A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of hydrometeorological observation network (automatic weather station of A’rou sunny slope station, 2013)**

1、Description

This dataset includes data recorded by the Hydrometeorological observation network obtained from the automatic weather station (AWS) at the observation system of Meteorological elements gradient of A’rou sunny slope station between 8 August, 2013, and 31 December, 2013. The site (100.520° E, 38.090° N) was located on a cold grassland surface in the sunny slope, which is near north of A’rou town, Qilian county, Qinghai Province. The elevation is 3529 m. The installation heights and orientations of different sensors and measured quantities were as follows: air temperature and humidity profile (HMP45AC; 5 m, north), wind speed and direction profile (034B; 10 m, north), air pressure (CS100; in the tamper box on the ground), rain gauge (TE525M; 10 m), four-component radiometer (CNR1; 6 m, south), two infrared temperature sensors (SI-111; 6 m, south, vertically downward), soil heat flux (HFP01; 3 duplicates, -0.06 m), soil temperature profile (109; 0, -0.04, -0.1, -0.2, -0.4, -0.8, -1.2, and -1.6 m), soil moisture profile (CS616; -0.04, -0.1, -0.2, -0.4, -0.8, -1.2, and -1.6 m), and two photosynthetically active radiation (PQS-1; 6 m, south, one vertically downward and one vertically upward).  
The observations included the following: air temperature and humidity (Ta\_5 m; RH\_5 m) (℃ and %, respectively), wind speed (Ws\_10 m) (m/s), wind direction (WD\_10 m) (°), air pressure (press) (hpa), precipitation (rain) (mm), four-component radiation (DR, incoming shortwave radiation; UR, outgoing shortwave radiation; DLR\_Cor, incoming longwave radiation; ULR\_Cor, outgoing longwave radiation; Rn, net radiation) (W/m2), infrared temperature (IRT\_1 and IRT\_2) (℃), soil heat flux (Gs\_1, Gs\_2 and Gs\_3) (W/m2), soil temperature (Ts\_0 cm, Ts\_4 cm, Ts\_10 cm, Ts\_20 cm, Ts\_40 cm, Ts\_80 cm, Ts\_120 cm, and Ts\_160 cm) (℃), soil moisture (Ms\_4 cm, Ms\_10 cm, Ms\_20 cm, Ms\_40 cm, Ms\_80 cm, Ms\_120 cm, and Ms\_160 cm) (%, volumetric water content), and photosynthetically active radiation of upward and downward (PAR\_up and PAR\_down) (μmol/(s m-2)).  
The data processing and quality control steps were as follows: (1) The AWS data were averaged over intervals of 10 min for a total of 144 records per day. The missing data were denoted by -6999. (2) Data in duplicate records were rejected. (3) Unphysical data were rejected. (4) The data marked in red are problematic data. (5) The format of the date and time was unified, and the date and time were collected in the same column, for example, date and time: 2013-9-10 10:30. (6) Finally, the naming convention was AWS+ site no. Moreover, suspicious data were marked in red.  
For more information, please refer to Liu et al. (2018) (for hydrometeorological observation network or sites information), Liu et al. (2011) (for data processing) in the Citation section.

2、Keywords

Theme：Precipitation,Meteorological element  
Discipline：Atmosphere  
Places：Heihe River Basin, A’rou sunny slope station, the cold region hydrology experimental area in the upper reaches  
Time：2013-08-08 to 2013-12-31, 2013

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：4.97MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.0898 | - |
| west：100.5204 | - | east：100.5204 |
| - | south：38.0898 | - |

5、Time frame:2014-02-13 16:00:00+00:00--2014-07-09 12:00:00+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 (automatic weather station of A’rou sunny slope station, 2013). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.176.2014.db2017

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. doi:10.2136/vzj2018.04.0072.  
  
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

National Natural Science Foundation of China

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