A Big Earth Data Platform for Three Poles

**Dataset of passive microwave SMMR brightness temperature in China (1978-1987)**

1、Description

This dataset mainly includes the passive microwave brightness temperature obtained from the Scanning Multichannel Microwave Radiometer (SMMR) carried by the Nimbus-7 satellite, including 06H, 06V, 10H, 10V, 18H, 18V, 21H, 21V, 37H, 37V, a total of ten microwave channels with two transits (ascending & descending) brightness temperature per day from October 25, 1978 to August 20, 1987, where H represents horizontal polarization and V represents vertical polarization.  
Nimbus-7, launched in October 1978, is a solar-synchronous polar-orbiting satellite. The microwave sensor SMMR is a dual-polarization microwave radiometer that measures the brightness temperature of five frequencies (6.6GHz, 10.69GHz, 18.0GHz, 21.0GHz, 37.0GHz) on the surface. It scans the surface at a fixed incident angle of about 50.3 °, with a width of 780 km, and passes through the equator at noon 12:00 (ascending orbit) and 24:00 (descending orbit). The time resolution of SMMR is daily, but due to the wide distance between swaths, the same surface will be revisited every 5-6 days.  
1. File format and naming:  
Each set of data is composed of remote sensing data files.  
The name and naming rules of each group of data files in the SMMR\_Grid\_China directory are as follows:  
SMMR-MLyyyydddA / D.subset.ccH / V (remote sensing data)  
Among them: SMMR stands for SMMR sensor; ML stands for multi-channel low resolution; yyyy stands for year; ddd stands for Julian Day of the year (1-365 / 366); A / D stands for ascending (A) and derailing (D ); subset represents the brightness temperature data in China; cc represents the frequency (6.6GHz, 10.69GHz, 18.0GHz, 21.0GHz, 37.0GHz); H / V represents horizontal polarization (H) and vertical polarization (V).  
2. Coordinate system and projection:  
The projection method is an equal area secant cylindrical projection, and the double standard parallels are 30 degrees north and south. For more information about EASE-GRID, please refer to http://www.ncgia.ucsb.edu/globalgrids-book/ease\_grid/.  
If you need to convert the EASE-Grid projection to Geographic projection, please refer to the ease2geo.prj file, the content is as follows:  
Input  
projection cylindrical  
units meters  
parameters 6371228 6371228  
1 / \* Enter projection type (1, 2, or 3)  
0 00 00 / \* Longitude of central meridian  
30 00 00 / \* Latitude of standard parallel  
Output  
Projection GEOGRAPHIC  
Spheroid KRASovsky  
Units dd  
parameters  
end  
3. Data format:  
Stored as integer binary, each data occupies 2 bytes. The actual data stored in this dataset is the brightness temperature \* 10. After reading the data, you need to divide by 10 to get the real brightness temperature.  
Spatial resolution: 25km;  
Time resolution: daily, from 1978 to 1987.  
4. Spatial range:  
Longitude: 60.1 ° -140.0 ° East longitude;  
Latitude: 14.9 ° -55.0 ° north latitude.  
5. Data reading  
Remote sensing image data files for each set of data can be opened in ENVI and ERDAS software.

2、Keywords

Theme：Microwave remote sensing,Surface Freeze-thaw Cycle/state Remote Sensing  
Discipline：Cryosphere  
Places：China  
Time：1978-1987

3、Data details

1.Scale：None

2.Projection：None

3.Filesize：2964.38MB

4.Data format：栅格

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：55.0 | - |
| west：60.1 | - | east：140.0 |
| - | south：14.9 | - |

5、Time frame:1978-11-04 06:00:00+00:00--1987-08-31 10:00:00+00:00

6、Reference method

References to data:

NSIDC. Dataset of passive microwave SMMR brightness temperature in China (1978-1987). A Big Earth Data Platform for Three Poles, 2016

References to articles:

Knowles, K.W., Eni Njoku, R.L. Armstrong, and M.J. Brodzik. 2002. Nimbus-7 SMMR Pathfinder Daily EASE-Grid Brightness Temperatures. Boulder, Colorado USA: National Snow and Ice Data Center. Digital media.`

7、Supporting project information

8、Data resource provider

name: NSIDC  
unit: National Snow and Ice Data Center  
email: braup@nsidc.org