A Big Earth Data Platform for Three Poles

**Arctic Sea Ice Melt Pond Fraction from Remote Sensing (2001-2022) v2.0**

1、Description

Under the summer sunlight, the snow covering the ice melts, forming different shapes and sizes of ice pools on the ice. The melting pool caused by the melting of the sea ice surface will reduce the sea ice albedo, which will have a significant impact on the energy balance in the polar region, increasing absorption and thus accelerating the sea ice melting process. Among the factors that affect the sea ice albedo, melting pool is one of the most important and most violent factors. With climate change, the rate of ice melting in summer is also getting faster and faster. The energy balance on the Earth's surface has a significant impact, and the acceleration of ice melting speed may also make the melting pool, an important natural phenomenon, one of the most significant ice surface features during the Arctic sea ice melting season. The albedo of melting pool is between sea water and sea ice. The study of melting pool on ice is also an important part of the study of the rapid change mechanism of Arctic sea ice. Due to the similar microwave signal characteristics between sea ice melting pools and the sea surface, and the significant uncertainty of using microwave data to map melting pool coverage due to factors such as wind speed and sea ice melting, the most reliable remote sensing method for melting pool coverage is to use medium resolution optical remote sensing data (such as MODIS) to map sub pixel melting pool coverage. This dataset includes the use of MODIS data for sub pixel decomposition inversion of Arctic sea ice melting pool coverage and sea ice concentration based on dynamic end element reflectance.

2、Keywords

Theme：Sea Ice,Sea ice melting pool
Discipline：Cryosphere
Places：Arctic
Time：2001-2022

3、Data details

1.Scale：None

2.Projection：North\_Pole\_Stereographic

3.Filesize：1190.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：90.0 | - |
| west：-180.0 | - | east：179.0 |
| - | south：60.0 | - |

5、Time frame:2001-02-28 16:00:00+00:00--2022-09-30 16:00:00+00:00

6、Reference method

References to data:

REN Yan, QIU Yubao, Xiong Chuan. Arctic Sea Ice Melt Pond Fraction from Remote Sensing (2001-2022) v2.0. A Big Earth Data Platform for Three Poles, doi:10.11888/Glacio.tpdc.2702612019

References to articles:

C. Xiong\*; Yan Ren. Arctic Sea Ice Melt Pond Fraction in 2000-2021 derived by Dynamic Pixel Spectral Unmixing of MODIS Images. ISPRS Journal of Photogrammetry and Remote Sensing, Volume 197, March 2023, Pages 181-198. DOI: https://doi.org/10.1016/j.isprsjprs.2023.01.023

7、Supporting project information

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

8、Data resource provider

name: QIU Yubao
unit: Institute of Remote Sensing and Digital Earth, Chinses Academy of Sciences
email: qiuyb@aircas.ac.cn

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

name: REN Yan
unit:
email: 2996643416@qq.com