Contribution of the World Meteorological Organization to the Twenty-Second meeting of the United Nations Open-ended Informal Consultative Process on Oceans and Law of the Sea, on the topic of Ocean Observing

Sustained oceanographic and marine meteorological observations and their free and unrestricted exchange are critical to mitigating the impacts of meteorological hazards, strengthening resilience in the face of climate change and variability, and building the scientific knowledge base for sustainable development. WMO continues to increase the coverage and resilience of global observing systems through implementation of the WMO Integrated Global Observing System (WIGOS) and WMO Information System (WIS). An important element is the incorporation and integration and of partner observing networks. Through key co-sponsorship initiatives, the WMO also contributes to global frameworks for climate and ocean observations, monitoring and research.

WMO is a co-sponsor of the Global Ocean Observing System (GOOS) along with the Intergovernmental Oceanographic Commission UNESCO-IOC, UN Environment (UNEP) and International Science Council (ISC). GOOS coordinates observations around the global ocean for three critical themes: climate, operational services, and marine ecosystem health. WMO, through the joint WMO-IOC OceanOPS Office, contributes to GOOS efforts to make ocean data available for all kinds of users through data and metadata standards and data discoverability and accessibility. WMO, together with IOC, plays a critical role in supporting coordinated efforts of various data providers, enhancing their collaboration. The annual status of the ocean observing system since 2016 has been published by WMO-IOC OceanOps, through Report Cards, available at https://www.ocean-ops.org/reportcard2021. The status of the international coordinated efforts in ocean observation is documented in the WMO bulletin in 2021 at; https://public.wmo.int/en/resources/bulletin/global-ocean-observing-system-oceans-of-data-earth-system-predictions

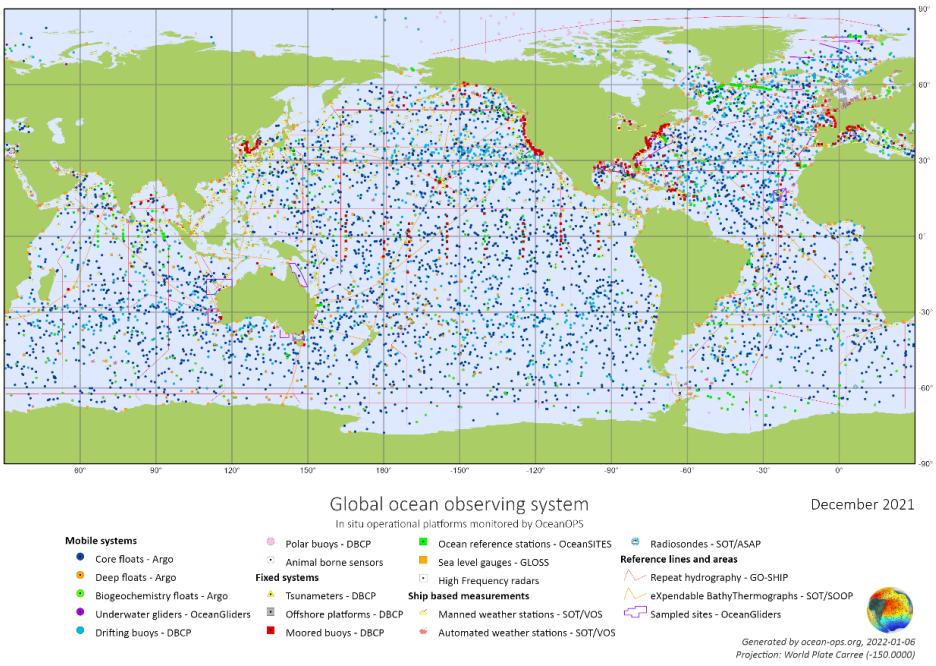

Figure 1. In situ operational platforms monitored by OceanOPS

WMO co-sponsors and hosts several relevant programmes which include components related to ocean observations and research, namely the Global Climate Observing System (GCOS), the World Research Climate Programme (WCRP) and the Global Cryosphere Watch (GCW). The Ocean Observations Physics and Climate Panel (OOPC) is supported by WMO and is connected to all those programmes, as well as GOOS.

At global level, the rapid changes occurring in the polar oceans are affecting the entire Earth system, through increased temperatures and the continuing loss of sea ice, retreat of marine terminating glaciers, thawing of underwater permafrost and through poorly understood carbon cycle feedbacks, including polar specific processes.

Significant gaps in observations over the polar oceans are compounded by gaps in data exchange (observations exist but are not shared) and gaps in sustainability, as around 70% rely on time limited research funds. The harsh operating conditions are a significant challenge on people and technology, and addressing these gaps require stronger collaboration, through broader engagements that would build on the strength of those engaged. WMO's long standing leadership on facilitating data exchange is a viable framework for addressing important data gaps in the polar regions.

At the political level, observing networks face significant challenges to operate within some Members' Exclusive Economic Zones (EEZ). Noting the release of the expert report (Ocean Observations in Area under National Jurisdiction Workshop Feb. 2020 – IOC/UNESCO), WMO and IOC intention is to investigate on how facilitate ocean observations into EEZ; through an improved regional cooperation, and through a pilot of the UNCLOS art. 247, which provides a simplified consent mechanism applicable to scientific research projects undertaken by or/under the auspices of international organizations.

The development of partnerships with civil society at large, and private sector is progressing through the launching of the UN Decade Odyssey project, led by OceanOPS. This ambitious project aims to unleash the potential of these new partners in contributing to the GOOS. Highlight of this project is the generalization of met-ocean observation from merchant ships and beyond, through close cooperation with main shipping industry companies, sailing races associations, fishing fleets, etc. WMO will play a key role organizing an operational data flow for these non-academic contributions.

The Extraordinary World Meteorological Congress (11-22 October 2021) adopted a unified Data Policy to ensure the free and unrestricted exchange of those data that are critical for the delivery of weather, climate and water services by WMO Members. WMO data policy includes ocean data, both in and above the ocean and at the sea-surface, from the open ocean to the coast.

The WMO-IOC Data Buoy Cooperation Panel (DBCP) continues to lead efforts to reduce data buoy vandalism, including an annual reporting of vandalism events on data buoys to track progress toward implementation of the vandalism preventative measures. Some countries are working towards agreements with neighboring countries to collectively act on vandalism event through law enforcement. Further, WMO continues to encourage Members to actively engage, support and collaborate in the efforts of the DBCP to collect existing education and outreach materials related to national or regional mitigation of data buoy vandalism efforts. New efforts are dedicated on Environmental sustainability of measurements.

With regards to space-based observations of the ocean, the WMO Space Programme interfaces with relevant discussions in the Coordination Group for Meteorological Satellites (CGMS) and with the Committee on Earth Observation Satellites (CEOS).

WMO through its Global Cryosphere Watch (GCW) has initiated an international coordinated effort to evaluate, intercompare and make recommendations on the available satellite products on sea ice thickness and snow on sea ice, to take place until 2023. The project engages and addresses individual end-user requirements and other data performance critical to their application (e.g., operational users are likely to require (near) real-time [(N)RT]; data assimilation and Numeric Weather Prediction (NWP) groups are likely to need NRT data, This project will provide the framework for increased coordination and standardization of sea ice observing and data exchange best practices, recognizing the distribution of these activities across many communities, and the strong role played by the scientific communities.

OceanOps maintains a real-time warning and notification system to inform Coastal States through their designated national focal point of the drift of Argo profiling floats from high seas into their EEZ. OceanOps provides as well support and guidance to Members for the application of UNCLOS and deployment of observing systems into their EEZ through: i) the recalling of rules to implementers and support to clearances requests; ii) the opportunistic seeking of global concurrences for deployment into EEZ; iii) the fostering of international and regional cooperation through data buoys donor programmes and other capacity building initiatives; iv) the assistance to the retrieval and securing of beached instruments; v) the assistance to data distribution and access Hence, OceanOps provides transparency on the ocean observing system implementation for coastal states. Members can check the systems operating in their EEZ (past, present and future) through the on-line monitoring dashboard www.jcommops.org. It is planned to include marine observations from EEZ in the Global Basic Observing Network (GBON) monitoring system. OceanOps strongly advocates for practical and multilateral solutions to facilitate the routine deployments of approximately 2500 ocean observations instrumentations per year, globally and regionally, and is ready to expand its support to keep enhancing the marine observations in EEZ for Members benefits.

More information on WMO’s role in ocean observations is available in WMO’s official journal, the WMO Bulletin (Vol 70(1), 2021): ‘The Ocean, Climate and Weather 'available on the WMO Library at https://library.wmo.int/index.php?lvl=bulletin_display&id=4061#.YfpDFerMI2w