A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of hydrometeorological observation network (automatic weather station of Huazhaizi desert steppe 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 Huazhaizi desert steppe station between 22 September, 2012, and 31 December, 2013. The site (100.319° E, 38.765° N) was located on a desert steppe surface in the Huazhaizi, which is near Zhangye city, Gansu Province. The elevation is 1731 m. There are two equipment in the site, and installed by Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences (CAREERI) and Beijing Normal University (BNU), respectively. The installation heights and orientations of BNU were as follows: two infrared temperature sensors (SI-111; 2.65 m, south, vertically downward), soil heat flux (HFP01; 3 duplicates, -0.06 m), soil temperature profile (AV-10T; 0, -0.02, -0.04, -0.2, -0.6, and -1 m), and soil moisture profile (ML2X; -0.04, -0.2 and -1 m). For the CAREERI installation: air temperature and humidity profile (HMP45C; 1, 1.99 and 2.99 m, north), wind speed profile (03102; 0.48, 0.98, 1.99 and 2.99 m, north), wind direction (03302; 4 m, north), air pressure (PTB210; in waterproof box), rain gauge (CTK-15PC; 0.7 m), four-component radiometer (CNR1; 2.5 m, south), soil temperature profile (107; -0.04, -0.1, -0.18, -0.26, -0.34, -0.42 and -0.5 m), and soil moisture profile (ML2X; -0.02, -0.1, -0.18, -0.26, -0.34, -0.42, -0.5, and -0.58 m, 3 duplicates in -0.02 m).
The observations included the following:
(1) 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\_20 cm, Ts\_60 cm and Ts\_100 cm) (℃), and soil moisture (Ms\_4 cm, Ms\_20 cm and Ms\_100 cm) (%).
(2) air temperature and humidity (Ta\_1 m, Ta\_1.99 m and Ta\_2.99 m; RH\_1 m, RH\_1.99 m and RH\_2.99 m) (℃ and %, respectively), wind speed (Ws\_0.48 m, Ws\_0.98 m, Ws\_1.99 m and Ws\_2.99 m) (m/s), wind direction (WD\_4 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), soil temperature (Ts\_4 cm, Ts\_10 cm, Ts\_18 cm, Ts\_26 cm, Ts\_34 cm, Ts\_42 cm and Ts\_50 cm) (℃), and soil moisture (Ms\_2 cm\_1, Ms\_2 cm\_2, Ms\_2 cm\_3, Ms\_10 cm, Ms\_18 cm, Ms\_26 cm, Ms\_34 cm, Ms\_42 cm, Ms\_50 cm and Ms\_58 cm) (%, volumetric water content).
The data processing and quality control steps were as follows: (1) The BNU data were averaged over intervals of 10 min, The CAREERI data were averaged over intervals of 30 min. A total of 144 runs per day were recorded in BNU data and 48 records per day in CAREERI data. The BNU data during 30 June, 2013 and 26 July, 2013 were missing during the malfunction of datalogger. 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: 2013-6-10 10:30. (6) Finally, the naming convention was AWS+ site no. Moreover, suspicious data were marked in red.
For more information, please refer to Li et al. (2013) (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, the artificial oasis experimental area in the middle reaches, huazhaizi desert steppe station
Time：2012-09-22 to 2013-12-31, 2013

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：13.04MB

4.Data format：文本

4、Space scope

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

5、Time frame:2012-10-05 00:00:00+00:00--2014-01-13 20:00:00+00:00

6、Reference method

References to data:

TAN Junlei, LI Xin, LIU Shaomin, XU Ziwei, CHE Tao, REN Zhiguo. HiWATER: Dataset of hydrometeorological observation network (automatic weather station of Huazhaizi desert steppe station, 2013). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.190.2014.db2016

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.

7、Supporting project information

National Natural Science Foundation of China

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