A Big Earth Data Platform for Three Poles

**Long-term surface soil freeze-thaw states dataset of China using the dual-index algorithm (1978-2015)**

1、Description

This dataset uses daily temperature data from SMMR (1978-1987), SSM/I (1987-2009) and SSMIS (2009-2015). It is generated by the dual-index (TB, 37v, SG) freeze-thaw discrimination algorithm. The classification results include the frozen surface, the thawed surface, the deserts and water bodies. The data coverage is the main part of China’s mainland, with a spatial resolution of 25.067525 km via the EASE-Grid projection method, and it is stored in ASCIIGRID format.  
All the ASCII files in this data set can be opened directly with a text program such as Notepad. Except for the head file, the body content is numerically characterized by the freeze/thaw status of the surface soil: 1 for frozen, 2 for thawed, 3 for desert, and 4 for precipitation. If you want to use the icon for display, we recommend using the ArcView + 3D or Spatial Analyst extension module for reading; in the process of reading, a grid format file will be generated, and the displayed grid file is the graphical expression of the ASCII file. The read method comprises the following.  
 [1] Add the 3D or Spatial Analyst extension module to the ArcView software and then create a new View.  
[2] Activate View, click File menu, and select the Import Data Source option. When the Import Data Source selection box pops up, select ASCII Raster in the Select import file type box. When the dialog box for selecting the source ASCII file automatically pops up, click to find any ASCII file in the data set, and then press OK.  
[3] Type the name of the Grid file in the Output Grid dialog box (it is recommended that a meaningful file name is used for later viewing) and click the path to store the Grid file, press OK again, and then press Yes (to select integer data) and Yes (to put the generated grid file into the current view). The generated files can be edited according to the Grid file standard. This completes the process of displaying an ASCII file into a Grid file.  
[4] In the batch processing, the ASCIGRID command of ARCINFO can be used to write AML files, and then use the Run command to complete the process in the Grid module:  
Usage: ASCIIGRID <in\_ascii\_file> <out\_grid> {INT | FLOAT}.  
The production of this data is supported by the following Natural Science Foundation Projects: Environmental and Ecological Science Data Center of West China (90502010), Land Data Assimilation System of West China (90202014) and Active and Passive Microwave Radiation Transmission Simulation and Radiation Scattering Characteristics of the Frozen Soil (41071226).

2、Keywords

Theme：Cryosphere remote sensing products,Surface Freeze-thaw Cycle/state Remote Sensing,Freeze thawing,Frozen Ground  
Discipline：Cryosphere  
Places：China  
Time：1978-2015

3、Data details

1.Scale：None

2.Projection：3410

3.Filesize：1210.0MB

4.Data format：ASCII Grid

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：53.9 | - |
| west：73.2 | - | east：135.5 |
| - | south：17.8 | - |

5、Time frame:1978-12-19 17:00:00+00:00--2016-02-22 06:00:00+00:00

6、Reference method

References to data:

LI Xin. Long-term surface soil freeze-thaw states dataset of China using the dual-index algorithm (1978-2015). A Big Earth Data Platform for Three Poles, doi:10.11888/Geocry.tpdc.2700292011

References to articles:

谢燕梅, 晋锐, 杨兴国. (2013). AMSR-E亮温监测中国近地表冻融循环算法研究. 遥感技术与应用, 28(2), 182-191.  
  
Jin,R, Zhang,T,Y, Li,X, Yang,X,G, Ran,Y,H.(2015). Mapping surface soil freeze-thaw cycles in china based on smmr and ssm/i brightness temperatures from 1978 to 2008. Arctic, Antarctic, and Alpine Research, 47(2), 213-229.

7、Supporting project information

8、Data resource provider

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