A Big Earth Data Platform for Three Poles

**Dataset of thin cloud micro physical characteristics based on the infrared radiation spectrum of the ground in Arctic Alaska (2000-2014)**

1、Description

This dataset contains the flux measurements from the Subalpine shrub eddy covariance system (EC) belonging to the Qinghai Lake basin integrated observatory network from April 28 to December 31 in 2019. The site (100°6'3.62"E, 37°31'15.67" N ) was located near Dasi, Shaliuhe Town, Gangcha County, Qinghai Province. The elevation is 3495m. The EC was installed at a height of 2.5m, and the sampling rate was 10 Hz. The sonic anemometer faced north, and the separation distance between the sonic anemometer and the CO2/H2O gas analyzer (Gill&Li7500A) was about 0.17 m.
The raw data acquired at 10 Hz were processed using the Eddypro post-processing software, including the spike detection, lag correction of H2O/CO2 relative to the vertical wind component, sonic virtual temperature correction, coordinate rotation (2-D rotation), corrections for density fluctuation (Webb-Pearman-Leuning correction), and frequency response correction. The EC data were subsequently averaged over 30 min periods. The observation data quality was divided into three classes according to the quality assessment method of stationarity (Δst) and the integral turbulent characteristics test (ITC): class 1-3 (high quality), class 4-6 (good), class 7-8 (poor, better than gap filling data), class9 (rejected). In addition to the above processing steps, the half-hourly flux data were screened in a four-step procedure: (1) data from periods of sensor malfunction were rejected; (2) data collected before or after 1 h of precipitation were rejected; (3) incomplete 30 min data were rejected when the missing data constituted more than 3% of the 30 min raw record; and (4) data were rejected at night when the friction velocity (u\*) was less than 0.1 m/s. There were 48 records per day, and the missing data were replaced with -6999.
The released data contained the following variables: DATE/TIME, wind direction (Wdir, °), wind speed (Wnd, m/s), the standard deviation of the lateral wind (Std\_Uy, m/s), virtual temperature (Tv, ℃), H2O mass density (H2O, g/m3), CO2 mass density (CO2, mg/m3), friction velocity (ustar, m/s), stability (z/L), sensible heat flux (Hs, W/m2), latent heat flux (LE, W/m2), carbon dioxide flux (Fc, mg/ (m2s)), quality assessment of the sensible heat flux (QA\_Hs), quality assessment of the latent heat flux (QA\_LE), and quality assessment of the carbon flux (QA\_Fc). The quality marks of sensible heat flux, latent heat flux and carbon flux are divided into three levels (quality marks 0 have good data quality, 1 have good data quality and 2 have poor data quality). In this dataset, the time of 0:30 corresponds to the average data for the period between 0:00 and 0:30; the data were stored in \*.xls format. Detailed information can be found in the suggested references.

2、Keywords

Theme：Atmospheric remote sensing products,Clouds,Cloud properties,Cloud microphysics,Atmosphere Remote Sensing
Discipline：Atmosphere
Places：Alaska
Time：2000-2014

3、Data details

1.Scale：None

2.Projection：

3.Filesize：300.0MB

4.Data format：nc

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：70.0 | - |
| west：318.0 | - | east：356.0 |
| - | south：50.0 | - |

5、Time frame:2000-01-12 16:00:00+00:00--2015-01-11 16:00:00+00:00

6、Reference method

References to data:

ZHAO Chuanfeng. Dataset of thin cloud micro physical characteristics based on the infrared radiation spectrum of the ground in Arctic Alaska (2000-2014). A Big Earth Data Platform for Three Poles, doi:10.11888/AtmosPhys.tpe.00000034.file2018

References to articles:

7、Supporting project information

CASEarth:Big Earth Data for Three Poles（grant No. XDA19070000）

8、Data resource provider

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