A Big Earth Data Platform for Three Poles

**Thermokarst lakes on the Qinghai-Tibet Plateau (2018)**

1、Description

The Qinghai-Tibetan Plateau (QTP), the largest high-altitude and low-latitude permafrost zone in the world, has experienced rapid permafrost degradation in recent decades, and one of the most remarkable resulting characteristics is the formation of thermokarst lakes. Such lakes have attracted significant attention because of their ability to regulate carbon cycle, water, and energy fluxes. However, the distribution of thermokarst lakes in this area remains largely unknown, hindering our understanding of the response of permafrost and its carbon feedback to climate change.Based on more than 200 sentinel-2A images and combined with ArcGIS, NDWI and Google Earth Engine platform, this data set extracted the boundary of thermokarst lakes in permafrost regions of the Qinghai-Tibet Plateau through GEE automatic extraction and manual visual interpretation.In 2018, there were 121,758 thermokarst lakes in the permafrost area of the Qinghai-Tibet Plateau, covering an area of 0.0004-0.5km², with a total area of 1,730.34km² respectively.The cataloging data set of Thermokarst Lakes provides basic data for water resources evaluation, permafrost degradation evaluation and thermal karst study on the Qinghai-Tibet Plateau.

2、Keywords

Theme：Area,Climate change,Surface Water,Thermokarst lakes,Boundary,Cryosphere remote sensing products,Surface Freeze-thaw Cycle/state Remote Sensing,Permafrost degradation;,Frozen Ground,Terrestrial Surface Remote Sensing,Lakes,Hydrological remote sensing products,Thermokarst lake
Discipline：Terrestrial Surface,Cryosphere
Places：Tibet Plateau
Time：2018

3、Data details

1.Scale：None

2.Projection：WGS84

3.Filesize：40.37MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：40.0 | - |
| west：105.0 | - | east：73.5 |
| - | south：26.0 | - |

5、Time frame:2018-03-31 16:00:00+00:00--2018-12-30 16:00:00+00:00

6、Reference method

References to data:

FAN Chengyan, LI Zhilong, WU Xiaodong, PENG Xiaoqing, JIA Lin, CHEN Xu, MU Cuicui, MU Mei. Thermokarst lakes on the Qinghai-Tibet Plateau (2018). A Big Earth Data Platform for Three Poles, doi:10.11888/Geocry.tpdc.2712052021

References to articles:

7、Supporting project information

the National Natural Science Foundation of China
Spatiotemporal variation characteristics and Carbon emission potential of thermokarst lakes in Qinghai-Tibet Plateau
Research on the mechanism, influence and climate effect of rapid change in the Arctic

8、Data resource provider

name: PENG Xiaoqing
unit:
email: pengxq@lzu.edu.cn

name: CHEN Xu
unit: Key Laboratory of Western China's Environmental Systems (Ministry of Education), College of Earth and Environmental Sciences, Lanzhou University, Lanzhou, 730000, China
email: xchen2018@lzu.edu.cn

name: MU Cuicui
unit:
email: mucc@lzu.edu.cn

name: JIA Lin
unit:
email: jial14@lzu.edu.cn

name: LI Zhilong
unit:
email: lizhl2019@lzu.edu.cn

name: MU Mei
unit:
email: mum14@lzu.edu.cn

name: FAN Chengyan
unit:
email: fanchy14@lzu.edu.cn

name: WU Xiaodong
unit:
email: wuxd@lzb.ac.cn