A Big Earth Data Platform for Three Poles

**Glacier velocity of the Central Karakoram (Version 1.0) (1999-2003)**

1、Description

Under the background of global warming, mountain glaciers worldwide are facing strong ablation and retreat, but from existing field observations, it is found that most of the glaciers in the Karakorum region remain stable or are advancing, which is called the ＂Karakorum anomaly＂. Glacier surface velocity is an important parameter for studying glacier dynamics and mass balance. Studying the temporal and spatial variation characteristics of glacier velocity in central Karakorum is significant for understanding the dynamic characteristics of the glacier in this region and its response to climate change.  
Four pairs of Landsat 7 ETM+ images acquired in 1999 to 2003 (images acquired on 1999.7.16, 2000.6.16, 2001.7.21, 2002.8.9, 2002.4.19, 2003.3.21) were selected; using the panchromatic band with a resolution of 15 m, each pair of images was accurately registered, and then cross-correlation calculations were then performed on each image pair after registration to obtain the surface velocity of the glacier in the central Karakorum region from 1999 to 2003. Due to the lack of velocity observation data in the study area, the accuracy of the ice flow results is estimated using the offset value of the stable region, and the surface velocity error of the glacier is approximately ±7 m/year.  
The glacier velocity data dates are from 1999 to 2003, with a temporal resolution of one year. They cover the central Karakorum region, with a spatial resolution of 30 m. The data are stored as a GeoTIFF file every year.   
For details regarding the data, please refer to the data description.

2、Keywords

Theme：Glaciers,Glacier motion,Remote Sensing Technology,Visible remote sensing,Glacier(Ice Sheet)  
Discipline：Remote Sensing Technology,Cryosphere  
Places：Central Karakoram  
Time：1999-2003

3、Data details

1.Scale：250000

2.Projection：

3.Filesize：420.0MB

4.Data format：Geotiff

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：36.5 | - |
| west：75.5 | - | east：77.5 |
| - | south：35.0 | - |

5、Time frame:1999-01-08 08:00:00+00:00--2004-01-07 08:00:00+00:00

6、Reference method

References to data:

Glacier velocity of the Central Karakoram (Version 1.0) (1999-2003). A Big Earth Data Platform for Three Poles, doi:10.11888/Glacio.tpdc.2700592018

References to articles:

Sun, Y.L., Jiang, L.M., Liu, L., Sun, Y.F., Wang, H.S. (2017). Spatial-Temporal Characteristics of Glacier Velocity in the Central Karakoram Revealed with 1999–2003 Landsat-7 ETM+ Pan Images. Remote Sensing, 9(10), 1064.  
  
孙永玲, 江利明, 柳林, 孙亚飞, & 汪汉胜. (2016). 基于landsat-7 etm＋slc-off影像的山地冰川流速提取与评估——以karakoram锡亚琴冰川为例. 冰川冻土(3), 596-603.  
  
王思胜, 江利明, 孙永玲, 柳林, 孙亚飞, & 汪汉胜. (2016). 基于alos palsar数据的山地冰川流速估算方法比较——以喀喇昆仑地区斯克洋坎力冰川为例. 国土资源遥感, 28(2), 54-61.

7、Supporting project information

近20年喀喇昆仑中部地区冰川变化特征的SAR/InSAR探测与研究  
CASEarth:Big Earth Data for Three Poles（grant No. XDA19070000）

8、Data resource provider