A Big Earth Data Platform for Three Poles

**30km Gridded dataset of Snowline altitude in High Mountain Asia （2001-2019）**

1、Description

High Mountain Asia is the third largest cryosphere on earth other than the Antarctic and Arctic regions. The large amounts of glaciers and snow over the High Mountain Asia play an important role not only on global water cycle but also on water resources and ecology of the arid regions of central Asia. The snowline, as the lower boundary of the snow covered area at the end of melting season, its altitude changes can directly reflect the changes in snow and glaciers. The snowline altitude provides a possibility to rapidly obtain a proxy for their equilibrium line altitude (ELA) which in turn is an indicator for the glacier mass balance. In this dataset, the daily MODIS snow cover products from 2001 to 2019 are used as the main data source. The cloud removal of the daily MODIS snow cover products was firstly carried out based on the developed cubic spline interpolation cloud-removel method, and snow covered days (SCD) are extracted using the cloud-removed MODIS snow cover products. In addition, the MODIS SCD threshold for estimating perennial snow cover is calibrated using the observed data of glacier annual mass balance and Landsat data at the end of melting season. The altitude value of the snowline at the end of melting season is determined by combining the perennial snow cover area and the hypsometric (area-elevation) curve. Finally, the 30km gridded dataset of snowline altitude in the High Mountain Asia during 2001-2019 is generated. This dataset can provide data support for the study of cryosphere and climate change over the High Mountain Asia.

2、Keywords

Theme：Snow,Snowpack,Snowline
Discipline：Cryosphere
Places：The High Mountain Asia
Time：2001-2019

3、Data details

1.Scale：None

2.Projection：WGS84

3.Filesize：0.5MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：50.45 | - |
| west：68.1 | - | east：102.0 |
| - | south：27.35 | - |

5、Time frame:2000-12-31 16:00:00+00:00--2019-12-30 16:00:00+00:00

6、Reference method

References to data:

WANG Xiaoru, DENG Gang, TANG Zhiguang. 30km Gridded dataset of Snowline altitude in High Mountain Asia （2001-2019）. A Big Earth Data Platform for Three Poles, doi:10.11888/Snow.tpdc.2709962020

References to articles:

Tang, Z., Wang, X., Deng, G., Wang, X., Jiang, Z., & Sang, G. (2020). Spatiotemporal variation of snowline altitude at the end of melting season across High Mountain Asia, using MODIS snow cover product. Advances in Space Research, 66(11), 2629-2645.

王晓茹, 唐志光, 王建, 邓刚, 王欣, 魏俊锋. (2019). 亚洲高山区融雪末期雪线高度空间差异的影响因素分析. 冰川冻土, 41(5): 1173-1182.

7、Supporting project information

National Nature Science Foundation of China
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8、Data resource provider

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