



The Global Ocean Observing System



# Session 2.3: Ocean indicators

**Karina von Schuckmann, Sabrina Speich**

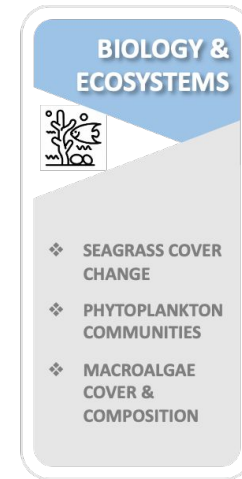
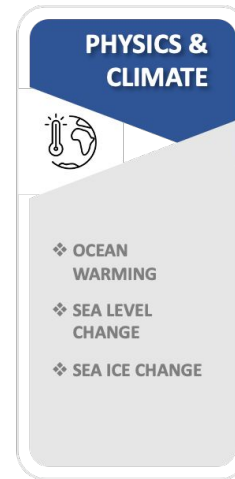
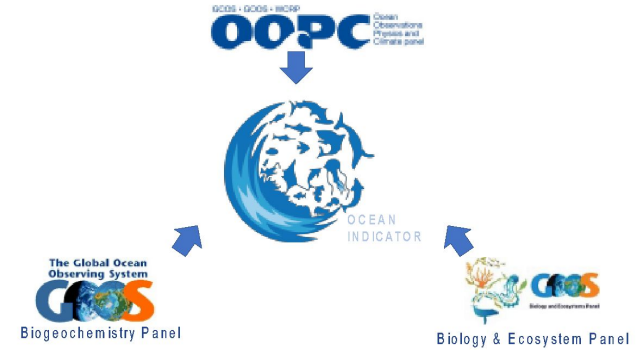
**14th GOOS Steering Committee meeting (SC-14) | 19-21 February 2025 | Paris, France**

# Recent advances

International framework on Ocean Indicators – a cross-panel initiative:

- Agreed new definition
- Agreed criteria for Ocean Indicators
- A guide for indicator implementation
- Proposed set of nine GOOS pilot indicators for physics & climate, biogeochemistry, biology & ecosystems


Scientific publication to be submitted to the Journal of Marine Policy (March 2025).



# Existing issues

Good progress, and albeit more long-term than expected, multi-disciplinary dialogue ongoing

**PHYSICS & CLIMATE**




- ❖ OCEAN WARMING
- ❖ SEA LEVEL CHANGE
- ❖ SEA ICE CHANGE

**BIOGEO-CHEMISTRY**



- ❖ OCEAN ACIDIFICATION
- ❖ OCEAN DE-OXYGENATION
- ❖ NET COMMUNITY PRODUCTION

**BIOLOGY & ECOSYSTEMS**



- ❖ SEAGRASS COVER CHANGE
- ❖ PHYTOPLANKTON COMMUNITIES
- ❖ MACROALGAE COVER & COMPOSITION

# Next steps

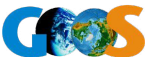
**Short-term (2025):** pass peer review of the scientific foundation for the international framework on ocean indicators (Journal of Marine Policy); engage with GOOS for further implementation, including visibility on the web-portal, identify linkages and implementation options across GOOS, and with the UN Decade on Ocean Science. Define the connection between the Essential Ocean Variables and the ocean indicators.

Resources needed: Engagement from the three panels/officers to finalise the paper. Support for communication (GOOS Newsletter etc.)

**Mid-term (2026-2027):** Benefit from the proposed pilot indicators for regular reporting on the ocean state, variability and change as part of annual reporting (e.g., IOC State of the Ocean Report). In addition, identify and agree on ocean regions, and explore opportunities for regionalized regular (annual) reporting of ocean indicators, taking into consideration observational capabilities within the GOOS Regional Alliances.

Engage with international assessment activities seeking for integration of the pilot indicators in relevant reporting assessments (e.g., IPCC, WOA, IPBES, WMO).

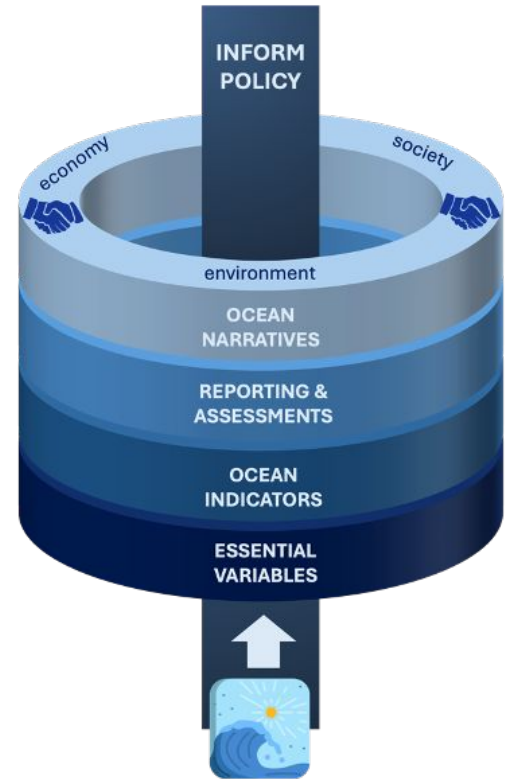
Resources needed: Secretariat support to explore regionalization and GRAs capacities to engage with this process. Secretariat support to explore integration into other reporting assessments.



# Next steps

**Long-term:** Engage and create momentum for the development of ocean narratives to connect GOOS ocean indicators with socioeconomic indicators, as well as to interlink to ongoing global dialogues (e.g., UNFCCC GGA). Continued dialogue with the GOOS panels for the expansion of the framework (e.g. developing further relevant indicators).

Resources needed: Participation in relevant international fora; Engagement of the GOOS panels/other experts to expand the framework.



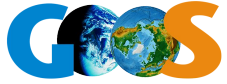
von Schuckmann et al., in prep

# Risks

- Challenging peer-review process (complex topic; multi-disciplinary) & hence further delays
- Challenges for the regionalization (eg, definition of regions, observing system gaps, uncertainties) for ocean reporting
- Inconsistencies across international reporting
- Challenges for transdisciplinary ocean narratives across different governance structures (interlink environment, society, economy)

# Considerations for the SC

- How should this activity develop to make sure it is fully integrated into GOOS?  
Webpage, formal recognition by the SC and or IOC?
- Could there be a section led by GOOS based on these Indicators in the IOC State of the Ocean Report?
- Identify GOOS Ocean regions for which a regionalization approach can be applied for regular reporting on ocean indicators
- Identify and engage in linkages with international assessment activities for integration of the GOOS pilot indicator themes in their activities
- Identify leveraging points for scientific activity around new indicators, and ocean narratives for observing system recommendations, and cross-links with GOOS relevant programmes & initiatives and the UN Decade for Ocean Sciences.



The Global Ocean Observing System

# Thank you

[goosocean.org](http://goosocean.org)

