A Big Earth Data Platform for Three Poles

**Spatial distribution of Active Layer Thickness and Soil Freeze Depth in Qilian Mountain**

1、Description

The widely definition of seasonally frozen ground include seasonally frozen layer (seasonally frozen ground regions) and seasonally thaw layer (active layer in permafrost regions). So the area extent of seasonally frozen ground occupied more than 80% land surface over Northern Hemisphere. Soil freeze/thaw cycle is one special character of seasonally frozen ground, which covers area extent, depth, time duration, variation of soil freeze/thaw. These changes in seasonally frozen ground have substantial impacts on energy, water and carbon exchange between the atmosphere and the land surface, surface and sub-surface hydrologic processes, vegetation growth, the ecosystem, carbon dioxide cycle, agriculture, and engineering constructuion, as a whole.Based on the observations from sites, CRU air temperature, we used the Stefan solution to calculate the spatial distribution of active layer thickness and soil freeze depth during 1971-2000. These results are helpful to further study the physical mechanism between seasonally frozen ground and climate change, eco-hydrology process.

2、Keywords

Theme：Active layer,Frozen Ground
Discipline：Cryosphere
Places：Qilian Mountain
Time：year

3、Data details

1.Scale：None

2.Projection：WGS84

3.Filesize：4.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：40.0 | - |
| west：93.0 | - | east：104.0 |
| - | south：35.0 | - |

5、Time frame:1970-12-31 16:00:00+00:00--2000-12-31 03:59:59+00:00

6、Reference method

References to data:

PENG Xiaoqing, ZHANG Tingjun. Spatial distribution of Active Layer Thickness and Soil Freeze Depth in Qilian Mountain. A Big Earth Data Platform for Three Poles, doi:10.11888/Geocry.tpdc.2711892020

References to articles:

Peng, X., Zhang, T., Frauenfeld, O. W., Wang, K., Cao, B., Zhong, X., ... & Mu, C. (2017). Response of seasonal soil freeze depth to climate change across China. The Cryosphere, 11(3), 1059-1073.

Peng, X., Zhang, T., Frauenfeld, O. W., Wang, K., Luo, D., Cao, B., ... & Wu, Q. (2018). Spatiotemporal changes in active layer thickness under contemporary and projected climate in the Northern Hemisphere. Journal of Climate, 31(1), 251-266.

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program

8、Data resource provider

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