A Big Earth Data Platform for Three Poles

**Multi-scale surface flux and meteorological elements observation dataset in the Hai River Basin: Huailai station-lysimeters (2019)**

1、Description

This dataset includes the observation data from 01 Jan. 2019 through 31 Dec. 2019, collected by lysimeters, which are located at 115.788E, 40.349N and 480 m above sea level, near the Huailai Station in East Garden Town, Huailai County, Hebei Province. The land cover around the station was maize crop.   
The weighable lysimeter was built by UMS GmbH (Germany), with a surface area of 1m2, and a soil column of 1.5 m high. The original data sampling frequency was 1 Hz, and then averaged to 10min for distribution. The precision of the weighing data is 10g (equivalent to 0.01mm). During the crop growth period, a lysimeter is covered by bare soil and another one is covered by planted maize. The soil moisture, temperature and soil water potential sensors are installed both inside and outside of the lysimeter to ensure that the water cycle in the soil column is consistent with that of the field. Different sensors are located at different depths: 5, 50, 100 cm for soil temperature sensors, and 5, 10, 30, 50, 100 cm for soil moisture sensors, and 30 and 140cm for soil water potential sensors (the tensionmeter here can also measure soil temperature at 30, 140 cm). The soil heat flux plates in both lysimeters are buried at 10cm depth.  
The data processes and quality control according to: 1) ensuring there were 144 data every day, the lost data were replaced by -6999; 2) deleting the abnormal data; 3) deleting the outlier data; 4) keeping the consistent date and time format (e.g. 2019-01-01 10:30).  
The distributed data include the following variables: Date-Time, Weight (I.L\_1\_WAG\_L\_000(Kg), I.L\_2\_WAG\_L\_000(Kg)), Drainage Weight (I.L\_1\_WAG\_D\_000(Kg), I.L\_2\_WAG\_D\_000(Kg)), Soil Heat Flux (Gs\_1\_10cm, Gs\_2\_10cm) (W/m2), Soil Moisture (Ms\_1\_5cm, Ms\_1\_10cm, Ms\_1\_30cm, Ms\_1\_50cm, Ms\_1\_100cm, Ms\_2\_5cm, Ms\_2\_10cm, Ms\_2\_30cm, Ms\_2\_50cm, Ms\_2\_100cm) (%), Soil Temperature (Ts\_1\_5cm , Ts\_1\_30cm, Ts\_1\_50cm, Ts\_1\_100cm, Ts\_1\_140cm, Ts\_2\_5cm , Ts\_2\_30cm, Ts\_2\_50cm, Ts\_2\_100cm, Ts\_2\_140cm) (C), Soil Water Potential (TS\_1\_30(hPa), TS\_1\_140(hPa), TS\_2\_30(hPa), TS\_2\_140(hPa)). The format of datasets was \*.xls.

2、Keywords

Theme：Lysimeter,Hydrology  
Discipline：Atmosphere,Terrestrial Surface  
Places：Huailai, Hebei, Haihe river basin  
Time：2019

3、Data details

1.Scale：None

2.Projection：None

3.Filesize：12.2MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：40.3491 | - |
| west：115.788 | - | east：115.788 |
| - | south：40.3491 | - |

5、Time frame:2018-12-31 16:00:00+00:00--2019-12-30 16:00:00+00:00

6、Reference method

References to data:

LIU Shaomin, XU Ziwei, ZHU Zhongli. Multi-scale surface flux and meteorological elements observation dataset in the Hai River Basin: Huailai station-lysimeters (2019). A Big Earth Data Platform for Three Poles, doi:10.11888/Meteoro.tpdc.2710922021

References to articles:

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.  
  
季辰, 朱忠礼, 徐自为. (2016). 高精度称重式蒸渗仪数据处理方法研究. 北京师范大学学报(自然科学版), 52(5), 628-63.

7、Supporting project information

8、Data resource provider

name: ZHU Zhongli  
unit:   
email: zhuzl@bnu.edu.cn  
  
name: XU Ziwei  
unit: Beijing Normal University  
email: xuzw@bnu.edu.cn  
  
name: LIU Shaomin  
unit: Beijing Normal University  
email: smliu@bnu.edu.cn