A Big Earth Data Platform for Three Poles

**Daily lake ice extent and cover proportion dataset of the Tibetan Plateau based on MODIS (2002-2018)**

1、Description

There are many lakes on the Tibetan Plateau. The phenology and duration of lake ice age in this area is very sensitive to regional and global climate change, so it is used as a key indicator of climate change research, especially the comparative study of environmental changes in the Earth's three poles. However, due to its harsh natural environment and sparse population, it lacked routine field measurements of lake ice phenology. Using the Moderate-resolution Imaging Spectroradiometer (MODIS) to normalize the Different Snow Index (NDSI) data, the lake ice was monitored at a resolution of 500 meters to fill the observation gap. The traditional snow map algorithm was used to detect the daily ice volume and coverage extent of lakes under sunny condition. The spatial and temporal continuity of lake surface conditions was applied to re-determine the daily ice volume and coverage extent of lakes under cloud cover condition through a series of steps. Time series analysis was performed on 308 lakes larger than 3 k㎡ to determine effective record of lake ice extent and coverage, then to form a daily lake ice extent and coverage data set. And furthermore, four lake ice phenological parameters: freeze-up start ( FUS), freeze-up end (FUE), break-up start (BUS), and break-up end (BUE) can be obtained from 216 lakes of the data set, and two parameters: FUS and BUE can be obtained from the other 92 lakes.

2、Keywords

Theme：Lake ice,Lake ice  
Discipline：Cryosphere  
Places：Tibetan Plateau  
Time：2002-2018

3、Data details

1.Scale：None

2.Projection：None

3.Filesize：404.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：46.0 | - |
| west：62.0 | - | east：105.0 |
| - | south：26.0 | - |

5、Time frame:2002-07-21 00:00:00+00:00--2018-07-10 00:00:00+00:00

6、Reference method

References to data:

QIU Yubao. Daily lake ice extent and cover proportion dataset of the Tibetan Plateau based on MODIS (2002-2018). A Big Earth Data Platform for Three Poles, doi:10.11922/sciencedb.7442019

References to articles:

7、Supporting project information

CASEarth:Big Earth Data for Three Poles（grant No. XDA19070000）  
Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program

8、Data resource provider

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