



**Second Ice Analysts Workshop June'2009**  
15-19 June 2009 Tromsø, Norway

# Report from the 2<sup>nd</sup> Ice Analysts Workshop (IAW-II)

IAW-II OrgCom



# Background and logistics

The second “Ice Analysts Workshop” (IAW-2) was held 15-19 June 2009 in Tromsø, Norway, at the Norwegian Meteorological Institute. The workshop was planned to focus on the practices and methodology of operational ice charting and was a followup to IAW-I (12-17 June 2008, Rostock, Germany, Bundesamt für Seeschifffahrt und Hydrographie, Ice Service).

IAW-2 was initiated at the 9<sup>th</sup> session of the International Ice Charting Working Group (IICWG-IX, Luleå, Sweden, 20-24 October 2008) and 23<sup>rd</sup> session of the Baltic Sea Ice Meeting (BSIM-23, Helsinki, Finland, 31 August – 2 September 2008) and was supported by the WMO/IOC Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) Expert Team on Sea (ETSI).

Organizing Committee: **Helge Tangen** (met.no Regional Director), **Vasily Smolyanitsky** (ETSI chair), **Jurgen Holfort** (BSIM chair), **Marie-France Gauthier** (IICWG DICSSC), **Alice Soares** (WMO Secretariat)

Logistics: Background document, agenda, invitations from the WMO Secretariat to PR, local arrangements, resources for case studies



# IAW-II participants:

1. Adamsen Nora (DMI)
2. Alvarstein Signe (met.no)
3. Bessonov Vladimir (AARI)
4. Buus-Hinkler Søren (DMI)
5. Dinessen Frode (met.no)
6. Eriksson Patrick (FMI)
7. Harnvig Klaus (DMI)
8. Holfort Jürgen (BSH)
9. Hughes Nick (met.no)
10. Jónsdóttir Ingibjörg (Uni.is)
11. Nicol Lind Lisa (SMHI)
12. Niskanen Tuomas (FMI)
13. Robertsen Trond (met.no)
14. Schmelzer Natalija (BSH)
15. Smolyanitsky Vasily (AARI)
16. Szorc Christopher (NIC)
17. Tangen Helge (met.no)
18. Weir Laurie (CIS)
19. Soares Alice (WMO)





# Agenda

## Day 1

- Registration
- Workshop Opening
- **Reports by national services on current status and key points for ice mapping systems and techniques for the last season 2008/2009**
- **Identification of strategy for comparison and formation of regional groups**
- Presentation of online resources to be used during case-studies
- Identification of a strategy for comparing practices and ice products
- Experts form 4 regional groups: West Arctic (Barents/ Greenland Seas) / East Arctic (Beaufort/ Chukchi /Bering Seas) / Baltic Sea / Antarctic
- **Case study 1: Comparison of routine ice charts and satellite imagery from the past season 2008-2009 by regions and national ice services**
- Experts break for comparison analysis by regions







# Day 2

- Daily logistics
- **Discussion 1:** Identification of differences in presentation schemas, list and uncertainties of sea ice parameters by regions, seasons and sensors for the routine ice charts and imagery for the past 2008-2009 season
- **Case study 2:** Online analysis of synchronous satellite imagery by ice analysts for 3 selected regions (West Arctic (Barents/ Greenland Seas) / East Arctic (Beaufort/ Chukchi /Bering Seas) / Baltic Sea)
- Experts break for individual online analysis and compilation of ice informational products (charts and/or annotated imagery)
- 3 regional groups formed: West Arctic (NO, DK, IC), 1 ice chart for North Greenland sea, East Arctic (CA, RU, US), 2 charts for the Bering Sea (AARI & NIC) and 3 charts for the Baltic Sea (DE, FI, SE)
- **Case study 2 /Training** on Identification of multiyear ice floes in the Canadian Arctic
- Summary for 2<sup>nd</sup> day
- Dinner at at "Arctandria"



1.377.030

ChopIce

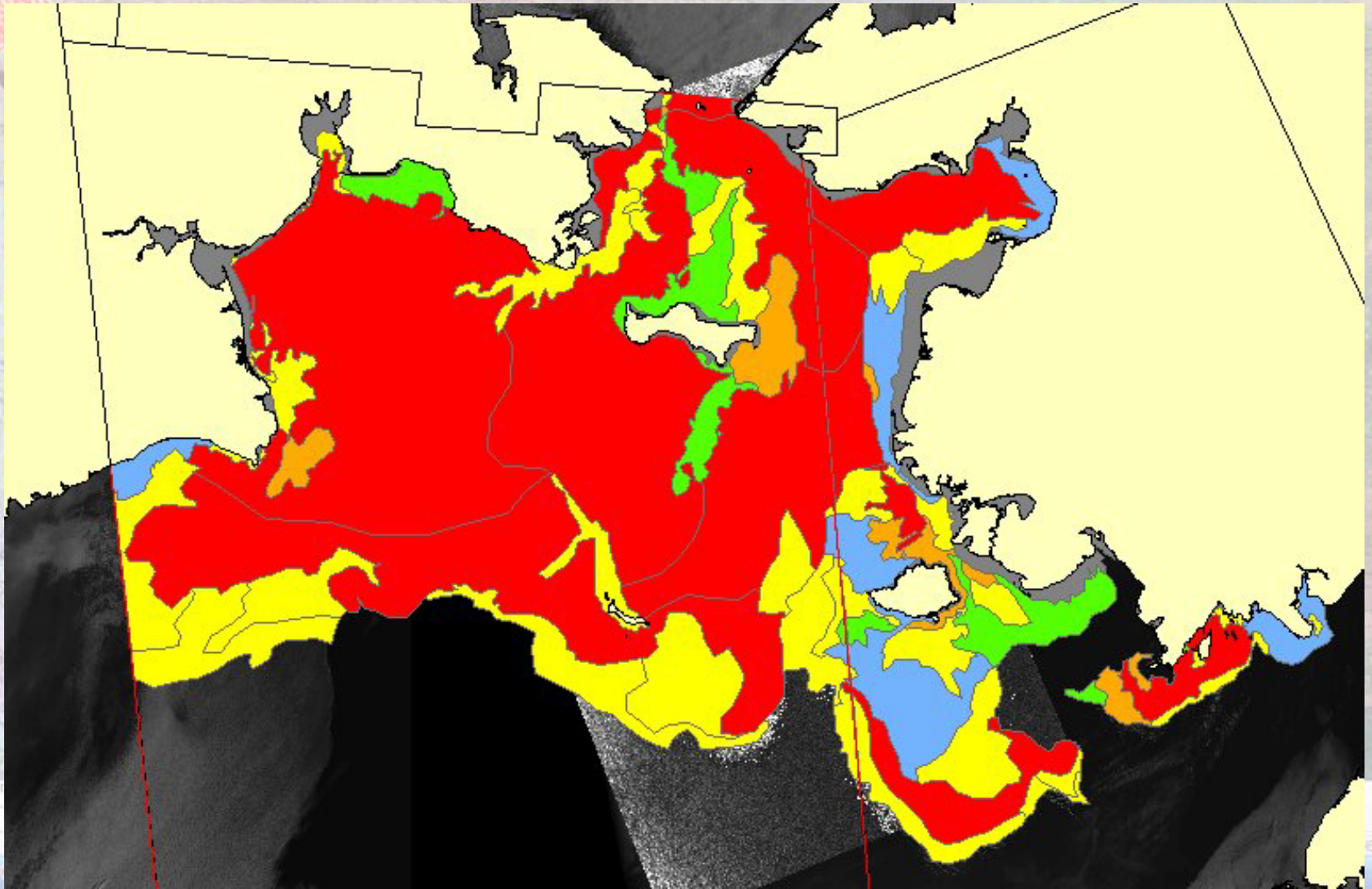




# East Arctic – case study 2

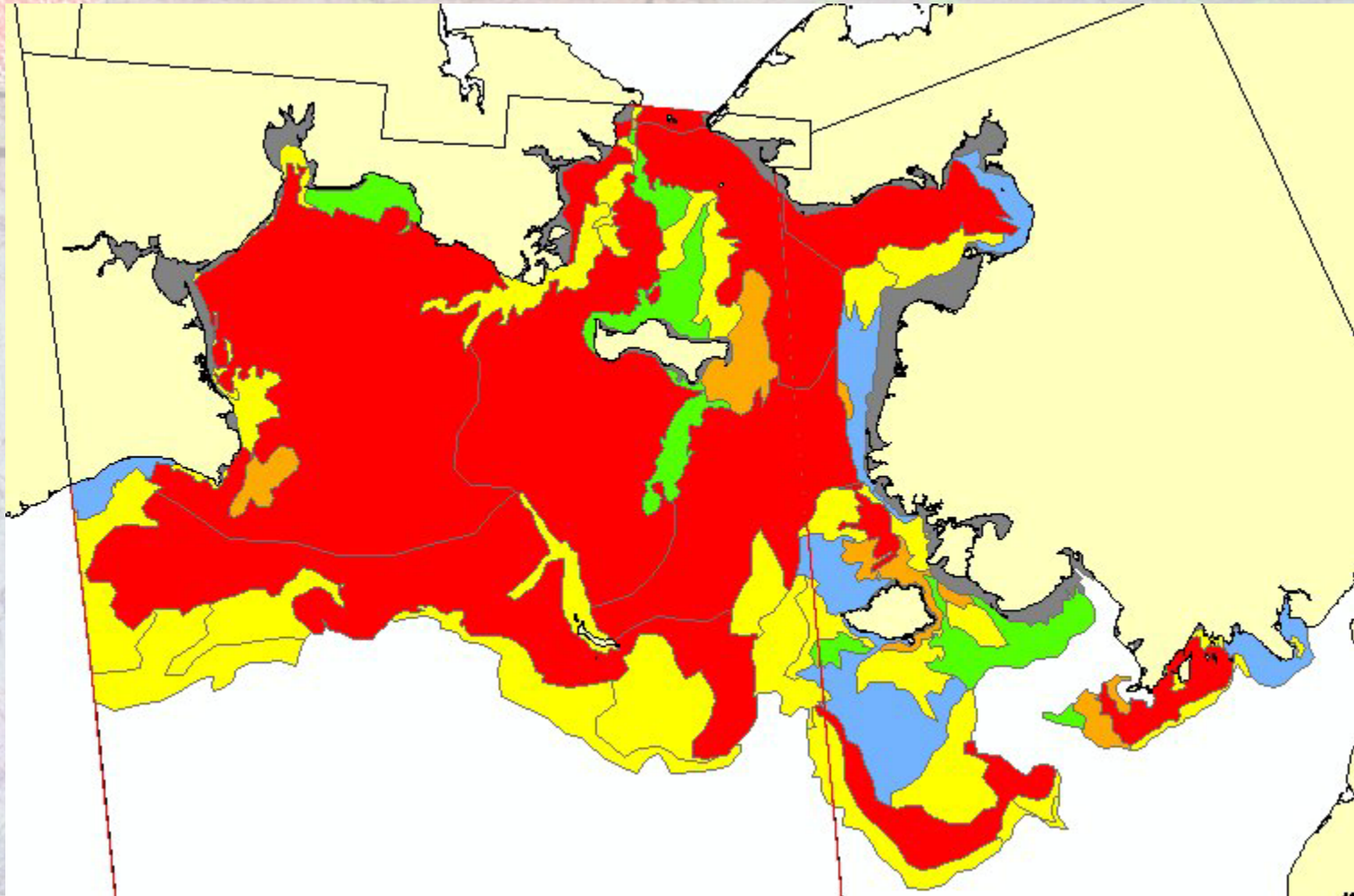


# NIC-CISAnalysis with imagery





# NIC Analysis Bering Str.

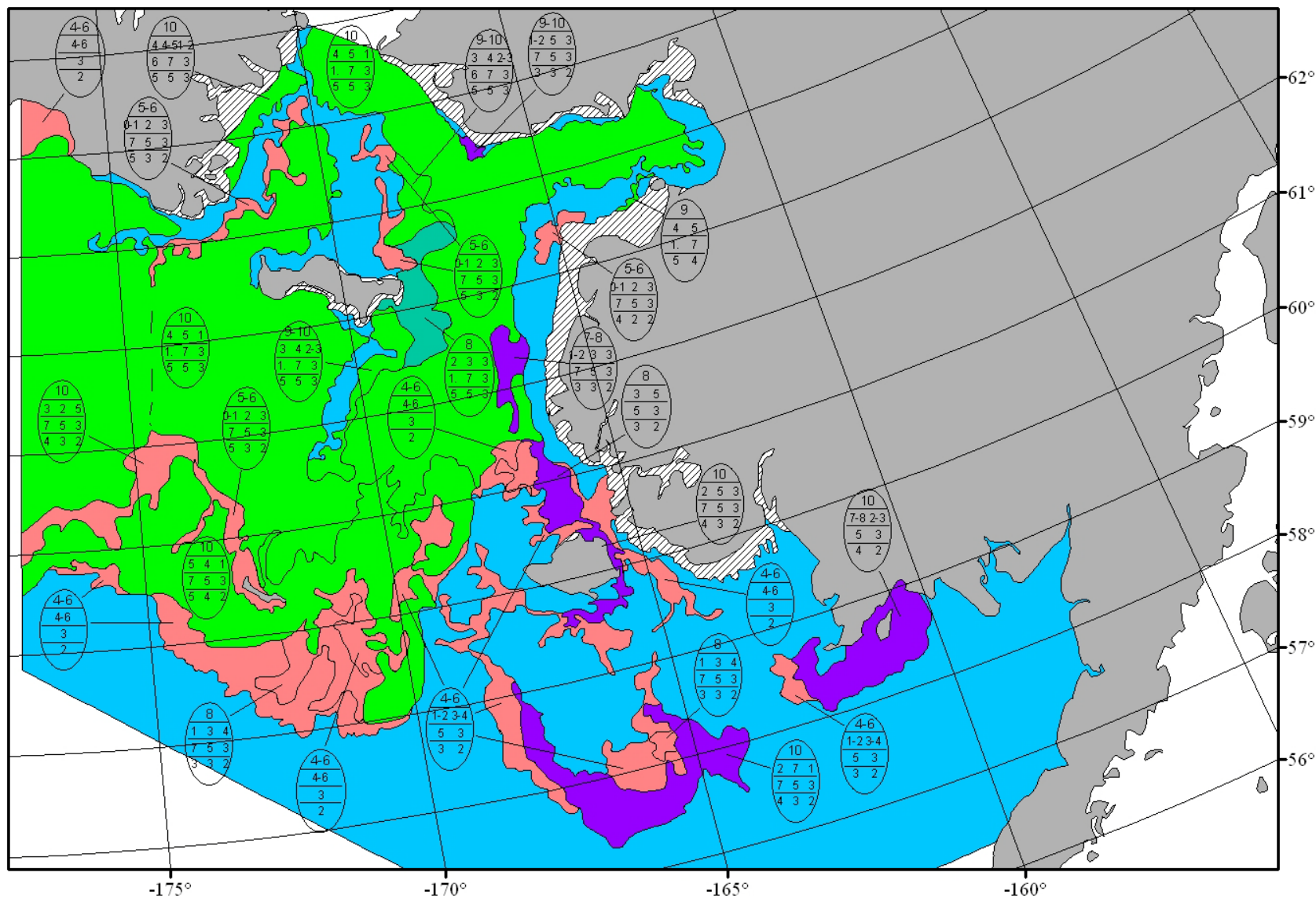




## • **Case Study 2**

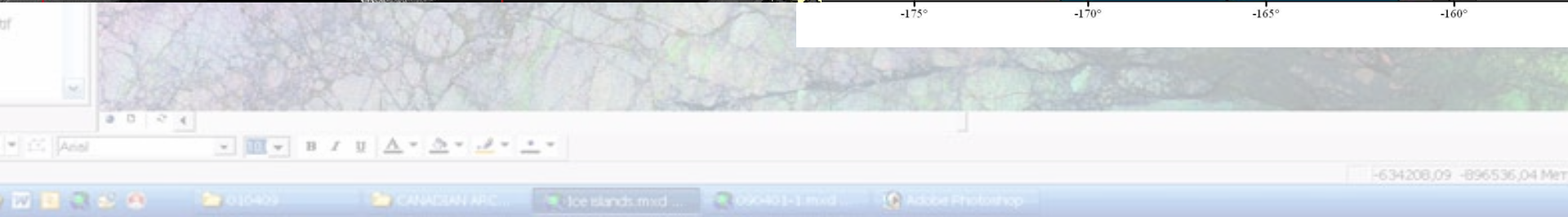
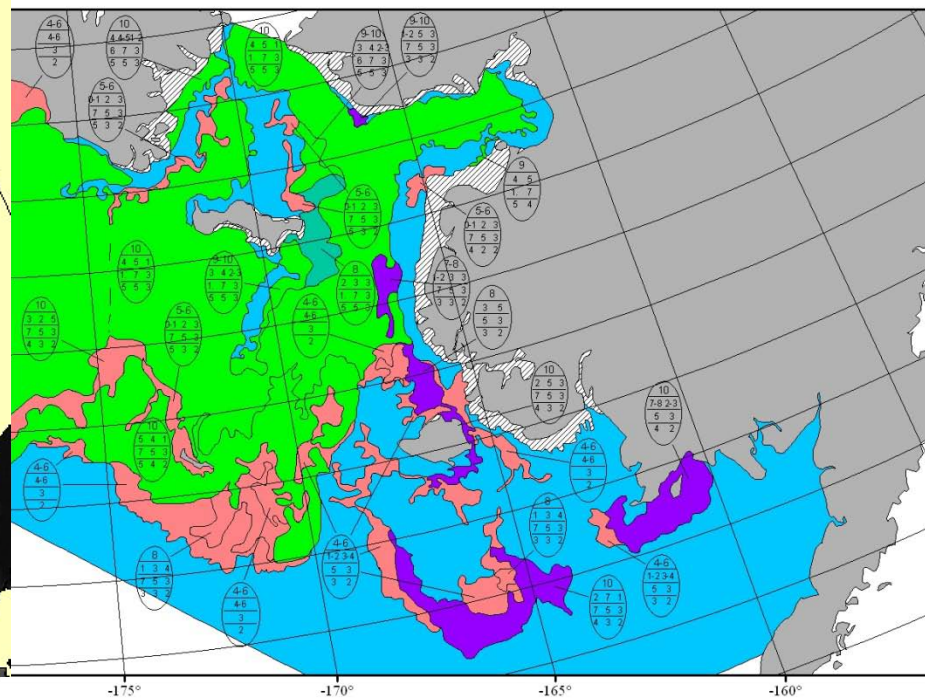
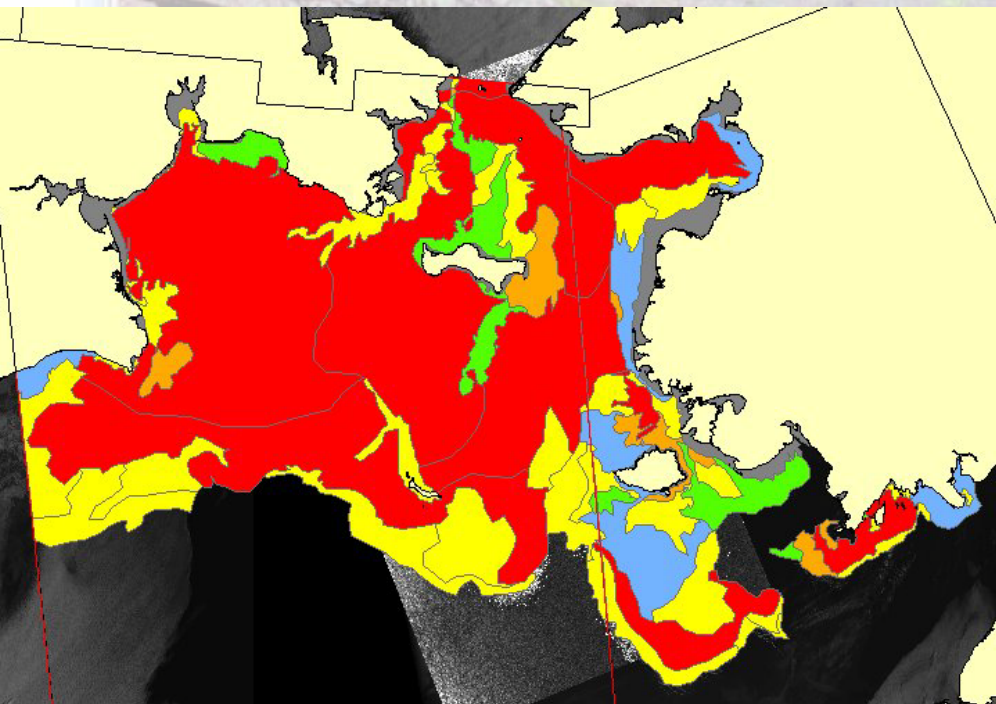
- Synchronous Analysis of Bering Strait East Imagery April 1 2009 - AARI and NIC, CIS
- Both NIC AARI use using Arcmap, CIS Arcinfo—incompatible, therefore worked with NIC
- Goal image analysis of Bering strait by two separate experts. Resulting products will be scrutinized for similarities.
- Missing in this case study was direction what scale should we be analyzing: i.e. how detailed, what is the time limit.
- This is important to ensure parody in the exercise. We also had difficulties in establishing common projections: stereographic, NIC WGS84, problems with uncommon central meridian. So we ended up using the US data.
- **AARI**
- Loads imagery for May 06
- Dmsp-ols-.55 km res/RSAT-100m res. For May 5 & 6th
- Would reuse yesterdays fast ice if available.
- Starts with open water/edge and switches between various sensors to complete exterior edge.
- -then heads to fast ice..uses OLS and prefers NOAA and MODIS as opposed to SAR for fast ice.
- -when fast ice completed then moves to concentration of interior ice polygons.
- There is an optimal zoom level to work at.
- Know you client.
- Vladimir does all his lines and then his eggs.
- **NIC/CIS**
- NIC commences with fast ice, the edges, and then polygon tagging.
- CIS would roll over fast ice from yesterday. Reanalyze fast ice and make changes as required.
- CIS analyst, depending on number of frames to analyze will work in subsections. If small scale. CIS adds eggs incrementally, while NIC add all eggs at end of line definition.
- Eg. If there were 3 rsat frames may do one frame in its entirety before moving to next.
- Both can work either way....generally speaking we all go from most easily identifiable ice feature to more difficult







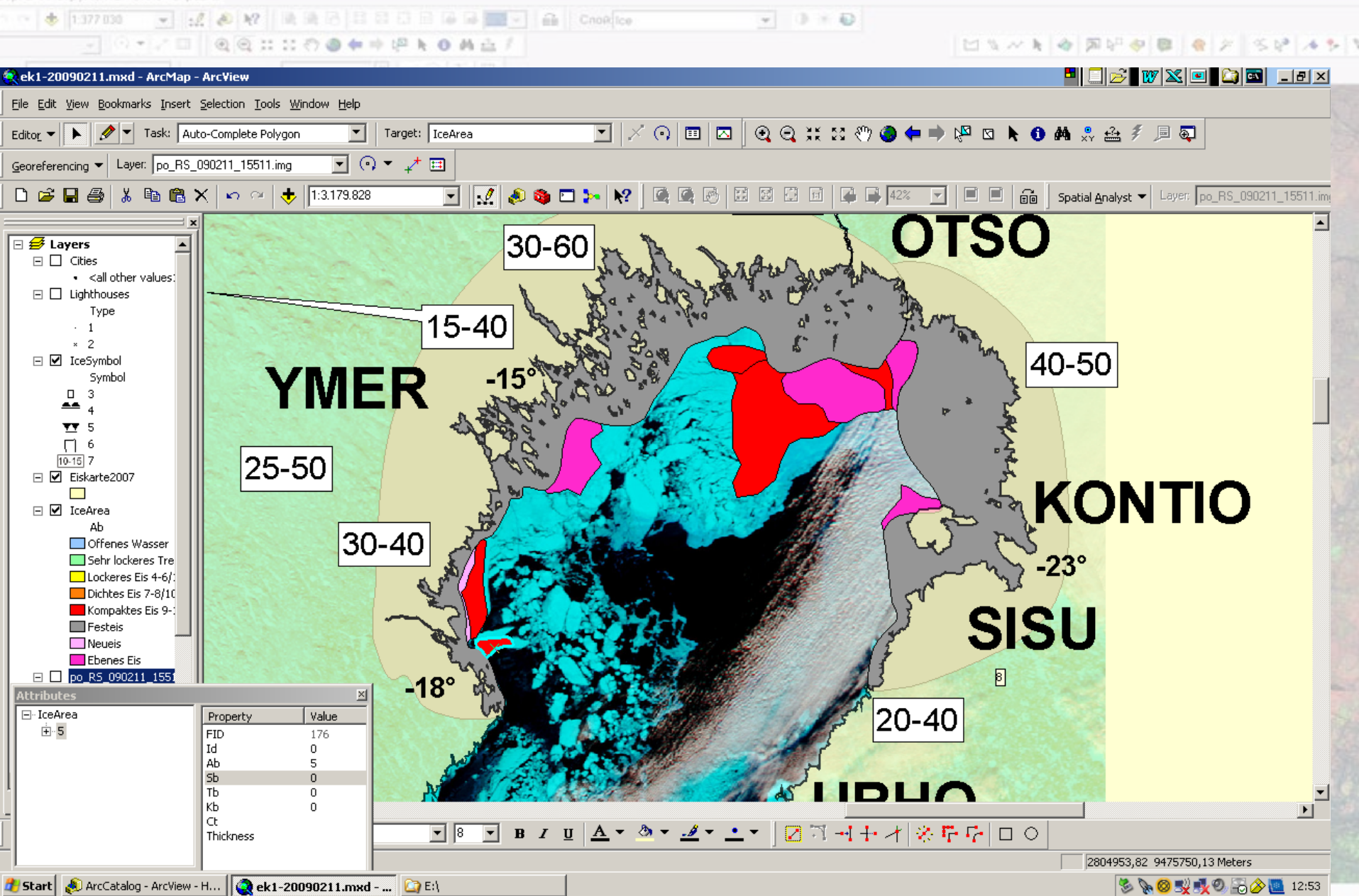
# NIC-CIS-AARI Analysis with Bering Strait Imagery









# Baltic – case study 2









Editor ▾ ▶  Task: Auto-Complete Polygon ▾ Target: IceArea ▾                   

1:1.706.371

Spatial Analyst Layer: po\_RS\_090211\_15511.img

The screenshot shows the 'Layers' panel in QGIS. The 'IceSymbol' layer is selected and expanded, showing a list of ice types with corresponding symbols. The 'IceArea' layer is also expanded, showing a legend for ice types with color-coded boxes. The 'IceSymbol' layer is currently set to 'IceSymbol'.

**-18°**

Creates a zonal histogram

Choose the layer for the Create Contours and Histogram tools

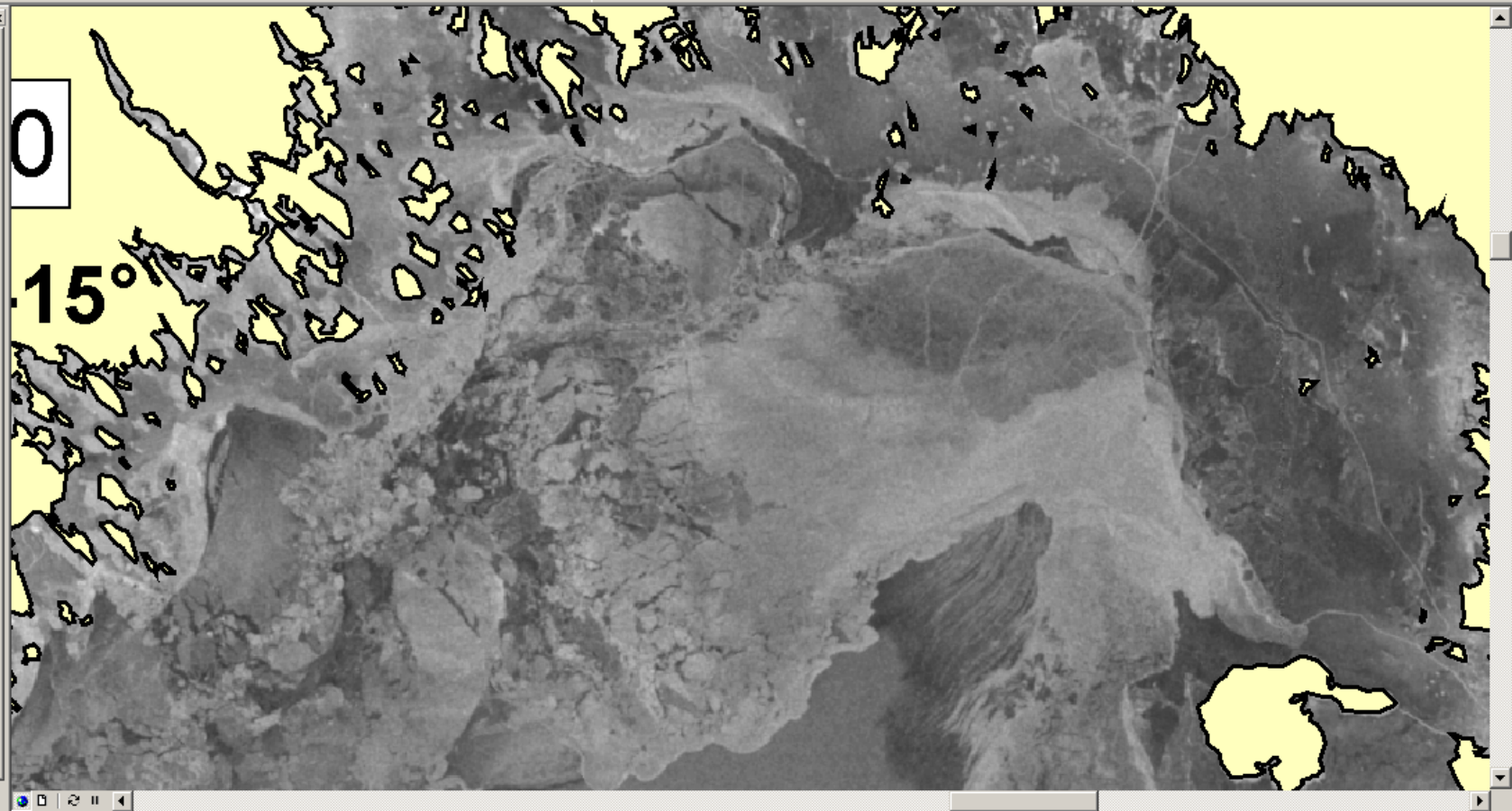
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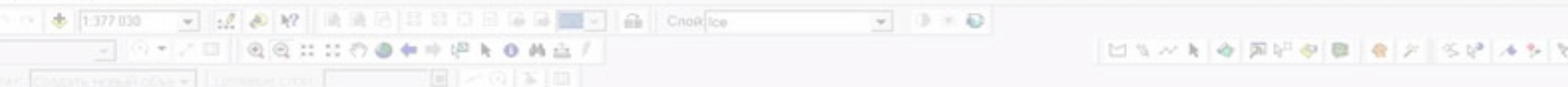




- Layers**
- ☐ Cities
    - <all other values:
  - ☐ Lighthouses
    - Type
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    - Kompaktes Eis 9-10
    - Festeis
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  - ☒ Gulf\_of\_Bothnia.2007
    - RGB
    - Red: Band\_1
    - Green: Band\_2
    - Blue: Band\_3
  - ☐ Gulf\_of\_Bothnia.2007







ek1-20090211.mxd - ArcMap - ArcView

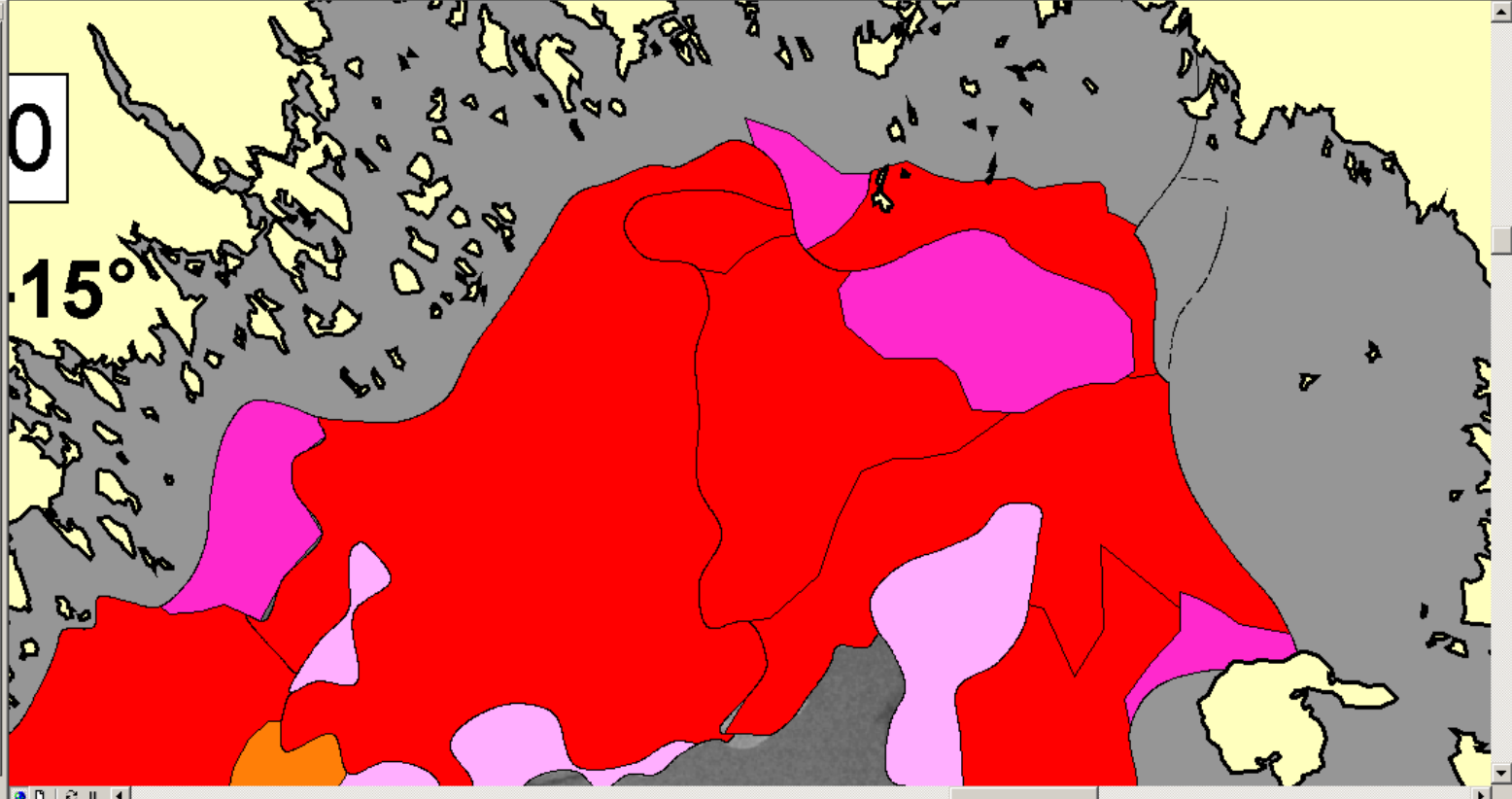
File Edit View Bookmarks Insert Selection Tools Window Help

Editor Task: Auto-Complete Polygon Target:

Georeferencing Layer: po\_RS\_090211\_15511.img

1:1.484.622 42% Spatial Analyst Layer: po\_RS\_090211\_15511.img

- Layers**
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  - ☒ Gulf\_of\_Bothnia.200
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  - ☐ Gulf\_of\_Bothnia.200



Display Source Selection Drawing Arial 8 B I U

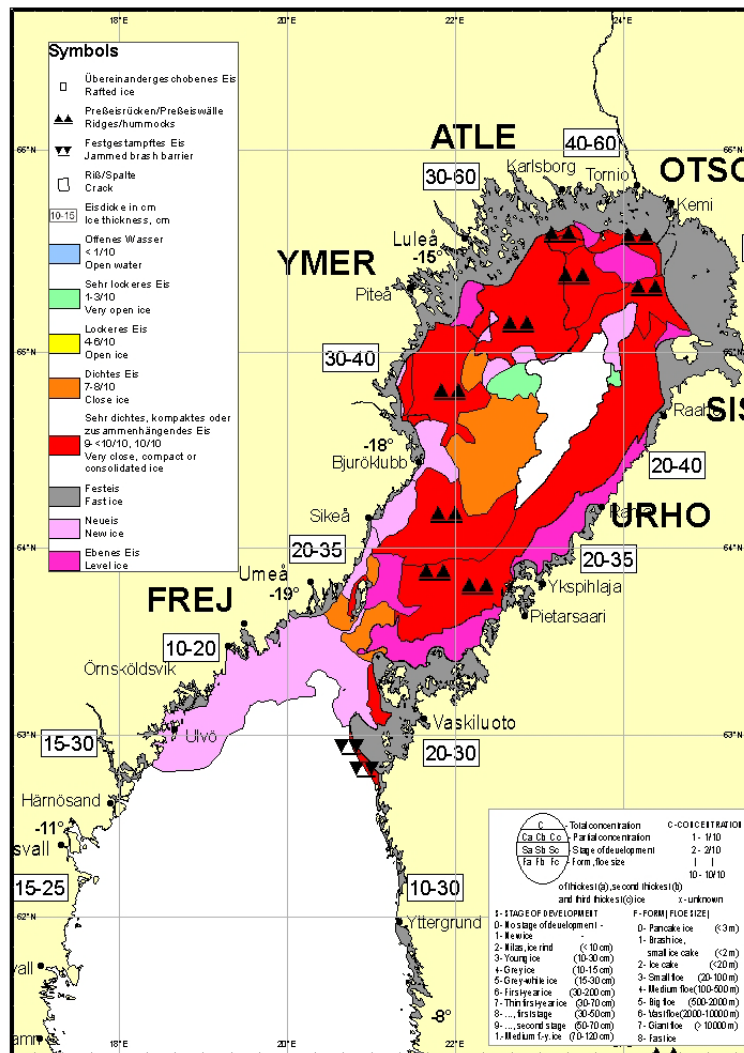
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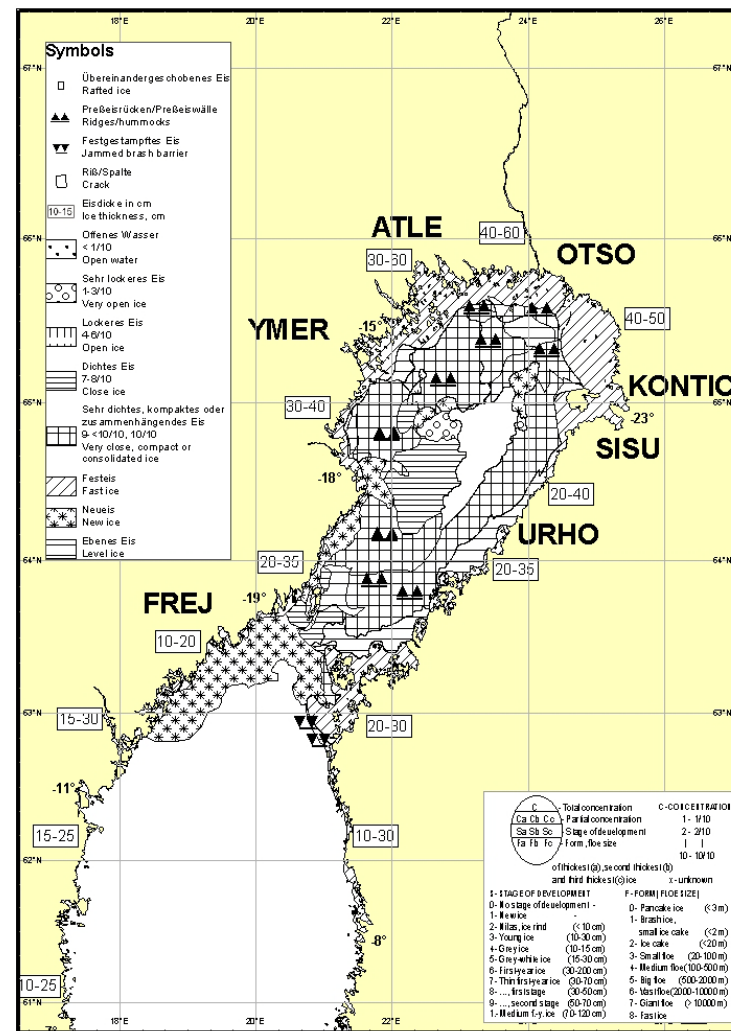
Bundesamt für Seeschifffahrt  
und Hydrographie

EISÜBERSICHTSKARTE Nr. 18  
Jahrgang 82 Rostock, 16.02.2009



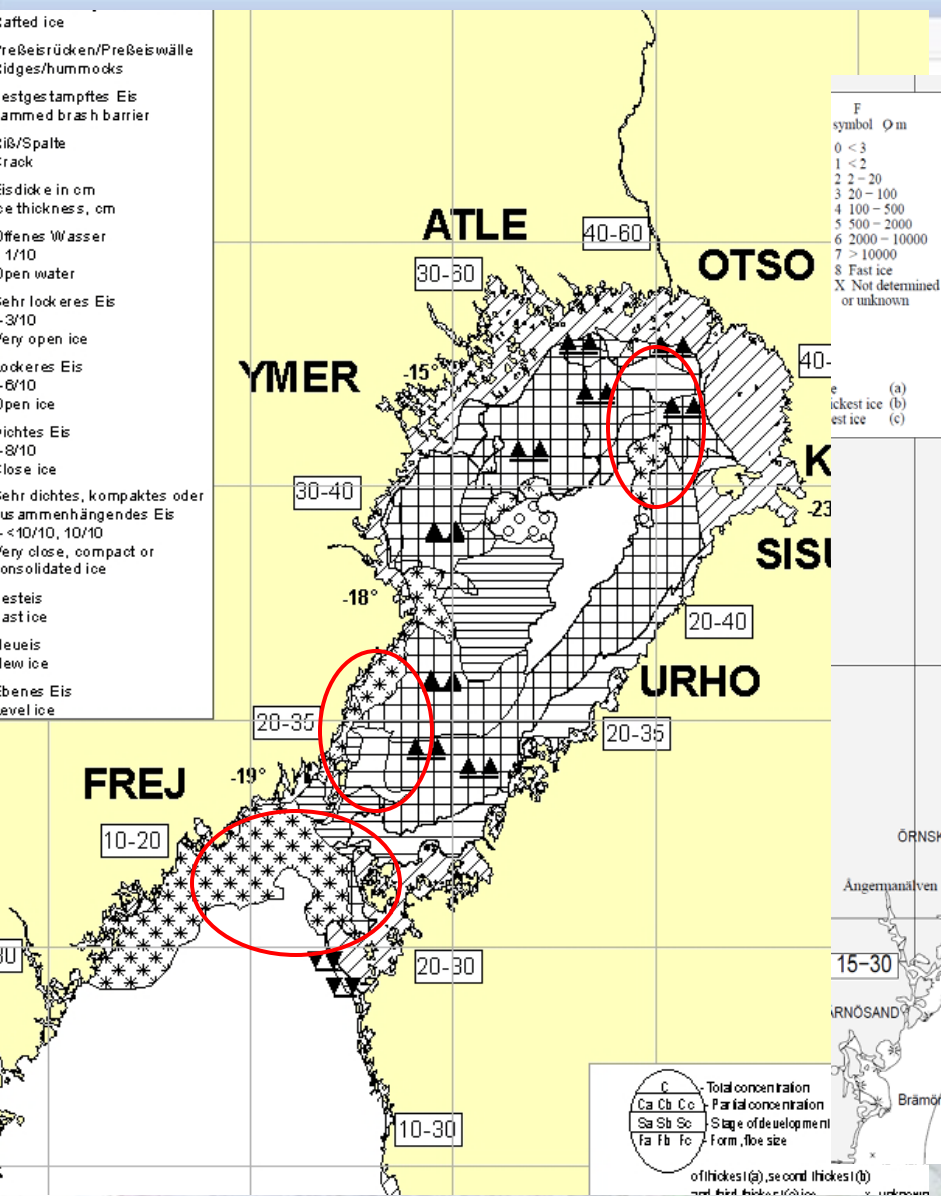
Bundesamt für Seeschifffahrt  
und Hydrographie

EISÜBERSICHTSKARTE Nr. 18  
Jahrgang 82 Rostock, 16.02.2009

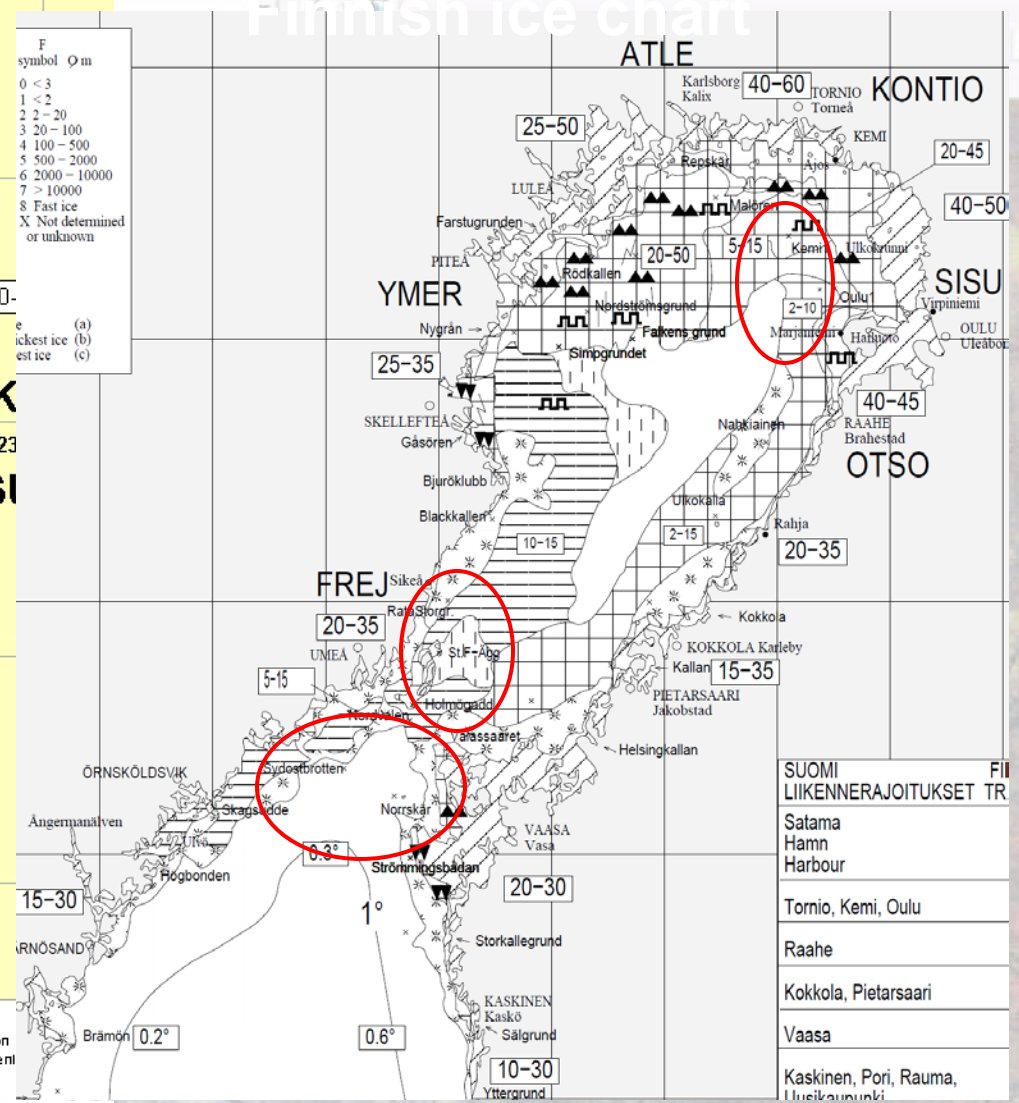




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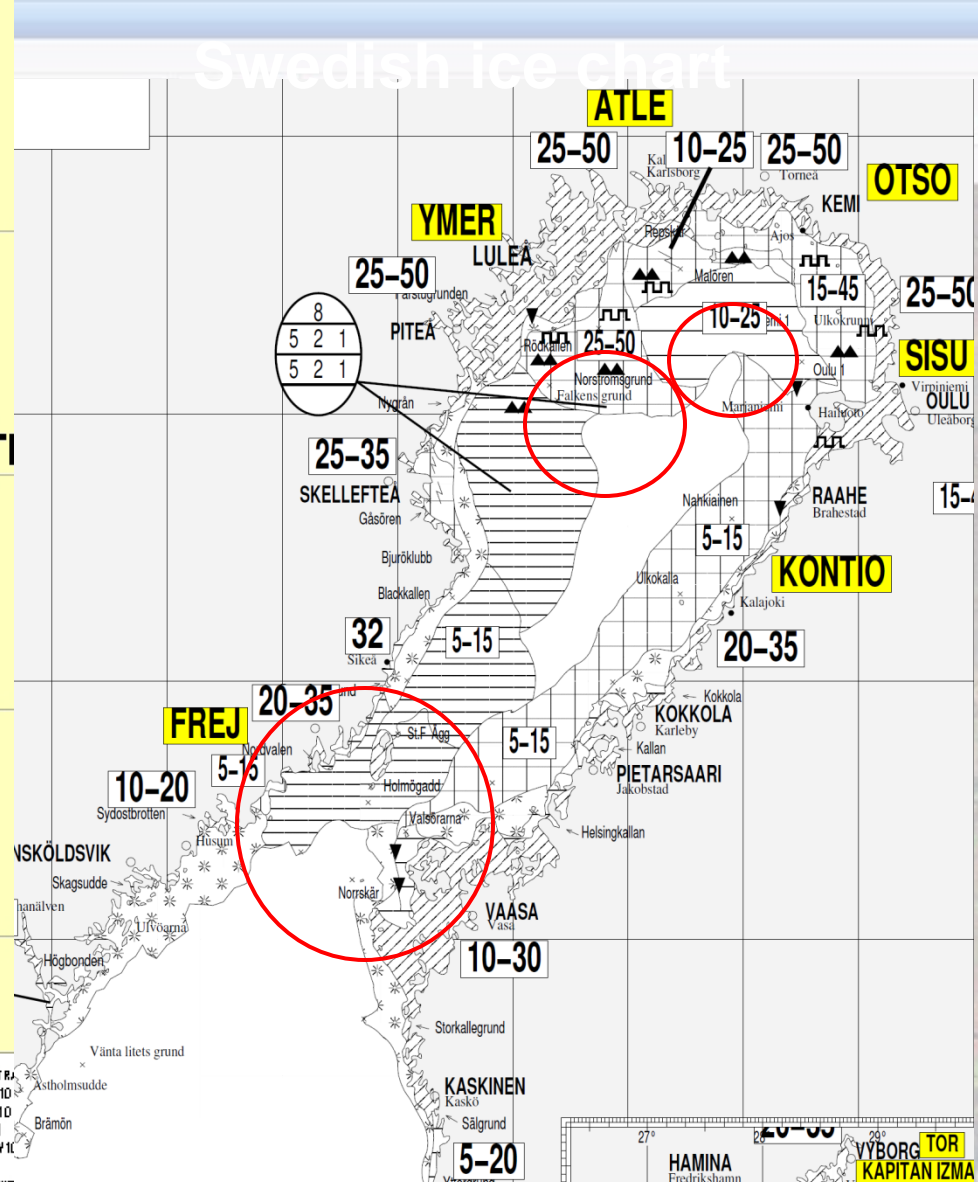
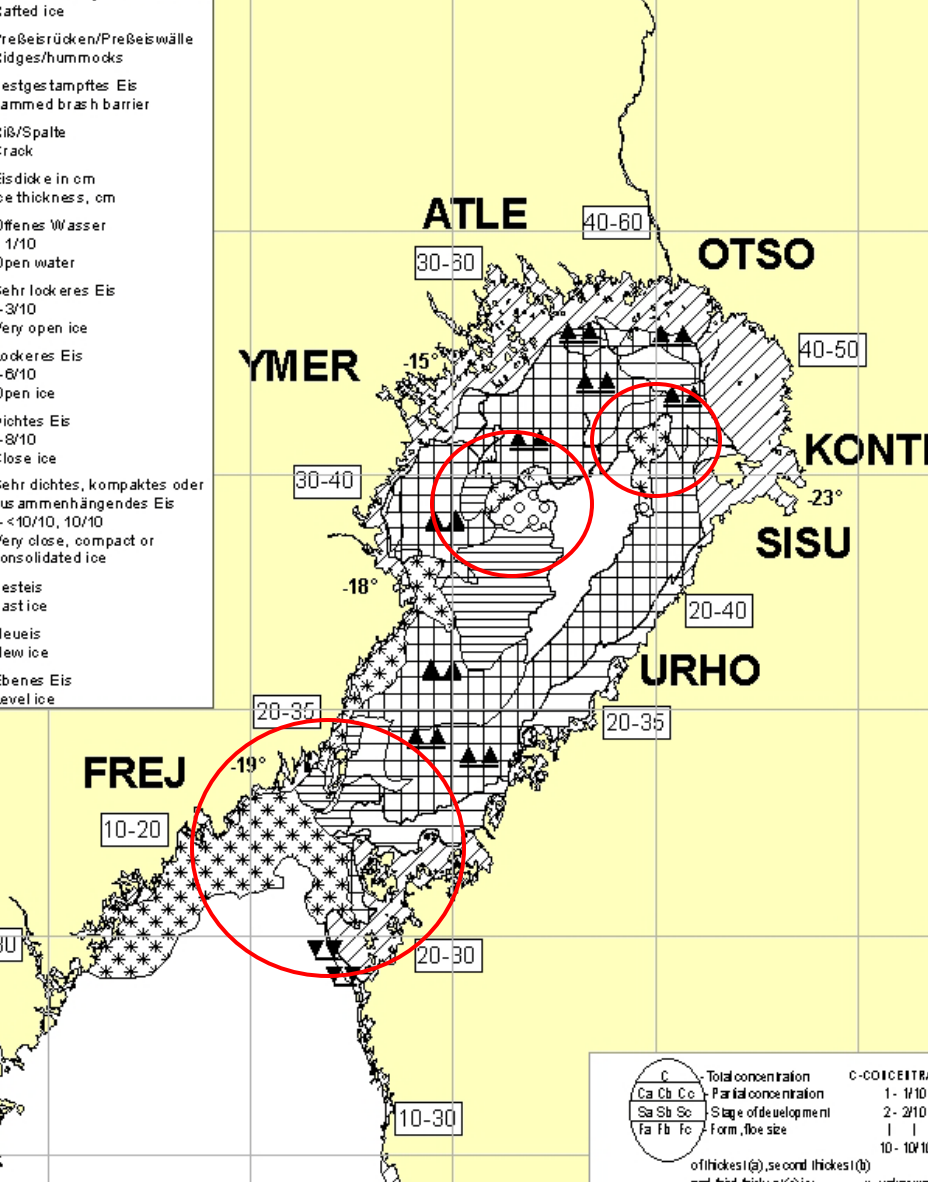


# Finnish ice chart

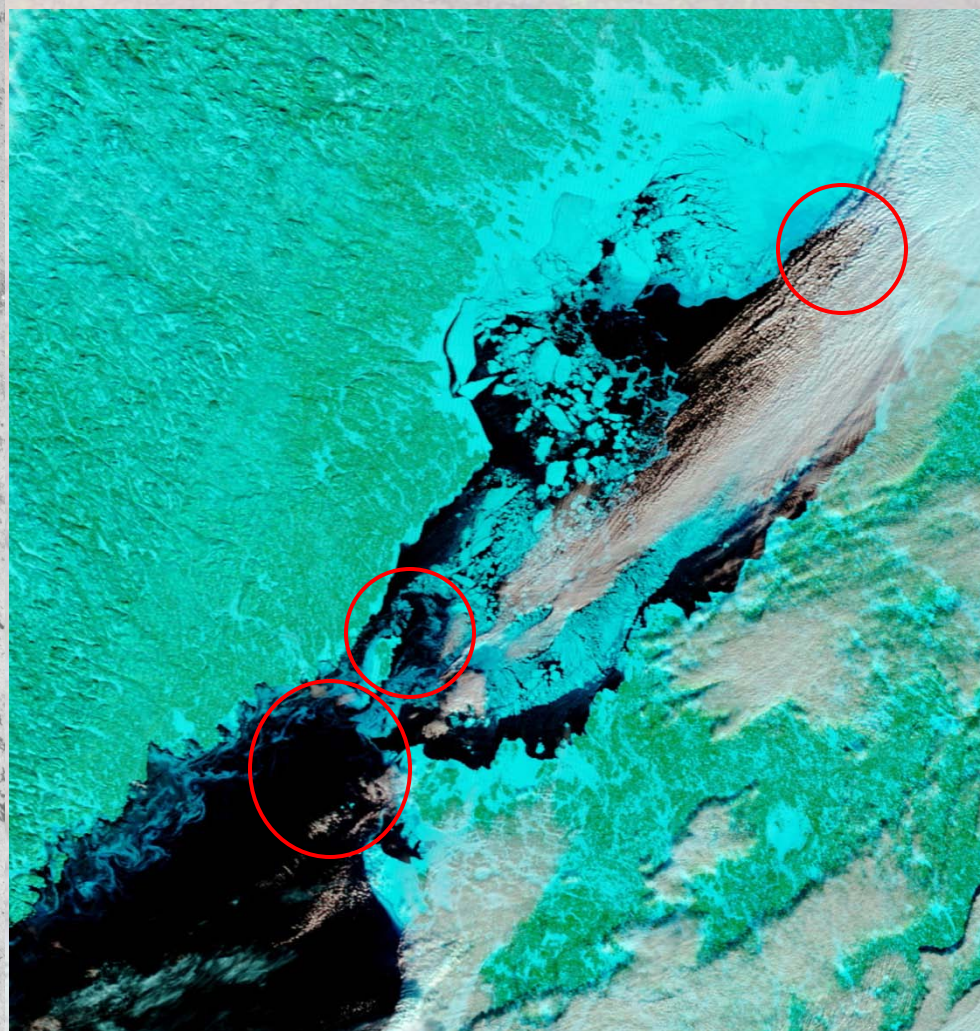
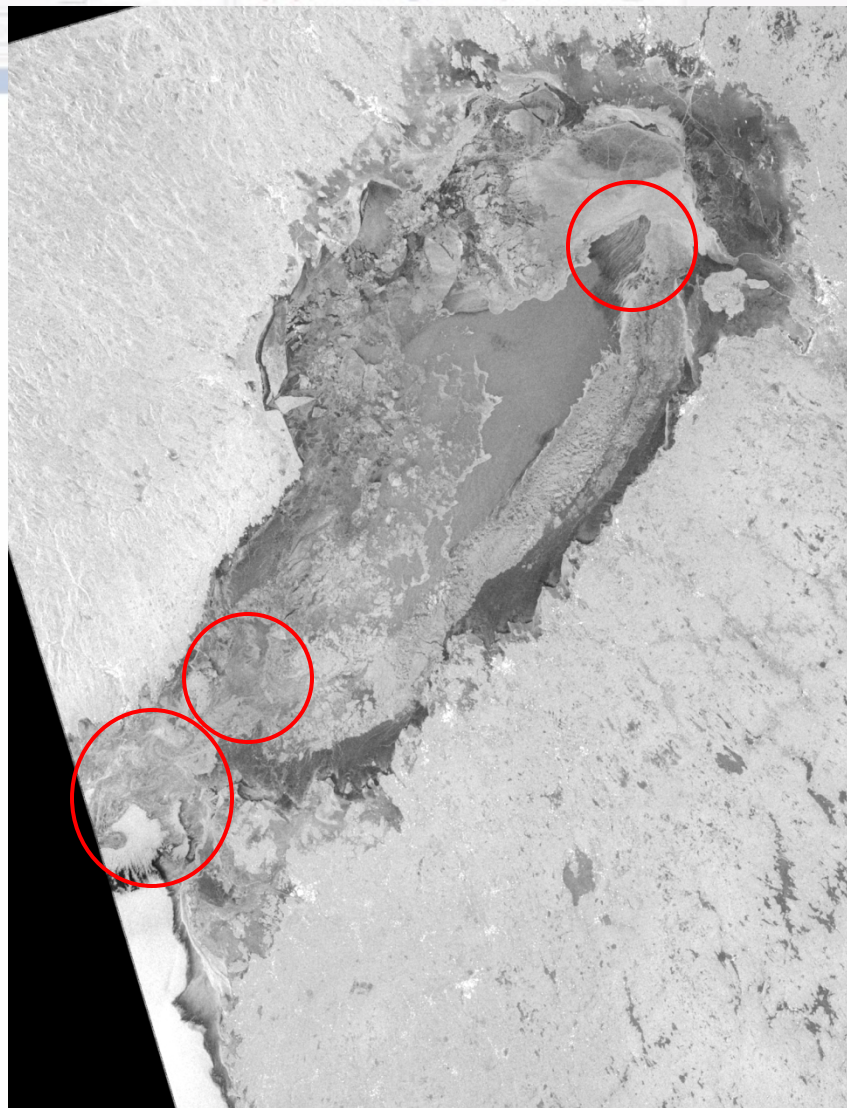




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# Some of the most valuable conclusions from CS#2

## Summary for CIS, NIC and AARI

Potentially ice charts are exchangeable for MSS, the same is for West Arctic, pending timeliness, accuracy of the boundaries, amount of additional information (leads, cracks, compactness) is sufficient for operative purposes, e.g. in many cases ice services (NIC) is marking the purpose of ice chart explicitly (“not to be used for operations”)

Baltic - Harmonized ice services due to BSIM.



# Day 3

- Daily logistics
- **Case study 3: Online analysis of routine dataset shared by met.no (SAR/VIS/IR, weather stations) and ice charting for the Barents Sea by 3-4 teams of ice analysts**
- Presentation of online resources for case study 3 and working arrangements
- Experts break into 4 groups for online analysis and compilation of Barents Sea ice chart for 14<sup>th</sup> June
- **Discussion 2: Identification of differences in ice analysis techniques, content and presentation schemas based on 3-4 regional online analysis and a common region of Barents Sea as a model**
- **Technical tour at KSAT**



# Key points for CS#3

- 6 Charts (met.no, WestArctic group, NIC, BSIS, AARI, Iceland), tried to discriminate by visualizing 5 charts In ArcMap environment. Met.no included 5 charts (shape and dbf) in to a single project, asked the analysts to colour by CT table, made and overlay of R2 image.
- Noted differences in approach:
  - Met.no – starting from the land seaward, DMI - starting from the ice boundary coastward, etc.
  - Trond points out that the difference is due to whom a chart is intended, end-users.
  - Drawing polygons is subjective.
  - It is important the scale, in time and space.
  - History and local knowledge is important.
  - End-user is important Met.no – tactical, DMI – tactical, AARI – review, BSH/FI/SE – review, NIC – regional chart, if we are supporting i/b, much tighter analysis and instead of 1 zone, NIC will draw 3 zones.
  - CA, NIC – putting ice drift vectors 24h forecast,
  - Fast ice – important for good coincidence between imagery and coastline.



## View1

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☐ Aari.shp

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☒ Metno.shp

Close Drift Ice

Fast Ice

Open Drift Ice

Open Water

Very Close Drift Ice

Very Open Drift Ice

☐ Westarctic.shp

Close Drift Ice

Fast Ice

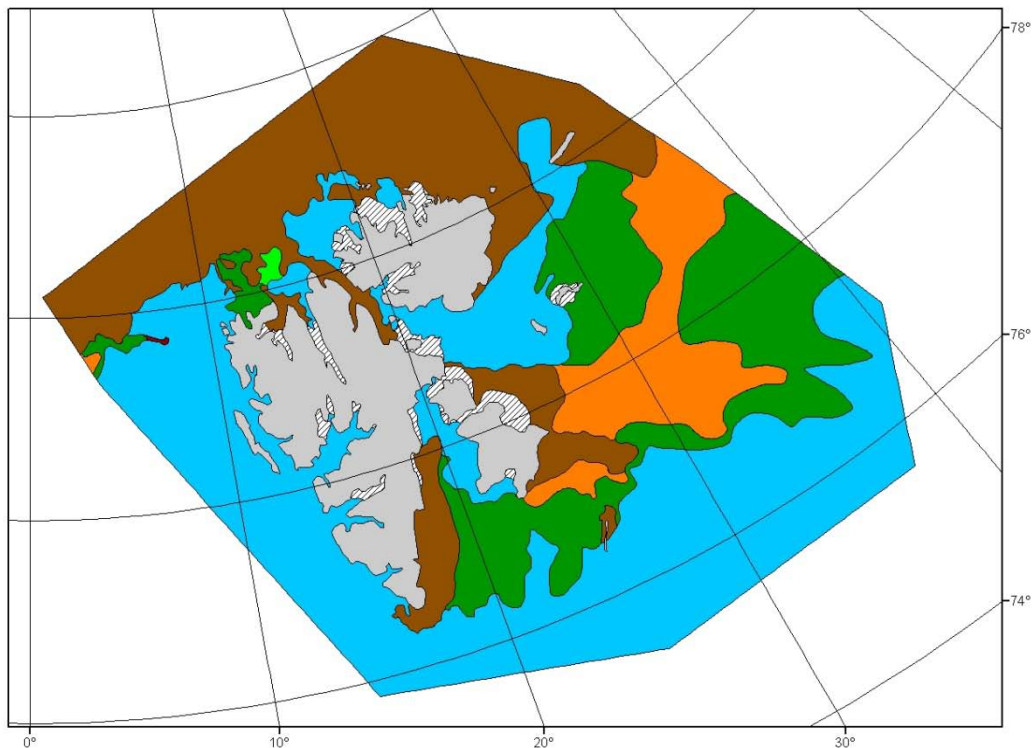
Open Drift Ice

Open Water

Very Close Drift Ice

Display Source Selection

Drawing Arial 10



# Day 4

- Daily logistics
- **Case study 4:** Import, export and assimilation of ice charts in gridded and vector internal and WMO formats between the services
- Experts exchange views and test importing and assimilating selected datasets in internal (e00) and external (SIGRID) formats
- **Discussion 3:** Harmonization, exchange of products and integration of ice charting, potentials for the training in sea ice analysis (implementation of coding schemas, SIGRID-3, ENC, gridded data etc)
- **Discussion 4:** Changes in ice services and customers requirements to initial information (satellite products, in-situ data) and sea ice products
- Summary for 4<sup>th</sup> day



## Some of the CS#4 key points:

- ❑ Met.no (Nick Hughes) showed potentials of using GDAL utilities for harmonizing geography (datum, projections), like:

```
set ENDPROJ="+proj=latlong +lat_0=90n +lon_0=0e +lat_ts=90n +ellps=sphere +a=6371000.0 +b=6371000.0"
```

```
set METNOPROJ="+proj=latlong +ellps=sphere +a=6371000.0 +b=6371000.0"
```

```
ogr2ogr -f "ESRI Shapefile" -s_srs %METNOPROJ% -t_srs %ENDPROJ% final\cntry95.shp Coastline\cntry95.shp
```

```
ogr2ogr -f "ESRI Shapefile" -s_srs %METNOPROJ% -t_srs %ENDPROJ% final\metno.shp metnoOriginal\chart_ice_org.shp
```

```
ogr2ogr -f "ESRI Shapefile" -s_srs %METNOPROJ% -t_srs %ENDPROJ% final\westarctic.shp WestArcticGroup\chart_ice.shp
```

```
set OTHERPROJ="+proj=latlong +ellps=WGS84"
```

```
ogr2ogr -f "ESRI Shapefile" -s_srs %OTHERPROJ% -t_srs %METNOPROJ% final\aaari.shp AARI\aaari_bar_20090617_pl_a.shp
```

```
ogr2ogr -f "ESRI Shapefile" -s_srs %OTHERPROJ% -t_srs %ENDPROJ% final\baltic.shp BalticGroup\Barentssea17062009.shp
```

- ❑ Met.no (Frode Dinessen) presented MyOcean projects, overview of services, single entrance points, 5 thematic centers req. for marine products

Uncertainties may be estimated based on

- ❑ History of the ice processes (less for fast ice boundary, other stable boundaries)
- ❑ Practices of the past
- ❑ Lessons from IAW
- ❑ CIS – analysts can not attribute confidence level to polygons in geobase, neither others do.
- ❑ IAW discussed using SIGRID-3 identifiers for source of informations, that can be an option for estimating uncertainty.



# Day 5

- Daily logistics
- **Review of existing sea ice regulatory publications**
- **Workshop proceedings**
- Development of a summary of ice charts and ice analysis differences for operational practices and climatological studies
- Development of guidelines for harmonization of ice practices and training in ice analysis
- **Review of Workshop actions Items**
- Final Comments
- Closure of workshop



## 2nd Ice Analysts Workshop List of Actions

Action	By whom	Deadline
<b>Case study 1</b>		
Compile table describing issuing times, dates, intervals for chart compilation	Ice Services	August
Update table describing formats used to provide ice chart to the customers (like GeoPDF)	Ice Services	August
Propose to add icebergs and growlers symbols into CT colour table, ask ETSI experts to develop detailed description of using colours and symbols for bergy and open waters	Chair	January 2010
Proposed to discuss harmonization of issuing times between NIC and AARI so that potentially Antarctic circumpolar ice chart be available on weekly scale (NIC – AARI – NIC – AARI – ....)	NIC and AARI	October 2009, during IICWG-X
<b>Case study 2</b>		
Prepare snapshots of the Arc project for the regions (WA, EA, BS)	Met.no	Mid-July
Prepare descriptions	Regional coordinators	Mid September

<b>Case study 3</b>		
Describe compilation process, for the met.no - make snapshots of the project with 5 charts	Analysts	Mid July (met.no) Mid September
<b>Case study 4</b>		
Fill table (software, datum, etc)	Analysts	August
Prepare and distribute ArcGIS project with shapefiles	Met.no	Mid September
Extend resources at JCOMM SPA (shapefiles)	Chair and all	Mid October but before IICWG-X
<b>GCW</b>		
IAW OrgCom will prepare a summary for BG describing ice products intercomparison results, harmonization level and validation processes.	OrgCom	End September
<b>General</b>		
Themes, focuses, proposals for date, place of IAW-III	all	Mid October but before IICWG-X



# Future of IAW

(IAW-III>0)?:

- DMI pointed out that descriptions of philosophies, better preparations, better ppt, longer preparation period are critical, Met.no – rerun CS#3
- Action for IAW-3:
- Descriptions of philosophies, better preparations, better ppt, longer preparation period.
- Each ice service describe what we facing individually from the clients,
- Consider standards for annotating imagery
- Differences in ice charts in time
- Sea ice climatology which is used by ice services to reference their ice charts
- Automated products in MyOcean project to be used
- rerun CS#3 and make a CS# on assimilation of shp from different ice services
- Consider whether IAW should be separated by focuses: 3 days for 1<sup>st</sup> focus and 2 days for 2<sup>nd</sup> one. For the place there is proposal from DMI to host the next meeting.



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Создать новый документ

