A Big Earth Data Platform for Three Poles

**Long-term series of daily snow depth in Euroasia (1980-2016)**

1、Description

The “long-term series of daily snow depth in Eurasia” was produced using the passive microwave remote sensing data. The temporal range is 1980~2016, and the coverage is the Eurasia continent. The spatial resolutions is 0.25° and the temporal resolution is daily. A dynamic brightness temperature gradient algorithm was used to derive snow depth. In this algorithm, the spatial and temporal variations of snow characteristics were considered and the spatial and seasonal dynamic relationships between the temperature difference between 18 GHz and 36 GHz and the measured snow depth were established. The long-term sequence of satellite-borne passive microwave brightness temperature data used to derive snow depth came from three sensors (SMMR, SSM/I and SSMI/S), and there is a certain system inconsistency among them. So, the inter-sensor calibration was performed to improve the temporal consistency of these brightness temperature data before snow depth derivation. The accuracy analysis shows that the relative deviation of Eurasia snow depth data is within 30%. The data are stored as a txt file every day, each file includes a file header (projection mode) and a 720\*332 snow depth matrix, and each snow depth represents a 0.25°\*0.25° grid.  
For details of the data, please refer to data specification “Snow depth dataset of Eurasian (Version 1.0) (1980-2016).doc”

2、Keywords

Theme：Microwave remote sensing,Snow depth,Snow,Cryosphere remote sensing products,Surface Freeze-thaw Cycle/state Remote Sensing  
Discipline：Cryosphere  
Places：Eurasia continent  
Time：1980-2016

3、Data details

1.Scale：None

2.Projection：

3.Filesize：979.0MB

4.Data format：PDF

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：70.0 | - |
| west：40.0 | - | east：180.0 |
| - | south：31.0 | - |

5、Time frame:1980-01-18 03:00:00+00:00--2017-01-15 07:59:00+00:00

6、Reference method

References to data:

CHE Tao. Long-term series of daily snow depth in Euroasia (1980-2016). A Big Earth Data Platform for Three Poles, doi:10.11888/Snow.tpdc.2700962018

References to articles:

Dai, L.Y., Che, T., &Ding, Y.J. (2015). Inter-calibrating SMMR, SSM/I and SSMI/S data to improve the consistency of snow-depth products in China. Remote Sensing, 7(6), 7212-7230.  
  
Dai, L.Y., Che, T., Ding, Y.J., &Hao, X.H. (2017). Evaluation of snow cover and snow depth on the Qinghai–Tibetan Plateau derived from passive microwave remote sensing. The Cryosphere, 11(4), 1933-1948.  
  
Che, T., Li, X., Jin, R., Armstrong, R., &Zhang, T.J. (2008). Snow depth derived from passive microwave remote-sensing data in China. Annals of Glaciology, 49, 145-154.

7、Supporting project information

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

8、Data resource provider

name: CHE Tao  
unit:   
email: chetao@lzb.ac.cn