A Big Earth Data Platform for Three Poles

**Qilian Mountains integrated observatory network: Dataset of Qinghai Lake integrated observatory network (an observation system of Meteorological elements gradient of Alpine meadow and grassland ecosystem Superstation, 2021)**

1、Description

This dataset includes data recorded by the Qinghai Lake integrated observatory network obtained from an observation system of Meteorological elements gradient of the Alpine meadow and grassland ecosystem Superstation from January 1 to October 9 in 2021. The site (98°35′41.62″E, 37°42′11.47″N) was located in the alpine meadow and alpine grassland ecosystem, near the SuGe Road in Tianjun County, Qinghai Province. The elevation is 3718m. The installation heights and orientations of different sensors and measured quantities were as follows: air temperature and humidity profile (HMP155; 3, 5, 10, 15, 20, 30, and 40 m, towards north), wind speed and direction profile (windsonic; 3, 5, 10, 15, 20, 30, and 40 m, towards north), air pressure (PTB110; 3 m), rain gauge (TE525M; 10m of the platform in west by north of tower), four-component radiometer (CNR4; 6m, towards south), two infrared temperature sensors (SI-111; 6 m, towards south, vertically downward), photosynthetically active radiation (PQS1; 6 m, towards south, each with one vertically downward and one vertically upward, soil heat flux (HFP01; 3 duplicates below the vegetation; -0.06 m), soil temperature profile (109; -0.05、-0.10、-0.20、-0.40、-0.80、-1.20、-2.00、-3.00 and -4.00m), soil moisture profile (CS616; -0.05、-0.10、-0.20、-0.40、-0.80、-1.20、-2.00、-3.00 and -4.00m).
The observations included the following: air temperature and humidity (Ta\_3 m, Ta\_5 m, Ta\_10 m, Ta\_15 m, Ta\_20 m, Ta\_30 m, and Ta\_40 m; RH\_3 m, RH\_5 m, RH\_10 m, RH\_15 m, RH\_20 m, RH\_30 m, and RH\_40 m) (℃ and %, respectively), wind speed (Ws\_3 m, Ws\_5 m, Ws\_10 m, Ws\_15 m, Ws\_20 m, Ws\_30 m, and Ws\_40 m) (m/s), wind direction (WD\_3 m, WD\_5 m, WD\_10 m, WD\_15 m, WD\_20 m, WD\_30m, and WD\_40 m) (°), precipitation (rain) (mm), air pressure (press) (hpa), infrared temperature (IRT\_1 and IRT\_2) (℃), photosynthetically active radiation of upward and downward (PAR\_D\_up and PAR\_D\_down) (μmol/ (s m-2)), four-component radiation (DR, incoming shortwave radiation; UR, outgoing shortwave radiation; DLR\_Cor, incoming longwave radiation; ULR\_Cor, outgoing longwave radiation; Rn, net radiation) (W/m^2), soil heat flux (Gs\_1, Gs\_2, and Gs\_3) (W/m^2), soil temperature (Ts\_5cm、Ts\_10cm、Ts\_20cm、Ts\_40cm、Ts\_80cm、Ts\_120cm、Ts\_200cm、Ts\_300cm、Ts\_400cm) (℃), soil moisture (Ms\_5cm、Ms\_10cm、Ms\_20cm、Ms\_40cm、Ms\_80cm、Ms\_120cm、Ms\_200cm、Ms\_300cm、Ms\_400cm) (%, volumetric water content).
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. The missing data were denoted 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: 2018/8/31 10:30. Moreover, suspicious data were marked in red.

2、Keywords

Theme：Soil,Precipitation,Temperature,Winds,Temperature profiles,Soil temperature,Soil moisture,wind speed
Discipline：Atmosphere,Terrestrial Surface
Places：Qinghai Lake Basin
Time：2021

3、Data details

1.Scale：None

2.Projection：None

3.Filesize：17.1MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：37.7 | - |
| west：98.59 | - | east：98.59 |
| - | south：37.7 | - |

5、Time frame:2020-12-31 16:00:00+00:00--2021-10-08 16:00:00+00:00

6、Reference method

References to data:

Li Xiaoyan. Qilian Mountains integrated observatory network: Dataset of Qinghai Lake integrated observatory network (an observation system of Meteorological elements gradient of Alpine meadow and grassland ecosystem Superstation, 2021). A Big Earth Data Platform for Three Poles, doi:10.11888/Atmos.tpdc.2726842022

References to articles:

Li, X.Y., Yang, X.F., Ma, Y.J., Hu, G.R., Hu, X., Wu, X.C., Wang, P., Huang, Y.M., Cui, B.L., & Wei, J.Q. (2018). Qinghai Lake Basin Critical Zone Observatory on the Qinghai-Tibet Plateau. Vadose Zone Journal, 17(1).

Li, X.Y., Ma, Y.J., Huang, Y.M., Hu, X., Wu, X.C., Wang, P., Li, G.Y., Zhang, S.Y., Wu, H.W., Jiang, Z.Y., Cui, B.L., & Liu, L. (2016). Evaporation and surface energy budget over the largest high-altitude saline lake on the Qinghai-Tibet Plateau. Journal of Geophysical Research: Atmospheres, 121(18), 10470-10485.

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program
the Strategic Priority Research Program of the Chinese Academy of Sciences

8、Data resource provider

name: Li Xiaoyan
unit: Faculty of Geographical Science, Beijing Normal University
email: xyli@bnu.edu.cn