Polar View

Sea Ice Information

British Antarctic Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

myOcean

Polar View

ICEMAR

Introduction

Polar View – developed by an international consortium of ice charting experts and operators in the polar regions

It provides a near-real-time sea ice information service for ship operators in the Arctic and Antarctic

The service helps them minimise delays, improve efficiency, and take action to avoid life-threatening safety hazards, damage to vessels and potentially severe consequences for the environment

It is widely used by commercial and tourist shipping, and by national polar research programmes

In the UK it is funded by the European Space Agency and UK Foreign & Commonwealth Office, plus related R&D funded by the EC

ICEMAR – increased focus on Arctic

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25 August 2011 Last updated at 17:42

Arctic sea routes open as ice melts

By Richard Black
Environment correspondent, BBC News

Two major Arctic shipping routes have opened as summer sea ice melts, European satellites have found.

Last year, the Peter 1 yacht sailed using both passages

Data recorded by the European Space Agency's (Esa) Envisat shows both Canada's Northwest Passage and Russia's Northern Sea Route open simultaneously.

This summer's melt could break the 2007 record for the smallest area of sea ice since the satellite era began in 1979.

Shipping companies are already eyeing the benefits these routes may bring if they remain open regularly.

The two lanes have been used by a number of small craft several times in recent years.

But the Northern Sea Route has been free enough of ice this month for a succession of tankers carrying natural gas condensate from the northern port of Murmansk to sail along the Siberian coast en route for Thailand.

"They're often open at the same time in the sense that with some ingenuity you can get through them," observed Peter Wadhams, an Arctic ice expert from the University of Cambridge.

Relat

Russia Arctic

Journe Arctic

Diary: Northv

theguardian

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Environment › Travel and transport

Thawing Arctic opens up new shipping routes on the 'roof of the world'

An increasing amount of seaborne traffic is moving along a new Siberian coastal route, cutting journey time and boosting trade prospects

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Terry Macalister
guardian.co.uk, Tuesday 5 July 2011 15.50 BST
Article history

The MV Nordic Barents leaves Kirkenes harbour, northern Nor to China via the Northern Sea Route. Photograph: Helge Sterkl

Cold is the new hot in shipping circles as melting sea i prospects for trade between China and the west to mo of the world.

An increasing amount of seaborne traffic is beginning called Northern Sea Route which traverses the Siberia also hopes of opening up more of the North West Pas Canada.

The attraction of the voyage is that it is one-third of th traditional routes through the Suez Canal. This means dioxide (CO_2) emissions and less fuel. It also means le

The Economist

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Charts, maps and infographics
Daily chart

Melting Arctic sea-ice and shipping routes

Northern exposure

Sep 22nd 2011, 17:59 by The Economist online

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Within four years, Arctic sea-ice cover has twice reached record lows

IN THE 16th century English navigators, cut off from the riches of the Indies by the growing Spanish and Portuguese empires, sought to reach Asia by sailing close to the North Pole. They failed, because so much of the Arctic ocean was frozen. No longer. Global warming is opening summer sea lanes through the ice, along the north-west passage sought by Martin Frobisher and the north-east one sought by Hugh Willoughby. Both have now been navigated—the north-east (or northern route, as it is known to Russians) most recently in August by a Russian supertanker, assisted by two icebreakers, as our Science & Technology article explains. In later life Barnes Wallace, the designer of the bouncing bombs used in the Dambuster raid by the RAF on Germany

Geopolitics

Credit IBRU, Durham University

Arctic Council

Arctic Marine Shipping Assessment 2009 Report

Better navigation in sea ice

Improved efficiency - BAS ship RRS James Clarke Ross in Antarctic sea ice

Improved safety - Sinking of the tour ship MV Explorer, Antarctic Peninsula, November 2007

Provide information direct to Rescue Coordination Centers

Rescue of the Russian fishing vessel Sparta, Ross Sea, Antarctica, December 2011, coordinated by Rescue Coordination Centre New Zealand (RCCNZ)

Use of the service

The Polar View Antarctic service is used by a range of different sectors including:

Science community

Tourism

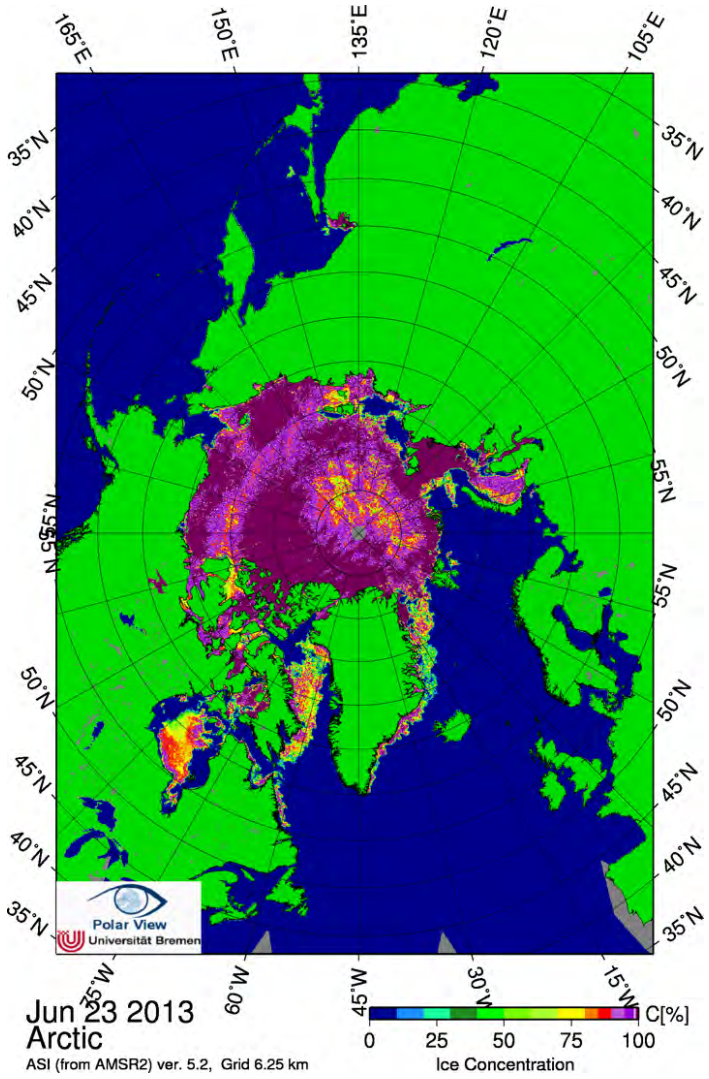
Commercial shipping

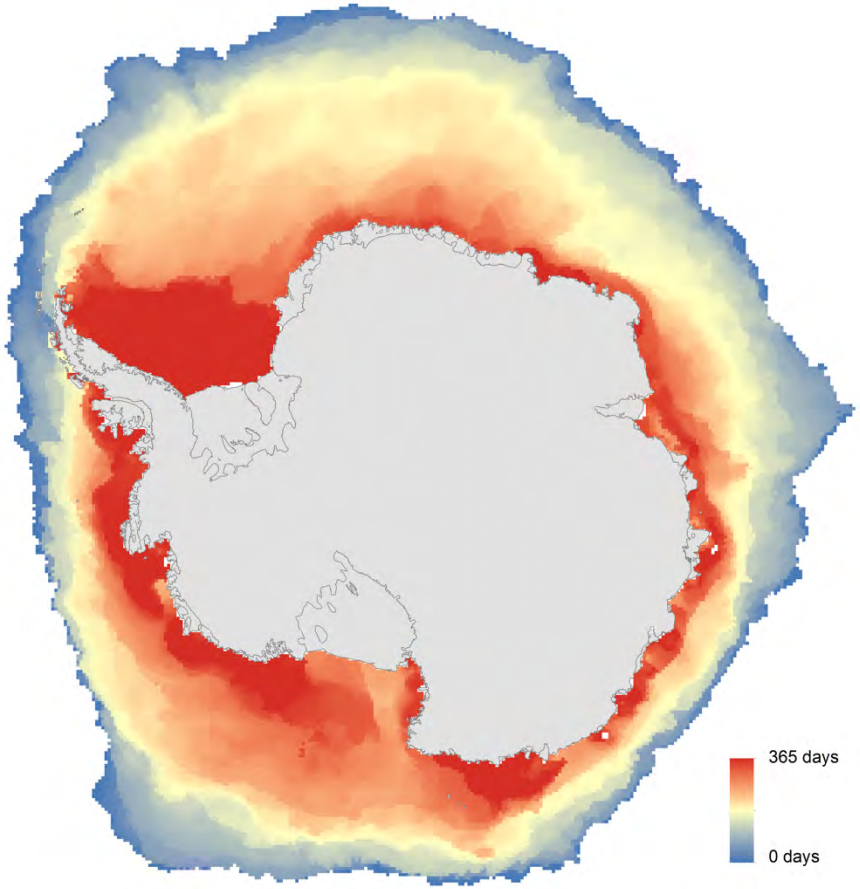
Fisheries

Defence

Rescue and marine safety organisations

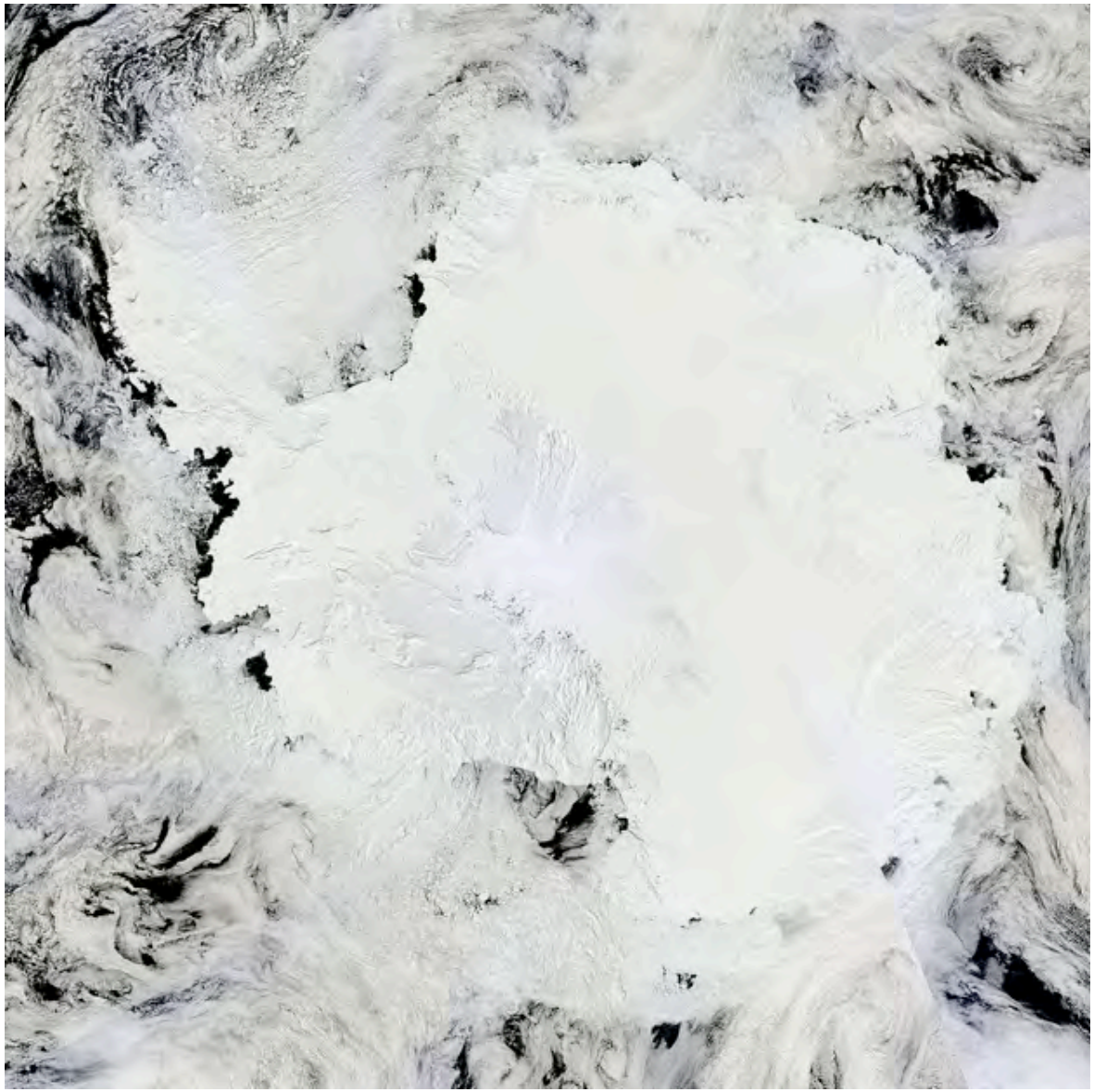
Passive microwave sea ice concentration





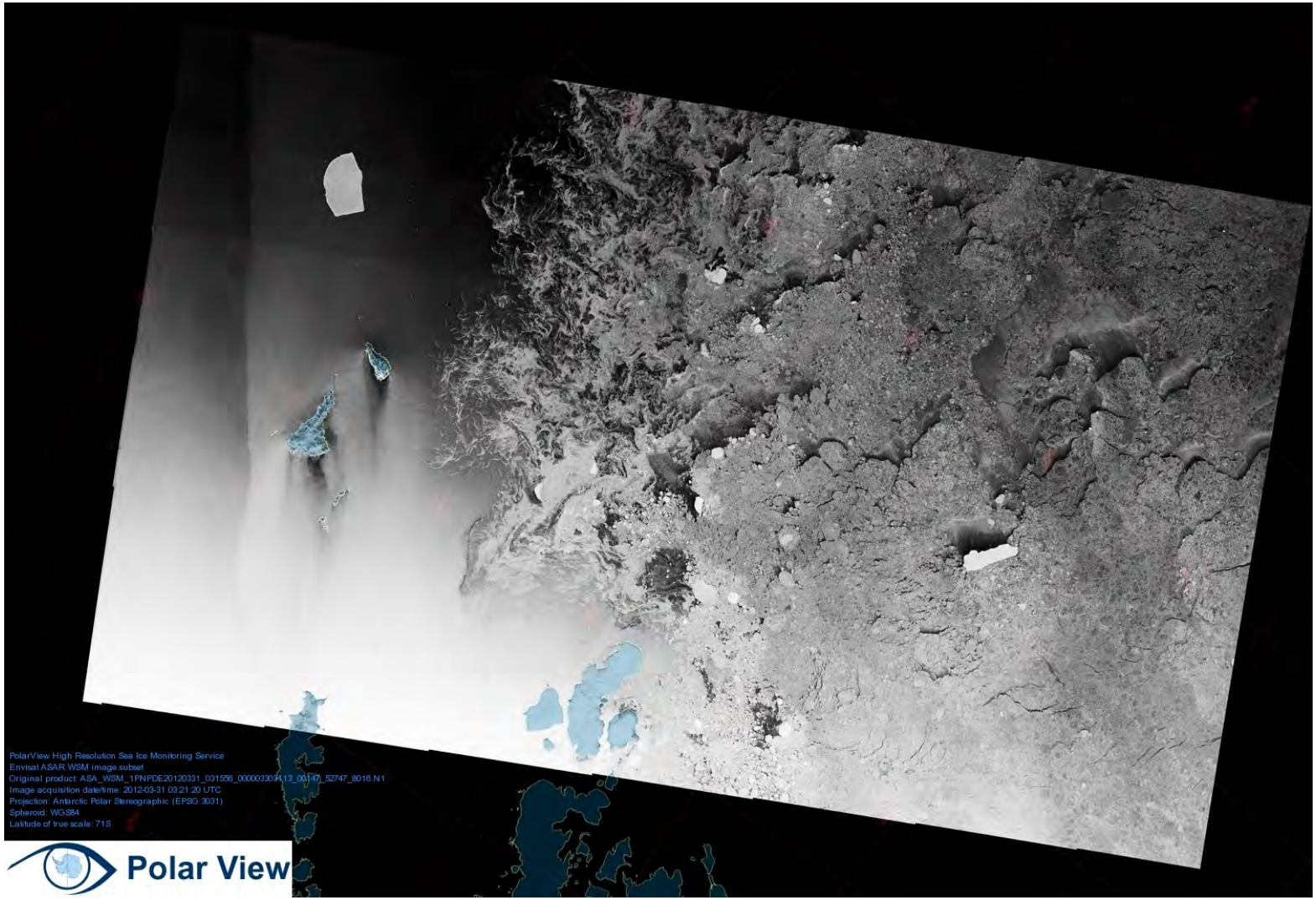
Daily maps of sea ice concentration (LH) and derived information about mean annual sea ice duration (RH)
University of Bremen - http://www.iup.uni-bremen.de:8084/amsr2

AVHRR, MODIS



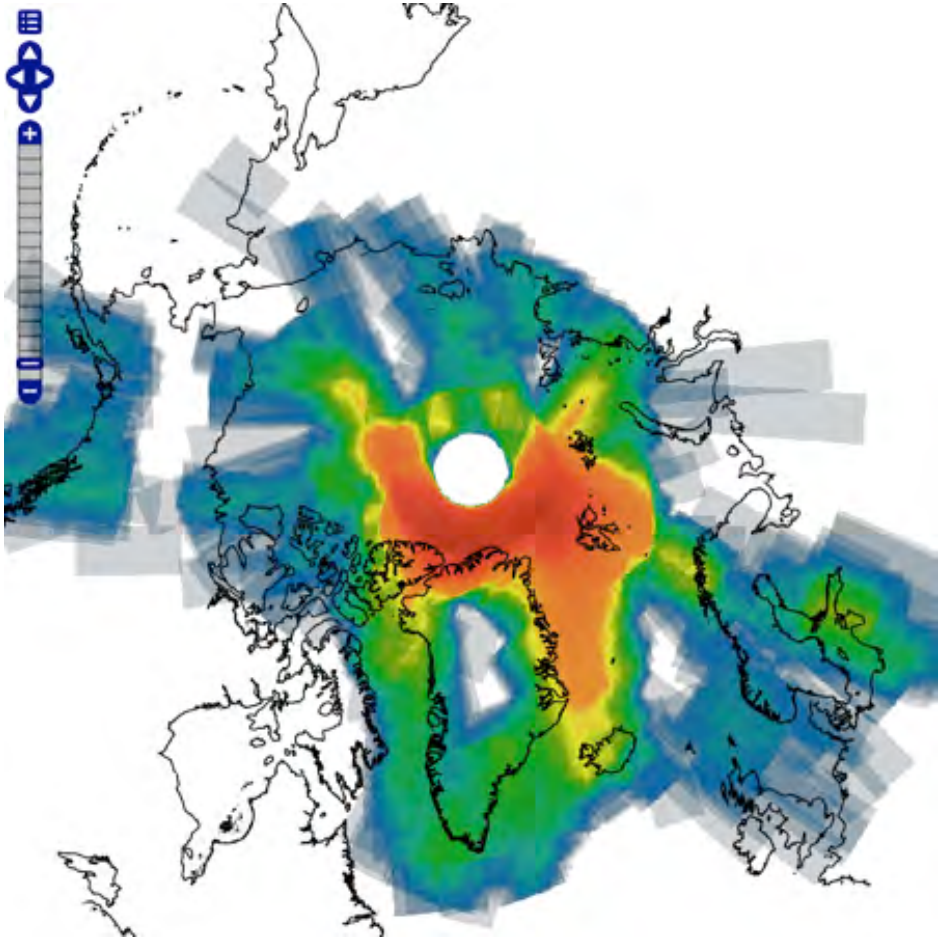
NASA Rapid Response - http://earthdata.nasa.gov/data/near-real-time-data/rapid-response

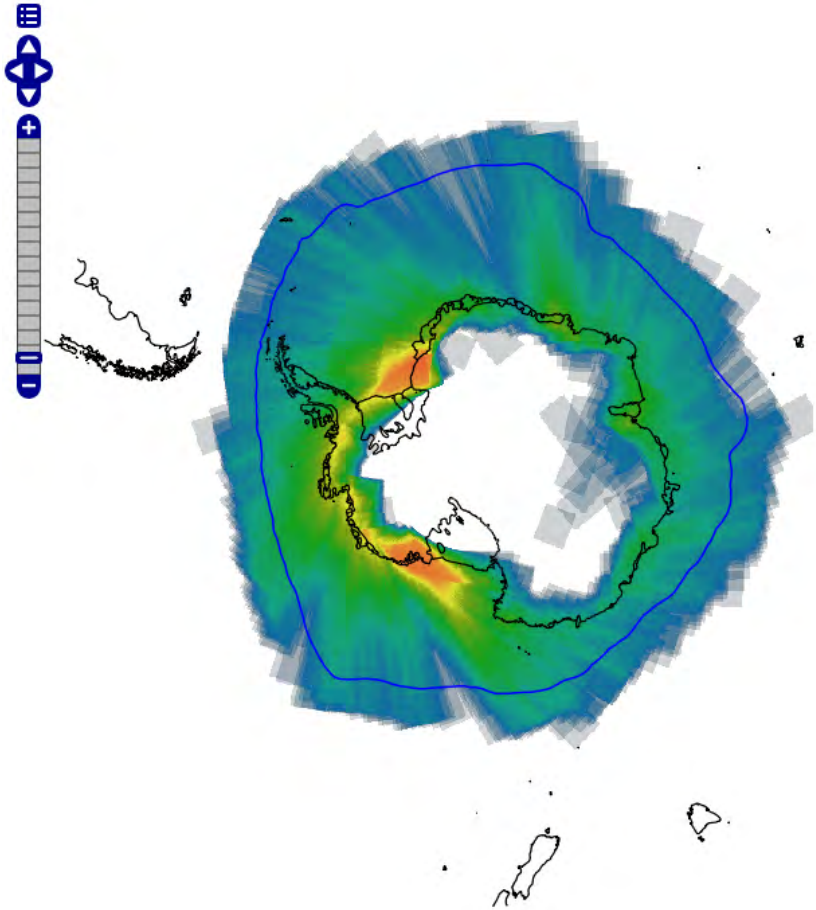
High resolution radar satellite imagery



A detailed and regular picture of sea ice delivered in near-real-time, unaffected by day/night or cloud cover. Novel delivery methods developed to use low bandwidth connections available to ships in the polar regions.

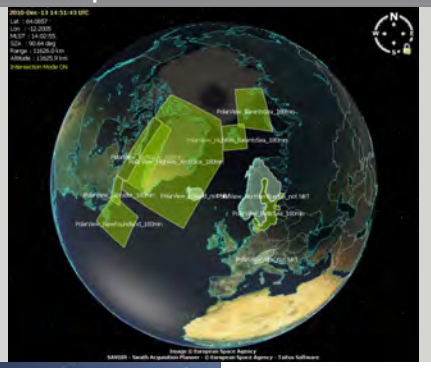
ENVISAT ASAR Coverage



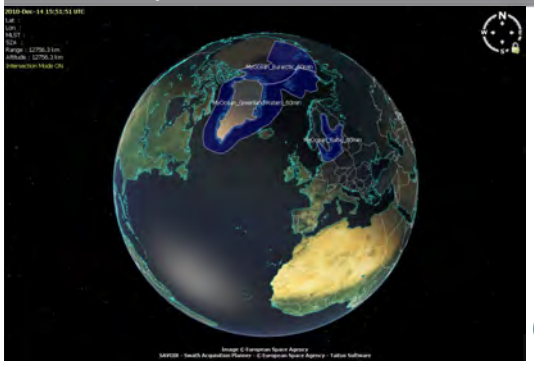


Sentinel-1

Polarview observation requirements
North Hemisphere

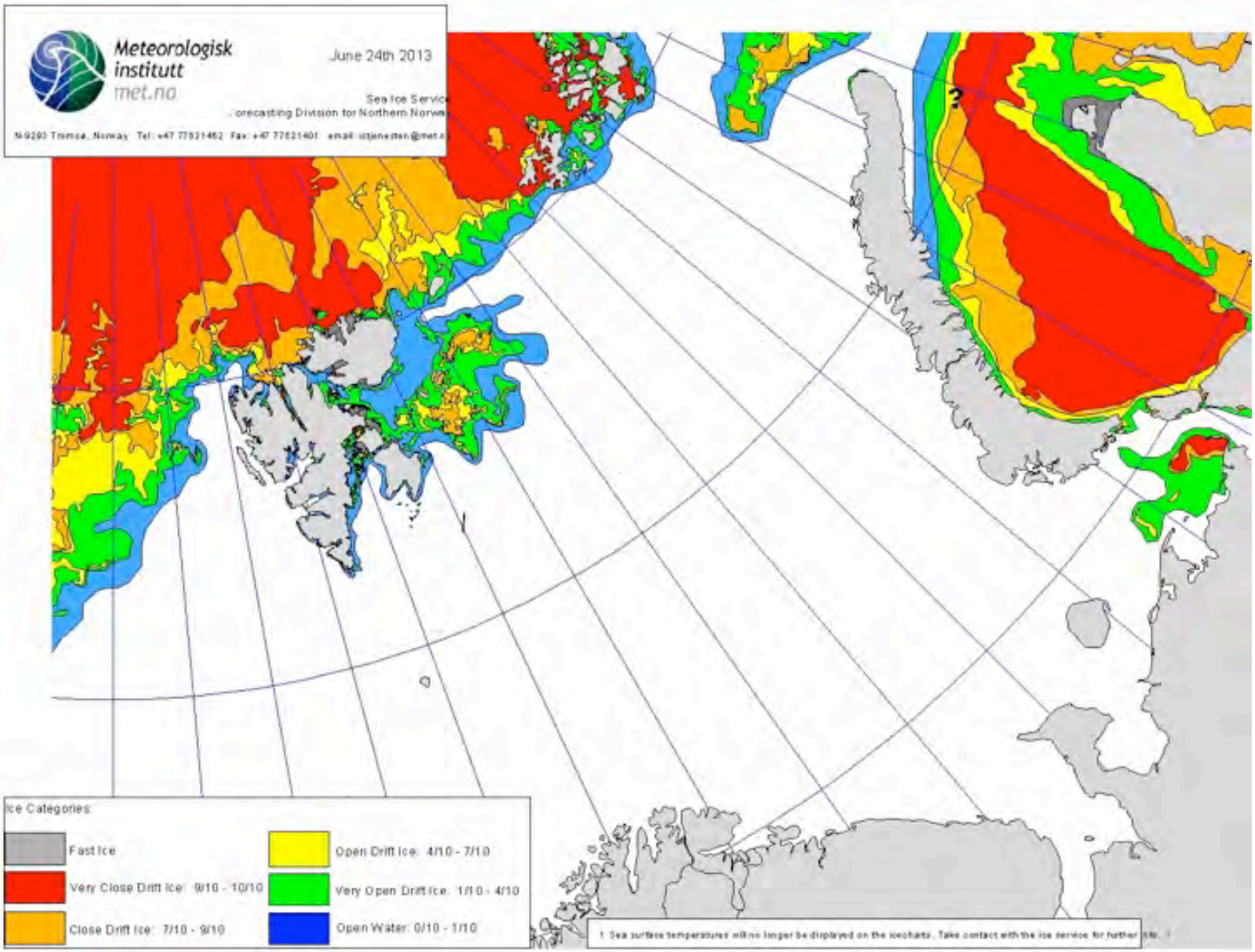


MyOcean sea-ice monitoring services
North Hemisphere



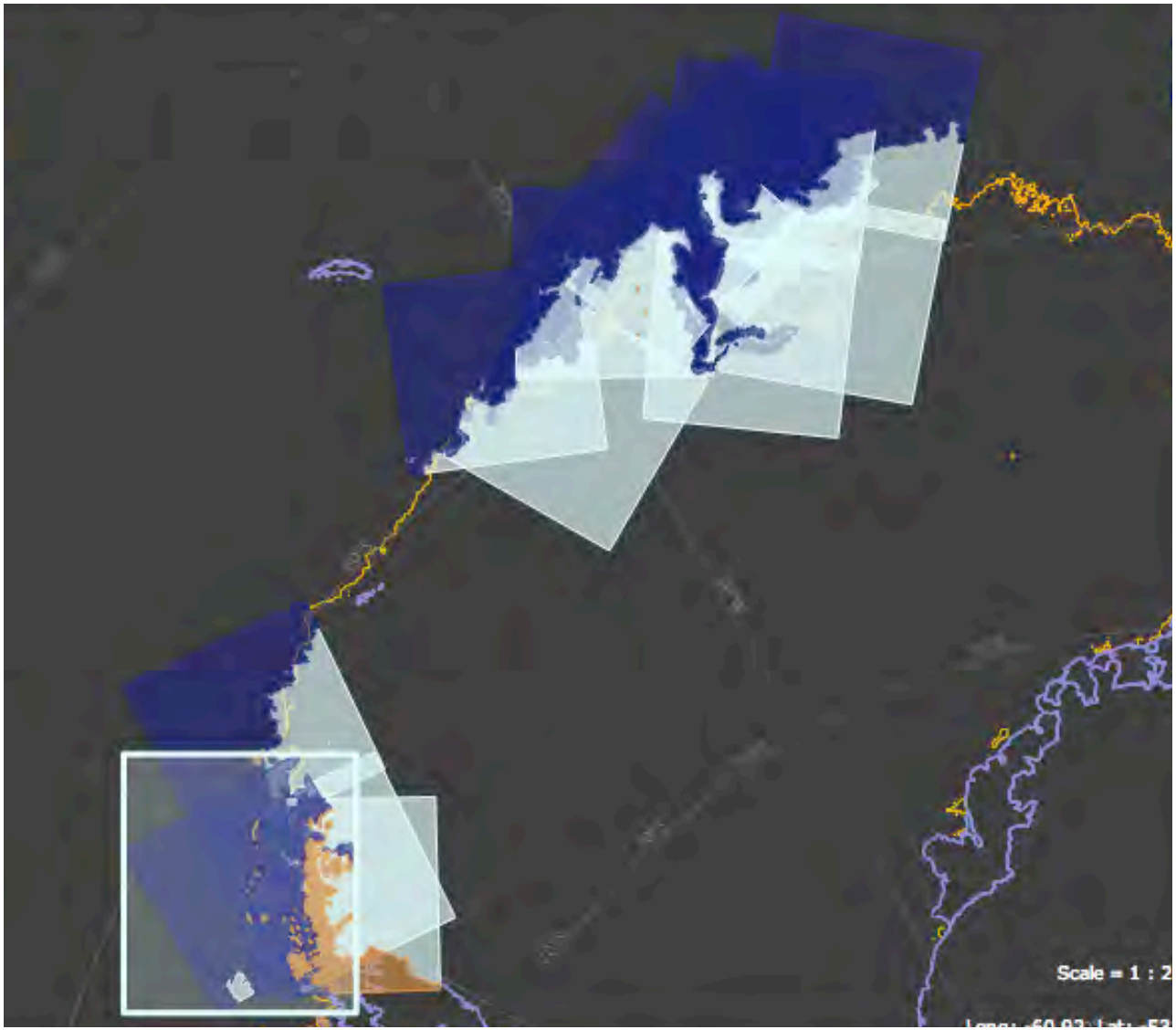
Transition to Sentinel-1 data - part of FP7 Polar Ice project starting in 2014

Ice charts



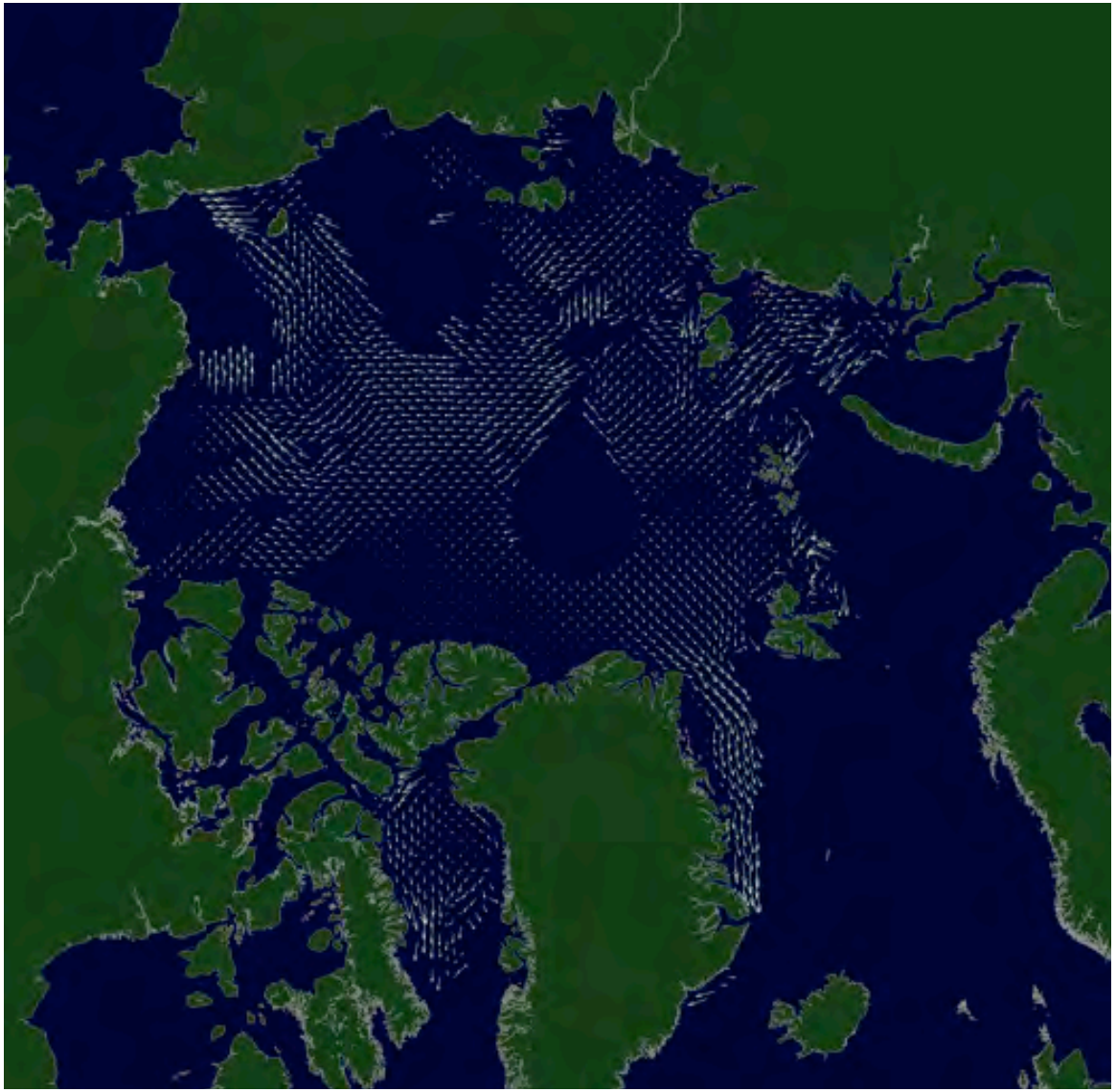
Ice charts produced by Met Norway

Detailed sea ice limit information



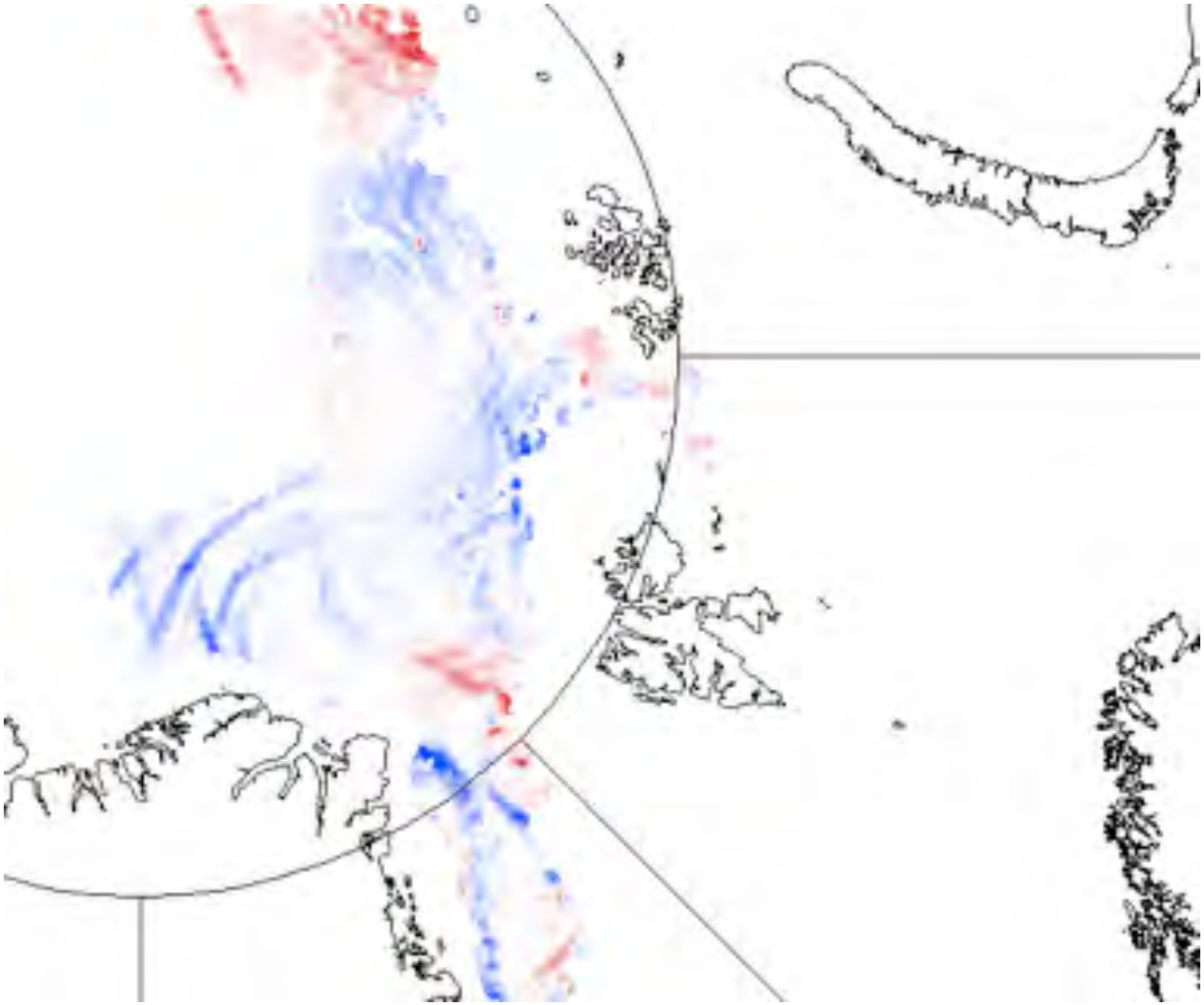
High-resolution sea ice edge interpreted from radar satellite images produced by BAS

Sea ice motion



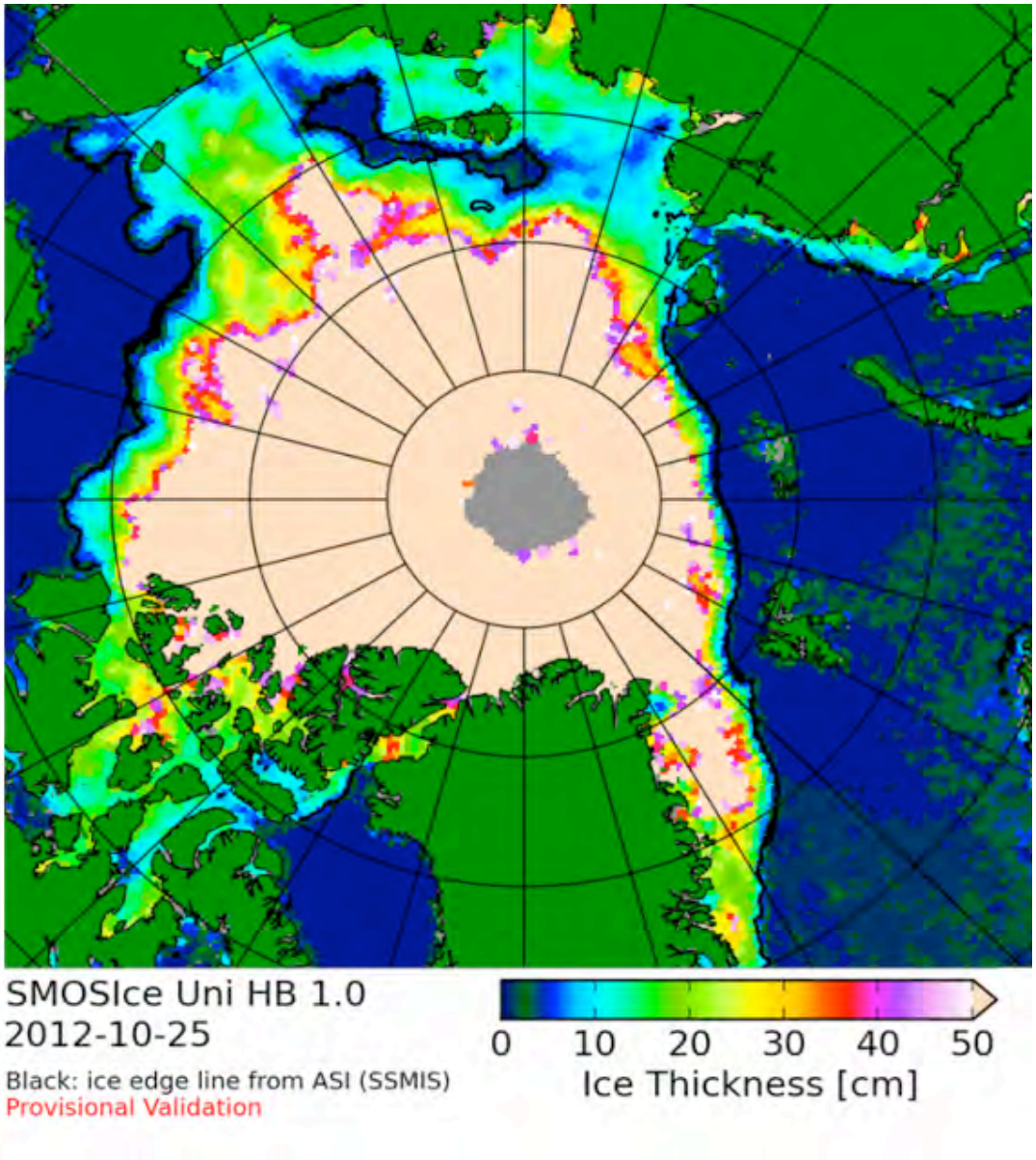
Sea ice drift product derived from differences in repeat satellite images produced by Danish Technical University

Sea ice compression



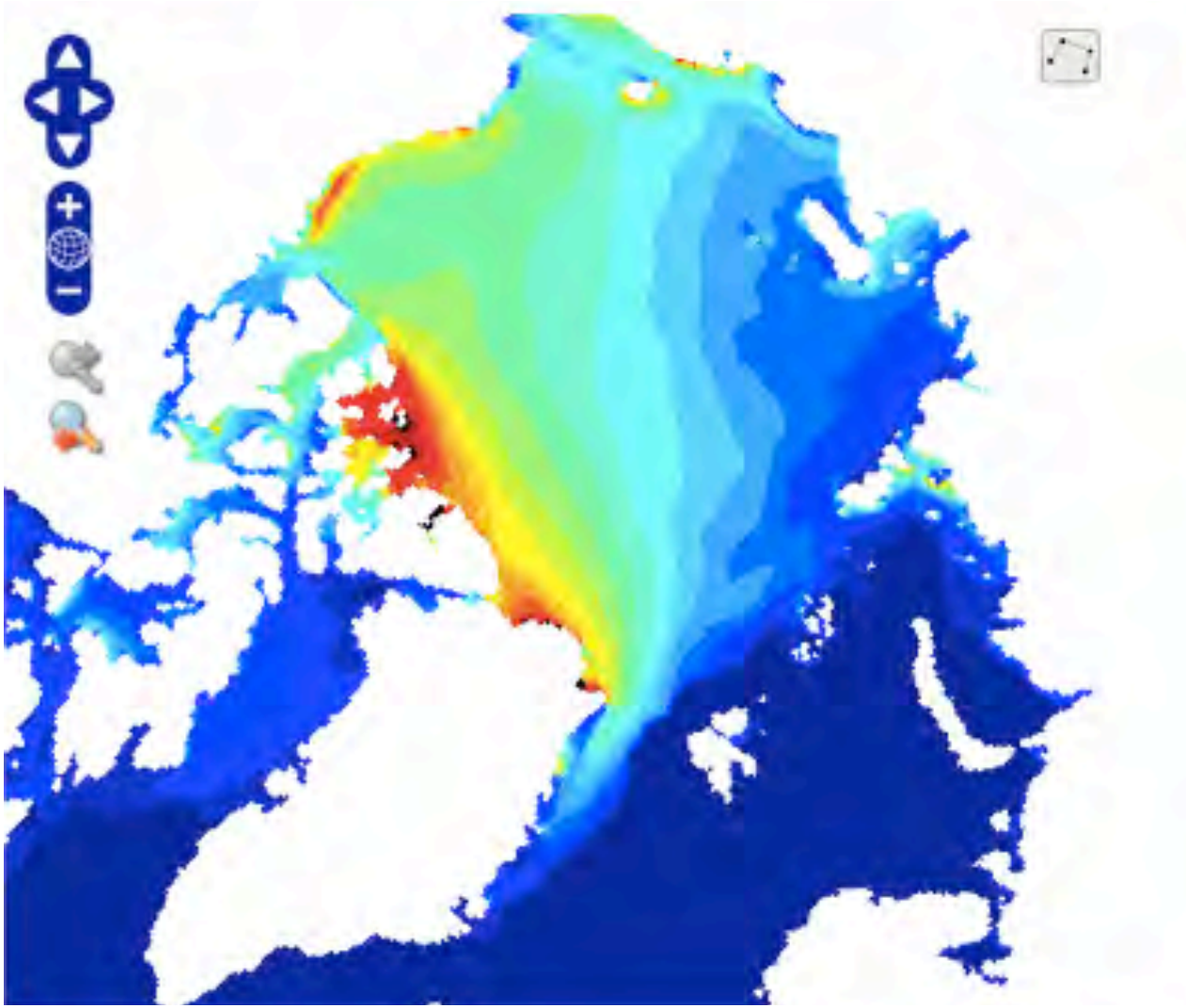
Blue is divergence (openings) and red is convergence (pressure ridge formation)

Sea ice thickness



http://www.myocean.eu

Sea ice forecast

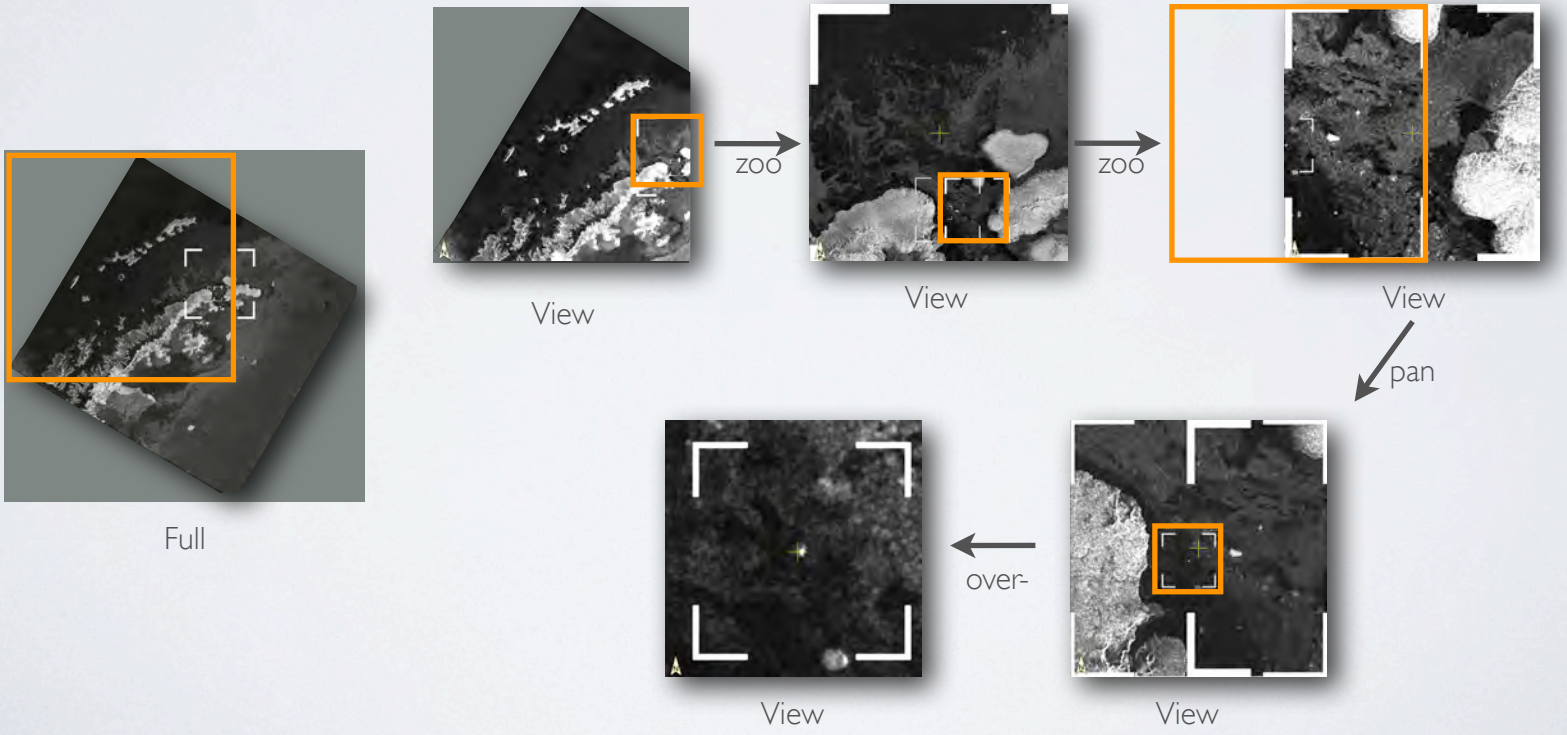


Example of MyOcean forecast of sea ice thickness field of the Arctic

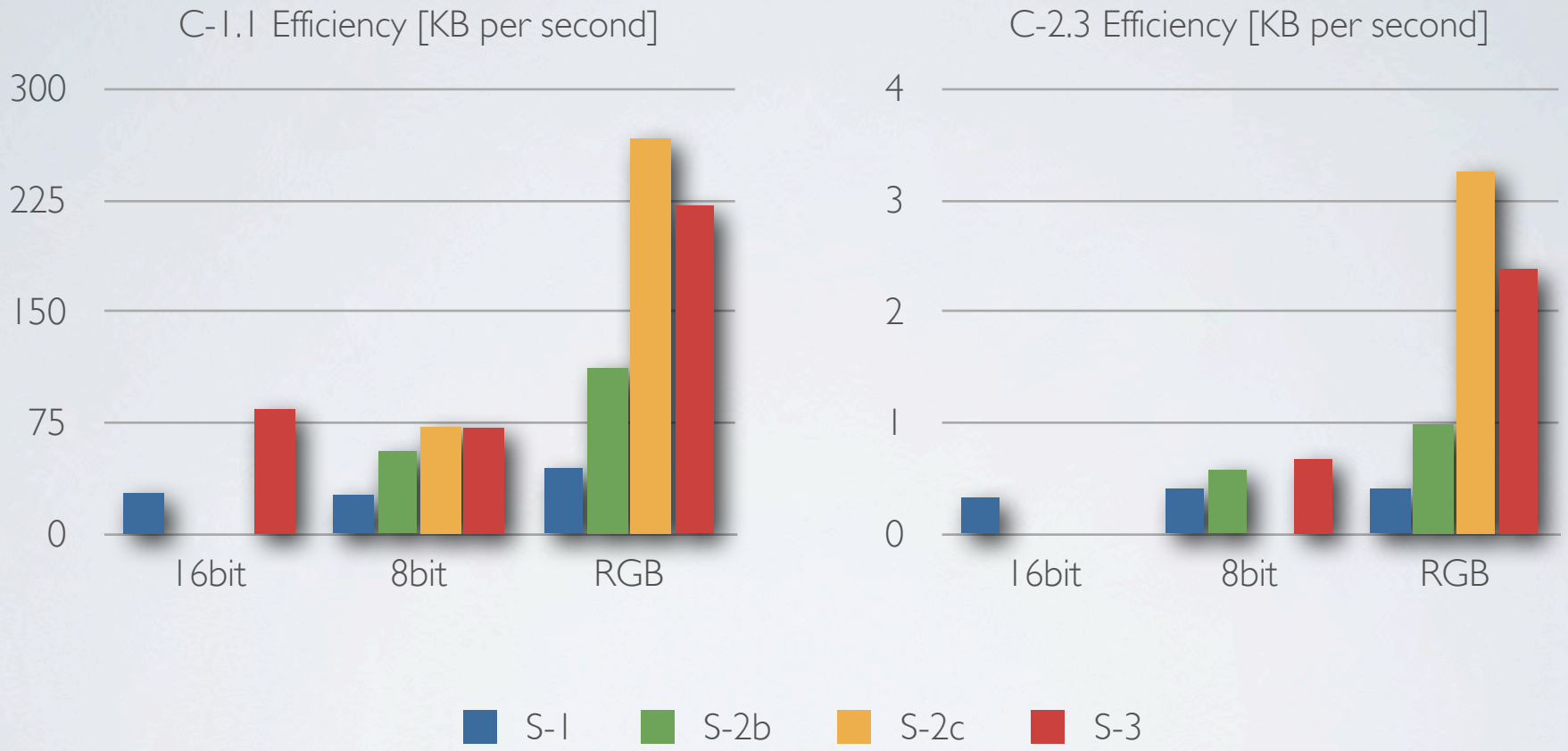
Information delivered through www.polarview.aq and other routes

Testing over low bandwidth communication links

- Testing novel technologies to stream imagery over low-bandwidth communication links
- Aim to measure the performance of image streaming technologies and how they fit user operational requirements
- One test image in variety of bit depths, digital file formats and compression profiles
- Vary the bandwidth, delay, loss, jitter of a simulated data connection
- For each view the individual plus cumulative data volume and transfer times were recorded.



Results - efficiency



* NB - Where blank - no efficiency data could be calculated since these images never completed over C-2.3 network profile

Thank you

Questions

ahf@bas.ac.uk