A Big Earth Data Platform for Three Poles

**Long-term series of daily global snow depth (1979-2017)**

1、Description

The “Long-term series of daily global snow depth” was produced using the passive microwave remote sensing data. The temporal range is 1980~2018, and the coverage is the global land. The spatial resolutions is 25,067.53 m 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 is a 1383\*586 snow depth matrix, and each snow depth represents a 25,067.53m\* 25,067.53m grid. The projection of this data is EASE-Grid, and following is the file header which describes the projection detail.  
File header:  
ncols 1383  
nrows 586  
xllcorner -17334193.54   
yllcorner -7344787.75   
cellsize 25,067.53   
NODATA\_value -1

2、Keywords

Theme：Microwave remote sensing,Snow depth,Snow,Cryosphere remote sensing products,Surface Freeze-thaw Cycle/state Remote Sensing  
Discipline：Cryosphere  
Places：globe  
Time：1980-2018

3、Data details

1.Scale：None

2.Projection：

3.Filesize：422000.0MB

4.Data format：None

4、Space scope

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

5、Time frame:None--None

6、Reference method

References to data:

LI Xin, DAI Liyun, CHE Tao. Long-term series of daily global snow depth (1979-2017). A Big Earth Data Platform for Three Poles, doi:10.11888/Snow.tpdc.2709252019

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  
  
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.  
  
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.

7、Supporting project information

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

8、Data resource provider

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