A Big Earth Data Platform for Three Poles

**Simulation data of active layer thickness and ground temperature of permafrost in Qinghai Tibet Plateau (2000-2015, 2061-2080)**

1、Description

A comprehensive understanding of the permafrost changes in the Qinghai Tibet Plateau, including the changes of annual mean ground temperature (Magt) and active layer thickness (ALT), is of great significance to the implementation of the permafrost change project caused by climate change.
Based on the CMFD reanalysis data from 2000 to 2015, meteorological observation data of China Meteorological Administration, 1 km digital elevation model, geo spatial environment prediction factors, glacier and ice lake data, drilling data and so on, this paper uses statistics and machine learning (ML) method to simulate the current changes of permafrost flux and magnetic flux in Qinghai Tibet Plateau The range data of mean ground temperature (Magt) and active layer thickness (ALT) from 2000 to 2015 and 2061 to 2080 under rcp2.6, rcp4.5 and rcp8.5 concentration scenarios were obtained, with the resolution of 0.1 \* 0.1 degree.
The simulation results show that the combination of statistics and ML method needs less parameters and input variables to simulate the thermal state of frozen soil, which can effectively understand the response of frozen soil on the Qinghai Tibet Plateau to climate change.

2、Keywords

Theme：Ground temperature,Active layer,Permafrost,Frozen Ground
Discipline：Cryosphere
Places：Tibet Plateau
Time：2061-2080, 2000-2015

3、Data details

1.Scale：None

2.Projection：

3.Filesize：6.12MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：40.0 | - |
| west：70.0 | - | east：110.0 |
| - | south：28.0 | - |

5、Time frame:None--None

6、Reference method

References to data:

Ni Jie, Wu Tonghua. Simulation data of active layer thickness and ground temperature of permafrost in Qinghai Tibet Plateau (2000-2015, 2061-2080). A Big Earth Data Platform for Three Poles, doi:10.17632/hbptbpyw75.12021

References to articles:

Ni, J., Wu, T., Zhu, X., Hu, G., Zou,D., & Wu, X., et al. (2021). Simulation of the present and future projection of permafrost on the Qinghai-Tibet Plateau with statistical and machine learning models. Journal of Geophysical Research: Atmospheres,126, e2020JD033402. https://doi.org/10.1029/2020JD033402.

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program

8、Data resource provider

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