver are 115.7825e and 40.3522n. The acquisition frequency of bls450 and zzlas is 5Hz and 1Hz respectively, with an average output of 1min.
The original data of large aperture scintillator is 1 min, and the released data is 30 min average data after processing and quality control. The sensible heat flux is mainly obtained by iterative calculation based on Monin obkhov similarity theory and combined with automatic weather station data. In the process of iterative calculation, for bls450, the stability function of thiermann and Grassl, 1992 is selected; for zzlas, the stability function of Andreas, 1988 is selected. The main quality control steps include: (1) eliminating the data of cn2 saturation; (2) eliminating the data with weak demodulation signal intensity; (3) eliminating the data of precipitation time and one hour before and after; (4) eliminating the data of weak turbulence under stable conditions (U \* less than 0.1m/s).
Several explanations about the published data are as follows: (1) the Las data is mainly bls450, and the missing time is supplemented by zzlas observation, and the missing time is marked with - 6999. (2) Data header: date / time: date / time, cn2: structure parameter of air refraction index (m-2 / 3), H\_ Las: sensible heat flux (w / m2). 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; Liu et al., 2013

2、Keywords

Theme：Surface energy balance,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：0.5MB

4.Data format：EXCEL

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：40.3522 | - |
| west：115.783 | - | east：115.783 |
| - | south：40.3522 | - |

5、Time frame:2016-01-21 16:00:00+00:00--2017-01-20 22:00:00+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-large aperture scintillometer, 2016). A Big Earth Data Platform for Three Poles, doi:10.3972/haihe.001.2019.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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