

## MEETING REPORT

### 1<sup>st</sup> EOOS Resource Forum Meeting

(15 November 2021, 9:00 – 13:00 CET)

#### Welcome & Introduction

Thorsten Kiefer (JPI Oceans, chairing EOOS Resource Forum) welcomed all representatives and observers and presented the objectives of the first European Ocean Observing System (EOOS) Resource Forum. This Meeting is a first formal exchange of national funding agencies and ministries as well as General Directorates of the European Commission. This first meeting set the scene for topics to be discussed in more detail in the follow-up meetings of the Forum.

Sheila Heymans (European Marine Board, chair EOOS Steering Group) presented the main steps of EOOS since the start of its discussions around in 2010 and 2014. EOOS is based on a bottom-up approach, initiated and promoted by the (scientific) community. However, a close connection to the political level and industry was established from its beginning. The EOOS framework is structured in implementation cycles. The first one will end in 2022. Thus, the start of the Resource Forum and Operations Committee is very timely. This way, the representatives can actively participate in shaping the Implementation Plan for the second cycle.

#### Setting the Scene

##### Introduction to EOOS Operations Committee & European GOOS National Focal Points Survey results

Ana-Lara Lopez (EuroGOOS, supporting the EOOS Operations Committee) presented the structure and activities of the Operations Committee (OC), which is chaired by Laurent Delauney (Ifremer, FR).

The Operations Committee consists of the European GOOS National Focal Points, implementers of European Infrastructures, EuroGOOS task teams and European Regional Ocean Observing Systems (ROOS).

One of the Operations Committee's first activities was to analyse and start mapping the European Ocean Observing landscape. A survey sent to European GOOS National Focal Points asked questions related to (1) funding sustainability, (2) focus of ocean observing and marine monitoring, and (3) level of integration between ocean observing and marine monitoring activities. The full report is available [here](#).

The following results were presented:

- Ocean observing and marine monitoring in Europe are driven by the needs and requirements specific to each nation and by EU statutory requirements,
- National funding structure is complex since more than one ministry is responsible for financing different elements of ocean observing and/or marine monitoring,

Ocean observing activities suffer from uncertainty in long-term funding in many nations.

After the presentation, the following questions were discussed.

- **Methodology of survey:** The survey results only indicate information which have been received by European GOOS National Focal Points. Accordingly, the report refers to *“the survey's key findings [...] derived from individual National Focal Point's responses”*.  
Since GOOS National Focal Points shall e.g. report to IOC-UNESCO on the status of national ocean observing system activities that contribute to GOOS or promote regional and national coordinated strategies for implementing a sustained ocean observing system, close contact and coordination with relevant parties at the national level about recent achievements and actions is needed.  
The survey showcases the support/funding of ocean observations and marine monitoring in a general way. It leaves room for a complementary survey, e.g. among resource forum members, to consolidate the results and to add information details on monetary values spent on specific observation and monitoring categories.
- **Cooperation between Ocean Observing and Marine Monitoring communities:** The contact between these two groups is not as good as needed. Thus, the survey results reflect well that better communication between these communities is needed.
- **Definition of Ocean Observing and Marine Monitoring:** It was asked if the definitions used here for ocean observing and marine monitoring will be revisited. A revision was recommended (but without making a concrete proposal).
- **Responsibilities on Ocean Observing and Marine Monitoring:** The EOOS Resource Forum representatives agreed that the survey gives rich information on responsibilities within the countries and in reflecting the challenges.
- **IOC-UNESCO's Global Ocean Science Report (GOSR):** The latest report from 2020 identifies unequal resourcing in Europe. However, that report had not been shared with the respondents of the survey, but some references had been made.
- **Division of resourcing responsibilities across ministries per country:** It needs to be identified if the survey results comprehensively include all work of federal agencies, which often conduct observing and monitoring under the responsibility of ministries.

#### [Sustaining in-situ Ocean Observations in the Age of the Digital Ocean](#)

Ed Hill (NOC, UK) presented the Policy Brief on [‘Sustaining in-situ Ocean Observations in the Age of the Digital Ocean’](#) published by the European Marine Board in June 2021. The focus of the policy brief is on systemic and sustained in-situ ocean observations and marine monitoring activities in the Exclusive Economic Zone (EEZ) and beyond national jurisdiction. Ed presented the Ocean Information Value Pyramid which indicates that observations are the foundation for developing information products of value for public needs. With feedback loops and adaptations at every stage of the value chain observations can be made even more fit-for-purpose.

Technology is no longer the limiting factor for ocean observations. Sufficient rapid, reliable, and cost-efficient technologies already exist to build and operate a globally distributed continuous ocean sensing infrastructure. However, we still need to develop a business model to support technological innovation more effectively and faster.

Further, the funding structures and legal frameworks and regulations behind ocean observing activities need to be improved. In the EEZ, countries have a strong mandate to

fund observing and monitoring activities sustainably, while in the open ocean the mandate is weak.

In addition, progress is needed in data infrastructures as the backbone of ocean observations.

In conclusion, the following six recommendations were made:

- (1) Recognize sustained in-situ observation as a large-scale, global public-good data infrastructure (foundation of value chain).
- (2) Empower and support streamlined, efficient coordination efforts.
- (3) Strengthen the integrated combined capability of the ocean observing system to deliver fit-for-purpose data and information.
- (4) Establish review of the costs and performance of the system and map its economic and environmental benefits.
- (5) Establish partnerships with the private sector and civil society to expand observations using existing infrastructures.
- (6) Co-design a holistic observing system that integrates all in situ observing capabilities with satellite observations and models.

After the presentation, the following comments were made:

- We need to take a closer look at the recommendations of the Policy Brief and identify for future Resource Forum Meetings where this forum can make a great impact, e.g. by overcoming the disconnection of what shall be observed and how it needs to be funded?
- The presented Policy Brief is very good for introducing the challenges for observing and monitoring activities at national level. However, to have a greater impact a translation of the Policy Brief into other languages beyond English would be valuable.

#### [Exploring the value chains in Public Marine Data](#)

Claire Jolly (OECD) explained that the mission of the Ocean Economy Group at the OECD Directorate for Science Technology and Innovation is to *“improve the measurement of ocean economic activities and provide evidence on the role of science, technology and innovation as drivers of ocean sustainability to support policy-makers”*.

Ocean observing systems and marine data management systems are complex and diverse. However, they are needed to provide crucial data to (1) understand the ocean, its dynamics and role in the Earth system and (2) manage activities in the marine environment and beyond. But sustaining ocean observing systems can be costly and requires significant and long-term public support. While the costs are somehow identifiable, the wide-ranging benefits are not always visible. Assessment of the value of ocean observations to society is therefore challenging and requires new and multidisciplinary approaches.

By exploring the socio-economic value of marine data and ocean observations we can identify

- characterization of different user communities,
- best practices and gaps in methods and valuation studies,
- contributions to a better understanding of value chains of marine data and their impacts,
- economic efficiency of a coordinated system and wide range of use beyond research,
- cost savings/efficiency in validation, checking, reporting, and
- direct economic value.

A first survey and analysis was undertaken in the UK. The study and its outcomes can be accessed [here](#). It provides robust evidence of who is using what marine data and why (focus only on UK). It also identifies data flows within economic sectors (e.g. offshore wind, offshore oil and gas, marine archaeology, marine renewable energy, marine science) and most common uses of marine public data (e.g. analyse risks, conduct research and development, inform marine planning decisions, inform operations, manage marine resources, etc.).

After this first study, Claire and her group would next like to follow two parallel tracks:

1. Expand the survey to other marine data centers to
  - a. Find the same or different data use patterns,
  - b. Find national / regional / global patterns.
2. Review Best Practice in the valuation of ocean observation.

Currently, the following countries indicated interest in such a survey: Belgium/Flanders, Canada, Ireland, Italy, Korea, Norway, Portugal, and the US. Claire concluded that it is possible to showcase the importance of ocean observing systems and that this would be a great achievement for the UN Ocean Decade.

After the presentation, the following comments were made and questions asked:

- **Linkages to respondents:** For assessing Marine Protected Areas the use of marine data seems to become more and more important. Governments should use data more to protect their marine environment. Claire answered that the current conclusions are based on one study only. Results might be different in different countries. To receive valuable and reliable results, we need to reach all important users of public marine data.
- **How much effort is needed to conduct the whole survey?** The OECD developed the survey together with GOOS. The survey sent to stakeholders can be re-used for further studies. The OECD STI OECD Economy Groups needs a national contact person (preferably from a data network) to identify stakeholders and take care of the survey process. The Ocean Economy Group is doing the analysis afterwards. In total, the UK study was a 1-year effort (including impacts due to COVID-pandemic). Conducting the survey took three months.

[EC-Initiative on ,Ocean observation – \\_sharing responsibility’ \\_](#)

Andreea Strachinescu (DG MARE, EC) started off mentioning that the previous speakers presented information which are the basis for starting the EC-Initiative. DG MARE has a long history in supporting activities around marine data (e.g. development and support of EMODnet). For achieving the objectives of the Green Deal, we need data, which requires conducting ocean observing and marine monitoring.

Currently, marine observations are made for a specific purpose by a specific user community whereas the observations may also be used for other purposes. However, the other communities have no say on where, when and how these observations are made. This leads to an inefficient and scattered planning.

Building a clear picture of the seas and ocean requires planning at a sea-basin or oceanic scale but countries are often unaware of the plans of their neighbours. Thus, we need to reduce the opaque planning processes.

Last but not least, we need to overcome the insufficient sharing of infrastructures. Vessels, buoys, buoys sensors are expensive tools. Gaps in observation limit our ability to sustainably manage our oceans. For example, sharing of these assets could allow more observations for the same amount of money. In general, we need to be more transparent and trust each other. Innovation for technologies need to be tackled together including public, private, and scientific actors.

The EC-initiative aims for more transparency and collectiveness in the fields of ocean observing and marine monitoring – starting at national level including activities at European level. A cross-sectoral planning will allow collaborations, sharing infrastructures, developing standards, etc. In June 2021, the EMODnet 2<sup>nd</sup> Conference and Jamboree started to identify improvements.

The impact assessment lead by DG MARE will be shared internally (Commission wide) in December 2021. In January 2022, the document will be shared with the European Council and Parliament.

After the presentation, the following comments were made:

- The group looks forward to learning about the outcomes of the EC-initiative on ‘Ocean observations – sharing responsibilities’.
- On 18 June 2021, the EC Ocean Observation event took place. The report and summary of community recommendations is now published [here](#). This event was co-organized by EMODnet, EMB, EuroGOOS and Copernicus Marine Service, with the wider community and supported by DG MARE, EC.

## State of play - Good practices and obstacles

Thorsten Kiefer introduced the discussion on best practices examples, obstacles to overcome, synergies, and topics/contents to which the EOOS Resource Forum representatives might agree.

The following comments were made by the representatives:

- **Need for cooperation and joint planning processes:** Big observational studies cannot be achieved by a country alone. We have a crowded field of observing initiatives and networks (like JERICO and EuroArgo). It is easy to do some kind of observation but we could do it better when we do it more integrated and at larger scales.
- **Need to share knowledge and technology:** In Australia, the Integrated Marine Observing System (IMOS) was nearly unfunded but by starting international cooperation (e.g. with data networks in New Zealand) and linking to industries at national level, IMOS was able to operate efficiently showcasing the benefits of the system for society.
- **Need for data collection framework:** A [data collection framework](#) (DCF) is in place for over 20 years focusing on fisheries data. It showcases what can be achieved through a European Commission endorsed activity in which different countries participate.
- **Need for better overview of resourcing of our national observing and monitoring activities:** The GOOS National Focal Point survey results show how patchy our information is about the funding landscape. Currently, the national structures seem so complex that we cannot get the full picture. We need to include the governmental agencies and ministries to improve the survey results. However, the survey results

are a good basis for starting discussions on resourcing. We need to map the system at national level throughout Europe.

- **Linking national efforts and European policy initiatives:** To get the best out of current activities in the field of ocean observing and marine monitoring, we should link the EOOS Resource Forum activities (bottom-up) and EC-Initiative on ocean observation (top-down).
- **Linking needs and resourcing for ocean observing and marine monitoring activities:** Observation and monitoring activities at coastal and open ocean are each motivated, justified and funded differently. At coastal ocean level the focus is more on observations that can support the use of our ocean and/or keep us safe. At open ocean level the focus is more on impacts of climate change. However, the coastal ocean and open ocean continuum is very important. Thus, all observations are needed, e.g. to improve our models etc.
- **Linking funding and infrastructure sharing more efficiently:** Most open ocean activities are funded by research and are often dedicated to solving a specific question or issue. However, sustained observing needs to be long-term funded, which implies that observation needs to relate to multiple values and benefit questions of our daily lives. Shared infrastructures on the other hand seem to be relatively efficiently and sustainably funded. This is in itself a sensitive topic with a lot of questions unresolved. Who is covering the costs of ships? How much more infrastructures are needed? What are the true costs?
- **Need for assessment of data streams that support decision making processes:** Many data managers and data policies are in place. However, we still have challenges around open data, e.g. some data are not released after their embargo. Our reporting duties (like OSPAR, MSFD, etc.) should be linked to data streams and providers directly to better understand the data needed. Measurements and data are highly relevant for informing political decision making (e.g. Marine Spatial Planning). Currently, ocean observations and monitoring activities are not fit for achieving Green Deal objectives.
- **Linking EOOS Resource Forum to activities at European level:** How do we relate this forum to activities that already exist like the Sustainable Blue Economy Partnership? This partnership might be a good place for addressing the problems we identified.

### Forward look – Opportunities

By looking forward, Thorsten Kiefer started to ask questions around opportunities for actions. He opened a short feedback round and EOOS Resource Forum representatives indicated their interest specific topics. These topics are:

- **Sharing responsibilities in developing joint observation strategies:** Some European countries have more capacities for conducting observation and monitoring strategies than others. In some countries monitoring strategies cannot be funded even though they would be highly important to improve hazard management, identifying impacts on climate change etc. In addition, due to the COVID-pandemic the observation and monitoring communities got a cut down in funding their activities.
- **Ideas and results from Resource Forum Meeting need to be discussed nationally** to identify priorities and who collects and manages the public marine data.

- **Connect to international activities:** Linking to the G7 FSOI might be important since the FSOI is addressing similar challenges.
- **Establish formal connection between EOOS framework and EC-initiative as well as Sustainable Blue Economy Partnership:** This could help intensify the conversation between the existing ocean observing Research Infrastructures. In addition, such a connection can shift the paradigms in the observation and monitoring landscape to fulfilling the value chain approach. Another important step would be to open the EOOS framework activities directly to non-EU countries.  
By linking EOOS framework implementation activities to Research Infrastructure programmes we can merge important observational structures. Additionally, by stressing the multi-purpose use of marine data, including sustainable blue economy growth and environmental policy, we can gather support for investments.
- **Assessment of connection in observation system:** Are the actors of observing and marine monitoring activities well connected to the value chain? How can initiatives and organisations like EMODnet and CMEMS help make the case for sustained observing in Europe?
- **How do we prioritize marine observations and identify strategies (e.g. for biological observation)?** For example, some governments would fund observations and monitoring wherever it is needed. However, to receive this information we need to know what is really operating in the water so that metadata flows can be improved. In addition, we need to understand who collects the data. The EOOS framework and governance structures seem to be a suitable mechanism to get and analyse the information at a strategic level.
- **Connecting all EOOS governance bodies:** All governance levels in EOOS need to discuss what observation and related funding is needed to put funders in a position to innovate funding mechanisms. Such discussions also need to take place at national level.

### Next steps

- Identify if a formal linkage between EOOS framework and EC-initiative on ‘Ocean observation – sharing responsibilities’ can be established.
- Connect to analysis of OECD on value chains of public marine data. OECD is continuing their work and offers the opportunity for a step-by-step approach. Claire and her team are happy to cooperate with more countries.
- Expand the Operations Committee survey on national funding structures by contacting funders at national level – starting with EOOS Resource Forum representatives?
- Intensify exchange with Operations Committee to get better guidance on what observations are needed.
- Look into how to better integrate coastal and open ocean observation and monitoring to identify long-term strategies.
- Next meeting in Spring 2022

## ANNEX I – PARTICIPANT LIST

NAME	AFFILIATION
Sofia Cordeiro*	FCT, PT
Veronique Creach*	CEFAS   DEFRA, UK
Willem de Moor	JPI Oceans
Dina Eparkhina	EuroGOOS (Observer)
Sheila Heymans	EMB (Observer)
Ed Hill	NOC, UK
Fabienne Jacq*	DG DEFIS, EC (Observer)
Claire Jolly	OECD
Doris Jozic*	Ministry of Science and Education, HR
Thorsten Kiefer*	JPI Oceans
Sandra Ketelhake*	JPI Oceans
Kate Larkin	Seascope Belgium   EMODnet (Observer)
Gilles Lericolais*	Ifremer   General Secretariat for the Sea of the Prime Minister, FR
Pierre-Yves Le Traon	Mercator Ocean, FR (Observer)
Inga Lips	EuroGOOS (Observer)
Ana Lara Lopez	EuroGOOS (Observer)
Eivind Lorentzen*	Ministry Trade, Industry and Fisheries, NO
Niall McDonough*	Marine Institute, IE
Frederic Melin*	JRC, EC
Angel Muñoz Piniella	EMB (Observer)
George Petihakis*	HCMR, GR
Christophe Pampoulie*	Hafrannsóknastofnun, IS
Nicolas Segebarth*	DG RTD, EC
Emil Stanev*	HEREON, DE
Andreea Strachinescu*	DG MARE, EC
Gert Verreet*	EWI, BE

\*member of the Resource Forum