A Big Earth Data Platform for Three Poles

**Antarctic Ice Sheet Surface Melt 0.05˚ Daily Data Set (1985-1986, 2000-2001, 2015-2016)**

1、Description

Snow, ice, and glaciers have the highest albedo of any part of Earth's surface. The increase in melting of the polar ice sheet results in a rapid and sequential decrease in albedo and subsequently influences the global energy balance. The hydrological system derived from surface melt and basal meltwater will affect the dynamic stability of ice sheet and therefore mass balance. The dataset combined microwave radiometer product and optical albedo product, the daily, winter (June-August) averages and July averages of the former are used for layer-stacking, then Gram-Schmidt Spectral Sharpening was adapted to fuse the layer-stacking results with MODIS GLASS albedo product. The spatial resolution of fusion-results has been downscaled from 25 km to 0.05˚. By employing a threshold-based melt detection approach for each fusion-results pixel, Antarctic ice sheet surface melt daily product for 1985-1986, 2000-2001, 2015-2016 (DSSMIS) was generated. The spatial resolution of DSSMIS is higher than that of published data sets at home and abroad. Combined with the advantages of radiometer and albedo data, the spatial details characteristics are enhanced and consistent with the extraction range of the original radiometer products, effectively reducing the noise of the radiometer. It better reflects the melting gradient of mountainous area, groundline area and ice shelf over time, DSSMIS has a higher accuracy. DSSMIS’s data type is integer, where 1 is melted, 0 is not melted, 255 is masked area besides Antarctic ice sheet, and the data set is stored as \*.nc.

2、Keywords

Theme：Downscaling,Surface Freeze-thaw Cycle/State,Cryosphere remote sensing products,Surface Freeze-thaw Cycle/state Remote Sensing,Remote Sensing Technology,Optical remote sensing,Microwave radiometer
Discipline：Remote Sensing Technology,Cryosphere
Places：Antarctic
Time：2000-2001, 1985-1986, 2015-2016

3、Data details

1.Scale：20000000

2.Projection：South\_Pole\_Stereographic

3.Filesize：1204.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：-58.1735 | - |
| west：-180.0 | - | east：180.0 |
| - | south：-90.0 | - |

5、Time frame:None--None

6、Reference method

References to data:

WEI Siyi. Antarctic Ice Sheet Surface Melt 0.05˚ Daily Data Set (1985-1986, 2000-2001, 2015-2016). A Big Earth Data Platform for Three Poles, doi:10.11888/Cryos.tpdc.2718482021

References to articles:

7、Supporting project information

8、Data resource provider

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