Report of the Secretary-General on Oceans and the law of the sea

Contribution by the World Meteorological Organization to the implementation of General Assembly Resolution 72/73, "Oceans and the law of the sea"

(September 2017 to mid-June 2018)

Introduction

The World Meteorological Organization (WMO) is the authoritative voice on the state and behaviour of the Earth's atmosphere, its interaction with the oceans, the climate it produces and the resulting distribution of water resources. The ocean provides essential natural resources to human beings and regulates the global climate. WMO contributes to oceans-related issues through the observation and monitoring of the ocean and climate; research on the climate and Earth systems; development and delivery of services for disaster risk reduction, including marine and coastal hazards; provision of science-based information and tools for policymakers and the general public at regional and global levels.[1]

Since the submission of the last report in 2017, WMO has continued providing support to Members for enhancing the delivery of weather, hydrological, climate and related environmental services to vulnerable communities and socioeconomic sectors – especially in small island developing States, coastal megacities, and the polar regions – and for sustaining oceanic and atmospheric observations and research efforts underpinning those services in light of the obligations of relevant conventions and international agreements and the guidance of Agenda 2030 and Sustainable Development Goal 14. The following sections provide details on the accomplishments between September 2017 and May 2018 in relation to the implementation of General Assembly Resolution 72/73, "Oceans and the law of the sea".

VIII. Maritime safety and security and flag State implementation

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

WMO continued providing assistance to Members to improve marine meteorological

[1] See the brochure "Ocean, climate and weather: the role of the World Meteorological Organization" at https://library.wmo.int/opac/doc_num.php?explnum_id=3132.

and coastal area service provision. This is in part fulfilling the WMO requirements under the International Convention for the Safety of Life at Sea (SOLAS), including for the regular provision of meteorological warnings and forecasts to ships at sea, including for the Polar regions and links to the Polar Code. In this regard two technical documents have been updated: *Manual on Marine Meteorological Services* (WMO.No-558) and *Guide to Marine Meteorological Services* (WMO. No-471).

WMO maintains its strong relationship and coordination with the International Maritime Organization (IMO) and the International Hydrographic Organization (IHO) to advance maritime safety services to Members. Collaboration with the Intergovernmental Oceanographic Commission (IOC) of UNESCO was also continued with respect to other activities such as tsunami warning and the Joint WMO-IOC Technical Commission of Oceanography and Marine Meteorology (JCOMM), whose fifth session was held in Geneva (25–29 October 2017).[2]

Polar regions

WMO is calling attention in international forums to the fact that Polar regions are normally data sparse, which has a major effect in forecasting skill across from weather, sub-seasonal to climate time scales, thus hampering reliable decision-making. Such improved data and predictions at the Poles directly affect forecasts at lower latitudes.

Under the umbrella of the Polar Prediction Project (2013–2022) and the Year of Polar Prediction (mid-2017 – mid-2019),[3] WMO is promoting cooperative international research enabling development of improved weather and environmental prediction services for the polar regions, on time scales from hours to seasonal, and aims to enable a significant improvement in environmental prediction capabilities for the Polar regions and beyond, by coordinating a period of intensive observing, modelling, verification, user-engagement and education activities.[4]

In order to improve services to society, e.g. support to maritime transportation and safety, WMO is also promoting the making of cryosphere and weather observations from ships sailing in polar regions.[5]

IX. Marine environment and marine resources

190. Further notes the work of the Intergovernmental Panel on Climate Change, notes with concern its findings on the acidification of the oceans and the substantial

[2] For the full report of JCOMM-5 see https://www.jcomm.info/components/com_oe/oe.php?task=download&id=38243&version=1.0&lang=1&format=1.

[3] See http://www.polarprediction.net/.

[4] The first special observing period, February to March 2018 in the Arctic, featured the contribution of several countries with several additional radio sounds launched in the Arctic. The second Arctic special observing period, July to September, will see also the deployment of several sea-ice buoys from the Russian sector. On longer time scales the WMO/IOC-UNESCO/ICSU World Climate Research Programme carries out a number of activities in the polar oceans, including its Polar Climate Predictability Initiative (closely linked to the Polar Prediction Project) and its Climate and Cryosphere (CliC) (see www.climate-cryosphere.org) core project.

[5] In particular, the WMO Executive Council Panel of Experts on Polar and High-mountain Observations, Research and Services (EC-PHORS), at its 7th meeting (Ushuaia, March 2017) requested its Observations Task Team to collaborate with IMO to effect changes in Polar Code to make cryosphere and weather observations mandatory.

risks to marine ecosystems, especially polar ecosystems, coral reefs, plankton and other organisms which have a calcareous exoskeleton, or a shell, like crustaceans, and the potentially detrimental consequences for fisheries and livelihoods, as well as the findings of the World Meteorological Organization contained in its annual Greenhouse Gas Bulletin, and notes its decision to foster collaboration with organizations and institutions that address the carbon budget of the ocean[6], and in this regard encourages States and competent international organizations and other relevant institutions, individually and in cooperation, to urgently pursue further research on ocean acidification […];

Greenhouse gases

WMO released its *Greenhouse Gas Bulletin 2016*[7] in October 2017. The latest analysis of observations from the WMO Global Atmosphere Watch (GAW) network shows that globally averaged concentrations calculated from this in situ network for carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O) reached new highs in 2016, with CO2 at 403.3 ± 0.1 ppm, CH4 at 1 853 ± 2 ppb and N2O at 28.9 ± 0.1 ppb, respectively 145%, 257% and 122% of pre-industrial (before 1750) levels.

Over the last ~800 000 years, pre-industrial atmospheric CO2 content remained below 280 ppm across glacial and interglacial cycles. From the most-recent high resolution reconstructions from ice cores, it is possible to observe that changes in CO2 have never been as fast as in the past 150 years.[8] Atmospheric CO2 reached 145% of the pre-industrial level in 2016, primarily because of emissions from combustion of fossil fuels and from cement production,[9] deforestation and other land-use change (1.0 ± 0.5 PgC average for 2006–2015). The record increase in the annual mean from 2015 to 2016 (3.3 ppm) is larger than the previous record increase from 2012 to 2013 and 50% above the average growth rate for the past decade (~2.2 ppm yr−1). The higher growth rate in 2016 and 2015, in comparison with previous years, is due, in part, to the increased natural emissions of CO2 related to the most-recent El Niño event. The steady increase in greenhouse gases concentrations in the atmosphere over the observation period from 1970 until present is consistent with the observed increase of global average temperatures in the same period with a record measured in 2016, as reported in the WMO *Statement on the state of the global climate*.

State of the climate

WMO released its *Statement on the state of the global climate in 2017*.[10] The *Statement* confirmed that 2017 was one of the three warmest years on record and the warmest not influenced by an El Niño event. It also examined other long-term indicators of climate change such as increasing CO2 concentrations, sea level rise, shrinking sea ice, ocean heat and ocean acidification.

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[6] Resolution 46 (Cg-17).
[7] See https://library.wmo.int/opac/doc_num.php?explnum_id=4022.
[8] Geological records show that the current levels of CO2 correspond to an "equilibrium" climate last observed in the mid-Pliocene (3–5 million years ago), a climate that was 2–3 °C warmer, where the Greenland and West Antarctic ice sheets melted and even some of the East Antarctic ice was lost, leading to sea levels that were 10–20 m higher than those today.
[9] The total sum of CO2 emissions was 9.9 ± 0.5 PgC in 2015 as assessed by the Global Carbon Project. See http://globalcarbonbudget2016.org/.
[10] See https://library.wmo.int/opac/doc_num.php?explnum_id=4453 (March 2018). A provisional release was presented at UNFCCC/COP23 (Bonn, 6–17 November 2017).

Global mean temperatures in 2017 were about 1.1 °C above pre-industrial temperatures.[11] Despite the cooling effect of La Niña, 2018 January-April global temperature broke records of all previous La Niña years and even the strong El Niño 1998, 20 years ago. Currently 2018 ties closely with 2010 which was a moderate El-Niño year and is amongst the five warmest years with all years included.

Global sea surface temperatures in 2017 were somewhat below the levels of 2015 and 2016, but still ranked as the third warmest on record. Ocean heat content – a measure of the heat in the oceans through their upper layers down to 2 000 meters – reached new record highs in 2017.

The *Statement* indicated that the magnitude of almost all of individual components of sea level rise has increased in recent years, in particular melting of the polar ice sheets, mostly in Greenland and to a lesser extent Antarctica. The April average Arctic sea ice extent was the second smallest (after 2016) in 39 years.

For the second successive year, above-average sea surface temperatures off the east coast of Australia resulted in significant coral bleaching in the Great Barrier Reef.

The *Statement* contains a special section on ocean acidification from the IOC of UNESCO.[12]

As one of the sponsors of GESAMP (Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection), WMO supported the organization and hosted in Geneva the 44th Session of GESAMP and a related side event on connection between climate change and the oceans in September 2017.

In partnership with academic institutions, WMO developed and submitted to Prince Albert Foundation a proposal related to coordinated observations between atmospheric and ocean greenhouse gas communities.

> *207. Notes with concern the severe impacts on coastal communities of extreme weather events, such as tropical cyclones and associated storm surges, and encourages cooperative actions by relevant United Nations bodies and organizations, including the World Meteorological Organization, to assist States in improving forecasting of such events and its application in multi-hazard early warning systems and risk management;*

<u>Tropical cyclones and coastal inundation</u>

Globally, the tropical cyclone season in 2017 saw the numbers of both named hurricanes and major hurricanes (category 3 and above) in North Atlantic doubling compared to long-term average. In other regions, socioeconomic consequences caused by tropical cyclones were also colossal; however, casualties were very low. The achievements can be attributed to well-established regional coordination mechanisms for tropical cyclone forecasting and warnings that enabled Members to

[11] The five-year average 2013–2017 global temperature is the highest five-year average on record. The world's nine warmest years have all occurred since 2005, and the five warmest since 2010.
[12] The Global Climate Observing System (GCOS) has identified ocean acidification as one of 7 global climate indicators, to assist in communicating the rounded picture of our changing climate. The Global Climate Indicators form the basis of the WMO Statement on the state of the global climate. In addition, Ocean Ecosystem Variables, Plankton and Marine Habitat Properties (including Coral Reefs) have been identified as Essential Climate Variables.

receive reliable and timely forecasting information based on impacts and in multi-hazard approach.

WMO continued strengthening regional coordination mechanisms through the organization and conduct of sessions of regional tropical cyclone committees.[13] Development of impact-based products is conducted under the initiative of the Regional Specialized Meteorological Centres (RSMCs) in collaboration with Members with experience in impact-based tropical cyclone forecast and warning services. RSMC Miami issued its first operational coastal inundation map associated with storm surge for the continental United States in 2017. It is planned to extend this product to other Members and regions.[14]

Information was provided to the UNSG concerning the disastrous hurricane season in the Caribbean and its possible linkages with global climate change together with suggestions for UN system actions to mitigate loss and damages from such severe hurricanes.

The Severe Weather Forecasting Demonstration Project (SWFDP)[15] aims to strengthen capacities to deliver improved forecasts and warnings of severe weather. With its expansion to West Africa and Eastern Caribbean in 2017, the number of regional subprojects has grown to eight with involvement of over 75 developing countries and SIDS, including LDCs in basically all Regions of WMO. Interest in other regions has been signaled.

WMO continued the implementation of the Coastal Inundation Forecasting Demonstration Project (CIFDP),[16] which provides a good example of how a Multi-hazard Early Warning System (MHEWS) can save lives. The project seeks to demonstrate how an integrated system can address all sources of coastal inundation, from storms to sea surges to cresting rivers. Three sub-projects are being implemented in the Caribbean, Fiji and Indonesia. The project in Bangladesh was completed.

Alerting systems

To support the implementation of target (g) of the Sendai Framework for Disaster Risk Reduction 2015-2030, namely to "substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030", WMO adopted the vision of a Global Multi-hazard Alert System (GMAS),[17] as the central aggregator, disseminator and resource for authoritative warnings and information related to high-impact weather, water, ocean and climate events. The system aims to enable easy and global availability and access to authoritative information and provision of expert advice to WMO Members as well as

[13] Four sessions were organized during the intersessional period. Africa: 22nd Tropical Cyclone Committee (Seychelles, September 2017); Asia: 44th WMO/ESCAP Panel on Tropical Cyclones (Bahrein, September 2017); 50th Typhoon Committee (Viet Nam, March 2018); North America, Central America and the Caribbean: 40th Hurricane Committee (France, April 2018).
[14] In addition, workshops and attachment trainings were organized in the five tropical cyclone regional bodies to improve tropical cyclone forecaster's skills and competencies for their forecasting and communication to the media and emergency managers. Competency standards at regional level were established in each of the five regional tropical cyclone bodies. Tropical cyclone forecaster competencies at global level will be further developed and agreed upon by consolidating those at regional level.
[15] See http://www.wmo.int/pages/prog/www/swfdp/.
[16] See https://www.jcomm.info/index.php?option=com_content&view=article&id=167.
[17] Decision 3 (EC-69).

to the United Nations and other humanitarian agencies to respond to their immediate needs and requests in anticipation of, during or after hydrometeorological hazard situations. GMAS will use standards such as the Common Alerting Protocol (CAP) and will comprise of existing and future regional warning mechanisms including the World Weather Information Service (WWIS),[18] the Severe Weather Information Centre (SWIC),[19] the MeteoAlarm system of EUMETNET, the MeteoAlert system of Roshydromet, and others, building on the alert hub technology.[20]

XI. Marine science

288. Stresses the importance of increasing the scientific understanding of the oceans-atmosphere interface, including through participation in ocean observing programmes and geographic information systems, such as the Global Ocean Observing System, sponsored by the Intergovernmental Oceanographic Commission, the United Nations Environment Programme, the World Meteorological Organization and the International Council for Science, particularly considering their role in monitoring and forecasting climate change and variability and in the establishment and operation of tsunami warning systems;

Marine observations and data play a critical role for optimizing the ocean input to improve forecasting and early warnings on sub-seasonal to seasonal scales based on climate drivers operating on intra-seasonal to interannual time scales (e.g., Madden-Julian Oscillation, El Niño/Southern Oscillation (ENSO) etc.). Improved modelling of the ocean's surface and sub-surface dynamics and effective coupling with the atmospheric models provide important benefits to the skill of atmospheric seasonal forecasts, and information for monitoring of impacts on ecological systems.

Observing systems

The Global Climate Observing System (GCOS)[21] has made progress in several areas, in particular through the delivery of the latest version of the report describing GCOS Implementation Needs.[22] A list of seven global climate indicators has been agreed and promoted to be used to communicate to the widest community the scope and rate of changes to the climate: global surface temperature, ocean heat, atmosphere carbon dioxide, sea level, ocean acidification, sea ice extent in the Arctic and Antarctic and glacier change.[23]

GCOS and Global Ocean Observing System Ocean (GOOS) are taking a strong role in organizing the 3rd decadal ocean observing conference, OceanObs'19, to shape priorities for sustained observing for the next decade.[24] They are also establishing a

[18] See http://worldweather.wmo.int/en/home.html.
[19] See http://severe.worldweather.org/.
[20] WMO is also working on the standardized characterization of weather, water, climate, space weather and other related environmental hazard and risk information and on the development of identifiers for systematically cataloguing extreme and high-impact weather, water and climate events.
[21] Co-sponsored by WMO, IOC, the International Council for Science (ICSU) and the United Nations Environment Programme (UN Environment).
[22] See https://bit.ly/2sjqYHf.
[23] GOOS is now finalizing its Strategy for 2030 in the view to have it adopted in mid-2018. Strategy includes 11 Strategic Objectives in the following areas: (a) engagement and impact, (b) integration and delivery, and (c) building for the future.
[24] See www.oceanobs19.net.

review of the observing system for tracking ocean heat and freshwater content, a forward strategy for air sea fluxes observations, embracing new technologies; and a project to guide the development of sustained observing systems for boundary currents and their interaction with the shelf.[25]

WMO is also promoting facilitating the making of marine meteorological observations from within exclusive economic zones for operational meteorology purposes and in support of safety of life at sea.[26]

The WMO-IOC JCOMM *in situ* Observing Platform Support Centre (JCOMMOPS),[27] the focal point for the coordination of the in situ ocean observing systems defined by JCOMM, continued to assist in the implementation and deployment of the observing networks; establishing, maintaining and verifying mechanisms for the timely exchange of data and metadata, including the facilitation of quality control and archival functions; and developing the consistent set of tools needed to monitor the status of the observing system and data and metadata distribution, so as to identify action areas and improve the overall effectiveness and development of the system.

El Niño/La Niña

WMO released its latest El Niño/La Niña Update on 14 June 2018,[28] with estimated probabilities for the third quarter of 2018. Sea surface temperatures in the east-central tropical Pacific Ocean as well as most of the overlying atmosphere indicators suggest that ENSO-neutral conditions are prevailing. Most climate models indicate continuation of neutral conditions into the third quarter of 2018. While there is a small chance of El Niño development, re-emergence of La Niña can be practically ruled out. Many models further indicate this period to be marked by a gradual warming of the tropical Pacific, eventually reaching possible weak El Niño level by the fourth quarter of the year. However, these predictions are subject to a high level of uncertainty characteristic of long-lead forecasts made at this time of the year.

Climate services in the Arctic

Substantial progress has been made in strengthening climate services in the Arctic. A new Pan-Arctic Climate Outlook Forum (PARCOF) has been launched, which met for the first time in Ottawa, Canada, on 15 and 16 May 2018.[29] The Forum provided seasonal outlook for the forthcoming summer ice-breakup season, in support of climate risk management and climate change adaptation and inform policy and decision-making in climate-sensitive sectors operating in the Arctic environment. The Outlook predicts that average surface temperatures will continue to be above average for June, July and August, while the sea-ice conditions will be below normal for most

[25] In addition, OOPC is strengthening its relationship with the ocean forecasting programme OceanPredict (GODAE OceanView), noting the developments in Earth system approaches and seamless prediction systems, including coupled numerical weather prediction, will place new demands on the ocean observing system.
[26] A draft 2019 Congress Resolution in this regard is expected to be recommended by the Executive Council in June 2018.
[27] See http://www.jcommops.org/board.
[28] See http://www.wmo.int/pages/prog/wcp/wcasp/enso_update_latest.html.
[29] The meeting was attended by representatives from Arctic Council member countries, including experts from National Meteorological and Hydrological Services, major stakeholders and user groups. PARCOF-1 placed a special focus on Arctic commercial shipping users (tourism, re-supply, resource extraction and fishing) and circumpolar indigenous organizations.

of the Arctic. Further, a new Arctic Regional Climate Centre Network (ArcRCC-Network)[30] launched its demonstration phase during PARCOF-1 to seek WMO designation. ArcRCC-Network also coordinates the PARCOF sessions on a regular basis.[31]

Research and modelling

The WMO/IOC-UNESCO/ICSU World Climate Research Programme (WCRP) carries out research and modelling activities world-wide. For example, its Climate and Ocean, Variability, Predictability and Change (CLIVAR)[32] core project focuses on a range of ocean-climate related activities, from the study of the polar oceans to the ocean's role in the monsoon rains.

The Regional Sea Level Changes and Coastal Impacts Conference (New York City, USA, July 2017),[33] co-organized by the World Climate Research Programme (WCRP) and IOC, assessed the state-of-the-art on regional sea level research that will be an important input to the next IPCC assessment. A major outcome from the conference included an evaluation of the current state of sea level science, an outline of future research requirements for improving our understanding of sea level rise and variability and a description of the observational requirements (both experimental and sustained systematic observations).[34]

The 6th phase of WCRP's Coupled Model Intercomparison Project (CMIP6) continued to move forward, although concerns are raised on the availability of resources to meet the timeline to provide the research and modelling basis for IPCC's 6th Assessment Report. Scientists from the Scenario Model Intercomparison Project of CMIP 6 have recently published information describing low emission scenarios (RCP 1.9).[35]

291. Urges States to take necessary action and to cooperate in relevant organizations, including the Food and Agriculture Organization of the United Nations, the Intergovernmental Oceanographic Commission and the World Meteorological Organization, to address damage to ocean data buoys deployed and operated in accordance with international law, including through education and outreach about the importance and purpose of these buoys and by strengthening these buoys against such damage and increasing reporting of such damage;

Data buoy vandalism

JCOMM-5 adopted a recommendation on Education and outreach strategy for data

[30] See https://arctic-rcc.org/.
[31] WMO co-sponsored PARCOF-1 along with a meeting of the node leads of ArcRCC-Network through the funds provided by Environment and Climate Change Canada (ECCC) for a new project entitled "Polar Observations, Predictions and Climate Services".
[32] See www.clivar.org.
[33] See www.sealevel2017.org/.
[34] Further synthesis of the discussion will: (1) identify the key factors contributing to past, present and future regional sea level rise and variability;(2) organize a systematic attack on the error budget of these factors; (3) Identify stakeholder needs for sea-level information for coastal planning and management purposes; and (4) define the requirements for new and augmented research, technical development and observations consistent with the above.
[35] All information about CMIP6 coordination and about each of the twenty-one endorsed research activities exists in full open access. The expected cumulative output of CMIP6, which the community hopes will not exceed ten petabytes, stimulates a parallel planning effort to handle, distribute and systematically evaluate that vast information stream.

buoy vandalism, endorsing the Draft Strategy to Reduce Damage to Ocean Data Buoys from Vandalism provided by the Data Buoy Cooperation Panel (DBCP) (DBCP Technical Document No. 58).[36] This recommends the WMO Executive Council and the IOC Assembly to adopt the draft Strategy; requests the DBCP to continue to seek further input from relevant national and regional organizations to promote the strategy and raise awareness about the issue of data buoy vandalism and its impacts on forecasting climate, weather, and tsunamis; and urges Members to actively engage, support and collaborate in the efforts of the DBCP and its Working Group on Data Buoy Vandalism to collect existing education and outreach materials related to national or regional mitigation of data buoy vandalism efforts.

292. Decides to proclaim the United Nations Decade of Ocean Science for Sustainable Development for the 10-year period beginning on 1 January 2021, within existing structures and available resources, and calls upon the Intergovernmental Oceanographic Commission to prepare an implementation plan for the Decade in consultation with Member States, specialized agencies, funds, programmes and bodies of the United Nations, as well as other intergovernmental organizations, non - governmental organizations and relevant stakeholders;

Decade of Ocean Science for Sustainable Development

At the 17th meeting of UN-Oceans, WMO expressed its support to the idea of the Decade and confirmed its commitment to contribute to the goals related to ocean knowledge, ocean-related hazards and ocean observation.

It also presented an Ocean Position Paper (*annexed to this report*) as its initial reflection on its priorities in weather services for maritime safety and coastal protection, sub-seasonal to seasonal forecasting and long-term predictions. The paper builds on the WMO contribution to the Ocean Conference 2017, where it presented four voluntary commitments (Weather and climate services for African, Caribbean and Pacific SIDS;[37] Responding to El Niño: improving international coordination for improved early warning;[38] The Year of Polar Prediction;[39] International Network of Multi-Hazard Early Warning System and Global Multi-hazard Alert System[40] – updates are provided on the website of the Ocean Conference).

WMO further proposed an intensified period (4 years) of ocean observations to support research and marine services, offered to co-lead activities related to the goal on ocean-related hazards and host a technical event as a contribution to the Decade.

XII. Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects

326. Recalls its invitation, in paragraph 313 of resolution 71/257, to the Intergovernmental Oceanographic Commission, the United Nations Environment Programme, the International Maritime Organization, the Food and Agriculture Organization of the United Nations, the World Meteorological Organization and

[36] See http://www.jcomm.info/DBCP-TD-58.
[37] See https://oceanconference.un.org/commitments/?id=15752.
[38] See https://oceanconference.un.org/commitments/?id=15659.
[39] See https://oceanconference.un.org/commitments/?id=14082.
[40] See https://oceanconference.un.org/commitments/?id=23965.

relevant United Nations system organizations, bodies, funds and programmes, as appropriate, to assist in the implementation of the second cycle of the Regular Process with regard to the following activities: awareness-raising, the identification of experts for the Pool of Experts, technical and scientific support for the Bureau and the Group of Experts, hosting workshops and meetings of the writing teams, capacity-building and the scoping process for the assessment;

As requested by the Resolution, on 19 March 2018 WMO recommended for consideration by the Ad Hoc Working Group of the Whole on the Regular Process ten experts for the Pool of Experts with expertise in coastal protection and land reclamation, physical oceanography, maritime disaster response, maritime safety and coastal-zone planning and management. At the moment of writing (15 June 2018) three experts have been confirmed by the respective Member States.

XV. Coordination and cooperation

Reform of WMO constituent bodies

Upon request of the seventeenth World Meteorological Congress (2015), the WMO Executive Council is undertaking a review of the structures and functioning of its constituent bodies with a view of submitting a proposal for adoption by the eighteenth Congress (2019). Among the proposals under consideration by the 70th Executive Council (20-29 June 2018) is that of reorganizing WMO scientific and technical bodies[41] to better support the long-term goals and strategic objectives of its Strategic Plan 2020-2023[42], adopting an Earth system approach and focusing on the value chain from observations and research to services and related capacity building in weather, climate and hydrology. To better support their relationship WMO is also developing a framework agreement with IOC (to be signed in 2019) covering the whole breadth of their cooperation and providing guidance to their collaborative activities.

WMO received an observer status in the Arctic Council (tenth Arctic Council Ministerial Meeting, Fairbanks, 11 May 2017), and has played an active role in the Arctic Council focal areas of meteorology and climate.

WMO supports and is fully engaged in marine-related interagency mechanisms and offered to host the next in-person UN-Oceans meeting in Geneva (tentatively in March 2019).

Annex

Position paper "The ocean and WMO: ocean issues, opportunities and priorities that contribute to the WMO Strategic Plan" (EC-70/INF. 12.3)

[41] See http://meetings.wmo.int/EC-70/_layouts/15/WopiFrame.aspx?sourcedoc=/EC-70/English/1.%20DRAFTS%20FOR%20DISCUSSION/EC-70-d16-3(4)-GOVERNANCE-REVIEW-TCs-draft1_en.docx&action=default.

[42] See http://meetings.wmo.int/EC-70/_layouts/15/WopiFrame.aspx?sourcedoc=/EC-70/English/1.%20DRAFTS%20FOR%20DISCUSSION/EC-70-d16-2(1)-WMO-STRATEGIC-PLAN-2020-2023-draft1_en.docx&action=default.