A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of hydrometeorological observation network (automatic weather station of Zhangye wetland 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 Daman Superstation between 22 September, 2012, and 31 December, 2013. The site (100.4464° E, 38.9751° N) was located on a wetland (reed surface) in Zhangye National Wetland Park, Gansu Province. The elevation is 1460 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 (03002; 5 and 10 m, north), wind direction profile (03002; 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 and -0.4 m), and four photosynthetically active radiation (PQS-1; install on 28 July, 2013, two above the plants, 6 m, south, one vertically downward and one vertically upward; two below the plants, 0.25 m, south, one vertically downward and one vertically upward).
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 and Ts\_40 cm) (℃), on the plants photosynthetically active radiation of upward and downward (PAR\_U\_up and PAR\_U\_down) (μmol/ (s m^-2)), and below the plants photosynthetically active radiation of upward and downward (PAR\_D\_up and PAR\_D\_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. Data were missing during 10 May, 2013 and 30 May, 2013 because of datalogger malfunction; the wind speed data were missing during 1 September, 2013 and 5 September, 2013 because of sensor malfunction. 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, Zhangye wetland station
Time：2012-09-22 to 2013-12-31, 2013

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：14.68MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.9751 | - |
| west：100.4464 | - | east：100.4464 |
| - | south：38.9751 | - |

5、Time frame:2012-09-30 00:00:00+00:00--2014-01-08 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 Zhangye wetland station, 2013). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.192.2014.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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