WMO/IMO INTERNATIONAL SYMPOSIUM
‘EXTREME MARITIME WEATHER:
TOWARDS SAFETY OF LIFE AT SEA AND
A SUSTAINABLE BLUE ECONOMY’
23 - 25 OCTOBER 2019,
IMO HEADQUARTERS
LONDON (UK)

PROGRAMME
Programme

**Symposium Chair:**
*Thomas J. Cuff, Director, Office of Observations,*
*NOAA National Weather Service, United States; JCOMM Services Chair*

**DAY 1**
*(Wednesday 23.10.2019)*

**9:30 - 10:20 OPENING SESSION**
Welcome / Practical Information (IMO)

Opening Words from
- Hiroyuki Yamada - IMO Secretary-General representative
- Xu Tang - WMO Secretary-General representative
- Ambassador Peter Thomson - United Nations Secretary-General’s Special Envoy for the Ocean (By video)

*Keynote: Towards Safety of Life at Sea and Blue Economy* (Thomas J. Cuff, Symposium Chair)

**10:20 to 11:00 SESSION 1 – IMO/WMO FRAMEWORK FOR THE SAFETY OF LIFE AT SEA**
*(Moderator: Thomas J. Cuff, Director, Office of Observations, NOAA National Weather Service, United States; JCOMM Services Chair)*

- Osamu Marumoto (Technical Officer, Operational Safety and Human Element, Maritime Safety Division, IMO) - SOLAS Convention Associated Guidelines
- Sarah Grimes (Acting Chief, Marine Meteorology and Ocean Affairs, WMO) - WMO and Maritime Safety Services
- Neal Moodie (National Manager, Marine Weather Services, Bureau of Meteorology, Australia; JCOMM WWMIWS-C Chair) - Worldwide Met-Ocean Information and Warning Service (WWMIWS)

**OBJECTIVE:** Providing an overview of regulation framework to safety of life at sea, and met-ocean information/services from IMO and WMO

**EXPECTED OUTCOME:** Audience to have a better understanding of these frameworks from both IMO and WMO sides.

**11:00 - 11:30 Coffee Break Courtesy of Norwegian Meteorological Institute**
11:30 - 12:30 SESSION 2 – EXTREME MARITIME WEATHER - CASE STUDIES (Moderator: Peter Hinchliffe, Chairman of the Nautical Institute Executive Board and former Secretary General, International Chamber of Shipping (ICS))

Panellists:

- Joseph Sienkiewicz (Branch Chief, Ocean Prediction Center, NOAA National Weather Service, United States) - Ship Behaviour Around Extra Tropical Cyclones
- Nelly Florida Riama (Director, Research and Development Center, Indonesian Agency for Meteorology Climatology and Geophysics (BMKG)) - Extreme Weather Impact Across Maritime Continent - Indonesia’s Perspective
- Petty Leung (Director of StormGeo Ltd, Hong Kong, China) - Decision Support Tools and Information Available for Mariners to Mitigate Weather Risks

OBJECTIVE: Case studies will be given to demonstrate insight into impacts of extreme maritime weather in different ocean basins.

EXPECTED OUTCOME: Audience to better understand ‘what is extreme maritime weather’ and its impacts in different regions and on various stakeholders.

12:30 – 14:00 Lunch

14:00 - 15:30 SESSION 3 – EXTREME MARITIME WEATHER - VIEWS FROM PROTECTION, INDEMNITY AND INSURANCE (Moderator: Peter Hinchliffe, Chairman of the Nautical Institute Executive Board and former Secretary General, International Chamber of Shipping (ICS))

Panellists:

- Helen Brohl (Executive Director, United States Committee on the Marine Transportation System) - The Sinking of El Faro and Resilience of Maritime Transport Related to Extreme Weather
- Marius Schønberg (Vice President, Head of Loss Prevention & Risk Assessment, Gard AS) - Weather Risks Seen From an Underwriter’s Point of View
- Sean M. Dalton (CPCU, AMIM, Head of Marine Underwriting NA, Munich Reinsurance America, Inc.) - Insurance Companies and Extreme Maritime Weather, Climate and Risk

OBJECTIVE: An overview will be given of risks and reasons for incidents to ships, cargo environment (e.g. oil spills) created by extreme maritime weather and possible examples by statistics (e.g. costings and increasing claims).

EXPECTED OUTCOME: Discussion on what PI or insurance companies need from improved weather services. Identification of the needs for the shipping industry (and its regulator) for ships to avoid further incidents in a changing climate.
15:30 – 16:00 Tea Break

16:00 – 17:00 SESSION 4 – EXTREME MARITIME WEATHER – STAKEHOLDERS PERSPECTIVES (Moderator: Nick Ashton, Key Account Manager, United Kingdom Met Office; JCOMM Services Vice-Chair)

Panellists:

- Morgan McManus (State University of New York Maritime College at Fort Schuyler, NY) - Insight Into the Aspects of Seagoing and Operational Challenges
- Andrew Colenutt (Head of Hydrography & Meteorology, United Kingdom Maritime and Coastguard Agency) - Marine Autonomous Surface Shipping: UK developments
- Don Cockrill (Secretary General of the United Kingdom Maritime Pilots Association; IMPA representative to PIANC) - The Effects on Port Pilotage of Extreme Weather Events and Other Climate Change Associated Factors

OBJECTIVE: To provide insights into extreme maritime weather impacts on operational aspects of sea-going vessels, autonomous vehicles and the mariner community with case studies from varying regions.

EXPECTED OUTCOME: Better understanding of the operational impacts of extreme maritime weather.

17:00 – 17:30 Summary of the Day 1 (Symposium Chair)

18:00 – 20:00 Reception hosted by WMO and IMO
DAY 2
(Thursday 24.10.2019)

9:30 - 10:00 SESSION 5 – IMPACT, VALUE AND OPPORTUNITIES OF THE VOLUNTARY OBSERVATION SHIPS AND RELATED PROGRAMS - INTERACTIVE SESSION

- Emma Steventon (Surface Marine Networks Manager, United Kingdom MetOffice; Ship Observations Team (SOT)) - The Voluntary Observing Ships (VOS) Program Status
- Mathieu Belbéoch (Lead, JCOMMOPS (IOC/WMO)) - Cooperation With the Shipping Industry: Opportunities and Challenges in the Global Ocean Observing System (GOOS) Context

OBJECTIVE: Presentation of the ship observations programme and its value to met-ocean services.

EXPECTED OUTCOME: Improved awareness of the need for voluntary observations from ships and other platforms at sea – hopefully increasing stakeholder involvement and identifying volunteers for pilots.

10:00 - 11:00 SESSION 6 – WEATHER AND OCEAN DATA TO IMPROVE FORECASTS AT SEA (Moderator: Thomas J. Cuff, Director, Office of Observations, NOAA National Weather Service, United States; JCOMM Services Chair)

Panellists:
- Pierre Bahurel (Director General, Mercator Ocean International; JCOMM ETOOFS Chair) - How Ocean Forecasting Provides Core Operational Information on the Marine Environment
- Enrique Alvarez Fanjul (Head of Physical Oceanography Department, Ports of Spain; JCOMM ETOOFS Vice-Chair) - How Core Information From Ocean Forecasting is Successfully Tailored to Serve Port Authorities
- David Pino (Head of Technical Management, Port of Barcelona, Spain) - How the Port of Barcelona Takes Advantage of a Reliable Monitoring and Forecasting of the Ocean State

OBJECTIVE: This session aims to explain to participants how weather and ocean data is used to generate ocean forecasting information, and how this core information is now successfully exploited by some maritime sectors (with examples from Spain).

EXPECTED OUTCOME: Stakeholders to understand better what is available for them to use.

11:00 – 11:30 Coffee Break Courtesy of Mercator Ocean International
11:30 - 12:00 SESSION 7 - ADVANCES IN WEATHER AND OCEAN FORECASTING TO SUPPORT DECISION MAKING - INTERACTIVE SESSION (Moderator: Nick Ashton, Key Account Manager, United Kingdom Met Office; JCOMM Services Vice-Chair)

Panellists:

- Neal Moodie (National Manager, Marine Weather Services, Bureau of Meteorology, Australia; JCOMM WWMIWS-C Chair)
- John Parker (Director, Prediction Services Operations – Marine, Ice and East Division, Meteorological Service of Canada / ECCC; JCOMM WWMIWS-C Vice-Chair)
- Daniel Peixoto de Carvalho (Lieutenant Commander, Navy Hydrographic Center, Brazil; JCOMM WWMIWS-C)

**OBJECTIVE:** Introduce concept of probability-based information to support Maritime Safety Information and marine safety products, and introduce the concept behind the impact-based warning framework.

**EXPECTED OUTCOME:** The session improves our understanding of the use cases that risk-based information would feed into, and gaining further insight into best practice for presenting this information. The session will gain intelligence about using the impact-based warning framework to assess system-related risks to global and local shipping, and identify opportunities for improvement.

12:00 – 13:30 Lunch

13:30 - 14:30 SESSION 8 – ENABLING DIGITAL DELIVERY OF MARITIME SAFETY INFORMATION - E-NAVIGATION AND WEATHER INFORMATION (Moderator: John Parker, Director, Prediction Services Operations – Marine, Ice and East Division, Meteorological Service of Canada / ECCC; JCOMM WWMIWS-C Vice-Chair)

Panellists:

- Javier Yasnikouski (Head, Operational Safety, Maritime Safety Division, IMO) E-Navigation and IMO Developments - definition and harmonization of the format and structure of relevant weather-related maritime services
- Eivind Mong (eNavigation System Analyst, Electronics and Informatics, Integrated Technical Services, Canadian Coast Guard; IHO Chair of Correspondence group for S-124) - Digital Delivery of Information to Ships' Screen (ECDIS)
- Jürgen Holfort (Head of ice service and Baltic sea-level service, German Federal Maritime and Hydrographic Agency (BSH); JCOMM ETSI Vice-Chair) - Standards for Sea Ice
- Joseph Sienkiewicz (Branch Chief, Ocean Prediction Center, NOAA National Weather Service, United States) - Standards for Wind, Wave, and Weather Hazards
OBJECTIVE: To inform stakeholders about efforts for electronic delivery of ice, weather, and hazard data directly to shipboard navigation systems.

EXPECTED OUTCOME: Increased awareness among users and producers of new digital charting standards for weather and ice information.

14:30 - 15:30 SESSION 9 - DECISION SUPPORT FOR SERVICES IN POLAR REGIONS (Moderator: Helge Tangen, Senior Advisor, Development Centre for Weather Forecasting, Norwegian Meteorological Institute; JCOMM WMIWS-C)

Panellists:

- Keld Qvistgaard (Senior Ice Advisor, Greenland Ice Service, Danish Meteorological Institute/Operations; JCOMM ETSI expert) - The Polar Code and What it Means for Navigation and Operational Meteorological Services

- John Parker (Director, Prediction Services Operations – Marine, Ice and East Division, Meteorological Service of Canada / ECCC; JCOMM WWMIWS-C Vice-Chair) - Long-range Ice Services and Seasonal Ice Forecasting

- Thomas J. Cuff (Director, Office of Observations, NOAA National Weather Service, United States; JCOMM Services Chair) - Integrating Met-Ocean and Weather Services for Polar Regions

OBJECTIVE: Describe met-ocean data delivery in polar regions and how met services are working with gaps in weather and ocean data to improve forecasts at sea.

EXPECTED OUTCOME: Improved understanding of the Polar Code, operational services, long-range services available to stakeholders in polar regions.

15:30 – 16:00 Tea Break
16:00 - 17:00 SESSION 10 - VOYAGE ROUTING OPTIMIZATION (Moderator: Nick Nash, President of the Nautical Institute)

Panellists:

- Gavin Roser (Ambassador at Large EU Freight Network) - Key Challenges for Voyage Routing, Lost Time to Freight Networks
- Charles Wyng (Sales Expert, Voyage Solutions, Wärtsilä Voyage) - Sea Traffic Management - Information Sharing Concept & Route Optimization Applications
- Huw Davies (StratumFive Ltd.) - Key Weather Issues Arising from Charter Contracts
- Gianandrea Mannarini (Scientist, Lead of Applications Research Unit, OPA Division, Euro-Mediterranean Centre on Climate Change (CMCC)) - Met-Ocean Routing for Safety of Navigation and IMO’s Decarbonization Ambition.

OBJECTIVE: This session aims to stimulate dialogue on Route Optimization Services (including issues of lost time to companies, potential products that companies can use, plus discussion to learn further about the gaps and needs of the industry.

EXPECTED OUTCOME: Needs of industry articulated. Gaps and areas for improvement identified, in the provision of met-ocean information for stakeholders.

17:00 - 17:30 SUMMARY OF THE DAY 2 (Symposium Chair)

17:30 - 20:00 Reception hosted by Nusrat Ghani MP, Parliamentary Under Secretary at the UK Department for Transport
DAY 3
(Friday 25.10.2019)

9:30 - 10:00 SESSION 11 - DECISION SUPPORT FOR PASSENGER SHIP NAVIGATION (Moderator: Petty Leung, Nautical Institute - Hong Kong Representative)

Panellists:

- Nick Nash (P&O Princess Cruises/Carnival Group (CLIA Member)) - "May the Force Be With You!" Uncontrollable Forces Affecting Cruise Ships
- Thomas Bøggild (Greenland Pilot Service) - Decision Support to the Cruise Industry

OBJECTIVE: This session aims to hear from the cruise shipping industry - their needs for maritime safety information and how decision support services can be improved.

EXPECTED OUTCOME: Needs of industry articulated. Gaps and areas for improvement identified, in the provision of met-ocean information for stakeholders.

10:00 - 11:00 SESSION 12 – DECISION SUPPORT FOR OFFSHORE INDUSTRY (Moderator: Tero Jokilehto, Seconded Expert, Marine Meteorology and Ocean Affairs Division, Weather and Disaster Risk Reduction Services, WMO)

Panellists:

- Jon Upton (Senior Metocean Engineer, Shell U.K. Limited; IOGP) - Met-Ocean Needs and Extreme Maritime Weather Impacts: Global Perspectives From International Oil and Gas Producers
- Jacob Sørenson (Group R&D Area Manager, Marine and Maritime, Danish Hydraulic Institute (DHI)) - Met-Ocean Data Provision and Support Services for Operation and Design of Offshore Energy Development
- Øyvind Breivik (Head, Oceanography and Marine Meteorology, Norwegian Meteorological Institute) - Trends in 20th and 21st Century Extra-Tropical Wind and Wave Climate

OBJECTIVE: This session aims to hear from the offshore industry (eg. oil and gas) - their needs for met-ocean information and how decision support services can be improved.

EXPECTED OUTCOME: Needs of industry articulated. Gaps and areas for improvement are identified in the provision of met-ocean information, for stakeholders.

11:00 – 11:30 Coffee Break Courtesy of the UK Met Office
11:30 - 12:30 SESSION 13 – MARITIME SAFETY AND OTHER CONCERNS  
(Moderator: Sarah Grimes, Acting Chief, Marine Meteorology and Ocean Affairs Division, Weather and Disaster Risk Reduction Services, WMO)

Panellists:

- Håvard Austefjord (Project Manager of the IACS project reviewing Rec. No. 34) - IACS Standardized Wave Data for Ship Design
- Jani Poutiainen (Manager, Finnish Meteorological Institute) Machine Learning in Railway Traffic Impact Forecasting and Views for Marine Applications
- Thomas Bruns (Head of Branch Office Hamburg, Marine-Meteorological Services, Deutscher Wetterdienst (DWD); JCOMM ETDRR expert) Wave Forecasting Support - Challenges and Opportunities

OBJECTIVE: This session aims to hear from various perspectives on maritime safety and other concerns, and how decision support services can be improved.

EXPECTED OUTCOME: Gaps and areas for improvement are identified, in the provision of met-ocean information for stakeholders.

12:30 – 14:00 Lunch

14:00 - 14:45 SESSION 14 – SEARCH AND RESCUE (SAR) AND ENVIRONMENTAL EMERGENCY RESPONSE  
(Moderator: Javier Yasnikouski, Head, Operational Safety, Subdivision for Operational Safety and Human Element, Maritime Safety Division, IMO)

Panellists:

- Nelly Florida Riama (Director, Research and Development Center, Indonesian Agency for Meteorology Climatology and Geophysics (BMKG)) – The Role of National Weather Service on Maritime Search and Rescue – Indonesia’s Case
- Giovanni Coppini (Director, Ocean Predictions and Applications, OceanLab, CMCC; JCOMM ETMEER Chair) - Products, Solutions - SAR and Marine Environmental Emergency Response
- Clément Chazot (Technical Officer, Marine Environment Division, IMO) - Marine Environmental Emergency Response

OBJECTIVE: This session aims to hear from various perspectives on SAR, and preventing and responding to marine environmental emergencies and disasters.

EXPECTED OUTCOME: Gaps and areas for improvement are identified, in the provision of met-ocean information, SAR and marine environmental emergency response services.
14:45 - 15:30 SESSION 15 – OPEN DISCUSSION – GAPS, ACTIONS, NEXT STEPS
(Moderator: Nick Cutmore, Secretary General, International Maritime Pilots Association (IMPA))

OBJECTIVE: This session opens the floor for questions, based on the previous 3 days of discussions, to identify gaps and address these, for example, consideration of what maritime community and stakeholders need, and what the met-ocean community is presently providing.

15:30 - 16:30 SUMMARY OF THE SYMPOSIUM AND CLOSING REMARKS
(Symposium Chair, WMO and IMO)
Meeting information for Delegates

Meeting Hours and Meeting Rooms

- Meetings are usually held from 9.30 a.m. to 5.30 p.m. The coffee, lunch and tea breaks are shown in the programme.
- No food or beverages should be brought into the Main Hall located on the ground floor or the Committee Rooms on the first and second floors.
- The IMO building is a non-smoking area.

Internet Access

- Wireless internet connections are available in all the meeting areas and the Delegates Lounge. The password to connect can be obtained from the Documents Counter on the ground floor and the Conference Desk on the second floor.
- Cabled internet connection is available in the Main Hall on the ground floor and Committee Rooms 9 and 10 on the second floor. Internet connection and power outlets are available on the front of desks and behind the back seats.
- Ethernet cables are available, on loan, from the Conference Desk on the second floor, with a step-by-step user guide to connect to the Internet.

Catering Facilities

- Restaurant facilities are available on the fourth floor for breakfast, tea/coffee and lunch. The Catering Manager, Mrs. F. Sturdy, is available on ext. 4046.
- Sponsored coffee breaks (noted in the programme) are served in the Delegates Lounge on the first floor.
Remote participation

Live Streaming: Is available to those who have registered through the IMO Registration System (please select your option for ‘remote participant’). Contact mmo@wmo.int if you need assistance to register.

Slido.com: Even if you are not in the room physically, you will still be able to pose questions to the speakers during plenary and panel sessions. Just go to https://www.sli.do/ and enter the event code #WMOIMO to access our interactive space.

Social media: Join the conversation and help develop the #SafetyatSea via Twitter(@WMO@IMOHQ) Instagram(@wmo_omm@imo_hq)

WMO and IMO Secretariat Support

WMO: Helena Campos Benitez, Sarah Grimes, Tero Jokilehto, Irene Sanz Zoydo, Xu Tang and Zhichao Wang

IMO: Amedeo Amiti, Nadia Bempong, Chloe Bourjalliat, Nonso Chukwunonye, Osamu Marumoto, Antonio Paoletti, Austin Rerri, Jiajun Shen, Hans Van Der Graaf and Javier Yasnikouski,
Acknowledgement

Programme Planning Committee

Chair: Thomas J. Cuff, Director, Office of Observations, NOAA National Weather Service, United States; JCOMM Services Chair.

Alison Agather, Nick Ashton, Pierre Bahurel, Giovanni Coppini, Jürgen Holfort, Neal Moodie, John Parker, Keld Qvistgaard and Vasily Smolyanitsky.

Sponsorship

WMO and IMO are grateful for the following sponsorship:

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<th>Norwegian Meteorological Institute</th>
<th>Meteorologisk institutt</th>
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<td>UK Department for Transport</td>
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# List of Speakers

**Enrique Álvarez Fanjul**  
Head of Physical Oceanography Department, Ports of Spain  
JCOMM ETOOFS Vice-Chair

**Nick Ashton**  
Key Account Manager, United Kingdom Met Office;  
JCOMM Services Vice-Chair

**Håvard Austefjord**  
Project Manager  
International Association of Classification Societies (IACS)

**Pierre Bahurel**  
Director General, Mercator Ocean International;  
JCOMM ETOOFS Chair

**Mathieu Belbéoch**  
Lead, JCOMMOPS (IOC-UNESCO/WMO)  
Brest, France

**Thomas Bøggild**  
Project & Quality Manager, Greenland Pilot Service

**Øyvind Breivik**  
Head, Oceanography and Marine Meteorology, Norwegian Meteorological Institute
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<td>Captain Training Ship Empire State VI, State University of New York Maritime College</td>
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### Marius Schønberg
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### Joseph Sienkiewicz
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### Emma Steventon
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### Xu Tang
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### Helge Tangen
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Jon Upton
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Marine Environment Division, IMO

Javier Yasnikouski
Head of Operational Safety,
Subdivision for Operational Safety and Human Element,
Maritime Safety Division, IMO
List of Acronyms

**BMKG**: Indonesian Agency for Meteorology Climatology and Geophysics  
**BSH**: German Federal Maritime and Hydrographic Agency  
**CLIA**: Cruise Lines International Association  
**CMCC**: Euro-Mediterranean Centre on Climate Change  
**DHI**: Danish Hydraulic Institute  
**DWD**: Deutscher Wetterdienst, Germany  
**ECC**: Environment and Climate Change Canada  
**ECDIS**: Electronic Chart Display and Information System  
**ETDRR**: Expert Team on Disaster Risk Reduction  
**ETMEER**: Expert Team on Marine Environmental Emergency Response  
**ETOOS**: Expert Team on Operational Ocean Forecasting Systems  
**ETSI**: Expert Team on Sea Ice  
**FMI**: Finnish Meteorological Institute  
**GOOS**: Global Ocean Observing System  
**IACS**: International Association of Classification Societies  
**ICS**: International Chamber of Shipping  
**IHO**: International Hydrographic Organization  
**IMO**: International Maritime Organization  
**IMPA**: International Maritime Pilots Association  
**IOC**: Intergovernmental Oceanographic Commission of UNESCO  
**IOGP**: International Association of Oil & Gas Producers  
**JCOMM**: WMO-IOC Joint Technical Commission for Oceanography and Marine Meteorology  
**JCOMMOPS**: JCOMM in situ Observations Programme Support Centre  
**MSC**: Maritime Safety Committee  
**MSI**: Maritime Safety Information  
**NOAA**: National Oceanic and Atmospheric Administration, United States  
**SAR**: Search And Rescue  
**SOLAS**: International Convention for the Safety of Life at Sea  
**SOT**: Ship Observation Team  
**VOS**: Voluntary Observing Ships  
**WMO**: World Meteorological Organization  
**WWMIWS-C**: Worldwide Met-Ocean Information and Warning Service – Committee
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