A Big Earth Data Platform for Three Poles

**Crevasse dataset over typical ice shelves in Antarctica（2015、2016、2020）**

1、Description

We propose an algorithm for ice crack identification and detection using u-net network, which can realize the automatic detection of Antarctic ice cracks. Based on the data of sentinel-1 EW from January to February 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 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 five typical ice shelves（Amery、Fimbul、Nickerson、Shackleton、Thwaiters) in Antarctica as an example, 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：Others,Shackleton,Antarctic,Crevasses,Semantic segmentation,Ice Shelf,Cryosphere remote sensing products,Surface Freeze-thaw Cycle/state Remote Sensing,fimbul,Remote Sensing Technology,radiation sensor,Amery,Glacier(Ice Sheet),detection
Discipline：Remote Sensing Technology,Cryosphere
Places：Antarctica
Time：2015、2016、2020

3、Data details

1.Scale：None

2.Projection：

3.Filesize：2.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：-89.0 | - |
| west：68.0 | - | east：-68.0 |
| - | south：-69.0 | - |

5、Time frame:2014-12-31 16:00:00+00:00--2020-01-31 03:59:59+00:00

6、Reference method

References to data:

LIANG Shuang , YANG Bojin , LI Xinwu , ZHAO Jingjing . Crevasse dataset over typical ice shelves in Antarctica（2015、2016、2020）. A Big Earth Data Platform for Three Poles, doi:10.11888/Cryos.tpdc.2727452022

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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