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Item 3.4 of the Provisional Agenda

**ISSUES AND SOLUTIONS FOR ENHANCING SUSTAINED OCEAN OBSERVATIONS IN
AREAS UNDER NATIONAL JURISDICTION, AND THE ROLE OF IOC, WMO AND DOALOS**

Summary

This document outlines the work that led to this proposed decision to review the Terms of Reference of the IOC Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS) and re-constitute this body to further the work of the IOC in creating a cooperative framework, within UNCLOS, for the collection and sharing of sustained ocean observations in coastal States Exclusive Economic Zones (EEZs).

Financial implications: IOC to implement the consultation process.

Decision proposed: The Executive Council is invited to consider the draft decision referenced as Dec. EC-55/3.4 in the Provisional Action Paper (document IOC/EC-55/AP).

1. The ocean plays such a fundamental role in climate that our ability to mitigate, adapt, and build sustainable communities and economies will depend in part on ocean information. The recent 2021 IPCC AR6 Report (*Climate Change 2021: The Physical Science Basis*) addresses the most up-to-date physical understanding of the climate system and climate change, brings together the latest advances in climate science, and combines multiple lines of evidence from paleoclimate, observations, process understanding, and global and regional climate simulations. This lays out the challenges that States face in stark terms, and some of the most impactful effects of climate change are now front and centre in international dialogue as we begin to experience climate related events with greater frequency.

2. There are still excellent opportunities to both reduce future warming and make our societies less vulnerable to changes when they occur. Quantitative and fit-for-purpose ocean information is fundamental to guide science-based adaptation strategies, which minimize the economical and societal costs associated with future changes, empower communities to self-adapt, and guide sustainable economic development for the long term. Improved ocean information will benefit nations bordering the ocean, it will also benefit all nations through more precise assessments and predictions.

3. Over several years, the scientific community undertaking sustained ocean observations within the framework of the Global Ocean Observing System (GOOS) have highlighted a number of challenges related to carrying out research in areas under national jurisdiction, including in disputed areas and relating to the granting of consent for marine scientific research (MSR). The 1982 United Nations Convention on the Law of the Sea (UNCLOS) provides the legal basis for maritime areas such as territorial seas and exclusive economic zones (EEZs), which are areas under national jurisdiction with different rights and obligations for States and international organizations. Areas under national jurisdiction cover over one-third of the ocean and are therefore essential for an effective global ocean observing system. The concerns expressed by the scientific community raise important issues of legal clarity. Although UNCLOS provides the international legal framework for activities in the ocean, implementation raises challenges and requires States to facilitate MSR, including through providing clarity on how they regulate ocean observations and MSR activity in accordance with UNCLOS. For a truly global and integrated system, more States need to be involved in the observing system and all regions of the oceans need to be adequately sampled; this will be vital to meeting the challenge of the UN Decade of Ocean Science for Sustainable Development (2021–2030), since observations are one of the foundational components underpinning sound ocean policy, management, and prediction.

4. The IOC has a twenty-year history in developing a cooperative framework for the real-time sharing of ocean data collected in exclusive economic zones (EEZs). In particular the IOC was successful in creating a Member State-agreed framework and mechanism, in compliance with UNCLOS, for the provision of data from floats in the global Argo Programme that drift into EEZs. The IOC Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS) worked on these issues and laid the foundation for the development of the Argo notification scheme between 2003 and 2009. For a more detailed monitoring of this evolution, refer to:

- IOC Resolution XX-6 (1999, "The Argo Project")
- IOC Resolution EC-XLI.4 (2008, "Guidelines for the Implementation of Resolution XX-6 of the IOC Assembly Regarding the Deployment of Profiling Floats in the High Seas within the Framework of the Argo Programme")
- Decision IOC/EC-LI/4.8 (2018, "Evolving Capabilities of the Argo Global Array of Profiling Floats")

5. The 2018 IOC decision supporting an extension of the Argo notification scheme to include six biogeochemical variables—oxygen, pH, nitrate, chlorophyll, backscatter and irradiance—has been a recent and important step forward in the recognition of the need for a wider range of sustained observations. It was also an endorsement of the value the Argo Programme brings to global ocean observing and of the trust developed in IOC mediated solutions. However, many other ocean

observing implementers, and the Argo Programme itself in terms of float deployment, still face important challenges when seeking consent to undertake ocean observations in waters under national jurisdiction.

6. These issues were raised again at the WMO 70th Executive Council in June 2018. In February 2019, WMO held a Technical Workshop on “Enhancing ocean observations and research, and the free exchange of data, to foster services for the safety of life and property”. The discussions considered the evolving requirements for ocean observation and research in support of WMO Application Areas with focus on marine meteorological services. The workshop resulted in two resolutions passed at the WMO Eighteenth Congress:

- Resolution 45 (Cg-18) “Ensuring adequate marine meteorological and oceanographic observations and data coverage for the safety of navigation and the protection of life and property in coastal and offshore areas”, and
- Resolution 46 (Cg-18) “Future collaboration between WMO and the Intergovernmental Oceanographic Commission on facilitating oceanographic observation in coastal regions in support of Earth system prediction and climate services”.

7. Resolution 45 (Cg-18) reaffirms the importance of marine meteorological observations, including those in EEZs, used operationally by WMO Members to provide services in support of safety of navigation and the protection of life and property in coastal and offshore areas, and clarifies the legal regime under which the Voluntary Observing Ships (VOS) network and surface observing platforms operate in taking marine meteorological observations, as operating outside of UNCLOS Part XIII (Marine Scientific Research) and therefore allowing unhindered operation in EEZs; while complying with UNCLOS general principles such as peaceful use of the sea, protection of human life at sea, and dissemination of information.

8. Resolution 46 (Cg-18) notes the twenty-year history of work by the IOC to develop a cooperative framework regarding the sharing of ocean data in EEZs, recognizes that WMO's operational forecast models and services increasingly rely on sustained global data streams of subsurface observations, and decides to identify the requirements for subsurface ocean variables to improve the quality of these forecasts and services, and work closely with IOC in order to explore mechanisms that make the highest-impact subsurface ocean data freely available. Both resolutions were noted by the IOC Assembly at its 30th session (item 7.1.1).

9. In February 2020, GOOS held an Experts Workshop on “Ocean Observations in Areas under National Jurisdiction (OONJ)” ([GOOS Reports, 246](#)), following a number of requests from the implementers of global ocean observing networks to consider the many challenges of ocean observations in EEZs. The two-day workshop focused its discussions on the taking of sustained or long-term ocean observations in waters under national jurisdiction, and the attendees, convened in their personal capacity as experts, included: representatives of the sustained global ocean observing networks under the Observations Coordination Group (OCG); international law of the sea experts (academic and United Nations Office of Legal Affairs Division for Ocean Affairs and the Law of the Sea); and representatives from the IOC and the WMO Secretariats.

10. The workshop discussed a number of ‘real life’ issues that the sustained global ocean observing networks face in undertaking observations in areas under national jurisdiction, in particular the coastal States’ EEZs. It also discussed the value of observations to coastal States and potential concerns of coastal States regarding sustained ocean observations in areas under their national jurisdiction. It identified practical frameworks (solution spaces), in the context of UNCLOS, for addressing these challenges, and provided recommendations for action by GOOS, the IOC, the WMO and the United Nations Office of Legal Affairs through its Division for Ocean Affairs and the Law of the Sea (DOALOS).

11. Through discussion of these 'real life' examples, the workshop team identified the key challenges across the sustained observing networks, as follows:

- MSR consent process is incompatible with the operational reality of sustained ocean observing, for example, leading to the need of making as many as 100 of applications per year.
- MSR consent process advance notice is incompatible with operational of sustained ocean observing for some platforms, due to their nature (commercial ships, animal-bourne sensors, drifters), and some networks are not able to provide advanced notification.
- MSR clearance is often impossible to obtain in zones where EEZs are disputed.
- Sometimes there is no national procedure for MSR clearance – for example in the case of new technology.

12. There is a tension between the taking of sustained ocean observations and the concerns of coastal States, which can generally be grouped into three areas: rights, resources, and security. Part of the problem that coastal States articulated is that there is a lack of knowledge and/or information on the benefit to the State of the observations that are requested to be undertaken within their EEZs. In addition, there can be a shortfall in the ability of some States to take advantage of and/or benefit from the observations in their EEZs. Thus, a weighing up of perceived risk against benefit of the observations taken within their EEZ cannot necessarily be made.

13. There was consensus that communication on the benefits of ocean observations in EEZs, with recognition that there are real concerns, is important. Likewise, data availability and data use are important to address, to gain the benefits of the observations for local and global society. It was noted that States will not have complete control over how the information is used. However the benefits generally outweigh the risks and that multiple use of observations brings significant economic benefits.

14. Seven potential and practical solution spaces, within UNCLOS, were proposed to meet these challenges, as follows:

1. Argo notification scheme as a process (model): to invoke through the IOC the same consultative process that enables the Argo notification scheme to develop and succeed in creating a new practical arrangement.
2. Article 247 of UNCLOS ([Procedure for the application of Article 247 by the IOC of UNESCO](#)): this article provides for Member States of an intergovernmental body (e.g. IOC) to adopt an MSR project, which then may be carried out after giving notice of intent to conduct the project in a member or participating State's EEZ. If no objection is received within a limited time frame (four months), in theory, the work could go ahead. However, Article 247 has yet to be implemented, and its implementation could be complex and open to interpretation.
2. Update DOALOS [Guide](#): "A revised Guide to the Implementation of the Relevant Provisions of the United Nations Convention on the Law of the Sea", which provides guidance and forms for Coastal States to use for MSR clearance. Updated guidance could reflect the issues raised in the workshop, providing a new 'best practice' for granting MSR clearance for sustained observing that would address the issues of MSR process and advanced notification. DOALOS would need a mandate from Member States through the annual General Assembly resolution on oceans and law of the sea. A 'lighter' approach could be in the form of issuing additional guidance to the existing Guide.
4. Raising-awareness activities: to help States realize the impact of ocean observations on issues such as climate change, sea-level rise, and extreme weather that affect States economy and society. The problems in observing of EEZs are at least partially

linked to the fact that States do fully not realize the value and benefits of ocean observing and the need to have an integrated Global Ocean Observing System.

5. WMO Recommendations: Looking at additional resolutions related to variables/platforms that are important for WMO service delivery could be considered.
6. Regional / country arrangements: Several examples exist of specific networks reaching agreement with a group of States in specific areas. There was agreement on the importance of regional governance and that working to develop a regional multi-State agreement to help facilitate observations in waters under national jurisdiction could be useful in some circumstances.
7. Article 258 of UNCLOS (Deployment and Use): This can be used to clarify the status of new ocean observing platforms, e.g. ocean gliders, and to clarify to national authorities that the national MSR clearance procedures should also incorporate the use of new technologies. This addition does not overcome the other issues associated with MSR clearance.

15. Requests for MSR clearance can be subject to geopolitical issues that go far beyond the realm of ocean science, and therefore requires action beyond the level of organizations such as GOOS and the sustained global networks. It requires higher level action by intergovernmental bodies such as the IOC, the WMO, DOALOS, and the United Nations General Assembly which has competence to review developments in ocean and law of the sea matters.

16. The need for action at an international level has been recognized by, for example, the G7 Science and Technology Ministers' Tsukuba Communiqué which notes the following: '93% of the global ocean is >200 m deep and spans many different jurisdictional boundaries and is governed by established international law; ocean observing is "big science". Proper, sustained, comprehensive and globally coordinated observation of the ocean and seafloor is necessary so that we have the tools to provide the data and understanding required to inform, with evidence, policy decisions about use of the ocean, especially against the background of human-induced change and natural variability. A comprehensive ocean observing programme would need to operate under a sound international framework in order to coordinate the deployment of global ocean observing assets to optimize their usage'.

17. Since the release of its [Recommendations on Open Science](#) in 2021, UNESCO has called on countries to increase scientific collaborations and information sharing, making all scientific data and knowledge openly available, accessible, and reusable for the benefit of society. The Open Science approach, which is also supported by the new Unified Data Policy of the World Meteorological Organization (WMO), asks governments to work on developing an enabling policy environment for open science and to promote international cooperation in order to reduce digital, technological and knowledge gaps. Such actions are fundamental for facilitating ocean observations within areas under national jurisdiction such as the EEZs.

18. The OONJ Workshop made the following recommendations under the premise that these recommendations should enable agreed and equitable access to ocean observations in areas under national jurisdiction. It also made them in light of advances in sustained ocean observing and the pressing global and national needs for these observations, to face challenges associated with climate change and adaptation, sustainable development, and to ensure safety of life and property at sea and in coastal areas.

1. **IOC** to consider initiating a process equivalent to the Argo notification scheme applicable to other platforms/variables. The initiative for commencing such a process should be brought to the IOC Assembly as a proposal by any Member State of the Commission, by the Executive Council, by the Executive Secretary, by the Head of any organization of the UN system, or by other organizations invited to participate in the work of the Commission. Initiating the discussion at the level of the Executive

Council requires following a similar path and should include an explanation why the decision of the Executive Council is required.

2. **IOC, with DOALOS and WMO support**, to set up an informal meeting, perhaps in conjunction with the IOC Assembly or Executive Council, to discuss and share different practices in the implementation of MSR clearance procedures by States. National examples could be provided, leading to an expression of an 'IOC Best Practice' for national implementation of MSR clearance procedures for sustained ocean observations.
3. **IOC/GOOS, WMO and DOALOS** to consider a joint workplan or initiative to raise awareness of the issues and the value gained from ocean observations, nationally and globally, especially in the context of the aims of the UN Decade of Ocean Science for Sustainable Development. A coordinated awareness building effort would be more powerful than a single action, perhaps initially through socializing the report and findings, particularly with IOC Member States and WMO Members, the Observation Coordination Group (OCG), and BioEco Panel networks.
4. **GOOS** to use the information from the findings, recommendations and outcomes of the OONJ Workshop to support networks, the GOOS National Focal Points, and the ocean observing community in working with the MSR clearance procedures and with States around the MSR clearance procedures. To ensure that networks are aware of the potential of regional agreements, and for those for which it is relevant of the use of Article 258, and also of raising awareness. GOOS could also develop a focal point for the collection and documenting of ongoing issues and dissemination of any raising awareness materials.
5. **WMO** to consider how resolutions could be supportive in highlighting the need for sustained ocean observations from EEZs and the critical role the national MSR clearance process plays in enabling this. GOOS to provide information as and when required to support such regulatory tools.
6. **DOALOS** to assess if there is appetite to pursue gaining a mandate from Member States to develop an update to the *Guide to the Implementation of the Relevant Provisions of the United Nations Convention on the Law of the Sea*.
7. **IOC** to consider initiating a pilot, using the IOC process on Article 247, to undertake ocean observations after adoption of the project by the IOC and notifying Member States of the intent to undertake the activities in their EEZs.

19. Proposed Dec. EC-55/3.4 contained in the Provisional Action Paper for this session of the Executive Council is for IOC Member States to act, inspired by the process that yielded the Argo notification scheme, and develop prerequisites for further work in this area by the IOC.

20. The decision asks that the IOC launch an intersession Member State consultation to propose updated Terms of Reference for a reconstituted IOC/ABE-LOS, a body with mixed scientific and legal competency to engage with IOC Member States and the observing community, and to prepare specific proposals for adoption by the IOC Assembly; and requests GOOS to work with the sustained networks to bring a limited number of clear and specific descriptions of difficulties/issues and possible solutions for discussion by a reconstituted IOC/ABE-LOS. This body might also treat questions larger than GOOS brought by other IOC or Ocean Decade programmes.

21. Unlocking the full potential of ocean science within the existing framework of UNCLOS will be a major step forward in making change under UNESCO Recommendation on Open Science. The IOC can play an important role through continuing its work in developing cooperative frameworks for the sharing of ocean data collected in EEZs, thus making the ocean more accessible and sustainably managed, and contributing to the vision of the UN Ocean Decade.