A Big Earth Data Platform for Three Poles

**Radiometer ice sheet freezing-thawing data for Antarctica and Greenland V1.0 (2016-2019)**

1、Description

The coverage time of microwave radiometer ice sheet freeze-thaw data set is updated to 2016-2019, with a spatial resolution of 25 km; the remote sensing inversion method based on microwave radiometer adopts the improved wavelet based ice sheet freeze-thaw detection algorithm, which takes into account the change of ice sheet freeze-thaw brightness temperature characteristics in time. First, the long-time brightness temperature data of all ice sheet areas in Greenland is small by using wavelet transform. The multi-scale decomposition of wave is used to analyze the edge information at different scales. Thirdly, the edge information of ice sheet melting and refreezing is separated from the noise by ANOVA. Based on the extracted edge information of long-term brightness and temperature change of ice sheet, the optimal edge threshold of dry snow and wet snow classification is determined by using the generalized Gaussian model, so as to detect the melting area of Greenland ice sheet. Finally, based on the principle of space automatic error correction, the error results caused by noise are detected by using the space neighborhood error correction operator, and the error is corrected manually. The brightness and temperature data of passive microwave in long time series come from SMMR, SSM / I and SSMI / s sensors. To ensure simultaneous interpreting of the brightness temperature of different sensors, simultaneous interpreting of different sensor brightness temperatures is made before freezing and thawing. Through the verification of the actual measurement site, it shows that the detection accuracy of Greenland ice sheet freeze-thaw is more than 70%.

2、Keywords

Theme：Ice sheet freeze-thaw,Glacier(Ice Sheet)  
Discipline：Cryosphere  
Places：Antarctica and Greenland  
Time：2016-2019

3、Data details

1.Scale：None

2.Projection：None

3.Filesize：1024.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：90.0 | - |
| west：-180.0 | - | east：180.0 |
| - | south：-90.0 | - |

5、Time frame:2016-01-08 08:00:00+00:00--2019-02-07 08:00:00+00:00

6、Reference method

References to data:

Liang Lei. Radiometer ice sheet freezing-thawing data for Antarctica and Greenland V1.0 (2016-2019). A Big Earth Data Platform for Three Poles, doi:10.11888/Glacio.tpdc.2702682019

References to articles:

7、Supporting project information

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

8、Data resource provider

name: Liang Lei  
unit: Institute of Remote Sensing and Digital Earth, Chinses Academy of Sciences  
email: lianglei@radi.ac.cn