A Big Earth Data Platform for Three Poles

**Qilian Mountains integrated observatory network: Dataset of Heihe integrated observatory network (large aperture scintillometer of Sidaoqiao superstation, 2018)**

1、Description

This dataset contains the flux measurements from the large aperture scintillometer (LAS) at Sidaoqiao Superstation in the Heihe integrated observatory network from January 1 to December 31 in 2018. There were one German BLS900 at Sidaoqiao Superstation. The north tower was set up with the BLS900 receiver and the south tower was equipped with the BLS900 transmitter. The site (north: 101.137° E, 42.008° N; south: 101.131° E, 41.987 N) was located in Ejinaqi, Inner Mongolia. The underlying surfaces between the two towers were tamarisk, populus, bare land and farmland. The elevation is 873 m. The effective height of the LAS was 25.5 m, and the path length was 2350 m. 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 (Cn2>7.58E-14). (2) The data were rejected when the demodulation signal was small (Average X Intensity<1000). (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). In the iteration process, the universal functions of Thiermann and Grassl, 1992 was selected. Detailed can refer to Liu et al. (2011, 2013).
Several instructions were included with the released data. (1) The missing data from the BLS900 instrument 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/m^2). 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 Liu et al. (2018) (for sites information), Liu et al. (2011) (for data processing) in the Citation section.

2、Keywords

Theme：Radiation,Sensible heat flux
Discipline：Atmosphere
Places：The lower reaches of the heihe river, Sidaoqiao superstation, the natural oasis eco-hydrology experimental area in the lower reaches
Time：2018

3、Data details

1.Scale：None

2.Projection：None

3.Filesize：0.54MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：42.008 | - |
| west：101.131 | - | east：101.137 |
| - | south：41.987 | - |

5、Time frame:2018-01-21 00:00:00+00:00--2019-01-20 00:00:00+00:00

6、Reference method

References to data:

TAN Junlei, LI Xin, LIU Shaomin, XU Ziwei, CHE Tao, REN Zhiguo. Qilian Mountains integrated observatory network: Dataset of Heihe integrated observatory network (large aperture scintillometer of Sidaoqiao superstation, 2018). A Big Earth Data Platform for Three Poles, doi:10.11888/Meteoro.tpdc.2707652019

References to articles:

Liu, S.M., Li, X., Xu, Z.W., Che, T., Xiao, Q., Ma, M.G., Liu, Q.H., Jin, R., Guo, J.W., Wang, L.X., Wang, W.Z., Qi, Y., Li, H.Y., Xu, T.R., Ran, Y.H., Hu, X.L., Shi, S.J., Zhu, Z.L., Tan, J.L., Zhang, Y., & Ren, Z.G. (2018). The Heihe Integrated Observatory Network: A Basin-Scale Land Surface Processes Observatory in China. Vadose Zone Journal, 17(1), 180072. doi:10.2136/vzj2018.04.0072.

Liu, S.M., Xu, Z.W., Wang, W.Z., Bai, J., Jia, Z., Zhu, M., & Wang, J.M. (2011). A comparison of eddy-covariance and large aperture scintillometer measurements with respect to the energy balance closure problem. Hydrology and Earth System Sciences, 15(4), 1291-1306.

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program
the National Natural Science Foundation of China “Key Theory and Methods for Validation of Land Surface Remote Sensing Products”

8、Data resource provider

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