A Big Earth Data Platform for Three Poles

**Qilian Mountains integrated observatory network: Dataset of Heihe integrated observatory network (automatic weather station of Yakou station, 2018)**

1、Description

This dataset includes data recorded by the Heihe integrated observatory network obtained from the automatic weather station (AWS) at the observation system of Meteorological elements gradient of Yakou station from January 1 to December 31, 2018. The site (100.2421°E, 38.0142°N) was located on an alpine meadow surface, which is near west of Qilian county, Qinghai Province. The elevation is 4148 m. The installation heights and orientations of different sensors and measured quantities were as follows: air temperature and humidity profile (HMP45C; 5 m, north), wind speed and direction profile (010C/020C; 10 m, north), air pressure (PTB110; 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 (109ss-L; 0, -0.04, -0.1, -0.2, -0.4, -0.8, -1.2, and -1.6 m), and soil moisture profile (CS616; -0.04, -0.1, -0.2, -0.4, -0.8, -1.2, and -1.6 m).
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/m^2), infrared temperature (IRT\_1 and IRT\_2) (℃), soil heat flux (Gs\_1, Gs\_2 and Gs\_3) (W/m^2), 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) (℃), and 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).
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. Due to the sensor malfunction, the infrared temperature and wind direction were wrong during October 10 to November 17 and after August, respectively. (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: 2018-9-10 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 sites information), Liu et al. (2011) for data processing) in the Citation section.

2、Keywords

Theme：Precipitation,Meteorological element
Discipline：Atmosphere
Places：the cold region hydrology experimental area, Yakou station, Heihe River Basin
Time：2018

3、Data details

1.Scale：None

2.Projection：None

3.Filesize：11.8MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.0142 | - |
| west：100.2421 | - | east：100.2421 |
| - | south：38.0142 | - |

5、Time frame:2018-01-17 08:00:00+00:00--2019-01-16 08:00:00+00:00

6、Reference method

References to data:

TAN Junlei, LI Xin, LIU Shaomin, XU Ziwei, CHE Tao, ZHANG Yang. Qilian Mountains integrated observatory network: Dataset of Heihe integrated observatory network (automatic weather station of Yakou station, 2018). A Big Earth Data Platform for Three Poles, doi:10.11888/Meteoro.tpdc.2707692019

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.

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

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”

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