Global Ocean Observing System

unesco
Intergovernmental Oceanographic Commission

WORLD METEOROLOGICAL ORGANIZATION

UN environment
United Nations Environment Programme

International Science Council

GOOS Update

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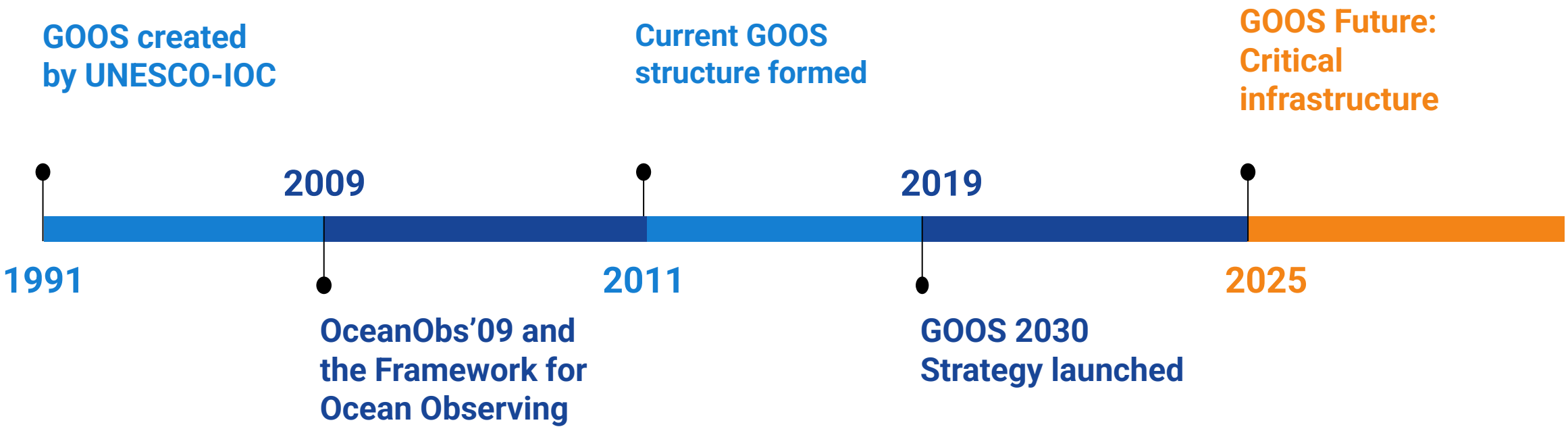
Ocean Observations and Services Head of Section, IOC/UNESCO

OOPC-27
2 June 2025, Villefranche-sur-Mer, France

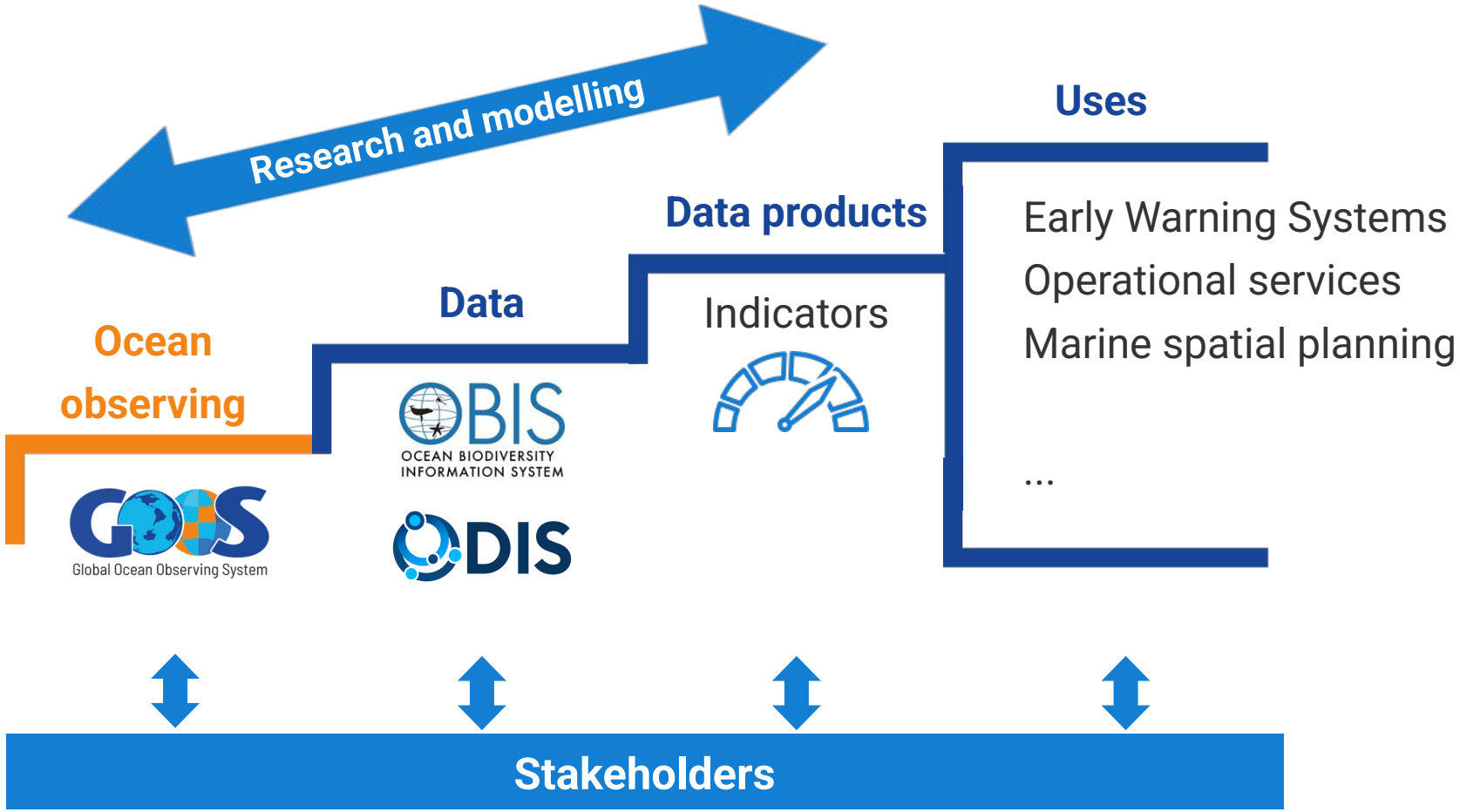
The Global Ocean Observing System (GOOS)

Leading and supporting a community of international, regional and national ocean observing programmes, governments, UN agencies, research organisations and individual scientists.

GOOS Evolution



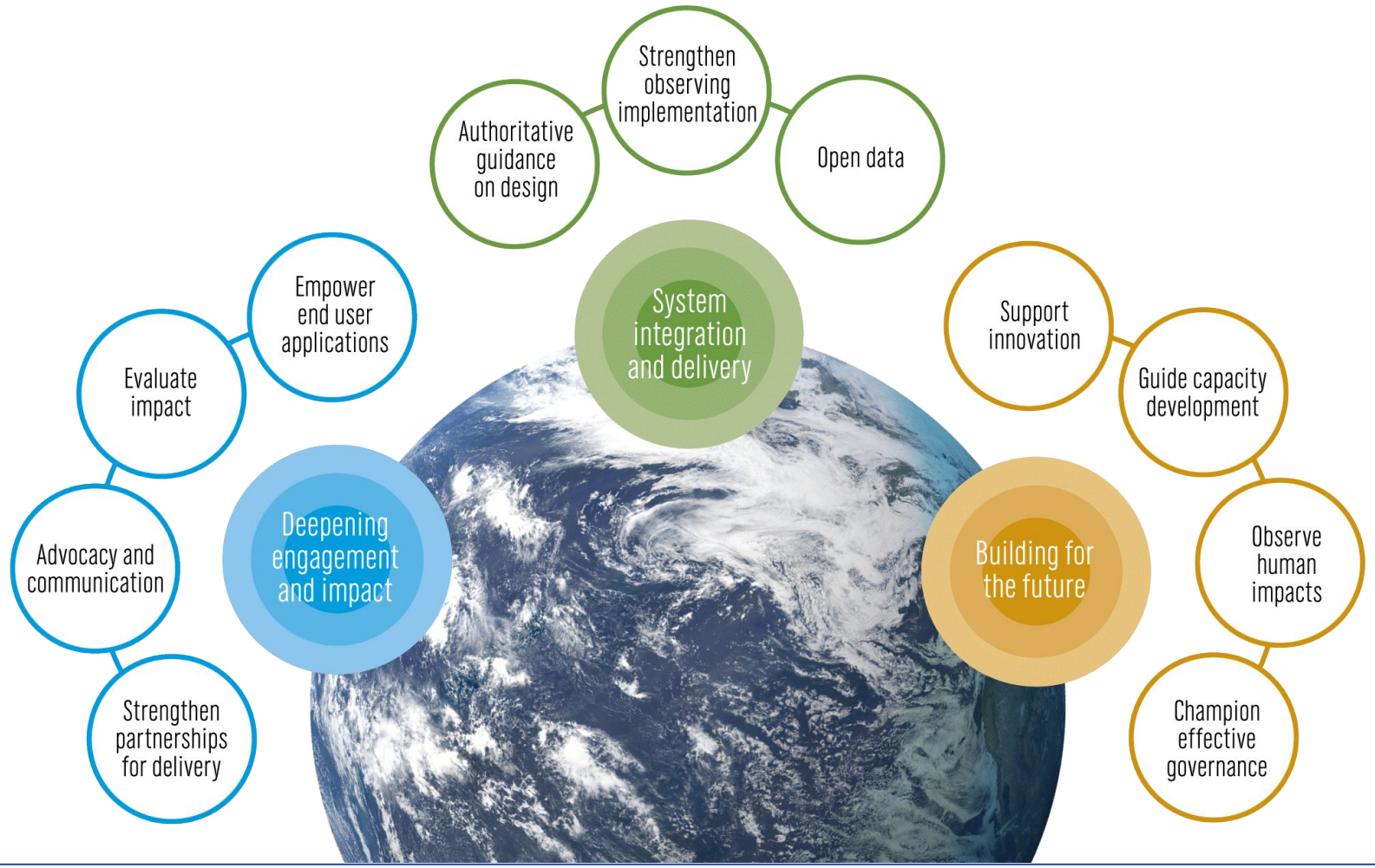
From observations to impact



The GOOS 2030 Strategy

Vision
A truly global ocean observing system that delivers the essential information needed for our sustainable development, safety, wellbeing and prosperity

Mission
To lead the ocean observing community and create the partnerships to grow an integrated, responsive and sustained observing system



Deepening engagement and impact

Advocacy within United Nations

CBD COP-16
COP-29
UNOC June 2025

COP16 COLOMBIA
Paz con la Naturaleza

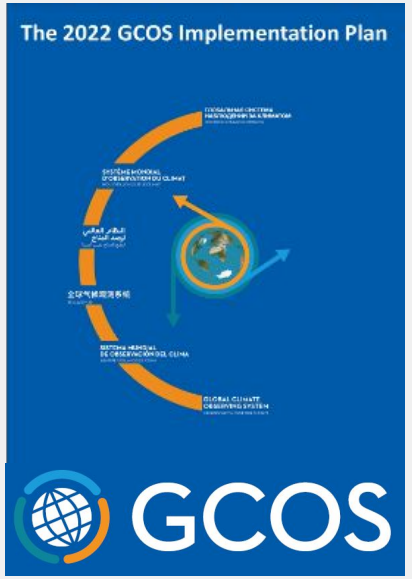
Implementing GOOS Communication Plan

Mailing list – GOOS Updates – articles, Report Card 2025
Communication toolkit
& GOOS brand update

The Global Ocean Observing System

Global Ocean Observing System

Strengthened partnerships



WORLD METEOROLOGICAL ORGANIZATION

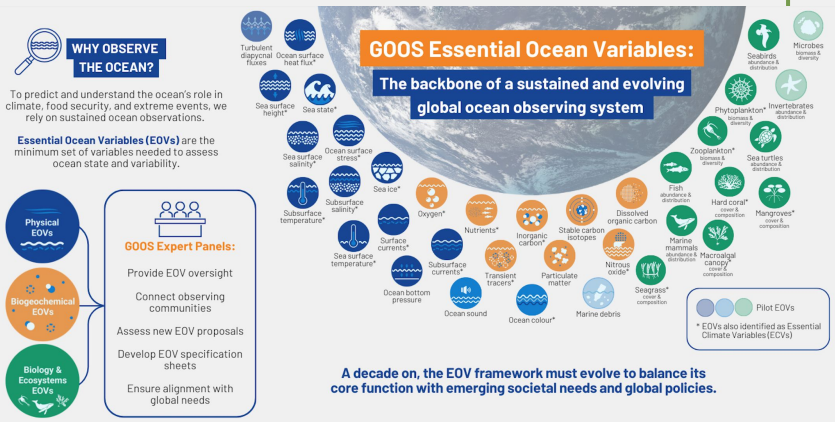
IODE

OECD

System integration and delivery

Structure & Standards

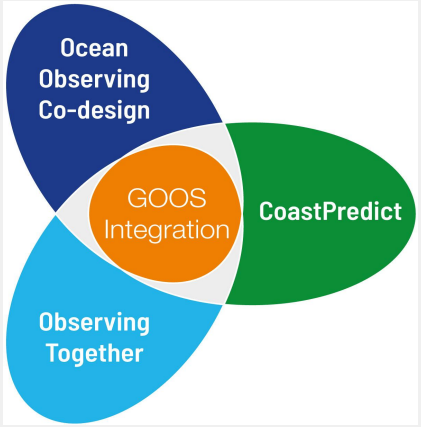
- EOV Paper Submitted (Marine Policy)
- **11** GOOS endorsed best practices – SOT endorsed Best Practice



Ocean best practices

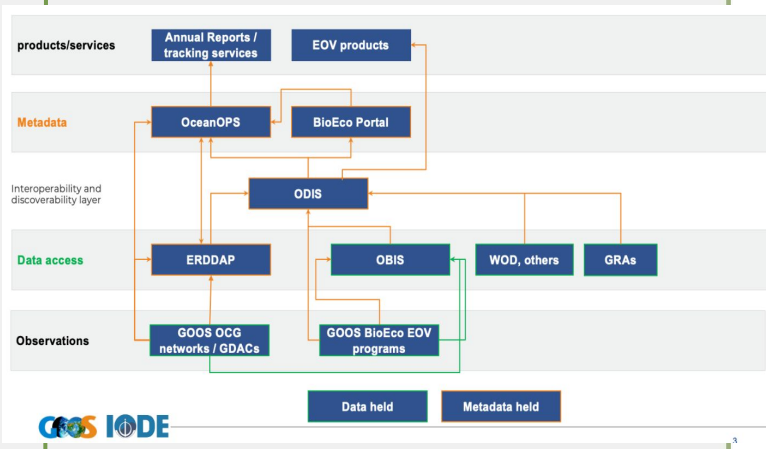
User focus – connecting down the value chain

- Ocean Decade Programmes and Projects
- WMO RRR work - first Ocean Applications Category >>> first Statements of Guidance



Digital Ecosystem

- First GOOS-IODE Data Workshop Sept 2024 >>> IOC Architecture (concept IOC Assembly)
- OCG Data Strategy Data TT work plays a key role, minimum metadata, ERDDAP nodes, EOVs, provenance



GOOS

System integration and delivery

Carbon and Greenhouse Gas Plan

- Developed under the BGC Panel with the collaboration of the Ocean Observing Co-Design Programme
- An important plan in the GOOS response to the GCOS IP and the WMO G3W
- Collaboration with other panels to coordinate carbon observations to complement inorganic carbon efforts
- Collaboration with Ocean Observing Co-Design – pillar 3 of the plan

Biodiversity Plan

- Goal of the plan: to serve as a roadmap to coordinate global efforts in marine biodiversity across all GOOS structures and components >>> IOC Biodiversity Plan
- Integrated with IODE/OBIS
- Collaborate key international partners active in marine biodiversity monitoring
- 2026-2027: Implementation of the GOOS Biodiversity plan

Ocean Observing Co-Design

by The Global Ocean Observing System

IODE International Oceanographic Data and Information Exchange

OBIS OCEAN BIODIVERSITY INFORMATION SYSTEM

GOOS

Building for the future

Collaboration with private sector

An opportunity to expand observing capacity, increase efficiency, and support blue economy

Tracking human impacts

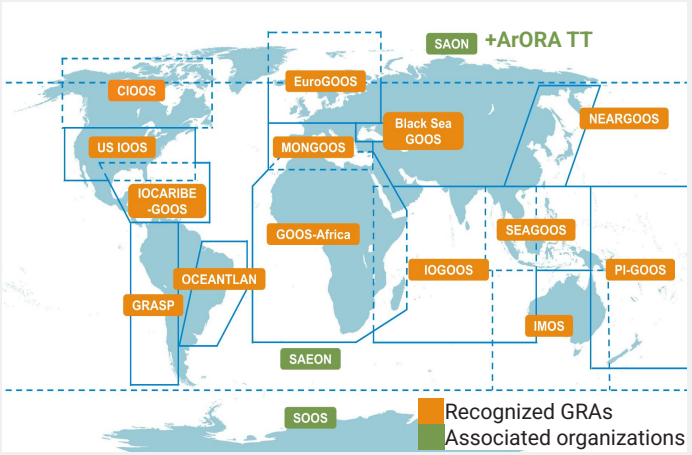
3 Essential Ocean Variables

- Marine debris
- Ocean colour
- Ocean sound

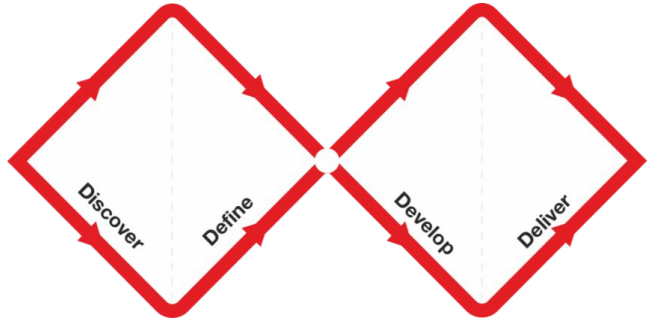
National Focal Points & Regional activation

81 GOOS National Focal Points

GRA regions being reinvigorated **Africa, Caribbean (IOCARIBE), Pacific Islands, Indian Ocean**



Decision EC-57/4.1 Request to ES



Proposal by the Executive Secretary to evolve GOOS governance, in consultation with t Steering Committee, representatives from Member States and GOOS sponsors.

Follow a double diamond approach.

1. Define the mission and scope of GOOS moving forward – the WHY and the WHAT.

	Phase 1. Discover and Define GOOS
1	Mission and Scope review and revision
2	Structure review
3	Draft Proposal for GOOS reform to A-33 (and side event)
4	Communications toolkit

2. 2026+ the approach taken to develop and deliver a reformed GOOS the HOW

	Phase 2. Develop and Deliver GOOS
5	Revised GOOS (mission, scope, structure, TOR, processes, delivery mechanisms)
6	User and Uptake Strategy
7	GOOS (EOV) status and implementation plan (GOOS basic network)
8	IOC Data Architecture
9	Communications Plan
10	GOOS 2030+ revised strategy

GOOS Steering Committee Focus Areas 2025-2027

1. Core coordination

WMO / IOC

OceanOPS

GOOS Steering Committee

Expert panels (OOPC, BGC, BioEco)

2. Observation system design and development

Carbon Plan

Biodiversity Plan

WMO Rolling Review of Requirements (RRR) and Evolving GBON

Refining EOV-led indicators

3. Strengthening data integration and delivery

IOC data architecture (cross-IOC sections)

Observations Coordination Group and GOOS Networks

OceanOPS

Bioeco Portal

4. Supporting implementation

Applications

National Focal Points

Global Regional Alliances

5. Partners and communication

Projects

Partners (Science, Government, UN, Satellite, Private Sector)

Communication including toolkit

GOOS status report card

6. GOOS Reform

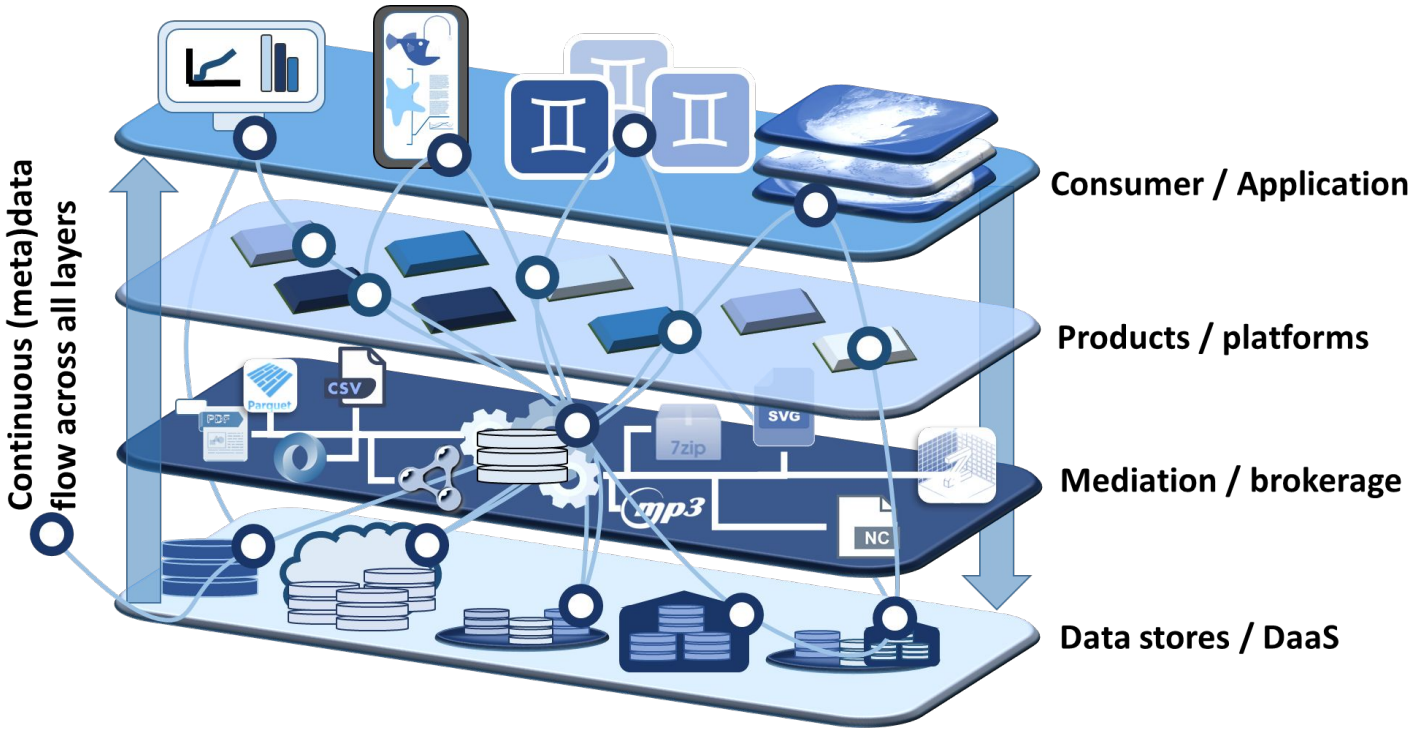
Double diamond approach

1. Mission & Scope – the Why and What

2. Users, Implementation and Communication – the How?

Ocean Decade Programmes

IOC Data Architecture Concept

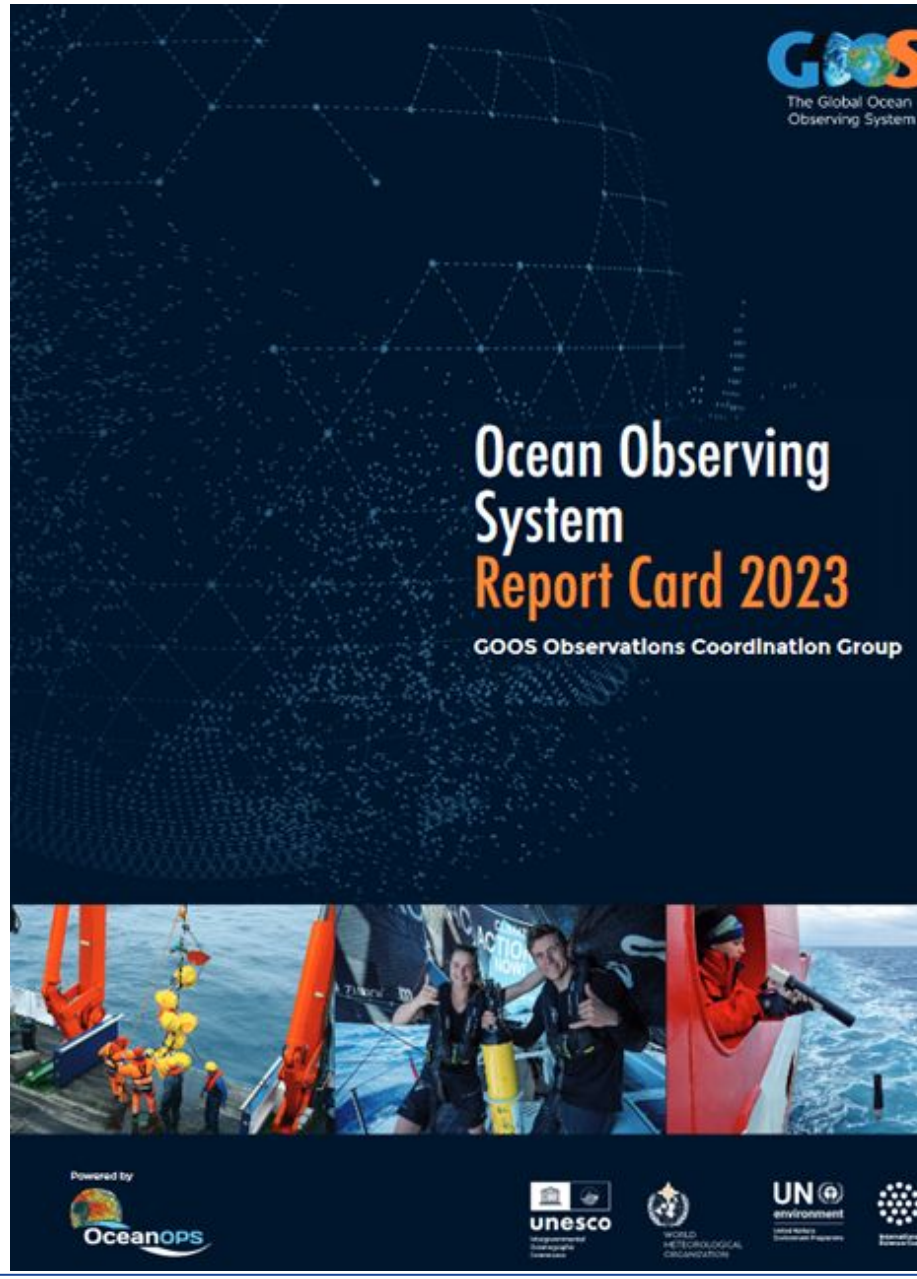


- Based on a data fabric model - federated system, metadata broker, connecting data and applications
- IODE ODIS provides active metadata & orchestration
- OCG ERDDAP provides data and metadata access
- OBIS is a thematic node BioEco EOVs
- OceanOPS / BioEco Portal interface for services
- Need for provenance and licensing metadata
- GOOS metadata tag to signal quality
- Decision on concept at IOC Assembly in June
- **Meeting Report**

Vision: A harmonised and tightly coordinated suite of IOC data systems delivering open, actionable, and freely available data for the ocean's digital ecosystem.

GOOS Ocean Observing Report Card

- **Yearly flagship report on the status and value of the GOOS and its networks since 2016.**
- **Purpose:** Highlights how an integrated ocean observing system adds value to society across the 3 GOOS delivery areas; Assesses networks' progress and challenges; Encourages collaborations and attracting new partners.
- **Audience:** Funders, implementers, high-level stakeholders, decision makers, and WMO-IOC Member States.
- **Upcoming issue**: October 2025 (with main focus on an interactive web version)



Topics for the 2025 Report Card

Main stories:

- **Climate**: insight into the **AMOC variability**, its societal impacts, scientific advancements, gaps, and the ongoing need for sustained ocean observations.
- **Operational services**: **El Niño,** its impact and the key role of ocean observations in predicting and managing its effects
- **Ocean health**: how **marine mammals in Antarctica** are providing real-time, quality-controlled biological data, and its implications for conservation.

Additional stories:

- **Strengthening and expanding local and regional ocean observing systems**: Highlighting **South Africa's / Agulhas Current system's** growing ocean observing capacity and its link to the Ocean Observing Co-Design programme..
- **Emerging networks - Advancing new technologies and capacity building:** Showcasing **FVON, SmartCables, SOCONET and USV** networks.
- **Fostering collaboration and engagement**: Featuring the role of civil society in ocean observing through the **2025 Vendée Globe race.**

WMO/IOC Joint Collaborative Board

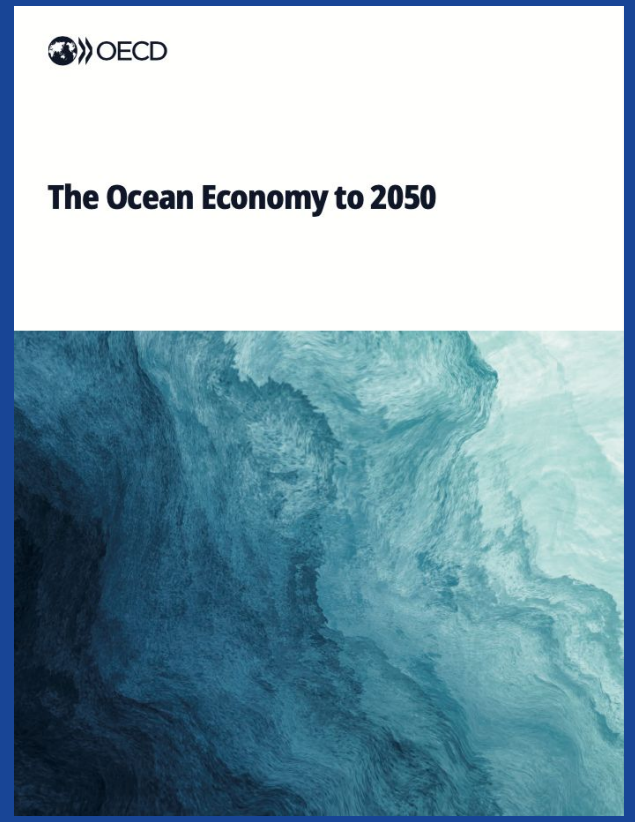
1. Global Basic Observing Network (GBON)
    - Co-create a definition of the Ocean GBON, incorporating additional ocean variables, in complement to / as a part of WMO's Global Basic Observing Network (GBON).
    - Joint WMO/IOC working group on GBON – TOR written/ membership determined and group to be started in 2025
2. Data Management and Interoperability
    - Enhance interoperability for an integrated observing and data system.
    - Improve data sharing between the WMO Information System (WIS) and the Ocean Data Information System (ODIS).
    - Develop a structured approach to Marine Climate Data Systems (MCDS) and enhance the integration of observation networks.
    - Joint WMO/IOC technical working group for data management
3. Coastal and Maritime Resilience
    - Strengthen coastal and maritime community resilience against hazards like tsunamis
    - Supporting the UN's Early Warning for All (EW4All) initiative.
    - IOC and WMO experts contributed to the report "Meteotsunamis: definition, detection and alerting services investigation" (IOC Technical Series 200, 2025). GOOS SC formed a task team to develop a proposal on how to contribute to the EW4ALL initiative
4. Capacity Development
    - Establish a Joint Oceanography and Meteorological Specialized Training Centre.
    - Share data management capabilities with developing countries and provide guidance on marine observing systems.

IOC and WMO coordination includes Global Campus Initiative and the Ocean Teacher Global Academy

IOC member join the WMO Executive Council Capacity Development Panel (David Farrel)

Ocean Observing as Critical Infrastructure

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 rely on this system for operational forecasting, preserving ocean health, sustainable ocean planning, climate change mitigation and resilience and the oce an economy.



Effective decision-making in the ocean economy depends on robust, real-time data. Strengthening ocean observation systems is crucial to addressing data gaps that limit the capacity to monitor ocean health and inform policy.

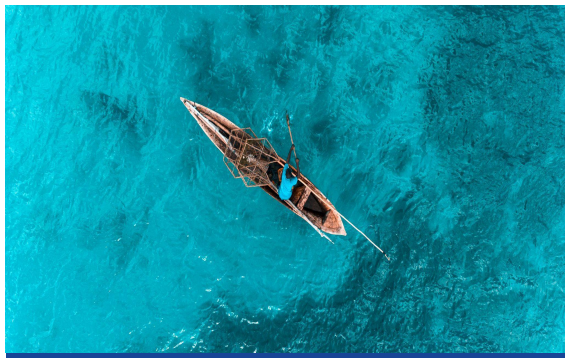
IOC Assembly (A33) June 2025

OONJ
WG reporting out - consider best practices - SOOP

JCB
WG Data, WG on GBON

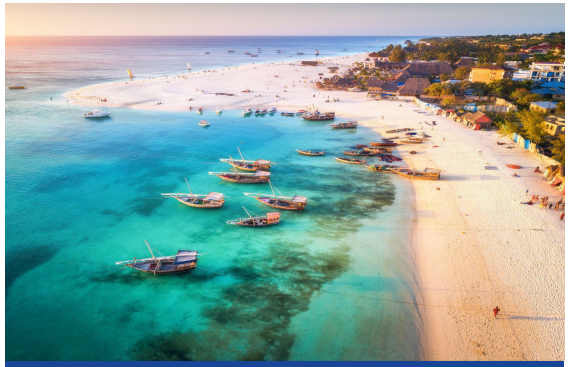
OBPS
IODE-GOOS > IOC

IOC Data Architecture



GOOS Governance Reform

GOOS Workplan



IOC Medium Term Strategy

Sustainable Ocean Management and Planning (SOPM)

The Global Ocean Observing System

Thank you

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UN environment programme

International Science Council