

THE GLOBAL OCEAN OBSERVING SYSTEM BIOLOGY AND ECOSYSTEMS EXPERT PANEL
(GOOS BioEco)
Terms of Reference and Governance
Revised September 2023

Overview

The Global Ocean Observing System (GOOS) is a programme under the Ocean Observations and Services Section (OOS) of the Intergovernmental Oceanographic Commission (IOC) of UNESCO. Recognising growing scientific and societal needs for sustained observations of ocean biological and ecosystem variables and building on the GOOS Framework of Ocean Observing and the work of the Panel for Integrated Coastal Observations, the GOOS Steering Committee established an Expert Panel for Biology and Ecosystems (GOOS BioEco). The GOOS BioEco Panel is one of three panels of GOOS focused on developing a coordinated, robust, global observing system for ocean biology and ecosystems by identifying and developing Essential Ocean Variables (EOVs), supporting GOOS in delivering biology and ecosystem observations that inform policy and management, and facilitating the global implementation and reporting of EOVS observations.

Overall responsibilities and commitments

The GOOS BioEco panel responsibilities and commitments include to:

1. **Review and prioritise the requirements** for sustained ocean (high seas and coastal, surface to bottom) observations of biological and ecosystem components, including:

- Engaging the broad scientific community in **identifying and developing biological and ecosystem (BioEco) Essential Ocean Variables (EOVs)** based on scientific and societal information needs.
- **Assessing the readiness** of observing technologies for gathering information on BioEco EOVS, identifying those with high feasibility and high potential impact in delivering required information.
- Assessing the **adequacy** of present global EOVS observations and making recommendations to GOOS for **phased implementation of BioEco EOVS observations**.
- Providing a source of **technical advice** on the development of national coastal and ocean observing requirements and observing system implementation plans.
- Engaging in projects that **support the coordination** of networks to advance international observing capacity, development of best practices, articulation of data schemas and interoperability, and/or inform an evaluation process of the biological observing system.
- **Maintain and promote** interactions with other GOOS expert panels and GOOS components to coordinate activities across GOOS, identify areas of collaboration, improve information exchange and ensure messaging relating to biology and ecosystem is consistent across GOOS entities.
- Collaborate with GOOS to continually **evolve the messaging** needed for the various audiences on the need for BioEco EOVS and integration of BioEco into ocean observing efforts.

2. **Coordinate observing networks** that contribute to the BioEco EOVS by:

- Encouraging national commitments and international collaboration to global observing networks.
- Identifying opportunities to promote the collection of biological EOVS within

- existing and proposed observing networks.
- Developing and advancing a set of specifications (specification sheets), implementation goals, and progress metrics for individual EOVs.
- Promoting and recommending common methodologies and observing standards for global and national observations, including data quality control and quality assurance procedures, data and metadata formats, and development and use of best practices.
- Promoting FAIR data sharing for global and national observations.
- Identifying opportunities for synergistic cooperation, common technical support, capacity building and capacity sharing by working with relevant IOC-UNESCO programmes and other organisations.
- Contribute to emerging national and international frameworks and bodies to provide rationale and justification for the use and application of relevant BioEco EOV observations to advance understanding and aid reporting and decision-making.

3. Work with **existing and emerging data systems** related to data management aspects, taking into account the IOC-UNESCO's oceanographic data and information exchange (IODE) programme, network and data systems, and, in particular, building on the IODE's Ocean Biodiversity Information System (OBIS) and linked GOOS BioEco Portal by:

- Fostering wider data sharing, curation and aggregation in order to streamline data interoperability and the feeding of integrated and quality-controlled datasets into modelling frameworks and other data-use applications.

4. **Develop a process** for:

- Ongoing identification and acknowledgement of biological observing systems collecting EOVs.
- Assessment of observing systems' capacity to deliver high-quality data and information on the EOVs (including raw data, analytic outputs, model outputs, reports, etc) to the global system.
- Liaising with groups or organisations contributing to national, regional, and global assessments to evaluate if the existing EOVs and associated observing systems meet current scientific and social needs.
- Contribute to endorsement processes for ocean best practices and methodologies in collaboration with the IOC's Ocean Best Practices System (OBPS).
- Working with GOOS to develop advice and rationale for IOC-UNESCO member countries to engage in augmented ocean observing systems and applications.

5. **Report** to GOOS SC [and other sponsor governing bodies] and work with external collaborating agencies and initiatives on shared objectives and goals.

Governance Structure of the GOOS Biology and Ecosystems Panel and roles and responsibilities.

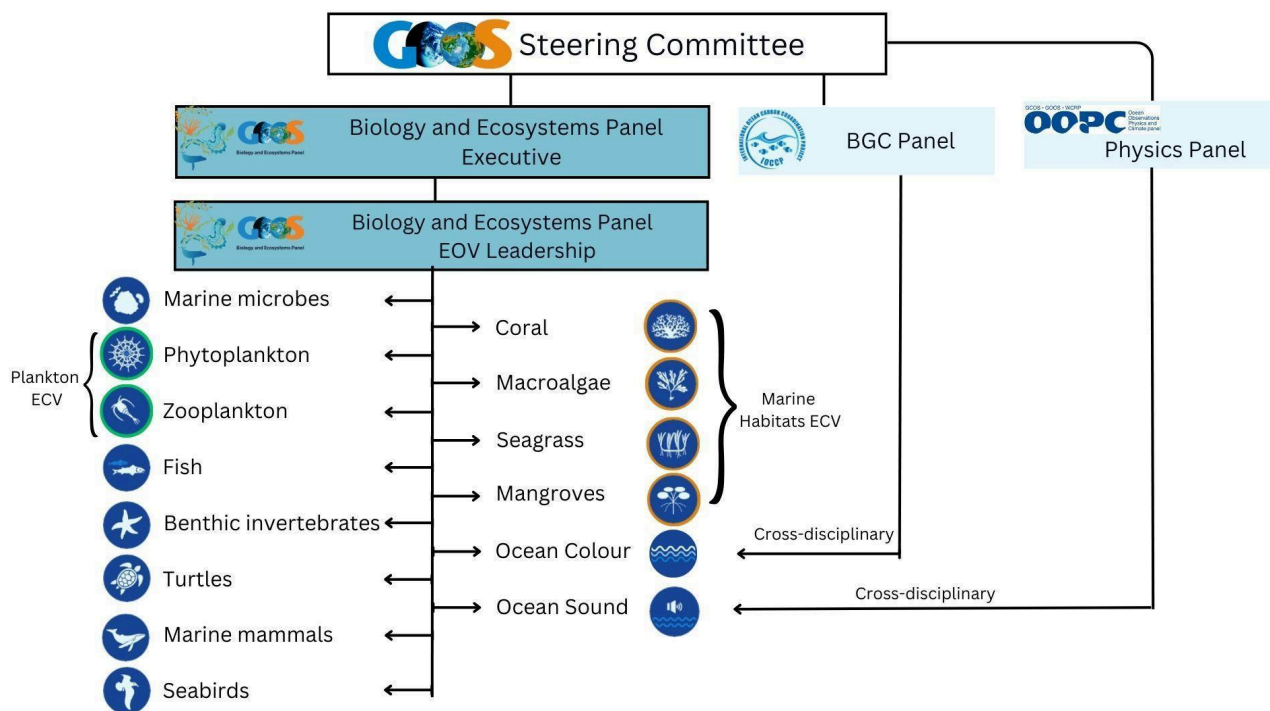


Fig. 1 Governance Structure of Biology and Ecosystems Panel within the Global Ocean Observing System

BioEco Executive

The BioEco Executive oversees and guides the GOOS BioEco Panel, leading both the development and the regular evaluation of the Panel's work and progress. It supports the work of the biology and ecosystems component of GOOS, with a particular focus on developing mechanisms and activities that support sustained ocean observations and their use (e.g. in international, regional and national reporting) and identifying and working with funders of sustained observations. The BioEco Executive also identifies and resolves any issues as they may arise and works closely with the GOOS Executive to progress the objectives of the GOOS 2030 Strategy, including identifying funding options and opportunities that may support the Panel's activities.

It consists of the Panel Chair(s), the International Project Officer and, if resources allow, the Secretariat. The BioEco Executive holds regular teleconference meetings (2-3 week intervals) and meets with the Panel either face to face or virtually four times a year. The BioEco Executive attends GOOS Steering Committee meetings and, on request, GOOS Steering Committee inter-sessional meetings or specialist task teams organised by the GOOS Executive or GOOS Steering Committee (see Time Commitment). The Chair(s) are nominated by the Panel and approved by the GOOS Steering Committee.

Time commitment

In providing strategic direction for the implementation and maintenance of the GOOS Biology and Ecosystems Panel, the role of the Chair(s) will require the range of skills and experience outlined below. The role of Chair(s) involves a commitment of approximately 20 working days a year. Chair(s) and Panel are supported by a full-time International Project Officer and, if resources allow, a part-time secretariat staff member (shared with IODE/OBIS or seconded by a relevant project or organisation) and funded by UNESCO's regular programme. Funding required to allow the BioEco Executive to travel on behalf of GOOS and to support the Panel to meet once per year is ideally provided by the IOC. However, some institutional support from each of the BioEco Executive members' organisation(s) is expected.

The Panel Chair(s) is/are a full member(s) of the GOOS Steering Committee, which meets via a combination of virtual and in-person meetings. The Panel Chair(s) is/are also a member of the GOOS Executive Committee [GOOS Co-Chairs, Expert Panel Chairs, GOOS Program Director, and the three Panel Project Officers], which meets virtually 2-3 times per year and, where practical, uses major conferences to meet in-person. The Panel Chair(s) will serve two-year terms that may be renewed up to three times consecutively to a maximum of six years. If there are two Co-Chairs, these should not be renewed in the same year.

Attributes of Panel Chair(s):

- Experience working at a “systems level” across taxonomic/ habitat/ ecosystem/ geographic levels & scales. Given the complexity of the systems and challenges to arrive at suitable indicators of ocean system function and health, it is desirable to have Chair(s) that can think and evaluate outside of their specific areas of interest.
- Track record in leading collaborative efforts at scale (ideally with experience in working internationally) and ability to supervise activities [of Project Officer(s) and colleagues] working outside your own workplace.
- Understanding of the local/regional/international context for sustained observations and their role in supporting assessments of ocean health
- Commitment to building a sustained global observing system for ocean biological and ecosystem monitoring.
- Advanced communication/presentation skills, including representation of GOOS to National and International science and science user audiences (e.g. policy, management, industry, etc).

Specific roles of the BioEco Executive

The GOOS BioEco Chair(s) will:

- Engage with the community to promote the Panel's objective of supporting the development of an observing network around identified EOVs, including pilot studies, ocean observing system components, technologies designed to measure such EOVs, and mechanisms for developing aligned methodologies, data standards and QA/QC procedures for biological data, and approaches for data sharing across the global community, in collaboration with OBIS.
- Engage with stakeholders, mostly with policy makers and end-users to promote the need for the observing system and the use of the data to inform management and contribute to international reporting commitments.
- Promote the use of the Framework for Ocean Observing as a basis for

- building the biological and ecosystem components of GOOS.
- With the GOOS Executive, explore funding opportunities to help advance the BioEco Panel's work and support the Panel's activities.

The GOOS BioEco International Project Officer will:

- Support the GOOS BioEco Panel in their EOV-focused activities, including collaboration and dialogue with the scientific community via national and international organisations, scientific steering committees, scientific workshops, and expert meetings.
- Support GOOS BioEco Panel activities in developing and coordinating EOV networks.
- Support the BioEco Panel in coordinating data collection, management, data product development, archival of ocean biology/ecosystems data, and regional and global data syntheses.
- Assist OBIS in maintaining an international directory of ocean biological observation activities, delivered through the BioEco Portal and GOOS reporting mechanisms such as the GOOS Report Card, where required.
- Work with the other International Project Officers supporting the GOOS expert Panels and the GOOS Regional Alliance in a distributed GOOS Project Office, ensuring effective coordination across GOOS.
- Liaise and coordinate with projects that contribute to the EOVs and where they might contribute directly to the Panel's work; together with the Co-Chairs, negotiate terms to support their contributions.

The GOOS BioEco Secretariat will:

- Support GOOS BioEco Panel activities, including fundraising, workshops, evaluations of the state of the observing system, standardisation and best practices for observations and data management, data sharing, regional and global data syntheses, projects, and outreach.
- Support coordination with the GOOS Regional Alliance, the GOOS-led programmes endorsed under the UN Decade of Ocean Science for Sustainable Development, GOOS projects, and other relevant bodies relevant to global ocean observation.

GOOS BioEco Panel

To fulfil the Panel's responsibilities and commitments, two expert members will ideally lead the coordination of each EOV. They will work with the BioEco Executive to progress BioEco's contributions to the GOOS 2030 Strategy and goals of the BioEco roadmap. In consultation with the panel, the Co-Chairs can invite additional experts as observers to panel meetings, as appropriate.

Specific roles of the GOOS BioEco Panel

- To engage the broad scientific community to progress the maturity of the identified BioEco EOVs within their areas of expertise.
- To contribute to the GOOS BioEco roadmap by developing and facilitating EOV implementation plans within a global observing system, promoting best practices and data sharing, and regularly reviewing and updating the EOV specifications.
- To connect observing networks collecting observations that contribute 'their'

EOVs to GOOS systems, including OBIS, OBPS, OCG, etc. and facilitate the coordination of activities as identified in item 2 of the overall responsibilities of the BioEco Panel.

- To promote consistent messaging on the justification, application, and benefits of BioEco EOVs for use across GOOS expert panels, GOOS SC, other GOOS components and relevant IOC programmes.
- To ensure an adequate succession plan is in place during their membership term to support continuity of expertise on the Panel.
- To assist the BioEco Executive in identifying expertise to contribute to the Panel, including co-leads for EOVs and replacement Panel members.

Recruitment Process for BioEco Panel Members

A call for new members of the BioEco Panel is issued when:

- A current member is within six months of finishing their maximum term limit or has indicated that they need to step down from the Panel before their term finishes.
- A need for additional expertise on the Panel is identified.

Issuing an open call for applications

- The BioEco Executive, in consultation with the relevant expert members of the Panel (either rotating off, stepping down or seeking a co-lead for the EOV), will prepare the call for panel membership, with specific requirements responding to the Panel's need for expertise. This may include requests for membership relating to more than two positions on the Panel at any one time.
- The BioEco Panel will communicate the call via the Panel website, GOOS communication channels and other communication/networking channels available to the Panel.
- Each call will be open for a period of four weeks.
- The period of the call may be extended if the call does not attract any applications for a given position or if the BioEco Executive identifies through an evaluation process that no suitable applicants are fulfilling the list of requirements identified in the call.

Selection process

- Members of the BioEco Executive and panel member(s) within the field of expertise (including the member concluding their term) will evaluate all membership applications based on (i) the applicant's ability to meet their role as a Panel member as described in the BioEco Terms of Reference and (ii) expertise associated with the relevant EOV and observing community.
- After recommending Panel membership, the BioEco Co-Chairs will inform the GOOS Steering Committee.
- The selected candidate will be notified about their appointment by the BioEco IPO and provided with the Terms of Reference and Governance documentation.

Term of Panel membership

Panel members will serve two-year terms that may be renewed up to three times consecutively (to a maximum of six years). Panel member terms will be staggered, and no more than a third of the Panel membership will be replaced in any year. Prior Panel members may return to the Panel after a break of at least one year. Panel members are expected to serve their full two-year terms but may request, in writing, to rotate off the Panel and provide notice at least three months in advance to allow time for a recruitment process for a

replacement. For members reaching the maximum term limit, a recruitment process will be started six months in advance to ensure adequate succession planning and handover of knowledge and information between those members coming to the end of their term and the new member.

REVIEW OF TERMS OF REFERENCE

These terms of reference will be reviewed every two years by the Panel and re-approved by the GOOS steering committee if significant revisions are made. The continuation of the expert Panel is at the discretion of the GOOS steering committee.