A Big Earth Data Platform for Three Poles

**High-resolution datasets of permafrost thermal state and hydrothermal zonation in the Northern Hemisphere**

1、Description

These datasets include mean annual ground temperature (MAGT) at the depth of zero annual amplitude (approximately 3 m to 25 m), active layer thickness (ALT), the probability of the permafrost occurrence, and the new permafrost zonation based on hydrothermal condition for the period of 2000-2016 in the Northern Hemisphere with an 1-km resolution by integrate unprecedentedly large amounts of field data (1,002 boreholes for MAGT and 452 sites for ALT) and multisource geospatial data, especially remote sensing data, using statistical learning modelling with an ensemble strategy, and thus more accurate than previous circumpolar maps.

2、Keywords

Theme：Frozen ground distribution,Ground temperature,Active layer,Permafrost,Discontinuous permafrost,Frozen Ground,Permafrost
Discipline：Cryosphere
Places：Tibetan Plateau, Alaska, Canada, Arctic, Eurasia
Time：2000-2016

3、Data details

1.Scale：None

2.Projection：WGS84

3.Filesize：350.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：89.0 | - |
| west：-180.0 | - | east：180.0 |
| - | south：25.0 | - |

5、Time frame:1999-12-31 16:00:00+00:00--2016-12-30 16:00:00+00:00

6、Reference method

References to data:

Juha Aalto, Olli Karjalainen, Miska Luoto, CHE Jinxing, CHENG Guodong, YU Qihao, Masahiro Hori, Jan Hjort, CHANG Xiaoli, LI Xin, RAN Youhua, Jaroslav Obu, JIN Huijun. High-resolution datasets of permafrost thermal state and hydrothermal zonation in the Northern Hemisphere. A Big Earth Data Platform for Three Poles, doi:10.11888/Geocry.tpdc.2711902021

References to articles:

Ran, Y., Li, X., Cheng, G., Che, J., Aalto, J., Karjalainen, O., Hjort, J., Luoto, M., Jin, H., Obu, J., Hori, M., Yu, Q., & Chang, X. (2022). New high-resolution estimates of the permafrost thermal state and hydrothermal conditions over the Northern Hemisphere. Earth System Science Data, 14, 865–884. DOI: 10.5194/essd-14-865-2022.

7、Supporting project information

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

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