NAVIGATION THROUGH SEA-ICE OFF GREENLAND

What it is about

Everything in Greenland is dependent on ice. Ice prevents transport over land while sea-ice and icebergs necessitate enhanced caution and pose a constant threat when shipping between the villages and with Europe. Given that most transport happens at sea, navigators need the latest information about the location of the ice in order to navigate safely.

The Ice Service of the Danish Meteorological Institute makes use of Copernicus Sentinel-1 data to provide frequent ice charts to Royal Arctic Line - a lifeline connecting Greenland with Europe - and to many other maritime stakeholders. The service is essential to keep the Greenlandic economy running.

What we found

- Using Sentinel-1 and other satellite data, DMI's Ice Service provides all stakeholders and the Greenland public with up-to-date ice charts and ice maps
- These ice maps and ice charts have enabled safe navigation through sea-ice and icebergs in Greenland through enhanced situational awareness and have added economic and social benefits to the Greenland economy
- Beneficiaries of the Ice Service are not only sea navigators off Greenland, but also local industry, businesses and fishermen who profit from more reliable imports and exports of goods.

Funded by the EU and ESA

Layout by ESA EO Graphics Bureau

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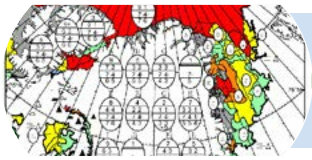
The satellite data
Copernicus Sentinel-1 provides free-of-charge frequent all-weather, day-and-night C-band radar images over the Greenlandic coast.



The Service Provider
Danish Meteorological Institute (DMI) produces frequent maps of the ice conditions that help ships navigate through the ice off Greenland.

The Primary User
Royal Arctic Line use the maps to avoid the ice off Greenland, they have an exclusive concession for the sea transportation of all cargo to and from Greenland. As a result, the shipping company is Greenland's bridge to the rest of the world.

€800k pa

Other Direct Users
Other sectors depending on shipping such as local fisheries and oil transport save time and fuel and operate more safely.

€2.75-3.65m pa

End Use Beneficiaries
Business and the local economy operate more efficiently and safely, stimulating economic growth.

€560k-1.02m pa

Tertiary Beneficiaries
Citizens can be sure that the supermarkets and other important shops will be stocked, jobs are assured through reliable navigations so increasing living standards.

€200k-1m pa

Other Benefits
Greenland has a large geo-political strategic value which is enhanced by safe effective sea transportation.

€4.31-6.45m pa

Total benefits: €8.6 - €12.5m pa

About the project

Through a series of case studies, EARSC aims to gather quantitative evidence that the usage of Copernicus Sentinel data provides an effective and convenient support to various market applications. These studies are undertaken in the frame of the project "Showcasing the benefits brought by the usage of Sentinels data to society, environment and economy: a bottom-up assessment based on traceable impacts along selected value chains", under an assignment from the European Space Agency (ESA) funded by the European Union as part of the Copernicus Programme.

Download the full report from the project website

http://earsc.org/sebs