



# **EMODnet Sea-basin Checkpoints added value and benefits:** stakeholder consultation key findings Final Draft

October 2023

EMODnet Secretariat

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\*This Presentation (PPT) present key highlights and findings from a full report: EMODnet Sea-basin Checkpoints added value and benefits stakeholder consultation, as Deliverable D5.2 (restricted access), submitted as part of the EMODnet Secretariat CINEA/EMFAF/2021/3.4.10/01/SI2.863177.

# Setting the scene: The EMODnet Sea-Basin Checkpoints concept

- Between 2013 and 2018, a series of six EMODnet Sea-basin Checkpoints (SBCP) assessed the quality of the Ocean observation and monitoring data at the level of the regional sea basins.
- By stress-testing the availability, accessibility and adequacy of EU marine data in EMODnet and other sources against specific end-user challenges based on real-life scenarios for the blue economy, the checkpoints evaluated how well the monitoring systems and data collection frameworks provided data to meet the needs of users.
- In doing so, data gaps and duplications as well as significant bottlenecks were highlighted.
- The Checkpoints provided essential insights that support sustainable marine management, inform policy decisions, and empower diverse user groups.

Are marine data fit for purpose?

## A user perspective

*Initiated in 2013, the EMODnet Sea-basin Checkpoint data stress test' was the first of its kind to adopt a user perspective to assess if the current ocean observation monitoring data were fit for purpose. In each case, the availability and suitability of open access marine data were tested against 11 specific end-user challenges at the level of 6 European sea-basins (see image below). Each challenge was designed to simulate a real-life application e.g. tracking an oil spill, siting of a wind farm, or assessing environmental impact of fisheries on the sea floor. The requirements for each challenge, including the diversity of datasets required, depended on the application. Each Checkpoint had to demonstrate how well the current monitoring systems and data collection frameworks provide data to meet the needs of users. In doing so, data gaps and duplications as well as significant bottlenecks could be highlighted.*



Arctic Checkpoint



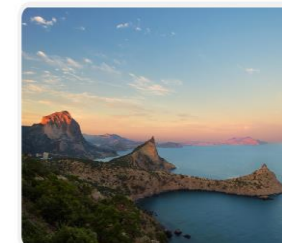
Atlantic Checkpoint



MedSea Checkpoint



Baltic Sea Checkpoint



Black Sea Checkpoint



North Sea Checkpoint

# Setting the scene: EMODnet Sea-basin Checkpoints user Challenges



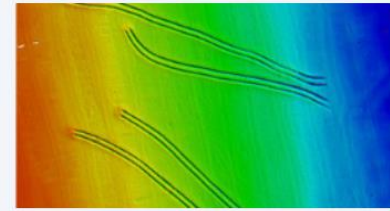
Wind Farm Siting



Marine Protected Areas



Fishery management



Marine environment



Climate & Coastal Protection



Oil Platform Leaks



River inputs



Climate



Bathymetry



Alien Species



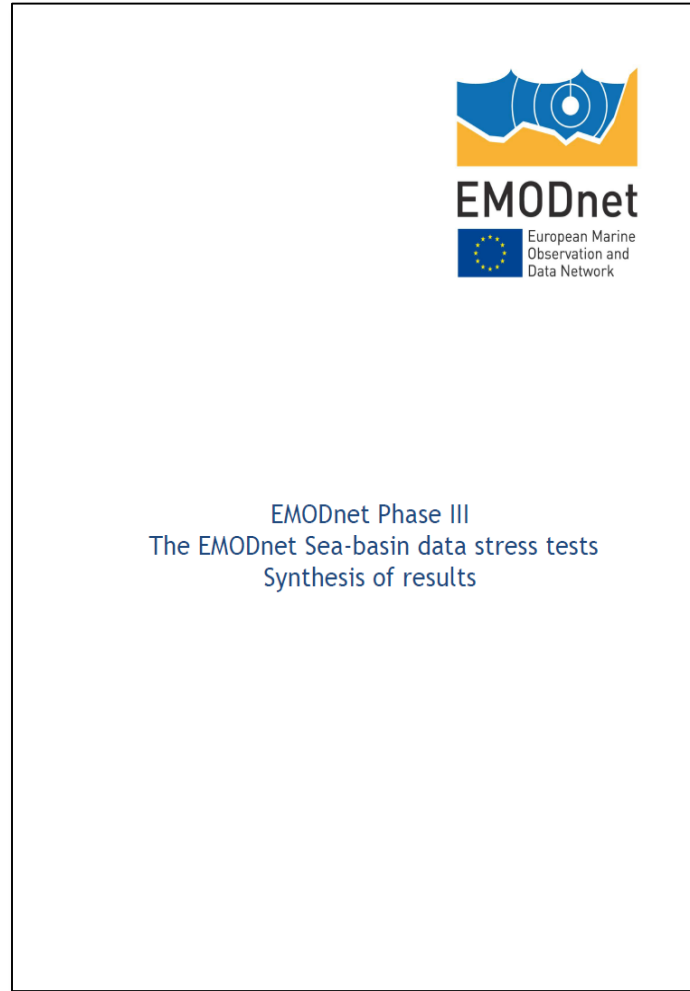
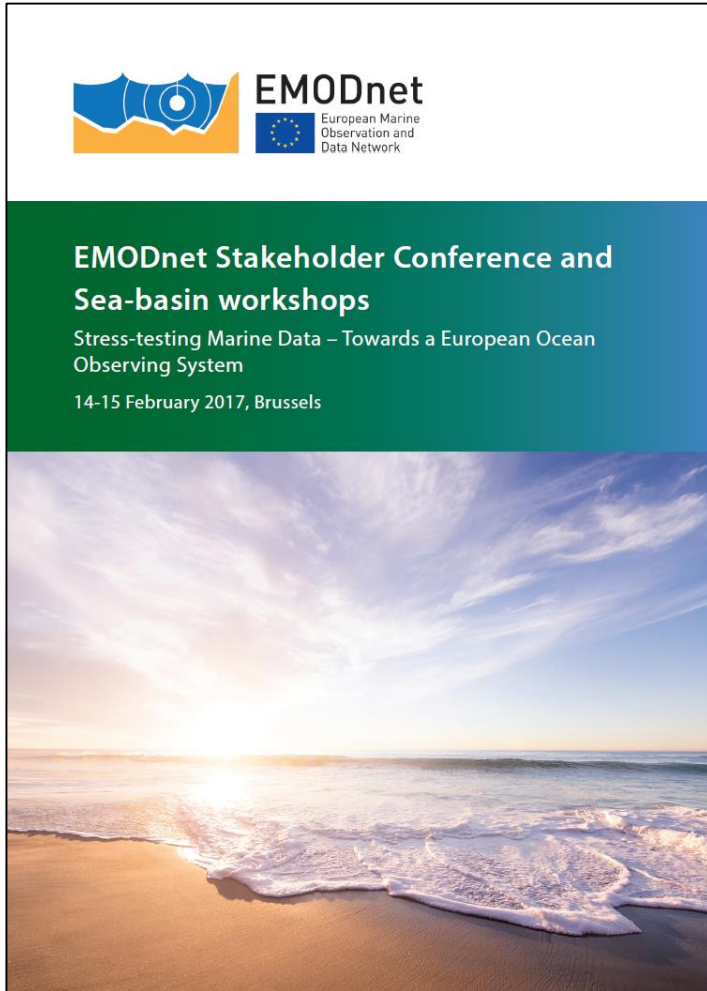
Coasts



Eutrophication

The “stress test” approach demonstrated whether the marine data ‘offer’ for a specific sea basin was fit-for-use for each end-user challenge area and application.

# Setting the scene: EMODnet Sea-basin Checkpoints Final Reports

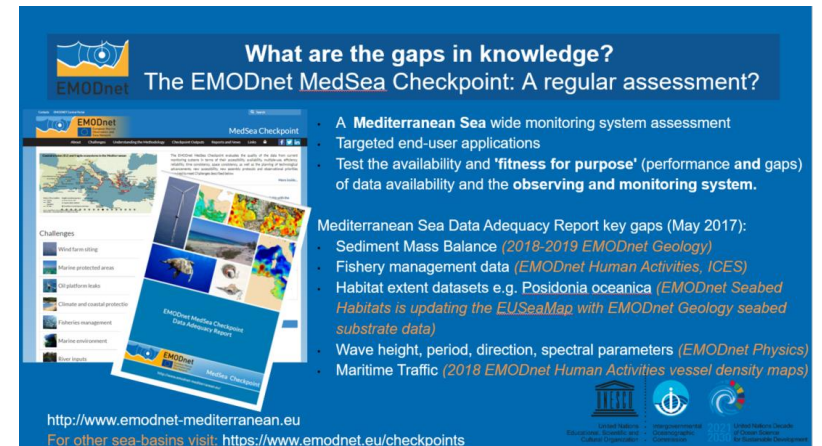


*“This user-oriented focus and perspective makes this exercise unique and original, facilitating the development of more concrete and practical recommendations for the future development of Europe’s ocean observing framework.”*  
EMODnet SBCP data stress tests synthesis report 2017

<https://emodnet.ec.europa.eu/en/checkpoints>

# EMODnet Sea-Basin Checkpoints: Communication and uptake 2018-2021

Despite the end of the EMODnet Sea-basin Checkpoint activity in mid 2018, the EMODnet and wider community recognized the value of the methods and outputs, communicating these at European and international Conferences and events, and discussing methodologies with key EU actors including the European Marine Board, EuroGOOS and Copernicus Marine Service and EU projects e.g., EuroSea in the context of EOOs.



**Jun She** (Danish Meteorological Institute, DMI) gave a presentation on the European Marine Observation and Data Network (EMODnet) as a long-term community effort, supported by the European Union, to assemble and make available marine data and products to internationally recognised standards for open and free access and use by all communities requiring ocean data. He explained

*"Open access and integration of ocean data enhances the value of the observations for all users. This is evident from the EMODnet Sea-basin Checkpoint challenges which tested data availability for real-life applications."*

Jun She

that users a central to EMODnet services. He outlined the EMODnet Sea-Basin Checkpoint initiative which was the first of its kind to assess the quality and provision of ocean observation and monitoring data through a user perspective, testing the data adequacy for specific real-life end-user challenges (see page 14 for more information). He noted that to identify future requirements it was vital to assess existing gaps in data provision. He explained that the EMODnet Checkpoint analysis identified three main types of data gaps that required tailored solutions. He concluded that demonstrating the value of marine data was vital to achieve sustainability of ocean observing and data services. And for successful coordination, there were a number of institutional and community barriers to overcome to integrate across purpose, parameter and instrument/platform.



Integrated observing: breaking institutional and community barriers to unlock value of observations

# EMODnet Sea-Basin Checkpoints: Communication and uptake 2018-2021

Despite the end of the EMODnet Sea-basin Checkpoint activity in mid 2018, the EMODnet and wider community recognized the value of the methods and outputs, communicating these at European and international Conferences and events, and discussing methodologies with key EU actors including the European Marine Board, EuroGOOS and Copernicus Marine Service and EU projects e.g., EuroSea in the context of EOOS.



**EMODnet**  
European Marine Observation and Data Network

**Connecting Open Data, Delivering Marine Knowledge: A Vision for 2030**

Second EMODnet Open Conference: Summary Report  
14-16 June 2021. Oostende and online

*"EMODnet has become a reference - not just in the EU but globally - and its importance will only grow in the future as marine knowledge is at the core of our fight against climate change."*  
Virginijus Sinkevičius, European Commissioner for Environment, Oceans and Fisheries

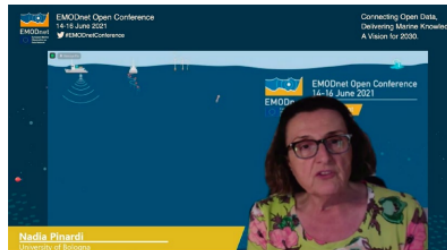
[emodnet.ec.europa.eu](http://emodnet.ec.europa.eu)

[emodnet.ec.europa.eu](http://emodnet.ec.europa.eu)  
EMODnet Open Conference | June 2021

## Community presentations

### Stress testing the European observing capacity: The EMODnet Sea-basin Checkpoint approach

**Nadia Pinardi** (University of Bologna and Checkpoint Partners) presented the EMODnet Sea-basin Checkpoints noting that the methodology used concrete user applications over different European sea basins to stress-test the European ocean observing capacity and data adequacy. Developed by EMODnet, the method has been seen to be useful for determining gaps in observations and information systems. Pinardi explained how the approach works, and summarised the six challenges applied, namely wind farm siting, Marine Protected Areas (MPAs), oil platform leaks, climate and coasts, fishery management, marine environment (eutrophication), and river input. For each user application, the availability, access and adequacy to relevant data through EMODnet, Copernicus Marine Service and other marine data services was assessed, using indicators to define the level of adequacy, summarised in a Data Adequacy Report. She concluded that the EMODnet's Sea-basin Checkpoint approach is unique in the world and clearly shows monitoring gaps at the sea basin scales. It is widely applicable, and has been successfully used in e.g., the Mediterranean, Atlantic and Black Sea to detect observation gaps. She proposed a way forward could be to establish a future assessment, or service, jointly by EMODnet and Copernicus, that would periodically evaluate the system following the Checkpoint methodology.



*"The EMODnet's Sea-basin Checkpoint approach is unique in the world and clearly shows monitoring gaps at the sea-basin scales, applying a user-oriented approach to assessing data adequacy."* Nadia Pinardi, University of Bologna

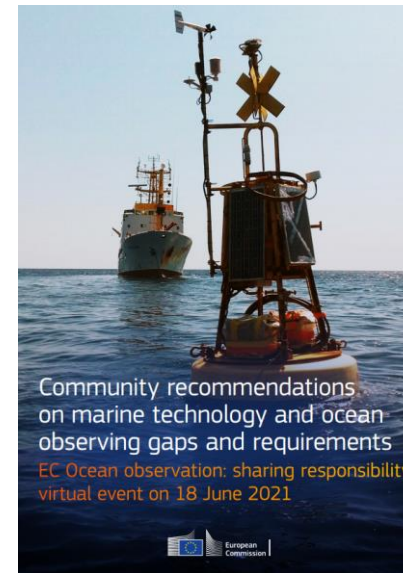
## EC Ocean Observation event (18 June 2021)

EC Ocean Observation event (18 June 2021, 13:30-17:00 CEST): OCEAN OBSERVING TECHNOLOGY: OPTIMISING EUROPEAN CAPABILITY & OCEAN OBSERVING GAPS AND REQUIREMENTS



## Ocean observing gaps and requirements

- Create mechanisms – building on existing methodologies - to regularly conduct community efforts evaluating ocean observing gaps and requirements and to synthesise across sectors, repeating these activities at regular intervals. There is a strong European ocean observing capability, but these are currently spread over multiple communities and lags behind the coordinated knowledge of gaps in remote (satellite-derived) observations;
- Comprehensively assess data adequacy, data accessibility and data gaps to fully identify if a gap may be a result of inadequacy or inaccessibility of the available data available, or if true gaps remain in the current ocean observing activities, through:
- Build on, integrate and innovate existing methodologies to assess ocean observation gaps and requirements (e.g. the EMODnet Sea-basin Checkpoints, Copernicus Marine Service, EuroGOOS, European Environment Agency (EEA)) to:
  - a. Shift from science-driven to user-driven approaches to identify ocean observation gaps and requirements and to move towards fully integrated, holistic assessments across data analysis and modelling communities, and to connect in situ with satellite-derived data;
  - b. Move from single user requirements to multiple, inter-connected, cross-border requirement identification, including cross-sectoral needs;



Community recommendations on marine technology and ocean observing gaps and requirements  
EC Ocean observation: sharing responsibility virtual event on 18 June 2021

# EMODnet Sea-Basin Checkpoints stakeholder consultation, 2022-2023

- Between 2022-2023 the EMODnet Secretariat conducted a **community consultation and study on the EMODnet Sea-basin Checkpoint (SBCP) added value and benefits.**

## Key Objectives and expected outputs

- The benefits of the EMODnet Sea-basin Checkpoints methodology and outputs, and areas that could be improved;
- A re-evaluation of the status of (EMODnet) marine data adequacy based on a comparison between the 2018 EMODnet Sea-basin Checkpoint final report in 2018 and the current status in 2022;
- The added value and/or complementarity of the EMODnet Sea-basin Checkpoint exercises compared to other key methods used by the community in Europe and beyond, including how EMODnet could further connect to other existing European efforts in these areas to create even more holistic, comprehensive assessment using both *in situ* and satellite data;
- Recommendations for how SBCP and wider related methodologies could be utilized by the European Ocean Observation and Marine Knowledge Value Chain actors, and what could be optimized e.g., key actors to be involved, geographical coverage, societal applications (Checkpoints Challenges), diversity of stakeholders (including users) that could be involved, and how findings could be fed back into the ocean observing system gaps and requirements feedback loop.



# EMODnet Sea-Basin Checkpoints stakeholder consultation, 2022-2023

- Between 2022-2023 the EMODnet Secretariat conducted a **community consultation and study on the EMODnet Sea-basin Checkpoint (SBCP) added value and benefits.**
- The community consultation was carried out through **targeted stakeholder dialogues and consultations with SBCP Coordinators, partners and key actors from the wider community**, with a focus on European stakeholders, set in a global context.

## Time-line of EMODnet SBCP activity 2022-2023

- Desk study of current status of SBCP communication and uptake (summer 2022)
- SBCP Coordinator first tele-meeting October 2022
- online stakeholder workshop January 2023
- online stakeholder survey (February 2023)
- Targeted dialogues with key actors e.g., EuroSea project, EMB, Report production, summary PPT (May – September 2023)
- SBCP Coordinator 2<sup>nd</sup> tele-meeting October 2023
- Promotion of key results (online and at events e.g., EMODnet Open Conference 2023)

# EMODnet Sea-Basin Checkpoints stakeholder consultation, 2022-2023

- The consultations were conducted in the form of **tele-meetings, an online workshop and online survey**, with the central aim to gather stakeholder feedback on the strengths and benefits of the SBCP exercises while gathering recommendations in terms of methodology, geographical coverage, user and stakeholder involvement and SBCP legacy. This presentation provides a summary of the community dialogues and recommendations.
- **Stakeholder mapping for EMODnet SBCP workshop**: An initial mapping of key actors in Europe and beyond was conducted by the EMODnet Secretariat and discussed with SBCP Coordinators at the first tele-meeting in October 2022, together with a draft agenda for the wider stakeholder workshop.
- Following targeted invitations to > 80 experts, **more than 50 participants attended the online stakeholder workshop on 26 January 2023**, bringing together EMODnet Sea-basin Checkpoint Coordinators, partners and expert panel members, EMODnet thematic and data ingestion experts, EMODnet associated partners, EC DG MARE, and wider invited experts e.g., Copernicus Marine, EuroGOOS and Coordinators of key relevant European projects e.g., EuroSea. A survey including the same questions was also launched for capturing additional feedback after the workshop.



EMODnet SBCP stakeholder workshop, 26 January 2023. Credit: EMODnet Secretariat

*TO ADD EC MF Forum link once article is published*

# Summary of stakeholder feedback and recommendations: Strengths and opportunities

- **Harmonized Methodology with Flexibility:** The diversity of methodologies was largely seen as a strength although some optimization of high-level methodology harmonisation could ensure a more consistent approach, whilst allowing flexibility for sea basin-specific methodologies makes the Checkpoints fit-for-use in different regions.

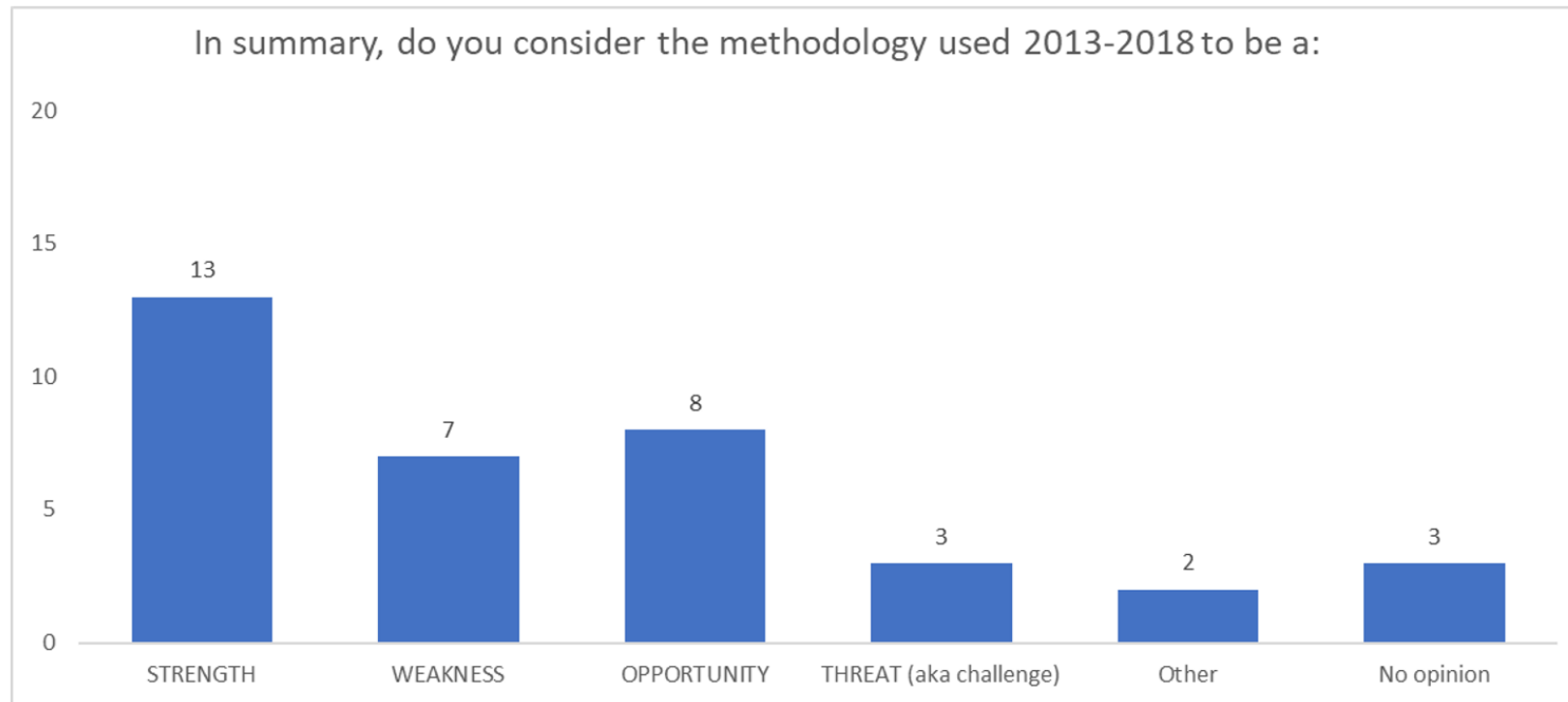


Figure 2: Multiple choice question on the strengths, weaknesses, opportunities and threats of the EMODnet SBCP methodologies. Results based on 20 respondents.

Figure from EMODnet SBCP stakeholder consultation workshop report, survey responses. Credit: EMODnet Secretariat

# Summary of stakeholder feedback and recommendations: Strengths and opportunities

- **Harmonized Methodology with Flexibility:** The diversity of methodologies was largely seen as a strength although some optimization of high-level methodology harmonisation could ensure a more consistent approach, whilst allowing flexibility for sea basin-specific methodologies makes the Checkpoints fit-for-use in different regions.
- **Leveraging and Connecting with Existing Methodologies:** Building on the methodologies developed in previous exercises saves time and resources, enabling more focus on running challenge exercises.

Stakeholders considered that SBCP methodologies aligned well with other existing (European) methodologies for assessing marine data adequacy and/or ocean observing gaps and requirements, and that SBCP methodology could complement towards a more holistic assessments of data adequacy and ocean observation gaps and user requirements:

- Copernicus In Situ Components, Copernicus Climate Change service (C3S);
- Danish Meteorological Institute (DMI);
- Optimising and Enhancing the Integrated Atlantic Ocean Observing Systems (AtlantOS);
- EuroSea project;
- OSPAR;
- The International Council for the Exploration of the Sea (ICES);
- European Environment Agency (EEA);
- Observing System Experiment (OSE) and Observing System Simulation Experiment (OSSE) in the Optimal design of observational networks project (ODON);
- Operational Ecology: Ecosystem forecast products to enhance marine GMES applications (OPEC);
- GO FAIR Initiative;
- Essential Ocean Variables (EOV) Framework and the Rolling Review of Requirements of the World Meteorological Organisation (WMO).

# Summary of stakeholder feedback and recommendations: Strengths and opportunities

- **Geographical Coverage Expansion:** Retaining original geographical coverage would allow comparing data adequacy in time. Including additional sea basins beyond continental Europe would allow leveraging lessons learned, sharing and expanding the methodology, and exchanging best practices with other regions.

A SWOT analysis is presented below, based on online Mural board stakeholder feedback gathered at the online workshop:

Table 3: The Strengths, Weaknesses, Opportunities and Threats (SWOT)-analysis of the SBCP geographic coverage, collated from results of the online survey and the interactive Mural.

<p><b>Strength</b></p> <ul style="list-style-type: none"> <li>- Regional approach is relevant as quite a lot of information is regional specific;</li> <li>- Getting the wide data landscape at regional level taught us a lot of important lessons;</li> <li>- Bundling in specific geographic regions makes the assessment easier to apply and flexible;</li> <li>- Almost all users are only interested in one or two of the regions;</li> <li>- Causes the EU to focus primarily on its own sea basins;</li> <li>- The data adequacy results should be targeted for each sea basin because each basin has unique environmental characteristics and political/governance landscapes that define the implemented observing system;</li> <li>- It's easier to find multi-disciplinary expertise in one specific region;</li> <li>- The final outcome of the project is more robust;</li> <li>- Each pool has specifics and users of the data;</li> <li>- It is important not to focus solely on one region;</li> <li>- Allows to look beyond EU borders and see the problem in data collaboration;</li> <li>- Data collection is not homogeneous across the regions;</li> <li>- It was possible to reflect regional differences (both in terms of geopolitical and environmental differences);</li> <li>- It allows to focus on key expected developments per basin.</li> </ul>	<p><b>Weakness</b></p> <ul style="list-style-type: none"> <li>- Results from the different sea basins were not comparable when a different approach was chosen;</li> <li>- There can be quite some redundancy;</li> <li>- When limited resources are distributed to many partners, each partner will have a limited funding for each topic;</li> <li>- The assessment is not necessarily limited to a sea basin;</li> <li>- Generates some overlaps;</li> <li>- Effort increases with increasing geographical detail;</li> <li>- No non-EU countries involved;</li> <li>- Not all challenges were equally relevant to all basins;</li> <li>- Limited number of stress tests per sea basin.</li> </ul>
<p><b>Opportunity</b></p> <ul style="list-style-type: none"> <li>- Others can replicate the methods used in certain sea basins for external (non-EU) basins;</li> <li>- Utilize existing regional sea quality assessments;</li> <li>- Allows specific potentially high-profile use cases to be published;</li> <li>- UN Decade provides a good platform to extend and share the EMODnet Sea-basin Checkpoints methods to other parts of the world</li> <li>- The usual assumption is the regional experts are the best placed to answer, but having experts from other regions assess could give a different perspective;</li> <li>- Use the lessons learned to create a method that can be adopted worldwide for practical assessment of data utility and coverage;</li> <li>- Have a joint assessment from multi-basins;</li> <li>- Go more international;</li> <li>- Make use of the products/DTO's/user applications/Virtual labs that already make use of EMODnet data in other projects like Blue cloud/EOSC/DTO developments and contact them for feedback/assessment.</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>- The sea basin may not necessarily be the area of interest for an application/research;</li> <li>- Possibility of spurious results to affect the overall conclusion;</li> <li>- Visibility of issues between sea basins due to data and the image of 'bad' and 'good' students would get less effort to improve the situation.</li> </ul>

SWOT Table from EMODnet SBCP stakeholder consultation workshop report. Credit: EMODnet Secretariat

# Summary of stakeholder feedback and recommendations: Strengths and opportunities

- **Common and Specific Challenges:** Stakeholders were asked which of the SBCP 2013-2018 user challenges they would repeat (Fig. 7 below) and which new applications/challenge areas they considered timely (at time of feedback, January 2023) (Fig. 8 below). It was also considered that refining common challenges across sea basins and leaving room for specific challenges could lead to more comprehensive assessments.

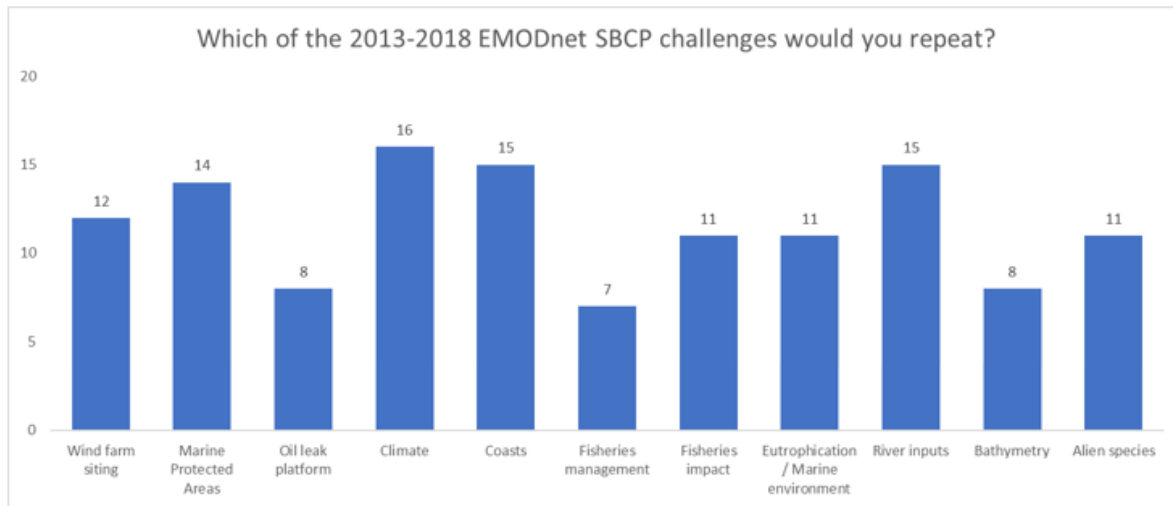


Figure 7: Multiple choice question on the end-user challenges of the EMODnet SBCP. Results based on 20 respondents.

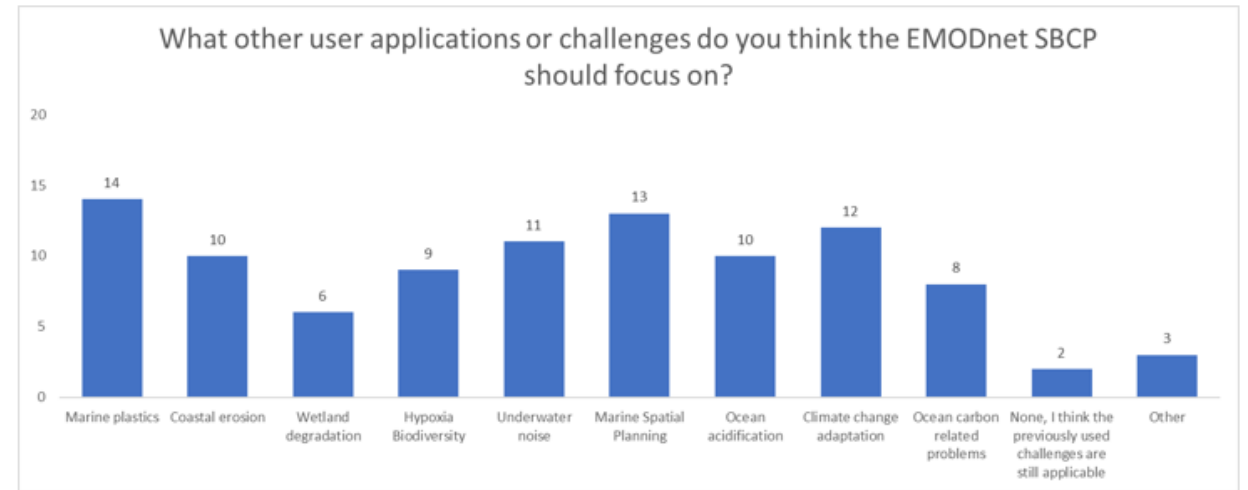


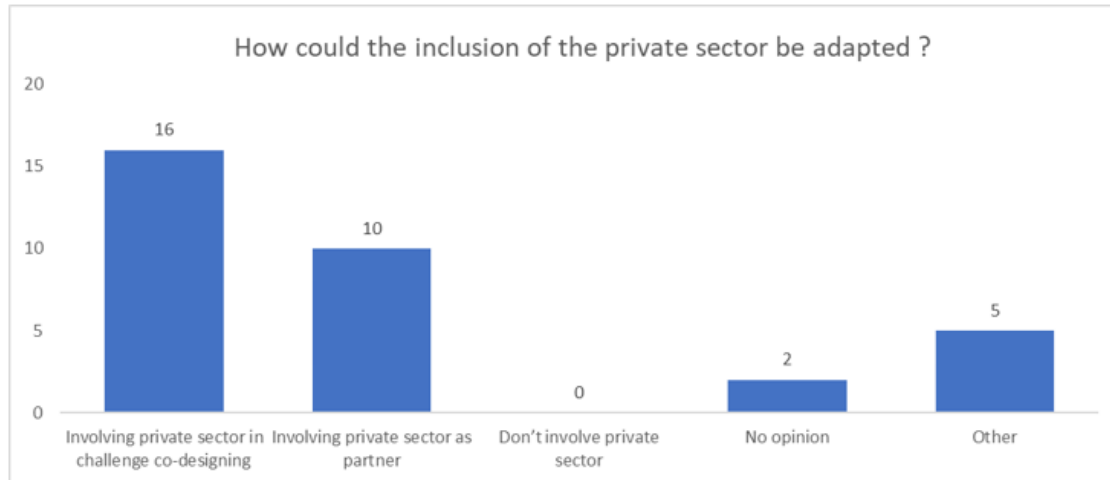
Figure 8: Multiple choice question on other end-user challenges of the EMODnet SBCP. Results based on 20 respondents.

Figures from EMODnet SBCP stakeholder consultation workshop report, based on results of the online survey. Credit: EMODnet Secretariat

# Summary of stakeholder feedback and recommendations: Strengths and opportunities

- **User-Base Engagement:** The Checkpoints could capitalize on the ever-increasing and diverse user-base of EMODnet to gather data and data product needs and requirements, actively assess data adequacy, and inform Ocean observing system design.
- **Stakeholder, including private Sector Engagement:** During the tele-meeting and workshop panels, it was acknowledged that the private sector was directly involved in the activities of the Sea-basin Checkpoints, although not sufficiently. It was recommended that involving the private sector in defining end-user challenges would demonstrate EMODnet's value to industry and help design more relevant challenges.

Table 5: The Strengths, Weaknesses, Opportunities and Threats (SWOT)-analysis on the involvement of the private sector in the EMODnet SBCP, collated from the interactive Mural.



<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>- The industry can link to relevant problems and satisfy all types of end-users;</li> <li>- They are directly relevant to what users are doing;</li> <li>- Users are the focus of the exercise;</li> <li>- Provides commercial expertise.</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>- It only offers a snapshot in time, not a continuous engagement;</li> <li>- Private sector experts might not always be domain experts for the specific challenges;</li> <li>- Only limited stakeholder engagement and feedback during the Sea-basin</li> <li>- The external expert boards were not very helpful. It wasn't easy to understand the "modus operandi" if you were an outsider. They questioned the results but without really understanding the process;</li> <li>- Checkpoints because the concept was not easy to grasp.</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>- Could attract more funds for such data portals as they will be seen as a backbone product to improve businesses and predict threats;</li> <li>- Access to new data for the private sector;</li> <li>- Gain the viewpoint of an important stakeholder group;</li> <li>- Engage an expert panel at the start and throughout the project as well;</li> <li>- Show EMODnet's added value to industry and the importance of the accessibility of their data;</li> <li>- National UNDOS committee can do similar assessment on a national level;</li> <li>- Get input from non-scientific users of marine data and products;</li> <li>- To rise private sector interest by involving into the process</li> <li>- Could enable sharing of private sector data.</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>- Private sector should not be involved in the compromising of the data quality, data policies and more generally data FIARness;</li> <li>- Users should be involved from the inception but they will not have time/money.</li> </ul>

Figure 11: Multiple choice question on how to include the private sector in the EMODnet SBCP. Results based on 20 respondents.

Figure and SWOT from EMODnet SBCP stakeholder consultation workshop report, based on the results of the online survey and workshop feedback respectively. Credit: EMODnet Secretariat

# Re-evaluation of the status of EMODnet data adequacy (2018 vs 2022)

Additionally, as part of the 2022-2023 consultation exercise, the **EMODnet thematic Coordinators** (Bathymetry, Biology, Chemistry, Geology, Physics, Seabed Habitats and Human Activities) were asked to re-evaluate the status of (EMODnet) marine data adequacy based on a comparison between the 2018 EMODnet SBCP synthesis report and the current status (conducted in October - November 2022). Some key findings are presented below, per EMODnet thematic.

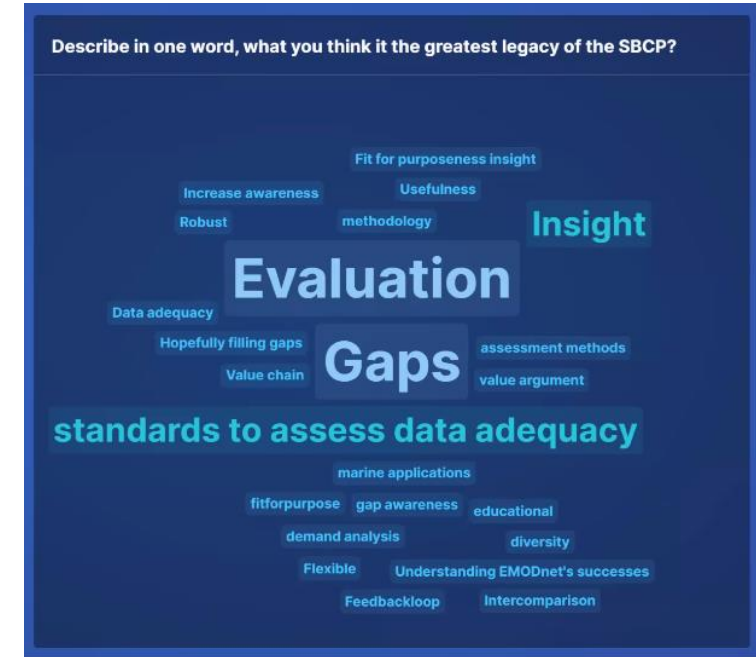
- In 2013-2018, the **bathymetric** aggregated datasets were considered sufficient for most challenges, but low resolution and data gaps limited their usability for some applications. Now, EMODnet Bathymetry is the preferred source as input for hydrodynamic models, seabed habitat maps, and micro-siting wind farms due to its high-quality data.
- There's no significant increase in **biological** data since 2018, except for phytoplankton and bird data in some basins. It was indicated that sampling protocols for biological data will remain heterogeneous in nature.
- Gaps in **chemical** marine as well as freshwater data (nutrients, chlorophyll-a, dissolved oxygen) were identified in certain areas. Coverage of nutrients data has increased especially on coastal areas. Freshwater parameters improved, but less so.
- **Geology** data had poor resolution and insufficient detail in 2013-2018; progress in adding detail was noted in the re-evaluation.
- Gaps in **seabed habitats** data included habitat extent and characteristics (insufficient availability and resolution). The quantity of maps grows every year, despite the lack of surveys in existence.
- Areas of data gaps as well as insufficient resolution in **physical** data included wind, ocean current, waves, sea level, sea ice and water discharge. Varying degrees of improvement were noted, depending on the area.
- In 2018, gaps in **human activities** data were identified in areas such as pipelines, military zones, aquaculture sites, and leisure activities, as well as deficiencies in data format or taking too long to obtain. There are improvements in responsiveness and availability, while deficiencies are still present in some areas.



# Summary of stakeholder feedback and recommendations:

## Recommendations, and next steps

- The **greatest value and legacy of the EMODnet Sea-basin Checkpoints 2013-2018 activities** was considered to be the **fit-for-purpose and user-driven methods** developed by the EMODnet SBCP to address how observations can generate evaluated products and identify existing gaps and needs for observations, and the results that these methods produced in terms of assessing data adequacy and data provision according to specific societal challenges;
- The SBCP exercise results were also seen as a great legacy showcasing an **overview of EMODnet's multidisciplinary data** at basin scale and a **snapshot of the data adequacy** at that time, while giving insights and feedback to the EMODnet thematics;
- It was noted that the EMODnet SBCPs benefitted the EU community because they provided information on the adequacy for particular data for user applications (challenge topics) at a particular time that could be used to inform the ocean monitoring community on the assessment of data gaps to help prioritize planning of resources for future ocean observation, marine monitoring and data collection efforts and design. Furthermore, it could be a better support to the environmental and conservation policies and policy-makers (MSP, MSFD);
- Enhanced Collaboration and Communication : Strengthened connections with other European initiatives and actors would create a more comprehensive and collaborative assessment process.



Slido Word-cloud taken during the SBCP Workshop.  
Credit: EMODnet Secretariat

# EMODnet evolution

- EMODnet unified all its thematic services in January 2023 and continues to evolve its services, according to user requirements
- The results of the EMODnet SBCP added value and benefits stakeholder consultation will be discussed at the third EMODnet Open Conference, 29-30 November 2023, with > 120 EMODnet partners and many more wider stakeholders.

The infographic features a central blue circle with the text '1 OCEAN 1 EMODnet' and 'One single portal'. To the left, a computer monitor displays a map viewer interface, with the text 'One central map viewer to visualise all EMODnet data' above it. To the right, another monitor shows a metadata catalogue interface, with the text 'One central metadata catalogue to enhance data search and discovery' above it. Below the central circle, the text '140 partners' and '+100 use cases' is displayed. In the center, it says 'Discover, visualise and download marine data and products across 7 thematics and hundreds of parameters'. At the bottom, seven circular icons represent the thematic areas: Bathymetry (sonar), Human Activities (gears), Physics (waves), Geology (rock layers), Seabed Habitats (seaweed), Chemistry (molecular structure), and Biology (seahorse). The website address 'EMODNET.EC.EUROPA.EU' is prominently displayed in the center. The background is a blue gradient with a sunburst effect emanating from the central circle and a stylized ocean floor with fish and coral at the bottom.

**One central map viewer**  
to visualise all EMODnet data

**1 OCEAN  
1 EMODnet**  
One single portal

**One central metadata catalogue**  
to enhance data search and discovery

140 partners

+100 use cases

Discover, visualise and download marine data and products across 7 thematics and hundreds of parameters

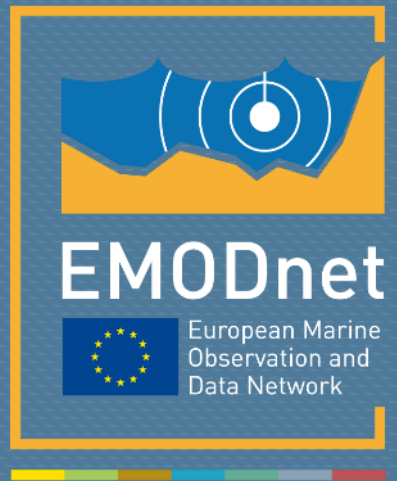
BATHYMETRY HUMAN ACTIVITIES PHYSICS GEOLOGY SEABED HABITATS CHEMISTRY BIOLOGY

**EMODNET.EC.EUROPA.EU**

YOUR GATEWAY TO *IN SITU* MARINE DATA IN EUROPE AND BEYOND

The European Marine Observation and Data Network (EMODnet) is financed by the European Union under regulation (EU) No 1026/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund

EMODnet  
European Marine Observation and Data Network



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