A Big Earth Data Platform for Three Poles

**Distribution of potential glacial lakes in the Tibetan Plateau and its surroundings**

1、Description

The dataset of of potential glacial lakes (PGLs) distribution in the Tibetan Plateau and its surrounding (TPS) are vector data (. SHP). The data set contains the ID, area, perimeter, volume and elevation of each PGL. The TPS region was divided into 17 subregions based on the river basins’ borders, including 8 outflow river basins, i.e., the Yellow, Yangtze, Mekong, Salween, Brahmaputra, Ganges, Indus, and Ob river basins, and 9 exorheic river basins, i.e., the Qiangtang, Hexi, Tarim, Qiadam, Junggar, Yili, Syr Darya, Amu Darya, and Mongolia river basins. This data is processed from theGlacier ice thickness distribution dataset (provided by Farinotti et al. (2019)). The grid difference between the initial DEM and the glacier ice thickness distribution was used to produce the DEM without glaciers. The overdeepenings were detected via two steps. First, we filled the depressions of the DEM without glaciers using a hydrology tool in the ArcGIS software. Second, using the filled DEM to subtract the DEM without glaciers, we ascertained the PGLs’ locations, areas, depths, and volumes. The quality of this data set depends on the quality of the original glacier thickness data, and the quality of the ice thickness dataset is the best of all similar data at present. The dataset of of potential glacial lakes distribution in the Tibetan Plateau and its surroundings can provide a new perspective from which to understand the future formation and evolution of glacial lakes in the TPS. It is anticipated that approximately 16,000 PGLs areas of greater than 0.02 km2 will be formed in the TPS, covering an area of 2253.95 ± 1291.29 km2 and holding a water volume of 60.49 ± 28.94 km3, which would contribute to a 0.16 ± 0.08 mm equivalent sea-level rise.

2、Keywords

Theme：Glacial lake,Glacier(Ice Sheet)
Discipline：Cryosphere
Places：Tibetan Plateau and its surroundings
Time：future

3、Data details

1.Scale：None

2.Projection：WGS84

3.Filesize：3.78MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：54.0 | - |
| west：60.0 | - | east：112.0 |
| - | south：20.0 | - |

5、Time frame:2021-05-31 16:00:00+00:00--2021-05-31 16:00:00+00:00

6、Reference method

References to data:

GAO Tanguang, ZHANG Taigang, WANG Weicai, YAO Tandong. Distribution of potential glacial lakes in the Tibetan Plateau and its surroundings. A Big Earth Data Platform for Three Poles, doi:10.11888/Glacio.tpdc.2713022021

References to articles:

Zhang, T.G., Wang, W.C., An, B.S., et al. (2022). Ice thickness and morphological analysis reveal the future glacial lake distribution and formation probability in the Tibetan Plateau and its surroundings. Global and Planetary Change, 216. https://doi.org/10.1016/j.gloplacha.2022.103923

7、Supporting project information

8、Data resource provider

name: WANG Weicai
unit: Institute of Tibetan Plateau Research, Chinese Academy of Sciences
email: weicaiwang@itpcas.ac.cn

name: YAO Tandong
unit: Institute of Tibetan Plateau Research, CAS
email: yaotd@itpcas.ac.cn

name: GAO Tanguang
unit:
email: gaotanguang@163.com

name: ZHANG Taigang
unit:
email: zhangtg16@lzu.edu.cn

name: AN Baosheng
unit:
email: anbaosheng@itpcas.ac.cn