



Ocean Affairs and the Law of the Sea

Contribution of the Intergovernmental Oceanographic Commission of UNESCO to the Report of the Secretary-General

June 2025

DEVELOPMENTS IN THE FIELD OF OCEAN AFFAIRS AND THE LAW OF THE SEA

1. Pursuant to United Nations General Assembly Resolution 79/144: Oceans and the law of the sea as of 12 December 2024, entitled “Oceans and the law of the sea” the information below represents the contribution of the Intergovernmental Oceanographic Commission of UNESCO (IOC) to the report of the Secretary-General. Highlights of this contribution which are detailed below include:

- Continued growth and impact of the UN Decade of Ocean Science for Sustainable Development with 61 endorsed global programmes and over 500 national and regional projects and the launch of The Barcelona Statement highlighting science and knowledge priorities for future years of the Decade.
- Publication of the 2024 State of the Ocean Report (StOR) synthesizing research to describe the current and projected future state of the ocean.
- Increased activities in coordination and facilitation of research on the ocean-climate nexus including ocean acidification, deoxygenation and blue carbon.
- Strengthened coordination, advocacy and integration of the Global Ocean Observing System which coordinates over 8,700 platforms operated by 83 Member States and initiation of rigorous analyses on emerging gaps and investment needs in the network.
- Continued growth of the Ocean Biodiversity Information System to support State and non-State parties in implementation of the Kunming-Montreal Global Biodiversity Framework and the BBBJ Agreement.
- Recognition of 100 communities, including 15 in SIDS, as Tsunami Ready Communities.
- Launch of the revised IOC Capacity Development Strategy and preparation of a detailed implementation plan for its operationalisation.
- Increased activities in marine pollution including nutrient pollution and a new decadal plan for Harmful Algal Bloom research.
- Growth in marine spatial planning (MSP) efforts including training and for a for over 1,000 participants from 116 countries and the launch of a new rapid assessment tool for MSP.
- Significant activities in ocean literacy, including the release of the Venice Declaration for Ocean Literacy in Action highlighting actions to increase ocean literacy across all sectors of society.

Activities of the Intergovernmental Oceanographic Commission

2. Coordinated by IOC since 2021, the United Nations Decade of Ocean Science for Sustainable Development (2021–2030) has cemented its place as the largest coordinated global ocean science initiative

ever undertaken. The 'Ocean Decade' has galvanised over 20,000 individuals working in multi-disciplinary, international teams to implement 61 endorsed global Decade programmes and over 500 regional and national Decade projects. These Decade Actions are led by research institutes, NGOs, private sector and government partners in 76 countries. Thirteen (13) regional and thematic decentralised coordination structures are hosted by partners including a newly launched Decade Collaborative Centre for sustainable ocean economy hosted by Barcelona City Council. Forty (40) countries have established National Decade Committees. The 2024 Ocean Decade Conference, hosted by Spain in April 2024 in Barcelona, convened over 2,600 in-person participants to discuss the science and knowledge needs that will guide the future priorities of the Ocean Decade, as well as opportunities related to partnerships and resources and the means of ensuring the full engagement of under-represented groups. The recommendations of the Ocean Decade Conference provided a foundation for IOC's engagement in the preparation of the 2025 United Nations Ocean Conference, which will also mark the mid-point of implementation of the Ocean Decade.

3. The second *IOC State of the Ocean Report* was published in June 2024. The StOR presents the results of ocean-related scientific activities and analyses to describe the current and future state of the ocean, addressing physical, chemical, ecological, socioeconomic and governance aspects, focusing on the seven Outcomes of the Ocean Decade. A call for members of the advisory board for the 2026 StOR was issued in March 2025, and a first meeting of the advisory board focused on initiating planning for the 2026 report was held in May 2025.

4. IOC's data submission towards *SDG Indicator 14.3.1 'Average marine acidity (pH) measured at agreed suite of representative sampling stations'* collected inputs from an increased number of countries and stations (178 stations in 2021; 765 stations from 44 countries in 2025). The IOC-coordinated global expert network on *ocean acidification* now counts more than 1,500 members from 116 countries (26 in Africa, 23 SIDS) and continues to grow.

5. *Ocean deoxygenation* continues to threaten ocean health with approaches focused on reoxygenation proposed as a means of reducing the extent of low oxygen areas. The GO2NE working group convened experts in September 2024 to discuss the potential of approaches to reoxygenation to stop further deoxygenation, with the results of the workshop to be published in *Eos (Journal)*.

6. The portfolio of IOC activities aimed to conserve, restore and sustainably manage coastal blue carbon ecosystems for climate, biodiversity and economy benefits continues to grow following the demand of Member States. The IOC helps to coordinate the Blue Carbon Initiative (BCI, since 2010), the International Partnership for Blue Carbon (IPBC, since 2020), an initiative of Australia, and the High-Level Ambition Group on blue carbon (HILAG, since 2022), an initiative of France. The IOC was one of the proponents of a Global Ocean Decade Programme for Blue Carbon (GO-BC) in late 2021 and has been one of its Steering Committee members ever since. These activities were showcased to Member States during a dedicated side event to the 57th session of the IOC Executive Council in June 2024.

7. Recognizing that Joint programmes between IOC, United Nations and other international organizations are important ways to leverage and enhance IOC activities to best serve society and that these programmes must be underpinned by timely and relevant agreements, a revised four-year memorandum of understanding for the Global Climate Observing System (GCOS) was negotiated with the World Meteorological Organization (WMO), the United Nations Environment Programme (UNEP) and the International Science Council (ISC). In addition, a memorandum of understanding was signed in April 2024 between UNESCO-IOC and FAO to formalise joint sponsorship of the Intergovernmental Panel on Harmful Algal Blooms (IOC-FAO IPHAB). In the context of an updated World Climate Research Programme Science and Implementation Plan, discussions are underway between UNESCO-IOC, WMO and ISC to update the 1993 co-sponsors agreement to ensure that it reflects the plan and is adaptable in the future. IOC as a co-sponsor of the World Climate Research Programme will host a meeting of the joint scientific committee at UNESCO HQ in May 2025.

8. The *Global Ocean Observing System (GOOS)* coordinates more than 8,700 ocean observing platforms across 13 global ocean observing networks, operated by 83 Member States (9 in Africa, 9 SIDS). Over 120,000 ocean observations are delivered to operational forecasting systems every day, as tracked through OceanOPS (GOOS IOC-WMO Operational Centre). The number of sustained biological and ecological observing programmes coordinated and tracked has risen to 638 across 71 Member States with 7 in Africa and 14 SIDS.

9. GOOS has continued to build coordination, integration and advocacy on global ocean observing in combination with advancing stakeholder engagement, and the resilience and responsiveness of the global system. Recent key advances include: enhancing community use of the foundational Essential Ocean

Variables (EOVs) concept through a new paper (submitted) and user driven revision of the EOVS Specification sheets; development of a minimum metadata passport—with a unique identifier for data use and tracking; the first IODE/GOOS Data Workshop where a significant step forward was made in uniting IOC data elements towards a cutting-edge IOC Data Architecture; building engagement and support with the 14 regional alliances and 77 GOOS National Focal Points, the latter through a second annual National Focal Point Forum and survey. GOOS/IOC office has coordinated across WMO and IOC to deliver the first Statement of Guidance (SOG) for ocean applications as part of the Rolling Review of Requirements process. This is a significant step forward in expressing the observational needs across operational ocean forecasting systems for a range of application areas.

10. The Joint WMO-IOC Collaborative Board met in person in September 2024 and identified priority areas for its work using a multi-criteria analysis. These priority areas are: defining the Global Basic Observing Network (GBON) for oceans; improving data management and interoperability; strengthening coastal and maritime resilience; and enhancing capacity development through joint training and collaboration.

11. The ad hoc intersessional Working Group on Ocean Observations in Areas under National Jurisdiction have been working according to the terms of reference outlined in Decision A-32/4.8.2 and have prepared a report of their work and recommendations for IOC Assembly at its 33rd session (Agenda item 4.5.3 at this session).

12. The WMO/IOC OceanOPS centre partnered with the 'Vendée Globe' race, equipping 25 of the 40 boats with advanced instruments to gather critical meteorological and oceanographic data. This unique initiative transformed the race into a "floating scientific station," providing valuable insights, especially from under-sampled regions like the Southern Ocean. The Vendée Globe/IOC collaboration will continue for the 2028 edition, during which all skippers will be required to embark scientific instruments.

13. The Ocean Data and Information System (ODIS) is a federation of independent data systems including continental-scale data systems, national data systems as well as those of small organizations. ODIS enables individuals and organizations to share their metadata with the world, and enable better findability, accessibility, interoperability and reusability (FAIR) of ocean data. ODIS currently links 55 data catalogues or nodes from 45 partner organizations, enabling a sustainable, interoperable, and inclusive digital ecosystem for all ocean stakeholders that will continue to grow in the future.

14. As a joint effort between the Global Ocean Observing System (GOOS) and the IODE/Ocean Biodiversity Information System (OBIS), information was collected from 638 long-term active biological monitoring programmes and integrated into an online metadata platform (BioEco portal), which will be connected to ODIS, and become the infrastructure to monitor the status of the marine biological component of GOOS. OBIS continues to play a key role in this regard by hosting and providing an integrated, standardised and quality controlled access point to the actual biological and ecosystem observations required to feed into ecosystem models, early-warning systems and indicator and assessment frameworks. OBIS now holds 136 million species observations and continues to grow with over 1 million records per month collectively provided by over 1,000 institutions from 99 countries.

15. The Environmental DNA Expeditions in Marine World Heritage Sites project, funded by the Government of Flanders (Kingdom of Belgium) and implemented jointly by the IOC (through OBIS) and the World Heritage Centre, was completed in December 2024 and demonstrated the transformative potential of environmental DNA (eDNA) for monitoring and conserving ocean biodiversity, by providing a cost-effective and accessible method, particularly in developing countries where traditional studies are difficult to carry out. By combining eDNA sampling with DNA metabarcoding, the initiative has engaged local communities, including students, in citizen science, thus promoting education and public participation in ocean conservation. Over a period of three years, sampling campaigns were conducted at 21 marine UNESCO World Heritage sites in 19 countries. More than 250 participants took part and 400 eDNA samples were taken, enabling the identification of around 4,400 marine species, including 28 marine mammals, 86 sharks and rays, three turtles, and 120 species on the IUCN Red List of Threatened Species. The data has been made accessible through OBIS by an interactive dashboard (<https://dashboard.ednaexpeditions.org/>) that includes climate change projections, and in a UNESCO publication titled *Engaging communities to safeguard ocean life: UNESCO Environmental DNA Expeditions* (<https://doi.org/10.58337/CBXU3518>).

16. Through the Flanders-funded Pacific Islands Marine Bioinvasion Alert Network (PacMAN) project (2020–2024), which also concluded in December 2024, IOC (through the Ocean Biodiversity Information System) has built an end-to-end system for monitoring, sampling, and analysing marine invasive species using

molecular technologies, with a primary focus on developing this scientific capacity in Fiji as a pilot. The PacMAN early-warning decision support tool can analyse species detections, assess risks, and display information in a user-friendly format and syncs with OBIS to retrieve data. Two high-risk invasive species were detected, the presence of which in Fiji was previously unknown. The project aligned with national and international biodiversity targets by its contributing to Target 6 of the Convention on Biological Diversity (CBD) in the Kunming-Montreal Global Biodiversity Framework and Fiji's National Biodiversity Strategic Action Plan 2020–2025.

17. Tsunami programme kept its strong capacity development focus in all ocean basins. With active support by Member States as indicated by the renewal of agreements with:

- the Agency for Meteorology, Climatology, and Geophysics of the Republic of Indonesia hosting the Indian Ocean Tsunami Information Centre (IOTIC) 2023–2027,
- the Coastal Zone Management Unit (CZMU) of Barbados hosting the Caribbean Tsunami Information Centre (CTIC) 2024–2029, and
- the Bureau of Meteorology (Bureau) of Australia hosting the Indian Ocean Tsunami Warning and Mitigation (IOTWMS) Office in Perth, Australia 2023–2027.

18. Advancing Tsunami Preparedness. The 2nd Global Tsunami Symposium in Banda Aceh (Indonesia) highlighted the importance of enhancing the Global Tsunami Warning and Mitigation System. In particular, it made an urgent appeal for investment to ensure that 100% of coastal community at risk are Tsunami Ready by 2030. In addition, a commemorative event at UNESCO headquarters marked the 20th anniversary of the 2004 Indian Ocean Tsunami, honouring the progress made and highlighting the work that remains to be done. There are now 100 recognized Tsunami Ready communities in 31 Member States, 15 of which are SIDS.

19. *Monitoring and Warning for Tsunamis Generated by Volcanoes* was published as an IOC Technical Series issue ([183](#)) in 2024.

20. The joint IOC-SCOR GlobalHAB science programme has developed a new decadal plan for an international HAB research programme focused on understanding HABs in the context of global sustainability. As part of the joint effort of GlobalHAB and GESAMP, a whitepaper on *Sargassum* was published in June 2023, and GlobalHAB published a white paper on *Fish-killing marine algal blooms* as IOC Manuals and Guides, [93](#).

21. A new partnership between the IOC, the Nippon Foundation and UNEP is developing a decadal implementation plan for 'A global ocean free from the harmful impacts of pollution by 2050'. The concept of this collaboration was presented at the World Ocean Summit in Tokyo in March 2025.

22. In June 2023, the Assembly adopted the IOC [Capacity Development Strategy, 2023–2030](#) and established a group of experts on capacity development to develop an implementation plan. The OceanTeacher Global Academy (OTGA) continues to grow with an increasing number of trainings (more than 50 courses per year) and approximately 14,000 beneficiaries worldwide. OTGA, a network of 17 Regional and Specialized Training Centres remains active, and dozens of additional partners have joined the training initiatives over the past two years. With its ISO 29993:2017 accreditation as a Learning Service Provider, the IOC, through OTGA, certifies hundreds of training participants every year and guarantees a high-quality standardized Learning Management System. OTGA continues to support training needs and priorities of all IOC programmes and regions, and those of the Ocean Decade, promoting expanded training and lifelong learning opportunities in the fields of ocean sciences, services, and management.

23. With the IOC capacity development effort bolstered by NORAD funding, five activities were launched in 2024, designed jointly with regional and technical subsidiary bodies: (i) establishing Early Warning Systems for Harmful Algae Blooms in Africa; (ii) GLOSS-Africa (Phase 1–North Africa); (iii) support for strategic planning and capacity development for ocean observations under the auspices of GOOS-Africa; (iv) Biodiversity Data Hub for the High Seas; and (v) OceanTraining internships to enhance global human capacity related to the IOC mandate. The call for 2025 cohort is now underway, with a call for interested host institutions launched in February 2025. New funding received in December 2024 will support the expansion of establishing early warning systems for harmful algal blooms in Africa, including the updating of data management infrastructure to support such systems, enabling linkages between blooms and deoxygenation to be determined and ensuring that observations associated with the systems contribute to GOOS.

24. The programmatic work of IOC in capacity development is complemented by the Ocean Decade Capacity Development Facility, which aims to develop and deliver priority capacity development initiatives in the framework of the Ocean Decade, with a focus on SIDS, Least Developed Countries and Early Career Ocean Professionals.

25. Ensuring alignment with evolving national and regional priorities and strategies is paramount for the success of our action for Global Priority Africa. The Africa Ocean Decade Task Force oversees and promotes the implementation of the [Ocean Decade Africa Roadmap](#), including the development and launch of a new Decade programme on sustainable ocean management in Africa. Similarly, the Tropical Americas and Caribbean Taskforce is overseeing the implementation of the Ocean Decade Africa Roadmap.

26. In the WESTPAC region, immense efforts have been made to align ocean science with societal needs including through national and international agreements and policy frameworks. A milestone was reached with the organization of the 2nd UN Ocean Decade Regional Conference and the 11th WESTPAC International Marine Science Conference (22–25 April 2024) hosted by Thailand, which brought together more than 1,200 stakeholders from 40 countries in the region and beyond to discuss the current state of ocean knowledge, take stock of the first three years' achievements of the Ocean Decade Actions in the region and identify future priorities, building on the outputs of the [Vision 2030 process](#) (The Ocean Decade's strategic ambition setting process on the road to 2030). A regional framework for action to accelerate marine spatial planning was adopted to support the [MSPglobal 2.0](#).

27. As a contribution to the UNESCO operational strategy on SIDS, IOC is leading one of six intersectoral Accelerator programme–ACE#2: Strengthen Sustainable Ocean Knowledge, Spatial Planning and Water Management capacities of SIDS in support of the growth of their blue economies. Increased engagement with SIDS in the Ocean Decade was supported through the establishment of a decentralized coordination hub for the Pacific Islands Region, hosted by The Pacific Community, and the establishment of a taskforce for the Tropical Americas and Caribbean Region to oversee implementation of the Ocean Decade in the region.

28. IOC stepped up its efforts in Marine Spatial Planning (MSP) and launched in 2022 an updated joint MSProadmap with the European Commission, then resumed the MSPglobal project (core of the MSPglobal programme and co-funded by EU) in July 2023 with a regional focus on Western Africa and Western Pacific. In addition, MSPglobal 2.0 has co-developed other knowledge, tools and new online training on OceanTeacher Global Academy to help all Member States advance their MSP processes. Two publications on the engagement of Indigenous Peoples and Local Communities in MSP were published in July 2024, while four other toolkits on biodiversity, climate, spatial data and offshore wind engagement will be launched by June 2025. These tools were developed through co-designed global workshops with key organizations and experts from all continents and sea-basins. In total, MSPglobal 2.0 activities had involved 1,000 participants from 116 countries by mid-March 2025. This engagement has been realized through the organisation of global and regional MSPfora, trainings and workshops for representatives of national authorities, as well as for G20 representatives. A new rapid assessment tool to facilitate national planning processes has been developed and piloted in seven countries in Africa, Western Pacific and Latin America and the Caribbean. Additional financial support from Government of Sweden (2024–2027) will continue to support this work, in addition to the renewed support of the European Commission's DG MARE for another two years. The work of IOC on MSP provides a solid basis for advancing the development of the draft IOC-wide Strategy on Sustainable Ocean Planning and Management (SOPM), and the new Decade Programme on Sustainable Ocean Planning supported by a range of international partners, which was launched at the Barcelona Conference. The IOC Working Group on SOPM met three times in 2025 to finalise the Draft Strategy and related Implementation Plan, to be presented to the 33rd IOC Assembly under agenda item 4.1.

29. Ocean literacy training has been delivered through dedicated programmes to a wide range of groups including students, early career ocean professionals, journalists, architects and urban planners, as well as finance experts, with training resources available in English, French and Spanish and e-learning modules delivered through the Ocean Teacher Global Academy. To facilitate students training, a new Ocean Literacy Centre, located on San Servolo Island in Venice was inaugurated in April 2025. More than 55 countries are now engaged in the blue schools regional or national network programme.

30. In June 2024 the first Ocean Literacy World Conference was held in Venice, under the patronage of the Italian Ministry of Foreign Affairs. The event brought together more than 140 participants from 76 countries, and resulted in the [Venice Declaration for Ocean Literacy in Action](#). An edition of the Ocean and Climate Village interactive exhibition was organized in Barcelona during the 37th America's Cup in partnership with Luna Rossa PRADA Pirelli. As a contribution to the Ocean Decade, the sixth edition of the Ocean Literacy

Dialogues, was organized in Mumbai (India) in collaboration with the Jane Goodall Institute and the UNESCO Office in New Delhi, and several webinars were set up to catalyse the new Decade Action on Challenge 10. The translation of the [*Ocean Literacy for All Toolkit*](#) from English to Swahili is now accessible to over 2,000,000 Kiswahili speakers in the East Africa sub-region, including the Democratic Republic of the Congo, Comoros, Kenya, Tanzania, and Somalia.