



EMODnet



European Marine
Observation and
Data Network

EMODnet Open Conference:
Consolidating the Foundations, Building the Future
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Breakout Session Report

Disclaimer: The recommendations, comments and views expressed in this informal report are the views of the participants of the EMODnet Conference and not those of the EMODnet Secretariat, EMODnet partners nor the European Commission.

1 Context

During the EMODnet breakout session all participants were invited to join one of several parallel breakout groups. The main aim of the Breakout discussions was to identify the main challenges related to marine data management and sharing in Europe as well as help identify how well the European Marine Observation and Data Network (EMODnet) is currently addressing these challenges. This led to an open discussion on the elements that should be retained and those aspects which could be addressed or improved by EMODnet in the future.

Based on the feedback received from registered participants prior to the Conference, the discussions were focused on following main themes:

1) Development of Products for users

EMODnet develops products such as maps and quality indices. What should be the core principles and criteria to select which products should be developed within EMODnet? Should this depend on the type of product and the type of target audience? Who are the core users and preferential clients to guide the selection and development of products? How to avoid market disruption by competing with SMEs?

2) External interactions and synergies with other marine data and information systems

How does EMODnet fit in the European marine data and information landscape? What are the main marine data and information systems/initiatives that characterize the European and International marine data landscape at this moment? How does EMODnet relate to these and how can we avoid duplication of efforts?



3) EMODnet external communication, promotion and dissemination

EMODnet has gained some visibility in the marine scientific community, but is still unknown to a very large group of users. How can we improve the visibility of EMODnet and gain a larger base of followers? What are the core message to be conveyed to the main target audiences? What resources (funds, actions, products, ...) need to be committed to increase that visibility? How can we enhance the visibility of EMODnet to maximize user-uptake.

4) Involvement of Industry as user and provider of data and tools for EMODnet

EMODnet aims to reduce the costs of offshore operators and create commercial opportunities by making marine data more accessible to private companies. At the same time, these companies often collect marine data which are often not shared. How can we get industry to both benefit from, and contribute to, EMODnet?

5) EMODnet Phase III (2016-2020) requirements – reaching the roadmap objectives

EMODnet is central in the 2020 EU flagship project aiming to prepare a seamless multi-resolution digital seabed map, covering topography, geology, habitats and ecosystems. It should be accompanied by access to data on the present and past state of the overlying water column and by associated data on human activities. All this should be easily accessible, interoperable and free of restrictions on use. What are the main operational, scientific, technical, policy and legal challenges to reach these 2020 flagship requirements? The Marine Knowledge 2020 Roadmap (2014) outlines the objectives for EMODnet thematic portals towards 2020; how should these be attained?

6) EMODnet Governance, coordination and financing

Currently EMODnet is funded and driven by DG MARE with support from a Secretariat, a Steering Committee, an Expert Group (MODEG) and Executive Agency (EASME) to manage the contracts. Is this governance model working well? Are there components that could or should be improved/strengthened?

What are the options beyond European Commission funding? Should Member States and the private sector also support EMODnet? What synergies can be developed to save costs by avoiding duplication of efforts and sustainably operate EMODnet post 2020?

EMODnet initially developed as a set of (pilot) thematic projects. As the various network activities expand in scope and extent there is a growing need to coordinate these efforts to maintain coherence. How can we do this best? How should the various activities and data portals be presented in a coherent way to externals? How can various activities evolve with their own specificity while maintaining a common identity?

7) Data provider engagement

EMODnet does not pay for data, but relies on a steady feed of data from a wide range of data providers. How can we ensure durable integration of data providers into the Network? How can we ensure data providers' concerns and needs are taken into account and met? How should data providers be embedded in the Network?

2 Main points and issues raised according to the high level topics

2.1 Development of products

Do we even need products?

There were diverging views from the participants on the extent effort and focus EMODnet should dedicate to the development of products. While most participants agreed that developing products in some cases is beneficial, others argued that EMODnet should primarily focus on harvesting and serving data with the following arguments:

- In some cases, developing products could mean competing with SMEs who may be better placed to provide added value services and products. Except for a few products covering an important societal need which would not be created otherwise, EMODnet should focus mainly on providing data with metadata and information on quality, and focus less on product development;
- Some of the thematic portals, notably geology and seabed habitats provide map products but limited underlying data. It is often difficult if not impossible to work out how maps were created from underlying data. It would be beneficial to make sample data available together with reproducible methods to devise mapped products.

How to define the scope of the core EMODnet products?

- The identification of common products requires both a top-down and a bottom-up approach;
- EMODnet should establish a multidisciplinary forum for discussion of possible interdisciplinary products (across lots) and to ensure complementarity in product development;
- As a prerequisite, the scope of each portal as well as the users and their requirements need to be clearly defined. Different users require different scales; hence products should incorporate different scales.
- Researchers are considered important as are public sector organisations, but service providers and SMEs are potentially the most important users. For public bodies, products need to be considered in first instance to respond to the needs related to Marine Strategy Framework and Maritime Spatial Planning Directives;
- Particular attention should be devoted to develop, document and catalogue products that support MSP; DG MARE should support and facilitate a dialogue between data portals to take account of existing pressure mapping projects;
- EMODnet should consider how to provide better links between near real-time and delayed mode data;
- There is a need for products which classify pelagic habitats (parallel to sea-bed habitat classification). This requires a pilot action or feasibility study;
- EMODnet product development criteria should be adaptable, based on feedback from users and EMODnet partners, and fully compliant with the Marine Knowledge 2020 strategic objectives;
- Products need to be well described and have appropriate metadata to allow users to determine if it is fit for end-user purpose. This should lead to products with known provenance and lineage that are complementary to existing products;
- Added value of EMODnet products is based on its multidisciplinary nature and scale as it offers the potential to deliver pan-European products and services combining data from more than one discipline simultaneously;
- There is a need for better outreach in terms of promoting uptake of EMODnet products;

Do we have sufficient and appropriate data to develop more and better products? Is there a need for improvement of existing data collection?

- There are limitations to the current temporal and spatial extents of data collection, preventing historical/reference levels to be made among the different European seas;
- A clear overview of the existing gaps is necessary in order to define/refine existing and future monitoring and observation efforts;
- There is a need for common monitoring, taking account of different habitats, environments and the consequent monitoring/sampling requirements;
- Learn from data rich areas to design sampling strategy in data poor areas;
- There is a need for better indication of data quality and confidence related to the current data collection to improve data products as well as future data acquisition efforts;

- Data should be preserved at (or close to) original source. There should be one original data-set, not many different versions;
- Duplication of data sets could be prevented by attaching originators' ID to all data sets;
- There are issues related to 'old data', issues of positioning accuracy, temporal variability, gear, analysis method. Flags are needed in terms of data quality.

2.2 External Interactions

How should EMODnet relate to the main marine data and information systems that currently exist in Europe and beyond? How can duplication of efforts be avoided and how can EMODnet fit well in the marine information landscape?

Participants generally recognised that the European marine data landscape is very complex with many different marine data and information systems and initiatives operational or in various stages of development. Following are the main points and questions raised:

EMODnet and in-situ observations:

- Observations are fragmented, there are many and various sources of observations, funded at Member State (MS) level by research and industry yet observations lie at the source of all EMODnet activities;
- Could EMODnet provide tools and services to support observation strategy, focusing not only at Member State level, but also to make these available for smaller public/private organizations making observations?
- EMODnet could produce a best practice manual for data collection and archiving. Is there a need for an EMODnet portal containing tools, guidelines and e-infrastructures to support organizations carrying out monitoring and observations to help them devise observation strategies (based on best-practice) so that data is usable?

Openness and interaction with public bodies:

- The marine data community is too closed. It must be more connected to the terrestrial / fluvial data community. EMODnet should raise awareness of this issue. Responsible bodies at EU (DG MARE) and national level need to reach out to 'terrestrial' counterparts;
- There is a need for improved interaction between EMODnet community and national implementing authorities (MSFD and environmental monitoring bodies) to:
 - ensure the provision of data to EMODnet;
 - facilitate data compilation and harmonization and overlaying of data layers to create products;
 - to fill gaps in environmental monitoring potentially with data from research;
 - Obtain feedback from regional sea conventions on monitoring appropriateness.
- Politicians are often unaware of the importance or potential of marine environmental science to contribute to their work and scientists are often unaware of legislation / policy concerning the sea.
- There is a need for lobbying at the European Parliament to influence the long term agenda of EU and Member States with regard to marine monitoring and observations.
- Could the EMODnet Secretariat set-up and coordinate a Working Group on politics, science and marketing to devise a strategy for how to achieve a better science/policy interface on these issues?

How to avoid duplication in the landscape and identify a unique role of EMODnet?

- There are currently too many initiatives in the field of ocean observations. However, less initiatives should not mean less funding, rather there is a need for better coordination of funding efforts;



- In the context of EMODnet Biology: it could play a unique role as a European data platform for archiving data (from EU funded projects) and for identifying data gaps so that future funding can be directed towards projects targeting these gaps;
- In the context of research projects, there is a need to improve communication between DGs and between project groups. DG Research should formulate conditions for mandatory data deposition in a national/public data centre repository (EMODnet) for all funded projects;
- EMODnet should work with other actors such as IODE to make an overview of existing data portals and provide guidance to users on portal usage and data quality;
- EMODnet's unique role is in providing a single entry point to a combination of data from various disciplines – this should be much better exploited by providing the simple tools to access these data layers via one single interface;
- EMODnet should focus on interoperability rather than on data/metadata standardization and stay as close to the original data as possible;
- EMODnet can play a unique role in supporting environmental decision making and in particular towards MSFD implementation.

2.3 EMODnet visibility

How can we improve EMODnet visibility and enlarge the user-base, what are the main messages? What resources are needed?

EMODnet communication policy should consider the following:

- Communicate and promote the use of EMODnet but also to educate public, students, politicians (policy makers), industry (providers and users of data); use easily understood message(s), focusing on benefits (data is not interesting – does not capture imagination);
- Showcase concrete examples of regional benefits of EMODnet (in language that is understandable to all) using case studies (e.g. from checkpoints);
- Secure political buy-in to obtain useful budget on the long term (5+ years);
- Fine-tune communication taking into account local and regional specificities, based on the needs of Member States and the sea-basins and explain how EMODnet fits within / alongside other systems;
- Highlight and exchange best-practices in terms of data collection, storage, management and dissemination;
- The multidisciplinary nature and pan-European coverage of EMODnet are the key added values that EMODnet should be included in external communication messages;
- Mechanisms for promotion of EMODnet could include:
 - Promotional tour around Europe (and beyond) by the Secretariat;
 - Development of standardised presentation of EMODnet for use by all;
 - Organisation of workshops including training;
 - Awareness raising via dissemination of informative leaflets & brochures, in particular on the range of provided services;
 - Raise EMODnet profile using social media.

Product promotion as a means of raising visibility:

- There is a need for active promotion of products to attract more users. Development of focused data products to support assessments and reporting will attract more users and promote EMODnet visibility and thus encourage support and funding. This will generate a multiplication effect: the more use cases are available that can be marketed – the more users they will attract and more feedback will be generated leading to more interesting products;

- Product promotion should be embedded in an active marketing campaign by the Secretariat.
- Secretariat together with EMODnet lot partners should make an inventory of end-user applications per portal.

How to enlarge the user-base?

- Integrate search and retrieval functionality of all data via one single portal;
- Develop mobile applications, in particular allowing entries with GPS so users can identify all data-sets products available at/near their location;
- Standardization in the way to browse and operate the various portals;
- Visualisation should be attractive – could be used in environmental education courses;
- EMODnet could be used to inform and guide developing countries;
- Dedicate attention to recruit two largely un-reached user groups: students and private companies;
- Improve social networking for students and wider public;

There is a need for an EMODnet Helpdesk to:

- Engage in a permanent process to collate feedback from users and feed that into the development process;
- Act on reported incidents at two levels: (i) take immediate action when necessary; and (ii) develop a roadmap to implement long term actions;
- Use feedback to harmonise access to data;
- Provide an overarching data policy at higher level (cf. Copernicus Marine Environmental Monitoring Service);
- Provide assistance to use EMODnet and train end-users (capacity building).

Data citation as a means of raising visibility of EMODnet use

- Need to improve and harmonise the data citation/acknowledgement system, e.g. via persistent Digital Object identifiers (DOIs), to increase evidence of scientific impact of EMODnet and link this to career advancement (via H score type system). This is challenging because existing organisations have different practices and abilities to change/adopt new procedures;
- There is a need for clear guidance of when and how to cite data;

2.4 Industry Involvement

How can we encourage industry interaction with EMODnet, as both users and providers of data?

- There needs to be a dialogue between EMODnet and industry/users to establish how they could help each-other. A user group with industrial actors should be set up to guide EMODnet product development.
- EMODnet may be most efficient if it focuses less on the ultimate end-user (e.g. shipping industry, oil and gas multinationals, major dredging companies) but should instead focus on intermediaries, small to medium size enterprises providing tailor-made products and services (service providers) to industry. Service providers could add value to EMODnet data and products and bring them to end-users. Therefore EMODnet should always maintain access to the underlying data, even if products are being made;
- EMODnet needs to identify some win-win scenarios to demonstrate to industry what they can do/provide for them. EMODnet should focus on 'low hanging fruit' in the first instance to develop case studies;



- EMODnet should focus more attention on the Arctic as an emerging area that industry is only beginning to explore and maybe they can forge a synergistic relationship with them possibly via the EMODnet Arctic checkpoint;
- The EC could include calls for EMODnet-industry collaboration as stand-alone calls for tender under the EMFF and in Horizon2020;
- Can EMODnet meet industry half-way and support them in terms of validating their data. Industry does not have specific allocated resources (data specialists) to do this;
- INSPIRE is not workable for SMEs - EMODnet should influence INSPIRE in a positive way so that it is more feasible for SMEs to take it into account;
- Industry will not be interested unless EMODnet can ensure sustainability of data provision;
- EMODnet's unique selling point to industry should be as a source of baseline data;
- Ask industry to supply the data they gather now so that EMODnet can see what sort of data industry needs;
- EMODnet should develop a silicon valley mentality: let start-ups and SMEs make apps on top of products that fit the exact needs of industry; organize hackathons to stimulate innovations and generate interest from new communities;
- EMODnet must be marketed! Many industrial actors still don't know about it. Let SMEs market EMODnet;

2.5 Phase III requirements

What are the main challenges to reach the Marine Knowledge 2020 requirements? What should each of the thematic lots be asked to deliver/improve in the coming four years? Are the objectives highlighted in the Marine Knowledge roadmap sufficient/appropriate?

Participants made the following recommendations to be addressed in future work:

- Ensure better integration of EMODnet with implementation of MSFD, INSPIRE, MSP;
- Develop better tools to identify, assess the importance of, and address remaining observation gaps;
- Improve the interface with meteorology;
- Strengthen linkages between thematic lots;
- Ensure traceability recognition, update feedback loop;
- Allow ways to match different spatial and temporal scales;
- Strengthen capacity building in neighbouring countries;
- Provide better services for data providers;
- Acquire better knowledge of user needs;
- Ingest more scientific data for safekeeping and re-use by others;
- Address data policy issues linked, amongst others, to data publishing, DOIs and data citation index; Encourage scientists to publish and open their data in conjunction with their scientific paper;
- Address gaps and heterogeneity of current bathymetry and geology data sets;
- Alleviate data restrictions on data and work towards open data policy implementation;
- Stimulate interaction between geology, bathymetry and seabed habitats;
- Address political and legal barriers to data sharing (e.g. geophysics secrecy in N.Baltic and east Med);
- Develop shared methodologies between data providers and producers;
- Adopt shared vocabularies and associate each vocabulary term with an image/example (e.g. mud can mean different things in different countries);



2.6 Data provider engagement

What are the modes of ensuring data provider acknowledgement? What about data publication and citability?

- Traceability of data sources via Digital Object Identifiers (DOI) will bring visibility and trust and quality assessment;
- Visibility of effort via proper citation on procedures (citation index impact factor) will bring acknowledgment and motivation;
- EMODnet should develop a 'recipe-book' for data providers including identifiers, standards, regulations for licensing, etc;
- Data centres should provide user metrics to data providers on a regular basis;
- Data providers share data for free in return for products and services they need;
- Many data providers have national obligations to collect and make available data in their country. EMODnet could offer the infrastructure for dissemination and the capacity for harmonization;
- Ensuring long term framework for EMODnet may encourage data providers to share their data (longevity of repository for their data);
- EMODnet needs greater visibility: several data providers have no idea that EMODnet exists;
- A reward scheme may be envisaged for those who share their data. This would fund 'long term' investment in 'on the ground' infrastructure. On the other hand, data collected through public funding should be made available by a specific obligation;
- National focal points and regional conventions can play a pivotal role in streamlining the process of sharing data, and make sure that providers do not deliver the same data-sets more than once;
- A help-desk should be set-up to follow-up the dialogue with data providers and make sure that they received services and products they need in return for their data.

2.7 Governance Coordination and Financing

What is currently working well and what could/ should be improved in the future in terms of governance, coherence and financing

- There is a need for improved internal coherence and coordination between themes via both better synchronization and more structured cross-links. More structured cross-links between different thematic activities will better cater for interdependencies e.g. map regime data from biology to bathymetry;
- OK to keep different thematic portals BUT need more stronger involvement of central portal to address lack of consistency (currently) in terms of *i*) performance *ii*) maturity & *iii*) user-experience
- There is insufficient funding to do everything thus the need for prioritization. This should be based on policy need in order to develop a long term vision and guide the application of funds.
- Regarding governance – four main DGs (MARE, ENV, Research & Innovation, DG GROWTH) should draft a vision and a roadmap for the coming years for a sustainable situation and considering harmonization of and with other initiatives.
- A unique feature of EMODnet is in providing a one stop shop to high quality *multidisciplinary* European marine data (a unique feature of EMODnet in the current landscape of European marine information systems).

3 Summary of recurrent and new messages from the break-out sessions

The main messages from the break-out session and also from feedback received in advance of the sessions via an online questionnaire are summarized as follows:

- **EMODnet requires greater visibility**, many potential users and providers are unaware of its existence. Successful use-cases must be identified and used to help promote EMODnet and encourage user and provider engagement;
- **EMODnet needs political buy-in at member state level** to ensure its longevity in terms of funding. Assuring the longevity of EMODnet would encourage more data-providers and users (particularly from industry);
- EMODnet cannot address all potential end-user needs. EMODnet should address the needs of public authorities and policy makers in the first instance. **The relationship between EMODnet and MSFD is particularly important**;
- EMODnet operates within a **complex marine data and information landscape** which is currently associated with confusion and perceived overlap between initiatives. The relevant European Commission Directorate-Generals should develop a roadmap in order to **clarify complementarities and align different marine data and information initiatives** to prevent duplication of efforts and financing;
- The **added value of EMODnet is its multidisciplinary nature**, and more **cross-linkage between thematic lots would be very positive**. The central portal is important and should be developed for improved EMODnet coherence and ease of use;
- Data should be preserved at (or close to) original source. There should be one original dataset, not many different versions in circulation. **Use of Digital Object Identifiers (DOIs) and citation indexes** could help ensure traceability/visibility of data providers;
- Funding bodies should **make data deposition in a public repository a mandatory requirement in all projects**. **Sharing data with EMODnet should be mandatory at national level**, and not only as a consequence of EC funding;
- EMODnet should collate and make available **information on data-gaps** to influence future monitoring programmes accordingly. Among others, **land-sea interactions** require more attention;
- EMODnet primary focus should be to **provide access to high-quality data together with information about the quality of that data, including confidence levels**. While EMODnet can also develop a selective range of societally relevant data products, it should let others (service-providers, intermediate users) develop added-value products and services;
- EMODnet needs to **provide better support mechanisms for users and providers through a service desk** and the provision of training workshops.