



JOINT WMO/IOC TECHNICAL COMMISSION FOR
OCEANOGRAPHY AND MARINE METEOROLOGY

Operations Handbook for METAREA Coordinators

Report by:

JCOMM WWMIWS Committee (2019)

NOTES

WMO Regulation 42

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Chair, Publications Board
World Meteorological Organization (WMO)
7 bis, avenue de la Paix
P.O. Box No. 2300
CH-1211 Geneva 2, Switzerland

Tel.: +(41 22) 730 84 03
Fax: +(41 22) 730 80 40
E-mail: Publications@wmo.int

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Operations Handbook for METAREA Coordinators

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1. Introduction

The world's ocean has been divided into 21 areas, called METAREAs (Figure 1) for the provision of Maritime Safety Information (MSI) to shipping. METAREA Coordinators are assigned to coordinate the provision of these maritime safety services for each area. This is a working document specifying the functions that a METAREA Coordinator needs to be aware of, or undertakes in the operation of the Worldwide Met-Ocean Information and Warning Service (WWMIWS). It will also serve as a good orientation toolkit for new Coordinators.

The Handbook collates requirements and procedures from a number of official documents maintained by the International Maritime Organization (IMO), World Meteorological Organization (WMO), and other relevant bodies. The intention of the Handbook is to supplement the procedures outlined in the official documents and to provide additional context to assist METAREA Coordinators in performing their duties.

Limits of metareas - 2017

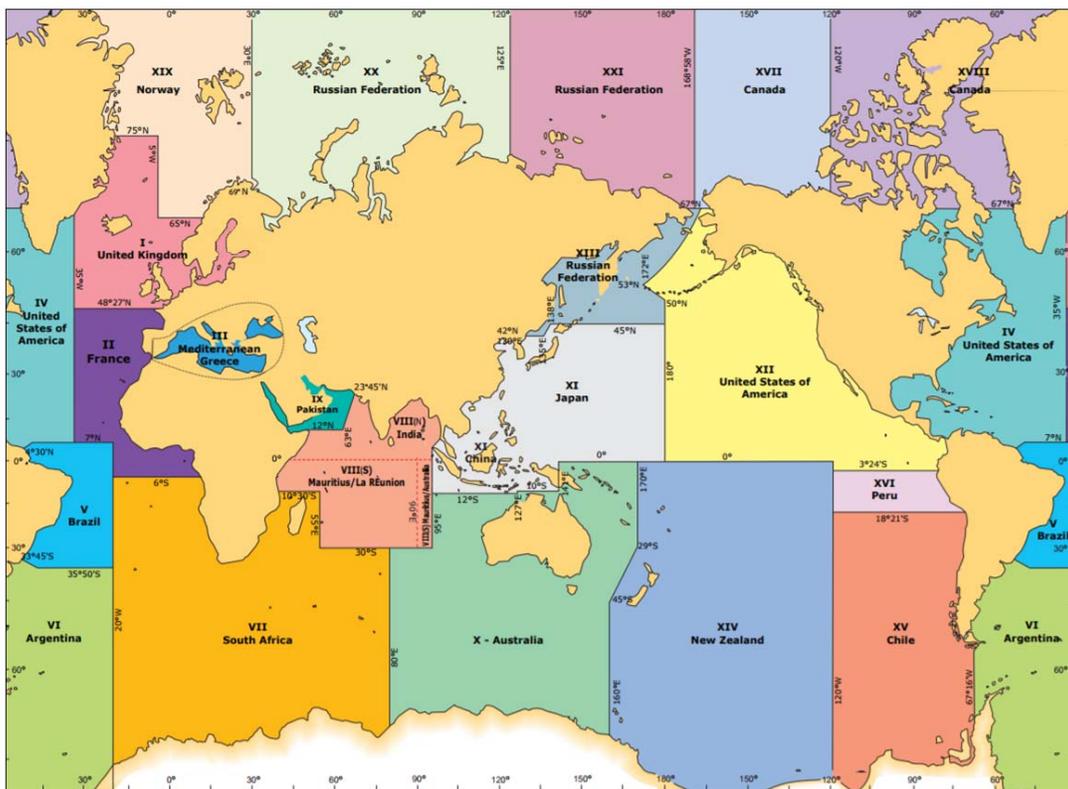


Figure 1: METAREA limits and designated national responsibility for the issue of meteorological Maritime Safety Information for the Worldwide Met-Ocean Information and Warning Service.

2. Overview of the IMO/WMO Worldwide Met-Ocean Information and Warning Service

The IMO/WMO Worldwide Met-Ocean Information and Warning Service (WWMIWS) provides MSI to mariners in the form of marine forecast and warning products. The WWMIWS is coordinated across the world's ocean through the METAREAs. Ships receive the MSI products via SafetyNet and Navtex communication systems, which form part of the Global Maritime Distress and Safety System (GMDSS).

2.1 Role of a METAREA Coordinator

To coordinate WWMIWS, each METAREA should coordinate the issuance and broadcast of marine forecast and warning products. A METAREA Coordinator is the authority charged with coordinating Marine Meteorological Information broadcasts by one or more National Meteorological and Hydrological Services (NMHSs) acting as Preparation or Issuing Services within the METAREA. A METAREA Coordinator has to be registered with WMO by the national Permanent Representative.

The publication *Weather Reporting, Volume D: Information for Shipping* (WMO-No.9, 2014b, as amended) provides contact information for METAREA Coordinators.

The following description of the role and responsibilities of a METAREA Coordinator is prescribed in IMO/WMO Worldwide Met-Ocean Information and Warning Service-Guidance Document (WWMIWS Guidance Document) (IMO-Resolution A.1051(27), 2019).

METAREA Coordinator resources

The METAREA Coordinator should have:

- .1 the expertise and information resources of NMHSs or equivalent National Authority;
- .2 effective communications, e.g. telephone, email, facsimile, and Internet, with NMHS and National Authorities in the METAREA, with other METAREA Coordinators, and with other data providers;
- .3 access to broadcast systems for transmission to the navigable waters of the METAREA. Reception of enhanced group call (EGC) messages should normally be possible at least 300 nautical miles beyond the limit of the METAREA.

METAREA Coordinator responsibilities

The METAREA Coordinator should:

- .1 act as the central point of contact on matters relating to meteorological information and warnings within the METAREA;

- .2 promote and oversee the use of established international standards and practices in the dissemination of meteorological information and warnings throughout the METAREA;
- .3 coordinate preliminary discussions between neighbouring Members, seeking to establish and operate NAVTEX services, prior to formal application;
- .4 coordinate the dissemination of meteorological bulletins on the WMO Information System (WIS), and ensure the correct display of MSI bulletins on the WWMIWS website;
- .5 liaise with entities that have responsibility for maritime safety, marine communications, port authorities, and other relevant maritime responsibilities on the effective use of meteorological information and warning services;
- .6 act as a coordination point for implementation of WMO strategic initiatives under the WMO Services Delivery Framework, including verification, quality management, Marine Forecaster Competency framework, and resilience activities;
- .7 be responsible for maintaining details of marine weather services and marine communications relevant for international service documentation such as Weather Reporting, Volume D: Information for Shipping (WMO-No. 9, 2014b, as amended), GMDSS Master Plan (IMO-GMDSS.1/Circ.22, 2018), International Telecommunication Union (ITU) List IV – List of Coast Stations and Special Service Stations, or other relevant nautical publications of national Administrations;
- .8 contribute to the development of international standards and practices through attendance and participation in the meetings of the WWMIWS committee, and also attend and participate in relevant IMO, International Hydrographic Organization (IHO) and WMO meetings as appropriate and required;
- .9 monitor the broadcasts which they originate, to ensure that the information has been correctly broadcast; and
- .10 take into account the need for contingency planning.

The METAREA Coordinator has to also ensure that within their METAREA, NMHS and National Authorities that act as Issuing Services have the capability to:

- .1 select meteorological information and warnings for broadcast in accordance with the guidance given in the *WMO Manual on Marine Meteorological Services* (WMO-No. 558, 2018);
- .2 provide insights and monitor changes in customer requirements for updates to the *WMO Guide on Marine Meteorological Services* (WMO-No. 471,2018);
- .3 ensure meteorological information is drafted in accordance with the *Joint IMO/IHO/WMO Manual on Maritime Safety Information (MSI Manual)* (IMO-MSC.1/Circ.1310, 2015); and
- .4 monitor the MSI transmission of the bulletins, that are broadcast by the Issuing Service within the respective METAREA.

The METAREA Coordinator has to further ensure that within their METAREA, NMHS and National Authorities that act as Preparation Services have the capability to:

- .1 be informed of/gather information on all meteorological events that could significantly affect the safety of navigation within their area of responsibility;
- .2 assess all meteorological information immediately upon receipt in the light of expert knowledge for relevance to navigation within their area of responsibility;
- .3 forward marine meteorological information that may require wider dissemination directly to adjacent METAREA Coordinators and/or others as appropriate, using the quickest possible means;
- .4 ensure that information concerning all meteorological warning subject areas listed in the *WMO Manual on Marine Meteorological Services* (WMO-No. 558, 2018), that may require a METAREA warning within their own area of responsibility is forwarded immediately to the appropriate NMHSs and METAREA Coordinators affected by the meteorological event;
- .5 Provide insights and monitor changes in customer requirements for updates to the *WMO Guide on Marine Meteorological Services* (WMO-No. 471, 2018); and

- .6 maintain records of source data relating to METAREA warnings and forecasts in accordance with the requirement of the national Administration of the METAREA Coordinator.

2.2 Framework to support promulgation of Maritime Safety Information

2.2.1 Overview of the WMO support framework

WMO has systems and frameworks that support NMHSs in fulfilling their METAREA responsibilities.

Figure 2 illustrates how services to the marine community are supported, from training of forecasting staff and developing Standard Operating Procedures (SOPs), the Global Data-processing and Forecasting System (GDPFS), through to international agreements such as the International Convention for the Safety of Life at Sea (SOLAS Convention) (UN, 1991). The WWMIWS Committee is the key group that coordinates the delivery of services for each METAREA. This Committee should also be used as a source of information to solve local problems.

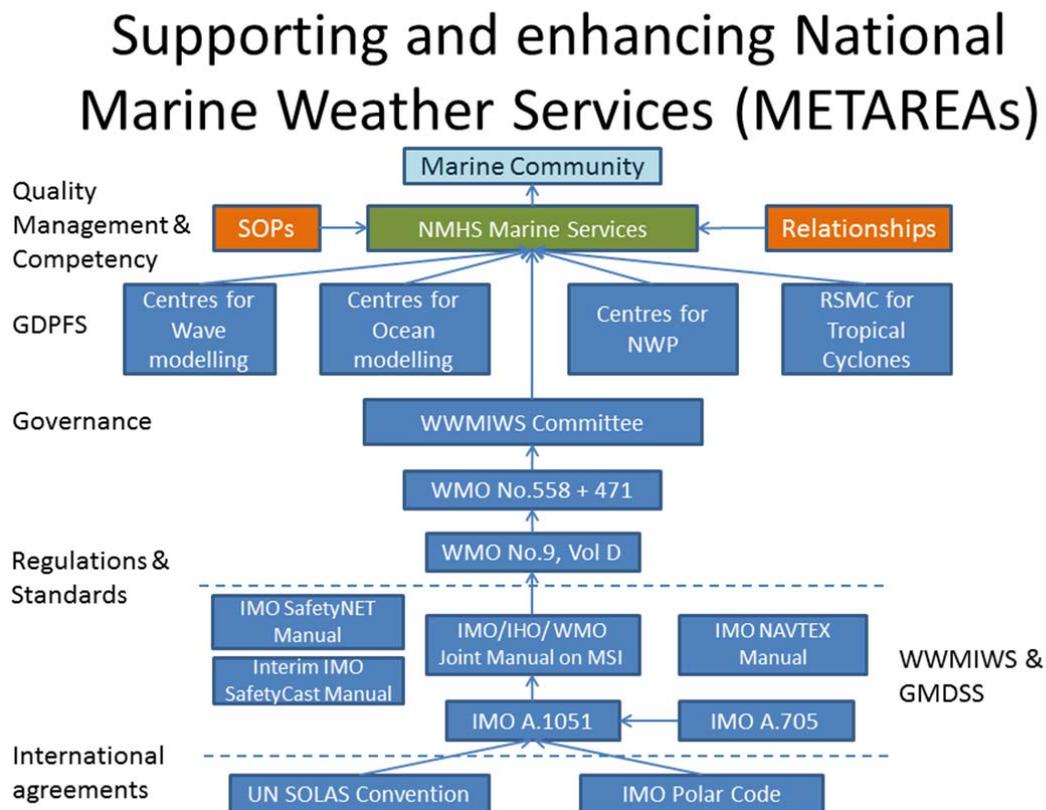


Figure 2. Overview of the international agreements, regulations and standards, coordination and governance, and forecasting systems that support and enhance the provision of services for the IMO/WMO Worldwide Met-Ocean Information and Warning Service (WWMIWS). GMDSS = Global

Maritime Distress and Safety System; MSI = Maritime Safety Information; NWP = numerical weather prediction; RSMC = Regional Specialized Meteorological Centres; SOP = Standard Operating Procedure; UN = United Nations. Source: the WWMIWS Committee.

2.2.2 Overview of the organization of Maritime Safety Information services of the Global Maritime Distress and Safety system

Figure 3 illustrates the various governance arrangements, information service providers and dissemination systems that facilitate provision of MSI on GMDSS communication methods to ships.

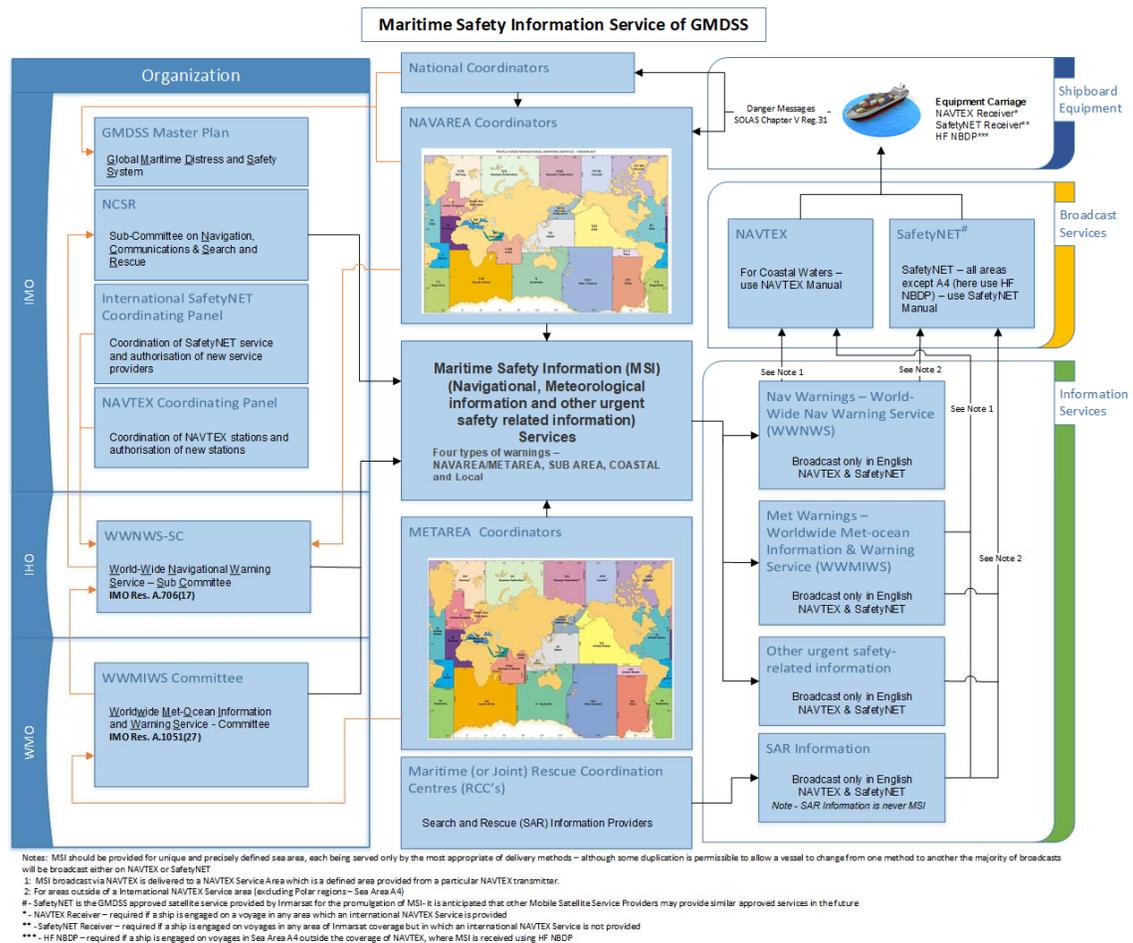


Figure 3. Overview of the organisational arrangements, and coordination bodies that support the provision of MSI on GMDSS communication methods to ships. GMDSS = Global Maritime Distress and Safety System; HF = high frequency; IHO = International Hydrographic Organization; NBDP = Narrow Band Direct Printing; NCSR = Sub-Committee on Navigation, Communications and Search and Rescue; SAR = search and rescue. Source: IHO WWNWS Sub-Committee.

2.3 Worldwide Met-Ocean Information and Warning Service delivery system and supporting activities

NMHSs have a strong focus on the warning system of WWMIWS to ensure effectiveness of services. By taking a systems approach, meteorological services can also understand the components that contribute to the system and their associated costs.

Three components relevant to transmitting the WWMIWS MSI bulletins from a meteorological service to vessels are outlined below:

1. Production of MSI bulletins (staff costs are set by the NMHS and are based on internal procedures);
2. Transmission of MSI bulletins to land earth stations (LESs) (instantaneously by email or file transfer protocol; as per section 11 of the Revised international SafetyNET Manual (IMO- MSC.1/Circ.1364/Rev.1, 2016) and the SafetyCast Manual (IMO- MSC.1/Circ.1613, 2019), costs depend on national and international routing arrangements with EGC headers pre-configured); and
3. Broadcast of the MSI bulletin from the LES to the ships using the GMDSS satellites (costs per byte, set by provider and satellite coverages).

WWMIWS involves coordination of a range of functions that cascade to deliver a reliable service to mariners. Figure 4 includes an overlay (refer to green outlined boxes) of the governance activities undertaken by the WWMIWS Committee and WMO to support each meteorological service in delivering on their service responsibilities for each METAREA. METAREA Coordinators will be involved in a number of these activities as part of their role in the WWMIWS Committee.

METAREA Coordinators are also responsible for delivery of bulletins onto WIS (formerly known as the Global Telecommunication System (GTS)), under the requirements of GDPFS.

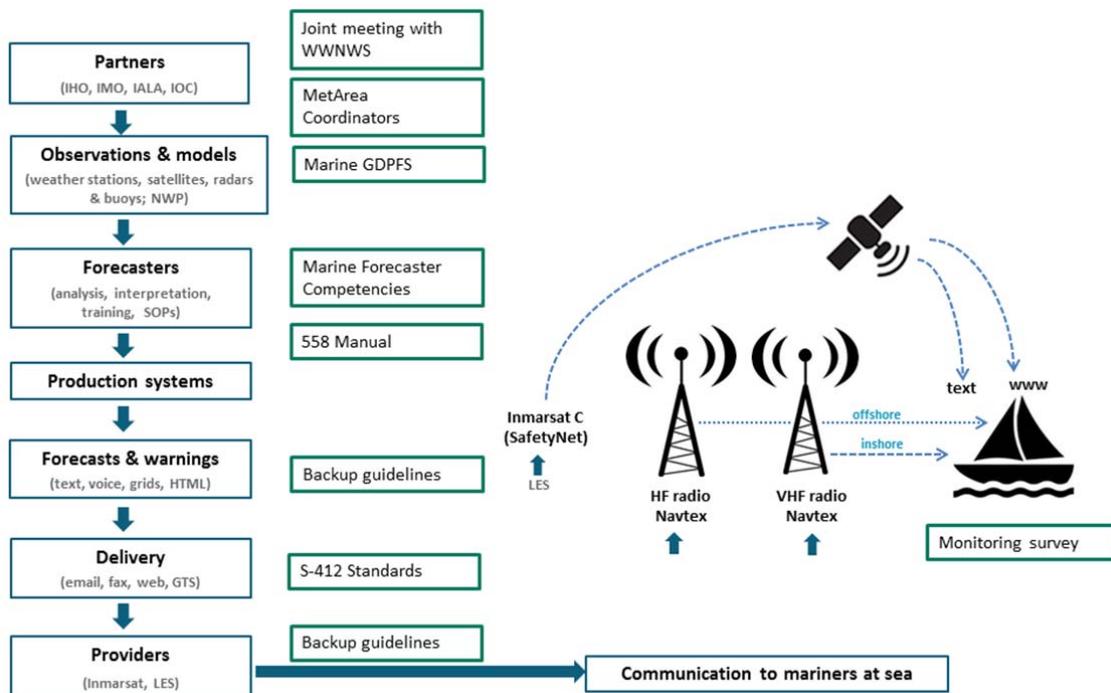


Figure 4. WWMIWS End to End Service Delivery Framework outlining the processes of partnerships, observations and forecasting models, forecast production, delivery to mariners through dedicated communication channels. HF = high-frequency; HTML = Hypertext Markup Language; IALA =

International Association of Marine Aids to Navigation and Lighthouse Authorities; IHO = International Hydrographic Organization; IOC = Intergovernmental Oceanographic Commission; NWP = numerical weather prediction; VHF = very high frequency; WWW = World Wide Web.

2.4 Key documents for Maritime Safety Information and the Worldwide Met-Ocean Information and Warning Service

METAREA Coordinators should be familiar with key documentation on the function of GMDSS and WWMIWS. Appendix II lists these documents with a summary of their key aspects. The documents can be downloaded from the WMO-IOC Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) WWMIWS webpage.

2.5 Partnerships that support the Worldwide Met-Ocean Information and Warning Service

Marine meteorological services generally require the formation of partnerships or agreements to support delivery of services or to promote use and understanding of the services. Figure 5 illustrates the partnerships that support the provision of MSI to ships. The following is referenced from the *Guide to Marine Meteorological Services* (WMO-No. 471, 2018).

Furthermore, the provision of MSI stems from the SOLAS Convention, and IMO, IHO and WMO maintain the MSI Manual (IMO-MSC.1/Circ.1310,2015) that governs the services provided under WWMIWS and its sister service, IMO/IHO WNWNS. The MSI Manual(IMO-MSC.1/Circ.1310,2015) is based on user requirements updated through IMO governance processes. The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) provides standards for Aids to Navigation and Automatic Identification System (AIS).

Partnerships are in place with the International Chamber of Shipping (ICS), International Union of Maritime Insurers (IUMI) and Permanent International Association of Navigation Congresses (PIANC) to seek feedback on services and gather insights into changing user requirements.

The International Association of Ports and Harbors (IAPH) and the International Association of Oil and Gas Producers (IOGP) are two main bodies that oversee the standards of infrastructure entities for ports and oil and gas exploration.

Experts within WMO's technical commissions are in place to provide technical and scientific expertise in support of WWMIWS. For example, experts with sea ice maintain the technical standards used for sea-ice information services.

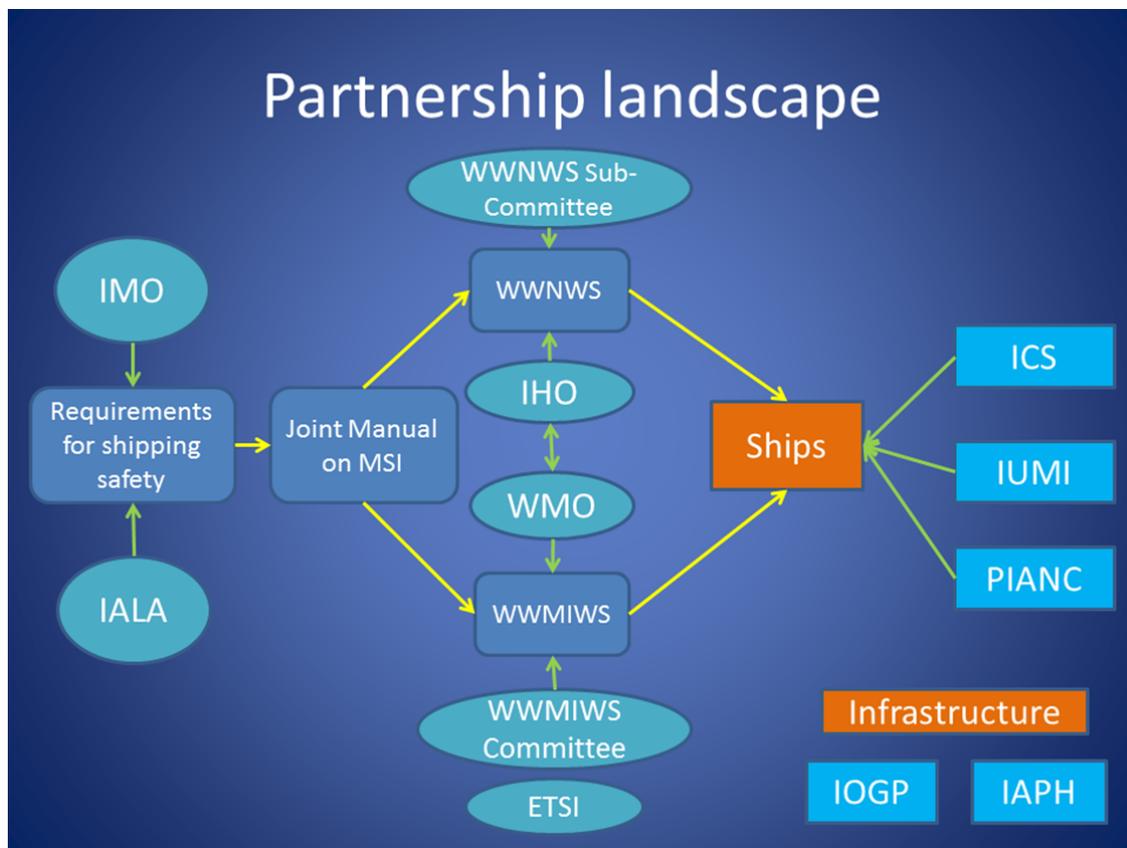


Figure 5. WWMIWS Partnership Landscape (2019). ETSI = Expert Team on Sea Ice; IALA = International Association of Marine Aids to Navigation and Lighthouse Authorities; IAPH = International Association of Ports and Harbors; IOGP = International Association of Oil & Gas Producers.

2.5.1 Importance of partnerships

NMHSs and National Authorities should establish consultation forums with relevant groups such as port and harbour authorities, ship masters, pilots, dockyard personnel, port works engineers, container terminal and warehouse operators, shipping companies and insurance companies. Based on these consultations, the NMHS will be able to formulate procedures to provide services of a general nature catering for most user groups, or services of a specialized nature tailored to meet any particular need of an individual user group or both types of services.

2.5.2 Setting up partnerships

The following are recommended steps for setting up partnerships:

1. Develop trust and understanding of each organization's role, and then deliver on commitments. These are key to developing effective partnerships.
2. Maintain regular discussion and coordination with the NAVAREA Coordinator. Topics to cover should include GMDSS service delivery and sharing of information about shipping matters.
3. Develop formal consultative meetings with relevant government agencies. Consider an annual frequency for the meetings.

4. Develop regular consultation and information sharing with marine radio service organizations to keep them updated on service and education developments, and to ensure weather information is broadcast correctly.
5. Ensure adequate representation of the NMHS in national and international organizations, in efforts to improve marine services.
6. Contact users and identify requirements in consultation with them. Users usually include:
 - (a) Government department for fisheries;
 - (b) Recreational boating organizations;
 - (c) Fishing organizations;
 - (d) Authorities responsible for safety of life at sea, including coastal waters;
 - (e) Authorities responsible for combating marine pollution;
 - (f) Operators of ferry, hydrofoil, hovercraft or similar services;
 - (g) Oil drilling and shipping companies;
 - (h) Authorities responsible for protection of the coastal populations from storm surges, high waves, tsunamis and so forth;
 - (i) Harbour control authorities.

Port Meteorological Officers (PMOs) fulfil an important role in the liaison between NMHSs and the shipping community. Their functions are truly international in nature – wherever a ship may find itself in the world, it must be able to obtain the assistance it needs to serve as a meteorological observing station, and must also be able to obtain information about the marine meteorological services available in the country, region and abroad. Developing an effective information-sharing mechanism with PMOs will ensure that they have the most up-to-date information about the marine meteorological services in the country.

2.6 Principles of the Worldwide Met-Ocean Information and Warning Service

The WWMIWS Guidance Document (IMO-Resolution A.1051(27), 2019), as amended, outlines the principles for the user and service requirements that govern WWMIWS. These principles are summarised, for the convenience of METAREA Coordinators, by the following text which is taken from Chapter 4 of WWMIWS Guidance Document (IMO-Resolution A.1051(27), 2019), as amended. The WMO standard regulations described in the *Manual on Marine Meteorological Services*, WMO No.558, are derived from these principles, and the requirements outlined in the *MSI Manual*(IMO- MSC.1/Circ.1310, 2015).

High level objectives

Marine meteorological services are provided to satisfy the requirements for information on marine environmental conditions and phenomena, established by national practices and international conventions in relation to marine operations.

Marine meteorological services are designed for the safety of marine operations and to promote, where possible, the efficiency and economy of marine activities.

The WWMIWS guidance and coordination for marine meteorological MSI messages issued on EGC, NAVTEX and HF NBDP communication systems covers the following areas:

- warnings and forecasts for the High Seas;
- warnings and forecasts for coastal, offshore and local waters (including ports, lakes and harbour areas).

Operational guidance for formatting meteorological information is given in detail in the WMO *Manual on Marine Meteorological Services* (WMO-No. 558, 2018) and the MSI Manual (IMO- MSC.1/Circ.1310, 2015).

Services for the High Seas

Marine meteorological services for the high seas include provision of:

- (a) Meteorological warnings;
- (b) Marine forecasts;
- (c) Sea-ice information services.

Services for the coastal, offshore and local waters areas

Marine meteorological services for coastal, offshore and local waters areas are similar to those for the high seas, but modified according to local requirements.

3. Operation of the Worldwide Met-Ocean Information and Warning Service

3.1 Guidelines on backup arrangements

Backup arrangements are an important part of the WMO Quality Management Framework for WWMIWS, and are recommended in the *MSI Manual (IMO-MSC.1/Circ.1310,2015)*. Backup arrangements may involve either an in-house alternate system for the collection and dissemination of information, or the deployment of necessary infrastructure so that the collection and dissemination of information can be taken up by another member, under mutual agreement, in case of an incapacitating system failure.

There are two components of the WWMIWS service provision that require backup arrangements:

- Creation of high seas forecasts and warning products
- Broadcast of products onto EGC satellites and NAVTEX

Best practice examples are summarized below to assist METAREA Coordinators to assess and review their current arrangements.

Creation of high seas forecasts and warning products

1. In the event that your office location needs to be vacated before you have produced the High Seas forecasts and warnings, what alternative arrangements do you have to produce the forecasts and warnings?

Best examples

- Our Marine production software is hosted on 2 separate servers with possible switch from one server to the other. Our Marine production tool (forecaster's interface), used for issuing High Seas forecasts and warnings, can be accessed remotely from 3 other office locations (Web interface on authorized IP).
- Backup/duplicate systems should be deployed in different locations.
- Another office location is available to setup the forecasting centre and produce the products.
- Recommended to build mutual backup arrangements between neighbouring Met Services.

2. In the event that your normal system to produce the High Seas forecasts and warnings is not able to be used, what alternative arrangements do you have to produce the forecasts and warnings?

Best examples

- Backup systems should be deployed in different places, in case one doesn't work, another can replace it.

- It is strongly recommended to produce the High Seas forecasts by multiple methods including “the old fashion way”, as editing by Microsoft Word or other text editors and sending out manually.
- It is necessary to build mutual backup arrangements between neighbouring Meteorological Services.
- It is recommended to establish arrangement with NAVAREA Coordinator who could transcribe product information by phone into a product/email that could be forwarded to the LES.

Broadcast of products onto Inmarsat SafetyNET

3. In the event that your organisation is unable to send the forecast and warning products for broadcast on Inmarsat SafetyNET, what alternative arrangements does your organisation have to send the forecast and warning products to the Land Earth Station for broadcast on Inmarsat SafetyNET?

Best examples

- It is strongly recommended to have duplicate servers for the transmission of this information, but in the unlikely event of a failure of these, the information would be sent to the NAVAREA Coordinator who would then forward to the LES.
- It is recommendable to have contact details (email and phone) offline for high priority contacts such as the LES or NavArea Coordinator. In this way it is possible to send the product by email with appropriate EGC headers to Maritime Operations Centre and they load the product onto SafetyNET.
- Some Met offices have two different ways to convey the forecast and warnings to the SafetyNET link; directly from their production system or via internet as email message with EGC headers.
- Consider using the SafetyNET II web interface.
- An escalation process may be used to advise the International Mobile Satellite Organization (IMSO) of issues related to provision of MSI through the satellite providers. Email gmdss@imso.org and maritime.safety@inmarsat.com.

Broadcast of products onto NAVTEX

4. In the event that your normal communication link between your office and the NAVTEX Station is down/broken, what alternative arrangements do you have to send the forecast and warning products for broadcast on NAVTEX?

Best examples

- Despite the fact that it is important to maintain modern systems for MSI dissemination, if problems arise in NAVTEX, the communication should be done through direct telephone line.

- It should be recommended that the information shall be repeated by nearest stations within the area and replaced by the next other in case of failure in order to insure the broadcast of weather bulletins and other navigation warnings.
- It should be recommended that the MSI institutes make efforts in order to write agreements with other organizations which are responsible for NAVTEX broadcasts

3.2 Decision matrix to designate Issuing Services or Preparation Services

Refer to the *Manual on Marine Meteorological Services* (WMO-No. 558, 2018) for the Appendix that describes the framework to determine applications by NMHSs for inclusion in WWMIWS as an Issuing Service or Preparation Service for broadcasts on EGC satellite systems.

Appendix I.1 of the Volume I of *Manual on Marine Meteorological Services* (WMO, 2018) clearly describes the framework to determine applications by NMHSs for inclusion in WWMIWS as an Issuing Service or Preparation Service for broadcasts on EGC satellite systems. It also defines the ocean and sea areas of responsibility for the issue of weather and sea bulletins for the high seas. Appendix I.2 of the same document covers the areas of responsibility and designated national meteorological services for the issue of warnings and weather and sea bulletins for the global maritime distress and safety system

3.3 Role of METAREA Coordinators in administering and promoting the user survey of the Worldwide Met-Ocean Information and Warning Service

A periodic survey is conducted as part of the WMO Quality Management framework underpinning continual improvement of Marine Meteorological Services.

The WWMIWS Committee uses the survey to monitor 3 main areas of WWMIWS:

1. Content as specified in Manual on Marine Meteorological Services (WMO-No.558, 2018),
2. Product availability as specified in Weather Reporting, Volume D: Information for Shipping (WMO-No.9, 2014b,as amended), and
3. User requirements as specified in Guide to Marine Meteorological Services (WMO-No. 471,2018).

3.3.1 Importance of the survey

The survey's purpose is to monitor the effectiveness of the weather and sea bulletins produced and transmitted by meteorological services. The results assist the WWMIWS Committee in understanding the perception of mariners regarding whether MSI services provided as part of WWMIWS are meeting user requirements.

3.3.2 Survey administration

The survey should be administered on a 2 year cycle by the WWMIWS Committee. The survey period of each cycle should be open for 4 months. The timing of the survey period should ideally be conducted between March and June.

The WMO in collaboration with the WWMIWS Chair and Vice Chair are together responsible for the initiation of the survey period through the following processes:

- Finalize the online version of the survey and advise of the web link
- Prepare a PDF version of the survey for hard-copy submission
- Send a letter to national Volunteer Observing Fleet (VOF) managers with the JCOMM link and PDF
- Advise METAREA Coordinators by email that the survey period has commenced
- Send a letter to IHO inviting NAVAREA Coordinators to assist with administering the survey

To maintain momentum, a reminder is sent halfway through the survey period, and should include an update on the number of responses received, an indication of the target expected and a suggestion to utilize NAVAREA Coordinators to reach domestic vessels.

METAREA Coordinators are responsible for:

- Working with their respective NAVAREA Coordinator to identify additional contact lists for domestic vessels in their region
- Administering the survey to any additional vessel contact lists in their region
- Responding to and solving any issues raised by the national VOF managers or NAVAREA Coordinators

National VOF managers are responsible for administering the survey through the following processes:

- Provide the survey web link and PDF version to the list of VOF ships that they manage
- Advise their METAREA Coordinator of any issues raised by ships
- Email all PDF versions of the survey to WMO

3.4 Key activities for quality management of the Worldwide Met-Ocean Information and Warning Service

Taking a systems approach to the function of WWMIWS requires that ongoing maintenance activities are established to maintain and improve the quality of services. The activities outlined in Appendix III contribute to the quality management system for WWMIWS.

The Chair and Vice-Chair of the WWMIWS Committee ensure that the METAREA Coordinators, in their role as members of the WWMIWS Committee, help coordinate these activities.

4. Procedures for METAREA Coordinators

4.1 Updating details in *Weather Reporting, Volume D: Information for Shipping*

Weather Reporting, Volume D: Information for Shipping (WMO, 2014b, as amended) contains details about the marine meteorological information services available from each country to assist shipping operations, as well as for fishing and other marine activities. The provision of this information is coordinated by WMO. The publication also contains information on meteorological broadcasts by radiotelegraphy and radiotelephony, meteorological broadcasts by radio-facsimile, GMDSS, coastal radio stations and Inmarsat LESs accepting ships' weather and oceanographic reports, marine meteorological services available for main ports, ship weather routing services and visual storm warning signals. Ensuring that mariners are aware of how to access such marine met-ocean information at sea is critical for the reputation of WMO as a quality and reliable provider.

4.1.1 Importance of updating details

It is important to inform the WMO Secretariat of any amendments so that the accuracy of the information in *Weather Reporting, Volume D: Information for Shipping* (WMO-No. 9, 2014b, as amended) can be maintained and improved.

4.1.2 Procedure for updating details

Updating details should be conducted through the following process:

1. METAREA Coordinators should inform the WMO Secretariat of any changes immediately, by emailing to mmo@wmo.int;
2. For larger changes, it may be helpful to use the forms available in the feedback section of http://www.wmo.int/pages/prog/www/ois/Operational_Information/VoID_en.html.

Specific links to key forms for new or updated material include:

- [Forms – Marine radio \(VHF, HF, NAVTEX, HF Narrow Band Direct Printing \(NBDP\)\)](#)
- [Form – Radio-Facsimile](#)
- [Form – Inmarsat-C LESs accepting Special Access Code \(SAC\) 41 messages](#)

4.2 Asking WMO to change details for a METAREA Coordinator

Occasionally, the METAREA Coordinator will change within an organization. Members should advise WMO within 6 months of the new person that has been designated to take over the METAREA Coordinator role.

4.2.1 Importance of changing details

The list of METAREA Coordinator contact details is used for coordination with IHO for WWNWS. IHO maintains a similar contact list for NAVAREA Coordinators. WMO manages the list of METAREA Coordinator countries. Once WMO has been notified of a change of details, it will organize an update of details in *Weather Reporting, Volume D: Information for Shipping* (WMO-No.9, 2014b, as amended).

4.2.2 Procedure for changing details

To change details for a METAREA Coordinator:

1. Arrange for a letter from the Permanent Representative to the WMO Secretary General, to notify the WMO Secretariat about the change of METAREA Coordinator;
2. Send the PR notification letter by email to the WMO (mmo@wmo.int).

4.3 Checking product headers for the WMO Information System

4.3.1 Importance of checking product headers

It is mandatory to send and share marine meteorological MSI products on WIS. This requirement is stated in the *Manual on the Global Data-processing and Forecasting System* (WMO-No. 485, 2017). The network of Regional Telecommunication Hub (RTH) Centres subscribes to various products from Issuing Services, and redistributes them to other NMHSs.

The list of product headers is maintained in *Weather Reporting, Volume C1: Catalogue of Meteorological Bulletins* (WMO-No.9, 2014a, as amended).

The WWMIWS website displays EGC and NAVTEX products that are distributed on WIS. Therefore, a product will not be displayed on the website without being available in the WIS catalogue.

4.3.2 Procedure for checking product headers

1. Check product headers by country or product type using the following search web page:

http://www.wmo.int/pages/prog/www/ois/Operational_Information/InteractiveAccess/index.html;

2. Identify which RTH the NMHS is connected with, based on the following web page:

http://www.wmo.int/pages/prog/www/ois/RTHFocalPts/Country_en.html.

4.3.3 Procedure for adding a new header

To add a new product header to the catalogue:

1. Specify a unique header following the rules outlined at http://www.wmo.int/pages/prog/www/ois/Operational_Information/Publications/WMO_386/AHLSymbols/TableB1.html;
2. Identify the RTH focal point using http://www.wmo.int/pages/prog/www/ois/RTHFocalPts/Country_en.html;
3. Request that the RTH focal point updates the WIS routing catalogues.

4.4 Using the Worldwide Met-Ocean Information and Warning Service website

4.4.1 Importance of the website

The WWMIWS website is currently hosted by Meteo France. It displays the SafetyNET and NAVTEX messages that are produced by Issuing Services.

WWMIWS uses the products that are shared on WIS, which operates using a catalogue of bulletins that GDPFS Centres can subscribe to and redistribute to other NMHSs.

METAREA Coordinators are responsible for getting their bulletins onto WIS and ensuring the product headers are correct.

4.4.2 Procedure for solving issues with the website

To assist the host country (eg. Meteo-France) to diagnose a problem in the display of bulletins on the website, METAREA Coordinators should undertake the following actions to identify the possible cause before contacting the host, as per the procedure in 4.4.3.

Cause 1: The first cause might be that the product header is not available on WIS. Check the WMO catalogue search tool to confirm that the bulletin is correctly included so that the host can subscribe to the bulletin.

http://www.wmo.int/pages/prog/www/ois/Operational_Information/InteractiveAccess/index.html.

Cause 2: The second cause may be that the product is not available on WIS due to a communication failure.

If the bulletin is correctly listed on the catalogue, then the cause could be related to sending the bulletin onto the WIS. Contact the host (eg. Meteo France) to confirm whether they can see the bulletin or not. If they cannot see the bulletin, then the connection problem may be located at the METAREA Coordinator's organization.

4.4.3 Procedure for requesting changes to the website

Send an email to the host of the website. At the time of publication, this contact is the METAREA Coordinator for METAREA II (located in France). Include appropriate details that will assist in diagnosing the problem:

http://www.wmo.int/pages/prog/www/ois/Operational_Information/VolumeD/GMDSS/Focal_Points/GMDSS/fp.pdf.

4.5 Accessing Regional Specialized Meteorological Centre products from the WMO Information System

4.5.1 Importance of accessing products

A network of Regional Specialized Meteorological Centres (RSMCs) for numerical ocean wave prediction and global numerical ocean prediction has been established to support WWMIWS Issuing and Preparation Services. These RSMCs provide global forecasts. The use of forecast guidance from multiple models provides benefits in terms of greater understanding of possible scenarios, improved accuracy and potential to provide probability-based services for user-defined thresholds.

4.5.2 Procedure for accessing products

To access RSMC products from WIS:

1. Identify the products used by the RSMC country at https://www-db.wmo.int/wwwois/aspscripts/search_country.asp;
2. Seek assistance from the WIS focal point in the country, based on the following web page: http://www.wmo.int/pages/prog/www/ois/RTHFocalPts/Country_en.html;
3. Seek assistance from the Information Technology Department or national WIS focal point to download and utilize RSMC forecasts.

4.6 Reporting interference or changes to NAVTEX transmitters

4.6.1 Importance of reporting

The IMO NAVTEX Coordinating Panel manages frequency allocations and works to resolve interference issues. The Chair is responsible for reporting new or removed transmitters and interference issues to the IMO Navigation, Communication and Search and Rescue Sub-Committee, and monitoring the accuracy of the GMDSS Master Plan (IMO-GMDSS.1/Circ.22, 2018). It is important to keep it up to date because the NAVTEX radio stations and their broadcasting schedules change over time, so all mariners depend on reliable information to be able to receive MSI.

4.6.2 Procedure for reporting

If any NAVTEX infrastructure has been added or removed, or there are any interference issues, then contact the Chair of the IMO NAVTEX Coordinating Panel at info@imo.org.

4.7 Maintaining communication with NAVAREA Coordinators

4.7.1 Importance of communicating

The *NAVAREA Coordinator* is the authority charged with coordinating, collating and issuing NAVAREA warnings for a designated NAVAREA, as part of the WWNWS. NAVAREA Coordinators generally work within a national maritime safety regulatory organization. They are therefore familiar with the issues and new developments that are discussed by IMO, IHO, IALA and IMSO. It is important for the METAREA Coordinator to maintain a communication link with their counterpart NAVAREA Coordinator to be aware of any relevant discussions. Other benefits include the potential for joint national initiatives with other government agencies, which may lead to increased visibility of the role of an NMHS in matters of maritime safety.

4.7.2 Procedure for maintaining communication

The following is a list of potential topics that a METAREA Coordinator should discuss regularly with their counterpart NAVAREA Coordinator:

- Developments in GMDSS satellite communications

- National and international NAVTEX station networks
- Maritime safety regulations and issues that relate to met-ocean services
- Feedback on MSI from mariners
- Operations and compliance with Promulgation of Maritime Safety Information (IMO-Resolution A.705 (17), 2019)
- Maintenance of documentation: GMDSS Master Plan (IMO-GMDSS.1/Circ.22, 2018), GMDSS EGC schedule, *Weather Reporting, Volume D: Information for Shipping* (WMO, 2014b, as amended) and United Kingdom Hydrographic Office (UKHO) Admiralty List of Radio Signals (ALRS)
- Issues being discussed at upcoming IMO, IHO, IALA and IMSO meetings, and potential joint contributions on these topics

4.8 Updating the International Maritime Organization Global Maritime Distress and Safety System Master Plan

4.8.1 Importance of updating

The GMDSS Master Plan (IMO-GMDSS.1/Circ.22, 2018) details the operating infrastructure that contributes to GMDSS. This infrastructure includes NAVTEX stations, HF NBDP stations and SafetyNET LESSs. The GMDSS Master Plan (IMO-GMDSS.1/Circ.22, 2018) also includes the SafetyNET schedule of broadcast times for WWMIWS, and it consults *Weather Reporting, Volume D: Information for Shipping* (WMO-No.9, 2014b, as amended) as an authoritative source for information about WWMIWS. It is important to keep it up to date because the GMDSS Master Plan (IMO-GMDSS.1/Circ.22, 2018) contains the broadcasting details that all mariners refer to in order to receive MSI, when sailing in or planning to sail to any METAREA in the world.

4.8.2 Procedure for updating

If any GMDSS infrastructure has changed, then the following process should be used for updating:

1. Consult the JCOMM WWMIWS webpage to access the GMDSS Master Plan (IMO-GMDSS.1/Circ.22, 2018) update forms;
2. Complete the forms with details of the new/changed/closed infrastructure;
3. Consult with the NAVAREA Coordinator to coordinate the update submission;
4. Submit the forms through the national maritime regulator organization to IMO.

Appendix I List of Acronyms and Definitions

AIS	Automatic Identification System
ALRS	Admiralty List of Radio Signals
EGC	Enhanced Group Calling
ETSI	Expert Team on Sea Ice
GDPFS	Global Data-processing and Forecasting System
GMDSS	Global Maritime Distress Safety System
GTS	Global Telecommunication System
HF	High Frequency
HTML	HyperText Markup Language
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IAPH	International Association of Ports and Harbors
IHO	International Hydrographic Organization
IMO	International Maritime Organization
IMSO	International Mobile Satellite Organization
IOC	Intergovernmental Oceanographic Commission of UNESCO
IOGP	International Oil and Gas Producers
ITU	International Telecommunication Union
IUMI	International Union of Marine Insurance
JCOMM	the WMO-IOC Joint Technical Commission for Oceanography and Marine Meteorology
LES	Land Earth Station
met-ocean	Meteorology and (physical) Oceanography
METAREA	Geographical sea region for the purpose of coordinating the transmission of meteorological information to mariners on international voyages through international and territorial waters
MEPC	Marine Environment Protection Committee
MMOP	Marine Meteorology and Oceanography Programme

MSC	Maritime Safety Committee
MSI	Maritime Safety Information
NAVAREA	Geographical sea region for the purpose of coordinating the transmission of navigational information to mariners on international voyages through international and territorial waters
NAVTEX	Navigational Telex
NBDP	Narrow Band Direct Printing
NCSR	Sub-Committee on Navigation, Communications and Search and Rescue
NMHS	National Meteorological and Hydrological Services
NWP	Numerical Weather Prediction
PDF	Portable Document Format
PIANC	Permanent International Association of Navigation Congresses
PMO	Port Meteorological Officer
RSMC	Regional Specialized Meteorological Centre
RTH	Regional Telecommunication Hub
SafetyCast	a satellite-based service for the promulgation of MSI, navigational and meteorological warnings, meteorological forecasts, SAR-related information and other urgent safety-related messages to ships
SafetyNET	an international automatic direct-printing satellite-based service for the promulgation of navigational and meteorological warnings, meteorological forecasts, Search and Rescue (SAR) information and other urgent safety-related messages - maritime safety information (MSI) - to ships
SAR	Search And Rescue
SOLAS	International Convention for Safety of Life at Sea
SOP	Standard Operating Procedure
UKHO	United Kingdom Hydrographic Office
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
VHF	Very High Frequency
VOF	Volunteer Observing Fleet
WIS	WMO Information System

WMO	World Meteorological Organization
WWMIWS	the IMO/WMO World Wide Met-Ocean Information & Warning Service
WWNWS	World-Wide Navigational Warning Service
WWW	World Wide Web

Appendix II References and Key Documents

<i>Document name</i>	<i>Summary of key aspects and purpose</i>
<i>Joint IMO/IHO/WMO Manual on Maritime Safety Information (MSI Manual)(IMO-MS.C.1/Circ.1310, 2015)</i>	Governs the MSI services provided for WWMIWS and the World-Wide Navigational Warning Service (WWNWS) Includes: <ul style="list-style-type: none"> • Definitions of key terms • Roles and responsibilities of METAREA Coordinators
<i>Manual on Marine Meteorological Services (WMO-No. 558, 2018)</i>	Sets service standards for WWMIWS (high seas), coastal waters, based on the requirements described in the <i>MSI Manual</i> (IMO-MS.C.1/Circ.1310, 2015) Includes: <ul style="list-style-type: none"> • Product element and format requirements • Service levels for timeliness and accuracy • Graphics standards for charts
<i>Guide to Marine Meteorological Services (WMO-No. 471, 2018)</i>	Outlines user requirements for information elements, user application and delivery channels
<i>Weather Reporting, Volume C1: Catalogue of Meteorological Bulletins (WMO-No.9, 2014a, as amended)</i>	Catalogue of bulletins List of product headers used by WIS
<i>Weather Reporting, Volume D: Information for Shipping (WMO-No.9, 2014b, as amended)</i>	Authoritative resource on meteorological services provided to shipping. Includes: <ul style="list-style-type: none"> • High-frequency (HF) fax services • Very high frequency (VHF)/HF radio schedules

	<ul style="list-style-type: none"> • SafetyNET schedule • METAREA Coordinator contact details • Description of service areas including maps
<i>Manual on the Global Data-processing and Forecasting System</i> (WMO-No.485, 2017)	<p>Defines roles and responsibilities for each type of centre</p> <p>Defines mandatory and optional products</p> <p>Defines required verification metrics</p>
Revised international SafetyNET Manual (SafetyNET Manual)(IMO- MSC.1/Circ.1364/Rev.1, 2016)	<p>Describes aspects of the SafetyNET system:</p> <ul style="list-style-type: none"> • Outlines C codes used for EGC addressing products sent on SafetyNET • Governance of the SafetyNET system
Interim Iridium SafetyCast Service Manual (SafetyCast Manual)(IMO- MSC.1/Circ.1613, 2019)	Describes aspects of Iridium enhanced group call service
NAVTEX Manual (IMO- MSC.1/Circ.1403/Rev.1, 2018)	Describes aspects of the Navigational Telex (NAVTEX) system including governance of the NAVTEX system
<i>IMO/WMO Worldwide Met-Ocean Information and Warning Service – Guidance Document</i> (WWMIWS Guidance Document)(IMO- Resolution A.1051(27), 2019)	<p>Key reference document that constitutes WWMIWS and defines roles and responsibilities of METAREA Coordinators</p> <p>Outlines service requirements for WWMIWS</p> <p>Outlines the distinction of Issuing Services and Preparation Services</p>
Recommendation on weather routeing (IMO-Resolution A.528(13), 1983)	Recommends that weather routing services and providers should be listed in <i>Weather Reporting, Volume D: Information for Shipping</i> (WMO, 2014b), and that WMO should authorize such providers
Participation of ships in weather routeing services (IMO- MSC/Circ.1063, 2002)	Provides additional guidelines on the types of service requirements of advisory services to support safe shipping
Provision of radio services for the Global Maritime Distress and Safety System (IMO-Resolution A.801(19), 1995)	<p>Sets out two principal methods for broadcasting MSI messages: SafetyNET and NAVTEX</p> <p>Lays out the governance of MSI provision, including the SafetyNET Panel and NAVTEX Panel</p>

Performance requirements for Enhanced Group Call Equipment (IMO-Resolution A.664(16), 1989)	Describes the performance requirements that Inmarsat SafetyNET receiving terminals have to comply with
SafetyNET functional requirements (IMO-Resolution A.1001(25), 2007)	Sets out the functional requirements that govern Mobile Maritime Satellite providers and EGC requirements that Inmarsat and Iridium need to comply with
Charges for distress, urgency and safety messages (IMO-Resolution A.707(17), 1991)	Describes the charging framework for the broadcast of messages on Maritime Satellite providers Origins of principle that mariners are not directly charged to receive MSI messages
World-Wide Navigational Warning Service (IMO-Resolution A.706(17), 2019)	Key reference document for WWNWS Structure similar to that of WWMIWS Guidance Document (IMO-Resolution A.1051(27), 2019)
Promulgation of Maritime Safety Information (IMO-Resolution A.705(17), 2019)	Outlines the definition of MSI and GMDSS components that MSI is required to be broadcast on Provides foundation for the SafetyNET Manual (IMO- MSC.1/Circ.1364/Rev.1, 2016) in terms of requirements for monitoring responsibilities of MSI providers
International Code for Ships Operating in Polar Waters (Polar Code)(IMO-MEPC 68/21/Add.1, 2014)	Describes requirements for ships to access sea-ice information and forecasts Outlines a risk assessment framework that incorporates ice conditions Defines a polar service temperature that ships must be designed to operate to Defines a low air temperature hazard for safety of crew
Master Plan of Shore-based Facilities for the Global Maritime Distress and Safety System (GMDSS Master Plan) (IMO-GMDSS.1/Circ.22, 2018)	Contains the latest information on MSI broadcasting methods and schedules based on replies received from all Members/Member States.
International Convention on Safety of Life at Sea (UN, 1991)	International Convention established following the Titanic sinking in 1912. Convention covers standards for ship integrity, training of personnel, radio communication and meteorological service provision.

A list of IMO resolutions is available at

<http://www.imo.org/en/KnowledgeCentre/IndexofIMOResolutions/Pages/Default.aspx>

Appendix III Key Activities

<i>Activity</i>	<i>Frequency</i>	<i>Notes for coordination</i>
Self-assessment	Every 2 years (or prior to the WWMIWS Committee meeting)	
Survey of users of WWMIWS	Every 2 years (or prior to the WWMIWS Committee meeting)	Coordination between WWMIWS-C, WMO with IHO (IHO liaison is required for WWNWS survey)
Marine Safety Services workshop for METAREA Coordinators	Every 4 years	Assess possibility of joining with IHO WWNWS meetings
Review of the <i>Manual on Marine Meteorological Services</i> (WMO-No. 558, 2018) and <i>Guide to Marine Meteorological Services</i> (WMO-No. 471, 2018)	Annual	Regular review and maintenance of documentation
Contribute to updates of documents through the IHO Document Review Work Group	Annual, rolling rotation	IMO/IHO document review: SafetyNET Manual (IMO- MSC.1/Circ.1364/Rev.1, 2016) , NAVTEX Manual (IMO- MSC.1/Circ.1403/Rev.1, 2018), GMDSS Master Plan (IMO- GMDSS.1/Circ.22, 2018), MSI Manual (IMO- MSC.1/Circ.1310, 2015), WWMIWS Guidance Document (IMO- Resolution A.1051(27), 2019) and Promulgation of Maritime Safety Information (IMO-Resolution A.705(17), 2019)
Update the WWMIWS website portal	Every 6 months	Send updates to the host of the GMDSS website (eg. Meteo France)

Update <i>Weather Reporting, Volume D: Information for Shipping</i> (WMO-No.9, 2014b,as amended)	Every 6 months	Send updates to the WMO (mmo@wmo.int)
Update the GMDSS Master Plan (IMO-GMDSS.1/Circ.22, 2018)	Annual	Coordinated through national marine agencies
Update Admiralty List of Radio Signals (ALRS) documentation	Annual	Published by the United Kingdom Hydrographic Office (UKHO) Mandatory for SOLAS ships to carry this document
Review IMO Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) and Maritime Safety Committee (MSC) agenda items	Annual and every 6 months	
Issue IMO Sub-Committee on Radiocommunications and Search and Rescue Circular for METAREA/NAVAREA Coordinator details	At least every 12 months	WWMIWS C to coordinate through the WMO. WMO to contact IHO Secretariat Supply link to METAREA Coordinator details IHO (in consultation with WMO) to submit joint details to IMO, who then issue the Circular

Appendix IV Useful Links

The JCOMM WWMIWS webpage:

https://www.jcomm.info/index.php?option=com_content&view=article&id=105

The WWMIWS website

<http://weather.gmdss.org/index.html>