



DMI

Center for Ocean and Ice

DMI Greenland Ice Service

Ice Information System

14th June 2011



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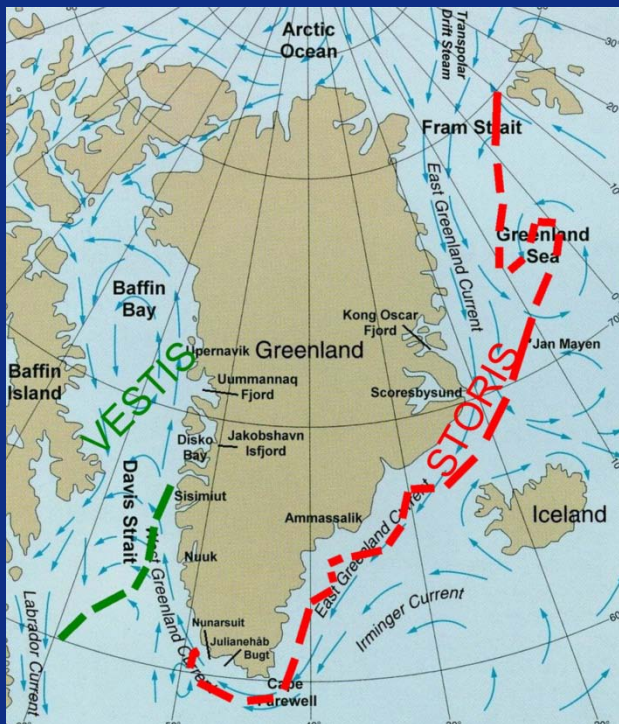
The South Greenland Ice Season (MY-ice)



Ice in main AOI



Bergy water



Forekomst af polaris i Kap Farvel området

Måned	Jan				Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec			
Dato	1-8	9-16	17-24	25-31	1-7	8-14	15-21	22-28	29-31	1-8	9-16	17-24	25-31	1-7	8-15	16-23	24-30	1-8	9-16	17-24	25-31	1-7	8-15	16-23	24-30	1-8	9-16	17-24	25-31	1-7	8-15	16-23	24-30	1-8	9-16	17-24	25-31	1-7	8-15	16-23	24-30	1-8	9-16	17-24	25-31			
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The Ice Service Organization

Ship obs
Near shore obs
(helicopter)

Offshore obs

Radarsat (via Norway, Canada, Scotland)
Envisat (via Norway, ESA Rolling Archive)
NOAA-AVHRR (via Smidsbjerg, Kangerlussuaq)
Terra/Aqua Modis (via Uni Dundee)
AMSR, SSIM, Quikscat, other services

(ArcGIS 9.3.1, in-house developed ice charting extension)
(WGS1984 UTM Zone 24 Lambert Conformal Projection)

Ice Patrol
Narsarsuaq

Ice Center
Lyngbyvej

Ice Charting Office
Atyrau, Kazakhstan

Near shore ice reports
24/7 on site service
Ice piloting
NAVTEX bulletins

Navigation ice charts
Weekly ice charts
Commercial services

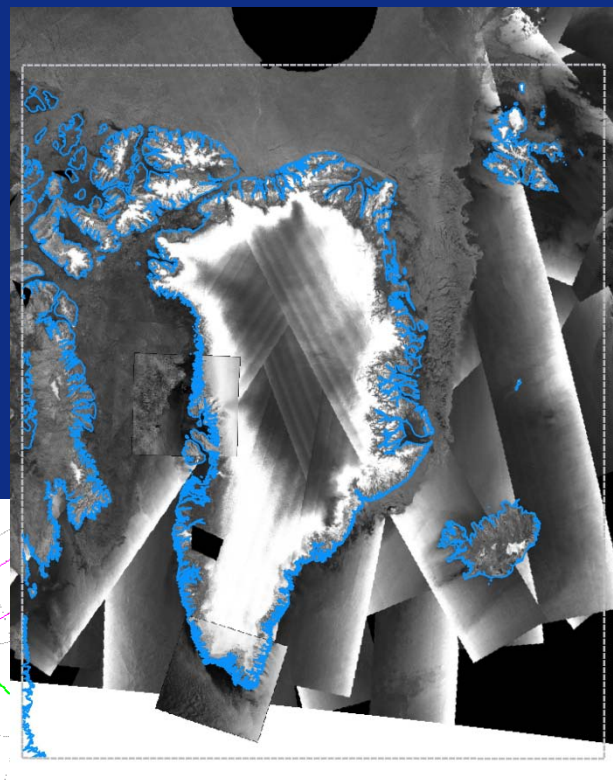
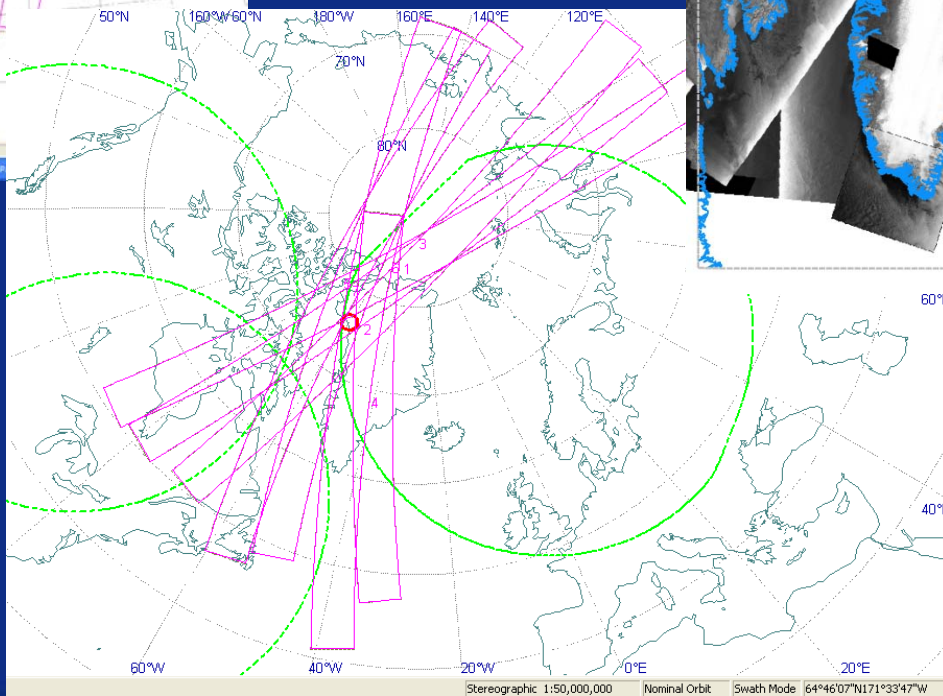
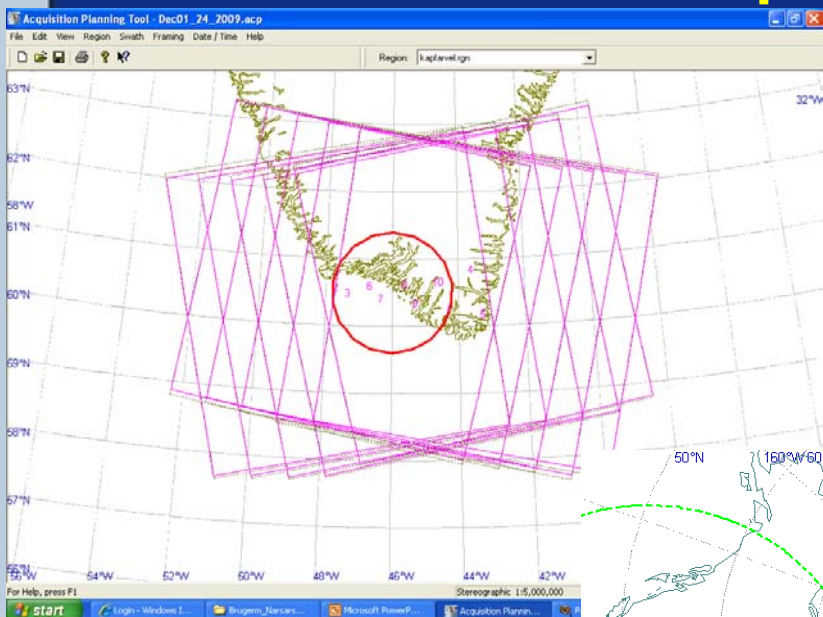




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NRT Synthetic Aperture Radar satellite data is the backbone DMI operation





Operational Setup

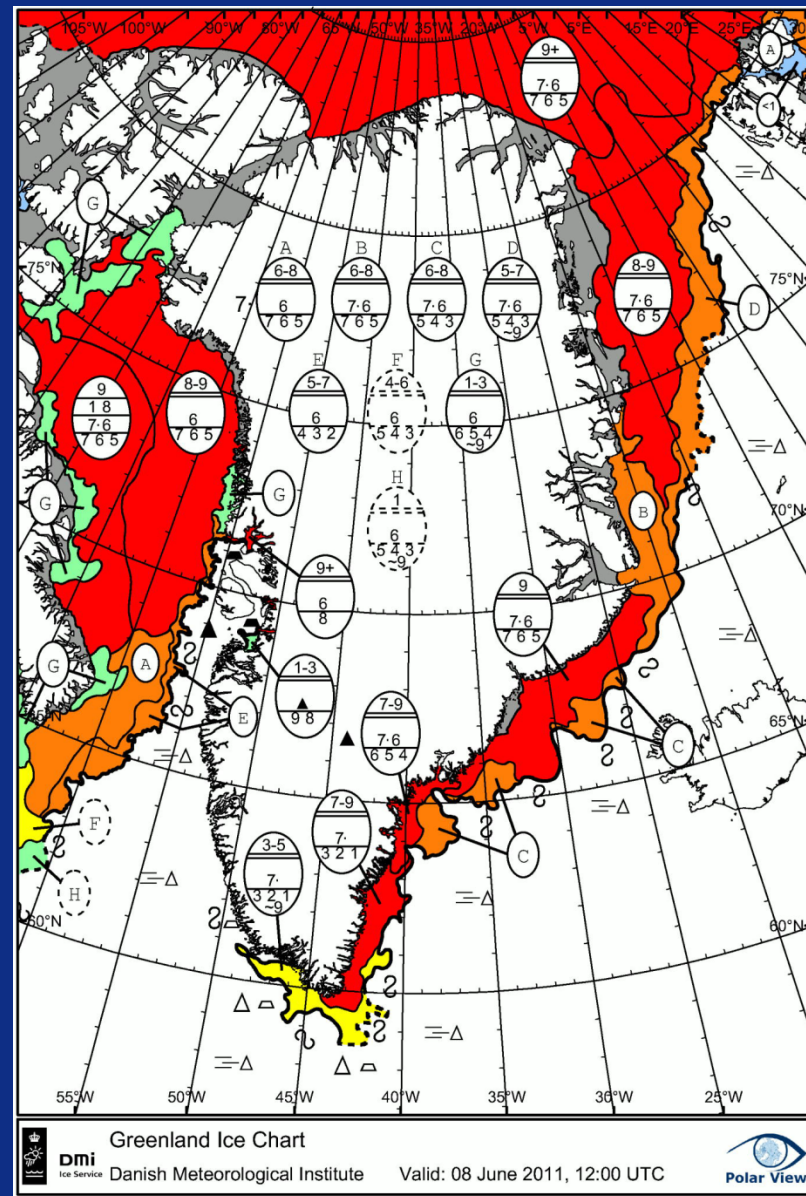
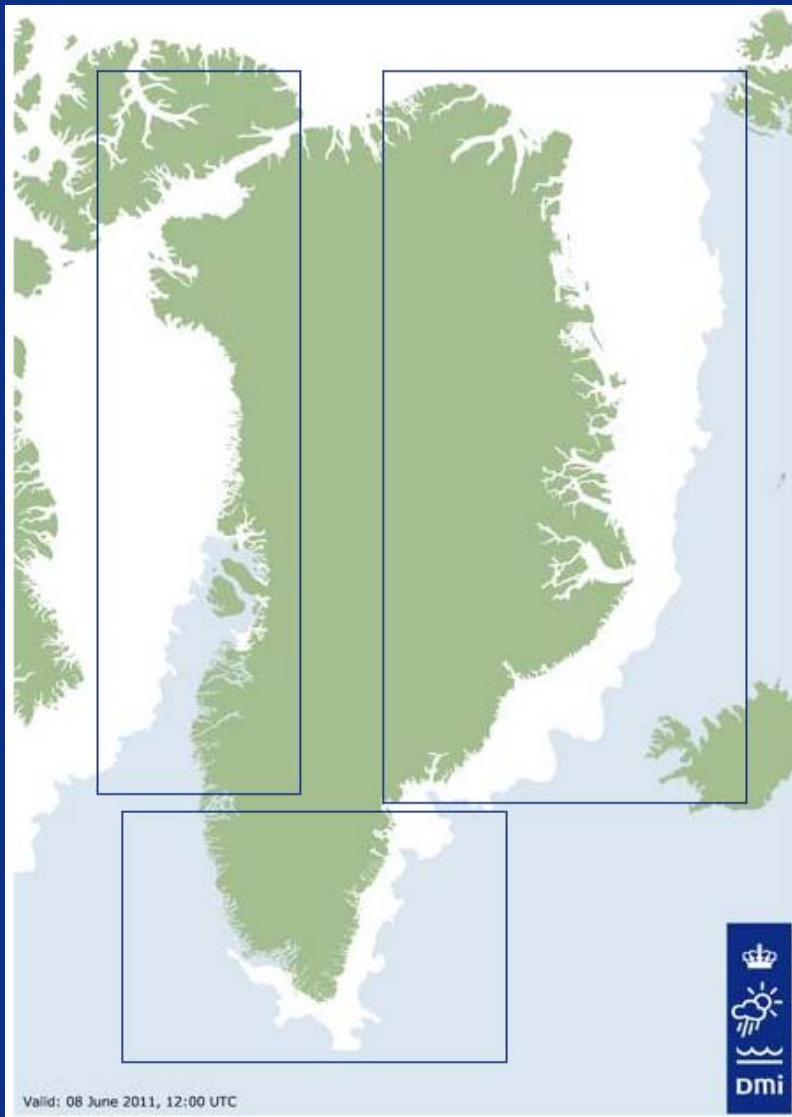
- Helicopter (Air Greenland) charter (South Greenland inshore routes)
- Permanent base Narsarsuaq & CPH Lyngbyvej
- NRT dataflow and ArcGIS (9.3.1) based analysis and presentation system
- Contract with MDA Corporation (Radarsat 1 / 2 data, app. 275 frames/year)
- Contract with KSAT (Envisat ASAR Wide 100 frames/year)
- Contract with Dundee Satellite Station (TERRA/AQUA MODIS daily)
- Access to AMSR/NOAA-AVHRR and ESA Rolling Archive (Envisat)
- Contract with Royal Arctic Line (5 navigators with ice experience)
- Ice group at DMI (8 full time staff, 5 part staff)



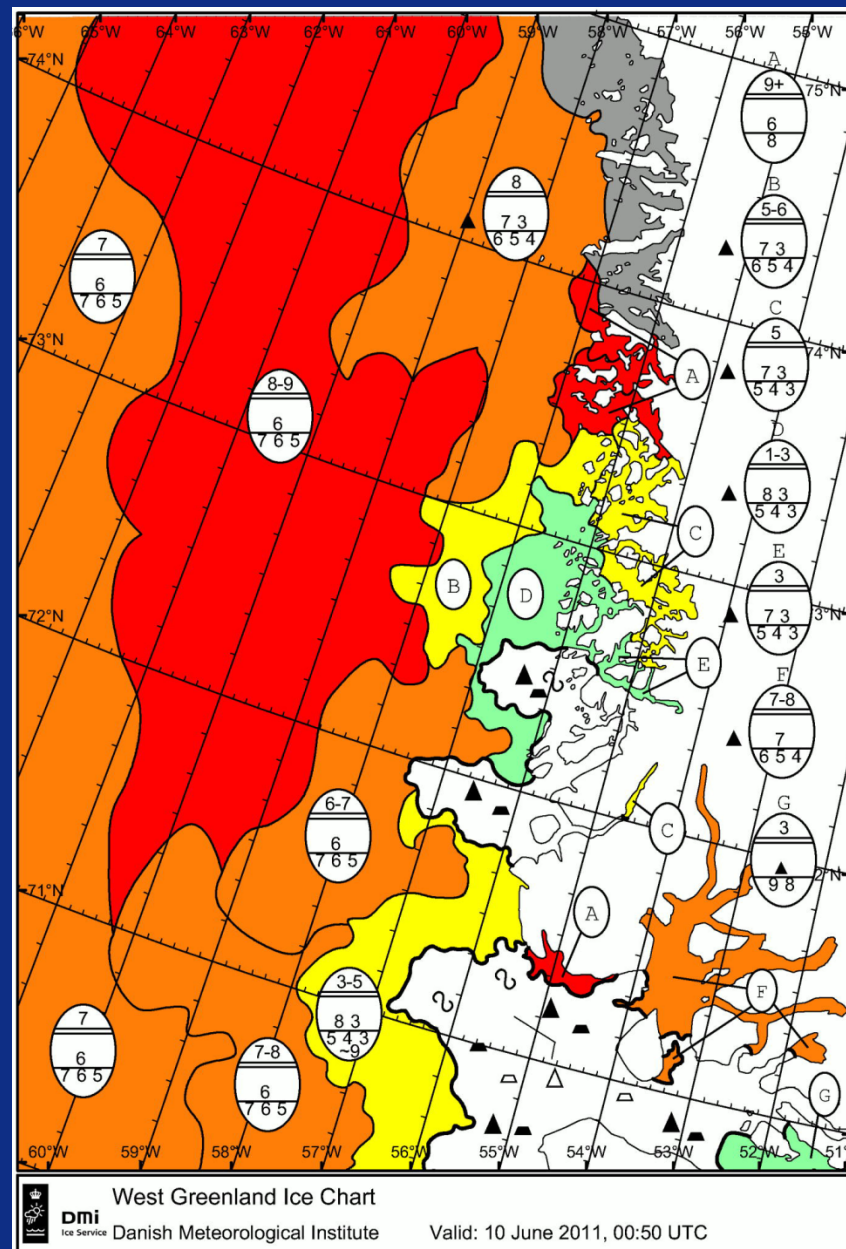
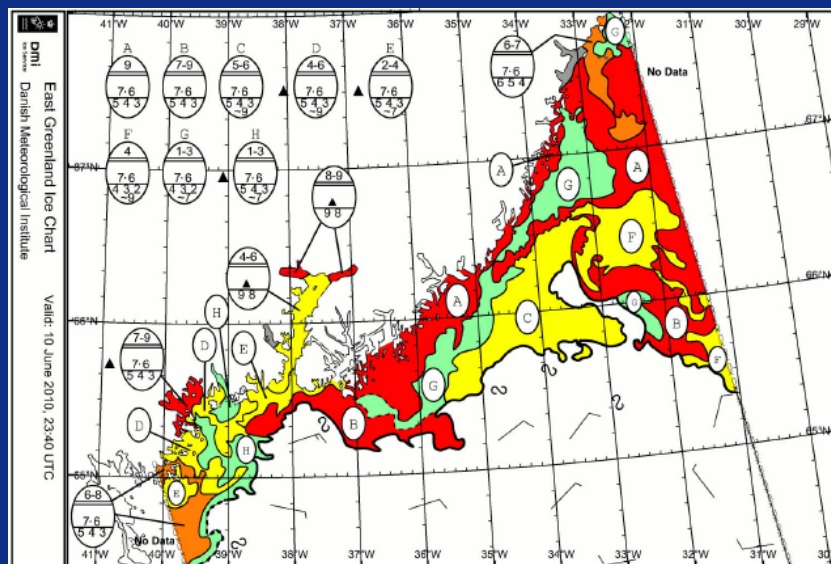
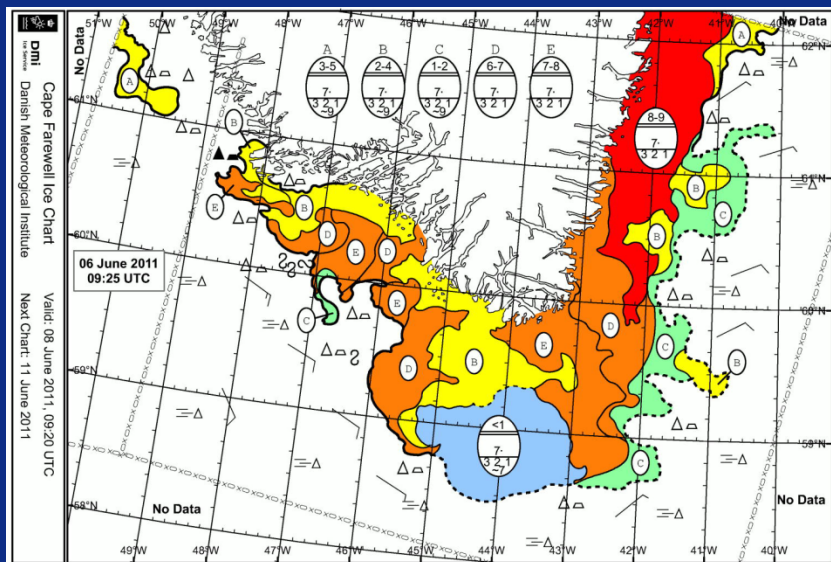
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General ice charts



Navigation ice charts



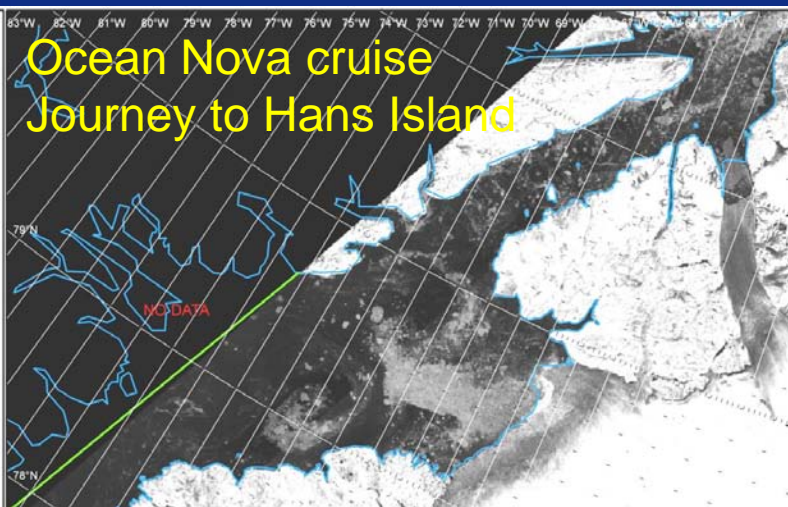


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Products to dedicated users

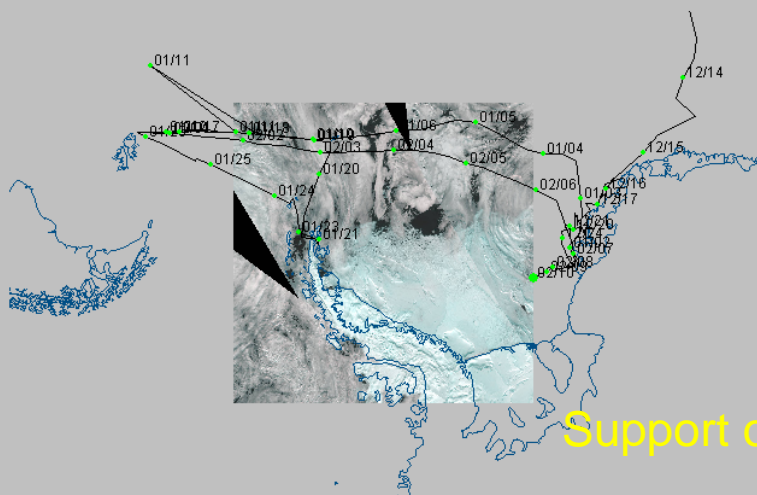
Ocean Nova cruise Journey to Hans Island



DMI
Danish Meteorological Institute
Valid: 12 August 2010, 16:00 UTC
Envisat Quicklook

MERIS.WeddellI1.d22

432.0 nm/100pix
600.0 nm/115pix



Ernest Shackleton

toggle

colorize



v1.46jb

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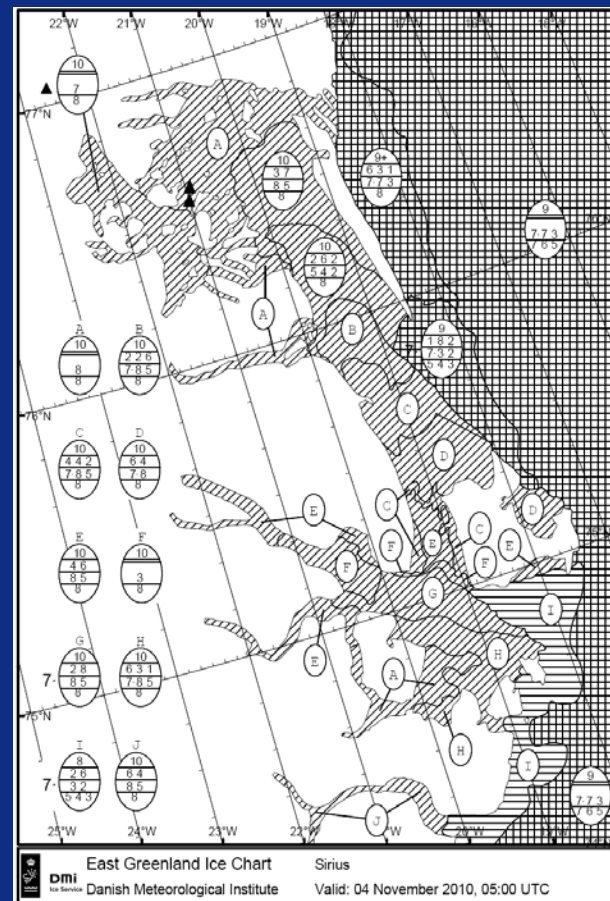
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Ice charts to Sirius dog sledge patrol



East Greenland Ice Chart

Sirius

DMI
Danish Meteorological Institute

Valid: 04 November 2010, 05:00 UTC

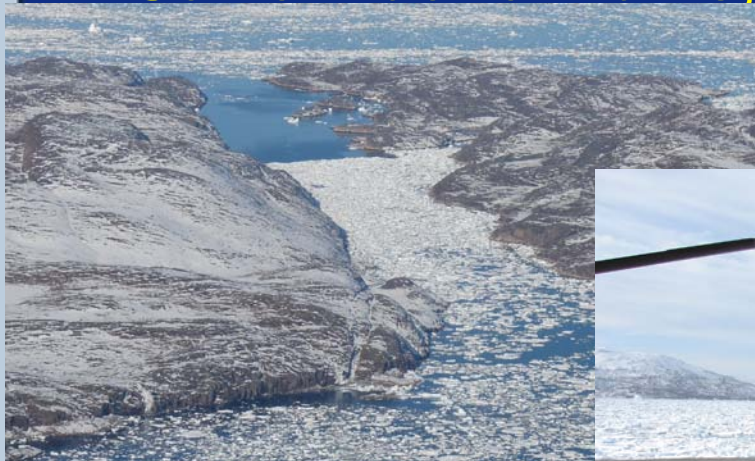
Support of Mary Arctica i Antarctica



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Selvom der er lidt is, behøver det ikke være let...



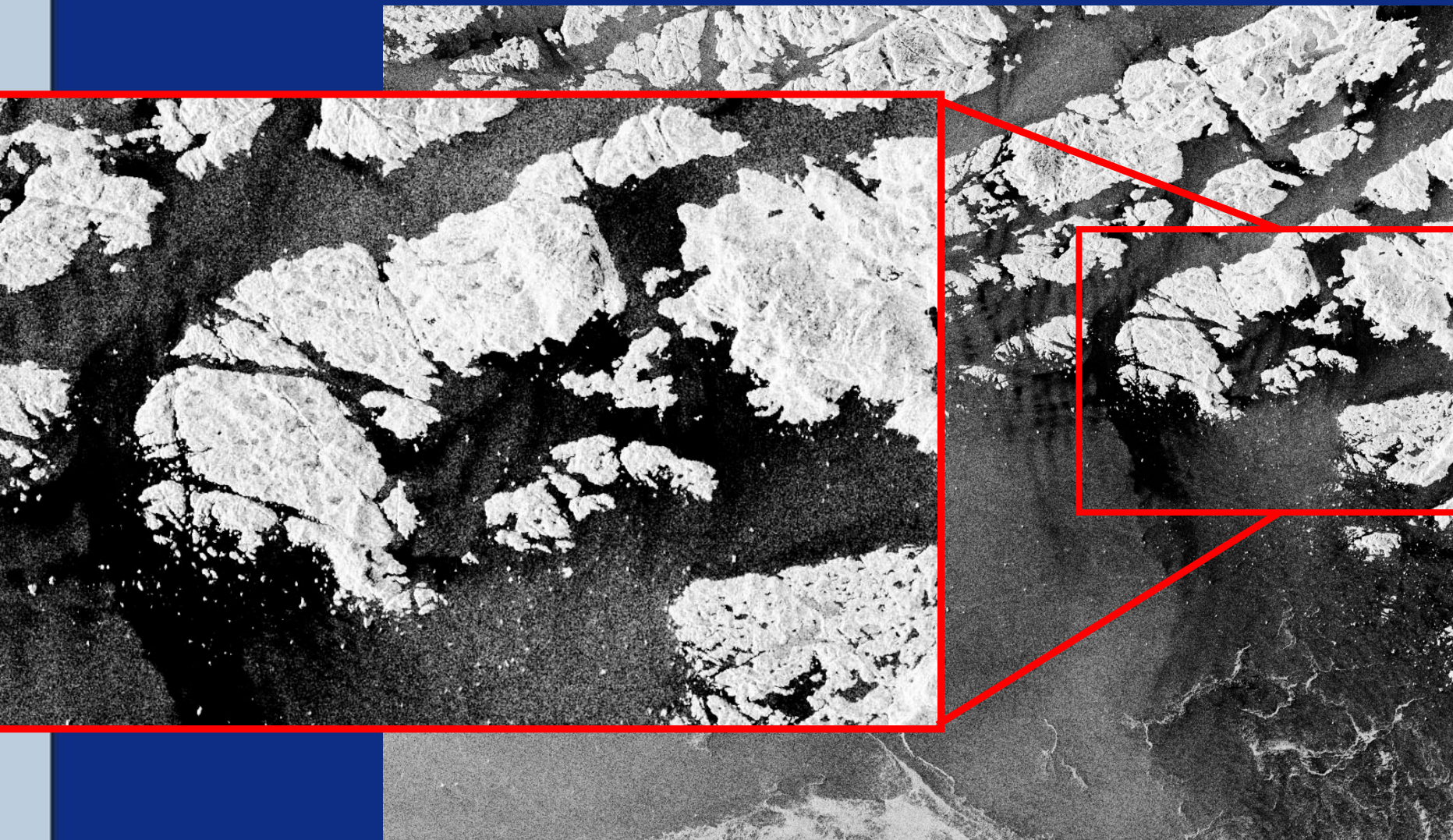


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Flere test af højopløselig Radarsat-1 indenskærs



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Outlooks and forecasts:

- Currently only to the offshore industry (based on sea ice statistics, current ice distribution, forecast winds, climatology and experience)



Long Range Ice Outlook

Prepared by: DMI Ice Service – Copenhagen

Issued: 08 June 2011

Long Range Ice Outlook

Temperatures below average in West Greenland in April and May (see figure on page 2 bottom) seem to have postponed the break-up in the Baffin Bay. No significant wind events are expected since the low pressure systems pass south of Greenland. As a result no sudden clearing of either Block Pitu or Block Napariag is expected.

Block Pitu: Decaying first-year ice (9/10 in concentration) is still located in Block Pitu due to the southerly winds observed lately, and open water is expected to occur one or two weeks later than average.

Block Napariag: The ice edge is located about 45 nm E of the analysis point and 7-9/10 of first-year ice still occupy the block.

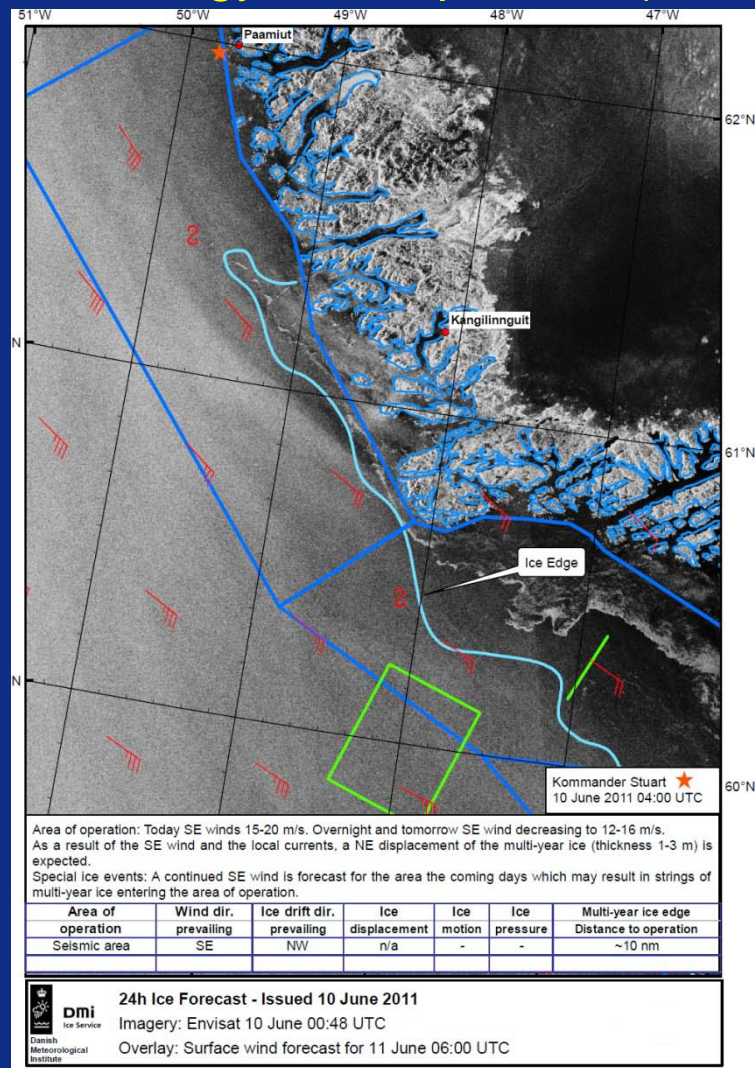
South Greenland: The northern analysis point in South Greenland (Ice Transect) is currently occupied with 6-8/10 of multi-year ice (thickness 1 – 3 meters), and the multi-year ice originating from the East Greenland coast will continue to encroach the area the coming month. The southern analysis point is currently in open water, but there is a risk of multi-year ice re-entering the area until early July.

Coordinate / Location	Estimate for open water 2011 (permanent)	Ice Charts 2000 – 2010 (median)	Air Temperature	Wind	Ice Conditions
7430N, 6000W (Block Pitu)	18 June – 02 July	18 June	→	↔	→
7120N, 5840W (Block Napariag)	18 – 25 June	18 June	→	↔	→
6930N, 6000W (Block Eqgua)	16 – 30 July	30 July	→	↔	←
6018N, 4657W (South Greenland)	02 – 09 July	—	↔	↔	↔
5958N, 4751W (South Greenland)	Open Water	—	—	—	—

↔ No significant influence ← Earlier Break-Up → Later Break-Up

- Validation and Operational testing of HYCOM-CICE numerical Model setup (10 km grid, 66 hours forecasts)

- Long term goal is to produce forecast products to the public





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The Offshore season 2010 (Greenland, DMI services)

GX Technology East grønland (73-81N) (ODEN & GEO EXPLORER)

Cairn Energy drillings in Disko West Block 1 (Utallige skibe)

Disko West Ice studies cooperation formalized (ExxonMobil, Husky, Chevron, Dong, Cairn, PA Ressources, Nunaoil)

Northeast Greenland (Kanumas East) Ice studies cooperation formalized (Chevron, ExxonMobil, ENI, Conocophillips, Shell, Dong, Statoil, JogMec, Statoil, Nunaoil)

6 license blocks awarded in Baffin Bay (Kanumas West)

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Cairn test drilling in the Kap Farvel region postponed to 2012



Products 2010:

- DMI and Narsarsuaq offices manned year round
- 80 near shore ice reports in Danish, Greenlandic (English in a test phase)
- Numerous NAVTEX bulletin circulated from Narsarsuaq
- Number of icecharts produced

Jan 10: 30

Feb 10: 40

Mar 10: 44

Apr 10: 43

Maj 10: 47

Jun 10: 48

Jul 10: 59

Aug 10: 51

Sep 10: 42

Oct 10: 22

Nov 10: 29

Dec 10: 34

TOTAL: 491 (2009: 477)

Formats available: pdf, png, gif, shape, SIGRID3

User meeting: Annual

Publications: None

Increasing demands for quicklooks / image products / product presentation

