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, 2020)**

1、Description

This dataset contains the flux measurements from the large aperture scintillometer (LAS) at Huailai station in the Hai River Basin from January 1 to December 31 in 2020. There were two types of LASs at Huailai Station: BLS450 and zzlas, produced by Germany and China, respectively. The north tower was set up with the zzlas receiver and the BLS450 transmitter, and the south tower was equipped with the zzlas transmitter and the BLS450 receiver. The site (north: 115.8023E，40.3596N; south: 115.7825E，40.3522N) was located in Donghuayuan Town, Huailai County, Hebei Province. The underlying surfaces between the two towers were corn. The elevation is 480 m. The effective height of the LASs was 14 m, and the path length was 1870m. The data were sampled 1 minute.
The raw data acquired at 1 min intervals were processed and quality controlled. The data were subsequently averaged over 30 min periods, in which sensible heat flux was iteratively calculated by combining Cn2 with meteorological data according to the Monin-Obukhov similarity theory. The main quality control steps were as follows: (1) The data were rejected when Cn2 exceeded the saturated criterion. (2) The data were rejected when the demodulation signal was small. (3) The data were rejected when collected during precipitation. (4) The data were rejected if collected at night when weak turbulence occurred (u\* was less than 0.1 m/s).
Several instructions were included with the released data. (1) The data were primarily obtained from BLS450 measurements, and missing flux measurements from the BLS450 instrument were substituted with measurements from the zzlas instrument. The missing data were denoted by -6999. (2) The dataset contained the following variables: Date/Time (yyyy/m/d h:mm), the structural parameter of the air refractive index (Cn2, m-2/3), and the sensible heat flux (H\_LAS, W/m2). In this dataset, a time of 0:30 corresponds to the average data for the period between 0:00 and 0:30, and the data were stored in \*.xlsx format. Moreover, suspicious data were marked in red.
For more information, please refer to Guo et al. (2020) (for observation experiment or sites information), Liu et al. (2013) (for data processing) in the Citation section.

2、Keywords

Theme：Evapotranspiration,Hydrology
Discipline：Terrestrial Surface
Places：Huailai, Haihe river basin
Time：2020

3、Data details

1.Scale：None

2.Projection：

3.Filesize：0.1MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：40.3596 | - |
| west：115.7825 | - | east：115.8023 |
| - | south：40.3522 | - |

5、Time frame:2019-12-31 16:00:00+00:00--2020-12-30 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 Hai River Basin (Huailai station-large aperture scintillometer, 2020). A Big Earth Data Platform for Three Poles, doi:10.11888/Hydro.tpdc.2717842021

References to articles:

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.

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.

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program

8、Data resource provider

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