A Big Earth Data Platform for Three Poles

**Crevasse dataset over typical glaciers in Greenland ice sheet（2018-2020）**

1、Description

We propose an algorithm for ice fissure identification and detection using u-net network, which can realize the automatic detection of ice fissures of Typical Glaciers in Greenland ice sheet. Based on the data of sentinel-1 IW from July and August every year, in order to suppress the speckle noise of SAR image, the probabilistic patch based weights (ppb) algorithm is selected for filtering, and then the representative samples are selected and input into the u-net network for model training, and the ice cracks are predicted according to the trained model. Taking two typical glaciers in Greenland (Jakobshavn and Kangerdlussuaq) as examples, the average accuracy of classification results can reach 94.5%, of which the local accuracy of fissure area can reach 78.6%, and the recall rate is 89.4%.

2、Keywords

Theme：Glacier remote sensing,Remote Sensing Product,Others,semantic segmentation,Glaciers,Remote Sensing Technology,Greenland Ice Sheet,radiation sensor,Glacier(Ice Sheet),deep learning,detection,Unet
Discipline：Others,Remote Sensing Technology,Cryosphere
Places：Greenland
Time：2018-2020

3、Data details

1.Scale：None

2.Projection：

3.Filesize：1.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：84.0 | - |
| west：-15.0 | - | east：-60.0 |
| - | south：58.0 | - |

5、Time frame:2018-06-30 16:00:00+00:00--2020-08-30 16:00:00+00:00

6、Reference method

References to data:

LIANG Shuang , YANG Bojin , LI Xinwu , ZHAO Jingjing . Crevasse dataset over typical glaciers in Greenland ice sheet（2018-2020）. A Big Earth Data Platform for Three Poles, doi:10.11888/Cryos.tpdc.2727462022

References to articles:

Zhao, J., Liang, S., & Li, X., et al. (2022). Detection of Surface Crevasses over Antarctic Ice Shelves Using SAR Imagery and Deep Learning Method. Remote Sensing, 14(3), 487.

7、Supporting project information

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

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