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, 2021)**

1、Description

This dataset contains the flux measurements from the large aperture scintillometer (LAS) at Huailai station. There were two types of LASs: German BLS450 and zzLAS. The observation periods were from January 1 to December 31, 2021. The site ( (north: 115.7825° E, 40.3522° N; south: 115.7880° E, 40.3491° N) was located in the Donghuahuan town of Huailai city, Hebei Province. The elevation is 480 m. The underlying surface between the two towers contains mainly maize. The effective height of the LASs was 14 m; the path length was 1870 m. Data were sampled at 1 min intervals.
Raw data acquired at 1 min intervals were processed and quality-controlled. The data were subsequently averaged over 30 min periods. The main quality control steps were as follows. (1) The data were rejected when Cn2 was beyond the saturated criterion. (2) Data were rejected when the demodulation signal was small. (3) Data were rejected within 1 h of precipitation. (4) Data were rejected at night when weak turbulence occurred (u\* was less than 0.1 m/s). The sensible heat flux was iteratively calculated by combining with meteorological data and based on Monin-Obukhov similarity theory.
There were several instructions for the released data. (1) The data were primarily obtained from BLS450 measurements; missing flux measurements from the BLS450 were filled with measurements from the zzLAS. Missing data were denoted by -6999. (2) The dataset contained the following variables: data/time (yyyy-mm-dd hh:mm:ss), the structural parameter of the air refractive index (Cn2, m-2/3), and the sensible heat flux (H\_LAS, W/m^2). (3) In this dataset, the time of 0:30 corresponds to the average data for the period between 0:00 and 0:30; the data were stored in \*.xls format. Moreover, suspicious data were marked in red.
For more information, please refer to Guo et al. (2020) (for 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：2021

3、Data details

1.Scale：None

2.Projection：

3.Filesize：0.5MB

4.Data format：None

4、Space scope

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

5、Time frame:2020-12-31 16:00:00+00:00--2021-12-30 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, 2021). A Big Earth Data Platform for Three Poles, doi:10.11888/Terre.tpdc.2729232022

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

name: XU Ziwei
unit: Beijing Normal University
email: xuzw@bnu.edu.cn

name: LIU Shaomin
unit: Beijing Normal University
email: smliu@bnu.edu.cn