A Big Earth Data Platform for Three Poles

**Qilian Mountains integrated observatory network: Dataset of Heihe integrated observatory network (automatic weather station of Huazhaizi desert steppe station, 2021)**

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 Huazhaizi desert steppe station from January 1 to December 31, 2021. The site (100.3201°E, 38.7659°N) was located on a desert steppe surface in the Huazhaizi, which is near Zhangye city, Gansu Province. The elevation is 1731 m. The installation heights and orientations of different sensors and measured quantities were as follows: air temperature and humidity profile (HMP45AC; 5 and 10 m, north), wind speed and direction profile (windsonic; 5 and 10 m, north), air pressure (CS100; 2 m), 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, -0.02, -0.04, -0.1, -0.2, -0.4, -0.6, -1.0 m), soil moisture profile (ML3; -0.02, -0.04, -0.1, -0.2, -0.4, -0.6, -1.0 m).  
The observations included the following: air temperature and humidity (Ta\_5 m and Ta\_10 m; RH\_5 m and RH\_10 m) (℃ and %, respectively), wind speed (Ws\_5 m and Ws\_10 m) (m/s), wind direction (WD\_5 m and 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\_2 cm, Ts\_4 cm, Ts\_10 cm, Ts\_20 cm, Ts\_40 cm, Ts\_60 cm, Ts\_100 cm) (℃), soil moisture (Ms\_2 cm, Ms\_4 cm, Ms\_10 cm, Ms\_20 cm, Ms\_40 cm, Ms\_60 cm, Ms\_100 cm) (%).  
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: 2021-6-10 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：Visibility,Hydrology  
Discipline：Atmosphere,Terrestrial Surface  
Places：The artificial oasis experimental area, huazhaizi desert steppe station, Heihe River Basin  
Time：2021

3、Data details

1.Scale：None

2.Projection：None

3.Filesize：12.4MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.7652 | - |
| west：100.3186 | - | east：100.3186 |
| - | south：38.7652 | - |

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, ZHANG Yang, XU Ziwei, REN Zhiguo, TAN Junlei, CHE Tao. Qilian Mountains integrated observatory network: Dataset of Heihe integrated observatory network (automatic weather station of Huazhaizi desert steppe station, 2021). A Big Earth Data Platform for Three Poles, doi:10.11888/Atmos.tpdc.2724812022

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.

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program

8、Data resource provider

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