WORLD METEOROLOGICAL ORGANIZATION

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (OF UNESCO)

EXPERT TEAM ON SEA ICE – FIFTH SESSION

STEERING GROUP FOR THE PROJECT GLOBAL DIGITAL SEA ICE DATA BANK (GDSIDB) – THIRTEENTH SESSION

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DECISIONS BY WMO GOVERNING BODIES AND JCOMM RELEVANT TO ETSI

Summary and Purpose of Document

This document provides information on decisions and priorities by WMO Executive Council and JCOMM SCG, since JCOMM-4 (May 2012), that the Team should be aware of and which it should address in further details during the intersessional period.

ACTION PROPOSED

The Team is invited to:

(a) note and comment on the information contained in this document as appropriate, and;

(b) address the emerging topics, and consider specific issues in the 2012-2017 Workplan.

References: Abridged final report with resolutions of the 64th Session of the WMO Executive Council (WMO-No.1092)

Final report of the 7th session of the JCOMM Services and Forecasting Systems Programme Area Coordination Group (JCOMM Meeting Report No.101)

2012-2017 SFSPA Projects and Work Plans (http://www.jcomm.info/SFSPAWP)

Appendix: A. WMO Resolution 2 (EC-64) – Report of the fourth session of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology

B. Excerpt of 2012-2017 SFSPA Projects and Work Plans for the Intersessional Period relevant to ETSI activities

DISCUSSION

Decisions by WMO Governing Body

1. The WMO Executive Council at its 64th Session (June 2012) noted the summary report of the fourth session of JCOMM presented by the co-president for meteorology, including the resolutions and recommendations and recorded its decisions on the recommendations in Resolution 2 (EC-64) – Report of the fourth session of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (*Appendix A*).

2. The WMO Executive Council noted that the implementation of Quality Management System (QMS) is primarily a management tool to ensure customer focus, corrective and preventive action, and continuous improvement of products and services. As such, it would seem appropriate that QMS principles should pervade the entire Organization, from basic quality assurance of data to the evaluation of products and services and the associated management practices and procedures to ensure that they are meeting users' needs. Several WMO Programmes have undertaken first steps to align their activities to QMS principles and the Council thus endorsed the QMS approach and policy of the following programmes, noting that for a comprehensive service strategy of WMO, a set of fundamental policies for QMS across the Organization, based on the overall WMO Mission and Vision statements were needed. JCOMM reported on its intersessional plan for QMS – building on the current QMS pilot project implemented by the Australian Bureau of Meteorology, to assist Members to apply the developed framework in the work for oceanographic and marine meteorological services. Following the model used in CAeM, it is planned to develop competency requirements for marine meteorology and oceanography. A small task team, whose chair will be a member of the JCOMM Management Committee, is tasked with preparing a draft of internationally acceptable competencies, focused on the competency requirements for a Quality Management Framework for marine meteorological and oceanographic services. Recommendation 5 (JCOMM-4) addressed also the issue of working with the International Maritime Organization (IMO) on possible future working arrangements to continuously update QMS requirements during the intersessional period.

3. Regarding the ongoing process of establishing/developing the Global Framework for Climate Services (GFCS), the WMO Executive Council reviewed the issue of exchanging climate data and relevant information. The Annex 1 to Resolution 40 (Cg-XII) has made the WMO policy and practice for the exchange of meteorological and related data and products including guidelines on relationships in commercial meteorological activities. The WMO Executive Council, with a view to ensuring that the climate data and products needed for the GFCS climate services are included therein, established an "Executive Council Task Team on the WMO Policy for International Exchange of Climate Data and Products to support the implementation of the Global Framework for Climate Services". This Task Team was composed with experts representing technical commissions, key programmes and bodies taking part in the climate service provision.

4. At the 65th session, the WMO Executive Council noted that the IMO/WMO World Wide MetOcean Information and Warning Services (WWMIWS) introduced the role of METAREA Coordinators and identified their responsibilities to ensure that the provision of met-ocean information and warnings is consistent in meeting the obligations of the International Convention for the Safety of Life at Sea (SOLAS). This also ensures consistency with other aspects of safety information provided under the Convention, in particular, Navigation Warnings, which are provided under the auspices of the International Hydrographic Organization, and are coordinated by NAVAREA Coordinators. The Council noted the need for collaboration by JCOMM (through its Expert Team on Maritime Safety Services) with IOC, IHO and IMO to better coordinate the

provision of tsunami warnings on the SafetyNet system. The Council recognized the need of ensuring maritime weather and sea ice safety services, including the operational service in five new Arctic Ocean Metareas, and acknowledged the acceptance of the NMHSs to serve as coordinators in their different METAREAS.

Decisions at the JCOMM Services and Forecasting System Area Coordination Group

5. The JCOMM Services and Forecasting System Area Coordination Group (SCG) had its 7th session in March 2013, to review list of priority activities endorsed at JCOMM-4 (2012) and harmonize the intersessional SFSPA Workplan (2012 - 2017) in line with the priority of WMO and IOC. The list of priority activities endorsed at JCOMM-4, which directly calls for the activities of ETSI, includes the following:

- …
- Continue supporting Maritime Safety Information Services (with IMO and IHO) including ice navigation services and information on complex sea states, and enhance ENC/Electronic Chart Display Information System (ECDIS) or other display capabilities for met-ocean safety information, under the agreed scheme for IMO e-Navigation;
- Maintain and update technical documentation, including the Manual on Marine Meteorological Services (WMO-No. 558), Guide to Marine Meteorological Services (WMO-No. 471), relevant parts of the Manual on the Global Data-Processing and Forecasting System (GDPFS, WMO-No. 485), and sea-ice standards and reference material;
- Continue supporting and harmonizing sea-ice related training (e.g. IAW, COMET, manual for ice experts —ice observers).
- …

6. To address those issues, the Group reviewed and agreed on the Projects to be carried out by the ETSI during the intersessional period (2012 – 2017), as follows. The full description of each Projects are reproduced in *Appendix B*, and also can be found at http://www.jcomm.info/SFSPAWP (also to be discussed under agenda item 10):

- Project #13: Capacity Development
- Project #20: Catalogue on Met-Ocean Object Class for ENC and e-Navigation
- Project #21: Facilitate implementation of QMS among members of the provision of MSS
- Project #26: Support and enhance the polar components of GMDSS
- Project#27: Support and enhance ENC/Electronic chart Display Information System (ECDIS) for ice navigation
- Project #28: Maintain and update sea ice technical documentation
- Project#29: Support for Sea ice climatology
- Project#31: Enhancing the integrated ice services and forecasting

7. The Group, based on relevant decisions and requests made at the JCOMM4 session, decided to review the overall structure of the Manual on Marine Meteorological Services (WMO-No. 558) and the Guide to Marine Meteorological Services (WMO-No. 471), in view of making a recommendation for a new structure of those mandatory publications without duplication and/or potential conflict in contents. Such a review should also develop clear guidelines for Members applying to be Preparation/Issuing Services for the Global Maritime Distress and Safety System (GMDSS) Marine Broadcasting System. The Group requested the ETSI, in coordination with the WMO Secretariat, to revise the electronic versions of documentation through the “fast-track” process similar to WMO-No.558 (see Project #31).

8. The Group recalled the discussion at JCOMM 4, that contribution to the Global Framework for Climate Services (GFCS) implementation for marine and coastal communities was set as high priority of SFSPA for the intersessional period. It was recalled that the Commission decided to fulfil the requirements by focusing on its core service mandates, while avoiding duplicated efforts or new creation of tasks that might impair the essential work. The Group identified a number of projects within the SFSPA intersessional workplan that directly addresses various elements of GFCS, including those on the Polar Met-Ocean and sea ice information services (coordinated through joint efforts by ETMSS, ETSI and ETOOFS) to develop meteorological and oceanographic information for safety and efficiency of ice navigation and for response to marine environmental accidents in the Arctic Ocean, Southern Ocean and other areas with seasonal ice cover (Projects #26 #29 and #31).

Appendices: 2

Resolution 2 (EC-64)

REPORT OF THE FOURTH SESSION OF THE JOINT WMO/IOC TECHNICAL COMMISSION FOR OCEANOGRAPHY AND MARINE METEOROLOGY

THE EXECUTIVE COUNCIL,

Having considered the *Executive Summary of the Abridged Final Report with Resolutions and Recommendations of the Fourth Session of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology* (WMO-IOC/JCOMM-4/3s),

Notes:

(1) The *Executive Summary of the Abridged Final Report with Resolutions and Recommendations of the Fourth Session of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology* (WMO-IOC/JCOMM-4/3s);

(2) Resolutions 1 to 5 (JCOMM-4);

Decides to take the following action on Recommendations 1 to 7 (JCOMM-4):

Recommendation 1 (JCOMM-4) – Provision of Ocean Instrument/Platform Metadata

Approves the recommendation;

Recommendation 2 (JCOMM-4) – Marine Climate Data System (MCDS)

(a) Approves the recommendation;

(b) Requests the Secretary-General, in coordination with the Executive Secretary of the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (UNESCO/IOC), to facilitate implementation of this recommendation and provide appropriate technical advisory assistance to Members/Member States concerned as required, in the operations of Centres for Marine Meteorological and Oceanographic Climate Data;

Recommendation 3 (JCOMM-4) – The IODE Ocean Data Portal (IODE ODP)

Approves the recommendation;

Recommendation 4 (JCOMM-4) – Enhancement of Capability for Marine Environmental Emergencies

(a) Approves the recommendation;

(a) Requests the Secretary-General, in coordination with the Executive Secretary of UNESCO/IOC, to arrange for the development and implementation of the strategy, in consultation with the co-presidents of the Commission, and other bodies and organizations as appropriate;

Recommendation 5 (JCOMM-4) – Quality Management Implementation for JCOMM

(a) Approves the recommendation;

(b) Requests the Secretary-General, in coordination with the Executive Secretary of UNESCO/IOC, to support developing guidelines and training material for a quality management framework/quality management system for marine meteorological and oceanographic services, based on the developed competence standards;

Services **(WMO-No. 558), the** ***Guide to Marine Meteorological Services*** **(WMO-No. 471) and WMO-No. 9, Volume D, Information for Shipping**

(a) Approves the recommendation;

(b) Requests the Secretary-General to arrange for the inclusion of these procedures in the *Manual on Marine Meteorological Services* and the *Guide to Marine Meteorological Services*;

(c) Authorizes the Secretary-General to make any consequent editorial amendments to the chapters of the *Manual on Marine Meteorological Services* and the *Guide to Marine Meteorological Services*;

Recommendation 7 (JCOMM-4) – Review of relevant resolutions of the governing bodies of WMO and UNESCO/IOC

Approves the recommendation.

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Note: This resolution replaces Resolution 4 (EC-LXII), which is no longer in force.

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Project #13: Capacity Development

Project Leader(s): ***Boram Lee, Kevin Horsburgh, Vasiliy Smolyanitsky, GaryBrassington, Henri Savina***

Project Description:

Capacity Development (CD) remains a core activity at the heart of most JCOMM activities. All individual projects have some capacity development aspects, whether these be high level scientific and technical workshops, hands on training activities, or Guides, Manuals and other guidance and training materials, including online course material.

At its fourth Session of JCOMM in May 2012,it was decided that focused efforts should be made for preparation and management of technical guidance material in conjunction with the regular review and update of the Guides and Manuals (addressed within other SFSPA projects). Also, Specific project related training and capacity development are described under the individual projects, particularly to serve for Members' / Member States' capacity development and technology transfer needs.

Opportunities for training and technology sharing include the joint workshops supported by JCOMM and the Tropical Cyclone Programme (TCP) – to provide hands on training on operational wind wave and storm surge forecasting, and to contribute to the ongoing development of the Storm Surge Watch Scheme (SSWS), as well as joint workshops on sea ice analysis.

- **Expected Outcomes:**
  - Support Capacity Development workshops
  - Publish and update the Guides on marine meterology and oceanography, including those on marine meteorological services, ocean forecast systems, waves and storm surge forecasting

- **Key Activities:**
  - Support JCOMM-TCP training workshops on wave and surge forecasting
  - support for "Ice Analysts Workshop" on regular scale (1-2 interval)
  - support for sea-ice training documentation and courses including COMET modules and manual for ice experts – ice observers.
  - Support METAREA Coordinators and Issuing Services in supporting Maritime Safety Services

- **Timeline/milestones:**
  - 4th JCOMM "Ice Analysts Workshop" (St.Petersburg, Jun/Jul'13)
  - 8th JCOMM-TCP Training Workshop on Storm Surge and Wave Forecasting, for East Africa (Nairobi, Nov'12)
  - 9th and 10th JCOMM-TCP Training Workshops on Storm Surge and Wave Forecasting (venue and time TBD)
  - Maritime Safety Services Enhancement Workshop, for METAREA coordinators and Issuing Services, in conjunction with IHO/WWNWS session (2014, NZ)

- **ETs, Other Organizations and participants:**
  - ETWCH, TCP, ETSI, ETOOFS, ETMSS COMET

- Implementation of JCOMM-4 decisions (noted by paragraph number of JCOMM-4 report)
  - 8.1.11 (training)
  - 8.2.3 (continuing JCOMM-TCP workshop series)
  - 9.5 (workshop in Africa)
  - 9.9 (harmonized training responding to Members'/Member States' needs)

Project #20: Catalogue on Met-Ocean Object Class for ENC and e-Navigation

Project Leader(s): NOAA, ***Henri Savina***

Project Description:

Since 1999, ETMSS has been working on the implementation of graphical/numerical Maritime Safety Information (MSI) broadcast within the GMDSS. The WMO Executive Council, at its sixtieth session (Geneva, June 2008) re-emphasized the continuing importance to mariners in receiving graphical products via radio transmissions and requested JCOMM to continue researching methods for transmitting graphical products to marine users. On the other hand, the WMO Executive Council, at its sixty-first session (Geneva, June 2009), encouraged WMO Members to investigate low-cost options for on-demand approaches that are compatible with Electronic Navigation Charts (ENC). In addition, the imminent increase of ENC systems on SOLAS vessels as regulatory material and the emergence of the e-navigation concept within IMO should reinforce the priority given to this requirement and the need to find appropriate resources to develop a suitable service. Both the ETMSS and ETSI have been working on this issue and ETSI has already developed the *Sea Ice Objects Catalogue* in accordance with IHO standards. The ETMSS has initiated the development of a catalogue on *Met-Ocean Object Classes and Attributes*, which would be an essential tool to enable NMHSs to develop products specifically for Electronic Navigation Chart Systems, allowing the implementation of software to decode and display met-ocean information by the manufacturers of these systems, using the S-57 and S-100 chart data exchange standards.

The IMO e-Navigation concept reinforce the need to go forward on this issue, to be able to finalize the catalogue on Met-Ocean Object Class for ENC and e-Navigation, especially for parameters included in MSI. A strong support and contribution from ETSI is expected, as the Team has already developed such catalogue for sea ice. WMO, through the Secretariat and ETMSS, need also to be proactive in dealings with IHO and IMO on e-navigation development, to ensure compatibility between e-navigation and future metocean services by Members.

- **Expected Outcomes:**
  - Met-Ocean object class for parameters included in MSI (wind, wave height, etc…) and additional met-ocean parameters (surface current,…), based on templates from the Ice Objects Catalogue.

- **Key Activities:**
  - Establish the first version of the catalogue for registration in IHO S-10x
  - Engage with IHO and TSMAD for the creation of a IHO Domain for a Met-Ocean Feature Catalogue

- **Timeline/milestones:**
  - Feb 2013: ETMSS-4
  - June 2014: Finalize the first version of met-ocean object class

- **ETs, Other Organizations and participants:**
  - NOAA (lead), ETMSS (H. Savina, B. Hackett, G. Coppini, J. Parker, N. Moodie), ETWS, ETSI, IHO, IMO

Project #21: Facilitate implementation of QMS among members of the provision of MSS

(This project is to be moved to MAN work plan)

Project Leader(s): Bryan/**Henri**

Project Description:
Quality Management Systems (QMS) for aviation has being undertaken within a global regulatory environment. If such regulations do not presently exist for marine services, IMO is moving in this general direction. In order to ensure the use of best practises and the improvement of value for mariners, JCOMM promotes the implementation of Quality Management Systems (QMS) within the NMS preparing MSI. JCOMM should take the lead within WMO in the provision of support to developing countries in implementing QMS as they further developed their marine services. A process for moving forward will be prepared and guidelines for implementation of QMS by Issuing Services will also be drafted by Bryan Boase, member of MAN with specific responsibility for QMS. Those documents will be review by ETMSS and MAN.
As a first step, a QM training, focussed on Internal Audit procedures, was provided to Issuing Services by a QM specialist supporting the Australian Bureau of Meteorology during the Workshop for Enhancement of Maritime Safety Services in May 2010. That allowed awareness and demystification of QMS practices for participants, and acquisition of an insight into the practical implementation of a QMS within an NMHS. Participants were formally provided with an *"introduction to internal QM auditing processes" certificate* at the end of this item, which indicated they had had an introduction to internal QM auditing processes.

- **Expected Outcomes:**
  - COMET training module for QMS
  - Pilot QMS projects at developing NMHSs

- **Key Activities:**
  - Develop COMET training module for QMS
  - Initiate pilot projects at developing NMHS to implement QMS practice

- **Timeline, Major milestones:**
  - COMET training module (dates?)

- **ETs, Other Contributing Organizations:**
  - ETMSS, ETSI, MAN, COMET

Project #26 Support and enhance the Polar components of GMDSS

Project Leaders: Darlene Langlois, Nick Hughes, Vasily Smolyanitsky

Project Description:
Polar components of the GMDSS as well as provision of MSI for areas with occurrence of floating ice differ in many aspects from mid-latitude or ice free areas of the World Ocean. Navigation near but outside of the ice and ice navigation needs proper support both for safety and efficiency in terms of regular provision of complex sea ice information, preferably in graphic form. If restricted to current Inmarsat transmissions, the Preparation Services still have limitations in coverage and ability to provide binary information in high latitudes.
Starting with June 2011 the new 5 Arctic METAREAs are put into a Full Operational Capacity with new procedures to support ice edge information in SafetyNET and NAVTEX bulletins and a special "ice" GMDSS server http://gmdss.aari.ru to support exchange of information between the Preparation Services.
The objective of the project will be for ETSI to continue with IICWG, ETMSS, IMO and IHO to support and enhance the polar components of GMDSS including the Southern Ocean and under the agreed scheme for IMO e-Navigation including the Polar Code.

Key outcomes:
- sustained and extended bi-polar components of GMDSS and capabilities
- enhanced capabilities for graphic products
- input to IMO on ice and weather safety related input for Polar Code

Key activities:
- support for operational exchange of information for polar GMDSS
- training and harmonization of practices across the Preparation Services, exchange and transition of experience to Southern hemisphere METAREAs, regular "Ice Analysts Workshops", possibly jointly with GMDSS meteorologists
- development, testing and implementation of updates to ice in SafetyNET and NAVTEX standards supporting graphic presentation of information
- support for developing international code of safety for ships operating in polar waters (Polar Code) by providing input on weather and ice safety related to Polar Code development to IMO.

Timeline / Milestones:
- 4th "Ice Analysts Workshop" (Jun/Jul 2013 or later) including session on Southern hemisphere
- Reports to IICWG-14 (Oct'2013, Iceland), ETSI-V (Nov'2013, Canada) and IICWG (Chile, 2014)

ETs, Other Organizations and participants:
- ETSI, ETMSS, IICWG, Preparation Services for METAREAS with floating ice

Implementation of JCOMM-4 decisions (noted by paragraph number of JCOMM-4 report
- 8.3.4 (Safety-related Marine Meteorological Services)
- 8.3.10 (Safety-related Marine Meteorological Services)

Project #27: Support and enhance ENC/Electronic Chart Display Information System (ECDIS) for ice navigation

Project Leaders: Juergen Holfort (ETSI TG ENCIO and BSH), Vasily Smolyanitsky

Project Description:

Sea ice information is mandatory for presentation on Electronic Navigational Charts (ENC) though the scope of sea ice parameters and presentation mechanisms differ across the IHO standards (MIO, AML and S-10x) and implementations of sea ice presentation in various Electronic Chart Display Information System (ECDIS).
In 2006 the ETSI entered into partnership with the IHO Transfer Standard Maintenance and Applications Development Working Group (TSMAD) and in 2007 adopted the first version 4.0 of the "Ice Objects Catalogue" which was based on the harmonized existing national practices and intended to extend the IHO S-57 standard for sea ice both for 'ice' and 'ice-free' navigation.
During 2007-2011 the Catalogue was tested and implemented in Canadian and Russian manufactured ECDIS along with corresponding presentation library. Results of the activity were regularly reported to TSMAD and presented during JCOMM-IV. Arising requirements from the end-users dictate further amendments to the Catalogue along with its implementation across all corresponding ice services. In 2010 the IHO adopted a new S-100 standard which may be considered to certain extent as a format more flexible for production at the level of ice services and for met-ocean information.
Objective of the project will be to support and enhance ENC/ECDIS capabilities for ice information in S-57 and S-10x formats following extending requirements from the end-users for complex ice navigation services and taking into account the current and perspective work of IMO and IHO in developing the concept of e-Navigation in cooperation with the IICWG and national ice services.

Key outcomes:

- IHO S-10x standard for sea ice
- Capability at National Ice Services to produce ice in S-10x and S-57

Key activities:

- Formal management of Ice Objects Catalogue
- Develop ice standards as IHO S-10x
- Interact with ENCS manufacturers and OGC to develop software to accept ice data
- Support National ice services to develop capability and to begin production of S-57/S-1xx data files
- Support implementation of MetOcean Catalogue as S-1xx

Timeline / Milestones:

- Draft S-107 (or other number 10x) and presentation to IICWG (Oct'2012)
- Preparation of a portrayal registry for parameters of the ice objects catalog (2013)
- Formalization of documentation and reports to ETSI-V (Nov, 2013), IICWG (Oct 2013 and 2014) and TSMAD (Jun 2013 and further)

ETs, Other Organizations and participants:

- ETSI TG ENCIO, BSH, IICWG, TSMAD

Implementation of JCOMM-4 decisions (noted by paragraph number of JCOMM-4 report

- 8.3.4 (Safety-related Marine Meteorological Services)
- 8.3.10 (Safety-related Marine Meteorological Services)

Project #28: Maintain and update sea ice technical documentation

Project Leader: Vasily Smolyanitsky, Darlene Langlois, IICWG

Project Description:
The WMO sea ice technical documentation is regulating the descriptive (nomenclature and glossaries), coding, exchange and presentation procedures for sea ice cover as well as existing sea ice best practices for observations and services on regional and world-wide scale.
In a broader sense, it would be favorable for observational, operational and research community if the same documentation will be is developed for all kinds of floating ice – sea, lake and river ice with all kinds of topology (point, linear, area, grid).
Following requirements from the end-users, in the framework of implementation of CryoNet as well as in connection with anticipated requested from the International Polar Initiative (IPI), ETSI will maintain, update and extend as appropriate the WMO sea ice standards in interaction and cooperation with the .International Ice Charting Working Group (IICWG).

Expected outcomes:
- Harmonization and updates to WMO ice documentation following progress in ice in ECDIS standards
- Updates to WMO ice standards in parts of river/lake ice/point/linear/gridded objects
- Documentation on ice observations and best practices

Key activities:
- Updates to “Sea Ice Nomenclature” (WMO-No.259) catching harmonization (Vol I – “Terminoloy” and Vol III - “International system of sea-ice symbols”) and training issues (vol. II - “Illustrated Glossary”);
- Updates to sea ice exchange and presentation formats (“SIGRID-3: a vector archive format for sea ice charts”, WMO/TD-No. 1214 and “Ice Chart colour code standard” WMO/TD-No. 1215);
- Developing “Understanding and Identifying Old Ice in Summer”, “Manual for Ice Experts – Ice Observers” and others docs (e.g. Canadian MANICE) as the new WMO sea publications for sea ice observations and analysis;
- Provide harmonization across the sea ice standards arising from adopted additions

Timeline / Milestones:
- Finalize additions arising from the “Ice Objects Catalogue” version 5.1” (ETSI-V, Nov 2013)
- Finalize additions on ice objects arising from end-users, Cryonet and ice observations requirements (ETSI-V, Nov 2013, IICWG, 2014)

ETs, Other Organizations and participants:
- ETSI, IICWG, CryoNet team

Implementation of JCOMM-4 decisions (noted by paragraph number of JCOMM-4 report
- 8.3.4 (Safety-related Marine Meteorological Services)
- 8.5 (Future priorities for the services and forecasting system programme)

Project #29 Support for sea ice climatology and ice information systems

Project Leader: Vasily Smolyanitsky, Caren Panowicz, IICWG

Project Description:
Based on a variety of sources, including the ice air reconnaissance introduced for the Arctic as early as in 1920s, ice charting material provides a unique opportunity to significantly extend our knowledge on variability of ice conditions in space prior to commencement of global ice cover monitoring based on passive microwave imagery in 1978.
The ice charts are still capable to deliver information on such sea ice parameters which are absent or poorly assessed with the help of automatically processed satellite data. That includes but is not limited to fast ice extent, stages of development, etc. Modern and most of the reprocessed historical ice charting material is based on a single WMO sea ice standard – "WMO Sea-Ice Nomenclature" (WMO, 1970).
In 1989 the WMO CMM initiated the "Global Digital Sea Ice Data Bank" (GDSIDB) project to support development of the sea ice climatology based on the ice charting with 2 archival centers – AARI, Russia and NSIDC, USA. Since 2001 the JCOMM Expert Team on Sea Ice in cooperation with the International Ice Charting Working Group (IICWG) is supervising the project and cooperates with JCOMM ETMC.
Since 1990s most of the ice services including BSIS, Canada, Japan, Russia, USA, are contributing to the project. Presently most of the ice charting data prior to 2000s is stored in a 0.25°x0.25° raster SIGRID, SIGRID-2 (WMO, 1989 and 1994) or Ease-grid formats, while after 2000s the data is stored in a more flexible vector SIGRID-3 format (WMO, 2004) and are available either via the AARI (http://wdc.aari.ru/datasets) or NSIDC (http://nsidc.org).
The project will concentrate on a) reprocessing and update of the sea ice 'blended' climatology and assessment of uncertainties and b) availability of the sea ice charting metadata and material in information systems and formats required by end-users community (CryoNet, WIS, NetCDF).

Expected Outcomes:
- Updated semicentennial and longer sea ice 'blended' climatology and uncertainties
- Availability of sea ice operational and historical metadata and material in WIS, Cryonet and other information systems and as geoservices

Key Activities:
- Regular (weekly – monthly - annual) input to GDSIDB ice charting archive in standard WMO formats from contributing ice services / centers
- Annual reprocessing of data, update of climatology, assessment of uncertainties and comparison with passive microwave
- Coordination of development of protocols and procedures for sea ice charting metadata/material availability in WIS, Cryonet, static NetCDF, geoservices, etc and supporting documentation

Timeline/milestones:
- Report to IICWG (October 2013, 2014)
- Report to Cryonet (2013)
- Report to ETSI and decision on information systems and access (ETSI-V, Nov 2013)

ETs, Other Organizations and participants:
- ETSI, ETMC, IICWG, CryoNet team

Implementation of JCOMM-4 decisions (noted by paragraph number of JCOMM-4 report
- 5.4.3 (Polar Met-Ocean and sea ice information services)
- 8.3.4 (Safety-related Marine Meteorological Services)

Project #31 Enhancing the integrated ice services and forecasting

Project Leaders: Vasily Smolyanitsky, Nick Hughes

Project Description:

Provision of services for efficiency and safety of navigation and other operations in the ice-covered waters require integrated approach in terms the ice and sea state parameters and products to be regularly, timely and in the binary formats delivered to end-users (navigators, off-shore platforms, search and rescue, emergency support). Typical scope of parameters should include concentration, stages of development or thickness, form, dynamic processes (ice drift, pressure) and ice surface state (ridges, melt processes, snow on ice) as well as several metocean parameters, while the products should include both ice analysis or charting, high and medium resolution satellite imagery and short–term numerical ice forecasting. SAR and emergency support may require additional products like medium-term ice and metocean forecasting and numerical forecasting of the oil spill dissemination. Possible changes to concept of ice support towards greater demands to products beyond the ice charting are progressing.

The objective of the project will be for ETSI in tight collaboration with the International Ice Charting Working Group (IICWG) to coordinate enhancement of integrated ice services by tracking and summarizing best practices and requirements to products and information, facilitating exchange of experience and resources in ice analysis, operational forecasting and numerical modeling of ice and related to ice parameters and harmonization of the services. This project should provide advice and input to corresponding projects led by JCOMM ETOOFS and TT on MPERSS.

Key outcomes:

- enhanced ice services following user-requirements
- enhanced ice diagnostic and forecast products beyond the ice charting
- input to MPERSS implementation in Polar Regions

Key activities:

- tracking and summarizing requirements to input data (current and perspective spaceborne information and ground observations) and products;
- updates (every ~1-2 years) of national best practices in "Sea-Ice Information Services in the World" (WMO-No.574), preferably compatible with the WMO-No. 9, Volume D;
- exchange and transition of experience in ice analysis, forecasting and harmonization of practices across the Services, training for developing Ice Services, including support for regular "Ice Analysts Workshops" and "Ice Assimilation Workshops".
- Input to ETOOFS guide ?

Timeline / Milestones:

- 4th "Ice Analysts Workshop" (Jun/Jul 2013 or later)
- 2013 and further updates to WMO-No.574 (mid 2013, 2015)
- Update to WMO RRR;
- Reports to IICWG-14 (Oct'2013, Iceland), ETSI-V (Nov'2013, Canada) and IICWG (Chile, 2014)

ETs, Other Organizations and participants:

- ETSI, IICWG, met.no and AARI for oil spills (?)

Implementation of JCOMM-4 decisions (noted by paragraph number of JCOMM-4) report

- 8.3.4 (Safety-related Marine Meteorological Services)
- 8.3.10 (Safety-related Marine Meteorological Services)

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