



Real-time ice information to ships

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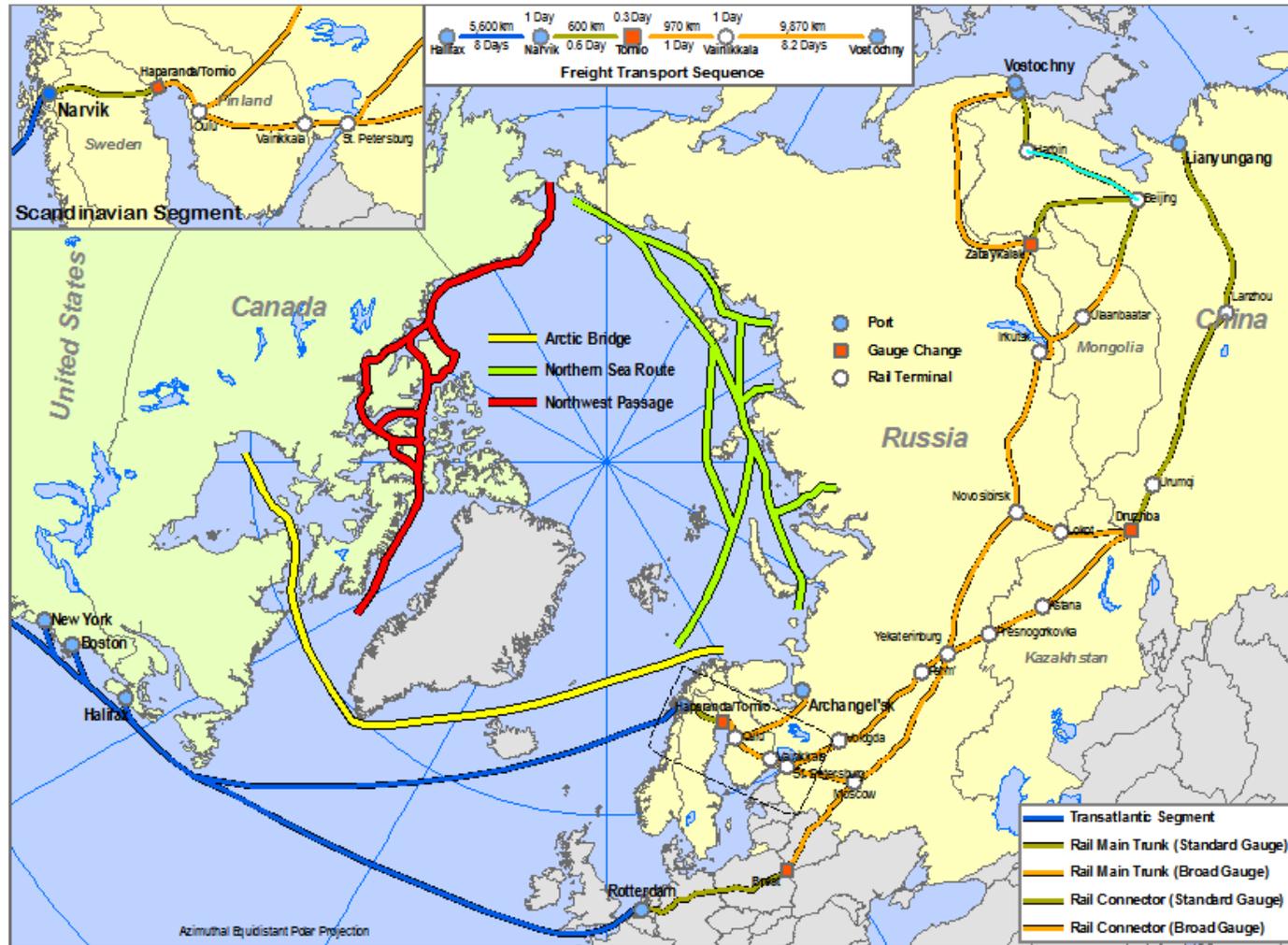
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WORLD CLASS – through people, technology and dedication

The Arctic and the global transport network



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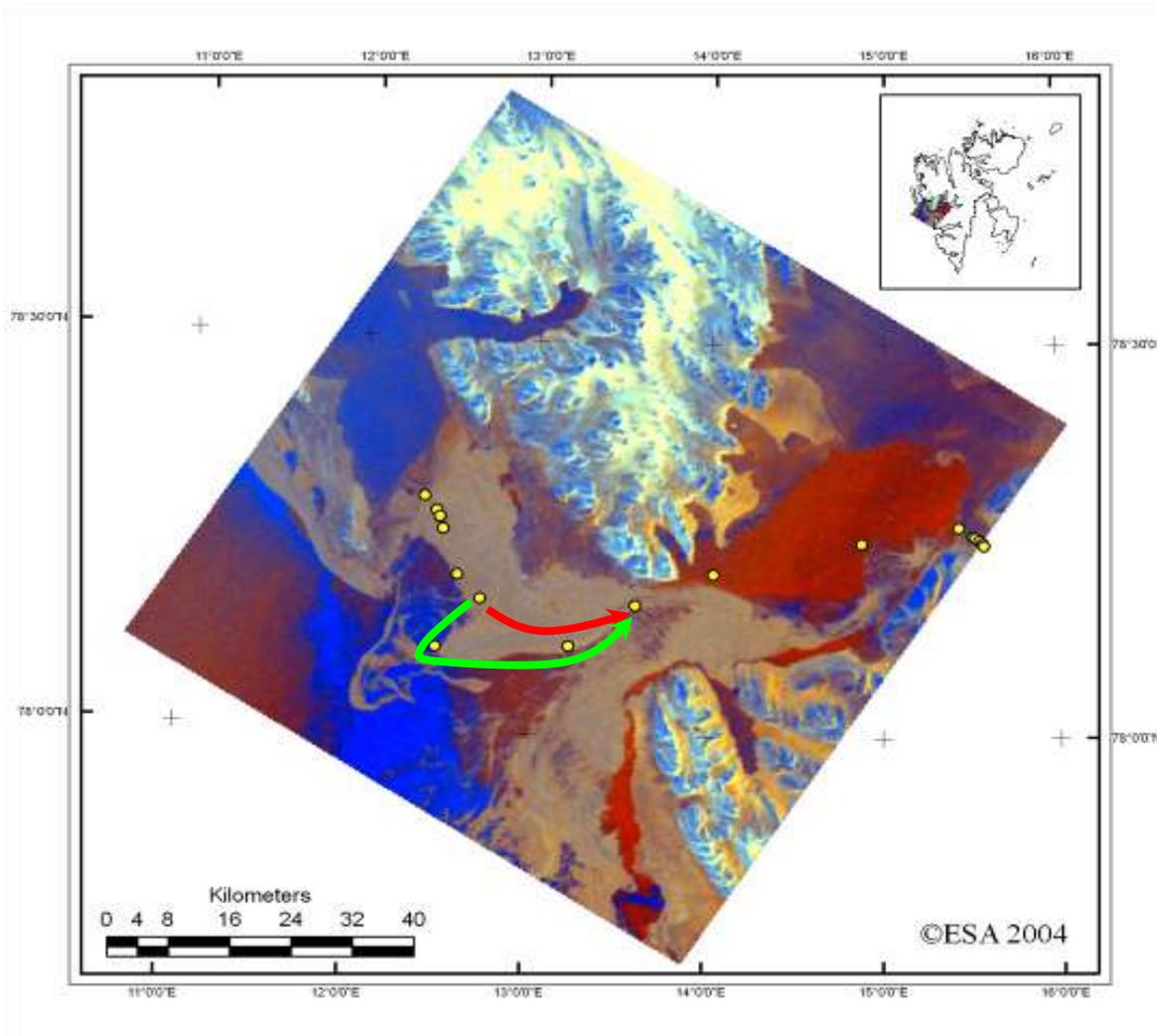


Source: International Union of Railways (2004) The Northern East-West (N.E.W.) Freight Corridor, Transportulviking AS.

Dr. Jean-Paul Rodrigue, Dept. of Economics & Geography Hofstra University



Introduction: Real-time information



Planned direct route
through the ice
6 hours

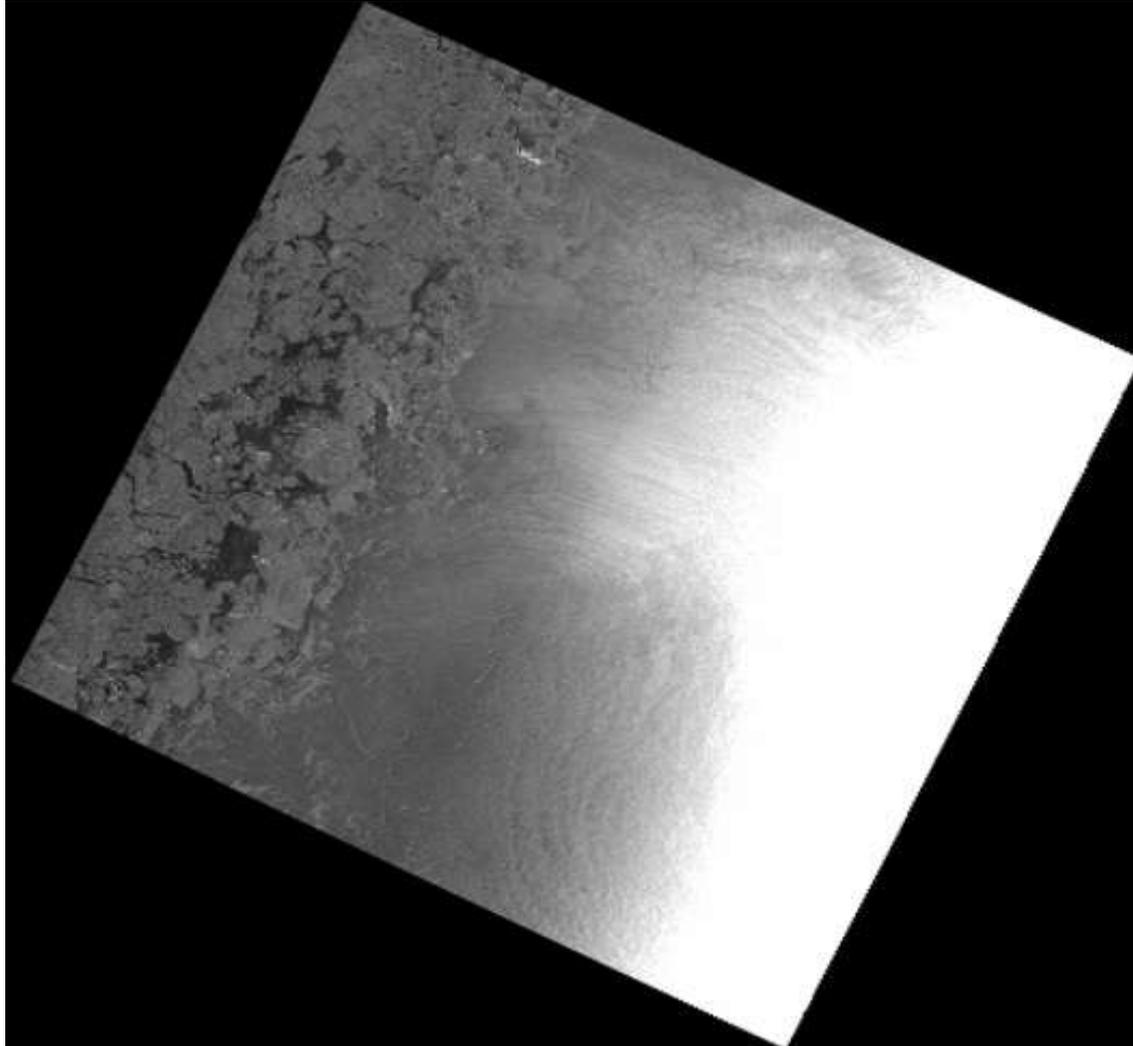
Actual route
around the ice
3 hours

The view from above
-halved the journey time

The benefits

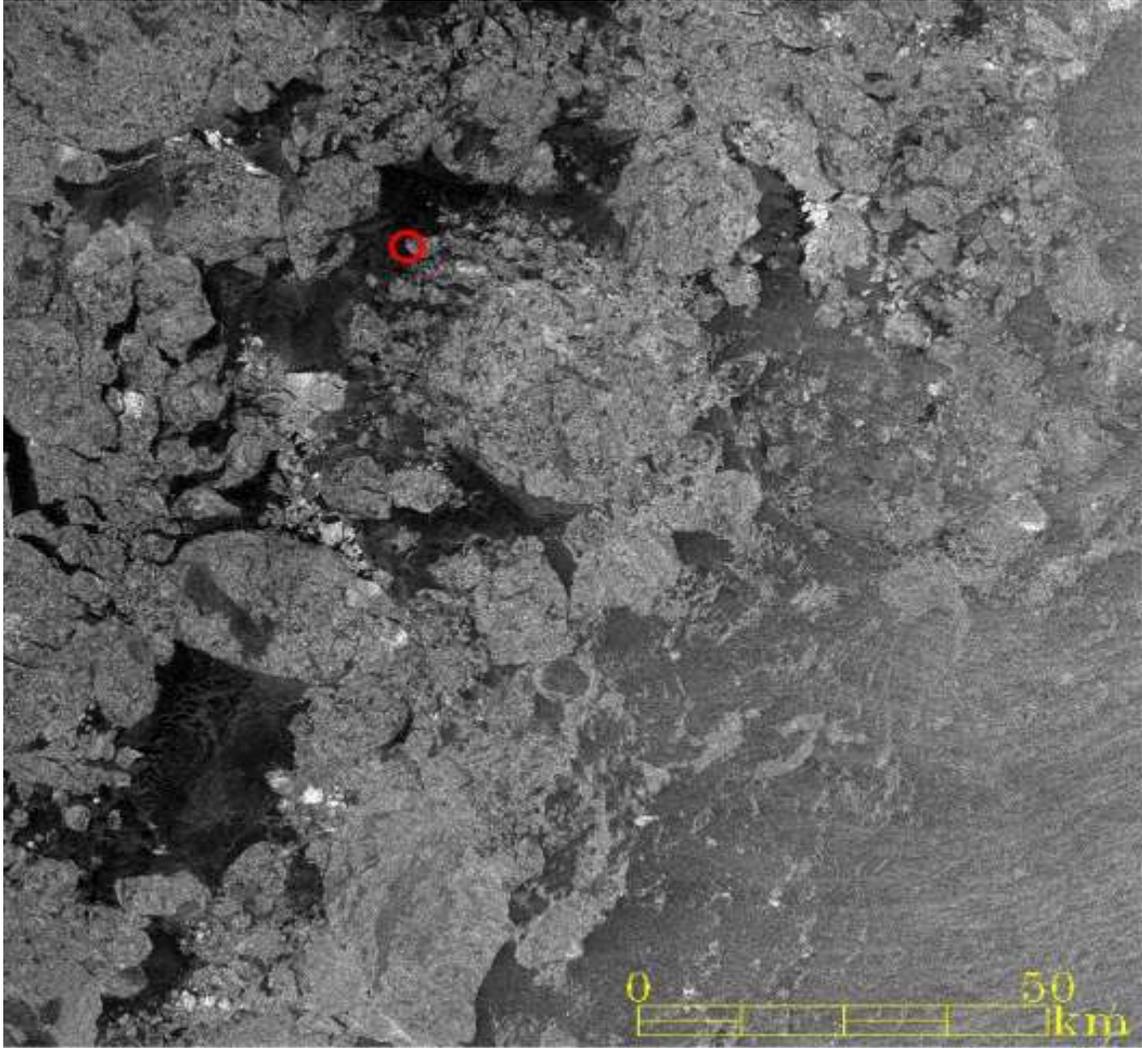
- Safety
- Saves time
 - Easiest, simplest route can be identified
 - Navigate around obstacles
- Saves money
 - Less fuel consumed
 - Less hull maintenance
 - Less time in dry-dock

Envisat ASAR wide-swath image





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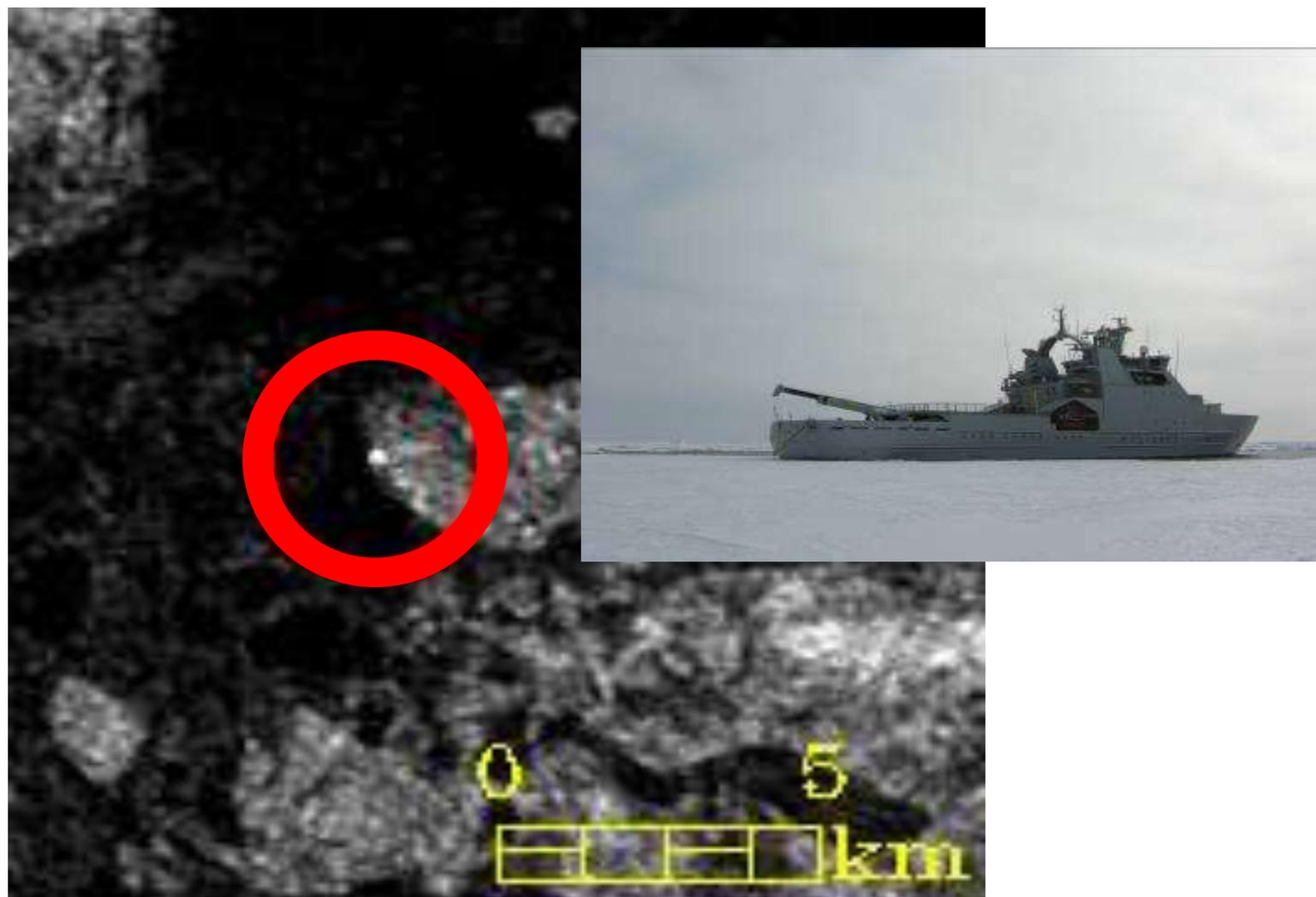
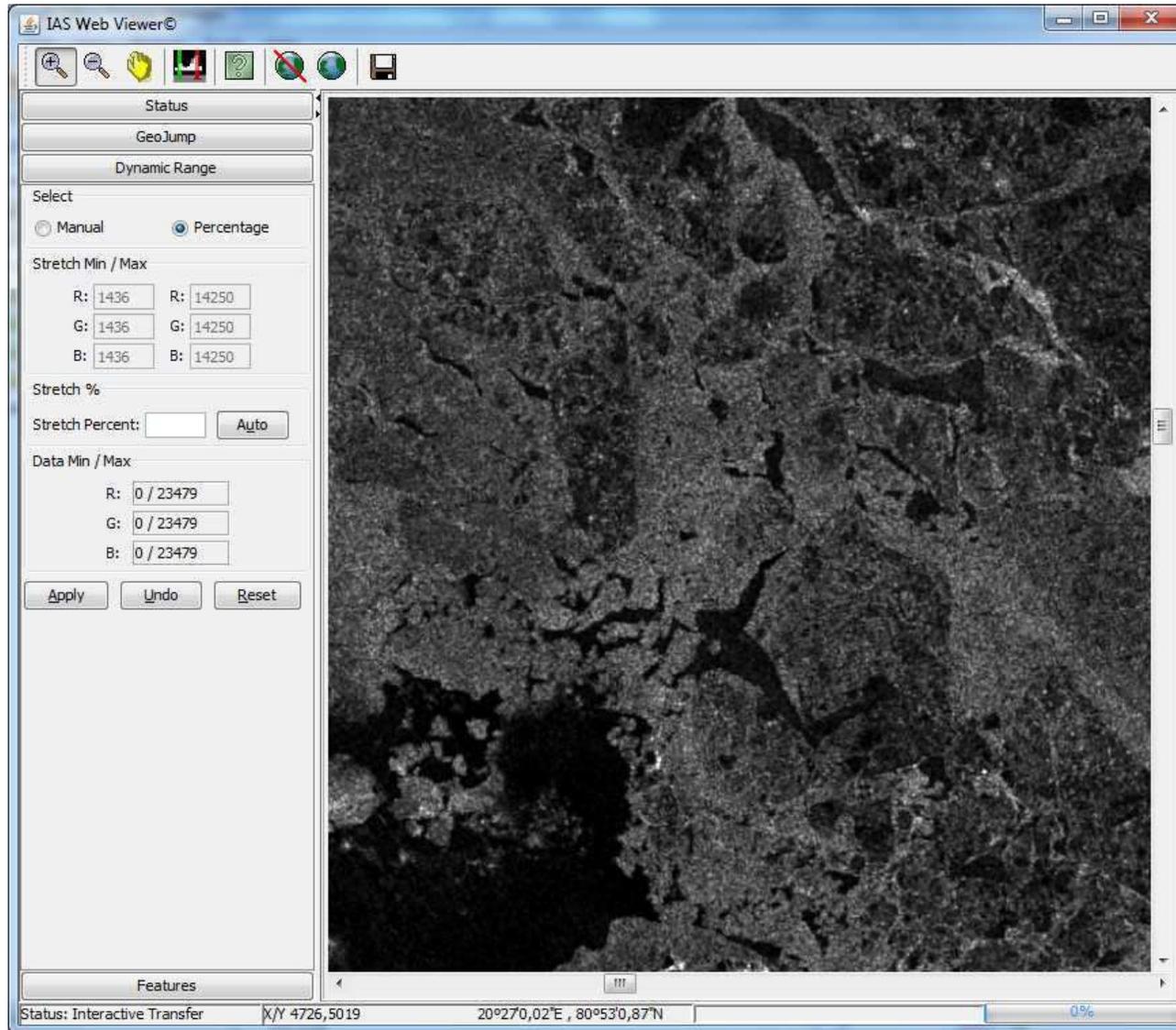


Image Anywhere – the bridge view



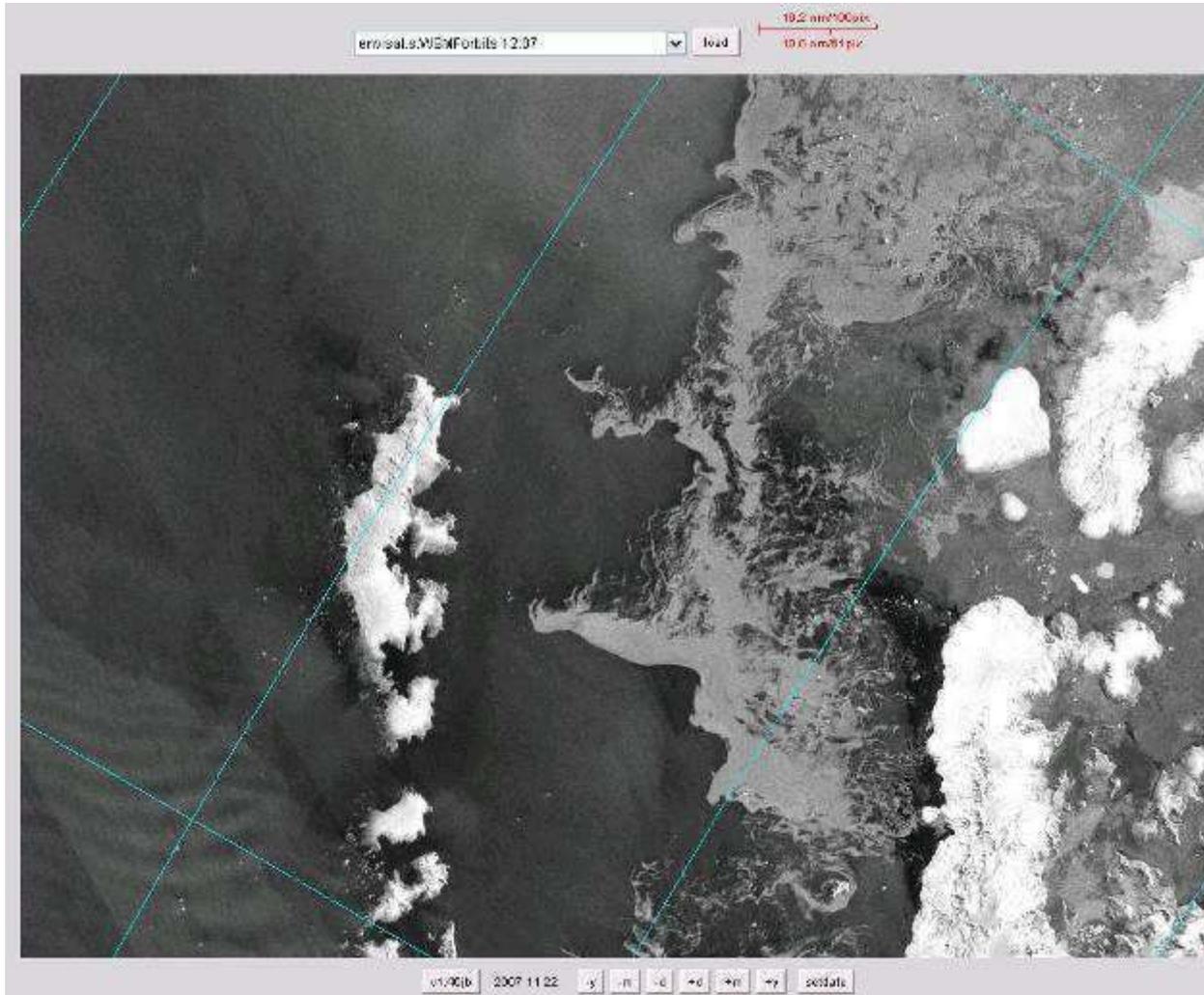
M/V Explorer



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The satellite view



Today's Situation

- Where do you go to learn about these new products?
 - Each product has a unique location
- How do yo get them?
- Are they compatible with other products?
 - Can you overlay them geographically?

ICEMAR – The project

3 year, € 2,1 million project funded by the E.C

Goal

Improve access to ice information for ship's operating in ice – focus on safety

Primary area of interests

Baltic Sea

European Arctic

Vision

Provide acces to ice informaton for any location



ICEMAR – The Partners



KSAT

EIS (FMI; DMI; Met.No SMHI)

BAS

BSH

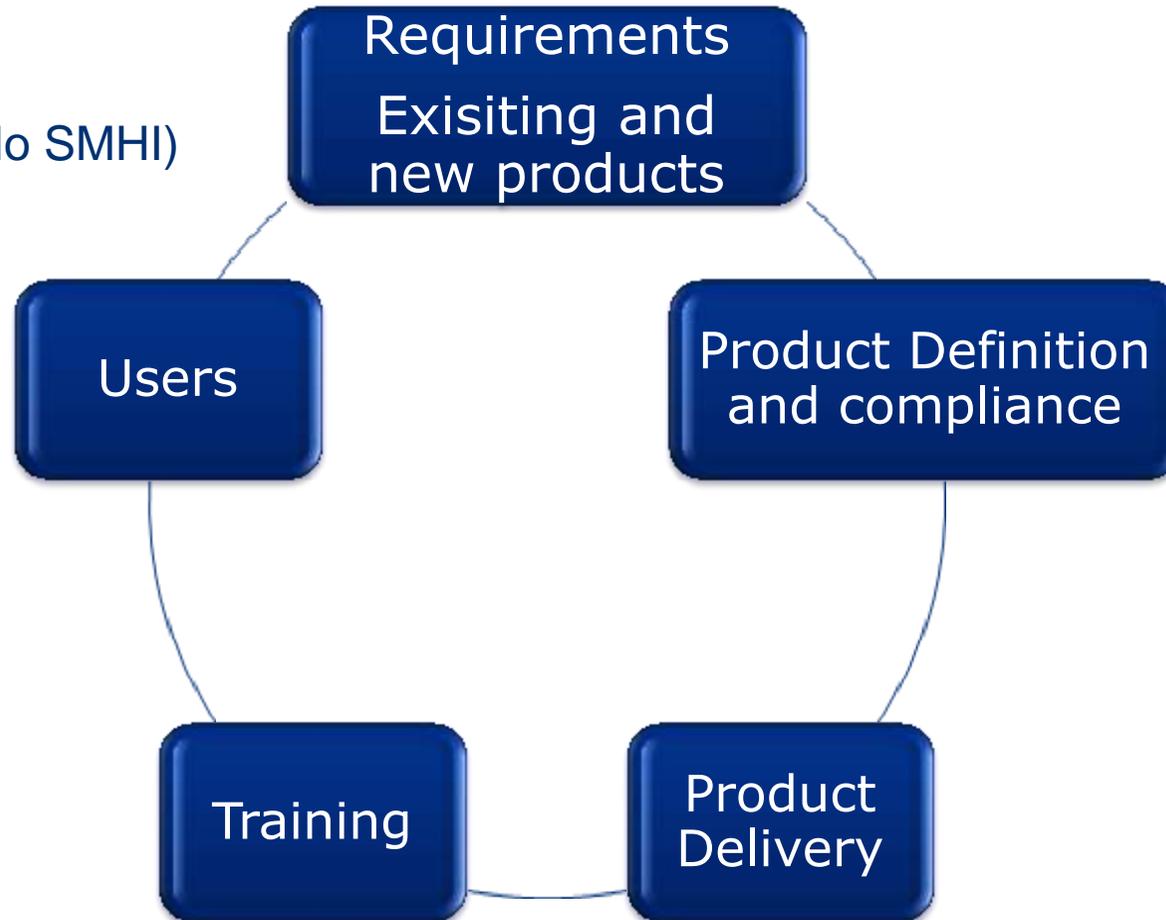
Infoterra

KMA

NERSC

VTT

Dualog



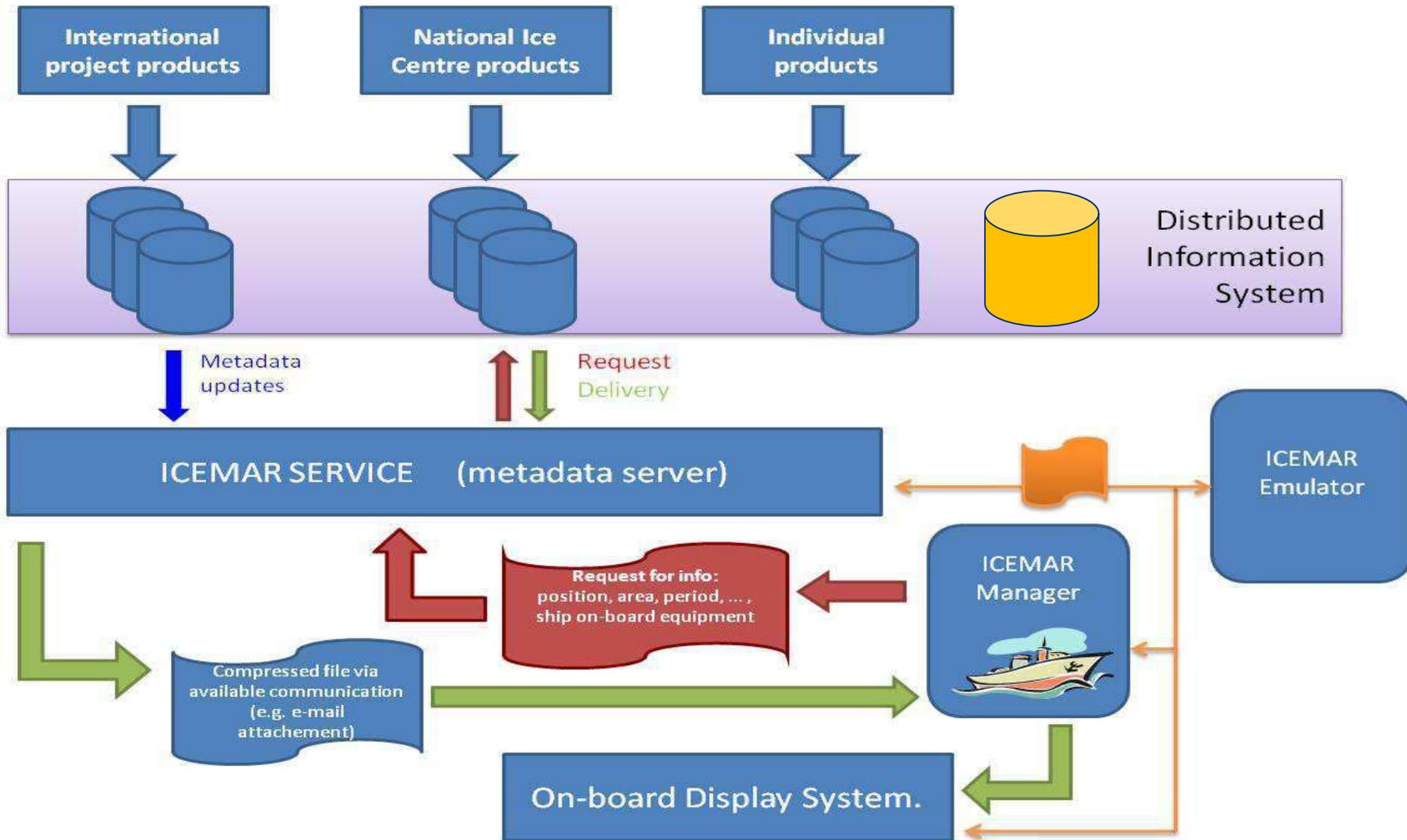
The scenario today

- Each product (ice chart) is obtained from the producer
- Example – Baltic in the winter
- Ship can obtain the SMHI ice chart and/or FMI ice chart
- Same ship goes to Spitsbergen
- Acquires ice chart from Met.No



ICEMAR scenario

- User sends request:
 - Information required, location and duration
 - Display equipment
 - Communications
- Receives list of available relevant products
- Selects required products
- Products delivered – automatically open up in the defined system



IBPlott - main symbols

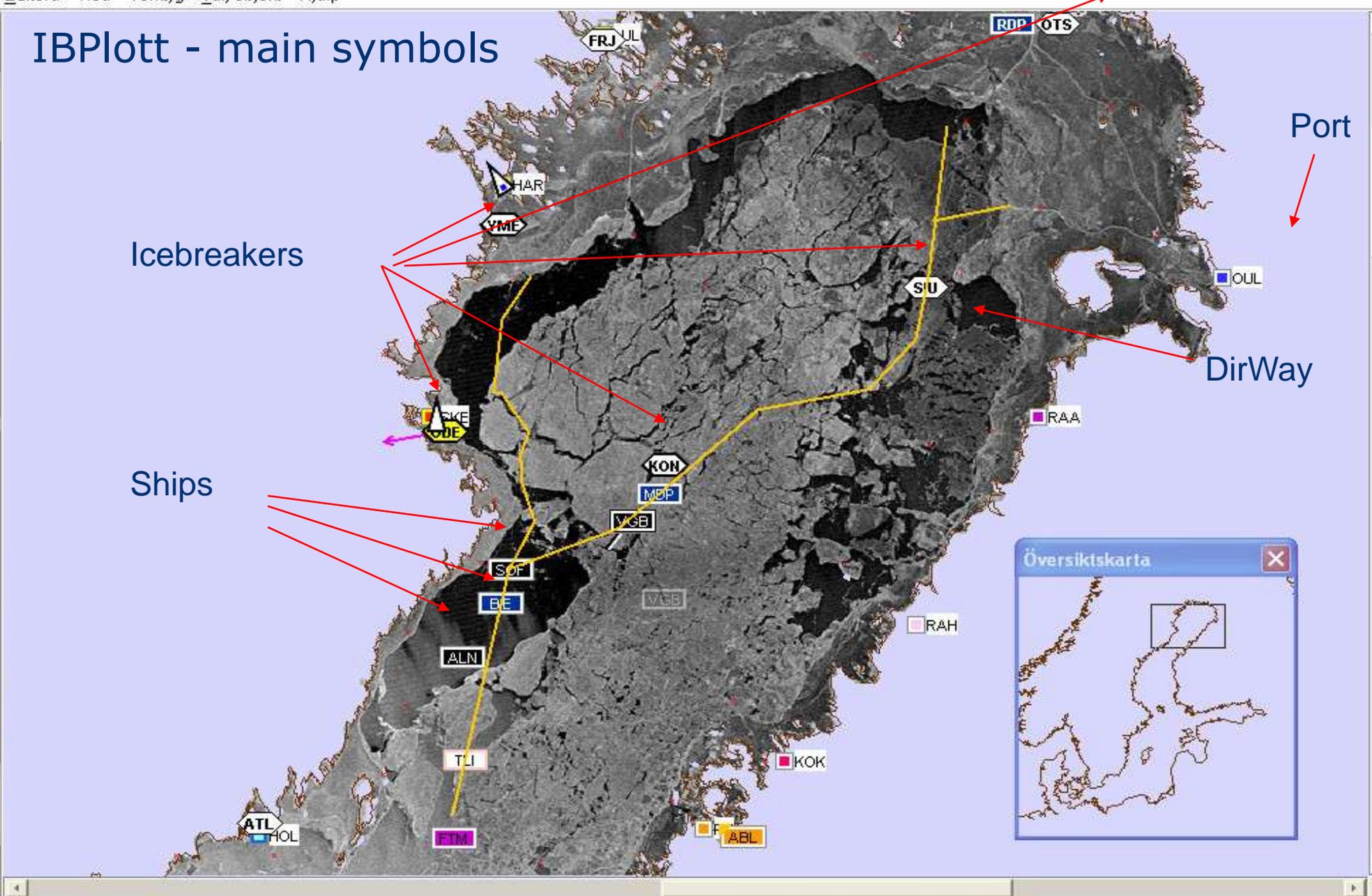


Icebreakers

Ships

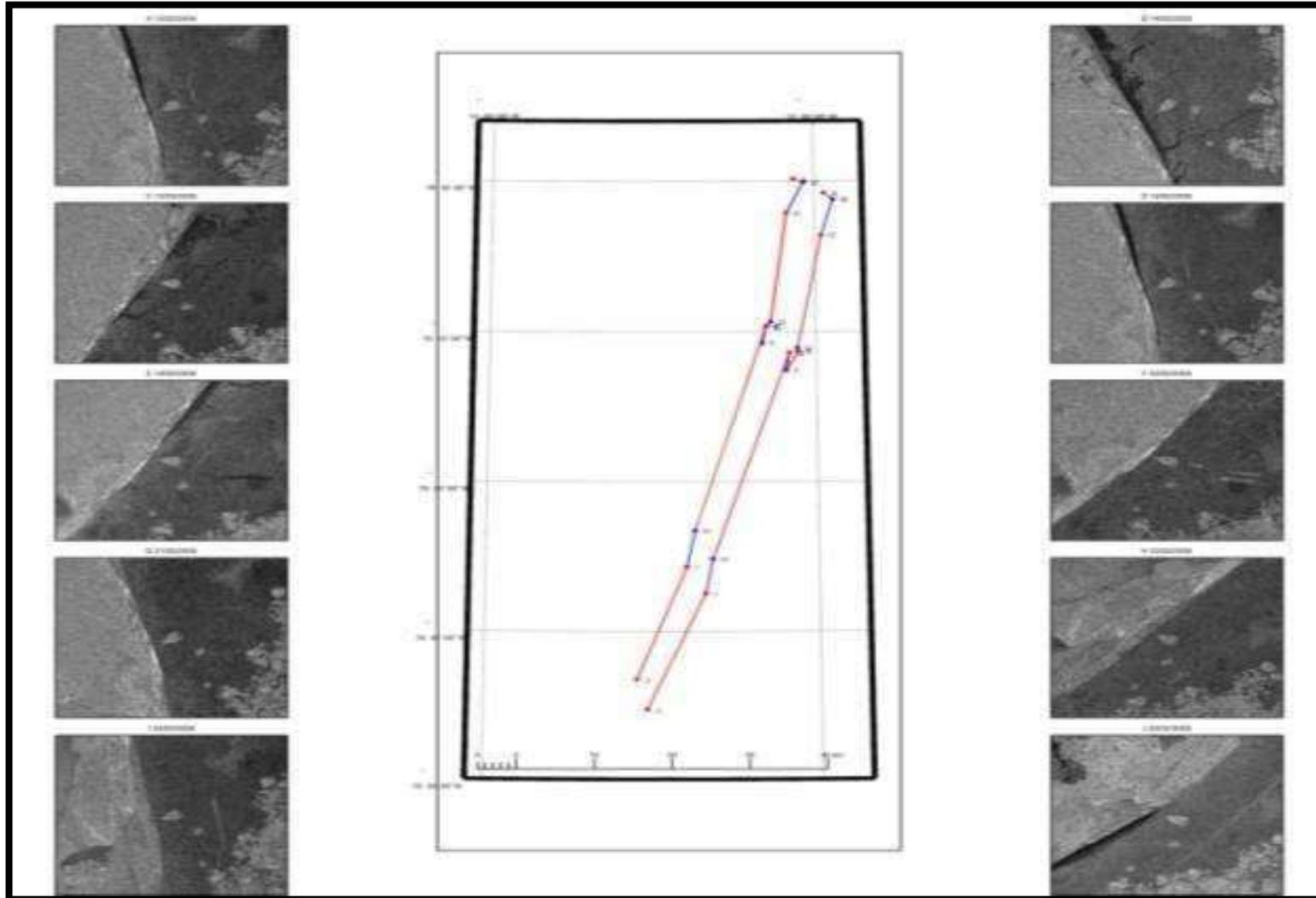
Port

DirWay



Object tracking in Fram Strait

February 2008



Tracking the movement of two pieces of sea ice over 12 days in February 2008
Object size: 1.68km² and 4.85km² Average speed = 0.2 knots , max speed = 1knot

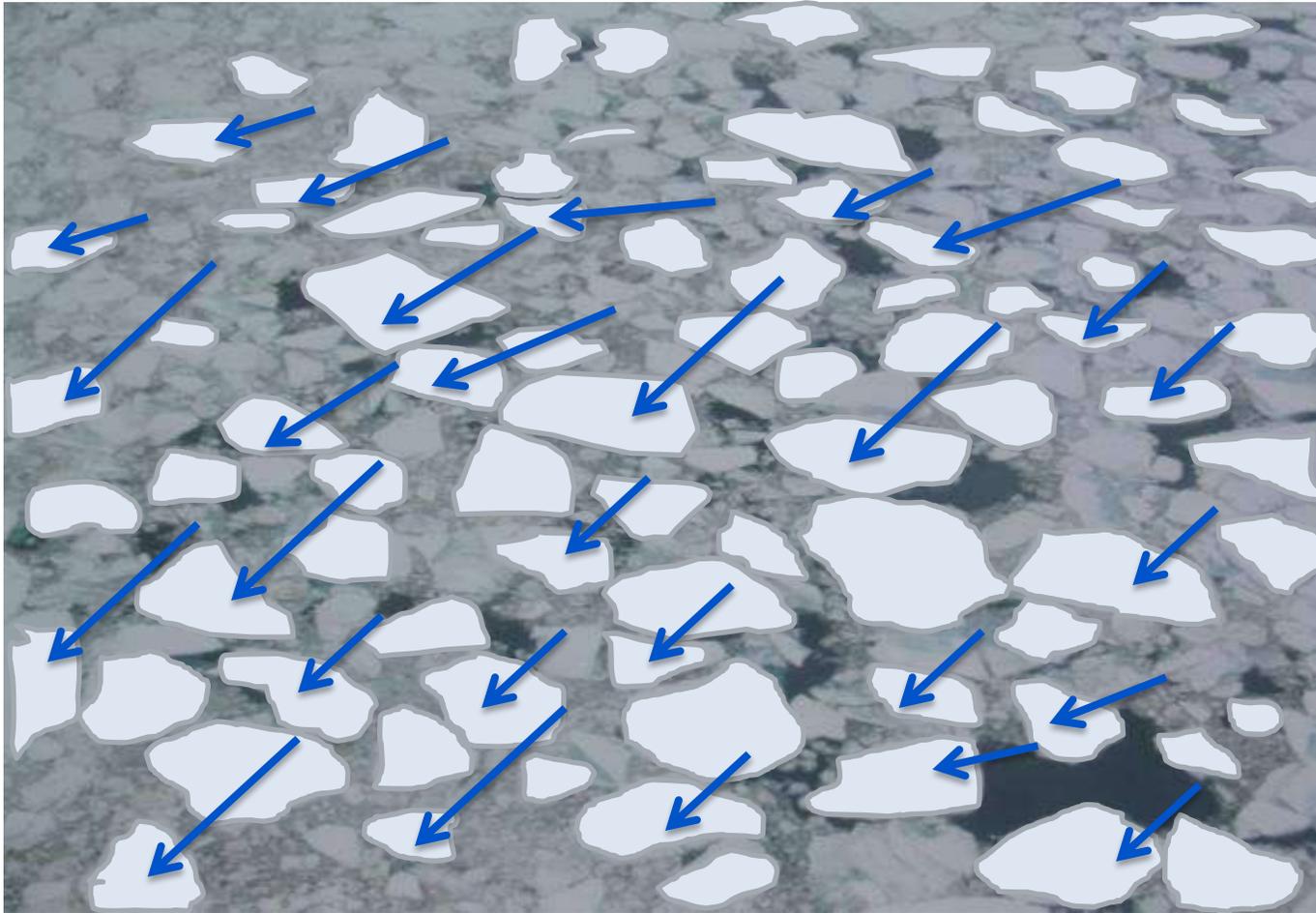
Ice object detection



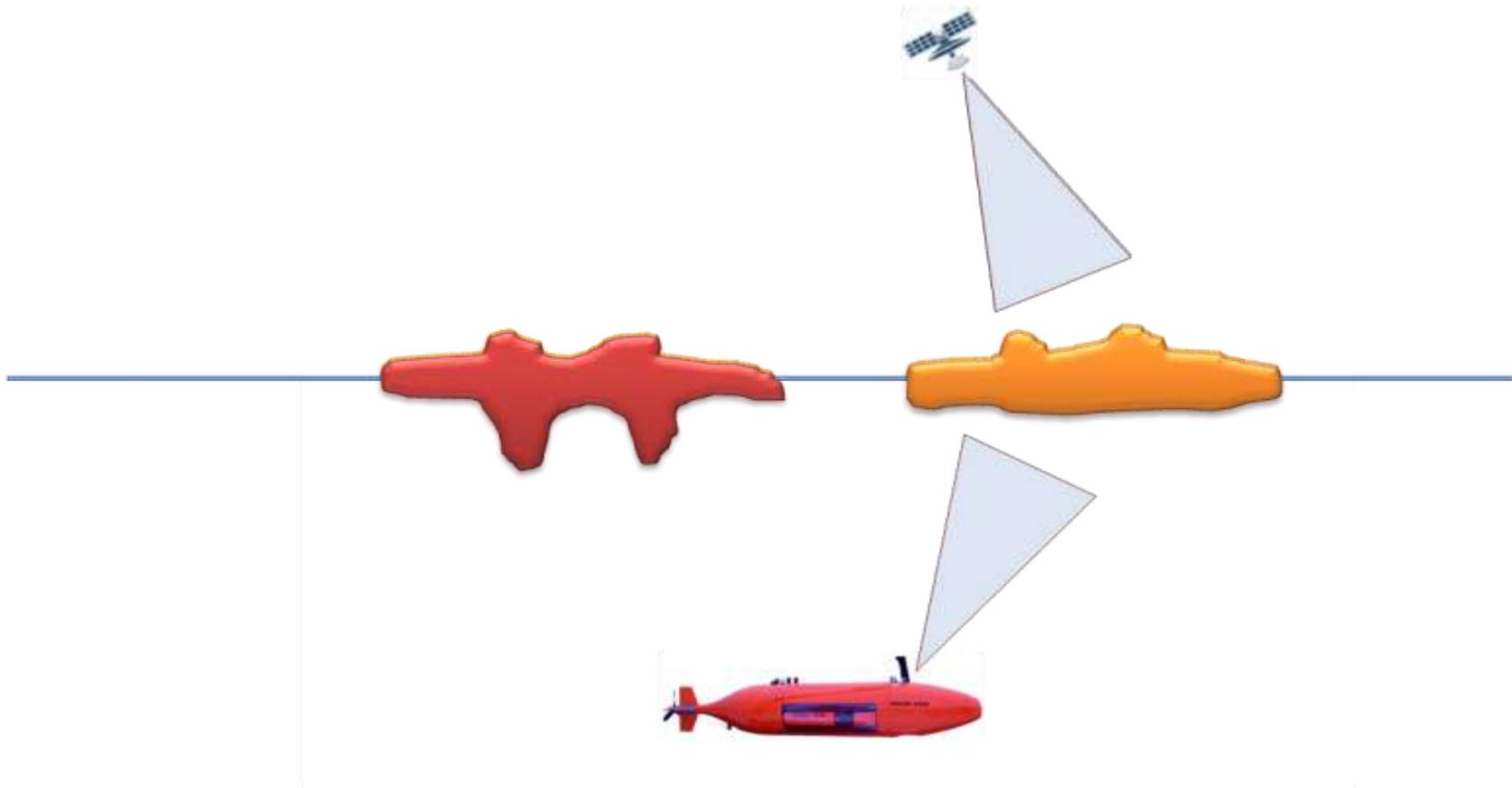
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Movement

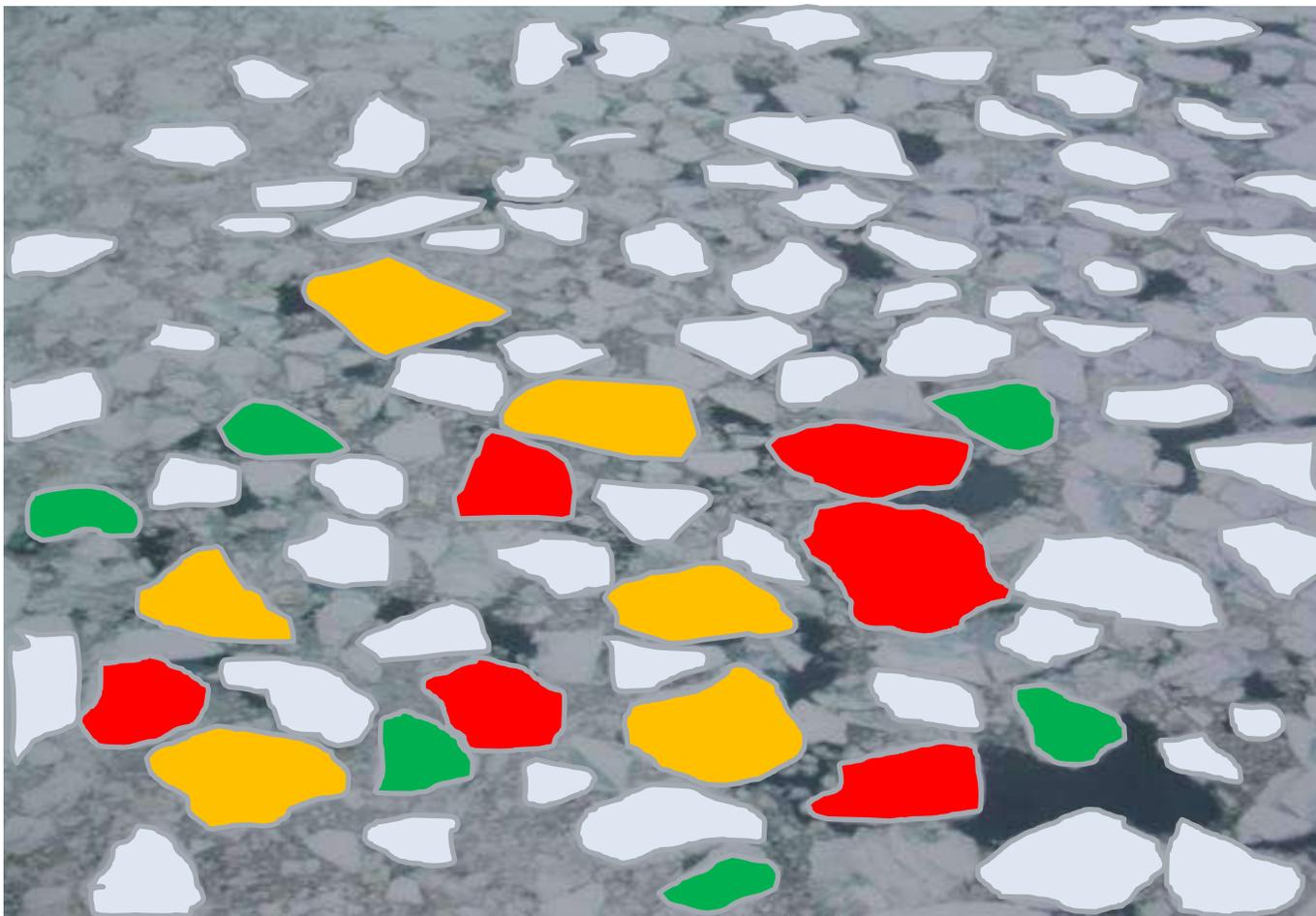


Combining satellite with AUV observations





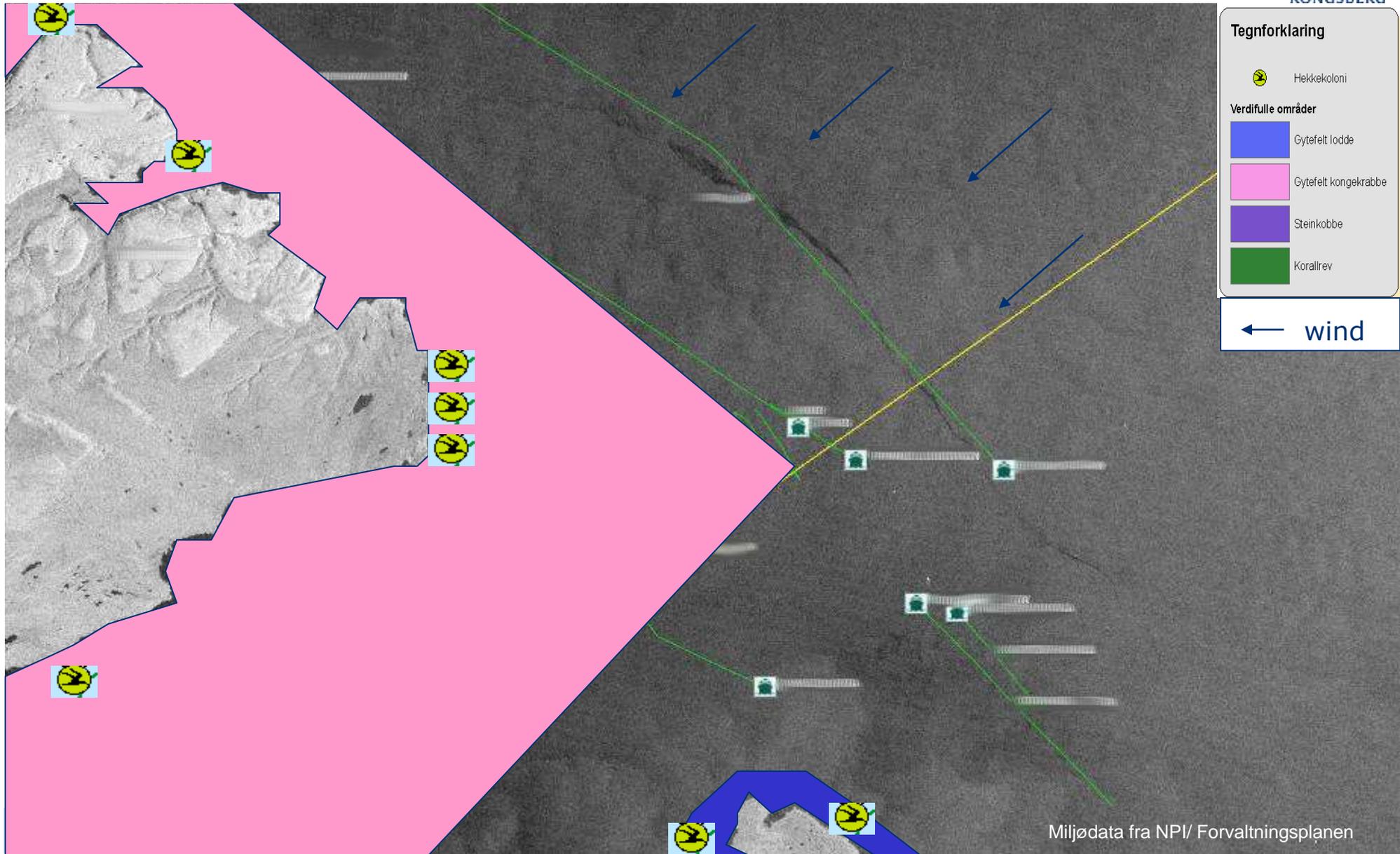
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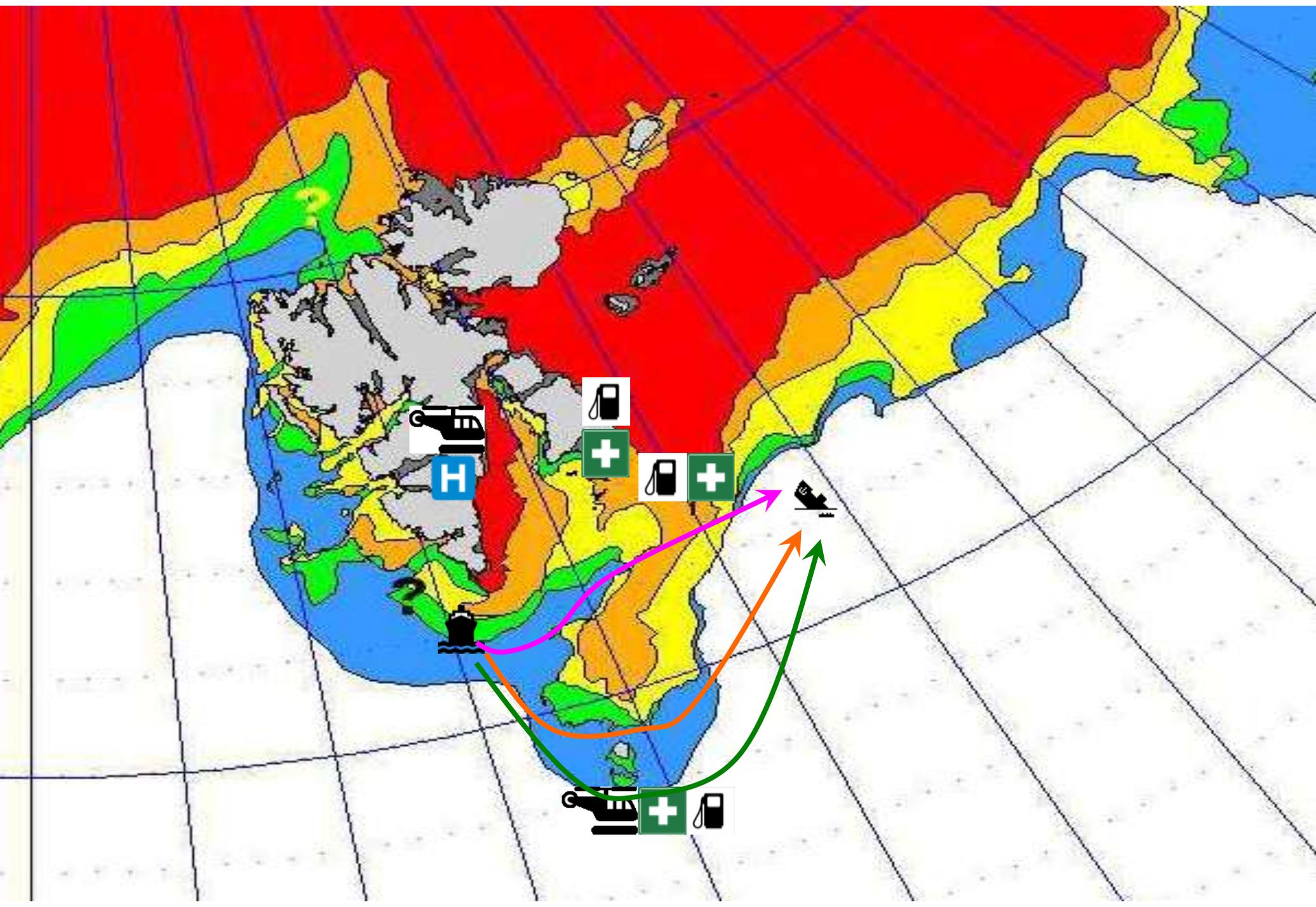


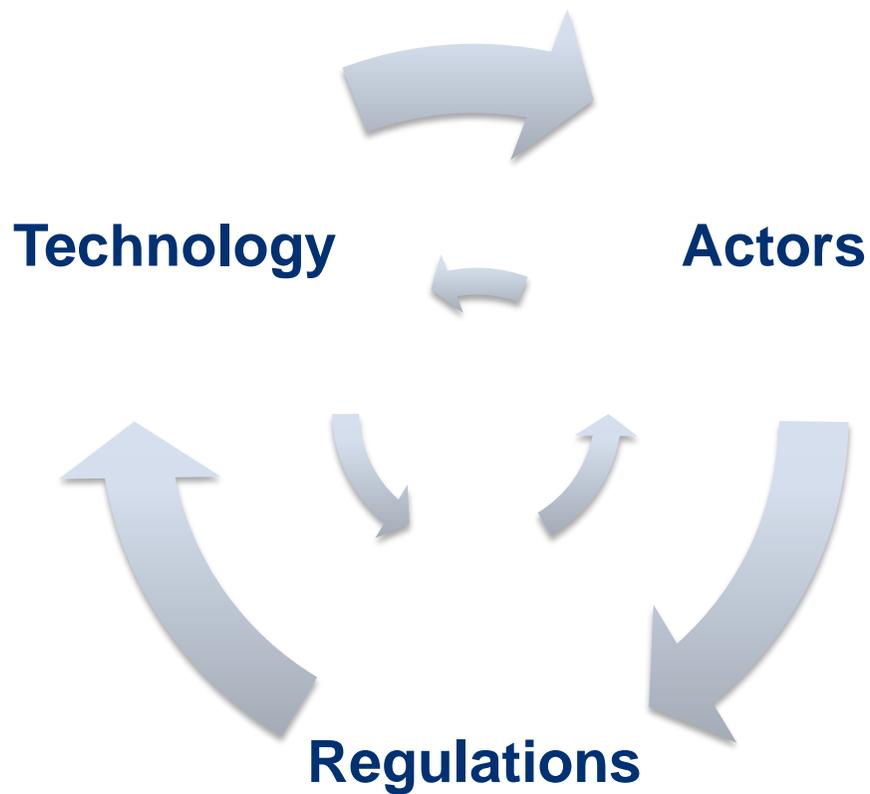
Barents Watch – the current view



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COMMUNICATE

Each sector needs to know

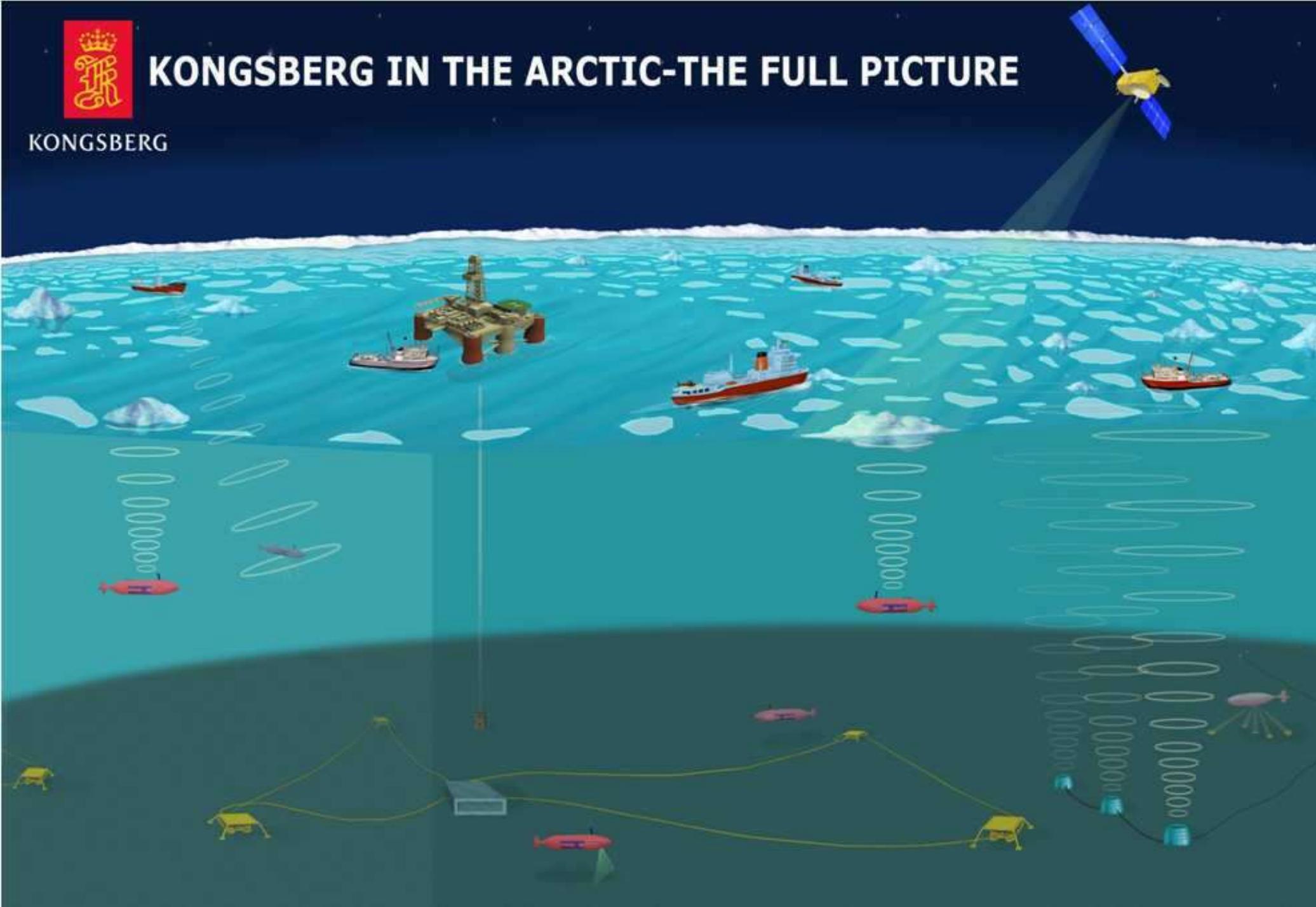
What is required

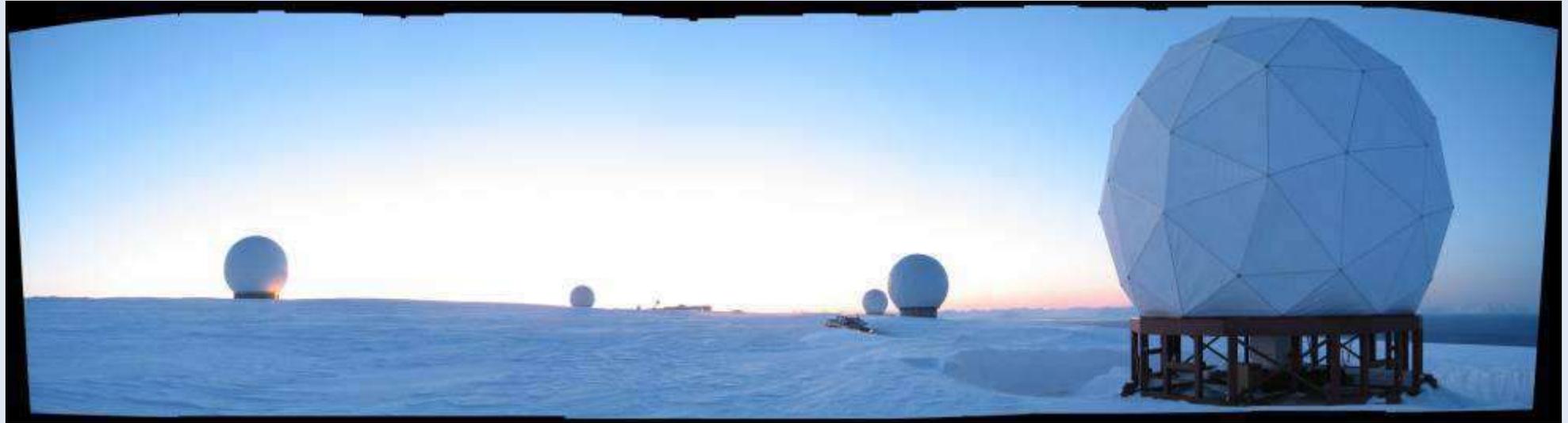
What is possible



KONGSBERG IN THE ARCTIC-THE FULL PICTURE

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Thank you for your attention

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