A Big Earth Data Platform for Three Poles

**Frozen ground map of China based on a Map of the Glaciers, Frozen Ground and Deserts in China (1981-2006)**

1、Description

These data are a digitization of the frozen soil distribution map of the Map of the Glaciers, Frozen Ground and Deserts in China (1:4,000,000). Considering the unification with the global frozen soil classification system, the permafrost is divided into the following five types:
(1) Discontinuous permafrost: continuous coefficient 50%-90%
(2) Island permafrost: continuous coefficient <50%
(3) Plateau discontinuous permafrost: continuous coefficient 50%-90%
(4) Plateau island permafrost: continuous coefficient 50%-90%
(5) Mountain permafrost
The compilation basis of the frozen soil map includes (1) the measured field survey data and exploration of frozen soil; (2) aerial image and satellite image interpretation; (3) TOPO30 1-km resolution ground elevation data; and (4) and temperature and ground temperature data. The distribution of frozen soil on the Tibetan Plateau adopted the research results of Zhuotong Nan et al. (2002). Using the average annual temperature data of 76 boreholes along the Qinghai-Tibet Highway, a statistical regression analysis was performed to obtain the relation between annual mean ground temperature, latitude and elevation. Based on the relation combined with GTOPO30 elevation data (global 1-km digital elevation model data developed by the Earth Resources Observation and Technology Center of the U.S Geological Survey), the annual average ground temperature distribution over the entire Tibetan Plateau was simulated. Taking the annual average ground temperature of 0.5 °C as the boundary between permafrost and seasonal frozen soil and the Map of Snow Ice and Frozen Ground in China (1:4,000,000) (Yafeng Shi, et al., 1988) as a reference, the boundary between the plateau discontinuous permafrost and plateau island permafrost was determined. In addition, taking the Distributions Map of Permafrost in Daxiao Hinganling Northeast China (Dongxin Guo, et al. 1981), the Distribution Map of Permafrost and Ground Ice in Circum-Arctic (Brown et al. 1997) and the latest field data as references, the permafrost boundary of northeast China has been revised; the mountain permafrost boundary in the northwest mostly adopted the boundary delineated in the Map of Snow Ice and Frozen Ground in China (1:4,000,000) (Yafeng Shi, et al., 1988).
According to this data set, permafrost area in China is approximately 1.75×106 km2, accounting for 18.25% of the territory of China, among which the mountain permafrost area is 0.29×106 km2, which accounts for 3.03% of the territory of China.
For more information, please refer to the Map of the Glaciers, Frozen Ground and Deserts in China (1:4,000,000) specification (Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences, 2006).

2、Keywords

Theme：Frozen ground distribution,Frozen Ground
Discipline：Cryosphere
Places：China
Time：1981-2006

3、Data details

1.Scale：3000000

2.Projection：Albers

3.Filesize：1.48MB

4.Data format：shp

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：53.9 | - |
| west：73.2 | - | east：135.5 |
| - | south：17.8 | - |

5、Time frame:1981-01-15 16:00:00+00:00--2007-01-14 16:00:00+00:00

6、Reference method

References to data:

GUO Dongxin, SHI Yafeng, WANG Tao. Frozen ground map of China based on a Map of the Glaciers, Frozen Ground and Deserts in China (1981-2006). A Big Earth Data Platform for Three Poles, doi:10.11888/Geocry.tpdc.2700382012

References to articles:

王涛. (2006). 1:400万中国冰川冻土沙漠图. 北京, 中国地图出版社.

7、Supporting project information

8、Data resource provider

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