A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of flux observation matrix (automatic meteorological station of No.1) of the MUlti-Scale Observation EXperiment on Evapotranspiration over heterogeneous land surfaces 2012 (MUSOEXE-12)**

1、Description

This dataset contains the automatic weather station (AWS) measurements from site No.1 in the flux observation matrix from 10 June to 17 September, 2012. The site (100.3582° E, 38.8932° N) was located in a cropland (vegetable surface) in the Yingke irrigation district, which is near Zhangye, Gansu Province. The elevation is 1552.75 m. The installation heights and orientations of different sensors and measured quantities were as follows: air temperature and humidity (HMP155; 5 m, towards north), air pressure (PTB110; 2 m), rain gauge (TR525M; 10 m), wind speed and direction (03002; 10 m, towards north), a four-component radiometer (CNR4; 6 m, towards south), two infrared temperature sensors (SI-111; 6 m, vertically downward), soil temperature profile (109ss-L; 0, -0.02, -0.04, -0.1, -0.2, -0.4, -0.6, and -1.0 m), soil moisture profile (SM300; -0.02, -0.04, -0.1, -0.2, -0.4, -0.6, and -1.0 m), and soil heat flux (HFP01; 3 duplicates with one below the vegetation and the other between plants, 0.06 m). One of the infrared temperature sensors (IRT\_2) was adjusted to a zenith angle of 50° after 6 August.
 The observations included the following: air temperature and humidity (Ta\_5 m and RH\_5 m) (℃ and %, respectively), air pressure (press, hpa), precipitation (rain, mm), wind speed (Ws\_10 m, m/s), wind direction (WD\_10 m, °), 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 IR\_2, ℃), soil heat flux (Gs\_1, below the vegetation; Gs\_2 and Gs\_3, W/m^2), soil temperature profile (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 profile (Ms\_2 cm, Ms\_4 cm, Ms\_10 cm, Ms\_20 cm, Ms\_40 cm, Ms\_60 cm, and Ms\_100 cm, %).
 The data processing and quality control steps were as follows. (1) The AWS data were averaged over intervals of 10 min; therefore, there were 144 records per day. The missing data were filled with -6999. (2) Data in duplicate records were rejected. (3) Unphysical data were rejected. (4) In this dataset, the time of 0:10 corresponds to the average data for the period between 0:00 and 0:10; the data were stored in \*.xlsx format. (5) Finally, the naming convention was AWS+ site no. Moreover, suspicious data were marked in red.
For more information, please refer to Liu et al. (2016) (for multi-scale observation experiment or sites information), Xu et al. (2013) (for data processing) in the Citation section.

2、Keywords

Theme：Precipitation,Temperature,Precipitation amount,Humidity/Dryness,Air temperature
Discipline：Atmosphere
Places：Heihe River Basin, the artificial oasis experimental area in the middle reaches, flux observation matrix
Time：2012, 2012-06-10 to 2012-09-17

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：3.15MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.89322 | - |
| west：100.35813 | - | east：100.35813 |
| - | south：38.89322 | - |

5、Time frame:2012-06-18 00:07:00+00:00--2012-09-25 00:07:00+00:00

6、Reference method

References to data:

LI Xin, LIU Shaomin, XU Ziwei. HiWATER: Dataset of flux observation matrix (automatic meteorological station of No.1) of the MUlti-Scale Observation EXperiment on Evapotranspiration over heterogeneous land surfaces 2012 (MUSOEXE-12). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.059.2013.db2016

References to articles:

Xu, Z.W., Liu, S.M., Li, X., Shi, S.J., Wang, J.M., Zhu, Z.L., Xu, T.R., Wang, W.Z., & Ma, M.G. (2013). Intercomparison of surface energy flux measurement systems used during the HiWATER-MUSOEXE. Journal of Geophysical Research, 118, 13140-13157, doi:10.1002/2013JD020260.

Liu, S.M., Xu, Z.W., Song, L.S., Zhao, Q.Y., Ge, Y., Xu, T.R., Ma, Y.F., Zhu, Z.L., Jia, Z.Z., &Zhang, F. (2016). Upscaling evapotranspiration measurements from multi-site to the satellite pixel scale over heterogeneous land surfaces. Agricultural and Forest Meteorology, 230-231, 97-113.

7、Supporting project information

National Natural Science Foundation of China

8、Data resource provider

name: XU Ziwei
unit: Beijing Normal University
email: xuzw@bnu.edu.cn

name: LI Xin
unit:
email: xinli@itpcas.ac.cn

name: LIU Shaomin
unit: Beijing Normal University
email: smliu@bnu.edu.cn