A Big Earth Data Platform for Three Poles

**Multi-scale surface flux and meteorological elements observation dataset in the Hai River Basin (Huailai station-automatic weather station-40m tower, 2016)**

1、Description

The data set contains the observation data of 40 m tower automatic weather station from January 1, 2016 to December 31, 2016. The site is located in donghuayuan Town, Huailai County, Hebei Province. The longitude and latitude of the observation point are 115.7923e, 40.3574n and 480m above sea level.
The automatic weather station is installed on a 40m tower with the acquisition frequency of 30s and output once every 10min. The observation elements include air temperature and relative humidity (3m, 5m, 10m, 15m, 20m, 30m, 40m) in the 7th floor, wind speed (3m, 5m, 10m, 15m, 20m, 30m, 40m) of the 7th floor, wind direction (10m), facing due north; air pressure (installed in waterproof box); rainfall (3m); four component radiation and photosynthetically active radiation (4m), facing due south; infrared surface temperature (8m) The soil temperature and humidity probe is buried 1.5m to the south of the meteorological tower, the soil temperature and humidity probe is buried at 2cm, 4cm, 10cm, 20cm, 40cm, 80cm, 120cm and 160cm, and the soil moisture sensor is 2cm, 4cm, 10cm, 20cm, 40cm, 80cm, 120cm and 160cm; the average soil temperature is buried in the underground 2, 4cm; soil heat flow The slabs (3 pieces) are buried 6 cm underground.
Processing and quality control of observation data: (1) ensure 144 data per day (every 10 min), if there is data missing, it will be marked by - 6999; (2) eliminate the time with repeated records; (3) delete the data obviously beyond the physical meaning or instrument range; (4) the format of date and time is unified, and the date and time are in the same column. For example, the time is: 2016-6-10 10:30.
The data released by automatic weather station include: date / time, date / time, air temperature (TA)\_ 3m, Ta\_ 5m, Ta\_ 10m, Ta\_ 15m, Ta\_ 20m, Ta\_ 30m, Ta\_ 40m) (℃), relative humidity (RH)\_ 3m, RH\_ 5m, RH\_ 10m, RH\_ 15m, RH\_ 20m, RH\_ 30m, RH\_ 40m) (%), wind speed (WS\_ 3m, Ws\_ 5m, Ws\_ 10m, Ws\_ 15m, Ws\_ 20m, Ws\_ 30m, Ws\_ 40 m (M / s), wind direction (WD) (°), air pressure (HPA), precipitation (mm), four component radiation (DR, ur, DLR, ULR, RN) (w / m2), par (umol / S / m2), surface radiation temperature (IRT)\_ 1、IRT\_ 2) (℃), soil heat flux (GS)\_ 1、Gs\_ 2、Gs\_ 3) (w / m2), multi-layer soil moisture (MS\_ 2cm、Ms\_ 4cm、Ms\_ 10cm、Ms\_ 20cm、Ms\_ 40cm、Ms\_ 80cm、Ms\_ 120cm、Ms\_ 160 cm) (%), multilayer soil temperature (TS\_ 2cm、Ts\_ 4cm、Ts\_ 10cm、Ts\_ 20cm、Ts\_ 40cm、Ts\_ 80cm、Ts\_ 120cm、Ts\_ 160 cm (℃), average soil temperature tcav (℃).
Guo et al, 2020 is used for site introduction and Liu et al, 2013 for data processing

2、Keywords

Theme：Land surface flux,Precipitation,Radiation,Meteorological element
Discipline：Atmosphere
Places：Huailai, Hebei, Haihe river basin
Time：2016

3、Data details

1.Scale：None

2.Projection：None

3.Filesize：12.7MB

4.Data format：EXCEL

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：40.3574 | - |
| west：115.792 | - | east：115.792 |
| - | south：40.3574 | - |

5、Time frame:2016-01-13 08:00:00+00:00--2017-01-12 08:00:00+00:00

6、Reference method

References to data:

LIU Shaomin, XU Ziwei, XIAO Qing. Multi-scale surface flux and meteorological elements observation dataset in the Hai River Basin (Huailai station-automatic weather station-40m tower, 2016). A Big Earth Data Platform for Three Poles, doi:10.3972/haihe.006.2019.db2019

References to articles:

Liu, S.M., Xu, Z.W., Zhu, Z.L., Jia, Z.Z., & Zhu, M.J. (2013). Measurements of evapotranspiration from eddy-covariance systems and large aperture scintillometers in the Hai River Basin, China. Journal of Hydrology, 487, 24-38.

Guo, A.L., Liu, S.M., Zhu, Z.L., Xu, Z.W., Xiao, Q., Ju, Q., Zhang, Y., & Yang, X.F. (2020). Impact of Lake/Reservoir Expansion and Shrinkage on Energy and Water Vapor Fluxes in the Surrounding Area. Journal of Geophysical Research: Atmospheres, 125, e2020JD032833. https://doi.org/10.1029/2020JD032833.

7、Supporting project information

8、Data resource provider

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