A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of hydrometeorological observation network (large aperture scintillometer of A’rou Superstation, 2017)**

1、Description

The data set contains the flux observation data of large aperture scintillator at areau station upstream of heihe hydrometeorological observation network.Two large aperture scintillation devices of BLS450 and zzlas type were set up in the upstream areau station respectively. The north tower was the receiving end of zzlas and the transmitting end of BLS450, and the south tower was the transmitting end of zzlas and the receiving end of BLS450.The observation time is January 1, 2017, solstice, December 31, 2017.The station is located in the grass daban village, a soft township, qilian county, qinghai province.The latitude and longitude of the north tower is 100.4712e, 38.0568n, and the latitude and longitude of the south tower is 100.4572e, 38.0384 N, with an altitude of about 3033m.The effective height of the large aperture scintillator is 9.5m, the optical diameter length is 2390m, and the sampling frequency is 1min.
Large aperture flicker meter raw observation data for 1 min, data released for after processing and quality control of data, including sensible heat flux is mainly combined with the automatic meteorological station observation data, based on similarity theory alonzo mourning - Mr. Hoff is obtained by iterative calculation, the quality control of the main steps include: (1) excluding Cn2 reach saturation data (BLS450: Cn2 > 7.25 e-14, zzlas: Cn2 > 7.84 E - 14).(2) data with weak demodulation signal strength (BLS450: Mininum X Intensity <50) were eliminated;Zzlas: Demod>-20mv);(3) data at the time of precipitation were excluded;(4) data of weak turbulence under stable conditions were excluded (u\* < 0.1m/s).In the iterative calculation process, for BLS450, Thiermann and Grassl(1992) stability universal function was selected.For zzlas, select Andreas 1988's stability universal function.Please refer to Liu et al(2011, 2013) for detailed introduction.From April 16 to May 26, 2017, the measurement signal of large aperture scintillator was relatively small, resulting in a large number of missing data.
Several notes on the released data :(1) the upstream 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 head: Date/Time: Date/Time (format: yyyy/m/d h:mm), Cn2: structural parameters of air refraction index (unit: m-2/3), H\_LAS: sensible heat flux (unit: 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, please refer to the references for details.
Please refer to Li et al. (2013) for hydrometeorological network or site information, and Liu et al. (2011) for observation data processing.

2、Keywords

Theme：Radiation,Sensible heat flux
Discipline：Atmosphere
Places：Heihe River Basin, A’rou Superstation, the cold region hydrology experimental area in the upper reaches
Time：2017, 2017-01-01 to 2017-12-31

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：0.52MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.05 | - |
| west：100.467 | - | east：100.467 |
| - | south：38.05 | - |

5、Time frame:2017-01-10 16:00:00+00:00--2018-01-09 16:00:00+00:00

6、Reference method

References to data:

TAN Junlei, LI Xin, LIU Shaomin, XU Ziwei, CHE Tao, ZHANG Yang. HiWATER: Dataset of hydrometeorological observation network (large aperture scintillometer of A’rou Superstation, 2017). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.2.2018.db2018

References to articles:

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.

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.

Che, T., Li, X., Liu, S., Li, H., Xu, Z., Tan, J., Zhang, Y., Ren, Z., Xiao, L., Deng, J., Jin, R., Ma, M., Wang, J., & Yang, X. (2019). Integrated hydrometeorological, snow and frozen-ground observations in the alpine region of the Heihe River Basin, China. Earth System Science Data, 11, 1483-1499

7、Supporting project information

8、Data resource provider

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

name: TAN Junlei
unit:
email: tanjunlei@163.com

name: ZHANG Yang
unit:
email: zhangyang@lzb.ac.cn

name: LI Xin
unit:
email: xinli@itpcas.ac.cn

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

name: CHE Tao
unit:
email: chetao@lzb.ac.cn