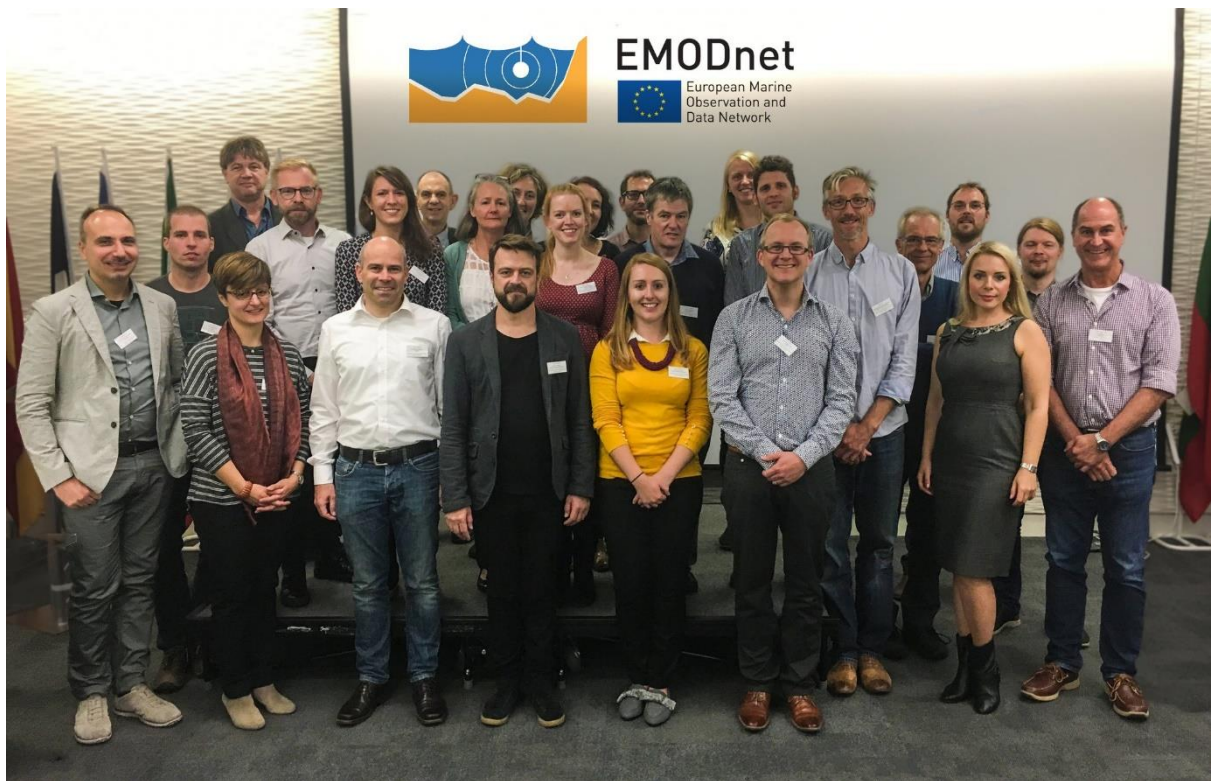


EMODnet Biology: Essential Data Products Workshop

Suggested Citation

Lear, D., Millburn, H, Pasquale, A., Lynham, C., Kissling, W.D., Vaughan, D., Hernandez, F., Muller-Karger, F., Canonico, G., Graham, G., Vanhoey, G., Lillis, H., Shepherd, I., Makarenko, I., Kaitaranta, J., Martin, J., Deneudt, K., Avellan, L., Dodds, L., Lipizer, M., Dickey-Collas, M., Herman, P., Appeltans, W., Hill, J., Claus, S (2017). Report of the EMODnet Biology: Essential Marine Biological Data Products Workshop, London, UK, 10th October 2017. Marine Biological Association, Plymouth



Summary

This one day workshop, held at Europe House, Westminster, London, brought together a wide range of practitioners involved in the coordination and management of the marine environment.

Representatives from the four European regional seas were present, participants from transatlantic partnerships, industry, conservation and management bodies to discuss the development of a core set of data products that could be developed through EMODnet Biology.

Context to the days discussions was given through presentations from EMODnet Biology partners, which was followed by short presentations from the invited experts.

Through discussion and question and answer sessions the 25 participants shared their current experiences of access to and use of marine biological data, including the current gaps and challenges. Pre-workshop questionnaires helped to inform and steer the debate, augmented by short presentations grouped by the following themes:

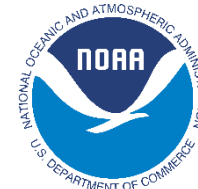
- Regional Seas
- Transatlantic & Global
- Conservation & Management

The workshop participants then split into three breakout groups structured around the three themes above to discuss what the ideal biological data products would be, how they would be delivered and the long term utility of such products.

The agreed next steps included a closer dialogue with the Regional Sea Commissions and their relevant working groups to ensure data products meet operational requirements; the structuring of an EMODnet Biology Atlas of Marine Life around the core Essential Ocean and Biodiversity Variables (EOV & EBV) and the planning and development of a peer reviewed publication on the methodology and approach in the development of marine biological data products to support management and legislation at the regional sea scale.

A follow-up workshop is planned in Spring 2019 to demonstrate progress and promote the next stages in development and engagement.

Participating Institutes/Organisations:



Ocean Data Interoperability Platform



Introduction

The third phase of the biological component of the European Marine Observation and Data Network (EMODnet) began in May 2017, following previously successful phases. The work continues to harmonise access to marine biological data, with special focus on areas where access to existing data is poor, and in the development of products meet the requirements of the broad range of EMODnet stakeholders.

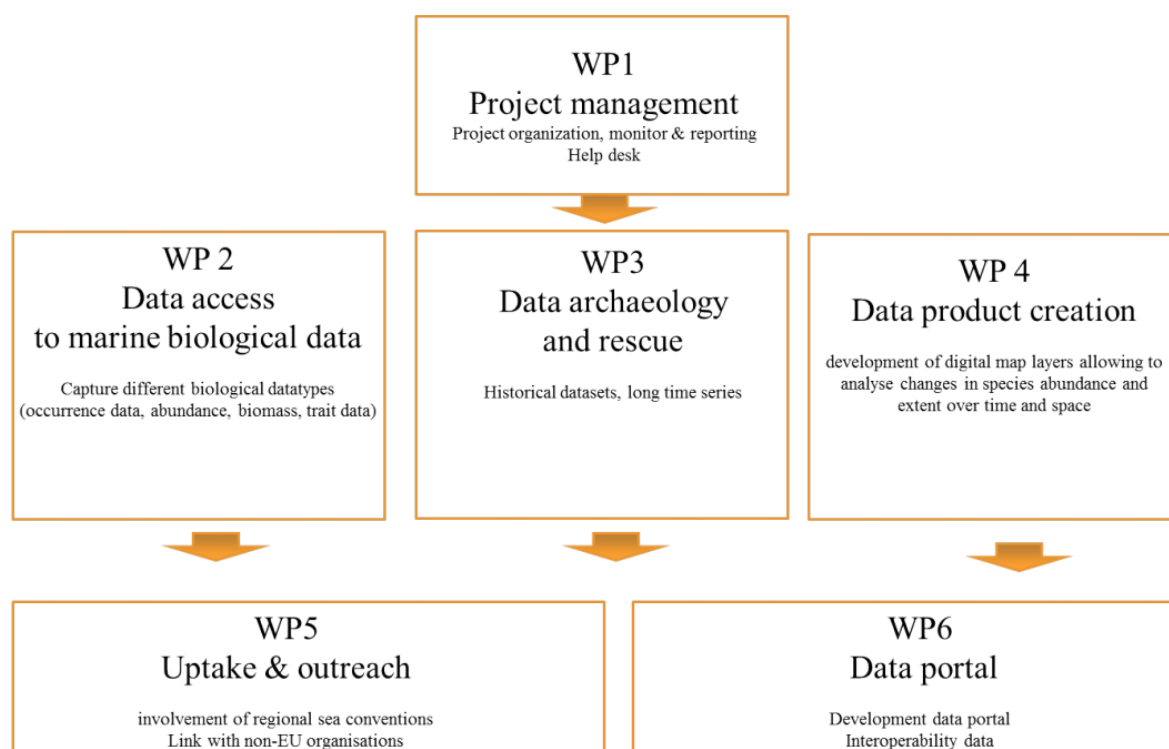


Figure 1. The EMODnet Biology Phase 3 Work Package Structure.

Work package 5 of EMODnet Biology has been established to ensure the highest level of utility of those products created with Work Package 4 and the underlying data resources accessible through WP6. By liaison with key stakeholders and users of marine biological data across Europe and globally, we will ensure that the data products fit the operational requirements essential for the management of Europe's marine waters and ensure interoperability with transatlantic and global initiatives.

The workshop

Following a welcome and round table introductions, the EMODnet Biology team presented the background of the project, and how the EMODnet Biology aspect integrates with the other thematic EMODnet lots. Within the context of product development there is a specific focus on the links with the Seabed Habitats lot, as there is significant overlap in requirements and relevant contributions that could be made.

Of particular interest was the review and analysis of the EMODnet Sea-basin checkpoint Data Adequacy Reports (DAR)¹. The initial reports, published in 2016 provide an overview of the monitoring effort in the regional seas, and the availability of the underlying data. Through a methodical interrogation of the reports it is possible to identify reference to biological data gaps. These gaps can then be used to inform and target the development of highly relevant biological data products.

Representatives of the four Regional Sea Commissions then presented their perspectives on biological data product needs, outlining their statutory responsibilities, current utilisation of products and data, and what would assist them in the future.

The global perspective was presented by the following suite of presentations, including the data requirements that will support the development of Essential Biodiversity Variables, Essential Ocean Variables and the relationship between them.

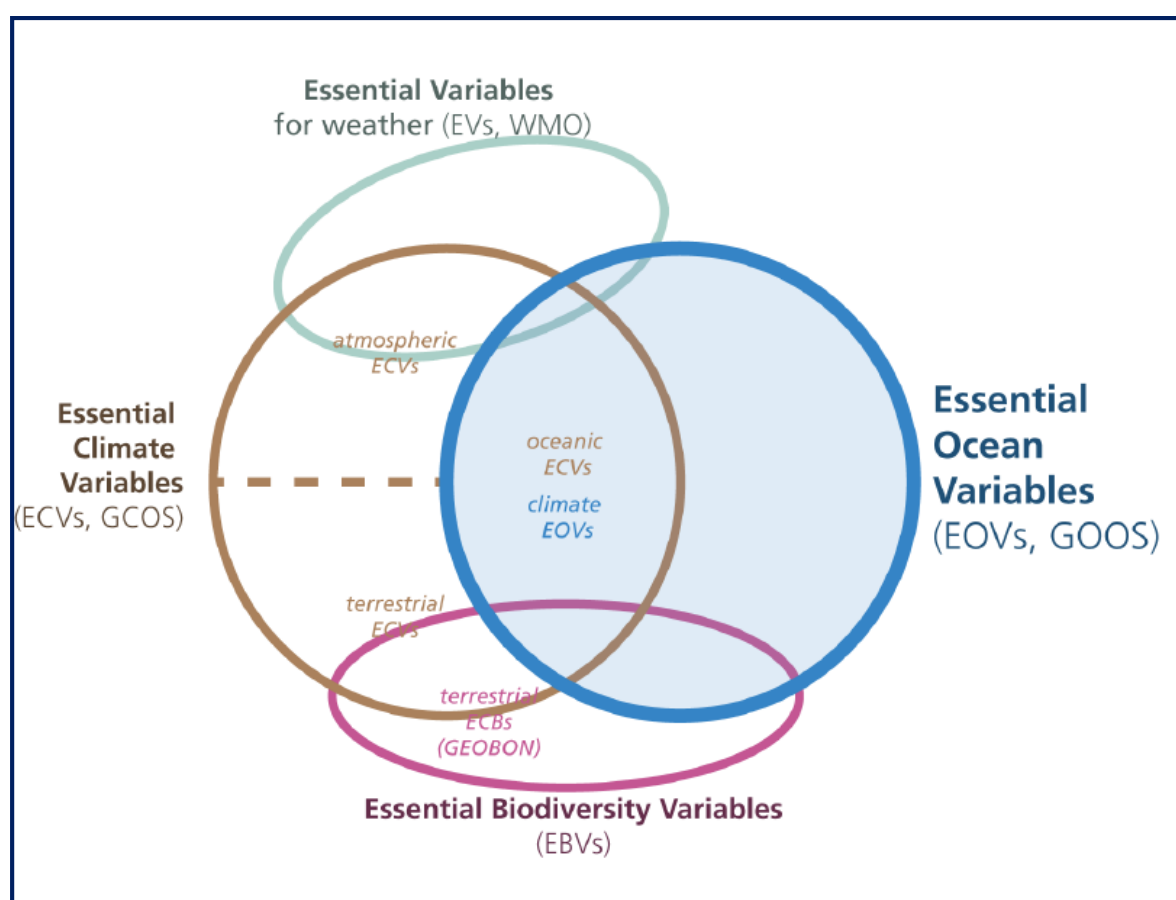


Fig 2. The relationship between the “Essential” variables. From FOO, 2012. A Framework for Ocean Observing. By the Task Team for an Integrated Framework for Sustained Ocean Observing, UNESCO 2012, IOC/INF-1284, doi: 10.5270/OceanObs09-FOO

An industry representative provided insight into the requirements and current data challenges to support their work in undertaking Environmental Impact Assessments at a range of spatial scales, including the lack of clarity relating to data sources, licensing and the proliferation of portals; both thematic and geographic.

¹ EMODnet sea-basin checkpoint data adequacy reports: <http://www.emodnet.eu/checkpoints/reports>

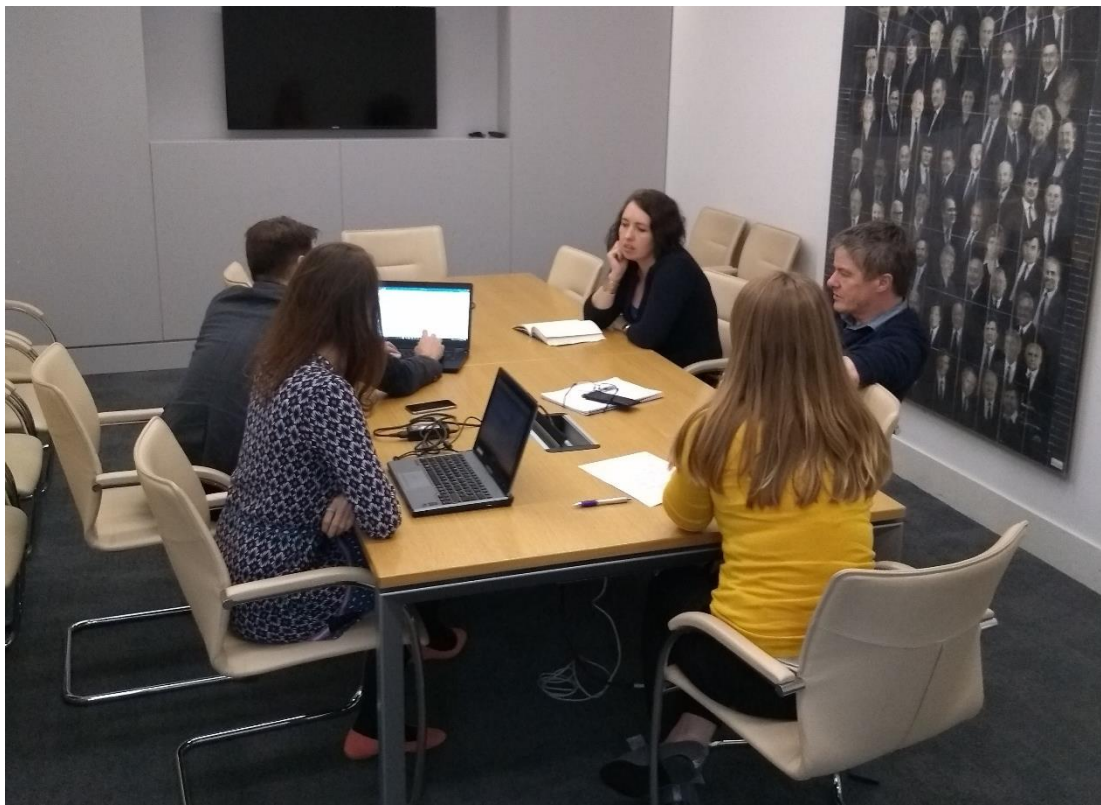
The final block of presentations came from the conservation and management sector, including global NGO's.

In the afternoon the preliminary results of the pre-workshop questionnaire were presented, to give additional context to the following discussions. The participants were then split into three breakout groups, organised around the structure of the morning presentations: Regional Seas, Global & Transatlantic, and Conservation & Management. The groups were asked to consider what the ideal data products would be from their perspective, the questions they would help to answer, the format they would be delivered in and the mechanism for delivery. Their responses should be aspirational but realistic, and informed by the background and context provided in the morning sessions.

Data Product Needs for conservation and management

Group members: Klaas Denuedt (VLIZ), Hannah Milburn (MBA), David Vaughan (EEA/ETC-ICM), Lyndsey Dodds (WWF), Juliette Martin (UNEP/WCMC)

This group identified the need for several map-based data products including habitat maps underpinned by species records for seagrass and habitat condition, including a spatial element to demonstrate changes in habitat condition over time to inform restoration and conservation effectiveness and track changes related to policy developments. Such maps could also be further developed to include a predictive element, based on historical data and trends.



Pan-European **pressure and vulnerability maps** were seen as a key deliverable to understand the cumulative impacts of industrial, anthropogenic and natural processes, however it was recognized that a standardized methodology and framework was needed, and should be developed in close collaboration with the Regional Sea Commission expert Working Groups and those coordinated by ICES.

Finally, the group discussed the requirement for summary information to be presented, including **area statistics for different key geographic regions** including Regional Seas, Marine Protected Areas, national waters etc. These would include the number of species, those species listed in statutes and legislative documents, information on the ecosystem service value and areas of commercial importance including nursery grounds.

Data product needs for the transatlantic and global community

Group Members: Frank Muller-Karger (University of South Florida; GEO BON/MBON), Gabrielle Canonico (NOAA), W. Daniel Kissling (UvA/GLOBIS-B), George Graham (SAHFOS), Jackie Hill (AECOM), Mark Dickey-Collas (ICES), Francisco Hernandez (VLIZ), Ward Appeltans (IODE/OBIS, GOOS BioEco)

The group discussed the requirements for the development of an **EMODnet Biology Atlas of Marine Life** that is being developed through Work Package 4 in this phase of EMODnet Biology. It was agreed that the Atlas should be 'dynamic' and interactive, build on the requirements to support the **development of Essential Ocean and Biodiversity Variables** (EOV and EBV) and seek to understand and develop the linkages between the data needs of the Marine Strategy Framework Directive and the EOV/EBV process.



Any work developing such an Atlas must include the capacity to integrate with, or ensure contextual connectivity with other, global initiatives, including OBIS, GOOS, and MBON. The Atlas must be demonstrably useable, interactive and relevant and clearly illustrate the changes over time in both assemblages and functional groups. It was recommended that EMODnet Biology utilise this strand

of work to provide an ‘implementation test case’ for integrating a set of biological EOV and EBV measurements into a multidisciplinary observing system.

The underlying data driving the Atlas will be dynamic and therefore **allow the visualisation of changes in species, communities and functional traits over time**, including the capability to provide context with supporting environmental parameters.

The concept of “**stories**” was discussed; by collating various, related data products the stories would be used to highlight real-world applications and potentially be utilised as a marketing tool to contribute to the sustainability of the infrastructure in the long-term. The concept of stories could be developed further by giving users of the system the capability to construct and share their own stories based on selecting parts of the component data products.

The group identified priority stakeholders including government regulators, industry bodies and MPA managers, but recognised that heterogeneous nature of the majority of data is a major limiting factor in data aggregation and reuse. Only through the promotion and adoption of standards can we make time series truly interoperable. This is best achieved through closer links with key communities of stakeholders and observing networks. Such collaboration could be explored through GOOS Regional Alliances and will trial the mechanisms for further joint and interoperable development. However, even with data that may initially appear incomparable, it may be possible to simply assess the degree of change within datasets and compare this rate of change across disparate data.

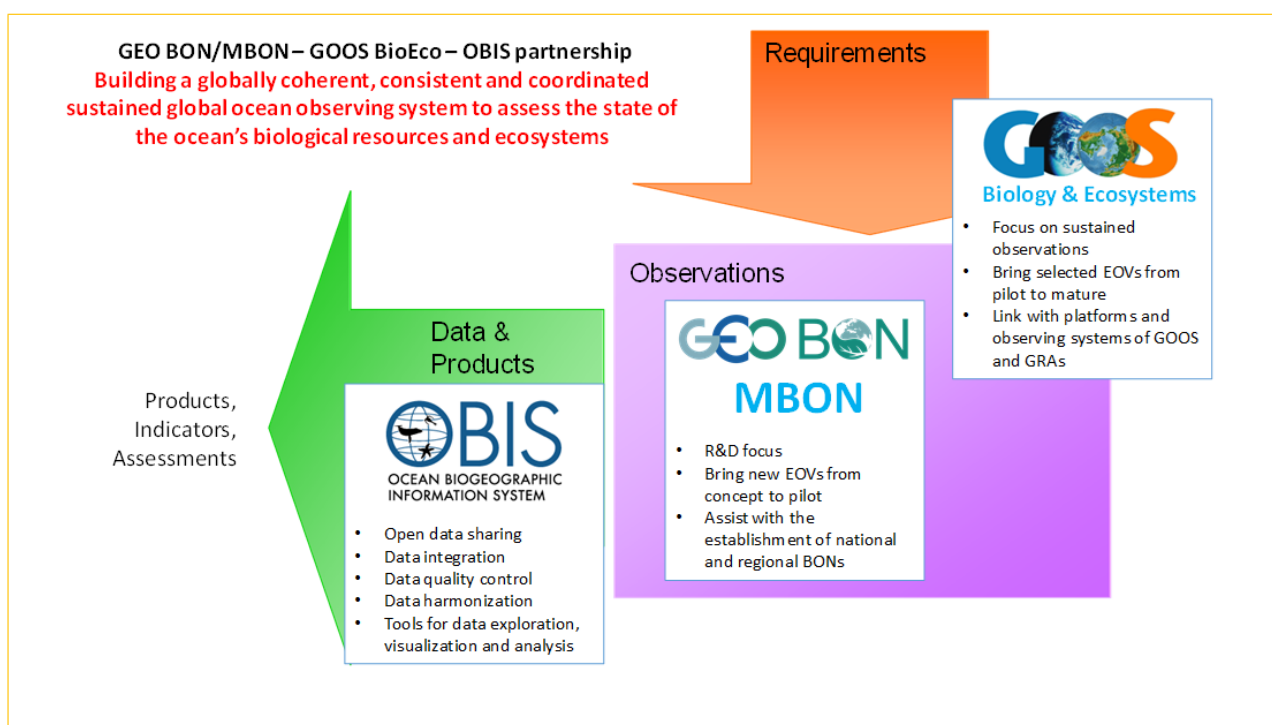


Fig 3. The relationship between IOC (OBIS & GOOS) and GEO (MBON).

<http://iobis.org/2016/12/15/goosgeobonobis/>

Data product needs for the Regional Sea Commissions

Group members: Helen Lillis (JNCC), Arthur Pasquale (EcAp), Gert Vanhoey (ILVO), Irina Makarenko (Black Sea Commission), Joni Kaitaranta (HELCOM), Lena Avellan (OSPAR), Simon Claus (VLIZ), Marina Lipizer (OGS), Iain Shepherd (EU), Peter Herman (Deltares), Chris Lynham (Cefas).

With a focus on meeting the needs of the four European Regional Sea Commissions this group identified the need for **modelled presence and absence and maps for key species and functional groups**, laid out in a standardised 1km² grid. Data associated with relevant trait information would be useful in the assessment of ecological coherence within MPA networks.



Regardless of the data products it was stressed that it would be essential to provide **high-quality metadata to ensure confidence, transparency and traceability**.

The delivery mechanism for the data products should be through web services, either as maps or 'raw' data to facilitate further downstream aggregation, processing and analysis. Such data product publication should be based upon repeatable, clearly documented workflows that can be automated and timed to align with the range of assessment reporting cycles. There needs to be a **continuous dialogue with the Regional Sea Commissions** in the delivery of products and methods. The best mechanism to achieve this is via the respective Secretariats who can then direct the discussion to the most relevant expert group.

Wider communication of the issues can be made possible through data-driven infographic and pictorials, which can be used to demonstrate the benefits of collaborative working to other parties who may not currently be fully engaged.

Next steps

Following each of the breakout groups reporting on their discussions the meeting concluded with a summary of immediate actions and next steps.

1. The EMODnet Biology WP5 team and the WP4 leader would meet the next day to discuss the outcomes, prioritise data products and plan how the recommendations would be implemented.
2. Initiate dialog with the OSPAR MPA Working Group to identify data products to support their work
3. Develop a peer-reviewed publication on the approaches and methods utilised in the development of biological data products to support the management of Europe's Regional Seas and step to ensure global interoperability.
4. Focus effort on increasing the availability of data to support the development of products in the Mediterranean and Black Sea.

Agenda

08.30 - Arrival & Coffee

09.00 - Welcome and Introductions (Dan Lear) - 10'

09.10 - EMODnet Biology Data Infrastructure (Simon Claus) - 10'

09.20 - EMODnet Biology Data Products - The story so far (Peter Herman) - 15'

09.35 - EMODnet Seabed Habitats Links and Opportunities (Helen Lillis) - 15'

09.50 - Sea Basin Checkpoint data needs (Gert van Hoey) - 10'

10.00 Data product needs from a regional sea perspective

OSPAR (Lena Avellan) - 10'

HELCOM (Joni Kaitaranta) - 10'

UNEP-MAP (Arthur Pasquale) - 10'

Black Sea (Irena Makarenko) - 10'

Questions/Discussion - 15'

11.00 - Coffee Break - 15'

11:15 - Data Product Needs from a transatlantic and global perspective

GEOBON and Global Data needs (Frank Muller-Karger) - 20'

Cross-Atlantic work within ICES (Mark Dickey-Collas) - 10'

OBIS (Ward Appeltans) - 10'

Essential Biodiversity Variables (W. Daniel Kissling) - 10'

MBON (Gabrielle Canonico) - 10'

AECOM (Jackie Hill)- 10'

Questions/Discussion - 20'

13.00 - Lunch - 60'

14.00 - Data Product Needs for conservation and management

UNEP/WCMC (Juliet Martin) 10'

WWF (Lyndsey Dodds) 10'

EEA (David Vaughan) 10'

14.30 - Breakout groups to scope ideas for "essential" data products - 90'

16.00 - Coffee Break 15'

16.30 - Breakout Groups report back & plenary- 60'

17.30 - Close Meeting

19.30 - Workshop Dinner

Participants

Name	Organisation
Arthur Pasquale	EcAp and CE&D
Chris Lynham	Cefas
Dan Lear	MBA
W. Daniel Kissling	GLOBIS-B
David Vaughan	EEA/ETC (European Topic Centre on Inland, Coastal and Marine waters)
Francisco Hernandez	VLIZ
Frank Muller-Karger	University of South Florida; GEO BON/MBON
Gabrielle Canonico	NOAA/US-MBON
George Graham	SAHFOS
Gert Vanhoey	ILVO - Vlaanderen
Hannah Milburn	MBA
Helen Lillis	JNCC
Iain Shepherd	DG-MARE
Irena Makarenko	Black Sea Commission
Jackie Hill	AECOM
Joni Kaitaranta	HELCOM
Juliette Martin	WCMC/UNEP
Klaas Deneudt	VLIZ
Lena Avellan	OSPAR
Lyndsey Dodds	WWF
Marina Lipizer	OGS
Mark Dickey-Collas	ICES
Peter Herman	Deltares
Simon Claus	VLIZ
Ward Appeltans	IODE/OBIS + GOOS BioEco