Global Ocean Observing System

ObsSea4Clim is funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for

ONE OCEAN SCIENCE CONGRESS

# Science-Based Development of the Rolling Review of Requirements for a Comprehensive Ocean Observing System

S. Speich, E. Heslop, S. Olsen, J. Karstensen, J. Pearlman, K. von Schuckmann, B. Martin Miguez, D. Legler, W. Yu

**One Ocean Science Congress | 3-5 June 2025, Nice, France**

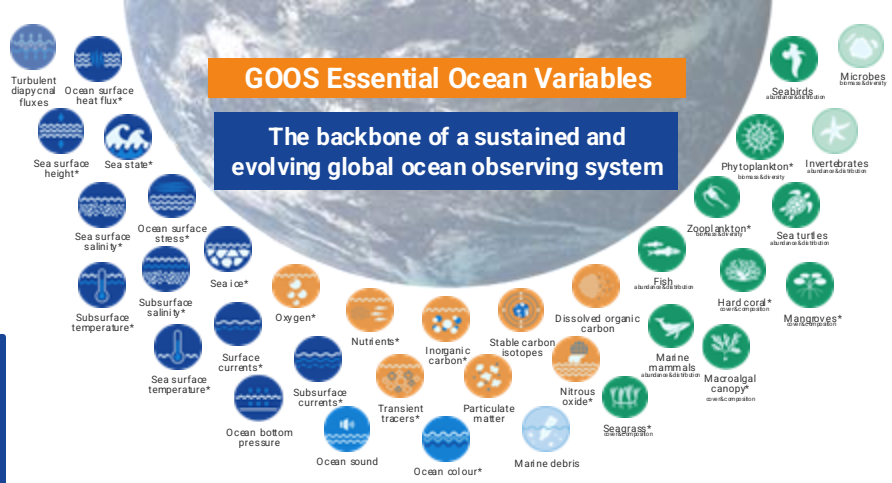
# The Global Ocean Observing System (GOOS)

## *Observing the Ocean. Informing the Future.*

## GOOS coordinates sustained observations for a wide range of applications

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

# GOOS Essential Ocean Variables (EOVs)




**Minimum set of ocean variables** needed to **assess ocean state and variability** for important global ocean phenomena, and to **provide essential data for applications that support societal benefit**.

Derived from sustained individual measurements, or combinations of measurements, that can be undertaken at global scale and in a cost-effective manner.

Pilot EOVs

* EOVs also identified as Essential Climate Variables (ECVs)

- System design & tracking
- Data policy & management
- Products & services
- Private Sector
- Best practices
- Funding requirements

14 LIFE BELOW WATER

United Nations Climate Change

THE LAW OF THE SEA

+ Biodiversity Beyond National Jurisdiction

UNEP

International Legally Binding Instrument on Plastic Pollution 2024

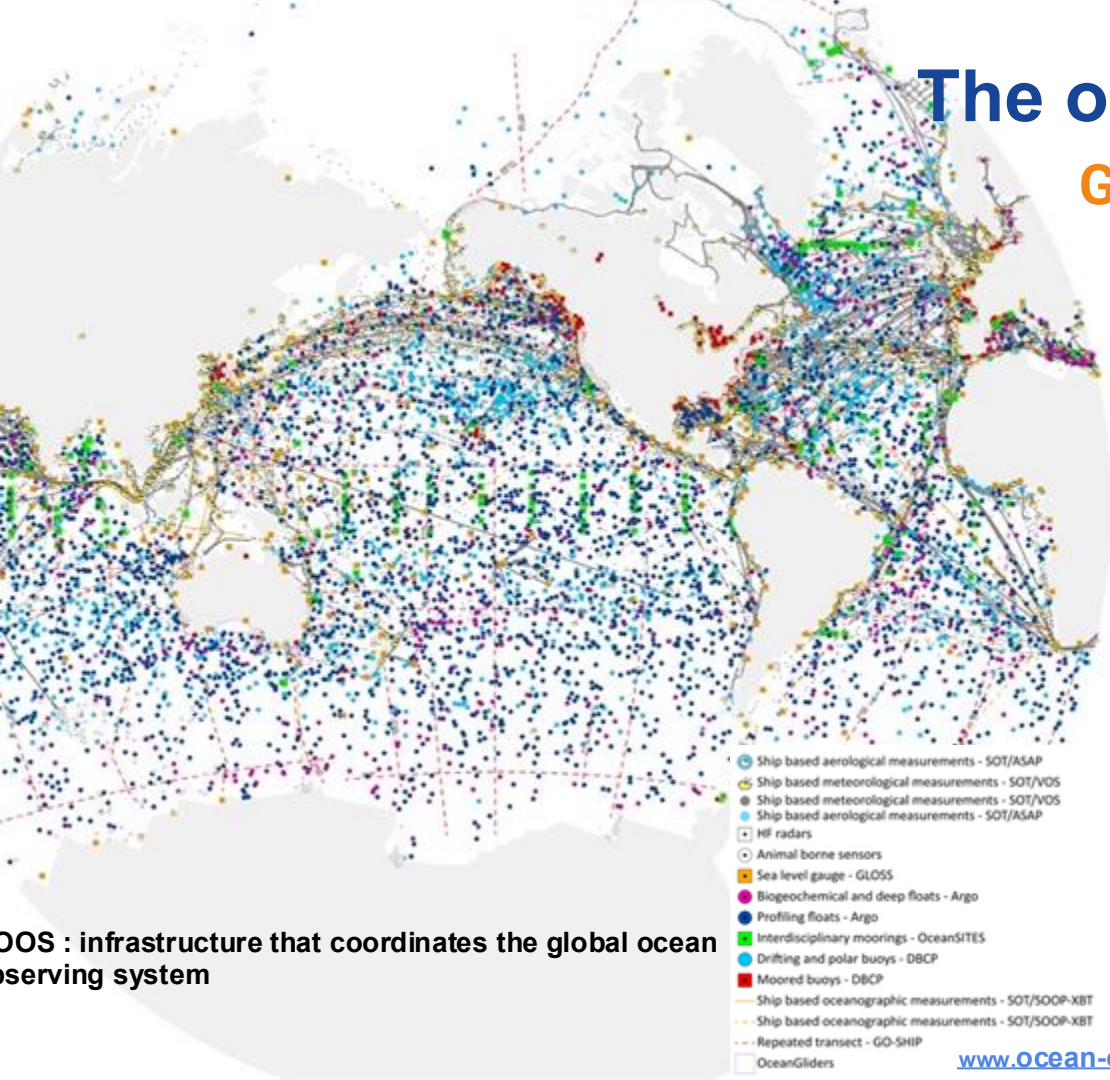
Convention on Biological Diversity

SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION 2015-2030

GOOS

# The ocean observing system

## GOOS & the Ocean in GCOS




**OOS : infrastructure that coordinates the global ocean bserving system**

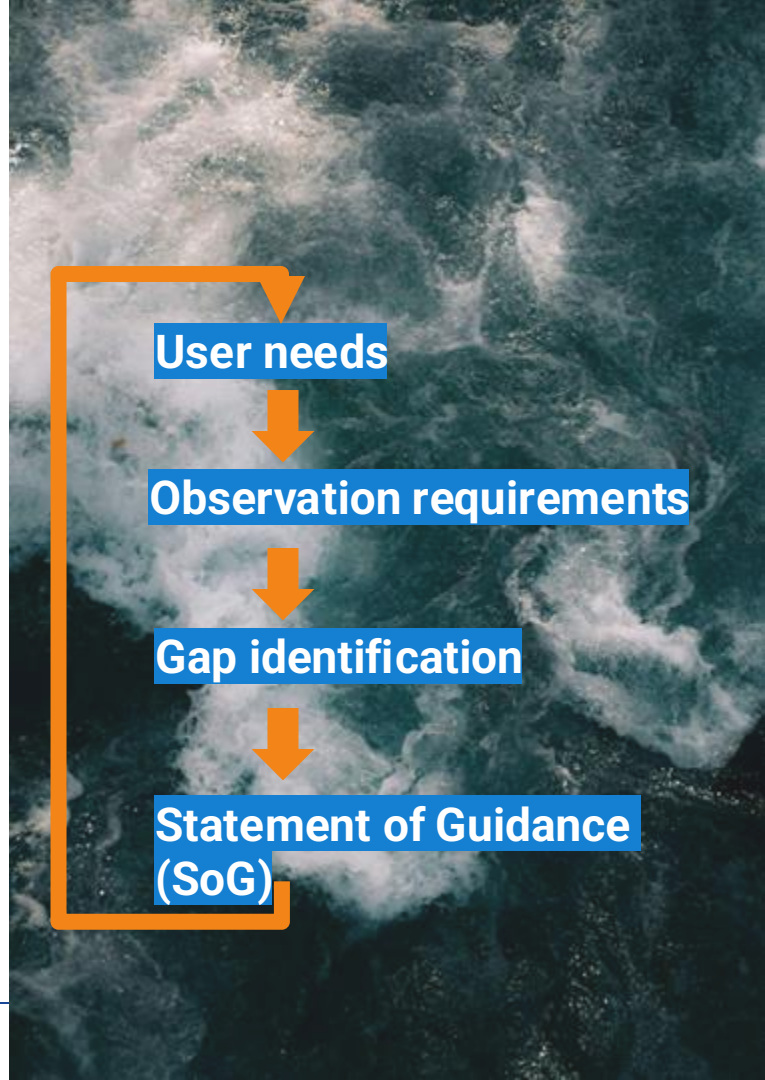
- A true global collaboration:
  **84 countries, 8,900+ observing platforms, 13 global networks (+ 3 emergings)**
- Ocean and marine meteorological Essential Ocean/Climate Variables
- **>120,000 observations delivered per day to operational services** across climate, weather and hazard warnings and ocean health
- Today it covers only 65% of the needed observations in physics, much less in chemistry & biology
- The whole system is extremely fragile funded through research project and programs. It is not sustained and rest on individual scientists
- Mandate from UNFCCC

www.ocean-ops.org/reportcard2023

# The Rolling Review of Requirements (RRR)

- A systematic and transparent process within the WMO Integrated Global Observing System (WIGOS)
- Collects and reviews user requirements existing services, across application areas
- GOOS is leading the FIRST Ocean Application Area, Statement of Guidance to be released in June 2025

**RRR helps guide the evolution of global observing systems to meet evolving user needs and will help define a global basic ocean observing network**

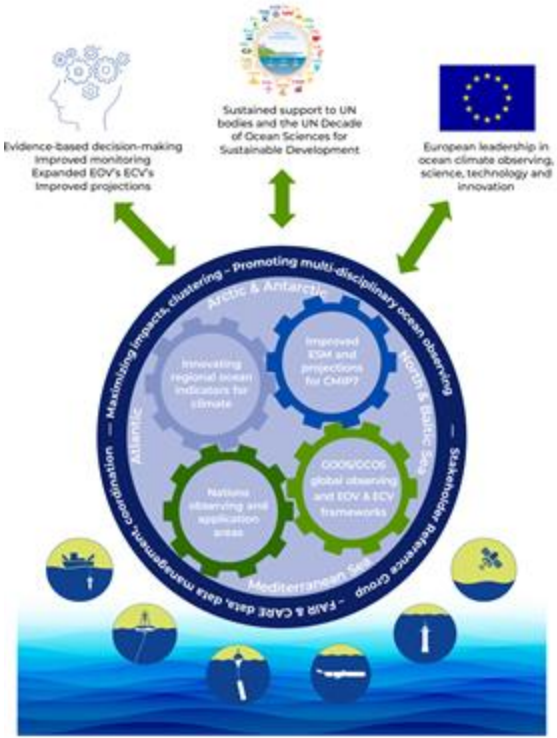


# ObsSea4Clim

## Ocean Observations and Indicators for Climate and Assessments

- *EU Call: Closing the research gaps on EOVs in support of global assessments - Physics*
- 19 partner (incl. 2 from India), Coordination: DMI
- Start: 01. Feb 2024 (4 years)

1. **Development of a RRR process guidance** based on sub-Climate Application Areas
2. **Definition of EOV/ECV-based Ocean Climate Indicators**: This helps to refine the requirements for a climate observing system going from global to regional and local scales
3. **Six sub-climate application areas** (sea level, ocean transports, marine heatwaves, ocean mesoscale, ocean stratification, sea ice)
4. **Improved projections and performance of Earth System Models** (support to improvement of next gen. ESMs, e.g. CMIP7)
5. **Making ObsSea4Clim science and innovation actionable** (via clustering EU projects, GOOS/GCOS, and stakeholder engagement)




ObsSea4Clim is funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.

# RRR – ObsSea4Clim Climate Application Areas & Approaches

OCEAN OBSERVATIONS AND INDICATORS FOR CLIMATE AND ASSESSMENTS

## Refine the WMO/GOOS Rolling Review of Requirements (RRR) process approach on specific climate application areas to provide a reference document associated with best practices

**Using the WMO RRR process and applying it to EOV/ECVs on ObsSea4Clim sub-climate application areas**

**Focus: Defining the processes to identify the needs to ensure European nations observing (e.g., EuroGOOS, EOOS, MSFD) deliver strong and coordinated input to the global collaboration for addressing large-scale and global climate information requirements and climate-linked marine extremes**


**Outcome: A general framework to the RRR process approach for ocean applications**

Funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.

Global Ocean Observing System

goosocean.org

**<- Explore other key events at OOSC and UNOC**

Obs Sea 4 clim

OCEAN OBSERVATIONS AND INDICATORS FOR CLIMATE AND ASSESSMENTS

https://www.linkedin.com/company/obssea4clim

www.obssea4clim.eu

https://bsky.app/profile/obssea4clim.bsky.social

Argo Program / Scripps Institution of Oceanography at UC San Diego

unesco Intergovernmental Oceanographic Commission

WORLD METEOROLOGICAL ORGANIZATION

UN environment programme

International Science Council

# Thank you