A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of hydro-meteorological observation network (automatic weather station of Huazhaizi Desert Steppe Station, 2014)**

1、Description

The data set contains the observation data of meteorological elements from the Huazhaizi Desert Steppe Station,,which is located along the middle reaches of the Heihe Hydro-meteorological Observation Network, and the data set covers data from January 1, 2014 to December 31, 2014. The station is located in Huazhaizi of Zhangye, Gansu Province. The underlying surface is piedmont desert. The latitude and longitude of the observation point is100.3186E, 38.7652N, and the altitude is 1731m. The observation instruments in Huazhaizi are installed respectively by Beijing Normal University and Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences. The observation instruments of Beijing Normal University are: two infrared thermometers installed 24 meters above the ground, facing south, with the probe vertical downward; soil temperature probes buried respectively at 0cm on the ground surface, 2cm、4cm、20cm、60cm and 100cmunder the ground; soil moisture sensors buried 4cm、20cm and 100cm under the ground; soil heat flow boards (3 pieces) buried 6cm under the ground. The observation instruments of Cold and Arid Regions Environmental and Engineering Research Institute are: wind speed sensor erected 10.48m、0.98m and 2.99m above the ground(3 layers),facing North; wind direction sensor erected 4 meters above the ground; air temperature and relative humidity sensors erected 1m and 2.99m above the ground(2 layers),facing North East; four-component radiometer installed 2.5 meters above the ground, facing South; barometric pressure sensor placed in the water-proof box; tipping bucket rain gauge installed 0.7 meter above the ground; soil temperature probes buried 4cm、10cm、18cm、26cm、34cm、42cm and 50cmunder the ground; soil moisture sensors buried 2cm、10cm、18cm、26cm、34cm、42cm、50cm and 58cm under the ground, 3 sensors buried at 2cm.
The specific observation elements are as follows:
(1) Observation elements of Beijing Normal University : surface radiation temperature (IRT\_1, IRT\_2) (unit: Celsius), soil heat flux (Gs\_1, Gs\_2, Gs\_3) (unit: watt / square meter), soil moisture (Ms\_4cm, Ms\_20cm, Ms\_100cm) (unit: percentage) and soil temperature (Ts\_0cm, Ts\_2cm, Ts\_4cm, Ts\_20cm, Ts\_60cm, Ts\_100cm) (unit: Celsius).
(2) Observation elements of Cold and Arid Regions Environmental and Engineering Research Institute: wind speed (WS\_0.48m, WS\_0.98m, WS\_2.99m) (unit: m/s), wind direction (WD\_4m) (unit: degree), four-component radiation (DR, UR , DLR\_Cor, ULR\_Cor) (unit: watt / square meter), air temperature and humidity (Ta\_1m, Ta\_2.99m, RH\_1m, RH\_2.99m) (unit: Celsius, percentage), air pressure (Press) (unit: hectopascal), precipitation (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 observation elements of Beijing Normal University are 10-minute average data, and the observation elements of Cold and Arid Regions Environmental and Engineering Research Institute are 30-minute average data.
Processing and quality control of observation data: (1) Ensure 144 data of Beijing Normal University per day (every 10 minutes), and 48 data of Cold and Arid Regions Environmental and Engineering Research Institute per day (every 30 minutes). If there is missing data, it is marked as -6999. Data between 12.11-12.31,2014 is missing due to storage problems. (2) Eliminate moments with duplicate records; (3) Remove data that is significantly beyond physical meaning or beyond the measuring range of the instrument; (4) Data marked by red is debatable; (5) The formats of the date and time are uniform, and the date and time are in the same column. For example, the time is: 2014-6-10 10:30; (6) The naming rule is: AWS + site name.
For hydro-meteorological 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, the artificial oasis experimental area in the middle reaches, huazhaizi desert steppe station
Time：2014, 2014-01-01 to 2014-12-31

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: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 hydro-meteorological observation network (automatic weather station of Huazhaizi Desert Steppe Station, 2014). A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.257.2015.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

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