A Big Earth Data Platform for Three Poles

**Snowmelt onset time of High Mountain Asia (1979-2018)**

1、Description

High Asia is very sensitive to climate change, and is a hot area of global change research. The changes of temperature and precipitation will be reflected in the freezing and thawing time of ice and snow. Satellite microwave remote sensing can provide continuous monitoring ability of ice and snow surface state in time and space. When a small part of ice and snow begins to melt, micro liquid water will also be reflected in active and passive microwave remote sensing signals. In the microwave band, the dielectric constant of ice and liquid water is very different, so it provides a basic theory for the microwave remote sensing monitoring of ice and snow melting. In the case of passive microwave, when ice and snow begin to melt and liquid water appears, its absorption and emissivity increase rapidly, so its emissivity, brightness temperature and backscatter coefficient will also change rapidly. This data set is the initial time of ice and snow melting in the high Asia region retrieved by using the satellite microwave radiometer and scatterometer observations from 1979 to 2018. The passive microwave remote sensing data are SMMR on satellite (1979-1987) and SSM / i-ssmis radiometer on DMSP (1988 present). The active microwave remote sensing data is the QuikSCAT satellite scatterometer (2000-2009).

2、Keywords

Theme：Microwave remote sensing,Snow,Surface Freeze-thaw Cycle/state Remote Sensing,Snow melt,Freeze/Thaw
Discipline：Cryosphere
Places：High Mountain Asia
Time：1979-2018

3、Data details

1.Scale：None

2.Projection：WGS84

3.Filesize：4.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：48.0 | - |
| west：58.0 | - | east：103.0 |
| - | south：26.0 | - |

5、Time frame:1980-06-27 16:00:00+00:00--2019-07-29 03:59:59+00:00

6、Reference method

References to data:

PAN Jinmei, YAO Ruzhen, SHI Jiancheng, LEI Yonghui, Xiong Chuan. Snowmelt onset time of High Mountain Asia (1979-2018). A Big Earth Data Platform for Three Poles, doi:10.11888/Snow.tpdc.2703072020

References to articles:

Xiong, C., Shi, J., Cui, Y., & Peng, B. (2017). Snowmelt Pattern Over High-Mountain Asia Detected From Active and Passive Microwave Remote Sensing. IEEE Geoscience and Remote Sensing Letters, 14, 1096–1100. doi: 10.1109/LGRS.2017.2698448

熊川, 姚汝桢, 施建成, 雷永荟, 潘金梅. (2019). 高亚洲地区冰雪融化时间变化. 科学通报, 64(27), 2885-2893.

7、Supporting project information

Second Tibetan Plateau Scientific Expedition Program

8、Data resource provider

name: Xiong Chuan
unit: Southwest Jiaotong University
email: xiongchuan@radi.ac.cn

name: SHI Jiancheng
unit:
email: shijc@radi.ac.cn

name: YAO Ruzhen
unit:
email: yaorz@radi.ac.cn

name: LEI Yonghui
unit:
email: leiyh@radi.ac.cn

name: PAN Jinmei
unit:
email: panjm@aircas.ac.cn