



# SeBS case study: Navigation through sea ice off greenland

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Matilde Brandt Kreiner

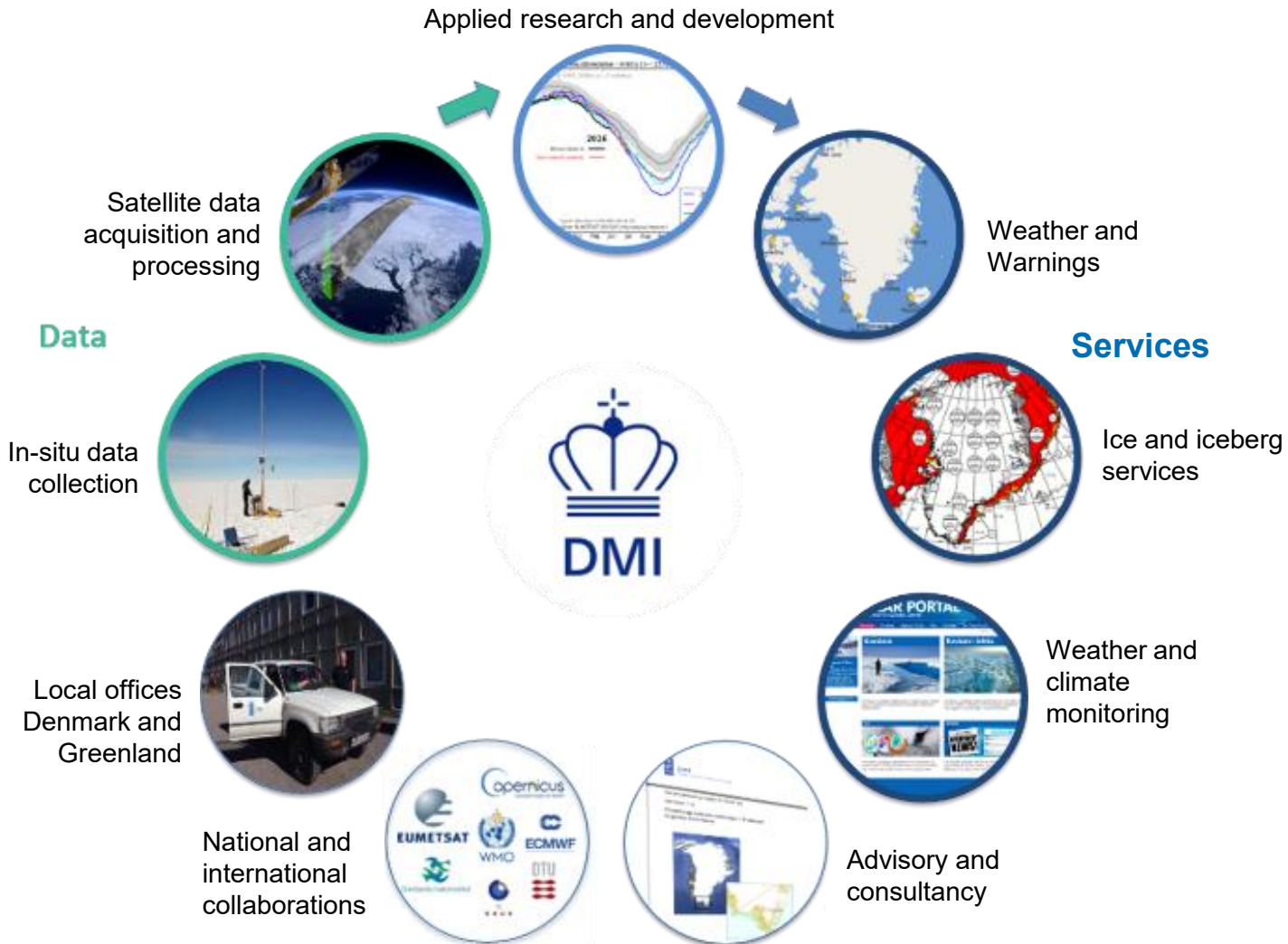
National Centre for Climate Research (NCKF) – Unit for Satellites & the Arctic

5/22/2026



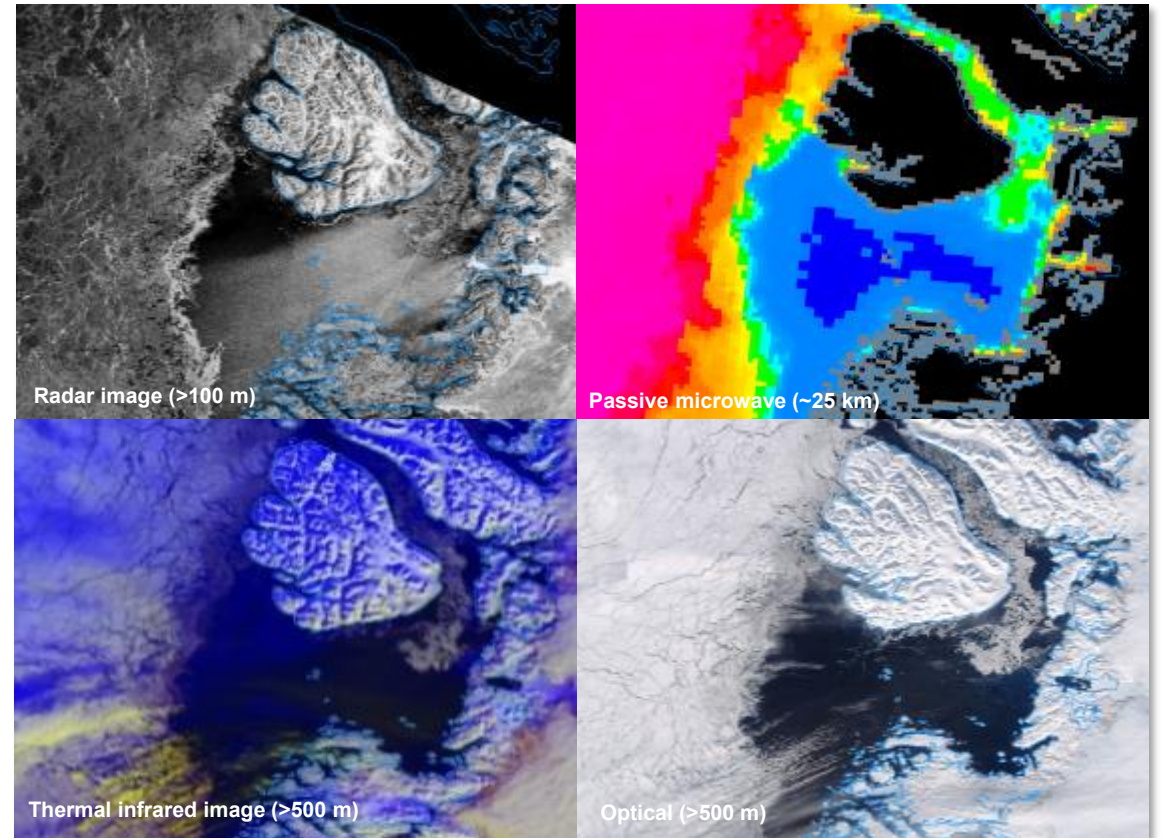
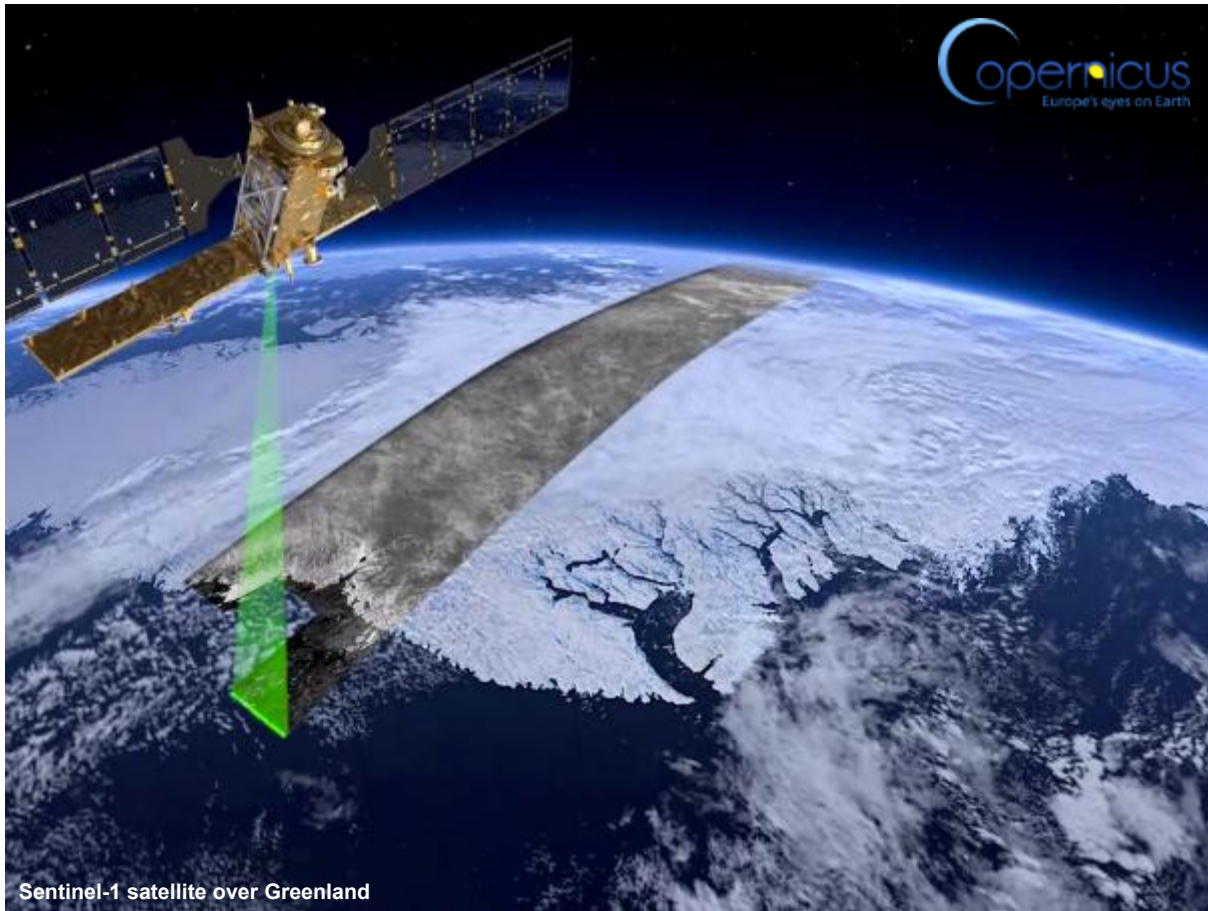
Danish Meteorological Institute

# DMI - from data to services



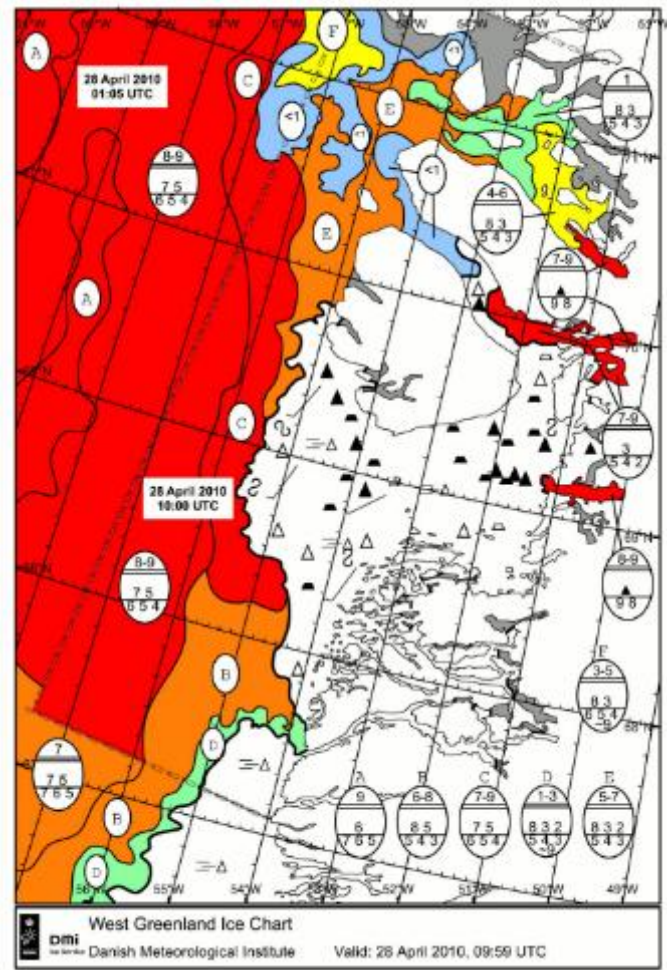
# Satellite data for ice services

Disko



# Satellite data for ice services

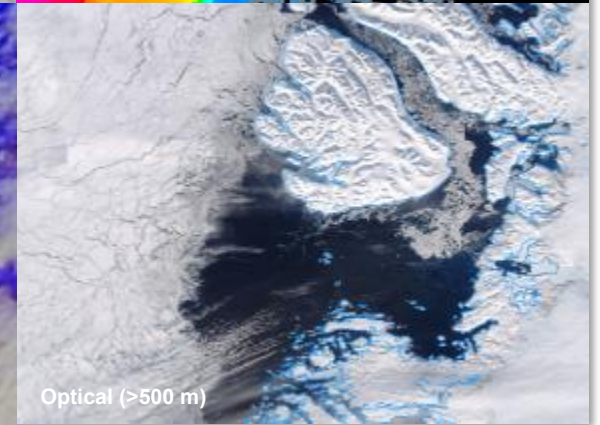
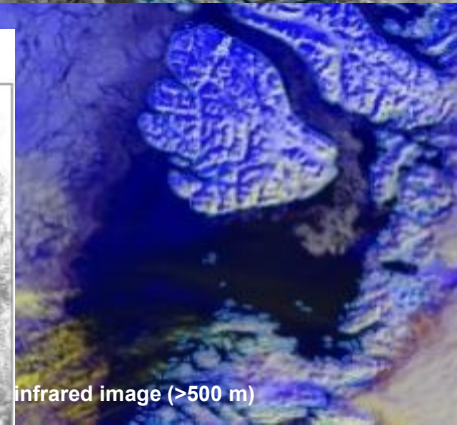
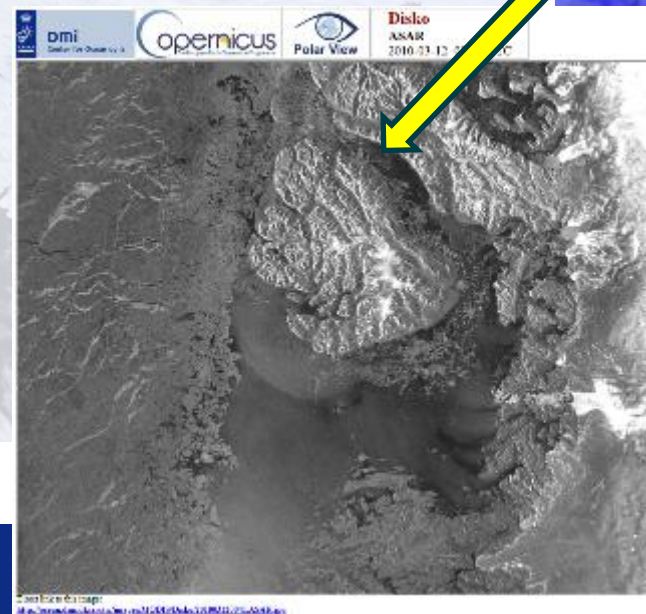
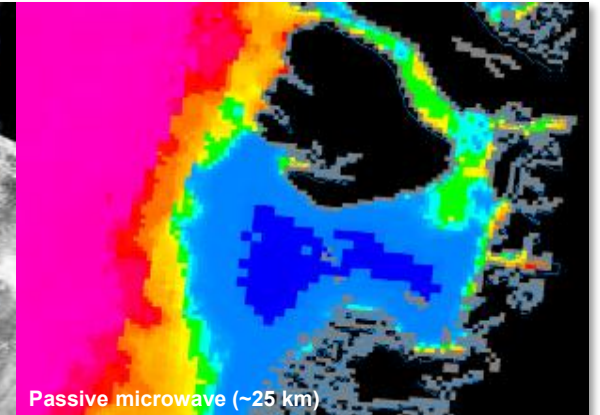
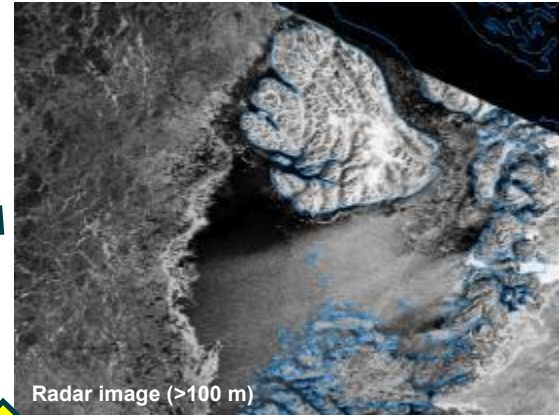
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Ice charts



Auto - Quicklooks



# Ice information users

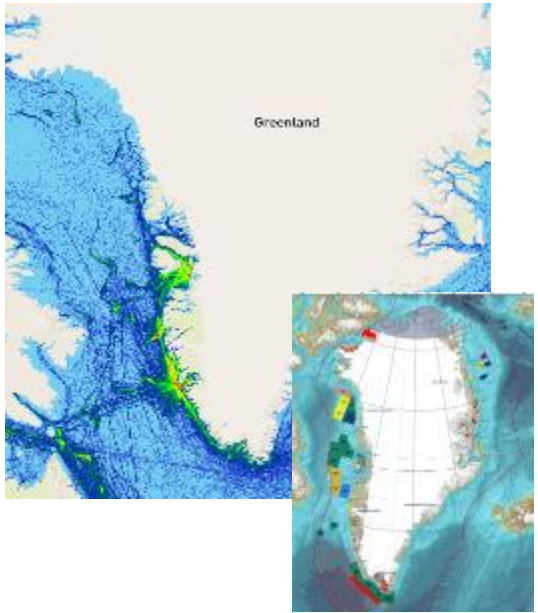
NAALAKKERSUISUT  
GOVERNMENT OF GREENLAND



Albatros  
travel



NUNAOILS A/S



Joint Arctic  
Command



Association of  
Arctic Expedition Cruise  
Operators



BLUE ICE EXPLORER  
YOUR GATEWAY TO SOUTH GREENLAND



ROYAL ARCTIC LINE A/S



# EARSC SeBS 2019 report [\[link\]](#)



## 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 Met makes use of Copernicus Sentinel frequent ice charts to Royal Arctic connecting Greenland with Europe maritime stakeholders. The service the Greenlandic economy running.



European Association of Remote Sensing Companies

Sentinels Benefits Study (SeBS)

### A Case Study

### Navigation through sea-ice in Greenland



**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.

€6.31-6.45m pa



# EARSC SeBS 2019 report [\[link\]](#)

- Greenland dependence on shipping is high!  
- and satellite-based ice services a necessity for navigation planning and safety.
- Quantifies the economic – and strategic – value.
- Awareness amongst users.
- Value chain analysis useful for DMI.



A Case Study  
Navigation through sea-ice in Greenland

Logos: European Association of Remote Sensing Companies, THE GREEN LAND, IITIA, Copernicus, esa

An aerial photograph of a dry, cracked riverbed in a desert landscape. The riverbed is a complex network of dark, branching lines against a lighter, textured ground. The overall scene is arid and desolate.

# Thank you

