A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of hydrometeorological observation network (an observation system of Meteorological elements gradient of Sidaoqiao Superstation, 2014)**

1、Description

This dataset contains the data of the meteorological element gradient observation system of the Sidaoqiao superstation downstream of the Heihe Hydrometeorological Observation Network from January 1, 2014 to December 31, 2014. The site is located in Sidaoqiao, Dalaihu Town, Ejin Banner, Inner Mongolia. The underlying surface is Tamarix. The latitude and longitude of the observation point is 101.1374E, 42.0012N, and the altitude is 873m. The air temperature, relative humidity and wind speed sensors are respectively set at 5m, 7m, 10m, 15m, 20m and 28m, with 6 layers facing the north; the wind direction sensor is set at 15m, facing the north; the barometer is installed in the waterproof box. The tipping bucket rain gauge is installed at 28m; the four-component radiometer is installed at 10m, facing south; two infrared thermometers are installed at 10m, facing south, the probe orientation is vertically downward; two photosynthetically active radiometers are installed At 10m, facing south, and the probe is vertically upward and downward respectively; the soil moisture sensor is installed 2m on the south side of the tower body, and the soil heat flow plates (self-correcting type) (3 pieces) are buried in turn in the ground 6cm deep; The average soil temperature sensor TCAV is buried in the ground 2cm, 4cm; the soil temperature probe is buried in the ground surface 0cm and underground 2cm, 4cm, 10cm, 20cm, 40cm, 80cm, 120cm and 160cm; soil moisture sensors are buried in the underground 2cm, 4cm, 10cm, 20cm, 40cm, 80cm, 120cm and 160cm.
Observed items include: wind speed (WS\_5m, WS\_7m, WS\_10m, WS\_15m, WS\_20m, WS\_28m) (unit: m/s), wind direction (WD\_15m) (unit: degree), air temperature and humidity (Ta\_5m, Ta\_7m, Ta\_10m, Ta\_15m, Ta\_20m, Ta\_28m and RH\_5m, RH\_7m, RH\_10m, RH\_15m, RH\_20m, RH\_28m) (unit: centigrade, percentage), pressure (unit: hectopascal), precipitation (Rain) (unit: mm), four-component radiation (DR, UR, DLR\_Cor, ULR\_Cor, Rn) (unit: watts/square meter), surface radiation temperature (IRT\_1, IRT\_2) (unit: centigrade), up and down photosynthetically active radiation (PAR\_U\_up, PAR\_U\_down) (unit: micromol/square Msec), average soil temperature (TCAV) (unit: centigrade), soil heat flux (Gs\_1, Gs\_2, Gs\_3) (unit: watts/square meter), soil moisture (Ms\_2cm, Ms\_4cm, Ms\_10cm, Ms\_20cm, Ms\_40cm, Ms\_80cm) , Ms\_120cm, Ms\_160cm) (unit: volumetric water content, percentage), soil temperature (Ts\_0cm, Ts\_2cm, Ts\_4cm, Ts\_10cm, Ts\_20cm, Ts\_40cm, Ts\_80cm, Ts\_120cm, Ts\_160cm) (unit: centigrade).
Processing and quality control of the observation data: (1) ensure 144 data per day (every 10 minutes), when there is missing data, it is marked by -6999; From September 8, 2014 to November 8, due to the sensor problems, the data is missing; on May 9, 2014, the soil moisture probe was re-buried, and the data before and after is inconsistent; (2) eliminate the moment with duplicate records; (3) delete the data that is obviously beyond the physical meaning or the range of the instrument; (5) the format of date and time is uniform, and the date and time are in the same column. For example, the time is: 2014-9-10 10:30; (6) the naming rules are: AWS+ site name.
For hydrometeorological network or site information, please refer to Li et al. (2013). For observation data processing, please refer to Liu et al. (2011).

2、Keywords

Theme：Precipitation,Meteorological element
Discipline：Atmosphere
Places：Heihe River Basin, Sidaoqiao superstation, the natural oasis eco-hydrology experimental area in the lower reaches
Time：2014, 2014-01-01 to 2014-12-31

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：9.59MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：42.0012 | - |
| west：101.1374 | - | east：101.1374 |
| - | south：42.0012 | - |

5、Time frame:2014-01-11 16:00:00+00:00--2015-01-10 16:00:00+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 (an observation system of Meteorological elements gradient of Sidaoqiao Superstation, 2014). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.264.2015.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

8、Data resource provider

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

name: TAN Junlei
unit:
email: tanjunlei@163.com

name: REN Zhiguo
unit: Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences
email:

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

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

name: CHE Tao
unit:
email: chetao@lzb.ac.cn