A Big Earth Data Platform for Three Poles

**NSIDC Antarctic sea ice dataset (1978-2017)**

1、Description

The data sets include four sets of data obtained from the Scanning Multi-channel Microwave Radiometer (SMMR), Special Sensor Microwave Imager (SSM/I) and the Special Sensor Microwave Imager Sounder (SSMIS) sensors using passive microwave remote sensing inversion. SMMR was aboard the Nimbus-7 satellite, and its working period was from October 26, 1978 to July 8, 1987. Since July 1987, the data provided by the SSM/I and the SSMIS aboard the US Defense Meteorological Satellite Program (DMSP) satellite group have been used.  
  
The first three data sets contain sea ice concentration data, covering the Antarctic region with a spatial resolution of 25 km:  
(1) The data were obtained from Nimbus-7 SMMR and DMSP SSM/I-SSMIS Version 1 by applying the NASA Team algorithm inversion. The temporal coverage is from November 1978 to February 2017, with a temporal resolution of one month. A bin file is stored every month.  
(2) The data source is the same as the first set. The temporal coverage is from 1978-10-26 to 2017-2-28. The temporal resolution is two days, and the spatial resolution is 25 km. A folder was stored every year, and a bin file was stored every other day.  
(3) The data were obtained from near-real-time DMSP SSMIS by applying the NASA Team algorithm inversion. The temporal coverage is from 2015-1-1 to 2018-2-3, and the temporal resolution is one day. A bin file is stored every day. Each file consists of a 300-byte file title (data time information, projection pattern, file name) and a 316\*332 matrix.  
  
The fourth set of data is the sea ice coverage and sea ice area time series. The temporal coverage is from November 1978 to December 2017. This data set is a time series sequence of sea ice coverage and sea ice area in the Antarctic. The temporal resolution is one month, and an ASCII file is stored every month. Each file consists of a file title (time, data type), a 39\*1 sea ice cover matrix and a 39\*1 sea ice area matrix.  
For further details on the data, please visit the US Ice and Snow Data Center NSIDC website - Data Description http://nsidc.org/data/NSIDC-0051; http://nsidc.org/data/NSIDC-0081; http://nsidc.org/data/G02135

2、Keywords

Theme：Microwave remote sensing,Sea Ice,Cryosphere remote sensing products,Surface Freeze-thaw Cycle/state Remote Sensing,Sea ice concentration  
Discipline：Cryosphere  
Places：Antarctic  
Time：1978-2017

3、Data details

1.Scale：250000

2.Projection：

3.Filesize：1250.0MB

4.Data format：bin

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：-39.23 | - |
| west：-180.0 | - | east：180.0 |
| - | south：-90.0 | - |

5、Time frame:1978-11-13 00:00:00+00:00--2017-03-18 00:00:00+00:00

6、Reference method

References to data:

LI Shuanglin. NSIDC Antarctic sea ice dataset (1978-2017). A Big Earth Data Platform for Three Poles, 2018

References to articles:

Cavalieri DJ, Parkinson CL, Gloersen P, and Zwally HJ. updated yearly. Sea Ice Concentrations from Nimbus-7 SMMR and DMSP SSM/I-SSMIS Passive Microwave Data, Version 1. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. 1996. doi: http://dx.doi.org/10.5067/8GQ8LZQVL0VL. [Date Accessed].  
  
Fetterer, F., K. Knowles, W. Meier, M. Savoie, and A. K. Windnagel. 2017, updated daily. Sea Ice Index, Version 3. [Indicate subset used]. Boulder, Colorado USA. NSIDC: National Snow and Ice Data Center.  
  
Cavalieri DJ, and Parkinson CL. Arctic sea ice variability and trends, 1979-2010. The Cryosphere, 2012, 6: 881-889, doi:10.5194/tc-6-881-2012.  
  
Maslanik, J. and J. Stroeve. 1999, updated daily. Near-Real-Time DMSP SSMIS Daily Polar Gridded Sea Ice Concentrations, Version 1. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center.

7、Supporting project information

CASEarth:Big Earth Data for Three Poles（grant No. XDA19070000）  
Antarctic climate change and its impact on East Asian summer climate

8、Data resource provider

name: LI Shuanglin  
unit: Institute of Atmospheric Physics, CAS  
email: shuanglin.li@cug.edu.cn