A Big Earth Data Platform for Three Poles

**Multi-scale surface flux and meteorological elements observation dataset in the Haihe River Basin (Huailai station-large aperture scintillometer, 2017)**

1、Description

This data set contains the observation data of large aperture scintillator on January 7, 2017 at solstice on December 31, 2017. Two large aperture scintillator models BLS450 and zzlas were installed respectively.The site is located in huailai county, hebei province, east garden town, the underlying surface for corn.The latitude and longitude of the observation point is 115.7880E, 40.3491N, and the altitude is 480m.The effective height of the large aperture scintillation instrument is 14m, the optical diameter length is 1870m, the longitude and latitude of the transmitting end is 115.8023e, 40.3596n, and the longitude and latitude of the receiving end is 115.7825e, 40.3522n.The acquisition frequencies of BLS450 and zzlas were 5Hz and 1Hz respectively, with an average output of 1min.

The original data of the large aperture scintillator is 1min, and the released data is the average data of 30min after processing and quality control. Among them, the sensible heat flux is mainly obtained by combining with the data of the automatic meteorological station and by iterative calculation based on the moning-obkhoff similarity theory.In the iterative calculation process, for BLS450, the stability function of Thiermann and Grassl, 1992 was selected.For zzlas, I'm going to pick Andreas 1988's stability function.The main quality control steps include :(1) eliminating the data of Cn2 reaching saturation;(2) eliminate data with weak demodulation signal strength;(3) data of the time of precipitation and the hour before and after the precipitation are excluded;(4) data of weak turbulence under stable conditions were excluded (u\* < 0.1m/s).

Several notes on the released data :(1) LAS data is mainly BLS450, the missing time is supplemented by zzlas observation, and the missing time of both is marked by -6999.(2) data table: Date/Time: Date/Time, Cn2: air refractive index structure parameter (m-2/3), H\_LAS: sensible heat flux (W/m2).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.

Guo et al, 2020 is used for site introduction and Liu et al, 2013 for data processing

2、Keywords

Theme：Surface energy balance,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：0.5MB

4.Data format：EXCEL

4、Space scope

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

5、Time frame:2017-01-09 16:00:00+00:00--2018-01-08 16:00:00+00:00

6、Reference method

References to data:

LIU Shaomin, XU Ziwei. Multi-scale surface flux and meteorological elements observation dataset in the Haihe River Basin (Huailai station-large aperture scintillometer, 2017). A Big Earth Data Platform for Three Poles, doi:10.3972/haihe.007.2019.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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