A Big Earth Data Platform for Three Poles

**Cold and Arid Research Network of Lanzhou university (an observation system of Meteorological elements gradient of Guazhou Station, 2020)**

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 Guazhou Station from January 1 to December 31, 2021. The site (95.673E, 41.405N) was located on a desert in the Liuyuan Guazhou, which is near Jiuquan city, Gansu Province. The elevation is 2014 m. The installation heights and orientations of different sensors and measured quantities were as follows: air temperature and humidity profile (2, 4, 8, 16, 32, and 48 m, towards north), wind speed and direction profile (windsonic; 2, 4, 8, 16, 32, and 48 m, towards north), air pressure (1.5 m), rain gauge (4 m), infrared temperature sensors (4 m, towards south, vertically downward), photosynthetically active radiation (4 m, towards south), soil heat flux (-0.05 m and -0.1m in south of tower), soil temperature/ moisture/ electrical conductivity profile -0.05, -0.1m, -0.2m, -0.4m, -0.6m and -0.8m in south of tower), four-component radiometer (4 m, towards south), sunshine duration sensor(4 m, towards south).  
The observations included the following: air temperature and humidity (Ta\_1\_2\_1, Ta\_1\_4\_1, Ta\_1\_8\_1, Ta\_1\_16\_1, Ta\_1\_32\_1 and Ta\_1\_48\_1; RH\_2 m, RH\_1\_2\_1, RH\_1\_4\_1, RH\_1\_8\_1, RH\_1\_16\_1, RH\_1\_32\_1, and RH\_1\_48\_1) (℃ and %, respectively), wind speed (WS\_1\_2\_1, WS\_1\_4\_1, WS\_1\_8\_1, WS\_1\_16\_1, WS\_1\_32\_1 and WS\_1\_48\_1) (m/s), wind direction (WD\_1\_2\_1, WD\_1\_4\_1, WD\_1\_8\_1, WD\_1\_16\_1, WD\_1\_32\_1 and WD\_1\_48\_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\_4\_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, TS\_1\_20\_1, TS\_1\_40\_1, TS\_1\_60\_1 and TS\_1\_80\_1) (℃), soil moisture (SWC\_1\_5\_1, SWC\_1\_10\_1, SWC\_1\_20\_1, SWC\_1\_40\_1, SWC\_1\_60\_1 and SWC\_1\_80\_1) (%, volumetric water content),soil water potential (SWP\_1\_5\_1, SWP\_1\_10\_1, SWP\_1\_20\_1, SWP\_1\_40\_1, SWP\_1\_60\_1 and SWP\_1\_80\_1)(kpa), soil conductivity (EC\_1\_5\_1, EC\_1\_10\_1, EC\_1\_20\_1, EC\_1\_40\_1, EC\_1\_60\_1 and EC\_1\_80\_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. (2) Data in duplicate records were rejected. (3) Unphysical data were rejected. (4) The data marked in red are problematic data. (5) 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: 2021-6-10 10:30.

2、Keywords

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

3、Data details

1.Scale：None

2.Projection：

3.Filesize：18.8MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：41.405 | - |
| west：95.673 | - | east：95.673 |
| - | south：41.405 | - |

5、Time frame:2020-12-31 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 Guazhou Station, 2020). A Big Earth Data Platform for Three Poles, doi:10.11888/Atmos.tpdc.2723532022

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

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