A Big Earth Data Platform for Three Poles

**Cold and Arid Research Network of Lanzhou university (an observation system of Meteorological elements gradient of Liancheng Station, 2021)**

1、Description

This dataset includes data recorded by the Cold and Arid Research Network of Lanzhou university obtained from an observation system of Meteorological elements gradient of Liancheng Station from January 4 to December 31, 2021. The site (102.737E, 36.692N) was located on a forest in the Tulugou national forest park, which is near Liancheng city, Gansu Province. The elevation is 2903 m. The installation heights and orientations of different sensors and measured quantities were as follows: air temperature and humidity profile (4 and 8 m, towards north), wind speed and direction profile (windsonic; 4 and 8 m, towards north), air pressure (1.5 m), rain gauge (2 m), four-component radiometer (4m, towards south), infrared temperature sensors (4m, towards south, vertically downward), photosynthetically active radiation (4m, towards south), soil heat flux (2 duplicates below the vegetation; -0.05 and -0.1m in south of tower), soil temperature/ moisture/ electrical conductivity profile (below the vegetation;-0.05 and -0.1m in south of tower), sunshine duration sensor(4 m, towards south).  
The observations included the following: air temperature and humidity (Ta\_1\_4\_1 and Ta\_1\_8\_1; RH\_1\_4\_1 and RH\_1\_8\_1) (℃ and %, respectively), wind speed (WS\_1\_4\_1 and WS\_1\_8\_1) (m/s), wind direction (WD\_1\_4\_1 and WD\_1\_8\_1) (°), air pressure (PA\_1\_1\_1) (hpa), precipitation (P\_1\_4\_1) (mm), four-component radiation (SWIN\_1\_4\_1, incoming shortwave radiation; SWOUT\_1\_4\_1, outgoing shortwave radiation; LWIN\_1\_4\_1, incoming longwave radiation; LWOUT\_1\_4\_1, outgoing longwave radiation; Rn\_1\_4\_1, net radiation) (W/m^2), infrared temperature (TC\_1\_4\_1) (℃), photosynthetically active radiation (PPFD\_1\_1\_1) (μmol/ (s m-2)), soil heat flux (SHF\_1\_5\_1, SHF\_1\_10\_1) (W/m^2), soil temperature (TS\_1\_5\_1, TS\_1\_10\_1) (℃), soil moisture (SWC\_1\_5\_1, SWC\_1\_10\_1) (%, volumetric water content), soil water potential (SWP\_1\_5\_1, SWP\_1\_10\_1)(kpa), soil conductivity (EC\_1\_5\_1, EC\_1\_10\_1)(μs/cm), Sun\_time\_1\_4\_1 (h).  
The data processing and quality control steps were as follows: (1) The AWS data were averaged over intervals of 10 min for a total of 144 records per day. Missing or abnormal data is replaced by – 6999. 2021.6.13-3021.9.8, the data is missing because the wire is bitten off. 8m wind speed and direction sensor failure; 5 and 10cm soil temperature/ moisture/ electrical conductivity sensor failure; 5 and 10cm soil water potential sensor failure; 4m infrared temperature sensor failure. (2) Data in duplicate records were rejected. (3) Unphysical data were rejected. (4) The format of the date and time was unified, and the date and time were collected in the same column, for example, date and time: 2021-8-20 10:30.

2、Keywords

Theme：Radiation,Temperature,Sunshine,Net radiation,Sunshine duration,Air temperature  
Discipline：Atmosphere  
Places：Liancheng, Datong River Basin  
Time：In 2021

3、Data details

1.Scale：None

2.Projection：

3.Filesize：7.75MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：36.692 | - |
| west：102.737 | - | east：102.737 |
| - | south：36.692 | - |

5、Time frame:2021-01-03 16:00:00+00:00--2021-12-30 16:00:00+00:00

6、Reference method

References to data:

ZHANG Renyi, ZHAO Changming. Cold and Arid Research Network of Lanzhou university (an observation system of Meteorological elements gradient of Liancheng Station, 2021). A Big Earth Data Platform for Three Poles, doi:10.11888/Atmos.tpdc.2723612022

References to articles:

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program

8、Data resource provider

name: ZHAO Changming  
unit: Lanzhou University  
email: zhaochm@lzu.edu.cn  
  
name: ZHANG Renyi  
unit: Lanzhou University  
email: zrenyi@lzu.edu.cn