

International Symposium on Extreme Maritime Weather: Towards Safety of Life at Sea and a Sustainable Blue Economy

Jointly Organized by IMO and WMO
From 23rd to 25th October 2019

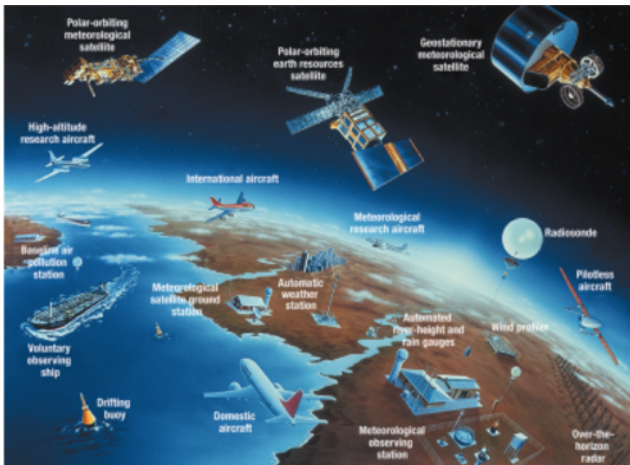
Captain Tero Jokilehto
PAME I-2020
Oslo, Norway
5th February 2020



WMO OMM

World Meteorological Organization
Organisation météorologique mondiale

World Meteorological Organization

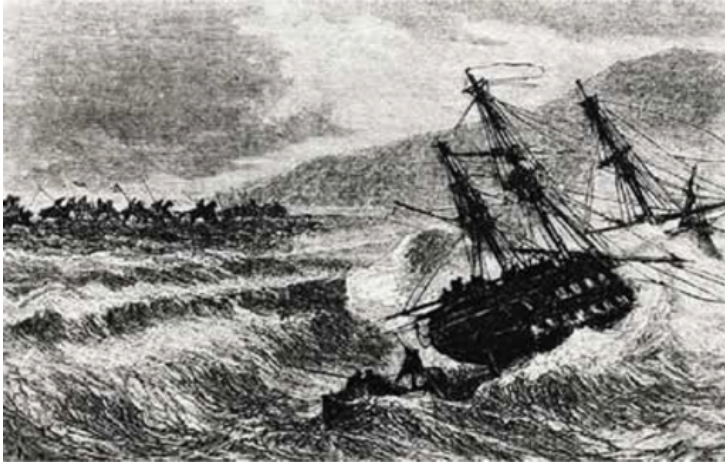


- UN Specialized Agency on weather, climate, water and environment
- 191 Members, HQ in Geneva
- 2nd oldest UN Agency, 1873-
- Coordinates work of ~200 000 national experts from meteorological & hydrological services and academia
- Co-Founder and host agency of IPCC (1st World Climate Conference, 1979)
- 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

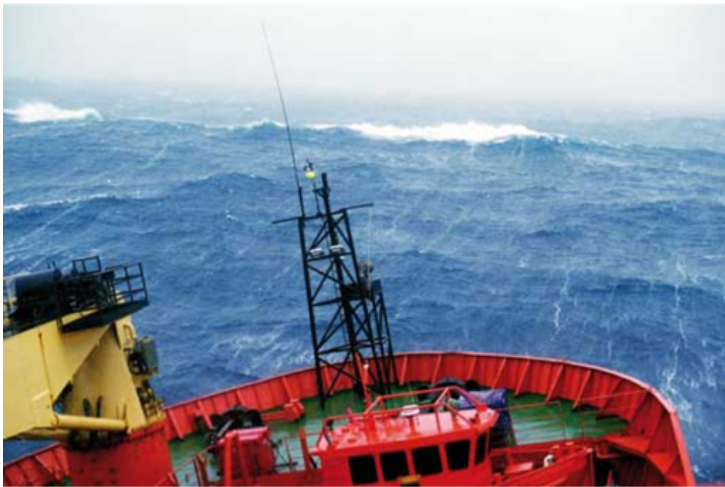
- United Nations Specialized Agency
- IMO Convention: adopted in 1948, entered into force in 1958, formally known as Inter-Governmental Maritime Consultative Organization - IMCO
- Headquarters in London since 1958
- 174 Member States, 3 Associate Members (also observed by IGOs and NGOs)
- Annual budget £30+ million
- Secretariat – 250 staff,
more than 50 nationalities



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

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

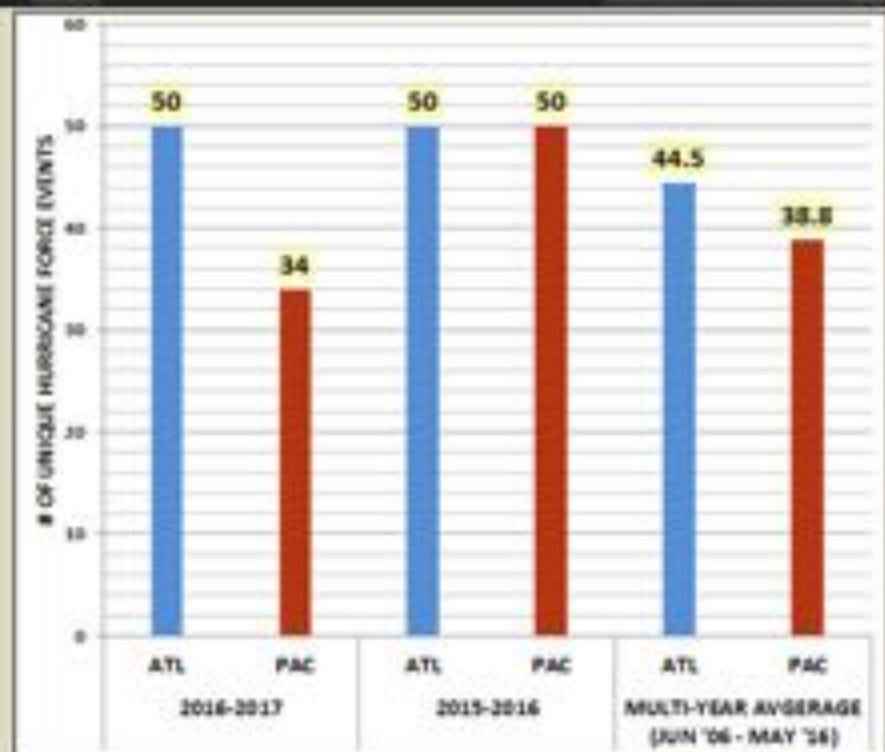
159. *Also recognizes* the importance of navigational warning services based on marine meteorological data for the safety of ships and lives at sea and the optimization of navigation routes, and notes the collaboration between the World Meteorological Organization and the International Maritime Organization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

DISTRIBUTION OF HURRICANE FORCE WIND EVENTS, JUNE 2016 – MAY 2017



TOP: heat map of total distribution of hurricane force low centers and hurricane force wind events (i.e., Greenland tip jets with no associated low center) for the winter season 2016/17.

RIGHT: bar chart comparison of hurricane force wind events between each ocean basin for the previous two winter seasons and multi-year average.



































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The container ship YM Efficiency arrives at Port Botany in Sydney, Australia, June 6, 2018. AAP/David Moir/via REUTERS

DEVELOPMENT OF MARINE IMPACT BASE FORECAST

NO	Type of Platform	RISK LEVEL			
		VERY LOW	LOW	MEDIUM	HIGH
1	Fishing Boat	 < 7 knot	 7 - 10 knot	 10 - 15 knot	 > 15 knot
		 < 0.5 m	 0.5 - 1.0 m	 1.0 - 1.25 m	 > 1.25 m
2	Tug Boat	 < 7 knot	 7 - 10 knot	 10 - 16 knot	 > 16 knot
		 < 0.75 m	 0.75 - 1.0 m	 1.0 - 1.5 m	 > 1.5 m
3	Passengers Ship	 < 11 knot	 11 - 15 knot	 15 - 21 knot	 > 21 knot
		 < 1.25 m	 1.25 - 2.0 m	 2.0 - 2.5 m	 > 2.5 m
4	Cargo Vessel, Cruise Ship	 < 16 knot	 16 - 21 knot	 21 - 27 knot	 > 27 knot
		 < 2.0 m	 2.0 - 2.5 m	 2.5 - 4.0 m	 > 4.0 m

From weather forecasts to impact forecasts

- Focus on the hazard:
 - “Tropical Storm IBA is expected tonight with 45-knot wind speeds.”
- Let’s consider also vulnerability:
 - “TS IBA expected wind speeds may cause damages to smaller vessels sailing along the Southeastern Brazilian coast.”
- Exposure is a key factor to be assessed in partnership with other agencies:
 - “When sailing along the Southeastern Brazilian coast, fishery boats and sailboats may suffer major damages, while 500-50k ton ships are likely to be damaged due to TS IBA expected wind speeds.”

Decision support services in Polar regions

- The operational Met-Ocean services, long-range services in polar regions were described to improve understanding to stakeholders in polar regions. The main challenges are climate change and more ships with different classes into polar regions. The International Ice Charting Working Group (IICWG) is working on issues faced by mariners navigating in ice.
- Recently a survey of mariners was carried out in relation to their satisfaction with ice information and services to understand the user base, interest in access to scalable ice information and insight on serving ships where they go. From the mariner perspective, the ice service from satellites and in situ observations are of same importance because ice is not always detectable by satellite. But ice services should tell mariners what is beyond their field of vision and capabilities in a fast-changing polar environment. Important observations should be submitted by mariners in polar waters, such as wind, waves, ice conditions, icebergs, freezing spray. Local indigenous communities also play a role in validating the ice prediction from models. So far no single authoritative source of data is available for ice climatology. Mariners should seek the best ice data from the national service of the country that is responsible for the particular area of interest.

Symposium - Recommendations

- Closing the Gap
 - Education, Training and awareness between stakeholders
- Data
 - Authorative information needs to be easily accessible/understood
- Communication
 - Communication between key stakeholders (eg providers, users, other stakeholders eg insurance and industry)
 - Improved awareness of the value of met-ocean data
- Application Areas
 - Impact based forecasting
 - Voluntary Observation efforts from ships
 - Polar regions
 - Ports and Harbours require attention in the face of a changing climate
 - Design of vessels

Thank You!



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