A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of hydrometeorological observation network (an observation system of meteorological elements gradient of Sidaoqiao Superstation, 2015)**

1、Description

The data set contains the data of meteorological gradient observation system of sidaqiao superstation downstream of heihe hydrometeorological observation network from January 1, 2015 to December 31, 2015.The station is located in the four Bridges of dalaihubu town, ejin banner, Inner Mongolia.The latitude and longitude of the observation point are 101.1374e, 42.0012n, and 873m above sea level.Air temperature, relative humidity and wind speed sensors are installed at 5m, 7m, 10m, 15m, 20m and 28m, with a total of 6 layers, facing due north.The wind sensor is installed at 15m, facing due north;The barometer is installed in the waterproof box;Dump-type rain gauge installed at 28m;The four-component radiometer is installed at 10m, facing due south;The two infrared thermometers are installed at 10m, facing due south, and the probe is facing vertically down.The two photosynthetic effective radiometers are installed at a location of 10m, facing due south, with the probes pointing vertically up and down, respectively.Part of the soil sensor is installed at 2m to the south of the tower body, in which the soil heat flow plate (self-calibration formal) (3 pieces) is successively buried at 6cm underground;The average soil temperature sensor TCAV is buried 2cm and 4cm underground.The soil temperature probe is buried at 0cm on the surface and 2cm, 4cm, 10cm, 20cm, 40cm, 80cm, 120cm and 160cm underground.The soil moisture sensors were embedded in the ground at 2cm, 4cm, 10cm, 20cm, 40cm, 80cm, 120cm and 160cm.
The observation items are: 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: Celsius, percentage), air pressure (Press) (unit:Hundred mpa), precipitation (Rain) (unit: mm), the radiation of four component (DR, UR, DLR\_Cor, ULR\_Cor, Rn) (unit: watts per square meter), the surface radiation temperature (IRT\_1, IRT\_2) (unit: c), up and down the photosynthetic active radiation (PAR\_U\_up, PAR\_U\_down) (unit: second micromoles/m2), the average soil temperature (TCAV) (unit: c), soil heat flux (Gs\_1, Gs\_2, Gs\_3) (unit:W/m2), soil moisture (Ms\_2cm, Ms\_4cm, Ms\_10cm, Ms\_20cm, Ms\_40cm, Ms\_80cm, Ms\_120cm, Ms\_160cm) (unit: volume water content, percentage), soil temperature (Ts\_0cm, Ts\_2cm, Ts\_4cm, Ts\_10cm, Ts\_20cm, Ts\_40cm, Ts\_80cm, Ts\_120cm, Ts\_160cm) (unit: Celsius).
Processing and quality control of observation data :(1) ensure 144 data per day (every 10min). If data is missing, it will be marked by -6999;Infrared temperature 1 between February 11, 2015 and April 25, 2015 due to sensor problems, data is missing;The soil temperature of 4cm was between October 8, 2015 and October 29, 2015. Due to sensor problems, the data was missing.(2) eliminate the moments with duplicate records;(3) data that is obviously beyond the physical meaning or the range of the instrument is deleted;(4) the part marked by red letter in the data is the data in question;(5) the format of date and time is uniform, and the date and time are in the same column.For example, the time is: 2015-9-10-10:30;(6) the naming rule is: AWS+ site name.
Please refer to Li et al. (2013) for hydrometeorological network or site information, and Liu et al. (2011) for observation data processing.

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：2015, 2015-01-01 to 2015-12-31

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：25.3MB

4.Data format：文本

4、Space scope

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

5、Time frame:2015-01-11 16:00:00+00:00--2016-01-10 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, 2015). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.321.2016.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

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