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WEATHER CLIMATE WATER
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World Meteorological Organization
Organisation météorologique mondiale
Organización Meteorológica Mundial
Всемирная метеорологическая организация
المنظمة العالمية للأرصاد الجوية
世界气象组织

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Our ref.: 35391/2019/OBS/OSD/Ocean-safe

10 January 2019

Annex: 1 (available in English only)

Subject: Workshop enhancing ocean observations and research, and the free exchange of data, to foster services for the safety of life and property (Ocean-safe), 5-6 February 2019, Geneva, Switzerland

Action required: To nominate an expert to attend

Dear Sir/Madam,

You may recall the Executive Council Recommendation 14 (EC-70) on "Ensuring adequate marine meteorological observations and data coverage for the safety of navigation and the protection of life and property in coastal and offshore areas". Following this recommendation I have the pleasure of informing you that the World Meteorological Organization (WMO) is organizing a workshop in Geneva, Switzerland, from 5 to 6 February 2019. This will be a contribution of WMO to the planning phase (2019–2020) of the United Nations Decade of Ocean Science for Sustainable Development (2021–2030).

One critical outcome of the Workshop will be a set of recommendations to the eighteenth World Meteorological Congress (Cg-18) with relevant standards and a workable list of marine meteorological and oceanographic variables, including from exclusive economic zones, indispensable for the issue of timely and accurate storm warnings for the safety of life at sea and the protection of life and property in coastal and offshore areas. The concept note with the preliminary programme is provided in the Annex.

As a country interested in marine issues, the organizing committee would be grateful if you could nominate an expert to attend the meeting.

For administrative purposes, I would appreciate it if you would kindly notify the WMO Secretariat for the attention of Mr E. Charpentier, Chief, Observing Systems Division (via: acatcheside@wmo.int), as soon as possible, **but not later than 25 January 2019**, whether your expert will be able to attend the meeting.

May I take this opportunity to thank you for your support to marine activities.

Yours sincerely,

(W. Zhang)

for the Secretary-General

To: Permanent Representatives (or Directors of Meteorological or Hydrometeorological Services) of Members of WMO

Ref.: 35391/2019-14 OBS-WMO/OSD

WMO Technical Workshop (draft - 20181219)

Enhancing ocean observations and research, and the free exchange of data, to foster services for the safety of life and property

A contribution to the planning phase (2019–2020) of the United Nations Decade of Ocean Science for Sustainable Development (2021–2030)

(Geneva, 5-6 February 2019)

The safety and wellbeing of people throughout the world and the economic benefits to all nations are at the centre of the WMO mandate and action. To address meteorological hazards, strengthen resilience in the face of climate change and variability, and build the scientific knowledge base for sustainable development, sustained oceanographic and marine meteorological (ocean/met.), observations and their free and unrestricted exchange are critical.

While the oceans cover more than 70% of the Earth surface, the natural system is fully coupled between the atmosphere and ocean and the delivery of effective and improved marine and weather services depends on both atmospheric and oceanic information. The growth of seamless forecasting systems means that meteorological services need an increasing amount of quality information about the ocean and the atmosphere above the ocean surface in order to be able to deliver the weather, marine and climate services derived from the use of such prediction systems. Ocean and marine-focused services particularly need both ocean and atmospheric information. Examples of products and services and the required data are provided in table 1.

This workshop is organized by WMO with the support of its technical commissions and co-sponsored programmes¹.

The workshop will consider the evolving requirements for ocean observation and research in support of WMO Application Areas with focus on marine meteorological services, which particularly rely on global and high resolution numerical weather prediction. The following Applications, which also rely on ocean observations will also be addressed: tropical cyclone, storm surge and high impact weather forecasting, sub-seasonal to longer range prediction, climate monitoring, climate modelling, climate impact analysis and climate services. As an example, Observing System Simulation Experiments (OSSEs) and sensitivity analyses could be used to investigate the importance of data collected within EEZs. The workshop may consider proposing a pilot activity in this regard.

To address such requirements, ocean/met observations are made in the framework of WMO initiatives such as the WMO Integrated Global Observing System (WIGOS), the World Weather Watch (WWW), and the Global Atmosphere Watch (GAW). Different collection means are used, such as ships of opportunity, data buoys and installations, profiling floats, remote sensing by satellites, and cabled observatories, to support critical services relying heavily on free and unrestricted exchange of the collected data.

The expected outcome of the workshop will be a set of recommendations with relevant standards and a workable list of marine meteorological and oceanographic variables (see

¹ The Joint WMO-IOC Technical Commission on Oceanography and Marine Meteorology (JCOMM), the Commission for Basic Systems (CBS) and the Commission for Instruments and Methods of Observation (CI MO) and its co-sponsored WMO-IOC-ISC World Climate Research Programme (WCRP), IOC-WMO-UNEP-ISC Global Ocean Observing System (GOOS) and WMO-IOC-UNEP-ISC Global Climate Observing System (GCOS).

note²), including from exclusive economic zones, indispensable for the issue of timely and accurate storm warnings for the safety of life at sea and the protection of life and property in coastal and offshore areas. Two sets of recommendations are foreseen:

- (1) Short term approach with focus on facilitating the making of surface marine meteorological observations in support of safety of life and property at sea;
- (2) Longer term approach, and future collaboration with the IOC of UNESCO with regard to ocean observations requirements, including in coastal regions, in particular in support of Earth System Prediction and climate services.

This outcome will be submitted to the World Meteorological Congress for consideration in the updating of Resolution 9 (Cg-IX) and they will be offered as a contribution to the United Nations Decade of Ocean Science for Sustainable Development and its objectives I (Knowledge of the ocean system), III (Ocean-related hazards) and IV (Cooperation in observation, data and other infrastructure).

The workshop will be organized in conjunction with the 2018 face-to-face meeting of UN-Oceans, the UN interagency coordination mechanism on ocean affairs, which will be hosted by WMO at the Headquarters. It will also entail the demonstration of the role of the WMO-IOC JCOMM *in situ* Observations Programme Support Centre (JCOMMOPS) for the distribution of ocean data.

Participation in the workshop will be by invitation to high-level experts in the fields of operational oceanography and marine meteorology, ocean research, instruments and methods of observation, and the law of the sea, as well as representatives of UN-Oceans members.

Organizing Committee: Chair: Tom Cuff (JCOMM/SCG); Members: Jon Turton (JCOMM/OCG), Erik Andersson (ECMWF), Glenn Nolan (EuroGOOS), Martin Visbeck (WCRP JSC), Johan Stander (JCOMM Co-President), Emma Heslop (IOC of UNESCO), Prof. Tullio Scovazzi.

Table 1: Examples of products and services and required data.

Requirements	Products and services	Required data
Maritime distress	<ul style="list-style-type: none"> • Warnings, bulletins • Maritime Safety Information • Forecasts of <ul style="list-style-type: none"> ◦ Weather (tropical cyclones, storms, wind, precipitation, temperature, snow & frost), ◦ Sea-state (waves, currents) ◦ Sea-ice & Icebergs 	<ul style="list-style-type: none"> • Satellite observations (e.g. wind, sea-ice, sea surface temperature) • In situ observations (atmosphere, cryosphere, ocean)
Reduce risks of pollution		
Emergency response to pollution		
Search and rescue operations		

² The GOOS strategic mapping tool has been developed to help provide an overview of the Global Ocean Observing System components. This visualization of the system shows the links to the Essential Ocean Variables identified by the GOOS Expert Panels, highlighting how they are efficiently measured through the observing networks to contribute to societal benefits in accordance with GOOS mandates: http://www.goosocean.org/index.php?option=com_content&view=article&id=120&Itemid=277

***Fleet management &
ship routing planning***

- *Climate outlook information (future)*
- *Climatological information (history)*

WMO Technical Workshop

Enhancing ocean observations and research, and the free exchange of data, to foster services for the safety of life and property

(Geneva, 5-6 February 2019)

Draft programme (v0.2 29 Nov. 2019)

Tuesday 5 February 2019

9:00 – 9:30	Opening (SG, ASG) Introduction to sessions 1 and 2 (Co-chair A)
9:30 – 10:30	Session 1 (socio-economic benefits): Socio-economic benefits of WMO Applications using marine meteorological and oceanographic observations Lectures (10 min each): <ul style="list-style-type: none">• SDG 14/Future Earth – Martin Visbeck (WCRP, GEOMAR, Germany)• Medium to long range forecasting – Erik Andersson (ECMWF)• Copernicus Marine Service - Karina von Schuckmann or Pierre-Yves Le Traon (Mercator Ocean)• Requirements of maritime transportation, incl. safety – IMO - TBD• Coastal application and other marine meteorological services – Nick Ashton (UK)• Severe weather – DRR – Fred Branski (USA) or Sarah Jones
10:30 – 11:00	Break
11:00 – 12:30	Panel discussion (90 min) – Possible panelists: <ul style="list-style-type: none">• Martin Visbeck (WCRP)• Erik Andersson (ECMWF)• Sarah Jones (DWD) or Oystein Hov (Norway)• Karina von Schuckmann or Pierre-Yves Le Traon (Copernicus Marine Service)• Johan Stander (GFCS)• IMO representative - TBD• Tom Cuff or Fred Branski• John Wilkin Questions for Panel Discussion: <ol style="list-style-type: none">1. How SDG 14 is relevant to protection of life and property at sea ?2. How critical are WMO Applications to protection of life and property at sea ?

12.30 – 13.30	Lunch
13:30 – 14:00	Live demonstration of JCOMMOPS tools
14:00 – 15:30	<p>Session 2 (data needs and gaps): The need for observations, assessed gaps and the evolving capabilities for the collection and distribution of oceanographic and marine meteorological data in support of WMO Application Areas to address safety of life and property at sea</p> <p>Lectures (15 min each):</p> <ul style="list-style-type: none"> • How protection of life and property at sea relies on WMO Application Areas (e.g. NWP) and observations - Nick Ashton (15 min) • Tropical Cyclone forecasting requirements - Daniel Brown (NHC, USA) (15 min)) • WIGOS Framework and outcome of the International Workshop on the Impact of Various Observing Systems on NWP – Erik Andersson (ECMWF) (15 min) - <u>Note</u>: the presentation will bring focus on the need for marine meteorological and ocean observations • Requirements of ocean modelling for ocean observations – OOPC – John Wilkin (USA) (15 min) • Implementation of Ocean Observing Networks and trends with focus on coastal aspects (e.g. innovations, new technology) – Jon Turton (15 min) • Ship Observations Team (SOT) implementation and issues – Henry Kleta (Germany), Voluntary Observing Ship Scheme (VOS) Panel (VOSP) Chair on behalf of SOT (15 min)
15:30 – 16:00	Break
16:00 – 17:30	<p>Session 2 (continued)</p> <p>Lectures (30 min each):</p> <ul style="list-style-type: none"> • Monitoring of Ocean Observing Networks and support for addressing the gaps in particular in coastal regions – Mathieu Belbéoch <p>Panel discussion (60 min) – Possible panelists:</p> <ul style="list-style-type: none"> • Erik Andersson (ECMWF) • John Wilkin (USA) • Tom Cuff (USA) • Jon Turton (OCG vice-Chair) • Mathieu Belbéoch (JCOMMOPS)

- Henry Kelta (VOSP Chair, on behalf of SOT)

Questions for Panel Discussion:

1. What are the most critical applications areas requiring marine meteorological and oceanographic observations to allow WMO to address its mandate to protect life and property, in particular in coastal regions ?
2. What are the most critically needed atmospheric, marine meteorological and ocean observations variables to address the needs of these applications ?
3. What are the emerging required atmospheric, marine meteorological and ocean observations variables to address the needs of these applications ?
4. What are the most critical observational gaps in coastal areas to address the needs of these applications ?
5. What are the main obstacles when it comes to filling these gaps ?

Wednesday 6 February 2019

9:00 – 10:30	<p>Recap of day 1 (30 min)</p> <p>Session 3 (Legal regime and practice): The international regime and the practice for the collection of Ship-based observations and other type of mobile marine meteorological platform data in coastal areas and the role of WMO</p> <p>Lectures (30 min each):</p> <ul style="list-style-type: none"> • Operational activities and marine scientific research under UNCLOS - Ms Gabriele Goettsche-Wanli, Director, UN/DOALOS (<i>confirmed</i>) • Open legal questions on operational meteorological observations in marine waters within national jurisdiction - Tullio Scovazzi • Polar Code requirements - TBD
10:30 – 11:00	Break
11:00 – 12:30	<p>Session 3 (continued)</p> <p>Lectures (30 min each):</p> <ul style="list-style-type: none"> • Recent initiatives in WMO and IOC frameworks • National experience regarding current regime - Germany • TBD
12.30 – 13.30	Lunch

13:30 – 15:30	<p>Panel discussion (120 min)</p> <ul style="list-style-type: none"> • Prof. Fred Soons (Netherlands) (<i>confirmed</i>) • Elie Jarmache (France) (<i>confirmed</i>) • Prof. Tullio Scovazzi (Italy) (<i>confirmed</i>) <p>Questions for Panel discussion</p> <ol style="list-style-type: none"> 1. <i>What is the regime for operational activities, such as meteorological observations, under the Law of the Sea Convention? How can "operational" activities be distinguished from "marine scientific research"?</i> (Gabriele Goettsche-Wanli, Director, UN/DOALOS) 2. <i>A country such as the USA has clearly identified the collection of marine meteorological data and other routine ocean observations - used for monitoring and forecasting of ocean state, natural hazard warnings and weather forecasts, and climate prediction - not to be marine scientific research. What is the position of other countries?</i> (Prof. Fred Soons, Utrecht University) 3. <i>What principles can be used to facilitate the conduct of operational meteorological observations at sea (not aimed to the exploitation of marine resources) with the necessary freedom and timeliness to serve the purpose of the protection of life and property?</i> (Elie Jarmache, Member of the legal and technical commission of the International Seabed Authority and of the scientific council of the Institut du droit économique de la mer, Monaco) 4. <i>The Convention for the Safety of Life at Sea (Chapter 5, Safety of Navigation; Regulation 5, Meteorological services and warnings) requests Contracting Governments undertake to encourage the collection of meteorological data by ships at sea and to arrange for their examination, dissemination and exchange in the manner most suitable for the purpose of aiding navigation (this data includes atmospheric pressure, wind, air temperature, sea surface temperature, wave height and sea ice extent). What is the legal regime of such observations on surface compared to those in the water column?</i> (Prof. Tullio Scovazzi, University of Milan Bicocca) 5. <i>Based on the legal regime and the established practice of States, as well as the opinion formulated by the President of the Third Committee of UNCLOS III, what can be inferred about the legal status of routine meteorological observations at sea, including in exclusive economic zones?</i> (All)
15:30 – 16:00	Break

16:00 – 17:30

Session 4 (Conclusion): Way forward and recommendations of the workshop

Panel Discussion (60 min) – Possible panelists:

- Chairs Sessions 1, 2 and 3
- Jon Turton (UK)
- Oystein Hov (Norway)
- Fred Branski (USA) or CBS/WIGOS rep.
- Legal expert

Guidance for Panel Discussion:

Panel discussion will seek to consolidate the views of the workshop during previous Sessions discussions, in particular to identify a number of principles and technical elements to be brought to WMO Congress. This may include for examples: relevance of WMO activities and applications to address socio-economic benefits, incl. in support of safeguarding life and property at sea; critical variables and observations gaps; how legal framework could be clarified, updated in such a way to facilitate the making of observations in coastal regions in support of WMO applications; etc.

Conclusion (30 min) (Chair Session 1, ASG):

Key principles and technical elements (e.g. list of critical variables to be observed and reported; list of emerging variables increasingly required) for a WMO 18-Cg resolution (or WMO-IOC), which may be transmitted to UN processes (UNGA and/or ICP).
