A Big Earth Data Platform for Three Poles

**Snow cover dataset based on optical instrument remote sensing with 1km spatial resolution on the Qinghai-Tibet Plateau (1989-2018)**

1、Description

Snow cover dataset is produced by snow and cloud identification method based on optical instrument observation data, covering the time from 1989 to 2018 (two periods, from January to April and from October to December) and the region of Qinghai-Tibet Plateau (17°N-41°N, 65°E-106°E) with daily product, which takes equal latitude and longitude projection with 0.01°×0.01° spatial resolution, and characterizes whether the ground under clear sky or transparent thin cloud is covered by snow. The input data sources include AVHRR L1 data of NOAA and MetOp serials of satellites, and L1 data corresponding to AVHRR channels taken from TERRA/MODIS. Decision Tree algorithm (DT) with dynamic thresholds is employed independent of cloud mask and its cloud detection emphasizes on reserving snow, particularly under transparency cirrus. It considers a variety of methods for different situations, such as ice-cloud over the water-cloud, snow in forest and sand, thin snow or melting snow, etc. Besides those, setting dynamic threshold based on land-surface type, DEM and season variation, deleting false snow in low latitude forest covered by heavy aerosol or soot, referring to maximum monthly snowlines and minimum snow surface brightness temperature, and optimizing discrimination program, these techniques all contribute to DT. DT discriminates most snow and cloud under normal circumstances, but underestimates snow on the Qinghai-Tibet Plateau in October. Daily product achieves about 95% average coincidence rate of snow and non-snow identification compared to ground-based snow depth observation in years. The dataset is stored in the standard HDF4 files each having two SDSs of snow cover and quality code with the dimensions of 4100-column and 2400-line. Complete attribute descriptions is written in them.

2、Keywords

Theme：Others,Snow,Snowpack
Discipline：Remote Sensing Technology,Cryosphere
Places：Tibetan Plateau, The Third Pole
Time：2018, 1989-2018, 30 years, 1989

3、Data details

1.Scale：500000

2.Projection：None

3.Filesize：6739.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：41.0 | - |
| west：65.0 | - | east：106.0 |
| - | south：17.0 | - |

5、Time frame:1989-01-17 08:00:00+00:00--2019-01-16 08:00:00+00:00

6、Reference method

References to data:

CHU Duo, ZHENG Zhaojun. Snow cover dataset based on optical instrument remote sensing with 1km spatial resolution on the Qinghai-Tibet Plateau (1989-2018). A Big Earth Data Platform for Three Poles, doi:10.11888/Snow.tpdc.2704652019

References to articles:

7、Supporting project information

Construction of Snow Remote Sensing Dataset for Climate in the Qinghai-Tibet Plateau

8、Data resource provider

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