A Big Earth Data Platform for Three Poles

**HiWATER: The multi-scale observation experiment on evapotranspiration over heterogeneous land surfaces (MUSOEXE-12)-dataset of flux observation matrix（Huazhaizi desert station) from Feb to Sep, 2012**

1、Description

This dataset contains the automatic weather station (AWS) measurements from Huazhaizi desert steppe station in the flux observation matrix from 2 June to 21 September, 2012. The site (100.31860° E, 38.76519° N) was located in a desert steppe surface, 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 m), and soil moisture profile (CS616; -0.02, -0.04 m). For the CAREERI installation: air temperature and humidity profile (HMP45A; 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), 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) (℃), and soil moisture (Ms\_2 cm, Ms\_4 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) (℃), 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. (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: 2012-6-10 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. (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：2012-06-02 to 2012-09-21, 2012

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：3.15MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.76519 | - |
| west：100.3186 | - | east：100.3186 |
| - | south：38.76519 | - |

5、Time frame:2012-06-08 18:34:00+00:00--2012-09-27 18:34:00+00:00

6、Reference method

References to data:

LI Xin, LIU Shaomin, XU Ziwei. HiWATER: The multi-scale observation experiment on evapotranspiration over heterogeneous land surfaces (MUSOEXE-12)-dataset of flux observation matrix（Huazhaizi desert station) from Feb to Sep, 2012. A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.078.2013.db2016

References to articles:

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. doi:10.1016/j.agrformet.2016.04.008.  
  
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.

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