A Big Earth Data Platform for Three Poles

**The ground temperature distribution Map of the Tibet engineering corridor (2010-2015)**

1、Description

The GIPL2.0 frozen soil model was used to simulate the average ground temperature distribution map of the Qinghai-Tibet Engineering Corridor. The model required to synthesize temperature data set of time series. In addition, the temperature data were divided into two phases according to the time spans, which were 1980-2009 and 2010-2015. The data of the first phase were from the Chinese meteorological driving data set (http://dam. Itpcas.ac.cn/rs/?q=data#CMFD\_0.1), the data of the second phase were the application of MODIS surface temperature products (MOD11A1/A2 and MYD11A1/A2) with a spatial resolution of 1 km. In addition, the soil type data required by the model came from the China Soil Database (V1.1) and have a resolution of 1 km. At the same time, the topography was also considered. The research area was classified into 88 types based on the measured soil thermophysical parameters and land cover types, and then the simulation was performed.
The annual average ground temperature simulation results were compared with the field measured data, and the results showed that they were highly consistent. The simulation results show that the annual average ground temperature is lower than -2.0 °C in high mountain areas such as Kunlun Mountain and Tanggula Mountain, while that in the higher river valleys such as Tuotuohe is above 0 °C. In the high plain areas (such as Beiluhe Basin and Wudaoliang Basin), the annual average ground temperatures are between -2.0 °C and 0 °C. If taking an annual average ground temperature lower than 0 °C as the threshold for the presence or absence of permafrost, the permafrost of the Qinghai-Tibet Engineering Corridor accounts for 78.9% of the entire area. In the meantime, according to the different ground temperatures, the frozen soils of the Qinghai-Tibet Engineering Corridor are divided into four types: low-temperature stable permafrost, low-temperature basically stable permafrost, high-temperature unstable permafrost and high-temperature extremely unstable permafrost.

2、Keywords

Theme：Frozen ground distribution,Ground temperature,Frozen Ground
Discipline：Cryosphere
Places：the Qinghai-Tibet Engineering Corridor
Time：2010-2015

3、Data details

1.Scale：250000

2.Projection：

3.Filesize：1.0MB

4.Data format：删格

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：35.43 | - |
| west：92.83 | - | east：93.5 |
| - | south：34.68 | - |

5、Time frame:2010-01-07 07:46:00+00:00--2016-01-06 07:46:00+00:00

6、Reference method

References to data:

NIU Fujun. The ground temperature distribution Map of the Tibet engineering corridor (2010-2015). A Big Earth Data Platform for Three Poles, doi:10.11888/Geocry.tpdc.2700442018

References to articles:

Niu, F.J., Zheng, H., & Li, A. (2018). The study of frost heave mechanism of high-speed railway foundation by field-monitored data and indoor verification experiment. Acta Geotechnica.

7、Supporting project information

CASEarth:Big Earth Data for Three Poles（grant No. XDA19070000）

8、Data resource provider

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