A Big Earth Data Platform for Three Poles

**Effects of permafrost environment on the construction of Qinghai-Tibet railway and environmental effects data (2002-2004)**

1、Description

The project “The impact of the frozen soil environment on the construction of the Qinghai-Tibet Railway and the environmental effects of the construction” is part of the “Environmental and Ecological Science in West China” programme supported by the National Natural Science Foundation of China. The person in charge of the project is Wei Ma, a researcher at the Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences. The project ran from January 2002 to December 2004.
Data collected in this project included the following:
Monitoring data of the active layer in the Beiluhe River Basin
(1) Description of the active layer in the Beiluhe River Basin
(2) Subsurface moisture data from the Beiluhe River Basin, 2002.9.28-2003.8.10 (Excel file)
\* Site 1 - Grassland moisture data
\* Site 2 – Removed turf moisture data
\* Site 3 - Natural turf moisture data
\* Site 4 - Gravel moisture data
\* Site 5 - Insulation moisture data
(3) Subsurface temperature data from the Beiluhe River Basin, 0207-0408 Excel file
\* Temperature data for the ballast surface
\* Temperature data for insulation materials
\* Temperature data for a surface without vegetation
\* Temperature data for a grassland surface
\* Temperature data for a grit and pebble surface
Data on the impact of construction on the ecological environment were obtained at Fenghuoshan, Tuotuohe, and Wudaoliang. Sample survey included plant type, abundance, community coverage, total coverage, aboveground biomass ratio and soil structure. The moisture content at different depths of the soil was detected using a time domain reflectometer (TDR). A set of soil samples was collected at a depth of 0-100 cm at each sample site. An EKKO100 ground-penetrating radar detector was used to continuously sample 1-1.5 km long sections parallel to the road to determine the upper limit depth of the frozen soil.
3. Predicted data: The temperature of the frozen soil at different depths and times was predicted in response to temperature increases of 1 degree and 2 degrees over the next 50 years based on initial surface temperatures of -0.5, -1.5, -2.5, -3.5, and -4.5 degrees.
4. The frozen soil parameters of the Qinghai-Tibet Railway were as follows: location, railway mileage, total mileage (km), frozen soil type mileage, mileage of zones with an average temperature conducive to permafrost, frozen soil with high temperatures and high ice contents, frozen soils with high temperatures and low ice contents, frozen soils with low temperatures and high ice contents, frozen soils with low temperatures and low ice contents, and melting area.

2、Keywords

Theme：Temperature,Ground temperature,Skin temperature,Active layer,Frozen Ground,Environment Pollution and Control
Discipline：Atmosphere,Human-nature Relationship,Cryosphere
Places：the Qinghai-Tibet Railway
Time：2002-2004

3、Data details

1.Scale：None

2.Projection：

3.Filesize：14.4MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：49.36 | - |
| west：73.45 | - | east：111.2 |
| - | south：20.9 | - |

5、Time frame:2002-01-12 08:00:00+00:00--2005-01-11 08:00:00+00:00

6、Reference method

References to data:

MA Wei, WU Qingbai. Effects of permafrost environment on the construction of Qinghai-Tibet railway and environmental effects data (2002-2004). A Big Earth Data Platform for Three Poles, doi:10.11888/Geocry.tpdc.2700332012

References to articles:

Wu, Q.B., Zhu, Y.L., &Liu, Y.Z. (2002). Evaluating model of frozen soil Environment Change under engineering actions. China Science (Series D), 45(10), 893-902.

7、Supporting project information

The influence of permafrost environment on qinghai-tibet railway construction and its environmental effect

8、Data resource provider

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