A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of hydrometeorological observation network (automatic weather station of Huazhaizi desert steppe station, 2015)**

1、Description

This data set contains meteorological element observation data of huazhaizi desert station in the middle reaches of heihe hydrological meteorological observation network from January 18, 2015 to December 31, 2015.The station is located in huazhaizi, zhangye city, gansu province.Huazhaizi station is equipped with observation instruments from Beijing normal university (longitude and latitude is 100.3201E, 38.7659N) and Cold and Arid Regions Environmental and Engineering Research Institute (longitude and latitude is 100.3186E, 38.7652N), with an altitude of 1,731m.The observation instrument of Beijing normal university has been installed since June 11, 2015. Specifically, the air temperature and relative humidity sensors are installed at 5m and 10m, facing due north.Install the barometer inside the waterproof box;The tilting bucket rain gauge is installed at 10m;The wind speed and direction sensor is set at 5m and 10m, facing due north;The four-component radiometer is installed at 6m, facing due south;Two infrared thermometers are installed at 6m, facing due south, and the probe facing vertically downward;The soil temperature probe is buried at 0cm of the surface and 2cm, 4cm, 10cm, 20cm, 40cm, 60cm and 100cm underground, 2m to the south of the meteorological tower.The soil water sensor is buried 2cm, 4cm, 10cm, 20cm, 40cm, 60cm and 100cm underground, 2m to the south of the meteorological tower.The soil hot plates (3 pieces) are buried 6cm underground.The observation instruments set up by Cold and Arid Regions Environmental and Engineering Research Institute are as follows: the wind speed sensor is set up at a height of 0.48m, 0.98m and 2.99m, with a total of three layers, facing north;The wind direction sensor is mounted at a height of 4m;Air temperature and relative humidity sensors are located at 1m and 2.99m respectively, with a total of 2 layers, facing north by east.The installation height of the four-component radiometer is 2.5m, facing due south;The air pressure sensor is placed in the waterproof box;The installation height of the tilting bucket rain gauge is 0.7m;The soil temperature probe is buried at depths of 4cm, 10cm, 18cm, 26cm, 34cm, 42cm and 50cm underground.The soil moisture sensors were buried underground 2cm, 10cm, 18cm, 26cm, 34cm, 42cm, 50cm and 58cm, respectively, with 3 repetitions buried in 2cm.Specific observation items are as follows:  
(1) observation items of Beijing normal university : air temperature and humidity (Ta\_5m RH\_5m Ta\_10m, RH\_10m) (unit: c, percentage), pressure (Press) (unit: hundred mpa), precipitation (Rain) (unit: mm), wind speed (WS\_5m, WS\_10m) (unit: m/s), wind (WD\_10m) (unit: degrees), the radiation of four component (DR, UR, DLR\_Cor, ULR\_Cor, Rn) (unit:Watts/m2), surface radiant temperature (IRT\_1, IRT\_2) (unit: Celsius), soil heat flux (Gs\_1, Gs\_2, Gs\_3) (unit: watts/m2), soil moisture (Ms\_2cm, Ms\_4cm, Ms\_10cm, Ms\_20cm, Ms\_40cm, Ms\_60cm, Ms\_100cm) (unit:Volume moisture content, percentage) and soil temperature (Ts\_0cm, Ts\_2cm, Ts\_4cm, Ts\_10cm, Ts\_20cm, Ts\_40cm, Ts\_60cm, Ts\_100cm) (unit: Celsius).  
(2) observation items of Cold and Arid Regions Environmental and Engineering Research Institute : wind speed (WS\_0. 48 m, WS\_0. 98 m, WS\_2. 99 m) (unit: m/s), wind (WD\_4m) (unit: degrees), the radiation of four component (DR, UR, DLR\_Cor, ULR\_Cor) (unit: watts per square meter), air temperature and humidity (Ta\_1m, Ta\_2. 99 m, RH\_1m, RH\_2 99 m) (unit: c, percentage), pressure (Press) (unit: hundred mpa), precipitation (Rain) (unit:Mm), soil temperature (Ts\_4cm, Ts\_10cm, Ts\_18cm, Ts\_26cm, Ts\_34cm, Ts\_42cm, Ts\_50cm) (unit: Celsius), soil moisture (Ms\_2cm\_1, Ms\_2cm\_2, Ms\_2cm\_3, Ms\_10cm, Ms\_18cm, Ms\_26cm, Ms\_34cm, Ms\_42cm, Ms\_50cm, Ms\_58cm) (unit: volumetric water content, percentage).  
The observed elements of Beijing normal university were the mean value of 10min, and those of Cold and Arid Regions Environmental and Engineering Research Institute were the mean value of 30min.  
Processing and quality control of observation data :(1) ensure 144 observation data elements of Beijing normal university every day (every 10min); Ensure the observed elements of Cold and Arid Regions Environmental and Engineering Research Institute are 48 data per day (every 30min). If the data is missing, it will be marked by -6999.Due to the problem of the wind speed sensor, the 10m wind speed observed by Beijing normal university was missing between June 21-7.09, 2015 and December 16-12.25.Due to the problem of data storage, the precipitation observed by Cold and Arid Regions Environmental and Engineering Research Institute is missing between 1.18 and 1.22.(2) excluding the time with duplicate records;(3) data that obviously exceeds the physical significance or the range of the instrument is deleted;(4) the part marked with red letter in the data is the data in question;(5) date and time have the same format, and date and time are in the same column.For example, the time is: June 10, 2015, 10:30;(6) the naming rule is: AWS+ site name.  
For information of hydrometeorological network or station, please refer to Li et al. (2013), and for observation data processing, please refer to Liu et al. (2011).

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：2015, 2015-01-01 to 2015-12-31

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:2015-01-12 08:00:00+00:00--2016-01-11 08:00:00+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, 2015). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.325.2016.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

8、Data resource provider

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