

-WMO- Supporting Marine Services in the Arctic – Towards Safety of Life at Sea –



WMO OMM

World Meteorological Organization
Organisation météorologique mondiale



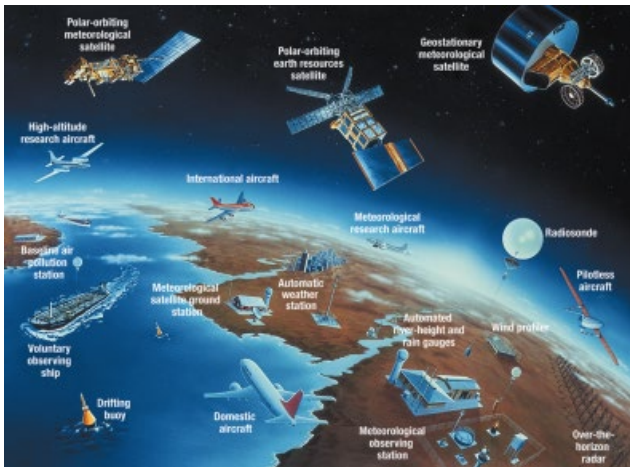
ARCTIC COUNCIL

PAME
Protection of the Arctic Marine Environment

Dr Sarah Grimes
- Head, Marine Services Division
- WMO Ocean Coordinator

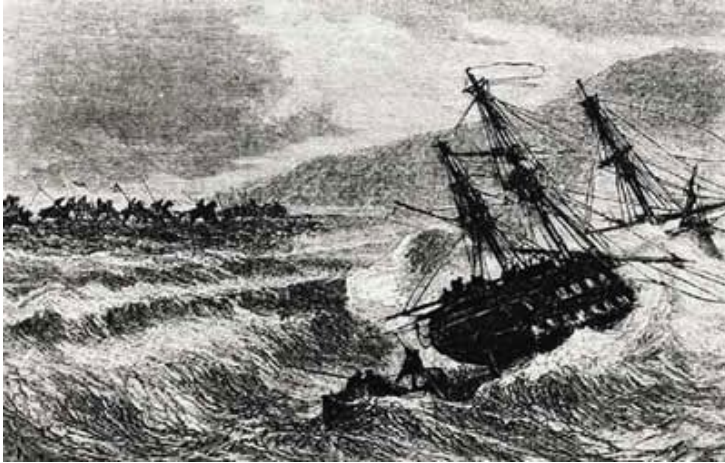
Dr Zhichao Wang, (MAR),
supported by RCP/WMO

World Meteorological Organization

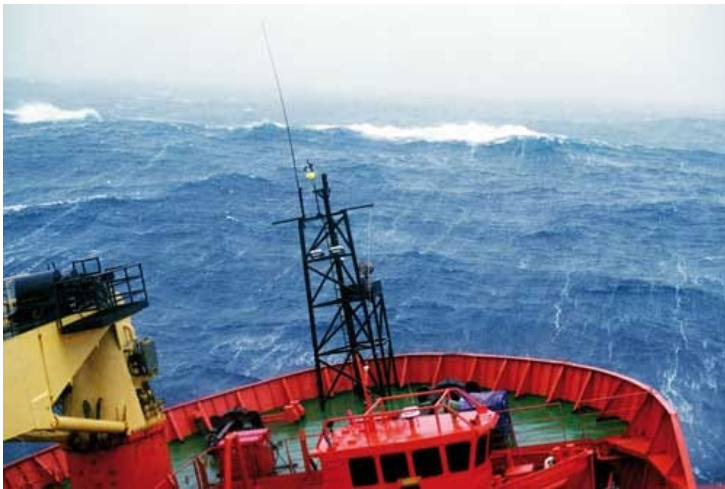


- UN Specialized Agency on weather, climate, water & environment
- 193 Members, HQ in Geneva
- 2nd oldest UN Agency, 1873-
- Coordinates work of ~200 000 national experts from meteorological & hydrological services & academia
- Co-Founder & host agency of IPCC (1st World Climate Conference, 1979)
- Co-Founder of UNFCCC (2nd World Climate Conference, 1990)
- **Observer of Arctic Council - since 2017**
- Major Contributor to Sendai Framework on DRR, active role in Paris Agreement and SDGs
- Annual State of Global Climate Report

History of IMO/WMO – Safety at sea

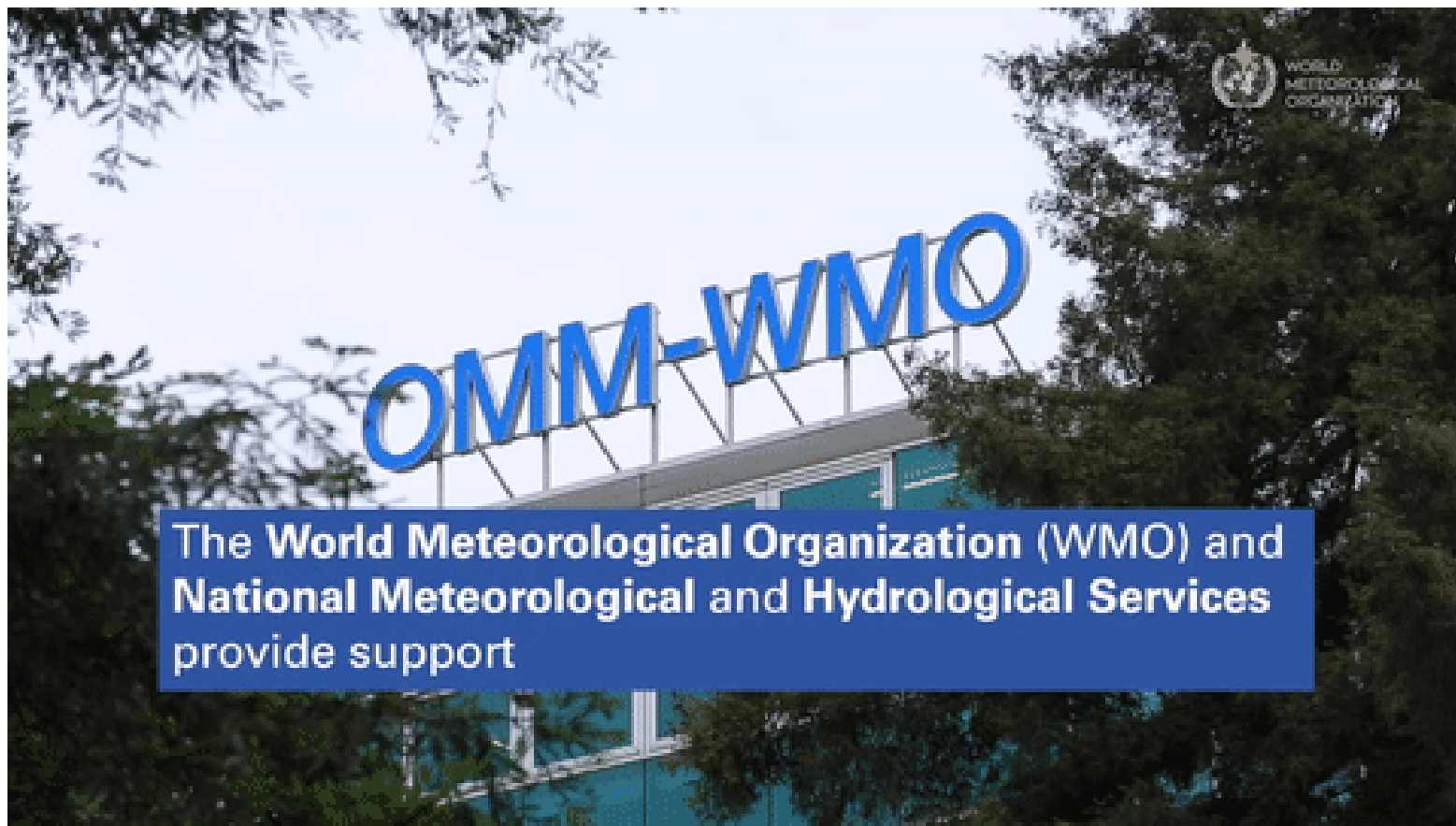


- Original driver: **predicting weather over the sea, for maritime safety**
- **Reliable and regular weather information** over the global seas led to recognition for **international cooperation**



- First International Meteorological Conference, Brussels 1853
- **IMO !!** International Meteorological Organization (1873) – facilitate exchange of weather information across national borders

WMO Marine Services



The World Meteorological Organization (WMO) and National Meteorological and Hydrological Services provide support

SOLAS and WMO's role

- **SOLAS Chapter V, Safety of navigation, Regulation 5 - Meteorological services and warnings** Parties are obliged to provide meteorological information and warnings to shipping, at least twice daily.
- **WMO supports** the provision of *Maritime Safety Information* (MSI) via the *Global Maritime Distress Safety System* (GMDSS), and more specifically delivered by the *IMO/WMO WorldWide Met-Ocean Information & Warning Service* (WWMIWS).
- METAREAS (21) & METAREA Coordinators are core functions of the GMDSS



United Nations General Assembly 2017

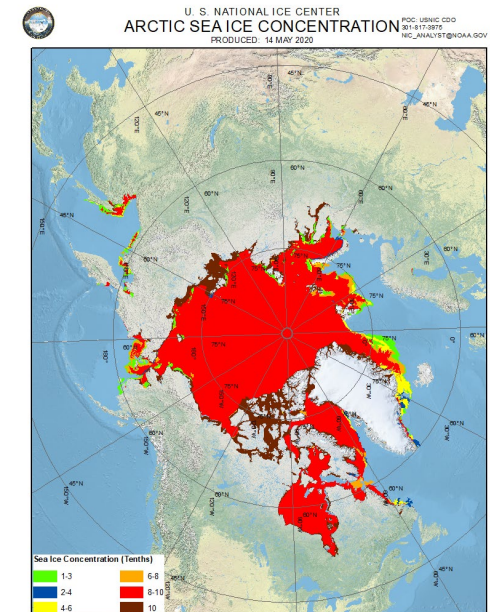
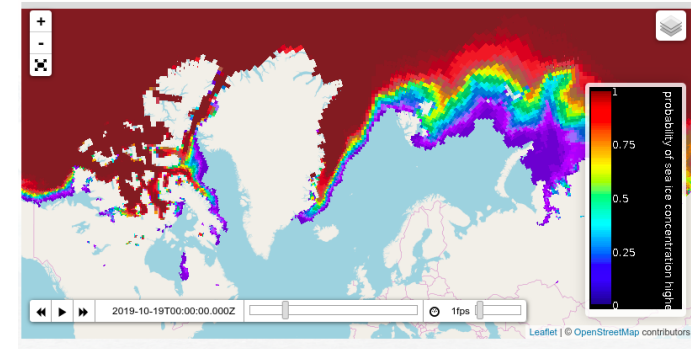
Resolution 72/73 – Oceans and the law of the sea

159. *Also recognizes* the importance of navigational warning services based on marine meteorological data for the safety of ships and lives at sea and the optimization of navigation routes, and notes the collaboration between the World Meteorological Organization and the International Maritime Organization for the enhancement of these services and their **extension to the Arctic region;**

Maritime Safety Services - Arctic focus

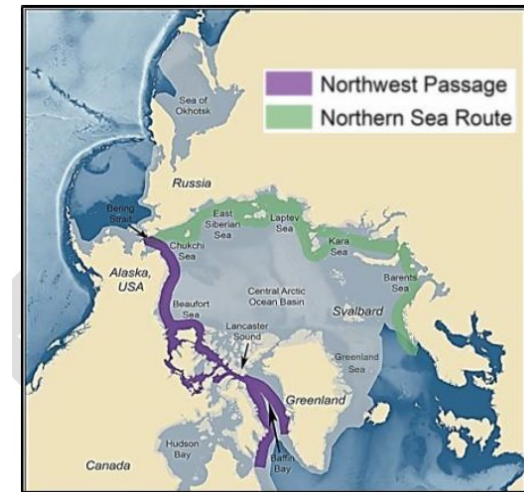
- Guided by UNCLOS, SOLAS, SAR, **Polar Code**, MARPOL
- Supporting IMO's Global Maritime Distress & Safety System (GMDSS) with WMO WWMIWS, & IHO's Worldwide Navigational Warning Service (WWNWS)
- **Arctic METAREA Coordinators:**
Canada, Norway, Russian Federation.
- **Sea Ice chart service** overlay through S-41X standards into bridge

MODEL-BASED SEASONAL FORECAST OF SEA-ICE

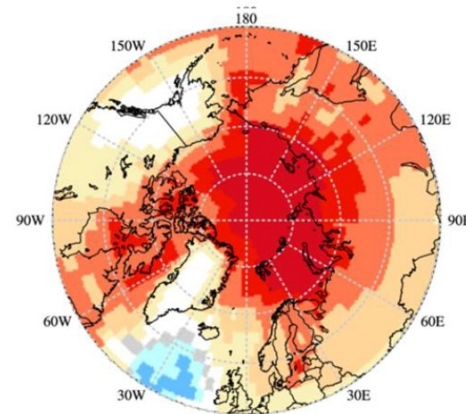


Climate Services - Arctic focus

- **Arctic RCC Network** <https://arctic-rcc.org/>
 - North EurAsia, North America, Northern Europe (Nordic) nodes
 - provides pan-Arctic climate services: data, monitoring, LRF
- **Arctic Climate Forum** (former PARCOF) - flagship activity of the ArcRCC-Network
- Established in 2018, twice a year – in May & October
- Long Range Forecasts and Climate Monitoring for Arctic
- Arctic Consensus Statement & regional summary for **ship routing in Arctic Waters**



Coverage



Multi model ensemble forecast for surface temperature for November 2020, December 2020, and January 2021. Three categories: below normal (blue), near normal (grey), above normal (red) and no agreement amongst the models (white). Source: www.wmolc.org.

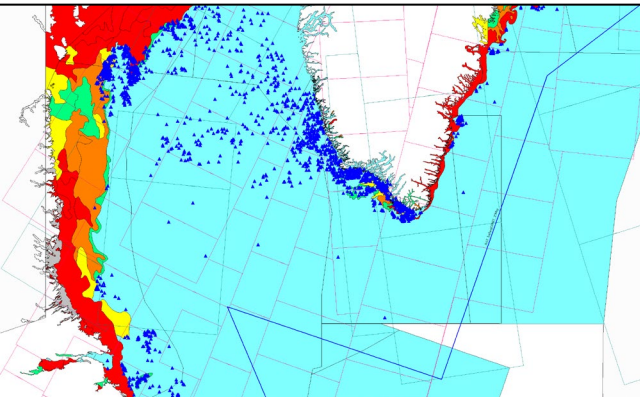
1st WMO-IMO Symposium on Extreme Maritime Weather

- October 2019.
- 200 + participants - private/public
- Themes including maritime safety, MEER, SAR, Polar regions etc.



Recommendations

- Better monitor climate change, provide long-range services
- Incorporate & standardize ice charts into shipboards ECDIS
- Establish standards for ice forecasters & analysts
- Improve iceberg models to predict location drift, & deterioration
- Improve training to 'close the gap' between metocean information providers & users



Sea Ice and Iceberg distribution
North Atlantic 26 May 2019
Source: Sentinel 1, DMI, CIS

WMO HUB and the PAME Shipping Portal

- Part IA and Part IB (safety)
 - Ch1: General
 - WMO general information, including: res, obs, forecasting
 - Ch2: Polar Water Operational Manual
 - GMDSS
 - WMO Guidance: No. 558, 471, sea ice (574, 1215, 259)
 - Ch8: Life saving appliances and arrangements
 - GMDSS Meteorological MSI
 - GDPFS/RSMC on MEER and SAR on demand
 - Ch9: Safety of Navigation
 - GMDSS Meteorological MSI
 - Ch11: Voyage Planning
 - GMDSS Meteorological MSI
 - Climate Services for Arctic Region
 - MEER and SAR
- Part IIA and Part IIB (pollution)
 - Ch1: Prevention of Pollution by Oil

Thank you Merci

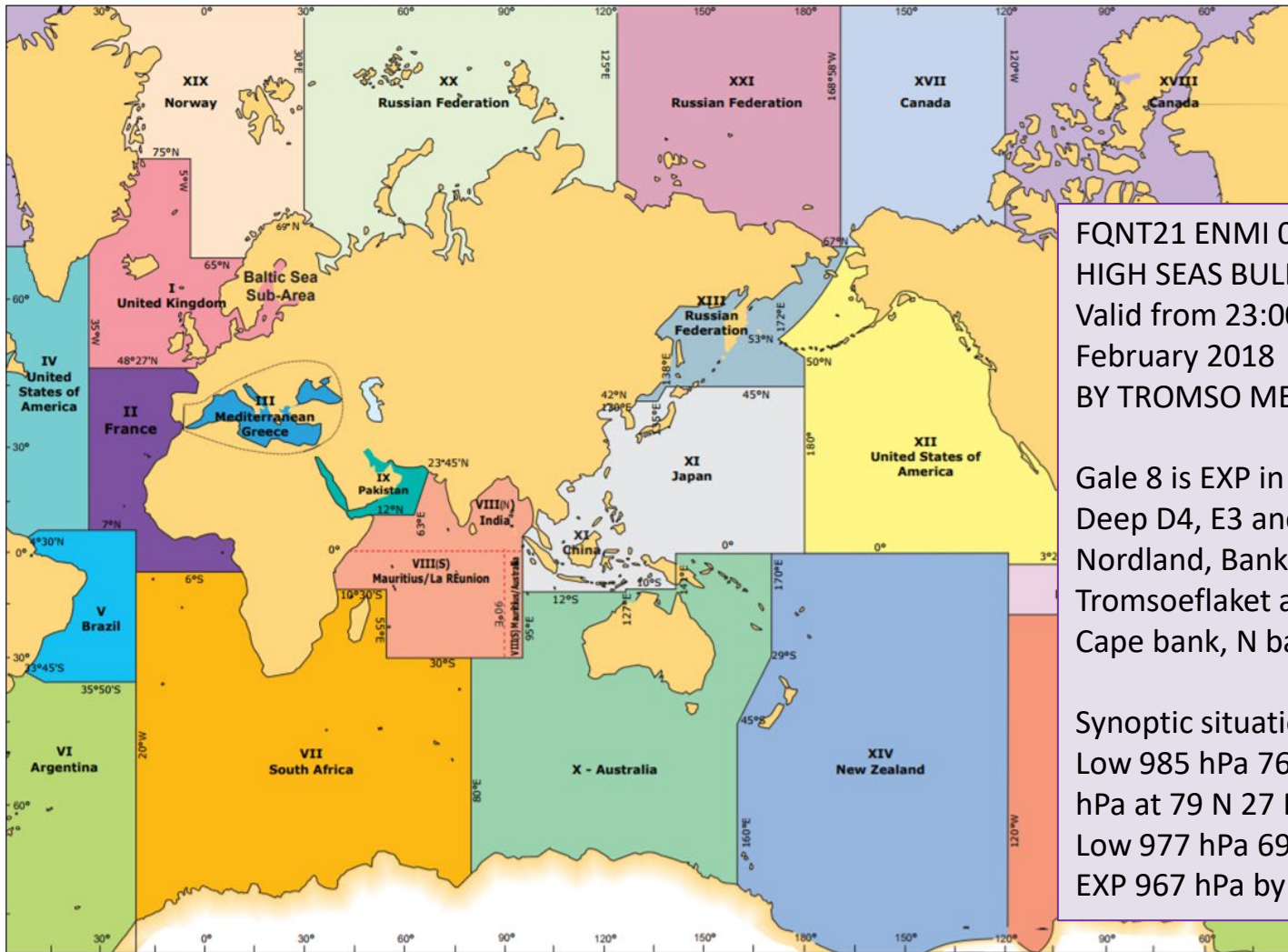


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Global Maritime Distress and Safety System

Limits of metareas - 2017



FQNT21 ENMI 072300
HIGH SEAS BULLETIN FOR METAREA 19
Valid from 23:00 UTC on Wednesday 7
February 2018
BY TROMSO METEO, NORWAY

Gale 8 is EXP in areas: B1, B2, C2, D2, D3,
Deep D4, E3 and Deep E4, Banks outside
Nordland, Banks outside Troms,
Tromsoeflaket and Hjelmsøey bank, N
Cape bank, N bank and Kildinbank

Synoptic situation at 18 utc
Low 985 hPa 76 N 13 E Mov Ne, EXP 990
hPa at 79 N 27 E by THU 18 utc.
Low 977 hPa 69 N 17 W almost STNR,
EXP 967 hPa by THU 18 utc.

International Convention for the Safety of Life at Sea (SOLAS), 1974

Chapter V , Safety of navigation, Regulation 5 - Meteorological services and warnings

Parties are obliged to provide meteorological information and warnings to shipping:



- **Warning ships** of gales, storms and tropical cyclones
- Issuing, at least twice daily, **weather information suitable for shipping** containing data, analyses, warnings and forecasts of weather, waves and ice
- **Publications for the efficient conduct of meteorological** work at sea and daily weather charts for the information of departing ships.
- Ships to be equipped with **marine meteorological instruments** and to take, record and transmit meteorological observations at standard times for surface synoptic observations
- In case of a **tropical cyclone**, ships to take and transmit their observations at high intervals
- Masters to inform ships in the vicinity and also shore stations whenever they experience a **wind speed of 50 knots or more**
- A **uniform procedure for international meteorological services already** specified and conformity with to the technical regulations and recommendations made by WMO.
- Forecasts, warnings, synoptic and other meteorological data intended for ships to be issued and disseminated by the NMS in the best position to serve various coastal and high seas areas, as defined by the **WMO System for the Preparation and Dissemination of Meteorological Forecasts and Warnings for the High Seas under the Global Maritime Distress and Safety System (GMDSS)**