

# GOOS SC-12

24 - 27 April 2023

Halifax, Canada

## Reports from GOOS components Biology & Ecosystems Panel

*Chairs: Gabrielle Canonico (NOAA) and Karen Evans (CSIRO)*

*International Project Officer: Ana Lara Lopez*

# 1. Achievements and Highlights

## **Development and launch of the GOOS BioEco Portal 1.0**

Hosted by OBIS, the BioEco Portal was completed in July 2022 (<https://bioeco.goocean.org/>). The BioEco Portal is an online platform that provides essential metadata to visualize the extent of BioEco observing networks in the global ocean and to identify who is measuring what, where, how, and why for marine life. This information serves as a crucial starting point for coordinating and improving access to marine life observations, thereby bridging the gaps in data collection. The ocean observing community can use the BioEco Portal to access information on BioEco observations and the sustained programs that collect them. A key objective is to establish an automated data and metadata flow from ocean observing programs to the portal and other data management systems like OBIS, and to build linkages to OceanOps to improve GOOS accounting of BioEco networks and progress.

The Portal was developed using information from the global survey undertaken by the PEGASuS/Future Earth project (Satterthwaite et al. 2021: <https://www.frontiersin.org/articles/10.3389/fmars.2021.737416/full>), and enhanced through the addition of European networks identified during surveys and workshops conducted by the EuroSea project. The portal currently contains information from 634 programmes and programme contacts are further updating the information through the GeoNode edit interface of the GOOS BioEco Portal.

The launch of the portal via the GOOS website is detailed at: [https://www.goocean.org/index.php?option=com\\_content&view=article&id=413:goos-bioeco-portal-the-place-to-go-for-information-on-biological-and-ecosystem-observations&catid=13&Itemid=125](https://www.goocean.org/index.php?option=com_content&view=article&id=413:goos-bioeco-portal-the-place-to-go-for-information-on-biological-and-ecosystem-observations&catid=13&Itemid=125). This directly delivers on Strategic Objective 3, Task 3.5 in the GOOS Implementation Plan: *Develop an interactive map of networks and metadata for biological monitoring.*

Since its launch OBON has identified that it will link to the portal expanding information on biomolecular observing.

## **GOOS Report Card**

For the 2022 GOOS Report Card, information from the BioEco portal (phytoplankton EOVS) has been incorporated into the 2022 GOOS Report Card. This is the first time that biological observations have been featured in the report card. Information on the report card is available at: <https://public.wmo.int/en/media/news/global-ocean-observing-system-report-card-released>

## **GOOS at the Convention on Biological Diversity COP-15**

The Panel provided substantial input to the side event held by the IOC-UNESCO at COP-15. This was reported on at: [https://www.goocean.org/index.php?option=com\\_content&view=article&id=443:biodiversity-cop15-hails-ambitious-new-global-policy-framework-for-preserving-ocean-life&catid=13&Itemid=125](https://www.goocean.org/index.php?option=com_content&view=article&id=443:biodiversity-cop15-hails-ambitious-new-global-policy-framework-for-preserving-ocean-life&catid=13&Itemid=125).

## **European Horizon “Eurosea” project <https://eurosea.eu>**

The BioEco International Project Officer was the lead contributor to Task 1.1.2: Strengthen and extend BioEco monitoring networks throughout the European Seas, in Work Package 1 Governance and Coordination of ocean observing and forecasting systems. This involved (i) Mapping the current state of biological observations in Europe, (2) conducting two workshops (on macroalgae and seagrass) and a global review to progress capacity and coordination of ocean observation, and (3) outlining key steps forward that will improve the capacity to predict biological and ecosystem changes under a changing climate. Members of the BioEco Panel will attend the final project conference in September 2023, particularly with a view of enhancing understanding of the project’s contributions to the objectives of the Panel and the uptake of the EOVs.

### **Progress on EOVs**

**Seagrass EOV** - A complete draft of the new seagrass EOV spec sheet and data schema was progressed through a dedicated workshop facilitated by the SCOR C-GRASS working group (<https://scor-int.org/group/158/>). This workshop was followed up with a meeting with officers of the World Seagrass Association (WSA) to integrate these activities into WSA governance and the new WSA website.

**Zooplankton EOV** - The former International Project Officer, the zooplankton EOV lead and a number of other Panel members published a paper on zooplankton in a changing climate in Nature Communications (<https://www.nature.com/articles/s41467-023-36241-5>). This was featured on the GOOS website:

[https://www.goosocan.org/index.php?option=com\\_content&view=article&id=447:a-key-component-of-marine-ecosystems-is-changing-together-with-our-climate&catid=13&Itemid=125](https://www.goosocan.org/index.php?option=com_content&view=article&id=447:a-key-component-of-marine-ecosystems-is-changing-together-with-our-climate&catid=13&Itemid=125).

**Fish EOV** - Mapping of EOV networks, in particular those utilising Baited Remote Underwater Video has progressed via the SCOR CONSENSuS working group (<https://scor-int.org/group/consensus-advancing-standardisation-of-coastal-and-nearshore-demersal-fish-visual-census-techniques>). The working group has been identifying global gaps based on visual survey methods and held a workshop in January 2023 at the (see <https://sites.google.com/saiab.ac.za/consensus/>) at the International Temperate Reef Symposium.

**Seabird EOV** - A workshop was held in association with the World Seabird Conference with the aims of socialising the EOV with the conference community and expanding contributions to the BioEco portal.

**Mammal EOV** - As part of the US Bio ICE working group best practices for acoustics and photo-ID were developed to the stage of submission to the OBPS and a workshop presentation was provided to the Rare Pinniped Conservation Network (RAPCON) detailing the EOV. The EOV lead is currently working with the International Whaling Commission to upload their best practices to the OBPS.

**Macroalgae EOV** - Using two previous global workshops organised by the BioEco Panel on Macroalgae, a third workshop was organised by the EuroSea project focused on improving coordination of the European macroalgae observing community. Key recommendations from the macroalgal community related to standardisation of protocols, improved structure and reporting, better data management, integrating various monitoring efforts and better collaboration, improved communication.

**Coral EOV** - Discussions in regard to expanding this EOV to include deepsea corals progressed, and initial drafting of an updated specification has progressed, with the aim that this

could be socialised via a workshop at the International Deep Sea Coral Symposium in May 2023.

**Ocean Sound EOV** - the draft implementation plan for the EOV was completed and is currently being reviewed by SCOR and POGO (as the funding agencies) and the ocean sound community.

### **Communication and outreach**

Panel members attended the following meetings:

- The International seagrass Biology workshop (ISBW)
- The GOOS Co-design workshop
- The World Seabird Conference
- The International Temperate Reef Symposium

Presentations were provided to the MBON Networking Friday webinar series.

A number of news items were developed with GOOS (see links throughout this report).

### **BioEco Panel governance.**

New EOV leads for the Coral, Seabird, Seagrass, Turtle and Zooplakton EOVs were established. Identification and onboarding of co-leads for the Microbes and Mangroves is underway.

## **2. Opportunities**

**G7 Future Seas and Oceans Initiative (FSOI):** Discussions with the G7 FSOI Secretariat have continued with Augmented Observing and Forecasting for Marine Life identified as a priority topic and discussed in depth at the annual meeting of the FSOI in November 2022. An inter-sessional workshop in Europe is currently being planned for September 2023 with involvement of the BioEco Panel and OBIS being discussed.

**Agreement for Conservation of Albatross and Petrels (ACAP):** The Seabird and Mammal EOV leads with the co-chair have submitted a paper to the thirteenth meeting of ACAP's Advisory Committee (AC13) May 2023 proposing potential collaboration between the BioEco Panel and ACAP. The seabird EOV lead will discuss options for potential funding to advance the EOV during this meeting.

**GRAs:** The BioEco Panel co-chairs are currently discussing potential attendance at the GRA Forum (date still being decided but likely to be early 2024) to discuss emerging BioEco networks and to further facilitate uptake of BioEco EOVs into the GRAs. The co-chair regularly meets with one of the GRA members (IMOS) and has been supporting the GOOS executive in re-establishing PI-GOOS.

**Horizon projects:** The new Horizon Europe project “MARCO-BOLO” consortium agreed to meet with the Panel during September to explain the activities of the project and identify potential synergies and interactions with the Panel. A project proposal to be submitted in April 2023 for funding beginning in 2024, led by the Macroalgae EOv lead and involving the BioEco Panel executive and OBIS is currently being finalised. It aims to operationalise a series of bioeco blueprints (that include testing specification sheets) and is linked to the “MARCO-BOLO” project. If successful the project will facilitate two in-person workshops between the project members and the BioEco Panel, support the continued updating of BioEco EOv specification sheets, and test the implementation and operationalisation of some of the BioEco EOvs.

**2023 GOOS Report Card:** In considering expansion of inclusion of biological EOvs in the report card the BioEco Panel executive has put forward a number of ideas that could be pursued for highlighting progress on EOvs and associated networks and expanding the reach of the EOvs.

**Re-establishing MOU with MBON:** In 2016, GOOS BioEco Panel, OBIS and GEOBON (MBON) signed a collaboration agreement which can be downloaded [here](#). There has been recent discussion about renewing this agreement via a more formal MOU mechanism. While at COP-15, Emma Heslop confirmed with Adriana Radulovici, GEO BON Executive Secretary that GEO is interested in pursuing the MOU. The groups intend to meet to discuss further.

### 3. Issues or barriers

Support for the BioEco Portal ceased in March 2023. Additional funding and support will be needed to maintain the BioEco Portal and develop and implement any further components of the Portal. Further development of the BioEco Portal is required to ensure long-term sustainability. This includes developing a strategy and vision of the Portal’s future role and function for the ocean observing community. Further discussion and consideration is required to ensure a fully operation BioEco portal is in place by 2025; this discussion should include a focus on ensuring linkages of the Portal to OceanOps. The launch of the BioEco Portal 2.0 due for July 2023 will be delayed.

The BioEco panel has been without a full-time IPO since late 2019, with the position working with the Panel only 60% from mid-2020 until October 2022, and 50% from Jan until October 2023. Funding for the position is currently not available to provide full support for the work requirements of the Panel. Finalising the updated specification sheets implemented by GOOS will require additional support for EOv leads, including funding to conduct workshops.

Most of the work developed over the last three years was lost due to a Google Documents complication with the departure of the previous IPO; this has hampered and delayed work

undertaken by EOV leads and the Panel Co-chairs. Effort will be required to recreate some documentation, including the BioEco implementation roadmap.

## **4. Future**

The BioEco panel plans to have its first in person meeting since 2019 on 19-20 September 2023. The meeting is timed to coincide with MARCO BOLO and EuroSea meetings and may also include the opportunity to participate in the G7 FSOI intersessional workshop (see also above).

## **5. Questions for the Steering Committee**

Given that Panels are identified as core components of GOOS, what is the strategy for long-term support for the Panels, including associated infrastructure such as the BioEco Portal.

At the moment, all progress made by the Panel is done voluntarily or with support from funding external to GOOS and the IOC-UNESCO that is sourced by individual members of the Panel.

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## Reports from GOOS components

### OOPC

*Sabrina Speich, Weidong Yu, Belén Martín Míguez*

## ● Achievements and Highlights

**Highlight:** First physical meeting in 4 years (Darmstadt 20-21 October 2022) and incorporation of 4 new members to the panel after a call for new members (40 applications screened and evaluated).

### **Achievements April 2022-April 2023:**

- Boundary Systems Task Team: series of webinars finished, paper with recommendations being prepared, mindful of the connection with Observing Co-Design
- OASIS: funded through SCOR, it becomes a UN Decade Programme coordinating a large international multidisciplinary community to advance our capacity to monitor air-sea interactions globally. It aspires to become a cross-GOOS and GCOS activity.
- Ocean Indicators: Cross-GOOS TT, series of interviews and perspective paper in preparation presenting the concept and methodology.
- CLIVAR-GOOS Workshop from Global to Coastal (Aug. 15-17, 2022, ICTP/Trieste, Italy) with one co-chair Weidong Yu serving as the co-chair of its organizing committee.
- 2022 GCOS IP includes 9 Actions to improve the ocean climate observing system and gets a lot of visibility at COP27 with one co-chair (Sabrina Speich) attending. Ocean ECV requirements updated, publicly reviewed and published in 2022.
- Large participation of the ocean community in the 2nd GCOS Climate Observation Conference (Oct. 17-19, 2022, Darmstadt, Germany) with co-chair Sabrina serving as the chair of its organizing committee.
- GOOS/OOPC role recognized by WMO (results from the Study Group on Ocean Observations and Infrastructure (SG-OOIS) and engagement in the Rolling Review of Requirements process lead by WMO Infrastructure department)
- Evaluation of two new EOVs: Bottom Pressure (accepted) and Turbulent Mixing (under review).
- High-level meeting in March 2023 with CLIVAR co-chairs and panel chairs to map areas where both bodies are connected and establish new ways of interacting.

## ● Opportunities

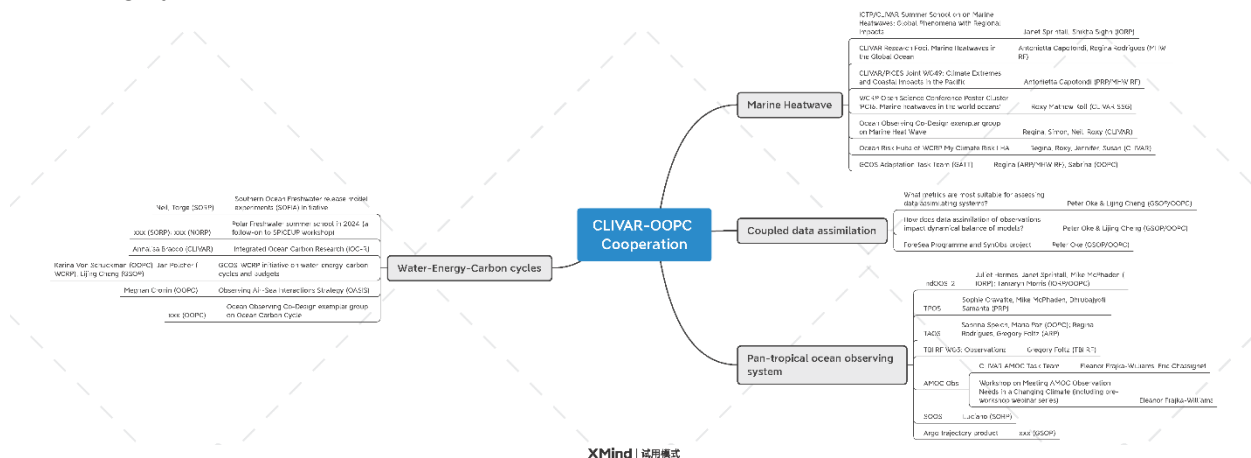
1. Both the 2022 2nd GCOS Climate Observation Conference and the presentation of the 2022 GCOS Implementation Plan at COP27 have provided an opportunity to advocate for a sustained ocean observing system to improve our understanding of and adapt to climate change. The role of the ocean in the climate system is better understood and the need to monitor it too. We have a new opportunity to make sure that enough attention is also given to non-physical variables, by engaging in a timely manner with BGC and BioEco for GCOS Status Report 2026 and GCOS IP 2027.



2. The UN *Decade of Ocean Science* for Sustainable Development is bringing a myriad of initiatives. OOPC members are already participating in some of those initiatives and better connections and synergies between the panel and some of those initiatives could be pursued, namely:

- Observing Co-Design exemplars
- ForeSea and SynObs projects related to ocean forecasting: OOPC counts now with several modellers who could help build some bridges between the observations and the modelling communities
- Ocean Decade Coordination Office UN Decade Collaborative Center for Ocean-Climate Nexus and Coordination amongst Decade Implementing Partners in China (DCC-OCC) (<https://www.dcc-occ.com>). This DCC-OCC is keen to support some co-design actions upon OOPC's prioritizing, such as OOPC/Decade co-design exemplars on Typhoon and/or Marine Heatwaves. There is a suggestion to organise an in-person workshop in Qingdao/China in October 2023 (supported by DCC-OCC together with OOPC) to work out a pilot action plan, which could be accompanied two online discussion workshops.

3. Engagement with CLIVAR. Several areas of interaction have been identified through a mapping exercise: Work on earth cycles and on marine heatwaves; connections between GSOP and OOPC follow up of the GOOS/CLIVAR workshop and pan-tropical observing system.



4. We have 4 new members in the panel and a polar expert who will overlap with our Arctic expert for one year, and who will strengthen connections with OCG, Observing Co-design and CLIVAR, and bring complementary modelling capacities to the work of the panel.

## ● Issues or barriers

- Panels support embarking in **cross-panel activities**, but not much has materialised in concrete outputs so far: why is that? What connection is most efficient, the one happening at panel level (through the chairs/officers) or through the experts?
- OOPC produces many **recommendations** on how to improve the observing system, but OCG, who are the main implementers, do not find it easy to react/use those recommendations: what happens?
- OOPC is encouraged to engage in the **Ocean Decade**, which is exciting, but also very time consuming and with no clear return: what could we change so that the process was less heavy and costly in terms of time of our experts?
- is there any **alternative to: let's meet**, let's meet, let's meet? would a potential solution be, instead of investing energy in engaging here and there, try to define and establish more clear limits to our own activities?
- If meeting is the only solution, **more human resources (\$)** are needed to ensure a proper cross-feeding between the discussions held in the meetings.
- The **EOV specification sheets need to be updated** using the new template. This is several days work and it is not clear how to go about this.

## ● Future

There are several on-going activities which are meant to continue as follows:

- The BSTT will submit a Community paper with a set of Recommendations to monitor Boundary Current System and the Activity will likely be merged then with the Observing Co-Design exemplar on Boundary Currents.
- OASIS is a UN Decade Programme as well as a SCOR Working Group and will go on shaping and implementing its strategy. There is a wish to strengthen and formalise the connection with other panels of GOOS, GCOS and WCRP.
- The Ocean Indicators task team will be expanding towards socioeconomic indicators receiving support from G7 FSOI, and with a focus on national stakeholders.

OOPC will be working on a new 2024-2028 Workplan which, besides the aforementioned activities will include:

- Addressing the Actions in GCOS Implementation Plan where input from the panels is sought. These include Actions on sustainability of observing networks,
- Interaction with CLIVAR: building up on the results of the mapping, priorities will be identified. Working on a pan-tropical ocean observing system could be one of them, in collaboration with the CLIVAR regional panels and CLIVAR Tropical basin interaction Research Foci ([TBI RF](#)).
- (In planning) Heat and Freshwater storage and transport/regionalization of the cycles.

- There are many opportunities for developing more work around EOVs/ECVs and advancing the observing system around the Observing Co-Design exemplars. But resources for coordination will be needed (see previous section).
- Developing a more intensive and focused interaction with the modelling community to guide the observing system review with new tools.

Now that in-person meetings have resumed, enhancing interaction with other GOOS components will be pursued (e.g. OOPC co-chairs will attend OCG-14 session (Jun. 6-8, 2023, Cape Town, South Africa).

## ● **Questions for the Steering Committee**

- Priorities: we (GOOS components) are spreading too thin: any advice on where to focus? Should we attempt an exercise of delimiting better who does what. (e.g: OOPC ToR vs: OCG ToR).
- In order to enhance interaction: what can we do beyond attending each other's meetings?
- WMO: what does GOOS SC think of this engagement and is there a need for OOPC to provide specific support to other GOOS elements (ETOOFs)?