A Big Earth Data Platform for Three Poles

**A decade datasets of the seasonal maximum freezing depth with 1 km from 1961 to 2020 in Northwest China, Tibet and surrounding area (1961-2020)**

1、Description

The maximum freezing depth is an important index of the thermal state of seasonal frozen ground. Due to global warming, the maximum freezing depth of seasonal frozen ground continues to decline. The maximum freezing depth data set of five provinces in Northwest China, Tibet and surrounding areas from 1961 to 2020 was released, with a spatial resolution of 1 km. The data set is a support vector regression (SVR) model based on the measured data of maximum freezing depth from 2001 to 2010 and spatial environmental variables, which simulates the maximum freezing depth in Northwest China, Tibet and surrounding areas from 1961 to 2020. The validation results show that the SVR model has good spatial generalization ability, and there is a high consistency between the predicted value and the observed value of the maximum soil freezing depth. The determination coefficients of the simulation results in the four periods of 1980s, 1990s, 2000s and 2010s are 0.77, 0.83, 0.73 and 0.71 respectively. The percentile range of the prediction results shows that the simulation results have good stability. Based on this data set, it is found that the maximum soil freezing depth in Northwest China continues to decline, among which Qinghai has the fastest decline rate, with an average decline of 0.53 cm every decade. The data set provides data support for the study of seasonal frozen soil in Northwest China, High Mountain Asia and the Third Pole.

2、Keywords

Theme：active layer,seasonally frozen ground,Frozen Ground
Discipline：Cryosphere
Places：High Mountain Asia, Qinghai-Tibet Plateau, Third Pole
Time：long time series, 1961-2020

3、Data details

1.Scale：None

2.Projection：

3.Filesize：1875.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：51.0 | - |
| west：62.0 | - | east：112.0 |
| - | south：20.0 | - |

5、Time frame:1959-12-31 16:00:00+00:00--2020-12-30 16:00:00+00:00

6、Reference method

References to data:

RAN Youhua, WANG Bingquan. A decade datasets of the seasonal maximum freezing depth with 1 km from 1961 to 2020 in Northwest China, Tibet and surrounding area (1961-2020). A Big Earth Data Platform for Three Poles, doi:10.11888/Geocry.tpdc.2717742021

References to articles:

王冰泉, 冉有华. (2021). 中国西北、西藏和周边地区1961—2020 年每十年1 km季节冻土最大冻结深度数据集. 地球科学进展，36(11), 1137-1145. DOI：10.11867/j. issn. 1001-8166. 2021. 120.

Wang, B.Q., & Ran, Y.H. (2021). Diversity of Remote Sensing-Based Variable Inputs Improves the Estimation of Seasonal Maximum Freezing Depth. Remote Sensing, 13(23), 4829. https://doi.org/10.3390/rs13234829

7、Supporting project information

National Natural Science Foundation of China

8、Data resource provider

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