A Big Earth Data Platform for Three Poles

**National annual average surface temperature and freezing index by remote sensing (2008)**

1、Description

The 2008 national remote sensing annual average surface temperature and freezing index is a 5 km instantaneous surface temperature data product based on MODIS Aqua/Terra four times a day by Ran Youhua et al. (2015). A new method for estimating the annual average surface temperature and freezing index has been developed. The method uses the average daily mean surface temperature observed by LST in morning and afternoon to obtain the daily mean surface temperature. The core of the method is how to recover the missing data of LST products. The method has two characteristics: (1) Spatial interpolation is carried out on the daily surface temperature variation observed by remote sensing, and the spatial continuous daily surface temperature variation obtained by interpolation is utilized, so that satellite observation data which is only once a day is applied; (2) A new time series filtering method for missing data is used, that is, the penalty least squares regression method based on discrete cosine transform.  
Verification shows that the accuracy of annual mean surface temperature and freezing index is only related to the accuracy of original MODIS LST, i.e. the accuracy of MODIS LST products is maintained. It can be used for frozen soil mapping and related resources and environment applications.

2、Keywords

Theme：Freezing index,Temperature,Surface air temperature,Frozen Ground  
Discipline：Atmosphere,Cryosphere  
Places：China  
Time：2008

3、Data details

1.Scale：None

2.Projection：lon-lat

3.Filesize：2.83MB

4.Data format：栅格数据

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：55.0 | - |
| west：60.0 | - | east：140.0 |
| - | south：15.0 | - |

5、Time frame:2008-01-25 16:00:00+00:00--2009-01-25 03:59:59+00:00

6、Reference method

References to data:

LI Xin, RAN Youhua. National annual average surface temperature and freezing index by remote sensing (2008). A Big Earth Data Platform for Three Poles, doi:10.11888/Meteoro.tpdc.2705562017

References to articles:

Ran, Y.H., Li, X., Jin, R., & Guo, J.W. (2015). Remote Sensing of the Mean Annual Surface Temperature and Surface Frost Number for Mapping Permafrost in China. Arctic. Antarctic & Alpine Research, 47(2), 255-265. doi: 10.1657/AAAR00C-13-306.

7、Supporting project information

8、Data resource provider

name: LI Xin  
unit:   
email: xinli@itpcas.ac.cn  
  
name: RAN Youhua  
unit:   
email: ranyh@lzb.ac.cn