WORLD METEOROLOGICAL ORGANIZATION

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (OF UNESCO)

JOINT WMO/IOC TECHNICAL COMMISSION FOR OCEANOGRAPHY AND MARINE METEOROLOGY (JCOMM)
THIRD ICE ANALYSTS WORKSHOP

COPENHAGEN, DENMARK
14 TO 18 JUNE 2011

IAW-3 DOC 1.2 (2)

ITEM 1.2 Rev 2

Original: ENGLISH

ANNOTATED PROVISIONAL AGENDA

1. OPENING OF THE WORKSHOP

1.1. Opening and welcome

The 3rd Ice Analysts Workshop (IAW-3) will open at 0900 hours on Tuesday 14 June 2011 at the Danish Meteorological Institute. Dr. Vasily Smolyanitsky (Russian Federation), Chairperson of the JCOMM Expert Team on Sea Ice will welcome the participants and chair the meeting. Participants will introduce themselves to the group.

1.2. Adoption of the agenda

The workshop participants will be invited to adopt the agenda for the session on the basis of the provisional agenda and timetable prepared by the Secretariat.

1.3. Workshop logistics and arrangements

The participants will agree on the hours of work and other practical arrangements.

2. Reports

2.1. Key facts of national ice information systems for the last season 2010/2011

The group will aim to get familiarized with the latest key facts of national ice information systems. It is proposed that each registered service (Canada, Chile, China, Denmark, Finland, Germany, Iceland, Norway, Russia, USA, etc.) will prepare and deliver a concise (not more than 10-minutes) presentation closely following the extended content of WMO Publication No. 574 “Sea Ice Information Services of the World” (see http://wdc.aari.ru//wmo/docs/WMO_574/wmo_574_2010.pdf). Annex A contains a more detailed template.

2.2. Reports/presentations from JCOMM, Secretariat, ice groups and data providers

3. Case studies

A detailed description of the proposed case studies is attached at Annex B.

3.1. Workshop logistics

Mr. Keld Qvistgaard (Denmark), the local host, will explain the logistics setup for the workshop including the location of the breakout areas and the availability of computer equipment, Internet connections and presentation facilities.

3.1.1. Presentation of online resources to be used during case-studies

Dr. Smolyanitsky and Mr. Qvistgaard will give a brief presentation to explain how on-line resources can be accessed for the workshop. This will include http and ftp access to the IAW-3 file server at gmdss.aari.ru and the local file server at DMI. Other participants will outline the materials that they have contributed to the workshop.

3.1.2. Identification of a strategy for comparing practices and ice products

The workshop participants will discuss how they would like the case studies to proceed and what each group will produce in the case studies so that ensuing plenary discussion can be comparable among the groups.

3.1.3. Identification of 3-4 break-out groups

Proposed lists of group assignments are included in Annex B. The participants will be invited to accept these lists or amend them.

3.2. Case study #1: Online analysis of routine dataset and ice charting for a test region by 2 teams 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. A detailed description of the case study is at Annex B.

3.2.1. Case study #1a: On-line analysis of routine datasets and ice chart production for two test regions by teams of ice analysts in break-out sessions.

The objective of this case study is to train ice experts in ice analysis by sharing analysis techniques and procedures among the ice analysts within each team and document best practices. A detailed description of the case study is at Annex B.

3.3. 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. A detailed description of the case study is at Annex B.

3.4. 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. A detailed description of the case study is at Annex B.

4. Plenary discussions

4.1. Discussion of Case Studies #1 and 1a - Investigating philosophies for ice analysis and requirements from individual clients

Case Study #1 involves two teams preparing ice charts for the same area and date with similar input data. In the plenary discussion following the breakout, the group will discuss the similarities and differences in the resulting ice chart products, identify the sources of the differences and the impact these differences might have on end-users.

Case Study #1a involves two teams preparing ice charts for two different areas – the Antarctic

and the Baltic. In the plenary discussion following the breakout, the group will discuss the similarities and differences in analysis techniques and procedures of the individual members of the group and identify the best practices adopted to produce their ice chart.

4.2. 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.

Case Study #2 involves the preparation of ice charts in for the Arctic METAREAs that are coordinated with the neighboring METAREAs. In the plenary discussion following the breakout, individual teams will present the challenges they faced in communicating with their neighbors and how they addressed those challenges. The group as a whole will identify best practices in coordinating between adjacent METAREAs. The plenary group will also aim to come to agreement on the ice analysis over the whole Arctic METAREAs for the first weeks of June as a model.

4.3. Discussion of Case Study #3: Online composition of sea ice Marine Safety Information for GMDSS and bulletins for NAVTEX.

Case Study #3 involves the preparation of a GMDSS marine safety notice and a NAVTEX bulleting. In the plenary discussion following the breakout, each team will discuss the challenges they faced in compiling the bulletins and in communicating with their neighbours and how they addressed those challenges to ensure timeliness and continuity of the bulletins. As a follow-up, the group will identify best practices in coordinating between adjacent METAREAs. Further, the group will identify and recommended changes to the compilation rules for the SafetyNET and NAVTEX bulletins (i.e. descriptions and size of described areas, etc) based on their experience.

4.4. Exchange of practices for satellite imagery relay: georeference and annotation standards, validity times, means for provision to customers, imagery display.

Based on the experience and knowledge gained over the course of the workshop, the plenary group will discuss how satellite imagery can be best shared among the services including practices for standards, display and provision to customers.

5. Presentations

5.1. Use of Coastal Radar for Ice Analysis in the Baltic Sea – Tuomas Kiskanen

Mr. Niskanen will give a presentation on the use of coastal radar for Baltic Sea ice analysis by the Finnish Marine Institute.

6. Review of existing sea ice regulatory publications

The chairperson will review the existing regulations concerning sea ice information embodied in publications such as the Guide to Marine Meteorological Services (WMO No. 471), Manual on Marine Meteorological Services (WMO No. 558), WMO Global Maritime Distress and Safety System (GMDSS) Marine Broadcast Systems, joint WMO/IMO/IHO Guidel and Manuals on Marine Safety Services, etc.

7. Workshop proceedings

7.1. Development of a summary of operational ice analysis differences and ice charts interoperability

With the assistance of the Secretariat, the group will develop a summary of differences in ice analysis procedures and their potential impact on interoperability and on end users.

7.2. Development of guidelines for harmonization of ice practices, delivery of the products and training in ice analysis including preparation of MSI

The group will prepare a set of guidelines to enhance interoperability and harmonization of ice

information provided to end users. This includes a synopsis of ice analyst training.

7.3. Workshop actions and report

The Chairperson and the Secretariat will summarize the actions arising from the workshop and draft the final report.

8. Close of the workshop

TEMPLATE FOR ICE SERVICE PRESENTATIONS ON ICE INFORMATION SYSTEMS

1. Organization, including:
    a. areas covered;
    b. specifications for staff working for ice analysis; and,
    c. involvement as GMDSS Preparation service (if appropriate).

2. Data acquisition and processing, including:
    a. general schema of information system and data flows; and,
    b. general particulars for satellite imagery (type and number of scenes, software used for analysis etc).

3. Output products including:
    a. Ice charts particulars and other binary products (software used production, reference projection, import/export formats); and,
    b. Plain text information including schedule of SafetyNET and NAVTEX bulletins.

4. Briefs for short-term numerical and longer period (e.g. seasonal) forecasts and forecasts methods.

5. Regular publications

6. Contact information including links to acting http/ftp file servers holding data collections

7. Sample material (charts, bulletins, etc.)

8. Additional information as appropriate.

PROPOSED CASE STUDIES

Facilities Setup

Plenary Room

The large conference room will be used for plenary presentations and discussions as well as for one case study team. This room is equipped with a projector and computer dedicated for presentations (this computer is not powerful enough to run GIS software). In addition, DMI will provide one portable computer with ArcGIS for the purpose of case study analysis work. This computer can be connected to the projector for group analysis. It will have Internet access and be able to download/upload files to the IAW-3 http/ftp file server.

Breakout Rooms

There will be three smaller breakout rooms available for case study work. Each of these rooms is equipped with a projector and computer for presentations. These computers are not powerful enough to run GIS software. Internet access will be available in the room. Selected team members will provide GIS analysis software on their own laptop computers. These laptops should be able to download/upload files to the IAW-3 http/ftp file server and be connected to the room's projector.

Participants identified to provide laptops with analysis software are:

- CIS – Darlene Langlois
- NIC – Chris Szorc
- AARI – Vasily Smolyanitsky
- Met.no – Nick Hughes

Others are welcome to bring their own laptops with software as available (participants should be familiar with their own software to avoid wasting time with technical issues)

IAW-3 http/ftp File Server

An Internet site with both http and ftp access has been set up at (http://gmdss.aari.ru and ftp:// gmdss.aari.ru) for operational coordination of the Arctic METAREAs. It is proposed to test this file server during the IAW-3.

Credentials for ftp-access to the directory are "iaw" / "iawgmdss". Currently all catalogues and their content are visible but this may change in future.

The structure includes directories:

/docs for Marine Safety Information documents
/archive for archival SafetyNET bulletins
/ice rolling set of ice bulletins and ice edge projects for 5 METAREAs for ice analysts only
/meteo rolling set of meteo bulletins for 5 METAREAs for meteo analysts only
/work working area with sub-directories containing background and intermediate material for ice & meteo analysts e.g.
/metarea17 – working area for METAREA-XVII only
...
/metarea21 – working area METAREA-XXI only

The sub-directory /docs/iaw3 will be used during the workshop for depositing input data as well as workshop outcomes.

Case Study #1

On-line analysis of routine datasets and ice chart production for a test region by two teams of ice analysts in break-out sessions.

Objective

Compare ice charts produced by several teams of analysts using identical input data to assess differences in analysis procedures, magnitude and sources of error, and impact on end-users.

Procedure

The group will be divided into two teams of 5 analysts. Each team will be given the same set of input data and asked to produce an ice chart for the same region. In the following plenary, the group will then discuss the similarities and differences in the resulting ice chart products, identifying the sources of the differences and the impact these differences might have on end-users.

Input Data

The test region will be the Greenland Sea. DMI will prepare the datasets for analysis. The test period is defined as a 2-week period preceding workshop i.e. 1-14 June 2011. The target date for the ice chart to be produced is June 14, 2011.

For the test region and period:

- Several daily and weekly ice charts in SIGRID3 and graphical formats (GIF, PDF) immediately preceding the target date
- Georeferenced satellite images - optical/IR (NOAA, EOA), passive microwave (SSMIS, AMSR) and synthetic aperture radar (ENVISAT/RADARSAT. Images should be close to but preceding the target date/time
- Weather maps and bulletins close to but preceding the target date/time
- Ship/shore ice and weather reports close to but preceding the target date/time
- Ocean current information for the test region

DMI will deposit the input data on the IAW-3 file server prior to the workshop. Met.no will submit their Arctic European sector weekday ice chart in shapefile format, background imagery and ArcView project for 14 June 2011. Other participants may also deposit relevant data on the IAW-3 file server prior to the workshop.

Product Format

The ice chart should be produced using WMO International Sea Ice Symbology (egg code) using the analysis systems available at DMI or on participants laptops. It should be saved preferably in the WMO SIGRID3 format and/or ESRI .mxd project or shapefile format. Hard-copies of the ice charts and intermediate steps of analysis process should be produced for use in plenary and proceedings.

Proposed Teams

These may be adjusted at the workshop.

Team 1	Team 2
Soloschuk (AARI)	Folomeev (AARI)
Langlois (CIS)	Buus-Hinkler (DMI)
Harnvig (DMI)	Adamsen (DMI)

Jonsdottir (IMO)	Larsen (met.no)

Case Study #1a (*in parallel with #1*)

On-line analysis of routine datasets and ice chart production for two test regions by teams of ice analysts in break-out sessions.

Objective

Share analysis techniques and procedures among the ice analysts within each team. Document best practices.

Procedure

The group will be divided into two teams of 5 analysts. Each team will be assigned a different region and, based on a set of input data, asked to produce an ice chart for that region.

In the following plenary discussion, each group will discuss the similarities and differences in analysis techniques and procedures of the individual members of the group and identify the best practices adopted to produce their ice chart.

Input Data

It is proposed to have 2 regions:

- Baltic Sea – test period is defined as a 2-week period 7-21 February 2011. The target date for the ice chart to be produced is February 21, 2011.
- Antarctic TBD (propose Bellingshausen / Weddell Seas) – test period is defined as a 2-week period preceding workshop - 1-14 June 2011. The target date for the ice chart to be produced is June 14, 2011.

For each region, the following is needed:

For the test region and period:

- Several daily and weekly ice charts in SIGRID3 and graphical formats (GIF, PDF) immediately preceding the target date
- Georeferenced satellite images - optical/IR (NOAA, EOA), passive microwave (SSMIS, AMSR) and synthetic aperture radar (ENVISAT/RADARSAT. Images should be close to but preceding the target date/time
- Weather maps and bulletins close to but preceding the target date/time
- Ship/shore ice and weather reports close to but preceding the target date/time
- Ocean current information for the test region

NIC, AARI, met.no, BSH and CNWS should deposit their data for the Antarctic on the IAW ftp file server before the workshop. Met.no will submit their weekly Antarctic Atlantic sector ice chart, background imagery and ArcView project for 18 April 2011 (last day of production for the 2010-2011 season).

FMI, BSH, NIC, and AARI should deposit their data for the Baltic on the IAW ftp file server before the workshop.

Product Format

The ice chart should be produced using WMO International Sea Ice Symbology (egg code) using the analysis systems available at DMI or on participants laptops and saved preferably in the WMO SIGRID3 format and/or ESRI .mxd project or shapefile format. Hard-copies of the

ice charts and intermediate steps of analysis process should be produced for use in plenary and proceedings.

Proposed Teams

These may be adjusted at the workshop

Team Baltic	Team Antarctic
Holfort (BSH)	Szorc (NIC)
Marnela (FMI)	Schmelzer (BSH)
Alvarstein (met.no)	Concha (CNWS)
Niskanen (FMI)	Hughes (met.no)
Qvistgaard (DMI)	Sarkisov (AARI) – remotely

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.

Objective

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. Identify challenges to be overcome in doing so. Explore practices and procedures to reconcile potential differences in ice edges and polygons at the boundaries between adjacent preparation services. Develop a process to make changes to the analysis that borders another METAREA. The aim is to come to agreement of the ice analysis over the Arctic METAREAs for the first week of June as a model. Test and assess communication means and rules.

Procedure

The group will be divided into 3 teams with leaders from corresponding preparation services.

- Team 1 – METAREA XVII - XVIII (lead CIS)
- Team 2 – METAREA XIX (lead met.no)
- Team 3 – METAREA XX – XXI (lead AARI)

The test period is defined as a 2-week period preceding workshop – May 30 - 09 June 2011. The target date for the ice chart to be produced is June 9, 2011.

Each team will use the ice charts produced by their lead service during the test period, together with georeferenced satellite imagery and any ancillary data for 1-3 days preceding the target date. All input data should be representative of data actually available to each service. Their task will be to prepare an updated ice chart for the target date for:

1) their METAREA and the adjacent 300 mile wide intersection zones; and optionally,
2) the circumpolar Arctic Ocean.

At the first step of the assimilation process, each team will focus on interoperability of SIGRID-3 format and identify challenges to be overcome in doing so.

At the second step, the teams will estimate congruence of the ice edge and ice zone polygons in the adjacent and overlaying zones and explore the practices leading to differences (like satellite imagery used, issue times, collection periods, philosophies).

At the third stage, each team will aim to come to agreement of the ice analysis over particular Arctic METAREAs and adjacent zones for the target dates. In doing that the teams will develop a process to make such changes to the analysis that ensures continuity of at least the ice edge across the METAREAs and document necessary operational decisions (at the level of preparation service).

Throughout the above stages, each team must communicate with the team in adjacent areas in order to produce ice charts that are compatible at the boundaries of the METAREAs.

In the following plenary discussion, the groups will discuss the challenges they faced in communicating with their neighbours and how they addressed those challenges. The group

will identify best practices in coordinating between adjacent METAREAs. Finally the plenary group will aim to come to agreement of the ice analysis over the whole Arctic METAREAs for the first weeks of June as a model.

Input Data

For each METAREA:

- Daily, weekly or bi-weekly ice charts in SIGRID3 format produced during the test period
- A few satellite images close to but preceding the target date/time
- Weather maps and bulletins close to but preceding the target date/time
- Ship/shore ice and weather reports close to but preceding the target date/time
- Ocean current information for the test region

NIC and CIS should deposit the data for METAREAs XVII-XVIII on the IAW ftp file server before the workshop.
Met.no should deposit the data for METAREA XIX.
AARI should deposit the data for METAREAs XX-XXI.

Note that all of the above data should be somewhat simpler in magnitude and complexity than what was provided for Case Study #1 (the objective here is to focus on coordination between METAREAs and interoperability issues, not on the analysis procedures). The same data should not necessarily be available to every team but, rather, should be representative of the data routinely available to the responsible preparation service.

The inter-team communication can be made more or less real by restricting the means by which teams can communicate. For example, the simulation could be made more real if only ftp and http exchange through the gmdss.aari.ru file server and/or e-mail telephone communication is allowed.

Product Format

Ice charts should be produced using WMO International Sea Ice Symbology (egg code) using the analysis systems available at DMI or on participants laptops and preferably in the WMO SIGRID3 format as well as ArcGIS project files. These products should be posted at the appropriate directory (/ice) on the IAW-3 file server. Proposed naming is metareaXX_2011MMDD.mxd (.shp, .dbf , etc). Hard-copies of the ice charts and intermediate steps of the assimilation process should be also produced for use in plenary and proceedings.

Proposed Teams

These may be adjusted at the workshop

Team XVII-XVIII	Team XIX	Team XX-XXI
Langlois (CIS)	Qvistgaard (DMI)	Soloschuk (AARI)
Marnela (FMI)	Adamsen (DMI)	Folomeev (AARI)
Alvarstein (met.no)	Harnvig (DMI)	Holfort (BSH)
Concha (CNWS)	Buus-Hinkler (DMI)	Larsen (met.no)
Jonsdottir (IMO)	Schmelzer (BSH)	Niskanen (FMI)
Szorc (NIC)	Hughes (met.no)	

Case Study #3

Online composition of sea ice Marine Safety Information for GMDSS and bulletins for NAVTEX.

Objective

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. Test existing formats and identify changes to standards for sea ice and icebergs MSI and NAVTEX bulletins. Test and assess communication means and rules.

JCOMM ETSI, during its 4th session, agreed on a set of rules for the description of ice conditions in a SafetyNET bulletin as well as usage of NAVTEX abbreviations. These will be used by the participants as a starting point.

Procedure

The same 3 teams as for Case Study #2 will be used.

- Team 1 – METAREA XVII - XVIII
- Team 2 – METAREA XIX
- Team 3 – METAREA XX - XXI

Using the ice charts produced in Case Study #2, each team must firstly delineate ice edge and secondly produce its description along with other appropriate ice information a GMDSS marine safety notice and a NAVTEX bulletin for its METAREA.

The teams should firstly follow rules set by JCOMM ETSI for description of sea ice and icebergs in SafetyNET and NAVTEX bulletins (ice edge description with at most 10 points is the only must, plain text for NAVTEX is preferable, additional information is at the competence of preparation service).

Secondly, each team must communicate with the team in adjacent areas in order to produce products that are compatible at the boundaries of the METAREAs and try to simulate and/or assess circumpolar circular (westward CIS 03/15UTC→ AARI 06/18UTC→ met.no 11/23UTC….) exchange of information. The inter-team communication can be made more or less real by restricting the means by which teams can communicate. For example, the simulation could be made more real if only ftp and http exchange through the gmdss.aari.ru file server and/or e-mail and/or telephone communication is allowed. The teams should identify challenges arising in ensuring continuity of ice edge description and other additional information in the bulletins.

During or after the process of compilation each team should assess the following challenges for SafetyNET and NAVTEX bulletins: descriptions and size of described areas; synoptic vs region descriptions; ice descriptions (average vs shipping lane details); number of ice edge points; use of local place names; use of abbreviations vs plain language; merging with weather descriptions; format for ice forecasts; iceberg details in bulletins; and, any other issues that may arise.

In the following plenary discussion, the group will discuss the challenges they faced in compiling the bulletins and in communicating with their neighbours and how they addressed

those challenges to ensure timeliness and continuity of the bulletins. As a follow-up, the group will identify best practices in coordinating between adjacent METAREAs. Further, the group will identify and recommended changes to the compilation rules for the SafetyNET and NAVTEX bulletins (i.e. descriptions and size of described areas, etc) based on their experience.

Input Data

For each METAREA:

- The ice chart produced in Case Study #2
- ArcGIS / shapefile format layer, depicting regions and sub-regions of appropriate METAREA
- SafetyNET and NAVTEX (if appropriate) ice bulletins for the previous date. Met.No will submit their GMDSS bulletin in proposed format for METAREAs I and XIX and background ice charts.
- WMO rules for producing GMDSS marine safety information and NAVTEX bulletins

All other data except the stated ice chart (ArcGIS projects with ice edge) should be considered as supplementary, as information to support the analysts' decisions.

Product Format

Products should conform to the accepted formats for GMDSS and NAVTEX and posted at appropriate directory (/ice) at the IAW-3 file server. Proposed naming convention is metareaXX_2011MMDD.txt. Hard-copies of the ice edge delimitation and intermediate steps of bulletin compilation process should be produced for use in plenary and proceedings.