Expert Team on Sea Ice

- Outcomes from ETSI-IV & ETMSS-III
- Status report on Arctic METAREAs
- Update on Ice Information in ENC
- IAW3, background, aim and objectives

Vasily Smolyanitsky

ETSI chair

(including slides from SFSPA - Ming Ji,
ETMSS-III - METAREA coordinators, ETSI TG ENCIO)

IICWG and ETSI linkage

- IICWG
  - Technical forum of ice services, centers, data providers etc, open membership; Open standards expressed in Charter; May raise and raises issues in “fast-track procedure”; informal contacts with intl’ org (WMO/IHO/IMO) etc;
  - Advisory technical body to ETSI in developing TD
- ETSI
  - Formal coordination of sea ice activities on the level of WMO/IOC; closed membership (from the same ice services !) defined at JCOMM sessions; under WMO standards; formal linkages with IHO/IMO (via Secretariat); finalize and provide TD to WMO Secretariat

Major JCOMM events (related to sea ice) for 2010: ETSI-IV, MSSW, ETMSS-III, ETOOFS-I

JCOMM EXPERT TEAM ON SEA ICE (ETSI)
Fourth Session
STEERING GROUP FOR THE GLOBAL DIGITAL SE ICE DATA BANK (GDSIDB)
Twelfth Session

St. Petersburg, Russian Federation
1-5 March 2010

FINAL REPORT

JCOMM Meeting Report No. 74

JCOMM EXPERT TEAM ON MARINE SAFETY SERVICES (ETMSS)
Third Session
St. Petersburg, Russian Federation
4-8 October 2010

FINAL REPORT

JCOMM Meeting Report No. XX

MARITIME SAFETY SERVICES ENHANCEMENT WORKSHOP

Melbourne, Australia
3 - 6 May 2010

FINAL REPORT

JCOMM Meeting Report No. 75

ETSI structural part of JCOMM SFSPA (www.icomm.info)

The Joint WMO–IOC Technical Commission for Oceanography and Marine Meteorology

Calendar | People & Teams | Publications | Search...

Services and Forecast Systems Program Area (SFSPA)

JCOMM promotes a state-of-the-art globally distributed and inter-connected system based on present and next-generation technologies and capabilities. The system is responsive to the evolving needs of all users of marine data and products and a close dialog with the user community is fundamental to the system design. In addition, JCOMM promotes the implementation of an outreach programme to enhance the national capacity of all maritime countries to work effectively for the maritime community and the management of the marine environment.

- JCOMM Home
- About JCOMM
- News
- Search
- Access to data and services
- Standards and best practices
- Observations Programme Area
- Services Programme Area
- Data Management
- Member Login

Marine Safety Services

Expert Team on Marine Safety Services (ETMSS)

> GMDSS
> ETMSS publications
> ETMSS meeting list

Waves & Surges

Expert Team on Wind wave and Storm surge (ETWS)

> Storm Surge Modelling & Forecasting
> Wave Forecast Verification Project
> ETWS publications
> ETWS meeting list

Sea Ice

Expert Team on Sea Ice (ETSI)

> Ice Services of the World
> ETSI publications
> ETSI meeting list

Ocean Forecasting

Expert Team on Operational Ocean Forecasting Systems (ETOOFS)

> ETOOFS publications
> ETOOFS meeting list

SFSPA progress

> SFSPA workplan
> SFSPA Pilot Projects

Services Coordination Group

> All SFSPA-related Meetings and Scientific Fora
> SCG meeting list
> All SPA publications

Latest News

– Coordinator's overview (JCOMM Newsletter No.7)

– Coordinator's overview (JCOMM Newsletter No.6)

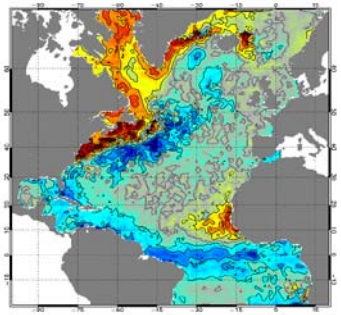
SFSPA Expert teams

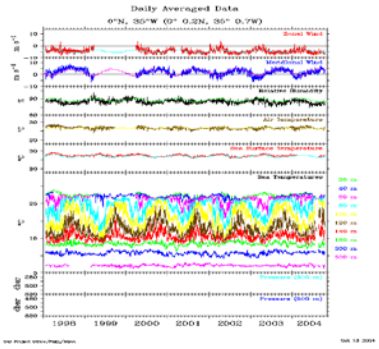
i. **Operational Ocean Forecasting Systems (ETOOFS)**

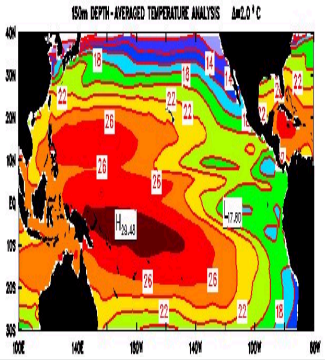
ii. **Wind Waves and Storm Surges (ETWS)**

iii. **Marine Safety Services (ETMSS)**

iv. **Sea Ice Service (ETSI)**







Some SFSPA high level priority activities (JCOMM-III Document 8.4)

- Implementing Operational Ocean Forecasting Services
- Enhancing Marine Safety Services: Operational GMDSS/MPERSS capability for the Arctic Ocean
- Supporting Climate Service – storm surge forecasting, coastal hazard reduction
- Implementing QMS framework by issuing services
- Developing Sea Ice, Met-ocean information for ENC
- Continuing capacity building

SFSPA High Level Requirements

(JCOMM-III Document 8.4)

- **WMO Expected Results (ER):**
  - **1- improving prediction, information, and services**
  - **2- reducing risks of environmental hazards**
  - **3- supporting climate service**
  - **6- strengthening capacity building**
  - **7- enhancing partnerships and cooperation**
- **IOC High Level Outcomes (HLO):**
  - **1- natural hazards**
  - **2- adaptation to climate change**
  - **4- management procedures and policies**

ETSI-IV,
1-5 March 2010

JCOMM EXPERT TEAM ON SEA ICE (ETSI)
Fourth Session
STEERING GROUP FOR THE GLOBAL DIGITAL SEA ICE DATA BANK (GDSIDB)
Twelfth Session

St. Petersburg, Russian Federation
1-5 March 2010

FINAL REPORT

JCOMM Meeting Report No. 74

ETSI-IV major outcomes

- **Implementation of the Polar Global Maritime Distress and Safety System (GMDSS)**
  - The Session considered the status of the GMDSS in the Arctic and Antarctic and developed procedures and actions for the Preparation and Issuing Services (Canada, Norway and Russia supported by Denmark and USA) to ensure Full Operational Capability (FOC) of the new Arctic METAREA XVII-XXI by 2011.
  - As a part of IHO/IMO declared Initial Operational Capability (IOC) GMDSS services in the Arctic METAREA will be started on 1st July 2010 (though in certain navigable rotes they have been provided through the last decade) and concentrate on an ice edge broadcast with more detailed information in areas with greater marine traffic.
  - Special concerns of the Services during the IOC stage will be paid to assessments of transmission of GMDSS information north of 76º presently not covered by Inmarsat.
  - ETSI agreed on a several coordination and clarifying issues to be implemented before June 2011 (ice edge continuity, exchange of information, disclaimer)

ETSI-IV major outcomes (continued)

- **Updates to relevant parts of the publications No.471 and 558 complement implementation of the Polar GMDSS**
  - It was agreed that the “ice edge” is the primary warning information and is the only information that the ice services will consider mandatory for sea ice to provide in the context of GMDSS. Beyond this level of information, each individual ice service can decide what to provide depending on its own unique circumstances and practices. Based on restrictions on GMDSS bandwidth the ETSI also agreed to limit the delineation of the ice edge to a maximum of 10 points per sub-area.
  - The ETSI developed a list of additional information for efficiency and safety of ice navigation, if transmission of information is not restricted to GMDSS SafetyNET and HF fax including routine and customized ice analysis and prognostic charts, high-resolution annotated satellite imagery etc
  - A first draft list of sea ice abbreviations for NAVTEX was considered, further developed by communication in April-July 2010 and presented to ETMSS

ETSI-IV major outcomes (continued)

- **WMO Sea Ice technical documentation**
  - Progress in the primary sea ice standard – WMO Sea Ice Nomenclature‖, volumes Terminology, Illustrated Glossary and Coding Tables, included adoption of a set of new terms, cross-harmonization of nomenclature with SIGRID-3 mapping format and the Ice Objects Catalogue and extension of nomenclature with the modern material from the national and regional practices.
  - The annual 2010 edition of publication No.574 —Sea Ice Services in the World‖ adopted by the Session, provides up-to-date snapshot of the national services in ice analysis, and forecasting and extends the WMO No. 9, Volume D – Information for shipping as well as recent IMO/WMO World-Wide Met-Ocean Information and Warning Service guidance document.

ETSI-IV major outcomes (continued)

- **Sea ice in ECDIS**
  - Another checkpoint of the session was agreement on a complete set of standards for sea ice presentation in ECDIS (Ice Objects Catalogueⅱ version 5.0, Presentation Schemes, Data Structure and Naming Conventions). The next stage documentation is planned for implementation in 2010-2012 by ETSI TG ENCIO, AARI/TRANSAS, CIS/CARIS and IHO TSMAD with outcomes as additions to IHO S-1XX family of formats and demonstration suite for JCOMM-IV.
- **The ice training issues**
  - The ice training issues considered by the Session, included support for the Ice Analysts Workshops, COMET modules and proposals for new WMO publications on Identification old ice and for a Manual for Ice Experts – Ice Observers.

ETSI-IV major outcomes (continued)

- **Ice climate services**
  - Progress in the ice climate services included GDSIDB session agreement on the permanent update of the project archive by including material from the past collections and ongoing ice analysis, inventory on the ship log digitizing, assessment of NetCDF and GRIB formats for sea ice in collaboration with JCOMM ETMC.
  - The session also committed on further support of the Ice Logistics Portal as component of WIS and on a regular contribution to the WMO RRR.

The ETSI-IV session material is summarized in JCOMM Meeting Report No.74.

ETSI priority activities for 2010-12

- **(#32) Sea Ice Analysis Training (ETSI)**
- **(#20) Supporting Issuing Services and AMOCs for GMDSS in the Arctic Ocean (ETSI)**
- **(#28) Coordinate the implementation of GMDSS in the Arctic Ocean (ETSI and ETMSS)**
- **(#22) Catalogue on Met-Ocean Object Class for ENC and e-Navigation (ETSI)**
- **(#23) Ice Information in ENCs (ETSI, experts from TRANSAS)**
- **(#24) Update sea ice standards (ETSI and ETOOFS)**
- **(#25) Global Sea Ice Digital Data Bank (GDSIDB)**

JCOMM ETSI projects for 2010-May 2012

(#32) Sea Ice Analysis Training

- **Expected Outcomes:**
  - COMET training modules, Workshop and Manuals
- **Key Activities:**
  - 1st two COMET sea ice modules developed
  - 3rd Ice Analysts Workshop
  - English version of Manual for Ice Experts – Ice Observers reviewed
- **Timeline/milestones:**
  - Sept 2010: COMET Module 1
  - Dec 2011: COMET Module 2
  - IAW Workshop June 2011
- **ETs, Other Organizations and participants:**
  - ETSI

JCOMM ETSI projects for 2010-May 2012

(#22) Catalogue on Met-Ocean Object Class for ENC

- **Expected Outcomes:**
  - Met-Ocean object class for wind, wave height, surface current based on templates from the Ice Objects Catalogue
- **Key Activities:**
  - Coordinate with IHO to validate requirement
  - Finalize the draft object catalogue
- **Timeline/milestones:**
  - Oct 2010: Meeting between WMO/IHO/WMO
  - Jan 2012: Finalize the met-ocean object class
- **ETs, Other Organizations and participants:**
  - ETMSS, ETWS, ETSI, IHO, IMO

JCOMM ETSI projects for 2010-May 2012

(#33) Ice Information in ENCs

- **Expected Outcomes:**
  - Standard for Exchange File; Ice Objects Catalogue 5.0, Presentation Schemes, Data Structure, File Naming Conventions, Demonstration Suite for JCOMM-IV
- **Key Activities:**
  - Harmonize the standards documents that have been developed in parallel by CIS and AARI/Transas
  - Develop data and software package as a demonstration package for JCOMM-IV
- **Timeline/milestones:**
  - June 2011: harmonize standards
  - June 2012: demonstration package
- **ETs, Other Organizations and participants:**
  - ETSI, experts from Transas

JCOMM ETSI projects for 2010-May 2012

(#24) Update Sea Ice Standards

- **Expected Outcomes:**
  - WMO Sea Ice Nomenclature - Vol 1 – Terminology and Vol 2 Illustrated Glossary – Supplement 6 – Baltic Sea Ice Terms
  - SIGRID-3, Prototype for New Formats for Sea Ice Data Assimilation
- **Key Activities:**
  - Update and Publish WMO Sea Ice Nomenclature
- **Timeline/milestones:**
  - Sept 2010: Publish SIGRID-3 update
  - Mar 2011: Publish Sea Ice Nomenclature
  - June 2012: New Format Prototype
- **ETs, Other Organizations and participants:**
  - ETSI, ETOOFS, SCG

JCOMM ETSI projects for 2010-May 2012

(#25) Global Sea Ice Digital Data Bank (GDSIDB)

- **Expected Outcomes:**
  - GSIDB updated with historical Sea Ice charts and logs
  - Updated normals for sea ice based on GDSIDB
- **Key Activities:**
  - Historical data submitted and quality controlled
  - Advertisement of new data
- **Timeline/milestones:**
  - Updated once a year
  - June 2012: Normals updated
- **ETs, Other Organizations and participants:**
  - ETSI, NSIDC

JCOMM ETSI projects for 2010-May 2012

(#20) Supporting Issuing Services and AMOCs for GMDSS in the Arctic Ocean

- **Expected Outcomes:**
  - Experimental suite of Met-Ocean products for the Arctic (text)
  - Experimental suite of Met-Ocean products for the Arctic (graphic)
- **Key Activities:**
  - Development of integrated sea ice-marine weather text products
  - Development of integrated sea ice-marine weather graphic products
- **Timeline/milestones:**
  - January 2011: Text suite available
- **ETs, Other Organizations and participants:**
  - ETSI, ETMSS, ETOOFS

JCOMM ETSI projects for 2010-May 2012

(#28) Coordinate the implementation of GMDSS in the Arctic Ocean

- **Expected Outcomes:**
  - GMDSS services implemented in the Arctic METAREAs in 2011
- **Key Activities:**
  - Revise WMO Manuals and Guides for Marine Meteorological Services in relevant parts
  - Procedures for coordinated delivery of services in the Arctic METAREAs
- **Timeline/milestones:**
  - June 2010: Revise Manuals and Guides
  - Oct 2011: Procedures established
  - Jan 1, 2011: GMDSS services implemented in the Arctic Ocean
- **ETs, Other Organizations and participants:**
  - ETSI, ETMSS

JCOMM EXPERT TEAM ON MARINE SAFETY SERVICES (ETMSS)
Third Session
St. Petersburg, Russian Federation
4-8 October 2010

ETMSS-III, 4-8 October 2010

FINAL REPORT

JCOMM Meeting Report No. XX

ETMSS priority Activities for 2010-12

- **(#19) Developing the MPERSS capabilities including the Arctic Ocean (ETSI)**
- **(#20) Supporting Issuing Services and AMOCs for GMDSS in the Arctic Ocean (ETSI)**
- **(#21) Update WMO 471 and 558 for sea state in MSI (ETWS)**
- **(#22) Catalogue on Met-Ocean Object Class for ENC and e-Navigation (ETSI)**
- **(#23) Facilitate implementation of QMS among Members for the provision of MMS**
- **(#4) Updating user requirements for marine weather and ocean forecasting services (ETOOFS)**

Status report on Arctic METAREAs

(based on information provided to ETMSS-III by METAREA XVII-XXI coordinators)

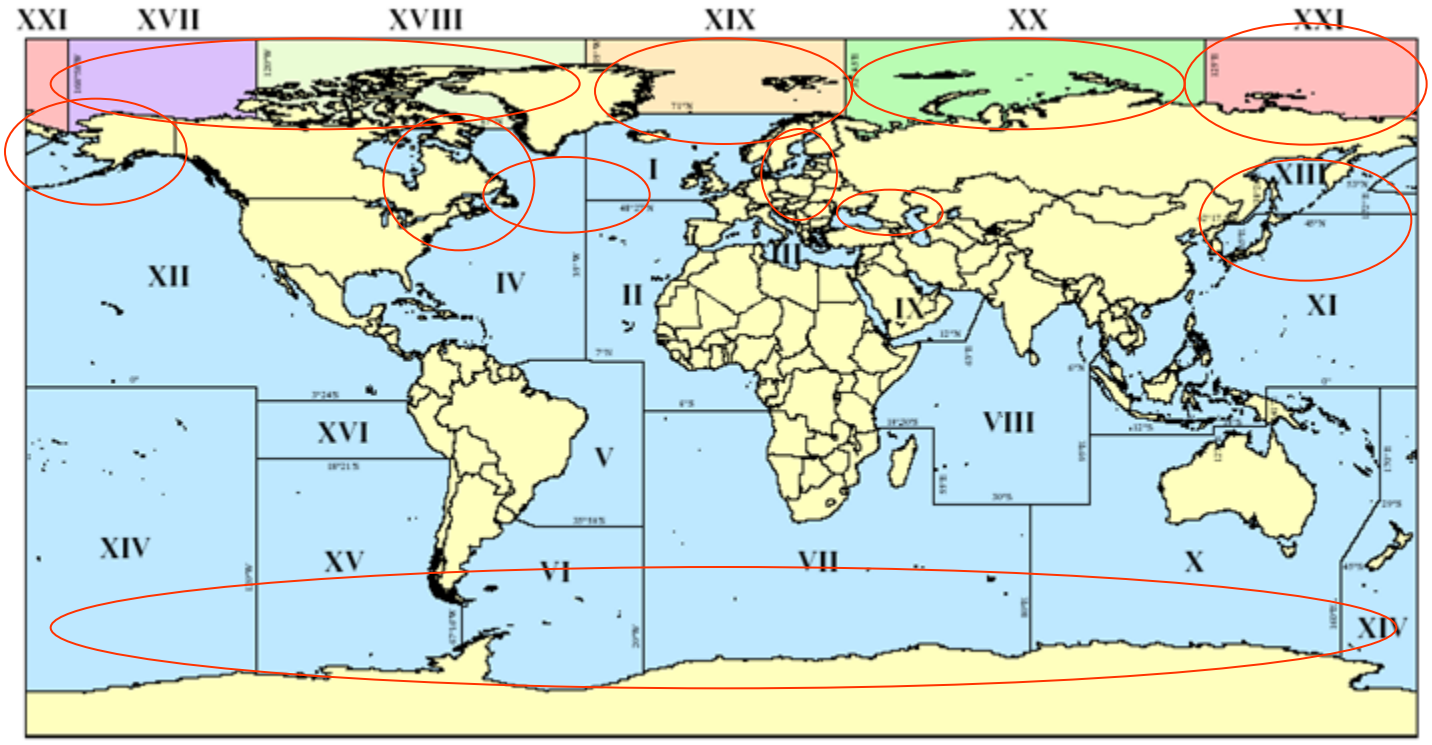
JCOMM EXPERT TEAM ON MARINE SAFETY SERVICES (ETMSS)
Third Session
St. Petersburg, Russian Federation
4-8 October 2010

FINAL REPORT

JCOMM Meeting Report No. XX

METAREAS (as of 2010)

(areas with sea ice are marked



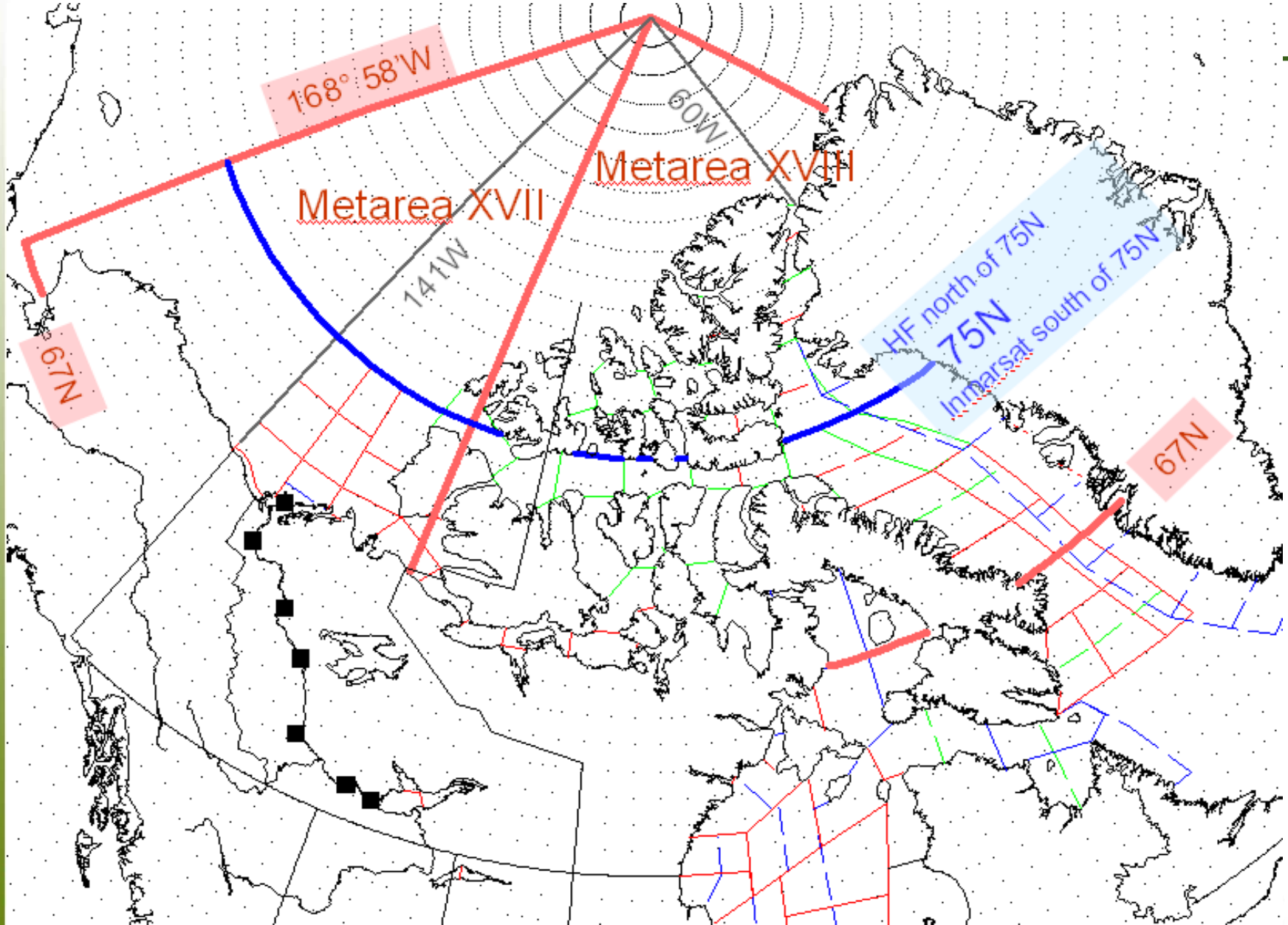
Environment Canada Environnement Canada

Canada

Implementation of METAREA XVII & XVIII: Status Report October 2010

John Parker
METAREAS Coordinator (Canada)
Environment Canada

METAREAS XVII & XVIII *(Depiction compliments of Ed Hudson, Northern & Arctic Marine Focal Point, MSC Prairie & Northern Region.)*



Summary for METAREAs XVII-XVIII

As the designated issuing service for METAREAs XVII-XVIII, the Meteorological Service of Canada under the authority of Environment Canada has commenced promulgation of Marine Safety Information (MSI) in the form of meteorological forecasts and warnings to sections of METAREA XVII-XVIII, as per Global Maritime Distress and Safety System (GMDSS) guidelines.

The promulgation of MSI to this region is in accordance with the June 2010 IMO/IHO declaration of an International SafetyNET service to sections of METAREA XVII-XVIII to be in “Initial Operational Capability”. Promulgation of MSI to ships at sea is via broadcasts over SafetyNET and, for high Arctic waters north of SafetyNET coverage, via HF telex.

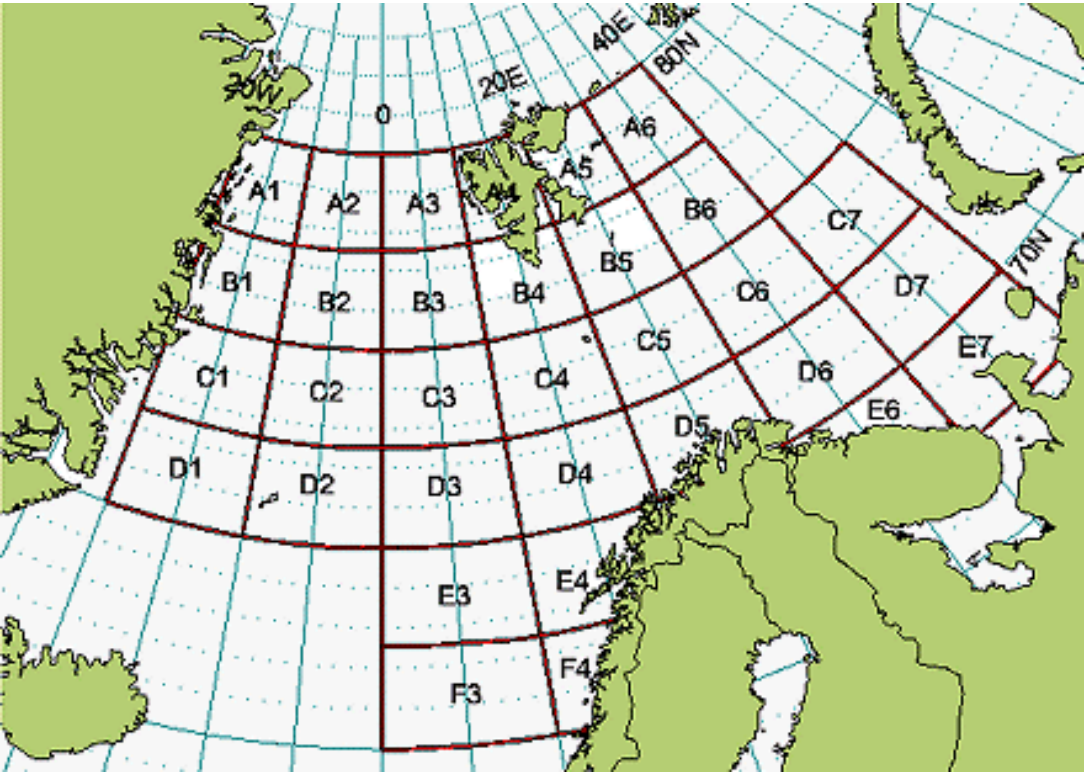
Environment Canada expects to transition to a “Full Operational Capability” service to METAREA XVII-XVIII by June 2011 in accordance with the June 2010 IMO/IHO announcement regarding the expansion of the IMO/IHO World-Wide Navigational Warning Service (WWNWS) into Arctic waters.

Norwegian
Meteorological Institute
met.no

METAREA XIX, status and concerns

Helge Tangen, Regional Director
Norwegian Meteorological Institute

Today's High Seas forecasts



Utstedt tirsdag 13.09.2005 kl. 10 UTC.

Sterk kuling ventes i følgende områder:

E4, F3, F4.

Synoptisk situasjon kl 06 UTC:

Lavtrykksenter 983 hPa i posisjon 79 nord 29 øst beveger seg sakte vestover og dyper seg langsomt .

Lavtrykksenter 975 hPa i posisjon 63 nord 17 vest beveger seg østover med hastighet 25 knop og fylles langsomt.

Værvarsel som gjelder for de neste 24 timene:

A1, B1, C1:
Nordvestlig frisk bris. Stort sett oppholdsvær og god sikt.

A2, A3, B2, B3, C2, C3:
Nordvestlig frisk bris til liten kuling. Spredte sludd eller snøbyger. Dårlig sikt i nedbør.

A4, A5, A6:
Skiftende bris. Spredte snøbyger. Dårlig sikt i nedbør.

B4:
Nordvestlig bris. Spredte snøbyger. Dårlig sikt i nedbør.

Osv...

Summary for METAREA XIX

In 2007 Norway accepted official recognition as the Issuing Service for marine weather forecasts and warnings for METAREA XIX as part of the Global Maritime Distress and Safety System (GMDSS). Norwegian Coastal Administration (NAC) is the Issuing (and preparation) Service for Associated NAVAREA XIX.

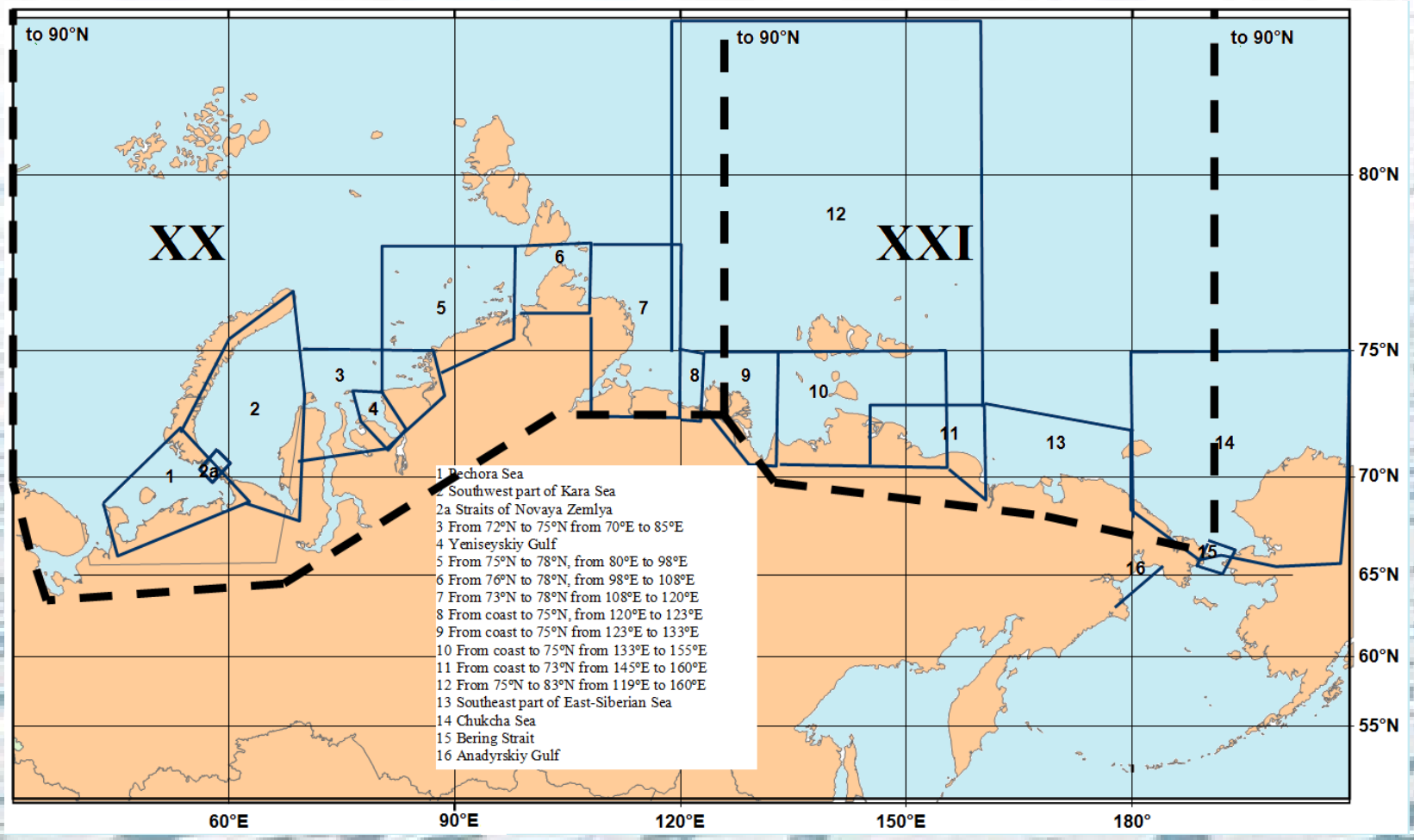
NAC and met.no are both preparing for testing periods. Today's HF NBDP will not cover properly the northernmost areas (N of approx. 81N). The agreement mentioned in Paragraph 4 includes enhancement of broadcast system, and will be ready by Oct 1, 2010. NAVAREA, METAREA, and NAVTEX coverage diagrams, including service areas and times of transmission are being developed as products and transmission times are negotiated.

Met.no expects to transition to a "Full Operational Capability" service to METAREA XIX by June 2011 in accordance with the June 2010 IMO/IHO announcement regarding the expansion of the IMO/IHO World-Wide Navigational Warning Service (WWNWS) into the Arctic waters.

MSI Self Assessment METAREA XX and XXI

Valery Martyschenko (Roshydromet) - METAREA coordinator
Sergey Brestkin (AARI of Roshydromet) - Preparation service
Vasily Smolyanitsky (AARI of Roshydromet) - JCOMM ETSI

Current sub-areas for NSR section of METAREAs XX-XXI



Summary for METAREAs XX-XXI

Roshydromet is the Preparation Service for METAREA XX and METAREA XXI. The Hydrographic Enterprise of the Russian Federal Agency of Marine and River Transport is the designated Preparation Service for associated NAVAREAs XX and XXI and the Issuing Service both for METAREAs and NAVAREAs XX and XXI. Since 2001 the Arctic and Antarctic Research Institute (AARI) of Roshydromet is leading and coordinating the preparation of weather and ice Marine Safety Information (MSI).

Activity for 2010 is in accordance with the June 2010 IMO/IHO declaration of an International SafetyNET service to METAREA XX and XXI to be in “Initial Operational Capability” and includes routine delivery of MSI (meteorological and ice) from the beginning of July 2010.

Roshydromet expects to transition to a “Full Operational Capability” service to METAREA XX and XXI by June 2011 in accordance with the June 2010 IMO/IHO announcement regarding the expansion of the IMO/IHO World-Wide Navigational Warning Service (WWNWS) into the Arctic waters.

OMM

jcomm
OCEANOGRAPHY & MARINE METEOROLOGY

Global Maritime Distress and Safety System

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METAREA XXI

HOME PAGE

The operational JCOMM official web site provides the marine weather information broadcast via Inmarsat-C SafetyNET by all National Meteorological Services (NMS) appointed as Issuing Services within the framework of the WMO Marine Broadcast System for the Global Maritime Distress and Safety System.

Some information broadcast by NAVTEX is also included (Common abbreviations for International NAVTEX).

Information on navigational warnings, including warnings for some of them, may be found on the NAVAREA co-ordinators websites

Caution: The Internet is **not** part of the Maritime Safety Information's operational data stream and should never be relied upon as a means to obtain the latest forecast and warning information. Access to the Site may be interrupted or delayed from time to time, update may also experience occasional gaps. Please refer to OFFICIAL sources, Inmarsat SafetyNET or international NAVTEX services, for more complete information.

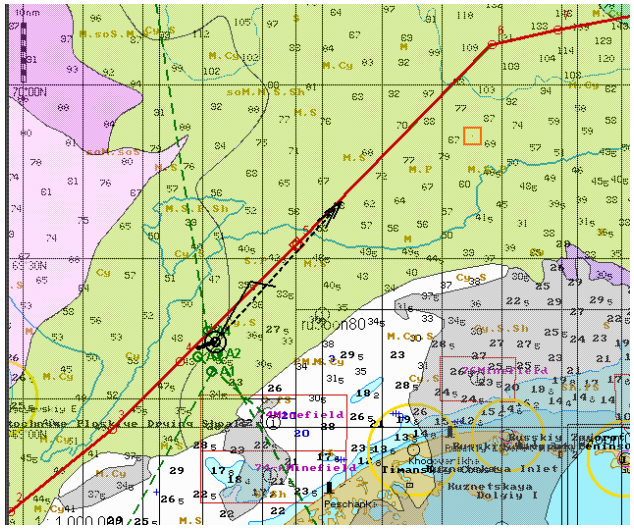
Links to Issuing Services and to some Preparation Services web sites are also provided.

Mariners are welcome to use information presented in this web site. In case of re-transmission, the text of the bulletins shall not be altered and credit to the respective NMSs shall be given.

This JCOMM website, developed and maintained by Meteo-France, is operational since June 2003 and will continue to grow and evolve. Suggestions are welcomed (Henri Savina). Note for additional interesting websites : JCOMM Marine Pollution Emergency Response Support System (MPERSS), WMO Severe Weather Information Centre, EUMETNET meteoalarm

Transmission schedules **Metareas Map** **Glossary**

Update on ice information in ENC



Based on presentations to:
ETSI-IV (March 2010),
DGIWG (October 2010),
ETMSS-III (October 2010)

by ETSI TG ENCIO (JF, KI) + IHO (SS)

Ice In ENCs - History

1992 S57 Object Catalogue Workshop - Ottawa

1995 Standards for Ice Information in ECDIS Workshop - Ottawa

- Ice Object Catalogue Ver 1.0

1996 ECDIS in Ice Navigation Workshop – Hamburg

- Ice Object Catalogue, Ver 2.0

1999 The ECDIS Ice Chart Project, SevenCs AG & Co.

2000 Ice In ECDIS Workshop – St. John's, NFLD

- Ice Object Catalogue, Version 3.0

2002 Integration of Sea Ice into ECDIS, UNB Project

2005 IHO Ice Register (Draft)

2005 IICWG Interoperability Data Formats Workshop

- trial implementation of Ice Objects catalogue
- catalogue revised to be consistent with other standards

Ice In ENCs – History (cont)

- 2007 JCOMM Expert Team on Sea Ice (ETSI)
  - Ice Object Catalogue Version 4.0
  - ETSI accepts ownership of Ice Registry; approves Registry management process
- 2007 IHO approves ETSI as owner of ICE Register
  - IHO Register of Marine Information Objects goes on-line
- 2008 CIS pilot project to produce S-57 files representing daily ice charts in eastern Canada
  - Ice Objects Catalogue Ver 4.1
  - CARIS contracted to produce Ice MIO Product Specification
- 2009 AARI & Transas develop end-to-end capability to display AARI ice charts on Transas ENCS
  - Ice Objects Catalogue Ver 5.0
- 2010 Steps to harmonize Canadian and Russian work
  - Ice Objects Catalogue Ver 5.1 accepted for implementation by ETSI

Ice In ENCs – History (cont)

2009-2010 MetOcean information in ENC

- WMO Secretariat develops a draft Catalogue for MetOcean information in ENC
- ETMSS-III helds general discussion on e-navigation concept, MetOcean Catalogue and its implementation in S-100
- WMO GRiB format is proposed for supporting gridded data

2010-2012 JCOMM SFSPA Project #33: Ice Information in ENCs

- **Expected Outcomes:**
  - Standard for Exchange File; Ice Objects Catalogue 5.0, Presentation Schemes, Data Structure, File Naming Conventions
  - **Demonstration Suite for JCOMM-IV (May 2012)**
- **Key Activities:**
  - Harmonize the standards documents that have been developed in parallel by CIS and AARI/Transas
  - Develop data and software package as a demonstration
- **Timeline/milestones:**
  - June 2011: harmonize standards
  - June 2012: demonstration package
- **ETs, Other Organizations and participants:**
  - ETSI, experts from TRANSAS, IHO

Ice Objects Catalogue

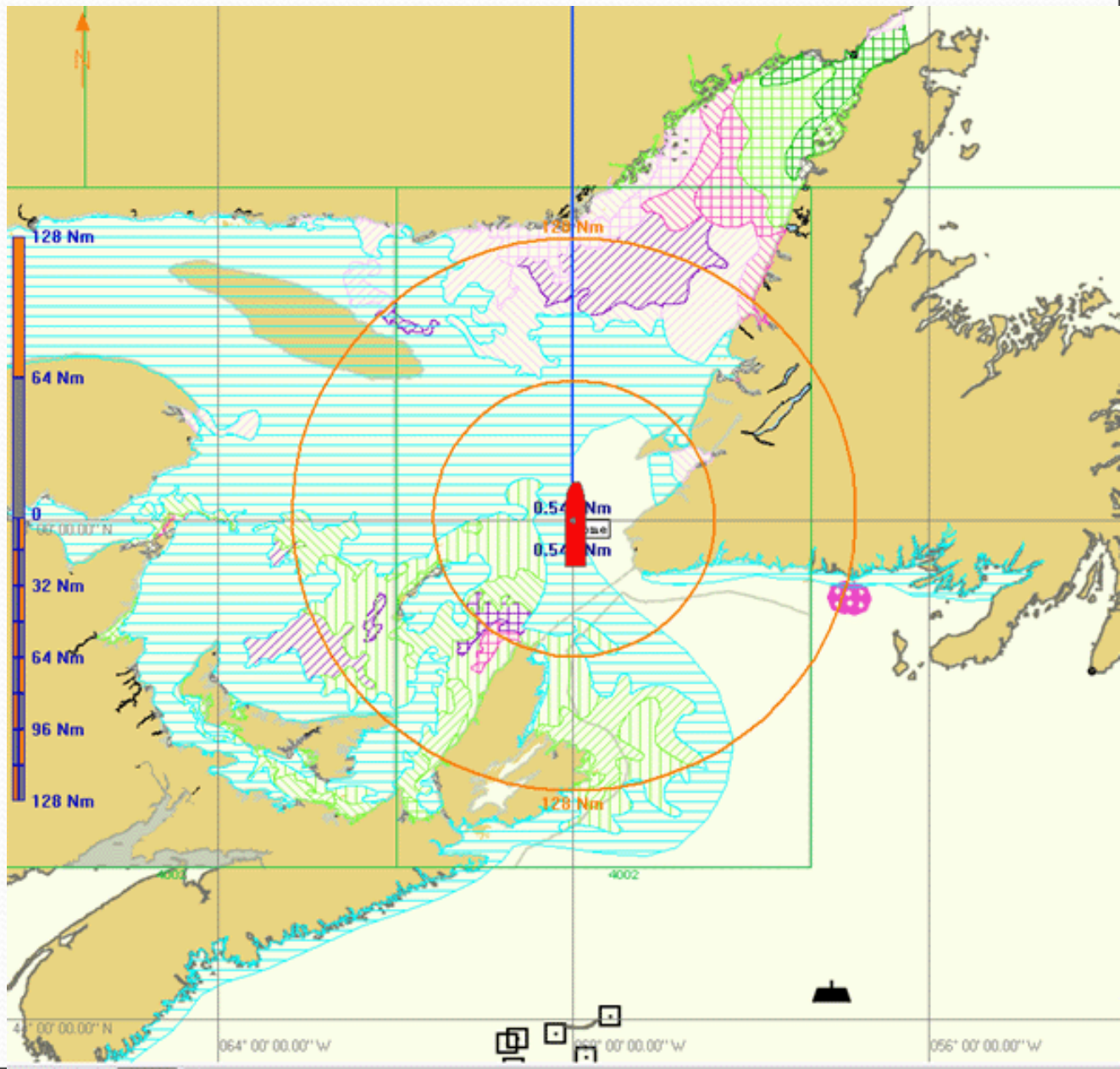
Ice Object Class	Acronym	Code
Polygon		
Sea Ice	SEAICE	30 300
	LACICE	30 301
Iceberg Area	BRGARE	30 302
Fast Ice	I_FAST	30 303
Separate Giant Floe	I_FLOE	30 304
Polyline		
Ice Edge	ICELNE	30 320
Iceberg Limit	BRGLNE	30 321
Limit of Open Water	OPNLNE	30 322
Limit of All Known Ice	LKILNE	30 323
Line of Ice Ridge	I_RIDG	30 324
Line of Ice Lead	I_LEAD	30 325
Line of Ice Fracture	I_FRAL	30 326
Line of Ice Crack	I_CRAC	30 327
Point		
Ice Compacting	ICECOM	30 350
Ice Lead	ICELEA	30 351
Iceberg	ICEBRG	30 352
Floeberg	FLOBRG	30 353
Ice Thickness	ICETHK	30 354
Ice Shear	ICESHR	30 355
Ice Divergence	ICEDIV	30 356
Ice Ridge/Hummock	ICERDG	30 357
Ice Keel/Bummock	ICEKEL	30 358
Ice Drift	ICEDFT	30 359
Ice Fracture	ICEFRA	30 360
Ice Rafting	ICERFT	30 361
Jammed Brash Barrier	JMDBRR	30 362
Stage of Melt	STGMLT	30 363
Snow Cover	SNWCVR	30 364
Strips and Patches	STRPTC	30 365
Grounded Hummock	I_GRHM	30 366

Ice Objects Catalogue

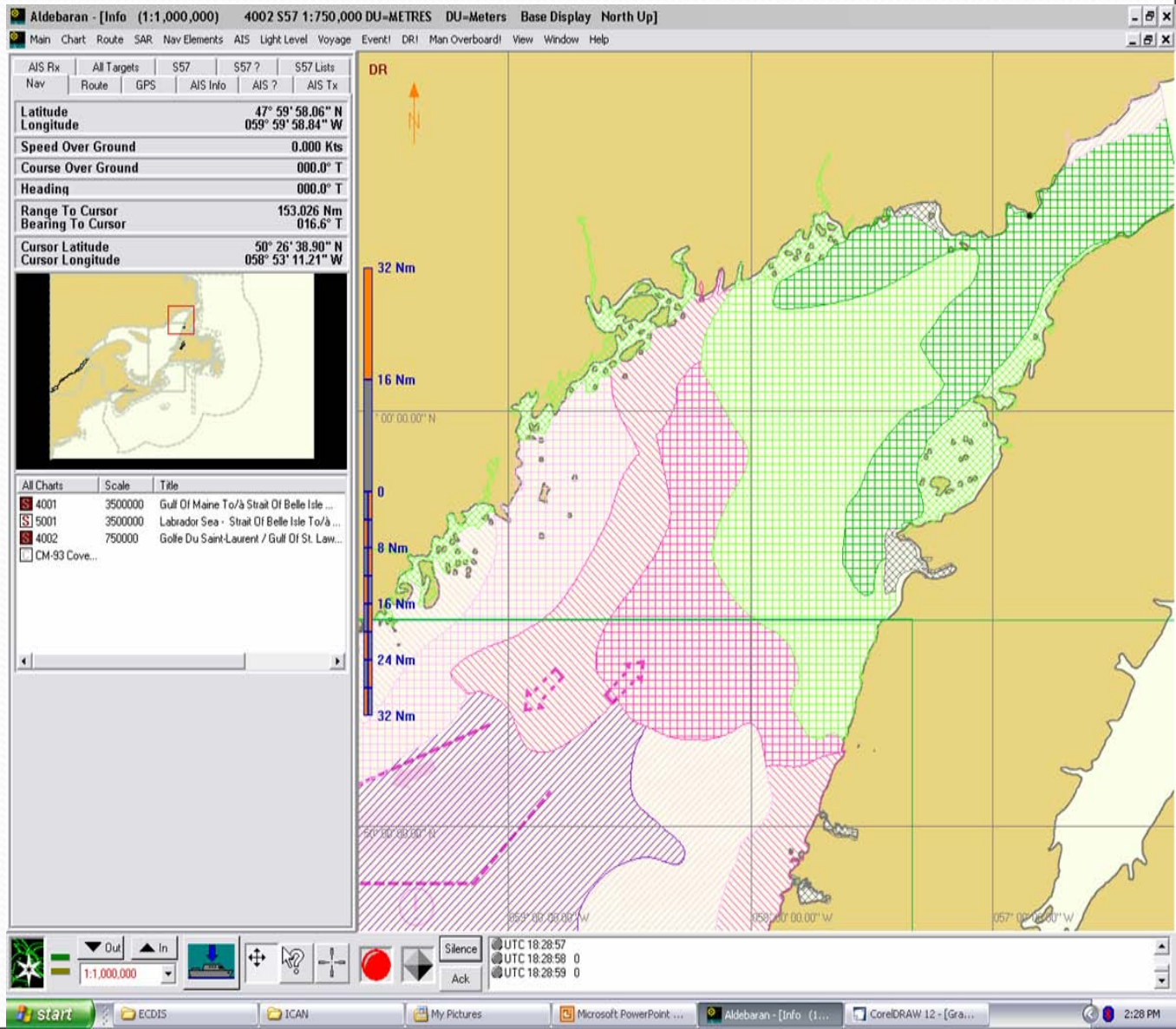
Ice Object Class: **Sea Ice**

Acronym:	**SEAICE**
Code:	30300
subset 'Attribute_A':	NOBJNM; OBJNAM; ICEACT; ICEAPC; ICESOD; ICEFLZ; ICESPC; ICELVL; ICECST; ICEFTY; ICEDSP; ICEDDR; ICERCN; ICERFQ; ICERMH; ICERXH; ICERDV; ICEKCN, ICEKFQ, ICEKMD, ICEKXD, ICEFCN; ICETCK; ICEMAX; ICEMIN; ICETTY; ICEMLT; ICESCN; ICESCT; ICEDOS; ICELST; ICELFQ; ICELOR;ICELWD; IA_SFA; IA_SFB; IA_SFC; IA_FFA; IA_FFB; IA_FFC; IA_RCN; IA_FCN; IA_SNG; IA_MLT; IA_PLG; IA_HLG; IA_CST; IA_DUG; SYMINS; SMINSR
subset 'Attribute_B':	INFORM; NINFOM; SCAMIN; SCAMAX; TXTDSC; NTXTDS; PICREP;
subset 'Attribute_C':	RECDAT; RECIND; SORDAT; SORIND;
Geometric Primitive:	Area
Definition:	Sea Ice is an area at sea that is covered, in whole or in part, with ice.
References:	"Workshop on International Standards for Ice Information in ECDIS," June 27-29, 1995, Canada/Germany/United States. "Ice in ECDIS Workshop," June 3-4, 2000, St. John's, Canada. "WMO Sea-Ice Nomenclature and International System of Sea-Ice Symbols", WMO Publication No. 259, Suppl. No. 5, 1989 "SIGRID-3: A Vector Archive Format for Sea Ice Charts", JCOMM Technical Report No. 23, 2004
Distinction:	LACICE
Remarks:	
Change from Version 4.1:	New attributes added

Canadian Ice Chart displayed on ICAN ECS

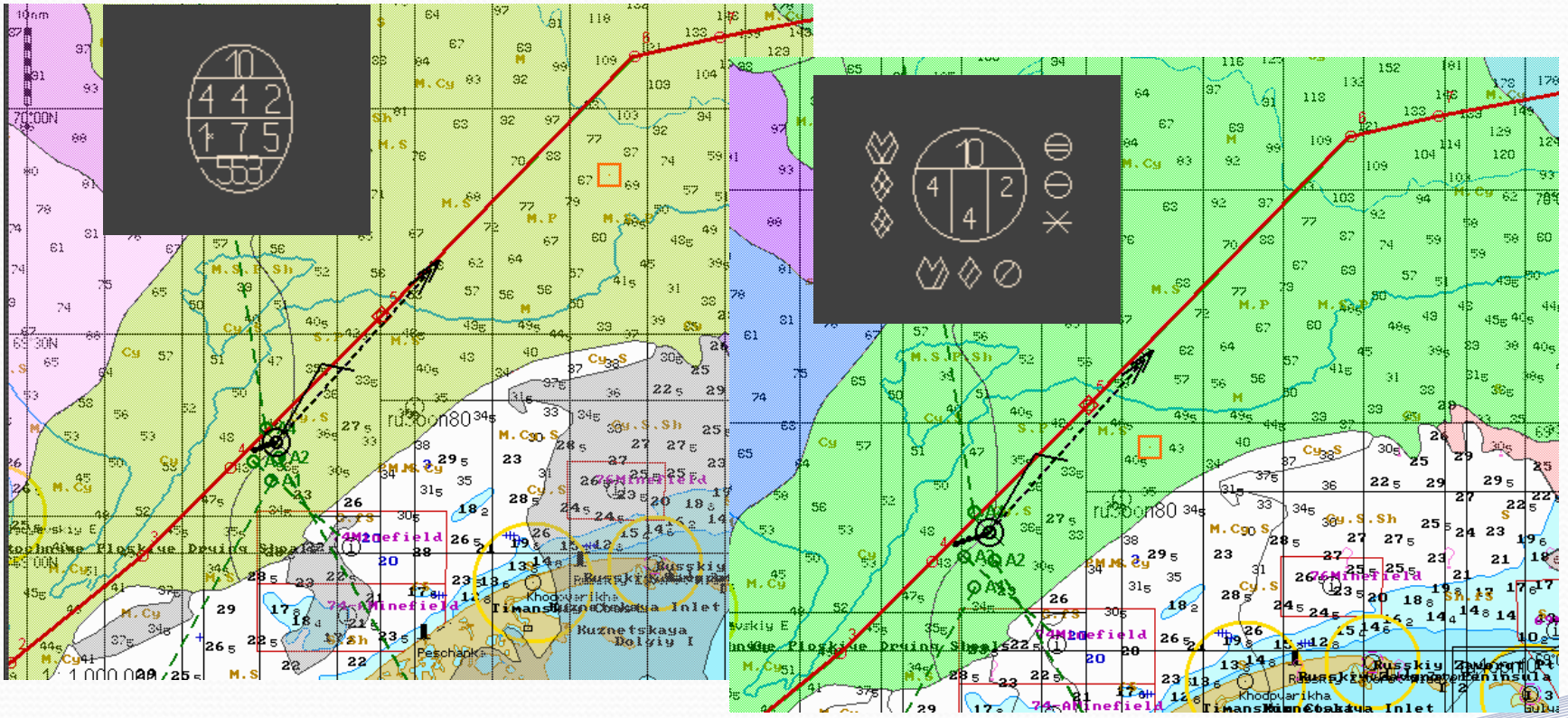


Canadian Ice Chart displayed on ICAN ECS



S-57 Ice charts

S-57 ice charts are displayed in ECDIS in conformity with Russian and International display regulations

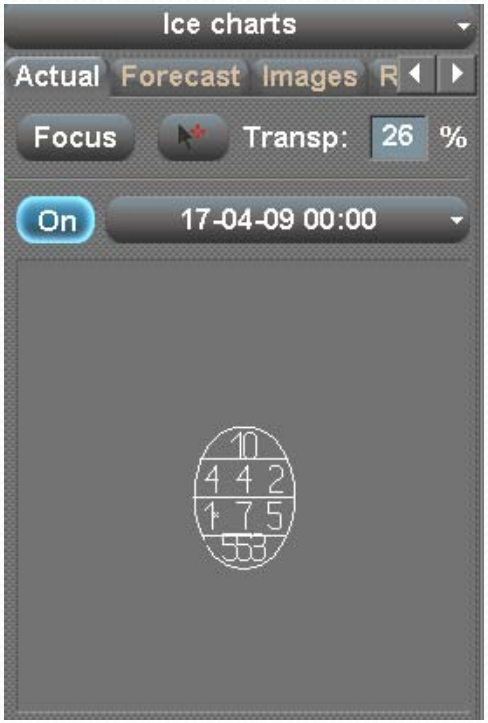


TRANSAS
SETS THE STANDARD

Ice data management

Main info panel consists of 4 pages

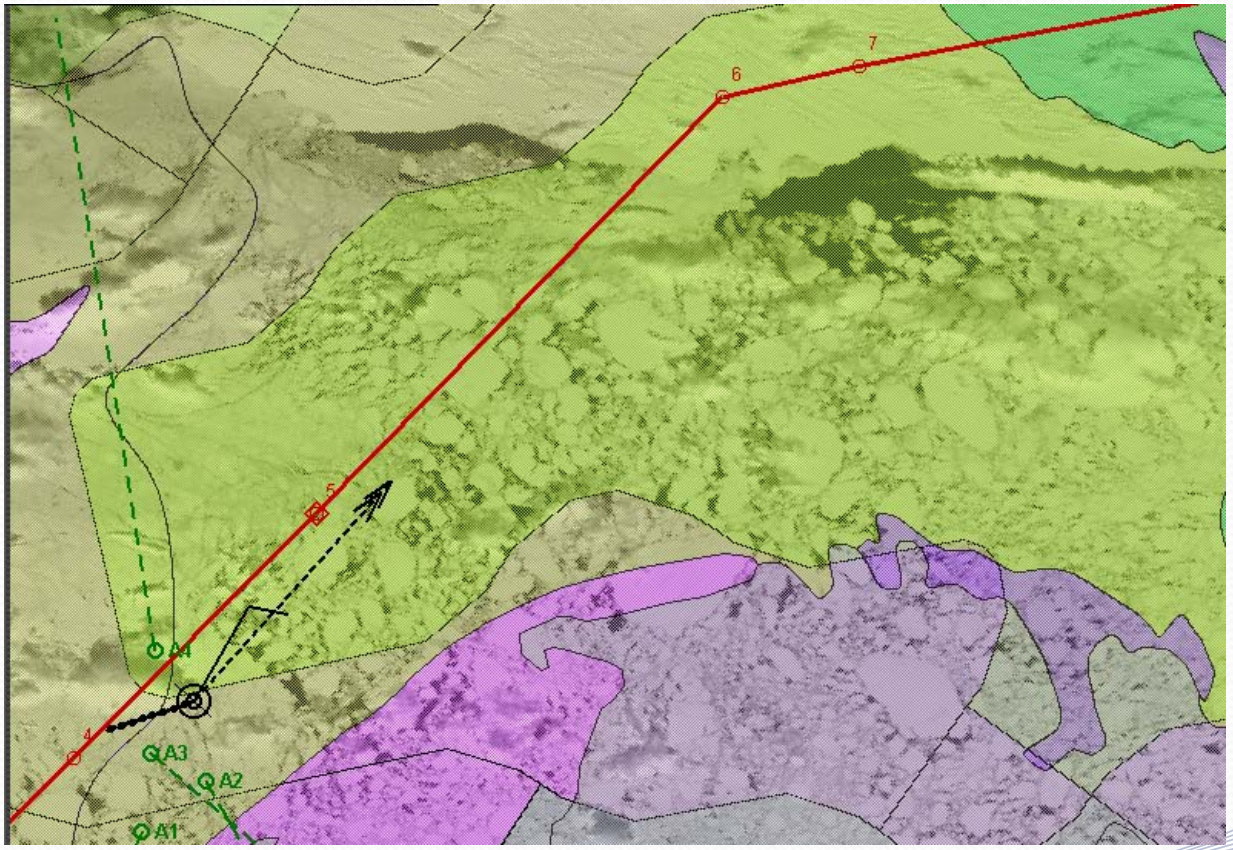
- Actual Ice Charts;
- Forecast Ice Charts;
- Raster Satellite Images;
- Recommended routes;



TRANSAS
SETS THE STANDARD

Ice charts in ECDIS

- Provides an operator with the combined navigational and meteorological information;
- Allows simultaneous display of up to 6 different semi-transparent layers:
  - NOAA images;
  - RadarSat images;
  - EOS images;
  - Actual S-57 ice chart;
  - Forecast S-57 chart;
  - Recommended route;



TRANSAS
SETS THE STANDARD

International Hydrographic Organization

The IHO Data Registry (S-100)

- how it can support e-Navigation

and a Universal Maritime Data Model

S-100 will support a variety of data sources, products and services

Ice Analysts Workshops

- 1st Ice Analysts Workshop, 12-18 June 2008, BSH
- 2nd Ice Analysts Workshop, 15-19 June 2009, met.no

Mit Standards noch effektiver

Rostock (rfra) • Heute geht im Bundesamt für Seeschifffahrt und Hydrographie (BSH) ein fünftägiger internationaler Workshop der Eisdienste zu Ende. Vertreter aus 13 Ländern, von Japan bis Kanada, tauschten in Rostock ihre Erfahrungen aus. Dabei wurde diskutiert, wie die Zusammenarbeit künftig weiter verbessert werden kann, erklärte gestern Dr. Jürgen Holfort, Leiter des gastgebenden BSH-Dienstes aus Rostock.

Als Ergebnis der Beratungen [illegible] die bisher [illegible] erarbeiteten [illegible] zu einem noch effektiveren Datenaustausch zu kommen. Im Blickfeld stand die technische Umsetzung der Herstellung und des Vertriebs der Eiskarten, die Minimierung von Fehlerquellen.

Holfort nennt ein Beispiel, wie die Arbeit noch stärker vernetzt werden kann. Alle zwei Wochen geben sowohl die USA als auch Russland Antarktis-Karten heraus. Wenn beide Seiten sich abstimmen, könnte im Ergebnis das Gebiet wöchentlich mit Karten abgedeckt werden.

Die Ergebnisse der Rostocker [illegible] werden in einem Report zusammengefasst.

Am „Ice Analyst Workshop" im Bundesamt für Seeschifffahrt und Hydrographie nehmen Vertreter von Eisdiensten aus der ganzen Welt teil. Foto: Ove Arscholl

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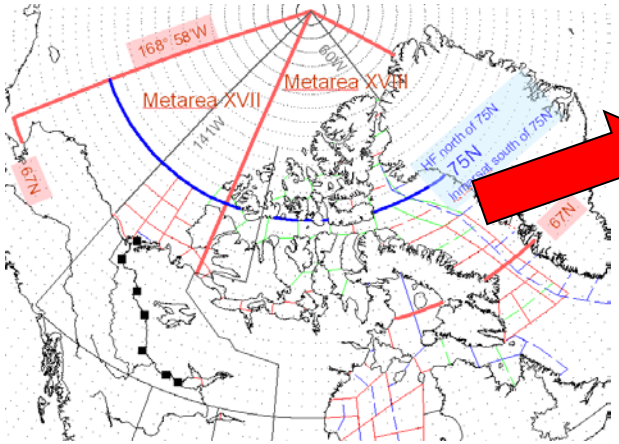
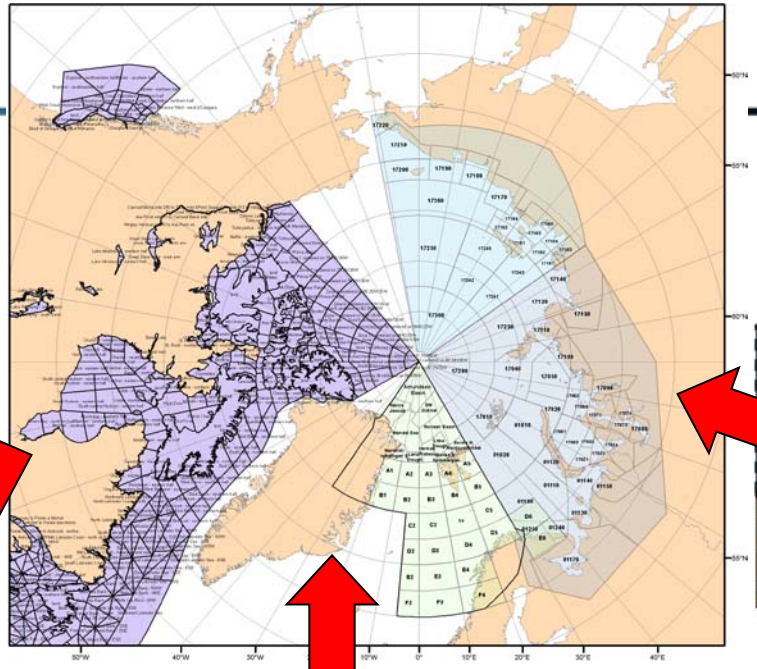
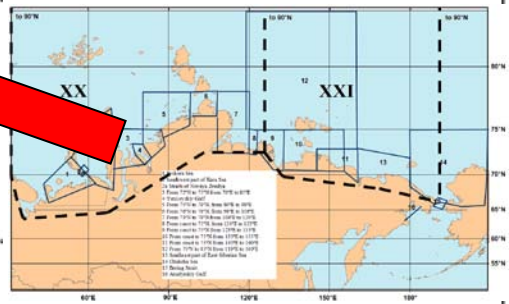
IAW3 – aim and objectives

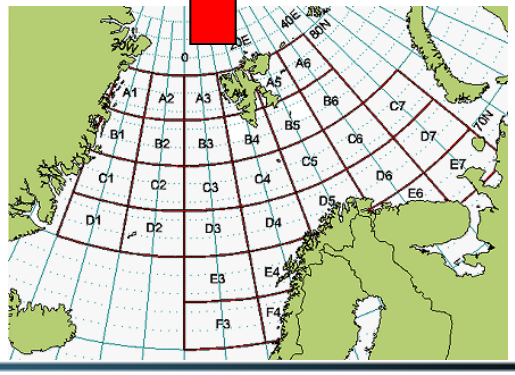
- Why IAW3 ?
  - ✓ Increased use of the Polar Regions by all elements of the marine community (including commercial, military and scientific) demand higher and higher level of support from ice and meteorological services
  - ✓ Harmonized, exchangeable ice analysis information within reconciled ice edges and ice polygones across the issuing services will be a benefit to all;
  - ✓ Sustainable and timely preparation of ice bulletins and other appropriate Maritime Safety Information (MSI) broadcasts within the new Arctic METAREAs XVII-XXI is a must for ice services since June 2011

IAW3 – aim and objectives









IAW3 – aim and objectives

- The primary objective of the Third Ice Analysts Workshop remains the assessment and minimization of differences between current practices of ice analysis and charting at the national ice services to meet operational needs.

- To help achieve this goal, the workshop encompasses:
  - ✓ Case studies, presentation / discussion from different Ice Services
  - ✓ Breakout expert groups by region (Arctic West/East; potentially Baltic Sea and Antarctic)

IAW3 – aim and objectives

- Case study #1: Online analysis of routine dataset and ice charting for a test region by 3-4 teams (Greenland, Baltic, Antarctic) of ice analysts

- The objective of this case study is
  - ✓ to train ice experts in ice analysis by comparing ice charts produced by two teams of analysts using identical input data to assess differences in analysis procedures, magnitude and sources of error, and impact on end-users.

IAW3 – aim and objectives

- Case study #2: Assimilation of ice charts in SIGRID-3 format; interoperability of format implementation across the services; reconciliation of ice edge and adjacent polygons
- The objectives of this case study are:
  - ✓ to train ice experts in ice analysis;
  - ✓ to demonstrate how ice charts originating from different services in a standard SIGRID-3 format can be combined and presented in the host ice chart production system;
  - ✓ to explore practices and procedures to reconcile potential differences in ice edges and polygons at the boundaries between adjacent preparation services;
  - ✓ to develop a process to make changes to the analysis that borders another METAREA; and,
  - ✓ to test and assess communication means and rules.

IAW3 – aim and objectives

- Case study #3: Online composition of sea ice Marine Safety Information (MSI) for GMDSS and NAVTEX bulletins
- The objective of this case study is
  - ✓ to train ice experts in the preparation of MSI and
  - ✓ to demonstrate how sea ice MSI and NAVTEX bulletins originating from different services can be produced in a coordinated manner to maximize the useful information content for mariners and minimize potential confusion.

Discussions and presentations

- Discussion of Case Studies #1 and 1a - Investigating philosophies for ice analysis and requirements from individual clients
- Discussion of Case Study #2: Assimilation of ice charts in SIGRID-3 format; interoperability of format implementation across the services; reconciliation of ice edges and polygons in adjacent METAREAs.
- Discussion of Case Study #3: Online composition of sea ice Marine Safety Information for GMDSS and bulletins for NAVTEX.
- Exchange of practices for satellite imagery relay: georeference and annotation standards, validity times, means for provision to customers, imagery display.
- Use of Coastal Radar for Ice Analysis in the Baltic Sea

Aims for the future:
More advanced, harmonized, modern services well-described in WMO/IHO/IMO TD for ice navigation and marine safety in all sea-ice covered regions….