Global Ocean Observing System (GOOS) Reform. Preparation of proposal for IOC Assembly 33 (2025)

DRAFT November 25, 2024

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A. Overview

This paper presents an outline approach and project plan for the proposal by the Executive Secretary to evolve GOOS governance, in consultation with the GOOS Steering Committee, representatives from Member States and GOOS sponsors. The proposal was requested in Decision EC-57/4.1.[1] It will be presented to IOC Assembly 33 in June 2025.

The evolution of GOOS will follow a double diamond approach (Figure 1).[2] The creation of the abovementioned proposal to the IOC Assembly 33 is represented by the first diamond and will comprise consultations with key stakeholders, virtual discovery workshops and a dedicated session at the GOOS Steering Committee meeting. The anticipated deliverable from this process will be to define the mission and scope of GOOS moving forward – the WHY and the WHAT.

This deliverable will also propose a process by which the HOW - the approach taken to develop and deliver a reformed GOOS – can be undertaken. This latter activity will comprise the work of the second diamond, which work would take place subsequent to the IOC Assembly 33.

Figure 1. Double diamond design process

In the evolution of this work, consideration must be taken of how to evolve both the system itself and the coordination of the system including its component parts, the GOOS Management Team (GMT) and any changes deemed necessary.

[1] https://unesdoc.unesco.org/ark:/48223/pf0000390379
[2] The Double Diamond - Design Council

B. Background

The current structure and funding of the Global Ocean Observing System (GOOS) are insufficient to provide the data needed to meet the requirements of Member States which are, and will increasingly be, relying on a fit-for-purpose global ocean observing system for operational forecasting, preserving ocean health, sustainable ocean planning, and climate change mitigation and resilience.

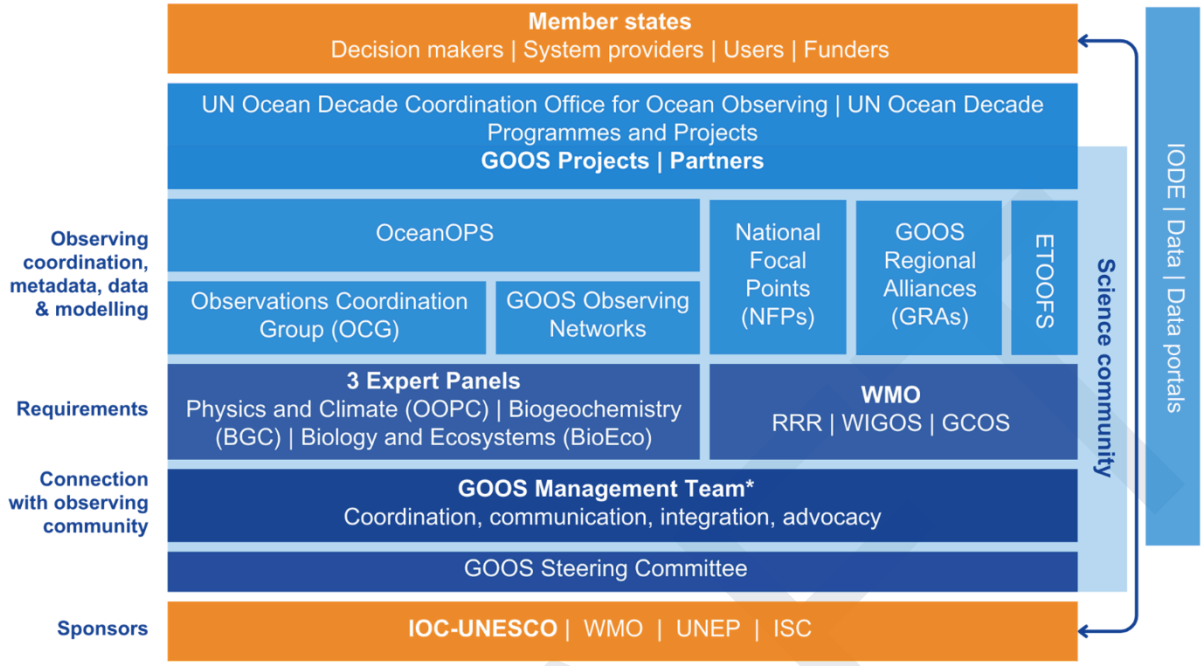
The GOOS mandate dates from 2012 by Resolution XXVI-8, which also sets out the terms of reference for its Steering Committee. GOOS currently operates under a complex, multi-tiered structure (see Figure 2 below). Its key governance components are: the GOOS Steering Committee; the GOOS sponsors (the Intergovernmental Oceanographic Commission of UNESCO, the World Meteorological Organization, United Nations Environment Programme, and the International Science Council); the GOOS Management Team which includes the central GOOS Office based in IOC, Paris and the wider team including colleagues in WMO and other scientific and communication officers supporting the components, several on consultancy basis. Further GOOS components include the expert panels, the observations coordination group, and the expert team on ocean operational forecasting systems. Implementation is through GOOS and partner networks, OceanOPS, national focal points and regional alliances. GOOS Regional Alliances also have their own varied governance structures as coalitions of nations, institutions or under IOC regional Sub-commissions. Table 1 provides a list of components and their terms of reference (TOR).

The GOOS Strategy 2030 has 11 strategic objectives, with number 11 being to champion effective governance for global *in situ* and satellite observing, together with partners and stakeholders. IOC Decision A-32/4.8.1 (2023) requested the Executive Secretary to review progress with reform of GOOS governance to meet the needs of Member States, including any proposed actions or otherwise in response to the nine recommendations of the 2021 Neville Smith Report (GOOS-290) 'Study on Support Provided to Global and Regional Ocean Observing Systems' and to report progress to the IOC Executive Council at its 57th session in 2024.

The report and recommendations are provided in IOC/EC-57/4.1.Doc(1). The Executive Council agreed in its Decision EC-57/4.1 to endorse the proposed actions to evolve GOOS governance as outlined in document IOC/EC 57/4.1.Doc(1), including any amendments as may be requested by Member States.

Importantly, the Ocean Decade Vision 2030 process has also provided visioning and a set of concrete recommendations for expanding the global ocean observing system through the Vision 2030 white paper on Challenge 7 (Ocean Decade Series, 51.7).

Figure 2: Rough schematic of current GOOS components



* GOOS Management Team HQ based at IOC secretariat, Paris

Table 1 List of GOOS components and their terms of reference

GOOS Component	Terms of Reference (TOR)
Global Ocean Observing System (GOOS) and GOOS Steering Committee	Resolution for GOOS and GOOS SC (2012) GOOS TOR
Physics and Climate Expert panel (OOPC)	OOPC Panel TOR
Biogeochemistry Expert panel (BGC) -	BGC panel TOR
Biology and Ecosystems Expert panel (BioEco)	BioEco Panel TOR
Observations Coordination Group (OCG)	OCG TOR
OceanOPS (joint WMO/IOC technical centre)	https://www.ocean-ops.org/ Five year strategic plan
GOOS Regional Alliances Council (GRA Council)	GRA Council TOR
National Focal Points (NFPs)	NFP TOR
Expert team on ocean operational forecasting (ETOOFs)	ETOOFS TOR
Projects	

C. Outline Approach to GOOS Reform

	Phase I: Discover and Define GOOS		
	Component	**Aim**	**Tasks**
1	**Mission and scoping review**	Review the viability and value of the central mission of GOOS. What is the unique value proposition? Through consultation with stakeholders: - Assess the needs and requirements of Member States and the ocean observing community. - Assess the ability of GOOS to facilitate worldwide cooperation in enabling a fit-for-purpose ocean observing system that has a clear scope and set of aims. With a view to GOOS' position within the UN, ensure alignment with the needs, priorities and deliverables for UN processes and national processes	Aspects to consider include, but should not be limited to: - Definition of the right GOOS metrics/indicators of success - Other UN body requirements/strategies, e.g. from WMO - Where GOOS needs to lead, where it needs to partner with others, and where GOOS needs to support activities of others; at the global, regional and national levels - How GOOS can better acknowledge and support a system that is largely built on voluntary engagement and external support - Development in Information Technology for visibility and engagement - Strategic engagement with the satellite community - Strategic engagement with the private sector ocean observing community - Capacity needs and development - Systems of accountability and rigor - Standard Operating procedure for GOOS functions (Concepts to Deliverables)
2	**Structure review**	Review the viability and ability to create value of the structure of GOOS through desk review/consultations. Considering previous work, including Neville Smith report, Decade Challenge 7 White Paper	<u>Review of Current Structure:</u> Conduct a detailed review across all the constituent internal components of GOOS, and the ToRs of such components - where available, to identify gaps and overlaps, building on previous work in this regard The review should focus on: - How the current components work together according to current TORs - What do these TORs say / What do components say they are doing - do they match - Consider the interoperability and practicality of TORs - Identification of gaps and overlaps within and between TOR

			- Places for better integration rather than a set of separate components - Develop a Compendium of GRA's ToRs / Strategies / Action Plans. Consider interoperability and practicality of GRA TORs - Map out where GOOS and the Management Team sit both vertically (with and to Member States and users) and horizontally (along value chain) with ongoing IOC processes (e.g. IODE), previous work undertaken by GOOS, and ongoing IOC-wide Strategies such as Sustainable Ocean Planning and Management (SOPM) <u>Review of Desired Structure</u> - Assess the true value of each constituent component of GOOS, in the context of the outcome of the Mission & Scoping Review. - Make recommendations on the need for, and value of, any changes to the constituent components of GOOS.
3	**Initial Proposal**	Proposal for revised GOOS moving forward	What do the community want GOOS to do? - including guidance support - areas for measuring success This will be further developed and delivered in phase II
4	**Communications toolkit**	Develop a communications toolkit that can be used by all members of the governance and support structure.	Toolkit developed, led by GOOS/IOC office with relevant consultancy engagement. Test each component with users. The toolkit will reflect the role and intended direction of the GOOS co-sponsors, e.g. the IOC Chair and Executive Secretary in engaging with IOC Member State Delegations GOOS National Focal Points, WMO member state delegations, UNEP member state delegations and delegations to ISC, business and other stakeholders beyond the observation community who are in a position to be supporting GOOS.

	Phase II: Develop and Deliver GOOS (to be further elaborated following Phase I)		
	Component	**Aim**	**Tasks**
5	**Revised Structure and Governance**	Develop and Deliver a reformed GOOS mission, structure and governance Consider - The Framework for Ocean Observing (FOO) and GOOS Strategy 2030 - GOOS evolvement into a critical infrastructure for a sustained and expanded ocean observing system. - Where GOOS needs to lead, where it needs to partner with others, where GOOS needs to support the activities of others; at the global, regional and national levels as well as where GOOS should not be involved (activities to deprioritise)	Based on the proposal from Phase I - Finalise the role, mission, structure, governance, operating procedures and processes This will include update to GOOS, GOOS mandates and TOR and clear guidelines/processes for operation GOOS wants to evolve into a truly global observing system that looks across the whole system and can identify the current state and/or future state of the whole of the ocean, the constituent components of GOOS need to be effectively and efficiently connected and integrated. What will be the most effective way to deliver GOOS and how should that be organized?
6	**User and Uptake Strategy**	Deliver a GOOS user and uptake strategy to identify the level of investment needed for a global ocean observing system. The support and investment from the scientific research community is not adequate to sustain and expand the observation system, we must more effectively and routinely engage the broader community - this includes documenting and tracking user needs, identifying opportunities and appropriate formats to ensure user uptake of observation-related information products, and discussing avenues for partnerships that include real support and investment. Consider: - Available cost /benefit analyses (e.g. by OECD, relevant insurance/reinsurance companies and other industry stakeholders, Ocean Risk and Resilience Action Alliance (ORRAA) that could provide estimates of both the cost and the returned benefit	Deliver analysis on who absorbs ocean data? - user uptake and emerging innovation Develop strategy that considers - Member States - Science (inc. POGO, major institutions using EOVs) including satellite community - Corporate / Blue tech/ financial Identify how the non-scientific community becomes a fundamental part(ner) of GOOS - such as “increased partnerships” with public, private, etc. that could strengthen those GOOS TORs that are currently weak eg.: technology innovation, technology scaling (another benefit of public-private partnerships), capacity development/training, public-private partnerships

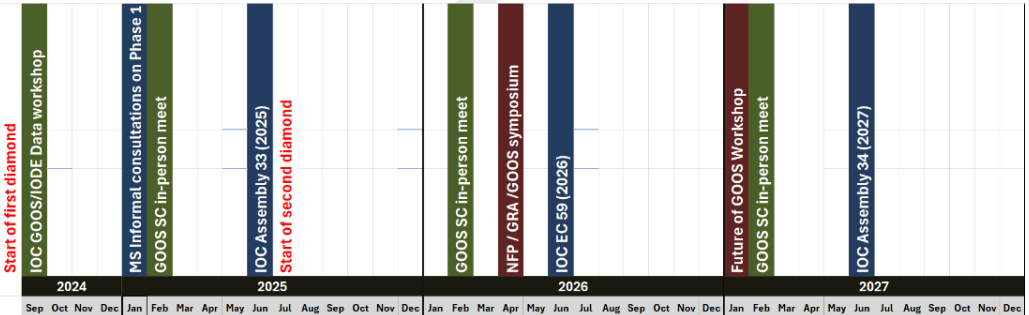
		- Learn from other "ocean data organisations" such as insurance companies, EMODnet who have undertaken similar work	Ultimately – the strategy must be able to respond to the question "how much does this cost, and is it worth investing"
7	**GOOS status and implementation plan**	Provide an outline EOV mapping and status, and GOOS implementation plan Consider advances in ability to track EOVs (open ocean and coastal) and optimised global system design	Develop GOOS status report and implementation plan (potentially modularised for GOOS delivery spaces Forecasting, Climate (carbon plan) and Health (biodiversity plan))
8	**IOC data architecture**	Jointly with all IOC sections co-develop the interoperable ocean data digital ecosystem that will fully enable the rapidly growing collections of ocean data and catalyze end-user applications and knowledge creation. Such a digital ecosystem has three key underlying components, namely, 'observations and data collection', 'data management and sharing', and 'analytics modeling and predictions'. Using co-design concepts with all relevant stakeholders, weave these three components together to create a Digital Ecosystem that strengthens the implementation of an ocean observing system that seamlessly feeds through to knowledge in the hands of end-users	Coordinate across IOC and Ocean Decade to jointly co-develop an IOC data architecture where GOOS data quality and standards are clearly identified and valued in the larger ocean data lake with GOOS as a "hypernode" of IODE. The architecture will be built in close collaboration with IODE (who's main goal is to co-develop a "digital ocean ecosystem"), OceanOPS, relevant IOC sections, DCO-data, DCC- observation and DCC-prediction, WMO, OBIS, ODIS, UNEP etc. Enable clear provenance (with semantic standards) of GOOS EOV data.
9	**Communications plan**	Develop a GOOS communications plan	Deliver a communications plan in line with the user and uptake strategy and reformed GOOS.
10	**GOOS 2030+**	Prepare revised TOR for GOOS and its components, clearly highlighted proposed changes/ new components Proposal to review and revise GOOS 2030 Strategy.	Revised/new strategy to be developed during the time period 2027-2029.

D. Project Plan

GOOS Governance

ES proposal with GOOS SC, Sponsors and Member States

DRAFT Project Plan



	TASK	START	END
	Phase 1. Discover and Define GOOS - Proposal to IOC 33 (2025)		
1	**Mission and Scope review and revision**	Nov-24	Jul-25
2	**Structure review**	Nov-24	Jul-25
3	**Draft Proposal for GOOS reform** (v1 for Member State comments and final version)	Apr-25	Jul-25
4	**Communications toolkit**	Nov-24	Jun-25
	Phase 2. Develop and Deliver GOOS - Proposal to IOC 34 (2027)		
5	**Revised GOOS** (mission, scope, structure, TOR, delivery mechanisms)		Apr-27
6	**User and Uptake Strategy**	Jul-25	Apr-27
7	**GOOS status and implementation plan**	tbc	tbc
8	**IOC Data Architecture** (proposal and implementation)	Apr-25	Apr-27
9	**Communications Plan**	Jan-26	Apr-27
10	**GOOS 2030+ revised strategy**		