WMO Liaison Report

Submitted by WMO

SUMMARY

Executive Summary: This document provides the report of the major activities, challenges and requirements for the provision of marine meteorological and oceanographic services since CPRNW 10

Action to be taken: Paragraph 21

Related documents: None

INTRODUCTION

1. This report covers the period since CPRNW 10 and outlines:

.1 Major outcomes of the Sixty-first Session of the WMO Executive Council (EC-LXI, June 2009) on enhanced capabilities of Members to provide and use marine meteorological and oceanographic applications and services;
.2 The Third Session of the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM-III); and
.3 Activities and developments during the period since the last report, covering monitoring of the marine meteorological services, the Weather-GMDSS website and link with the WMO Information System (WIS), the Arctic METAREAs, graphical/numerical products, and Quality Management Systems.

MAJOR OUTCOMES OF THE WMO EC-LXI (June 2009)

User focus

2. The Council recognized the importance of direct interaction with and feedback from the marine users and welcomed the results of the JCOMM survey on monitoring the effectiveness of the marine meteorological and oceanographic information produced and transmitted by NMHSs. The results demonstrated the increased demand for user-focused marine meteorological and oceanographic products and services. The Council therefore requested the Secretary-General to keep Members informed of the results of this and any further monitoring and urged Members concerned to take the appropriate actions to improve marine meteorological and oceanographic services within their areas of responsibility, in order to meet the marine users' requirements.

3. The Council noted the International Maritime Organization (IMO) resolution A.705(17) on promulgation of maritime safety information, adopted by IMO/MSC-85 (2008). The resolution set out the organization, standards and methods which should be used for the promulgation and reception of maritime safety information, including navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages broadcast to ships, as documented in the International Convention of Safety of Life at Sea (SOLAS). The Council requested the Secretary-General to establish and develop, in collaboration with the IMO, terms of reference for an IMO/WMO World-Wide Met-ocean Information and Warning Service (WWMIWS), to complement the existing IMO/International Hydrographic Organization (IHO) World-Wide Navigational Warning Services (WWNWS, IMO resolution A.706(17)) for consideration by EC-LXII (June 2010).

Service delivery

4. The Council recalled the coordinated initiative by WMO, IMO and the IHO to expand the Global Maritime Distress and Safety System (GMDSS) into the Arctic waters and the commitment by the Environment Canada, Norwegian Meteorological Institute and Roshydromet (Russian Federation) to serve as Issuing Services for the new Arctic METAREAs. The Council noted that new METAREA Issuing Services had developed their operating plans, including timelines, for the implementation of marine meteorological and oceanographic operational services. Noting that the GMDSS for the Arctic region should be fully implemented by 2010/11, the Council requested the Secretary-General to assist the Issuing Services concerned in implementing their operating plans for the provision of marine meteorological and oceanographic services for the Arctic region.

5. The Council commended Members for their contributions and participation in the GMDSS-Weather Website (http://weather.gmdss.org/), which is managed and hosted by Météo-France. Noting the current expansion of this Website to include products prepared for the International Navigational Telex (NAVTEX) dissemination (see for example: http://weather.gmdss.org/II.html), the Council urged Members to disseminate these products through the GTS and to provide the appropriate metadata in compliance with the WIS.

6. Recalling the continuing importance to mariners at sea in receiving graphical products, the gradual demise of HF radiofax as a means of disseminating those products, including for the Arctic region, and the Council's request, in its sixtieth session (EC-LX, June 2008), to JCOMM to continue researching methods for transmitting graphical products to marine users, the Council noted the successful development, in accordance with IHO standards, of product specification for sea ice information in Electronic Navigation Chart Systems (ENC). It encouraged Members to make maximum use of these essential tools and requested JCOMM, in consultation with IMO, to develop similar standards for other met-ocean variables. It requested the Secretary-General to promote resource mobilization to develop these activities and partnerships through national and international support. In addition, the Council encouraged Members to investigate low-cost options for on-demand approaches that are compatible with ENC.

Quality Management Systems

7. Noting that the IMO resolution A.705(17) stated that common standards and procedures are applied to the collection, editing and dissemination of maritime safety information, the Council recognized the need for the development of a Quality Management

System (QMS) for the provision of marine meteorological services for international navigation. It therefore requested the Secretary-General, in liaison with IMO, to integrate Quality Management (QM) principles in the regulatory documents on marine meteorological services. The Council urged Members to implement QMS for the provision of marine meteorological services for international navigation and to document the process in order to share with other NMHSs, with a view to facilitating and expending QMS implementations.

Capacity-building and training

8. The Council supported the continuing activities aimed at enhancing capacities of NMHSs to access the existing marine products worldwide and making use of these products for operational forecast and warning services. It noted with appreciation the training activities in marine meteorological services which had taken place during the intersessional period, including on wave and storm surge forecasting, and ice analysis harmonization. Recognizing the need for improved marine meteorological services for international navigation, including for the Arctic region, the Council reiterated its support for a vigorous training and capacity-building programme in marine meteorology, with special focus on GMDSS WWMIWS and on the role and responsibilities of issuing Services as METAREA Coordinators. It requested the Secretary-General, in consultation with IMO, to facilitate and support such training events in the future.

JCOMM-III

9. The Third Session of the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM-III) is scheduled to be held in Marrakech, Morocco, from 4 to 11 November 2009.). The major activities, challenges and issues related to the provision of marine meteorological and oceanographic services, including the work programme for the next four years, will be discussed at the JCOMM-III. Detailed information is available on the WMO ftp server at: ftp://ftp.wmo.int/Documents/SESSIONS/JCOMM-III/. Agencies involved in the provision of MSI or more generally the safety at sea, including IHO and National Hydrographic Services, are strongly encouraged to attend the JCOMM-III.

ACTIVITIES AND DEVELOPMENTS DURING THE PERIOD SINCE THE LAST REPORT

Monitoring of Marine Meteorological Services (MMMS)

10. Direct interaction with and feedback from the marine users is required to ensure to meet users' requirements. The JCOMM survey questionnaire for MMMS was reviewed, revised and distributed the questionnaires distributed in 2009 to ships' masters through national PMOs as well as via the WMO and Weather-GMDSS websites. The results of the analysis of the 883 returns will be compiled into a report to be considered by JCOMM-III. The feedback came mainly from SOLAS vessels. Mariners confirm the satisfactory accuracy and usefulness of marine meteorological services through the GMDSS (SafetyNET and International NAVTEX services). Nevertheless, the results demonstrated the increased demand for user-focused marine meteorological and oceanographic products and services and the remaining considerable room for improvement with regards to both the quality and content of services, their coverage and timeliness in some oceanic regions. In addition, the

great majority of respondents re-emphasized the usefulness of graphical information, like radio facsimile products, and reported also significant dissatisfaction with the quality of these services and unannounced terminations.

Weather-GMDSS website and link with the WMO Information System (WIS)

11. The Weather-GMDSS website (http://weather.gmdss.org) continued to disseminate official maritime safety information and warnings supplied by the existing METAREA Issuing Services. Relevant maps showing limits of METAREAs and sub-areas included in publication WMO-No. 9, Volume D – *Information for Shipping*, are displayed in the Weather-GMDSS website. Regulations and guidance material for the provision of met-ocean services, given in publications WMO-No. 558 (*Manual on Marine Meteorological Services*) and WMO-No. 471 (*Guide to Marine Meteorological Services*), will be available in the Weather-GMDSS website in a near future. The inclusion of maritime safety information prepared for NAVTEX dissemination is under preparation (see for example: http://weather.gmdss.org/II.html). IHO has been collaborating with WMO and its JCOMM Expert Team on Maritime Safety Services to include links to NAVAREA Coordinators websites (see http://weather.gmdss.org/navareas.html). The statistics, including the access to the NAVAREA pages, are available in Annex I.

12. The WMO Members and other agencies involved in the provision of MSI or more generally the safety at sea, including IHO and National Hydrographic Services, are encouraged to disseminate their products through the WMO Global Telecommunication System (GTS) and to provide the appropriate metadata in compliance with the WMO Information System (WIS) to both WMO Secretariat and Météo-France. They are also invited to add, as appropriate, a link to the GMDSS website on their own website.

13. WMO reiterates its offer to coordinate the use of the URL domain "*gmdss.org*" for the provision of both meteorological and navigational warning information on the Web. Météo-France, that developed and maintains the GMDSS web site for JCOMM, could provide technical assistance to the focal point that could be identified to build the equivalent website for the provision on Navigational Warnings on this portal. Some tools, pages or functionalities already developed could be used or adapted by this focal point.

14. If IHO decide to move forward and propose a tentative work plan for a feasibility study, some important issues will have to be considered, due to differences in operational systems and in the management of messages between met-ocean and navigational warnings MSI, in particular :

- Dissemination and collection of messages: the global WMO Global Telecommunication System (GTS), operational for decades for the exchange of data and products between NMSs, has been "naturally" used to gather the met-ocean products. But such a global network and switching system seems not to be available for Navigational Warnings at the moment. A FTP server and/or the WMO Information System (WIS) can be considered for such purposes.

- Management of the messages: for met-ocean MSI, it is quite simple as the retention can be considered as fixed for a dedicated message, that, in most cases, replace the previous one (if there is one in force for warnings). At least for SafetyNet products,

the number of messages in force per Metarea is (very) limited. It is certainly more complicated for Navigational Warnings.

- Update frequency: the met-ocean information has to be made available in real-time but it is not supposed to be a problem with the GTS more than 99% of the time. It is to be defined for Navigational Warnings (real-time or "delayed" mode? If delayed mode, which update frequency? The same for all the messages?, etc.).

Arctic METAREAs

15. The WMO Secretariat and the ETMSS chairperson have provided assistance as focal points to Arctic METAREA Issuing Services in developing their own operating plans and timelines for the implementation of operational services. In addition, during the first session of the Task Team on Maritime Safety Information in March 2009, GMDSS focal points have been identified as relevant to provide assistance to the implementation of such services for the Arctic Ocean, including the UK Met Office and NOAA focal points for the Weather-GMDSS as additional focal points for the Arctic Issuing Services.

16. Reports on the status and plans for the implementation of the Arctic METAREAs are presented in Annex II.

Graphical/numerical products

17. Since 1999, ETMSS have been working on the implementation of graphical/numerical Maritime Safety Information (MSI) broadcast within the GMDSS. Despite some limited studies and discussions, the Team has failed to consider this main issue, mainly due to the lack of sufficient number of experts engaged in this task. In the same context, the WMO EC-LX (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 EC-LXI (June 2009) encouraged 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. The JCOMM Management Committee (MAN), at its Seventh Session (Melbourne, Australia, December 2008) established a Task Team on Methods for Transmission of Graphical Products to Marine Users, in order to develop a roadmap for developing these activities. 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 development of a catalogue on Met-Ocean Feature Object Classes and Attributes has been initiated, which would be an essential tool to enable NMHSs to develop products specifically for Electronic Navigation Chart Systems and would allow 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. WMO Members are encouraged to be engage in these activities and to contribute to future pilot projects to target the testing of these products to specific user communities. WMO has requested IHO collaboration in these activities, to which working arrangements are still to be defined.

18. An Ice Objects Catalogue, defining 23 ice "object classes" (with formal definitions and enumerations, in accordance with WMO-No. 259 – *WMO Sea Ice Nomenclature*) was produced in consistency with the existing IMO, IHO and the International Electrotechnical Commission (IEC) standards and specifications for Marine Information Objects (MIO), and progress has been made to integrate it into the IHO Registry and development of an S-57 Product Specification for ice information. This Catalogue would provide the essential tool to enable NMHSs, in particular their National Ice Services, to develop products specifically for Electronic Navigation Chart Systems and would allow the implementation of software to decode and display ice information by the manufacturers of these systems, using the S-57 chart data exchange standard.

Quality Management Systems

19. A catalogue on marine meteorological and oceanographic best practices and standards is under preparation by JCOMM in accordance with the recommendations from Inter-Commission Task Team on Quality Management Framework (ICTT-QMF) and Resolution 32 (Cg-XV, May 2007). This catalogue should assist Members in developing quality management systems for marine meteorological forecasts and services.

20. As stated in the IMO resolution A.705(17), common standards and procedures are applied to the collection, editing and dissemination of Maritime Safety Information (MSI). There is then a need for the implementation of Quality Management Systems (QMSs) for the provision of marine meteorological services for international navigation. WMO Members have been encouraged to develop and implement QMSs for the provision of marine meteorological services and to document the process in order to share with other National Meteorological Services (NMSs) with a view to facilitating and expanding QMSs implementations. WMO Members providing marine meteorological services for international navigation, it is important that QMSs take into account recommendations by JCOMM-III, which should be endorsed by the WMO EC-LXII (June 2010), to ensure as far as possible the consistency and coordination of the GMDSS. WMO, IHO and IMO are encouraged to closely collaborate on these issues in order to have a coordinated development and implementation of QMSs for the provision of MSI.

ACTION REQUESTED OF THE SUB-COMMITTEE

21. The Sub-Committee is invited to note and comment on the information provided.

Annex I

Weather-GMDSS website statistics

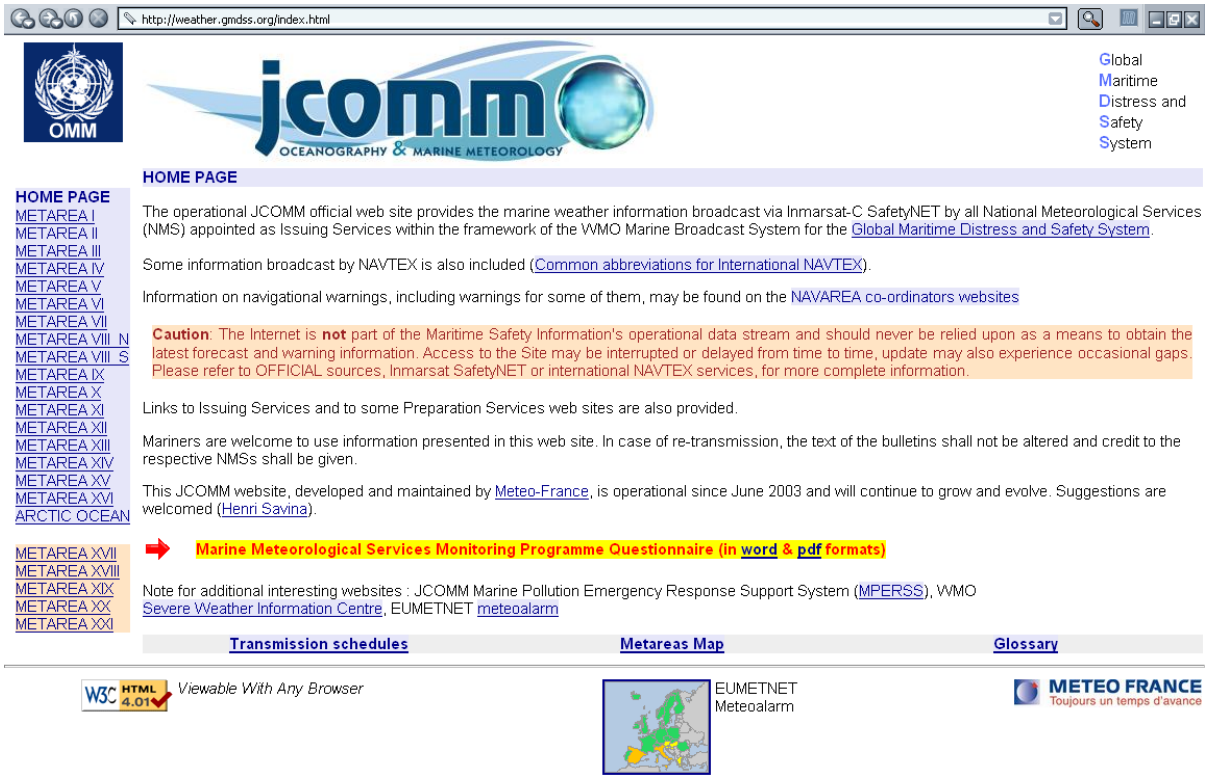


Figure 1: the current principle of the web site is to create frequently (every 5 minutes) each METAREA page containing the updated list of the bulletins available and to associate each new bulletin a single name (which it preserves as much as the bulletin is available – for example *METAREA3E.HIGH_SEAS_FORECAST.0930.181013346067.html*).

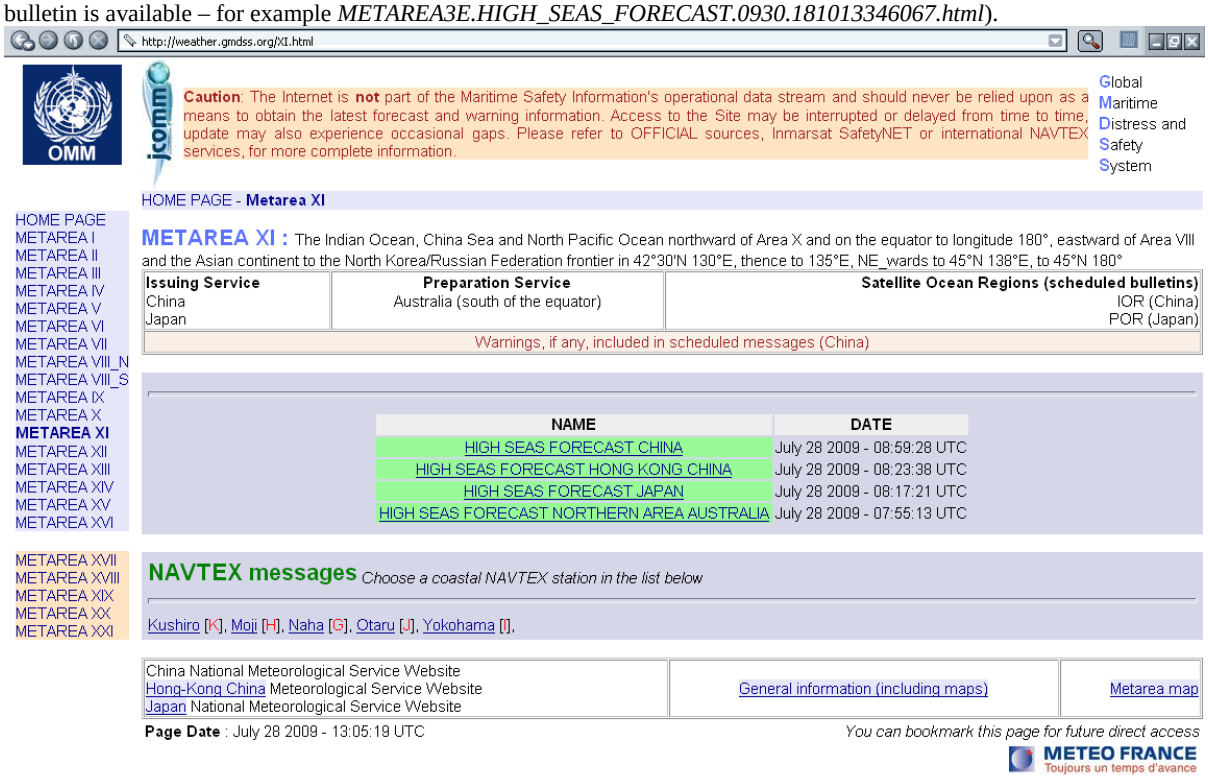


Figure 2 : the customer must make sure that the Metarea page posted at his place is per hour (+ - 5mn) to have the most recent information (use the "reload" button). It is thus essential that customers consulting the web site pass initially by the Metarea page to ensure to have the last bulletins available. Retention, management & apparent name for each bulletin in a dictionary.

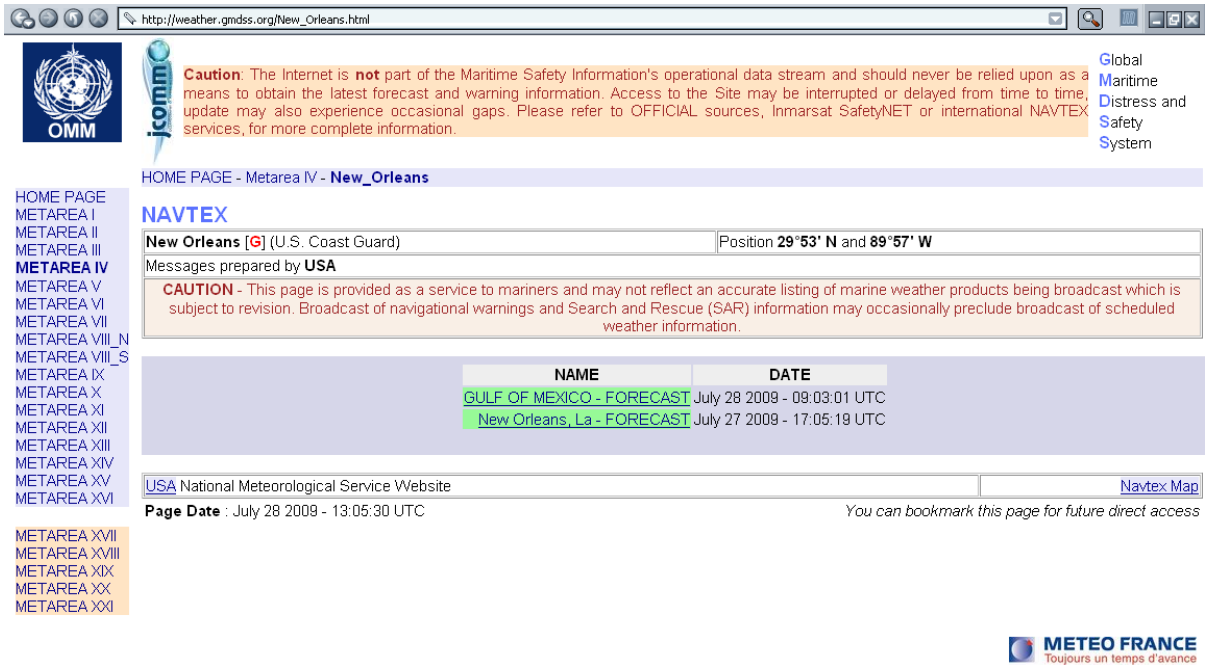
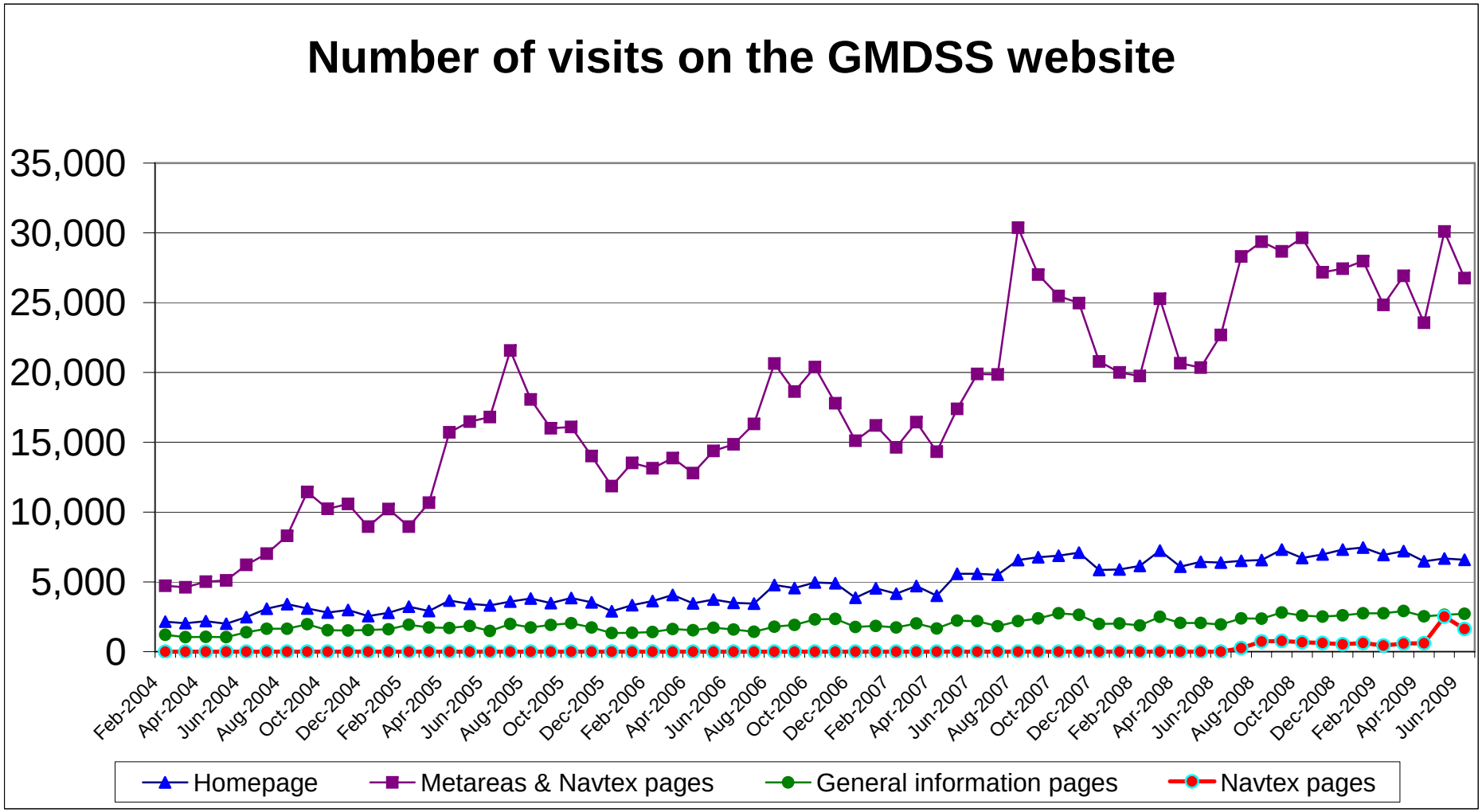
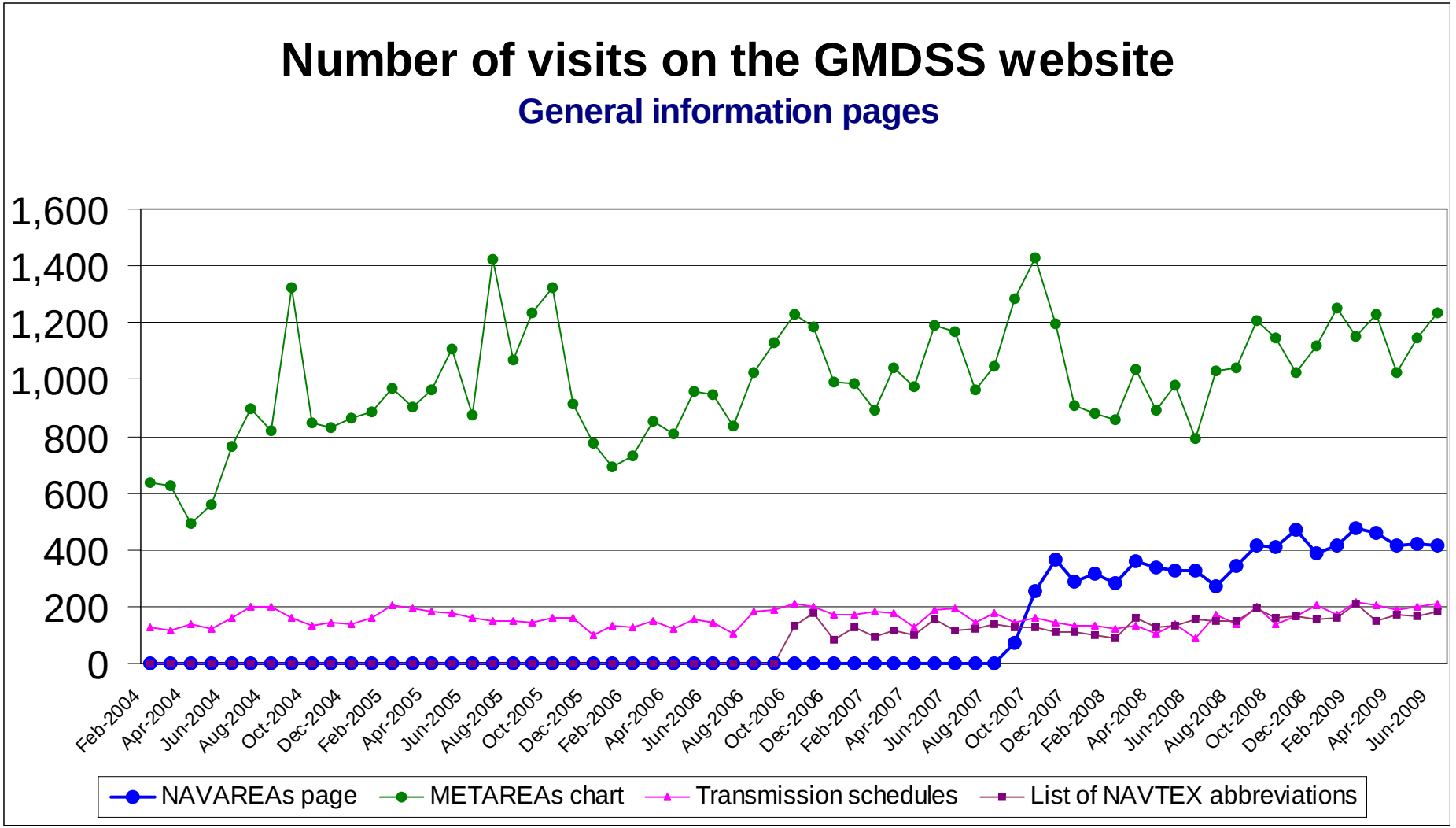


Figure 3 : sample of page prepared for product of a NAVTEX station.

Figure 4 : NAVAREA Page **(to be completed for NAVAREA XVII to XXI).**


Number of visits on the GMDSS website
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Feb-2004
Apr-2004
Jun-2004
Aug-2004
Oct-2004
Dec-2004
Feb-2005
Apr-2005
Jun-2005
Aug-2005
Oct-2005
Dec-2005
Feb-2006
Apr-2006
Jun-2006
Aug-2006
Oct-2006
Dec-2006
Feb-2007
Apr-2007
Jun-2007
Aug-2007
Oct-2007
Dec-2007
Feb-2008
Apr-2008
Jun-2008
Aug-2008
Oct-2008
Dec-2008
Feb-2009
Apr-2009
Jun-2009
Homepage
Metareas & Navtex pages
General information pages
Navtex pages


Number of visits on the GMDSS website
General information pages
1,600
1,400
1,200
1,000
800
600
400
200
0
Feb-2004
Apr-2004
Jun-2004
Aug-2004
Oct-2004
Dec-2004
Feb-2005
Apr-2005
Jun-2005
Aug-2005
Oct-2005
Dec-2005
Feb-2006
Apr-2006
Jun-2006
Aug-2006
Oct-2006
Dec-2006
Feb-2007
Apr-2007
Jun-2007
Aug-2007
Oct-2007
Dec-2007
Feb-2008
Apr-2008
Jun-2008
Aug-2008
Oct-2008
Dec-2008
Feb-2009
Apr-2009
Jun-2009
NAVAREAs page
METAREAs chart
Transmission schedules
List of NAVTEX abbreviations

Annex II

METAREAs XVII and XVIII

By the Canadian Issuing Service Focal Point

In general our preparations are continuing on an appropriate pace to reach testing status by May 2010 as communicated to you in February of 2009. Product development is underway with samples ready for internal testing this fall. Acquisition of the INMARSAT-C receivers will take place this fall with installation for monitoring purposes this winter. The acquisition of a service contract for the INMARSAT-C upload services will begin by September.

Specifically, you have asked us to address a number of questions from the COMSAR 13 report (Section 3.22, points 1, 2, 3, 5, 7). I have attached that below and will attempt to respond to each with our status.

Excerpt from the COMSAR 13 report:

3.22 The Sub-Committee considered that it would be necessary to continue with the work of the Joint IMO/IHO/WMO Correspondence Group on Arctic MSI Services and re-established the Correspondence Group with the following terms of reference under the coordination of IHO:

1. Monitor the testing of Arctic NAVAREAS/METAREAS including status, infrastructure, monitoring of messages and relationships with information providers (i.e. International Ice Patrol, METAREA Issuing Authorities, Search and Rescue authorities, National administrations and other NAVAREA Coordinators);

We will be developing our specifications for upload services in order to establish a contract with an upload service provider. We've identified the equipment required to monitor the METAREA messages and proceed with that acquisition in the fall of 2009. Monitoring of the three INMARSAT-C satellites (POR, AOR-W and AOR-E) will be routed to a central location for monitoring purposes.

2. Facilitate the coordination of transmissions on the NAVTEX frequencies of 518 kHz, 490 kHz and 4209.5 kHz through the International NAVTEX Coordinating Panel;

We are working with our NAVAREA coordinator in Canada on this. We will be broadcasting METAREA information for north of 75 degrees north through our NAVAREA provider (Department of Fisheries and Oceans – Canadian Coast Guard)

3. Facilitate the coordination of transmissions of SafetyNET messages through the International SafetyNET Panel, including identification of prospective Service Providers;

This will be developed over the coming months.

5. Develop Arctic NAVAREA/METAREA/NAVTEX coverage diagram including service areas and times of transmission;

To be developed as products and transmission times are agreed upon.

7. Monitor the status of training, assistance and support to achieve operational capability of Arctic MSI services,

Right now we are in the development stage of the implementation. Plans will be put in place to train staff during the winter months on our METAREA responsibilities. This is an extension of our existing Marine and Ice forecast and warning programs so the training will only be incremental. We will continue to seek clarification on issues through our METAREA Coordinator (Savina) and in discussion with our Canadian NAVAREA colleagues.

METAREA XIX

By the Norwegian Issuing Service Focal Point

Referring to the new terms of reference for the Correspondence Group on Arctic MSI Services, the comments refer to 3.22 in the COMSAR 13/14 report.

1. There has been no testing of messages for METAREA XIX. However the checking of range for the HF NBDP signals is ongoing (Coast Guard and Telenor Maritime Radio).
2. No comment. As this is coordinated by other entities, met.no will make the weather and sea ice messages available for transmission.
3. This is not yet coordinated nationally.

5. As the coverage diagrams are developed and decided, met.no will supply relevant messages for the actual areas.

7. met.no is coordinated with the Norwegian Coastal Administration (NCA) in the planning towards operational capability in 2011. In addition, a contact is established with UK Met Office to help out with training and advices.

A time plan for bringing met.no in position for METAREA XIX operational service provision in 2011 can be listed briefly as follows;

- Legal questions on contracts for transmission of messages is under consideration. Either Telenor Maritime Radio will get a contract as the only possible operator, or it has to be an open tender. This task is coordinated with NCA.
- The new METAREA coordinators (Canada, Russia and Norway) will have 2 opportunities for planning, discussions and coordinating the coming 6 months; at the International Ice Charting Working Group (IICWG) meeting in Geneva in October ands at the Expert Team on Sea Ice (ETSI) meeting in Tromso, Norway in January 2010.
- National testing periods will be coordinated with NCA and Telenor Maritime Radio. After the legal issues are sorted out shortly, plans for such testing can be made.

METAREAs XX and XXI

By the Russian Federation Issuing Service Focal Point

1. Review the status of preparation and transfer of GMDSS information for the Northern Sea Route area within METAREA XX and XXI METAREA for 2004-2008

1.1 According to decision of the Government of the Russian Federation (1997) «On the creation and operation of the Global Maritime Distress communications and Security System» (GMDSS), and in line with the decisions of the Ministry of Transport of Russia (1997-1999), in 2001 transfer of navigational - hydrographic, weather and ice information (MSI) to the SafetyNET network was organized for the Northern Sea Route (NSR) area.

1.2 The MSI transmittance to the SafetyNET network for the NSR area is performed by the Federal State Unitary Hydrographic Enterprise (FSU HE) - responsible organization of Federal Agency of Marine and River Transport (former Ministry of Transport) with the appropriate certificate of the International Maritime Organization (IMO). MSI is transferred to the western part of the NSR area (Pechora Sea - Khatangskiy Gulf) year-round, while to the eastern part of the NSR area (Khatangskiy Gulf - Bering Strait) - 4 months a year (from July to October). Schema of forecasts subareas is given in Appendix 1.

1.3 In Roshydromet, lead organization and coordinator of the preparation of weather and ice information for the NSR area is the Arctic and Antarctic Research Institute (AARI), which transmits this information to FSU HE for further transfer, together with the navigation of messages to the SafetyNET network. Co-executors of AARI for this work are the Arctic Roshydromet divisions and centers located in Arkhangelsk, Yakutsk and Pevek.

1.4 Preparation and transmission of weather and ice information to the SafetyNET network is accomplished in accordance with the following documents:

- IMO “International SafetyNET manual” (1994);
- “Guide to Marine Meteorological Services", WMO No. 471;
- “Joint IMO/IHO/WMO manual on maritime safety information (MSI)” (1998);
- Russian national "Guideline on preparation and transmission through the SafetyNET network of INMARSAT system of formalized information on safety of navigation for the Northern Sea Route area (2002) and other active Roshydromet guidelines.

1.5 In line with these documents, Roshydromet divisions and centers in Arctic two times a day (0600 and 1800 UTC) prepare and transmit to AARI meteorological weather bulletins and storm warnings within their areas of responsibility. After processing and English translation of the report, AARI compiles weather bulletins for the NSR area in accordance with the international requirements of the SafetyNET network and transmits them to the FSU HE. Three times a week (Monday, Wednesday and Friday) at 1800UTC AARI prepares brief summary description of ice conditions for the NSR area.

1.6 In 2008, MSI information for the western part of the NSR was transmitted during the period 1 July - 30 November 2008 in a form of weather bulletins two times a day, and ice

summaries – three times a week on Mondays, Wednesdays and Fridays. The same MSI weather and ice information for the eastern part of the NSR was transmitted during the period 1 July - 10 October 2008 and for the area of the Anadyr Gulf (METAREA XIII) – during the period 1 July - 31 December 2008. Sample bulletins for the western, eastern parts of the NSR area and Anadyr Gulf are provided in Appendix 2. In January and February of 2009 due to complexities of financing, transmittance of MSI information for the NSR area was not provided. It is expected that in the near future the transfer of information data will be resumed.

1.7 Thus, the system of preparation and transmission of weather and ice information for the NSR area has been implemented and, after elimination in the near future of problems, is capable for sustainable operation.

2. Changes in the preparation and transmission of GMDSS information in the Arctic region in 2008

2.1 In 2008, IMO has identified the boundaries of new NAVAREA regions within the NSR area:

- NAVAREA XX bound by:
  From the border between Norway and Russia (Inland) to:
  69° 47'. 68N 030° 49, 16E, 69° 58'. 48N 031° 06, 24E,
  70° 22'. 00N 031° 43, 00E, 71° 00'. 00N 030° 00, 00E,
  From this co-ordinate (71° 00'. 00N - 030°00'. 00E) further north along the 030° 00'.00E Meridian to:
  90°00'. 00N 030°00'. 00E, 90°00'. 00N 125°00'. 00E,
  then south to the Russian Federation Coastline along the 125°00'. 00E meridian; and
- NAVAREA XXI bound by:
  From a position on the Russian Federation Coastline at the 125°00'. 00E meridian to:
  90°00'. 00N 125°00'. 00E,
  90°00'. 00N 168°58'. 00W,
  67°00'. 00N 168°58'. 00W,
  west to a position on the Russian Federation Coastline along the 67°00'. 00N parallel;

2.2 Coordinator for the collection, preparation and transfer of MSI in the areas NAVAREA XX and NAVAREAI was defined as FSU HE. Adopted by the Russian Federation regions of METAREA XX and METAREA XXI fully conform to NAVAREA XX and XXI regions and include the western and eastern parts of the NSR used presently in practice.

3. Activities planned by Roshydromet for 2009

3.1 Activities planned by Roshydromet for 2009 include:

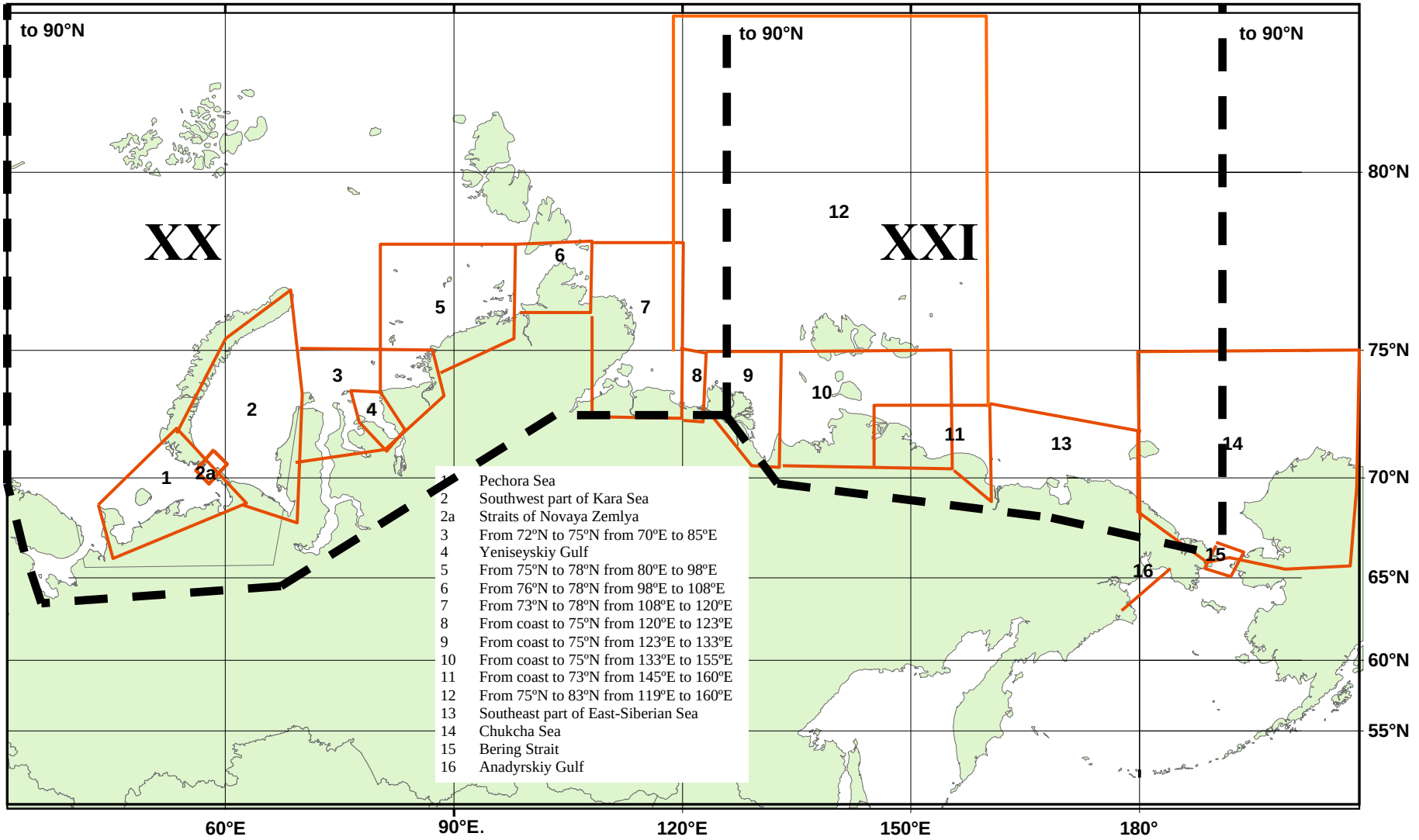
- harmonization of work on regular transmission of information to the SafetyNET network for all areas of METAREA XX and XXI with Russian coordinator of this activity – FSU HE;

- involvement of Roshydromet forecast center in Murmansk;
- coordination of the release of MSI information in the vicinity of METAREA XX and XXI borders with the corresponding issuing organizations in Canada and Norway;
- specification of subregions within METAREA XX and XXI in accordance with the NSR forecast subareas currently used in practice and other high-latitude navigational routes in the Arctic;
- pilot production of MSI information in the areas METAREA XX and XXI with transition to a regular one in 2010.

3.2 It is worthwhile to consider the specifications of MSI preparation and transmittance for high-latitude sub-regions of the Arctic METAREAs with permanent ice cover in accordance with tailored requirements of the customers. It should be noted that safety of navigation in the Arctic METAREAs is largely dependent on the solution of technical issues of the dissemination of sea ice graphic information in binary formats.

Appendix 1

Russian Federation, SafetyNET, METAPEA XX and XXI, Northern Sea Route forecast sub-areas



Appendix 2

SafetyNET bulletins for the western and eastern parts of the Northern Sea Route (METAREA XX and XXI) for 04 July 2008, 1800 UTC

SECURITY
WEATHER BULLETIN FOR WEST NORTHERN SEA ROUTE
67N44E/80N44E/67N125E/80N125E
ISSUED BY THE ARCTIC AND ANTARCTIC RESEARCH INSTITUTE ST PETERSBURG
ON THE 07 JULY 2008 AT 1800UTC
PART 1
AT 071800UTC
GALE WARNING
PECHORSKOYE SEA
FROM 071800UTC TO 080600UTC
WINDS E S/E 17 TO 20 MS
AFTER 080600UTC WINDS S/E S 12 TO 16 MS
STRAITS OF NOVAYA ZEMLYA
WINDS S/E E GUST 17 TO 20 MS
PART 2
SINOPSIS AT 071800UTC
LOW 995 HPA 67N 42E DEEPENING
HIGH 1015 HPA 73N 66E
HIGH 1015 HPA 73N 63E STATIONARY
ICE
PECHORSKOYE SEA
OPEN WATER AND 1-3 BALLS OF DRIFT ICE
STRAITS OF NOVAYA ZEMLYA
7-10 BALLS OF DRIFT ICE AND FAST ICE
SOUTHWEST PART OF THE KARA SEA
OPEN WATER,1-6,7-10 BALLS 0F DRIFT ICE AND FAST ICE
FROM 72N TO 75N FROM 70E TO 85E
OPEN WATER, 1-6 OF DRIFT ICE AND FAST ICE
YENISEYSKIY GULF
OPEN WATER AND FAST ICE
FROM 75N TO 78N FROM 80E TO 98E
OPEN WATER,1-6, 7-10 BALLS OF DRIFT ICE AND FAST ICE
FROM 76N TO 78N FROM 98E TO 108E
9-10 BALLS OF DRIFT ICE AND FAST ICE
LAPTEV SEA: FROM 73N TO 78N FROM 108E TO 128E
OPEN WATER,7-10 BALLS OF DRIFT ICE AND FAST ICE
KHATANGSKIY GULF
OPEN WATER, FAST ICE
FROM COAST TO 75N FROM 113E TO 119E
OPEN WATER,7-10 BALLS OF DRIFT ICE AND FAST ICE
FROM COAST TO 75N FROM 119E TO 128E
OPEN WATER,9-10 BALLS OF DRIFT ICE AND FAST ICE
FROM COAST TO 74N FROM 128E TO 133E
OPEN WATER, 9-10 BALLS OF DRIFT ICE AND FAST ICE
PART 3
FORECAST FROM 071800UTC TO 081800UTC
PECHORSKOYE SEA
WINDS E S/E 17 TO 22 MS AFTER 080600UTC S/E S 12 TO 16 MS
VIS 4 TO 6 KM LOCALLY RAIN
TEMP PLUS 6 TO PLUS 11 DEGREES

SEAS 2.0 TO 2.5 M
SOUTHWEST PART OF THE KARA SEA STRAITS OF NOVAYA ZEMLYA
WINDS S/E S 9 TO 14 MS
STRAITS OF NOVAYA ZEMLYA WINDS S/E E GUST 17 TO 20 MS
VIS 4 TO 6 KM LOCALLY RAIN
TEMP PLUS 5 TO PLUS 10 DEGREES
FROM 72N TO 75N FROM 70E TO 85E YENISEYSKIY GULF
WINDS N/E N 8 TO 13 MS YENISEYSKIY GULF 11 TO 16 MS
VIS 10 KM FROM 72N TO 75N FROM 70E TO 85E LOCALLY 0.5 TO 1.0 KM FOG
TEMP 0 TO PLUS 5 DEGREES YENISEYSKIY GULF PLUS 8 TO PLUS 13 DEGREES
FROM 75N TO 78N FROM 80E TO 98E
WINDS N/E E 6 TO 11 MS
VIS 10 KM LOCALLY 0.5 TO 1.0 KM FOG
TEMP MINUS 2 TO PLUS 3 DEGREES
FROM 76N TO 78N FROM 98E TO 108E
WINDS N/E E AFTER 080600UTC W 7 TO 12 MS
VIS 10 KM LOCALLY 2 TO 4 KM PRECIPITATION HAZE
TEMP MINUS 2 TO PLUS 3 DEGREES
FROM 73N TO 78N FROM 108E TO 113E
WINDS N/E N AFTER 080600UTC W 7 TO 12 MS
VIS 10 KM SOMETIMES 2 TO 4 KM PRECIPITATION HAZE
TEMP MINUS 2 TO PLUS 3 DEGREES

KHATANGSKIY GULF
WINDS N/E E 6 TO 11 MS
VIS 6 TO 10 KM SOMETIMES WEAK PRECIPITATION
TEMP PLUS 2 TO PLUS 7 DEGREES REGION KHATANGSKIY PLUS 12 DEGREES
FROM COAST TO 75N FROM 113E TO 119E
WINDS N/E E 4 TO 9 MS OF NORHT 72N S/E S 4 TO 9 MS
VIS 6 TO 10 KM SOMETIMES WEAK PRECIPITATION
TEMP PLUS 1 TO PLUS 6 DEGREES
FROM COAST TO 75N FROM 119E TO 128E
WINDS N N/E 4 TO 9 MS AFTER 080000UTC OF NORHT 72N E S/E 4 TO 9 MS
VIS 4 TO 10 KM SOMETIMES WEAK PRECIPITATION HAZE
TEMP 0 TO PLUS 5 DEGREES
FROM COAST TO 74N FROM 128E TO 133E
WINDS N N/E 3 TO 8 MS AFTER 080600UTC E S/E 3 TO 8 MS
VIS 2 TO 6 KM SOMETIMES WEAK PRECIPITATION HAZE
TEMP 0 TO PLUS 5 DEGREES COASTAL REGION PLUS 9 DEGREES
NNNN

SECURITY
WEATHER BULLETIN FOR EAST NORTHERN SEA ROUTE
63N125E/80N125E/63N165W/80N165W
ISSUED BY THE ARCTIC AND ANTARCTIC RESEARCH INSTITUTE ST PETERSBURG
ON THE 07 JULY 2008 AT 1800UTC
PART 1
AT 071800UTC
GALE WARNING
FROM COAST TO 73N FROM 159E TO 171E
FROM 071800UTC TO 080600UTC
WINDS N/W GUST 17 TO 20 MS
ANADYRSKIY GULF

FROM 071800UTC TO 080600UTC
WINDS S GUST 17 TO 20 MS
PART 2
SINOPSIS AT 071800UTC
LOW 988 HPA 81N 158E MOVING N/W 25 KMH DEEPENING
HIGH 1010 HPA 74N 117E MOVING S/E
LOW 990 HPA 70N 173E MOVING E 30 KMH
ICE
KHATANGSKIY GULF
OPEN WATER, FAST ICE
FROM COAST TO 75N FROM 113E TO 119E
OPEN WATER, 7-10 BALLS OF DRIFT ICE AND FAST ICE
FROM COAST TO 75N FROM 119E TO 128E
OPEN WATER, 9-10 BALLS OF DRIFT ICE AND FAST ICE
FROM COAST TO 74N FROM 128E TO 133E
OPEN WATER, 9-10 BALLS OF DRIFT ICE AND FAST ICE
FROM COAST TO 74N FROM 133E TO 141E
OPEN WATER, 7-10 BALLS OF DRIFT ICE AND FAST ICE
FROM COAST TO 75N FROM 141E TO 150E
OPEN WATER, 7-10 BALLS OF DRIFT ICE AND FAST ICE
FROM COAST TO 74N FROM 150E TO 159E
OPEN WATER, 1-6, 7-10 BALLS OF DRIFT ICE AND FAST ICE
FROM COAST TO 73N FROM 159E TO 171E
OPEN WATER, 7-10 BALLS OF DRIFT ICE
FROM COAST TO 72N FROM 171E TO 178W
OPEN WATER, 7-10 BALLS OF DRIFT ICE
FROM COAST TO 71N FROM 178W TO 168W
OPEN WATER, 1-3, 7-10 BALLS OF DRIFT ICE AND FAST ICE
BERING STRAIT
OPEN WATER
ANADYRSKIY GULF
OPEN WATER
PART 3
FORECAST FROM 071800UTC TO 081800UTC
KHATANGSKIY GULF
WINDS N/E E 6 TO 11 MS
VIS 6 TO 10 KM SOMETIMES WEAK PRECIPITATION
TEMP PLUS 2 TO PLUS 7 DEGREES REGION KHATANGSKIY PLUS 12 DEGREES
FROM COAST TO 75N FROM 113E TO 119E
WINDS N/E E 4 TO 9 MS OF NORHT 72N S/E S 4 TO 9 MS
VIS 6 TO 10 KM SOMETIMES WEAK PRECIPITATION
TEMP PLUS 1 TO PLUS 6 DEGREES
FROM COAST TO 75N FROM 119E TO 128E
WINDS N N/E 4 TO 9 MS AFTER 080000UTC OF NORHT 72N E S/E 4 TO 9 MS
VIS 4 TO 10 KM SOMETIMES WEAK PRECIPITATION HAZE
TEMP 0 TO PLUS 5 DEGREES
FROM COAST TO 74N FROM 128E TO 133E
WINDS N N/E 3 TO 8 MS AFTER 080600UTC E S/E 3 TO 8 MS
VIS 2 TO 6 KM SOMETIMES WEAK PRECIPITATION HAZE
TEMP 0 TO PLUS 5 DEGREES COASTAL REGION PLUS 10 DEGREES
FROM COAST TO 74N FROM 133E TO 141E
WINDS W N/W 4 TO 9 MS
VIS 1 TO 6 KM SOMETIMES PRECIPITATION HAZE
TEMP MINUS 1 TO PLUS 4 DEGREES COASTAL REGION PLUS 9 DEGREES
FROM COAST TO 75N FROM 141E TO 150E

WINDS W N/W 4 TO 9 MS OF NORHT 73N 7 TO 12 MS
VIS 4 TO 10 KM SOMETIMES PRECIPITATION HAZE
TEMP MINUS 1 TO PLUS 4 DEGREES
FROM COAST TO 74N FROM 150E TO 159E
WINDS N/W 5 TO 10 MS
VIS 4 TO 10 KM SOMETIMES PRECIPITATION HAZE
TEMP MINUS 1 TO PLUS 4 DEGREES COASTAL REGION PLUS 9 DEGREES
FROM COAST TO 73N FROM 159E TO 171E
WINDS N/W 7 TO 12 MS GUST 17 TO 20 MS
VIS 10 KM LOCALLY 0.5 TO 1.0 KM FOG
TEMP PLUS 0 TO PLUS 5 DEGREES
SEAS 1.0 TO 2.0 M
FROM COAST TO 72N FROM 171E TO 178W
WINDS N/W 5 TO 10 MS GUST 11 TO 16 MS
VIS 10 KM LOCALLY 0.5 TO 1.0 KM FOG
TEMP PLUS 2 TO PLUS 7 DEGREES
SEAS 0.5 TO 1.0 M
FROM COAST TO 71N FROM 178W TO 168W
WINDS S/W 4 TO 9 MS GUST 11 TO 16 MS
VIS 10 KM
TEMP PLUS 5 TO PLUS 10 DEGREES
SEAS 1.0 TO 2.0 M
ANADYRSKIY GULF
WINDS S 8 TO 13 MS GUST 17 TO 20 MS
VIS 10 KM
TEMP PLUS 13 TO PLUS 18 DEGREES
SEAS 1.0 TO 2.0 M

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