A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of hydrometeorological observation network (automatic weather station of Shenshawo sandy desert 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 Shenshawo sandy desert station between 1 September, 2012, and 31 December, 2013. The site (100.493° E, 38.789° N) was located on a desert surface in the Shenshawo, which is near Zhangye city, Gansu Province. The elevation is 1594 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 profile (010C; 5 and 10 m, north), wind direction profile (020C; 10 m, north), air pressure (PTB110; 2 m), rain gauge (52203; 10 m), four-component radiometer (CNR1; 6 m, south), two infrared temperature sensors (IRTC3; 6 m, south, vertically downward), soil heat flux (HFP01; 3 duplicates, -0.06 m), soil temperature profile (109; 0, -0.02, -0.04, -0.1, -0.2, -0.4, -0.6, and -1 m), and soil moisture profile (CS616; -0.02, -0.04, -0.1, -0.2, -0.4, -0.6 and -1 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\_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 and Ts\_100 cm) (℃), and soil moisture (Ms\_2 cm, Ms\_4 cm, Ms\_10 cm, Ms\_20 cm, Ms\_40 cm, Ms\_60 cm and Ms\_100 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 precipitation data were missing during 31 March, 2013 and 26 July, 2013 because of the malfunction of rain gauge. 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, Shenshawo desert station
Time：2013, 2012-09-01 to 2013-12-31

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：17.89MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.7892 | - |
| west：100.4933 | - | east：100.4933 |
| - | south：38.7892 | - |

5、Time frame:2012-09-11 16:00:00+00:00--2014-01-11 12:00:00+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 Shenshawo sandy desert station, 2013). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.191.2014.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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