

# ESA support to polar operational activities and Polar TEP

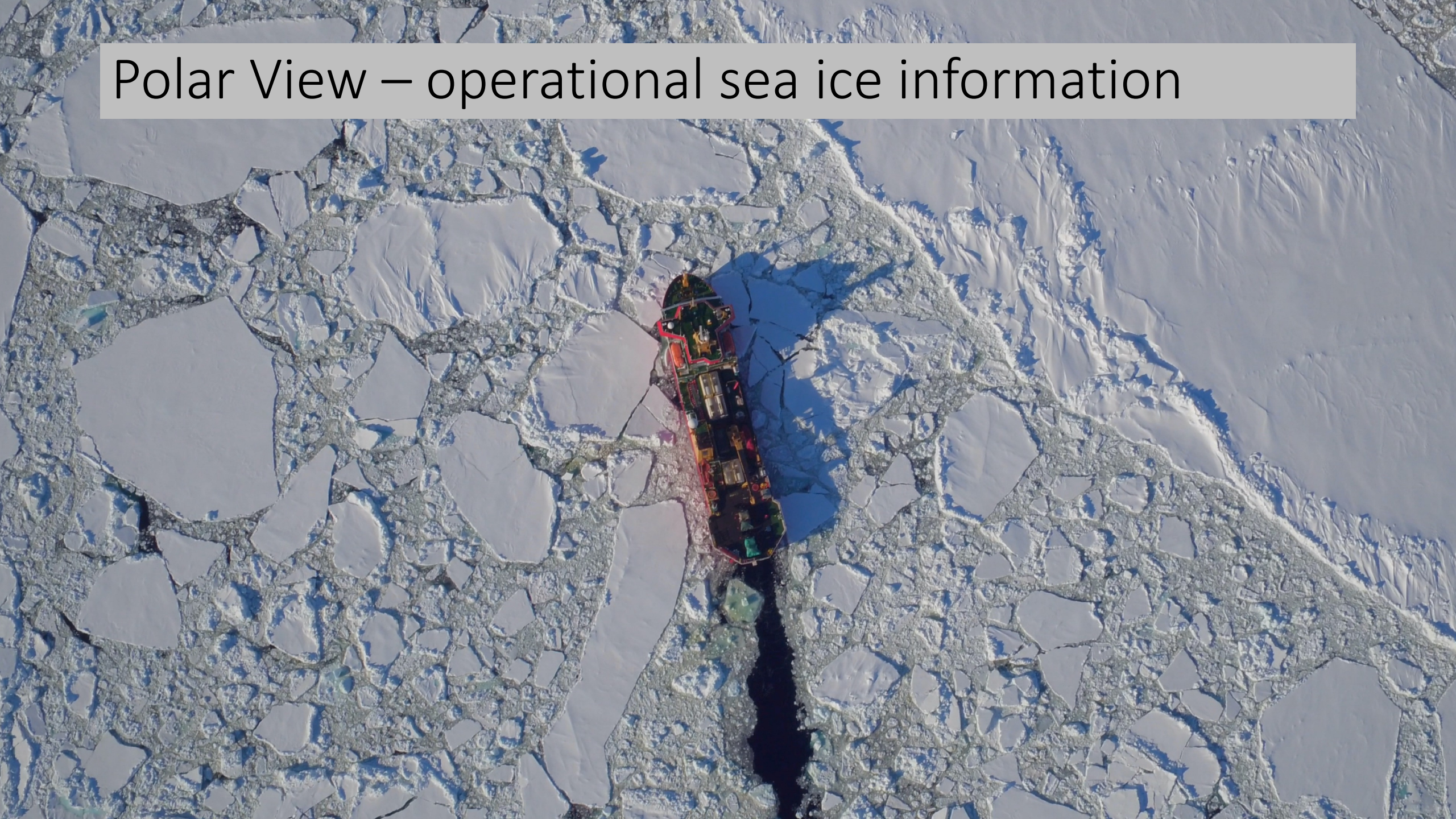
Andreas Cziferszky

17<sup>th</sup> September 2021





# Polar View – operational sea ice information





Available datasets

SAR imagery

- ☒ Sentinel 1
- ☒ Radarsat 2
- ☒ Cosmo SkyMed

Showing data for the last 72 hours (default)

Sea ice concentration

- ☒ AMSR2 Sea ice edge (15%)
- ☒ AMSR2 Sea ice map

Ice charts

- ☐ Ice chart (mat.no)
- ☐ Ice chart (NIC, ML2)
- ☐ Ice chart (NIC, Cae)
- ☐ Ice chart (NIC, Sud)

IMO Polar Code Polaris

☒ Summer ice ☐ Winter ice

☒ PCI

MODIS Mosaics

- ☐ MODIS Mosaic (yesterday)

Sentinel 3 Mosaics

- ☐ Sentinel 3 Mosaic

CHEMS Sea Ice Edges

- ☐ CHEMS edge boundaries

Showing data for the last 30 days (default)

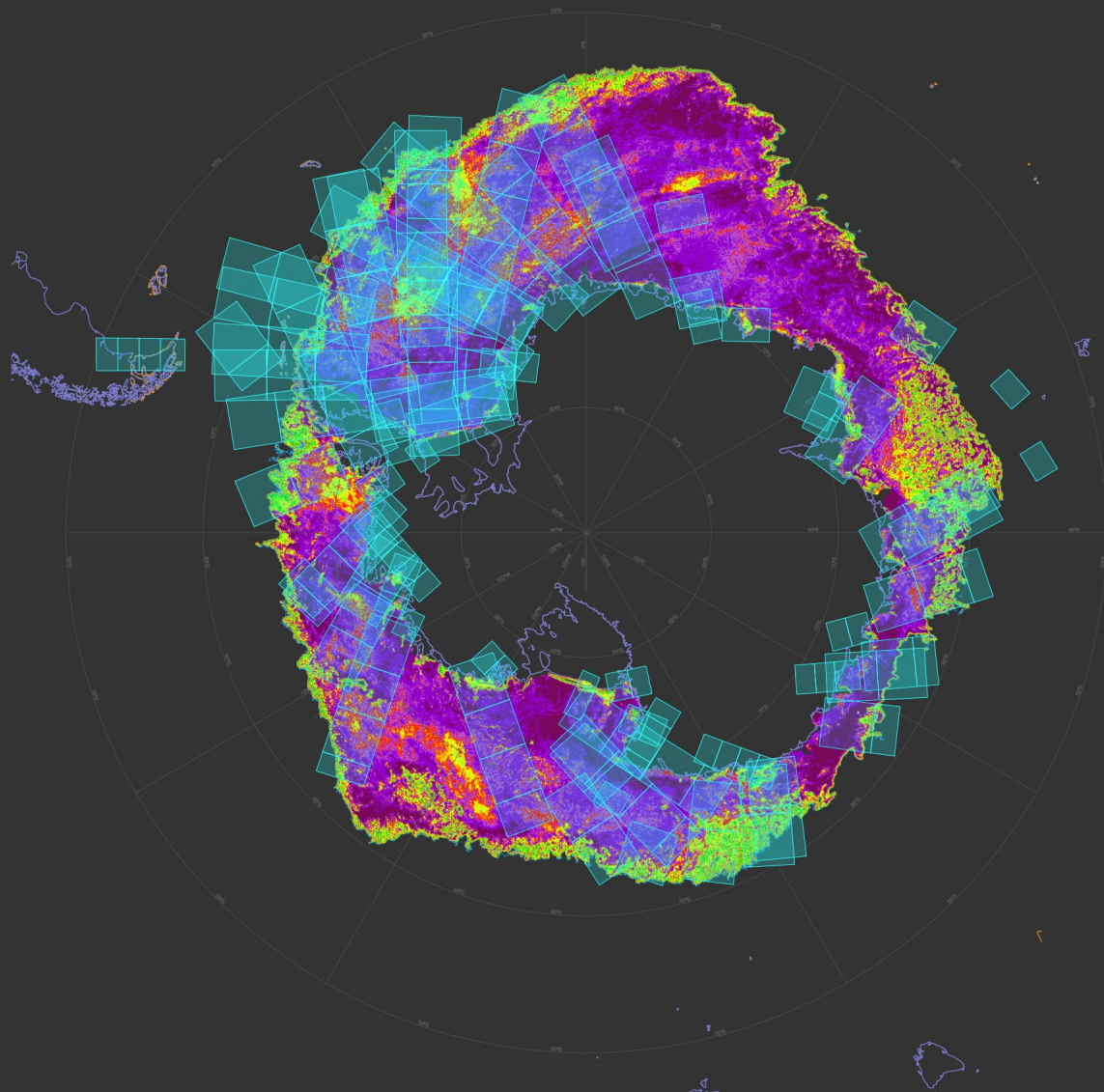
Icebergs

- ☐ NIC Iceberg data
- ☐ Argentine Iceberg chart

S1 Future Acquisitions

- ☐ S1 Foresight

Showing data for the next 48 hours (default)



100 km  
200 m

Long: 46.12, Lat: 18.05

Timeline and image preview section.

Timeline: 06-09-21, 07-09-21, 08-09-21, 09-09-21, 10-09-21, 11-09-21, 12-09-21, 13-09-21

Image preview thumbnails:

- SAR imagery
- Sea ice concentration
- Ice charts
- IMO Polar Code Polaris
- MODIS Mosaics
- Sentinel 3 Mosaics
- CHEMS Sea Ice Edges
- Icebergs
- S1 Future Acquisitions

## Available datasets

### SAR imagery

- ☐ Sentinel-1 [Select image](#)
- ☐ Radarsat 2 [Select image](#)
- ☐ Cosmo SkyMed [Select image](#)

Showing data for the last 72 hours (default)

### Sea ice concentration

- ☐ AMSR2 Sea ice edge (15%) [2020-09-20](#)
- ☐ AMSR2 Sea ice map [2020-09-20](#)

### Ice charts

- ☒ Ice chart (met.no) [2020-04-27](#)
- ☐ Ice chart (NIC, MIZ) [2020-09-19](#)
- ☐ Ice chart (NIC, Con) [2020-09-17](#)
- ☐ Ice chart (NIC, SoD) [2020-09-17](#)

### IMO Polar Code Polaris

- ☒ Summer ice ☐ Winter ice
- ☐ PC1 [2020-09-17](#)

### MODIS Mosaics

- ☐ MODIS Mosaic (yesterday) [2020-09-18](#)

### Sentinel 3 Mosaics

- ☐ Sentinel 3 Mosaic [2020-09-18](#)

### CMEMS Sea Ice Edges

- ☐ CMEMS edge boundaries [Select image](#)

Showing data for the last 30 days (default)

### Icebergs

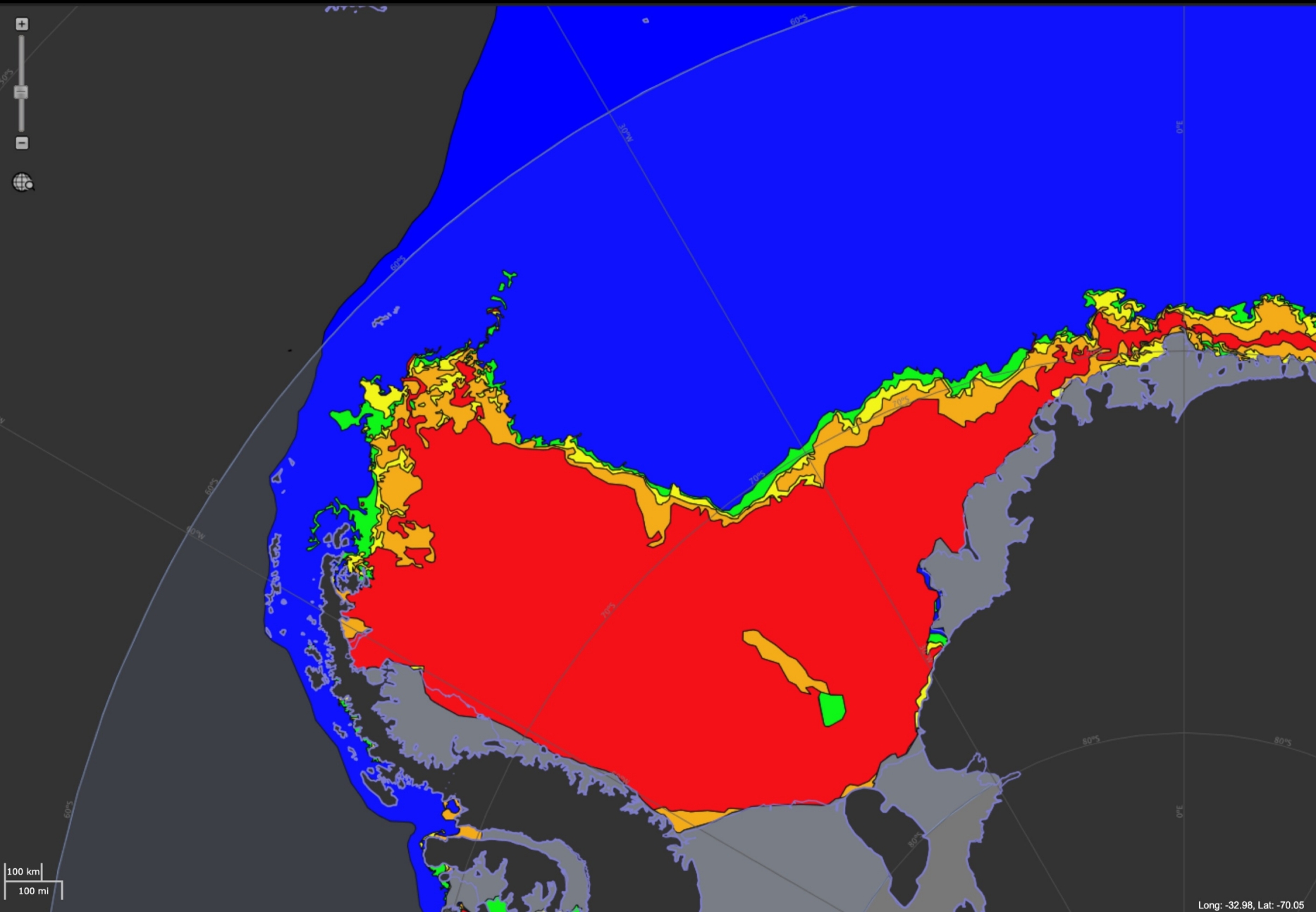
- ☐ NIC iceberg data [unknown](#)
- ☐ Argentine Iceberg chart [2020-09-20](#)

### S1 Future Acquisitions

- ☐ S1 Foresight [unknown](#)

Showing data for the next 48 hours (default)

## Image preview





## Available datasets

### SAR imagery

- ☐ Sentinel-1 [Select image](#)
- ☐ Radarsat 2 [Select image](#)
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Showing data for the last 72 hours (default)

### Sea ice concentration

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- ☒ Summer ice ☐ Winter ice
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### Sentinel 3 Mosaics

- ☐ Sentinel 3 Mosaic

### CEEMS Sea Ice Edges

- ☐ CEEMS edge boundaries [Select image](#)

Showing data for the last 30 days (default)

### Icebergs

- ☒ NIC iceberg data [unknown](#)
- ☒ Argentine Iceberg chart [2020-09-20](#)

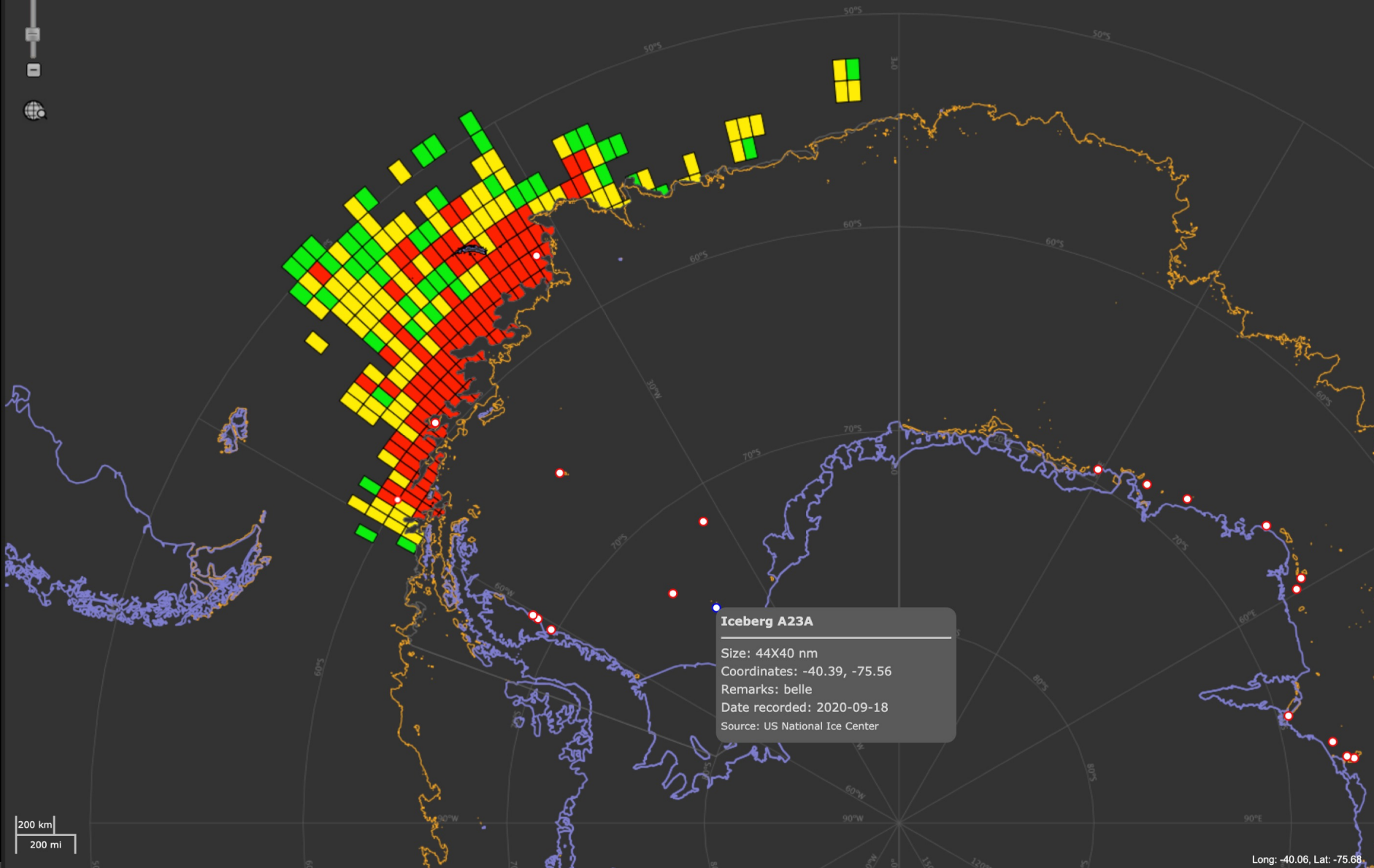
### S1 Future Acquisitions

- ☐ S1 Foresight [unknown](#)

Showing data for the next 48 hours (default)

## Image preview

200 km  
200 mi



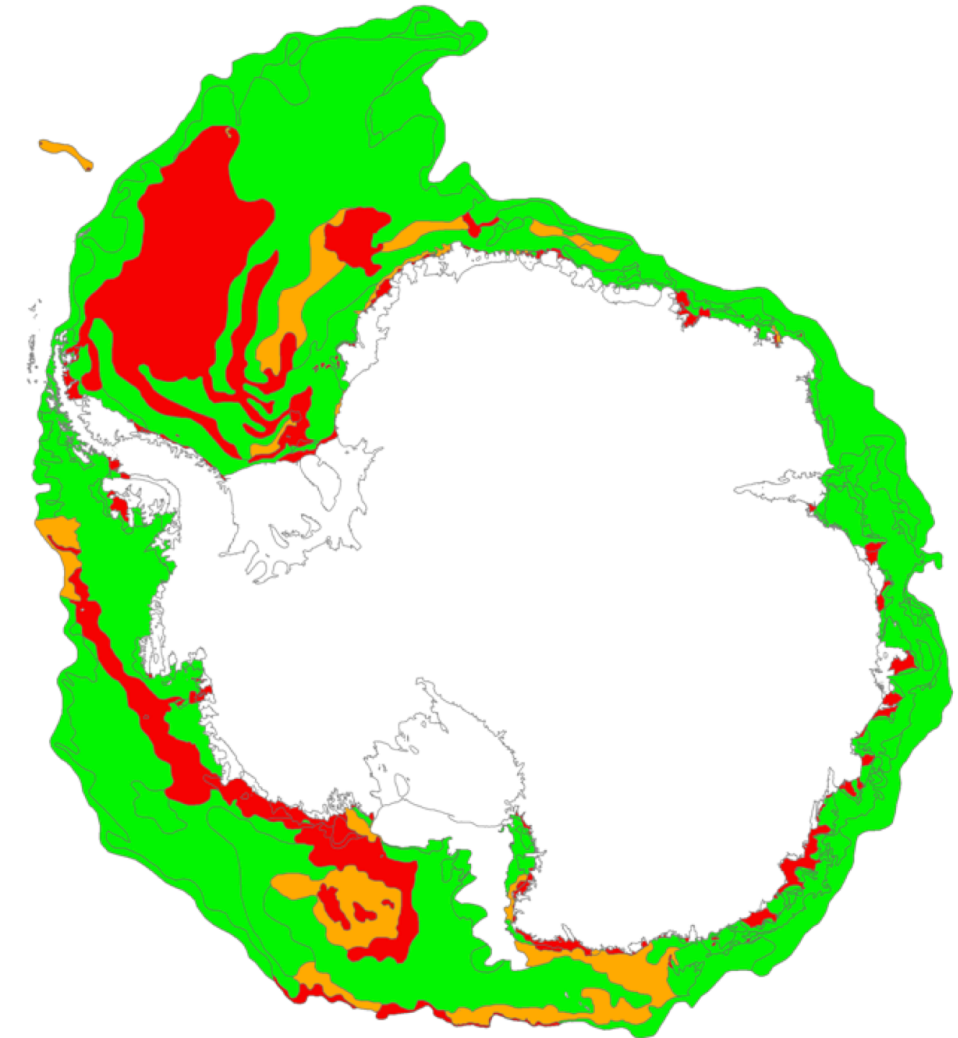
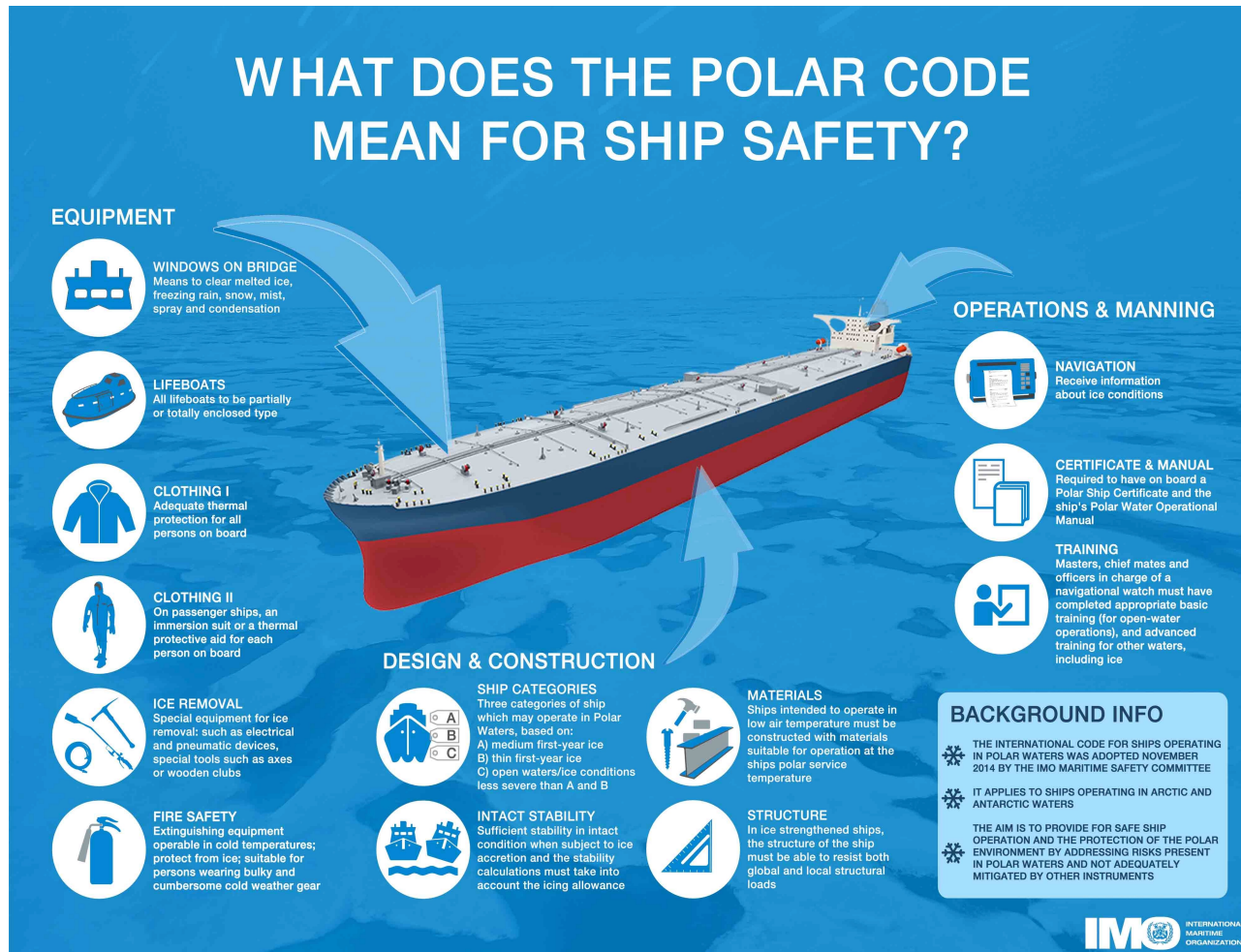
### Iceberg A23A

Size: 44X40 nm  
Coordinates: -40.39, -75.56  
Remarks: belle  
Date recorded: 2020-09-18  
Source: US National Ice Center

Long: -40.06, Lat: -75.68

[Click to expand the carousel](#)

# Polar View – IMO POLARIS risk assessment



Green	Operation permitted
Amber	Limited speed operation permitted
Red	Operation not permitted



# Polar View – IICWG & Ice Logistics Portal

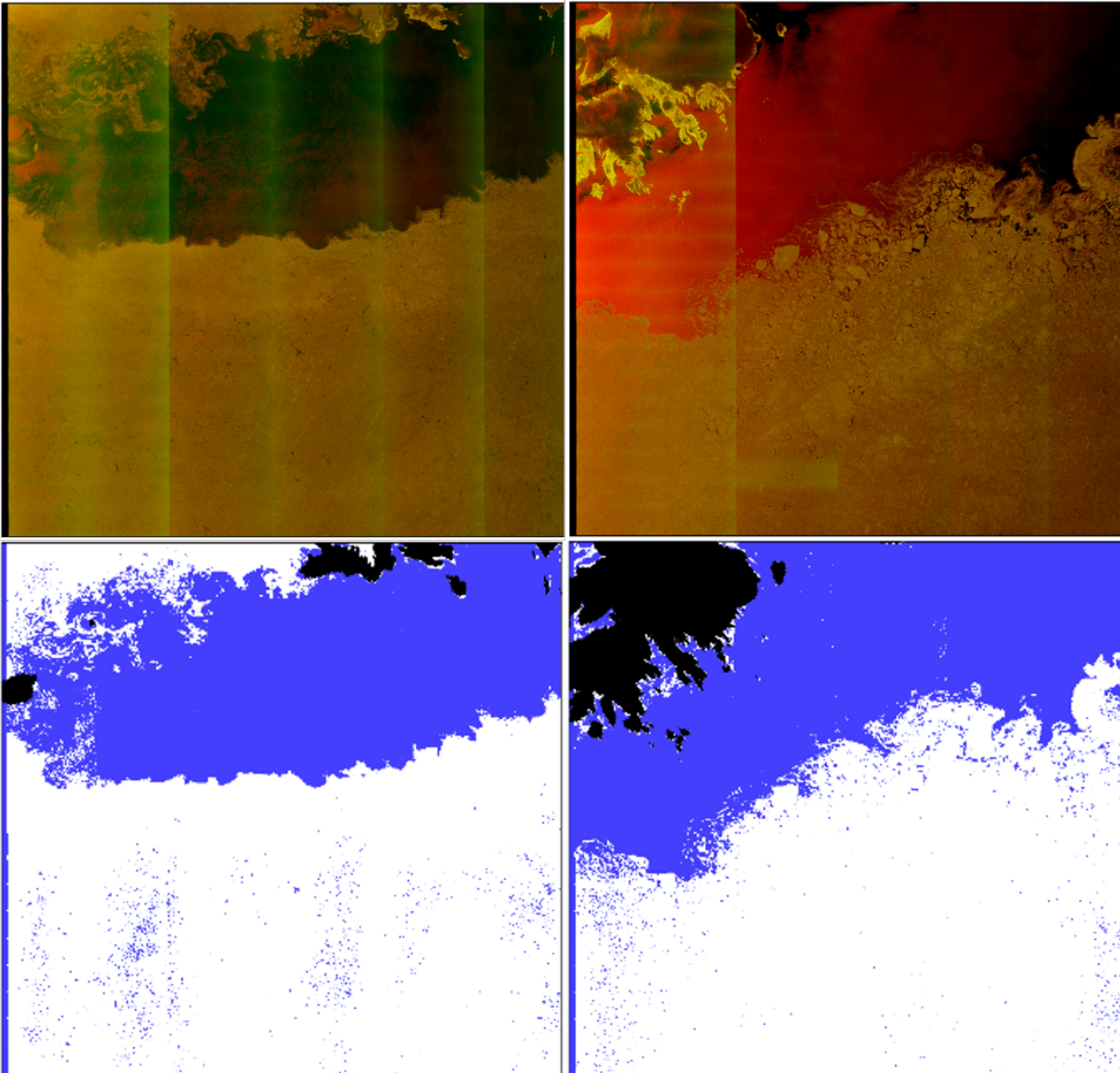


NORTHERN HEMISPHERE (90W)



- Ice Logistics Portal established for International Polar Year 2007-2008
- Brings together ice charts from all national ice centers
- Charts in different formats and often not useable for POLARIS calculations
- New initiative to establish consistent delivery of ice charts on Polar TEP platform
- Provide all ice charts alongside NRT satellite and other sea ice information through Polar View portal
- International Ice Charting Working Group (IICWG) endorse this merging of Ice Logistics Portal into Polar View

# H2020 Extreme Earth– automation of sea ice classification



- H2020 Extreme Earth project w Met Norway
- Classification results from north of Svalbard. Ice is annotated in white, water is annotated in blue and the land mask is shown in black.



# Polar TEP

<https://polartep.io>

The screenshot displays the Polar TEP web application interface. The top navigation bar includes the Polar TEP logo, a user greeting "Hi Andrew", and three main sections: "DATA SEARCH & PROCESSING", "DEVELOPMENT & TESTING", and "COLLABORATION & DOCUMENTATION".

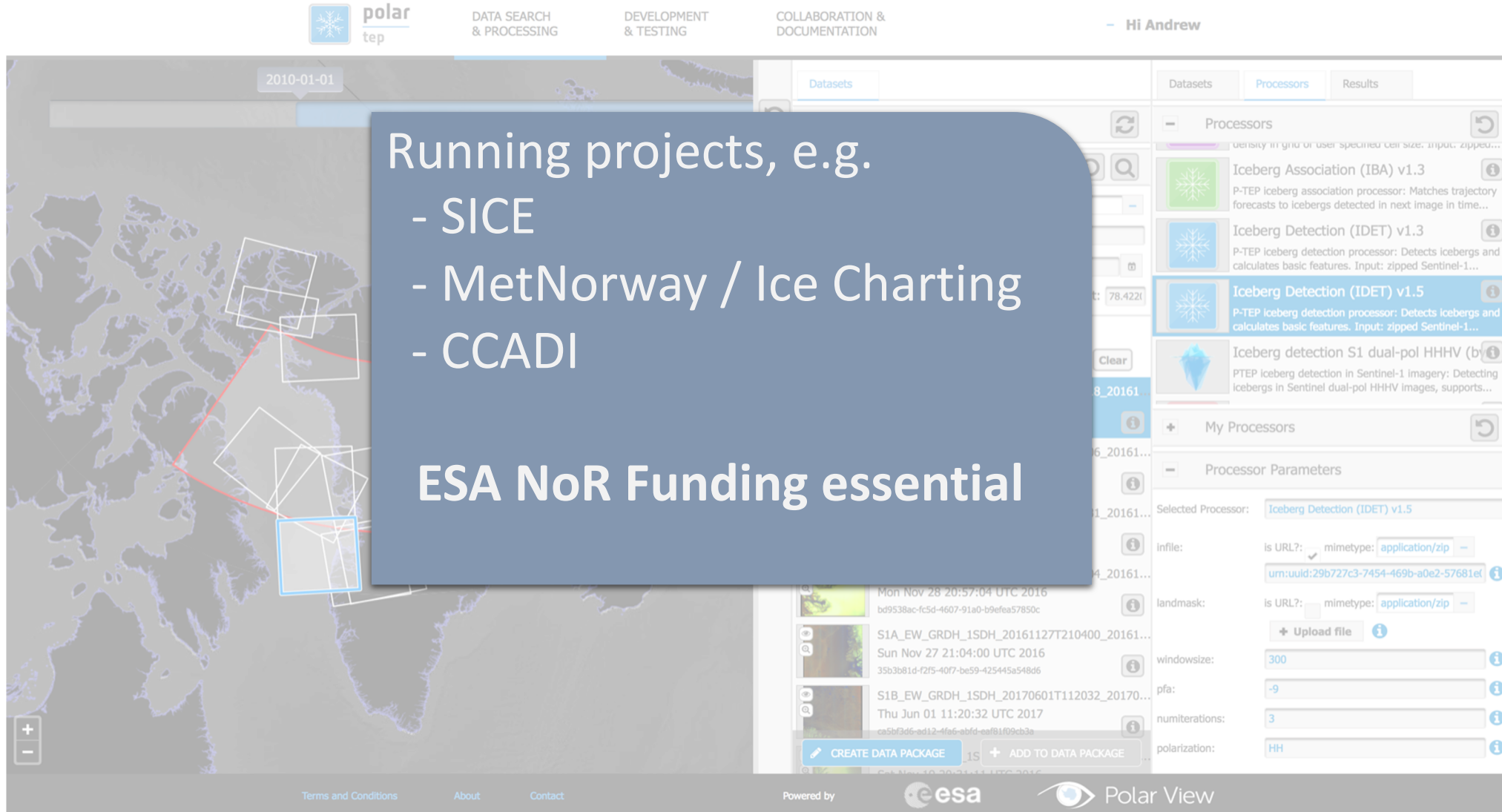
The main content area is divided into three panels:

- Map Panel (Left):** Shows a map of the Arctic region with a date range of "2010-01-01" to "2018-4-11". A red line indicates a search area, and several white and blue rectangular boxes highlight specific data points or regions.
- Search Results Panel (Middle):** Displays a list of 6234 total results found. The first result is highlighted in blue and shows a satellite image of an iceberg. The results list includes columns for Data Collection, Title search, Date range, and MnLon/MnLat/MxLon/MxLat/MnLat/MxLat.
- Processing Panel (Right):** Shows a list of processors available for use. The selected processor is "Iceberg Detection (IDET) v1.5". The panel includes a "My Processors" section and a "Processor Parameters" section with fields for "infile", "landmask", "window size", "pfa", "numiterations", and "polarization".

The bottom of the interface features a footer with links for "Terms and Conditions", "About", and "Contact", and logos for "esa" and "Polar View".

# Polar TEP

<https://polartep.io>



The screenshot displays the Polar TEP web interface. At the top, there's a navigation bar with the 'polar tep' logo and links for 'DATA SEARCH & PROCESSING', 'DEVELOPMENT & TESTING', and 'COLLABORATION & DOCUMENTATION'. A user greeting 'Hi Andrew' is visible. The main area features a map of the Arctic region with several white rectangular boxes indicating areas of interest. A blue box highlights a specific area. A semi-transparent blue overlay box is positioned in the center, containing text about running projects and funding. To the right, a sidebar shows a list of processors, including 'Iceberg Association (IBA) v1.3', 'Iceberg Detection (IDET) v1.3', 'Iceberg Detection (IDET) v1.5', and 'Iceberg detection S1 dual-pol HHHV (b)'. Below this, the 'Processor Parameters' section for 'Iceberg Detection (IDET) v1.5' is visible, showing fields for 'infile', 'landmask', 'window size', 'pfa', 'numiterations', and 'polarization'. The bottom of the interface includes a footer with 'Terms and Conditions', 'About', 'Contact', 'Powered by' logos for 'esa' and 'Polar View', and buttons for 'CREATE DATA PACKAGE' and 'ADD TO DATA PACKAGE'.

Running projects, e.g.

- SICE
- MetNorway / Ice Charting
- CCADI

**ESA NoR Funding essential**



# Polar TEP - Hopsworks ML platform



The image displays the Hopsworks ML platform interface, which is divided into several sections:

- Launcher:** A central area with a file explorer on the left showing a "README.md" file. The main area contains a "Notebook" section with four icons for Python, PySpark, Spark, and SparkR, and a "Console" section with four icons for Python, PySpark, Spark, and SparkR.
- Left Sidebar:** A vertical navigation menu with the following items:
  - Help
  - Tours (with a sub-menu for Deep Learning, Spark, Kafka, and Feature Store)
  - Cluster Datasets
  - Hopsworks Forum
  - ML for Sea Ice Forum
  - polar tep
  - food security tep
  - Polar View
  - Vista
  - LOGICAL CLOCKS
- Right Panel:** A detailed view of the "demo\_kafka\_ancz0000" project, showing a list of recent activities:
  - Andreas Cziferszky added new service Jobs (Project name: demo\_kafka\_ancz0000)
  - Andreas Cziferszky added new service Kafka (Project name: demo\_kafka\_ancz0000)
  - Andreas Cziferszky added a new dataset named TestJob (Project name: demo\_kafka\_ancz0000)
  - Andreas Cziferszky added a new dataset named Experiments (Project name: demo\_kafka\_ancz0000)
  - Andreas Cziferszky added a new dataset named Resources (Project name: demo\_kafka\_ancz0000)
  - Andreas Cziferszky created a new project named demo\_kafka\_ancz0000 (Project name: demo\_kafka\_ancz0000)
  - Andreas Cziferszky added a new dataset named Logs (Project name: demo\_kafka\_ancz0000)

# Polar TEP and CVL

## CVL



- Data search and discovery
- Satellite, in-situ, model, and SIOS data
- Data transformation
- Visualisation

Information  
Object

Data  
publishing

## Polar TEP

- Rapid Application Development & Prototyping
- Scalable Jupyter environment
- Copernicus data archive access via Creodias
- Conversion of Jupyter NBs to headless processors
- Scalable Execution Environment
- Dedicated developer VMs