EMODnet

European Marine Observation and Data Network

EMODnet Thematic Lot n°V - BIOLOGY

EASME/EMFF/2016/1.3.1.2- Lot 5/SI2.750022 – Biology

Start date of the project: 19/04/2017- (24 months)

EMODnet Phase III – Quarterly Progress Report (9)

Reporting Period: 01/04/2019 – 30/06/2019

The European Marine Observation and Data Network (EMODnet) is financed by the European Union under Regulation (EU) No 508/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund.

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Disclaimer

Highlights during the reporting period

WP1. Project management (Tasks 7 & 8)

Major efforts during this reporting period were directed to the organization of the EMODnet Biology third general meeting (back to back to the stakeholder event) and the elaboration of the final report.

The EMODnet Biology consortium met at the Centro Cultural de Belem (Lisbon) during the 16th and 17th of May 2019 to evaluate the progress achieved in the first two years of the project, and to discuss and refine the work plan for the renewal period. There were collective sessions directed to the whole consortium and breakout sessions for each of the work packages. A detailed report of the meeting is available in the document section of the website: http://www.emodnet-biology.eu/sites/emodnet-biology.eu/files/public/documents/EMODnet_Biology_III/Lisbon_meeting/EMODnet_Biology_GM_Lisbon_report.pdf?_t=1560329475. A summary of the meeting is provided in the Introduction session:

Throughout the remaining sections of the report, all the discussions held for each of the breakout sessions was summarised and links to all presentations are provided. The meeting took place after the EMODnet Biology stakeholder event (15th May) organised by WP5, corresponding to D5.3 (further details are provided in the specific WP5 section of this report).

This reporting period saw the submission of the deliverables below. These are all available at the deliverables section of the EMODnet Biology website:

D2.3	Data standardization and formatting of datasets mentioned under data coverage section of proposal for linking with EMODnet biology
D3.5	General report on data entry with an individual report for each dataset as available including. list of data papers in preparation, submitted, and published
D4.3 and D4.4.	Portfolio of modelling tools and products for European marine species and two examples of trait based approaches

The final report, corresponding to D1.4 and covering the full performance period (19-04-2017 to 18-04-2019) was also submitted and is currently under revision.

During the reporting period, we also experienced staff changes. The principal data manager has undertaken a new position in Tasmania (leaving in mid-June) and a new data manager was hired in March.

The monitoring indicators are used to report web metrics (using Matomo) and usage of the data (data download monitoring). For this reporting period, we observed an average of 17 unique visitors per day (20.4 during weekdays). The highest number of visitors (>40) where achieve in the dates preceding and during the EMODnet Biology stakeholder meeting and general meeting, and during a workshop on FAIR data management principles (13-14th June).

Figure 1.Evolution of visitors of emodnet-biology.eu during the reporting period, showing a peak during the EMODnet Biology General meeting (mid-May) and the FAIR data workshop organized by Assemble+ project.

Concerning the monitoring indicators about data availability and usage, new developments have taken place to monitor download volume, which are further detailed in the WP6 section.

As mentioned in the previous quarterly report and in the final report, we have been working in a R-Shiny based application that allows to query the data availability in EMODnet Biology. With this tool, we aim to

report on the progress indicators with improved consistency, but also to increase transparency for users and to communicate easily on data availability and data gaps in a visual way. Extensive details about the tool were provided in the Annex 1 of the final report. Although the tool is operational and live, it has not been promoted or hyperlinked in the website because we would like to include more functionalities. We are experiencing some delays in the finalisation of the tool due to staff changes, but the main features related to reporting are already usable.

Finally, the help desk stayed online and operational throughout this reporting period.

WP2: Data access to marine biological data (Task 1)

In May 2019 13 new datasets were harvested, accounting for over 337,393 new occurrence records and 855,338 Extended Measurements or Facts (eMoF) records. In addition, 2 datasets were updated, affecting over 744,000 records. The individual datasets can be accessed via the metadata catalogue, which contains a link to their selection in the download toolbox (list of dataset names and links provided below).

New datasets:

- Lagoon Monitoring Network of Languedoc-Roussillon
- Phytoplankton data for Danish marine monitoring (ODAM) from 1985 - 2016
- Zooplankton data for Danish marine monitoring (ODAM) from 1985 - 2016
- 1776-1997 Paul F. Clark North East Atlantic Crab Atlas
- 1743-2010 National Marine Aquarium (NMA) United Kingdom Marine Fish Recording Scheme
- FinnNetwork Monitoring phytoplanktonish Baltic Sea phytoplankton monitoring, KPLANK database
- Macrobenthos and Phytoplankton monitoring in the Belgian coastal zone in the context of the EU Water Framework Directive (WFD)
- Dynamics of coastal eutrophicated ecosystems. (IPMS-PHAEO)
- Advanced modelling and research on eutrophication linking eutrophication and biological resources (AMOREII)
- Combined Effect of Changing Hydroclimate and Human Activity on Coastal Ecosystem Health (AMOREIII)
- Belgian Marine Mammals database
- Mid-winter waterfowl count, Estonian national monitoring 1991-2016
- Monitoring of the effects of Belgian wind mill parks on benthic macro-invertebrates and the fish fauna of soft substrates - reference situation. (WINMON)

Updated datasets:

- CETUS: Cetacean monitoring surveys in the Eastern North Atlantic
- Network Monitoring phytoplankton

The geographical, temporal and taxonomical distribution of the data added and updated in this reporting period can be seen in the figures below.

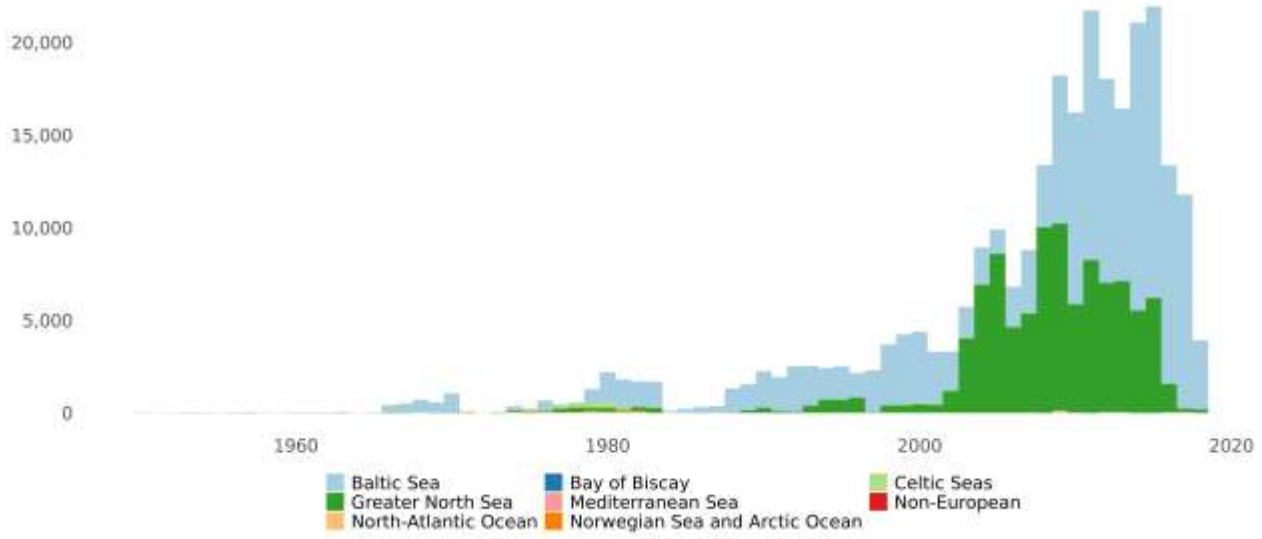

Figure 2. Number of records per occurrence year and marine region that have been harvested during the reporting period.

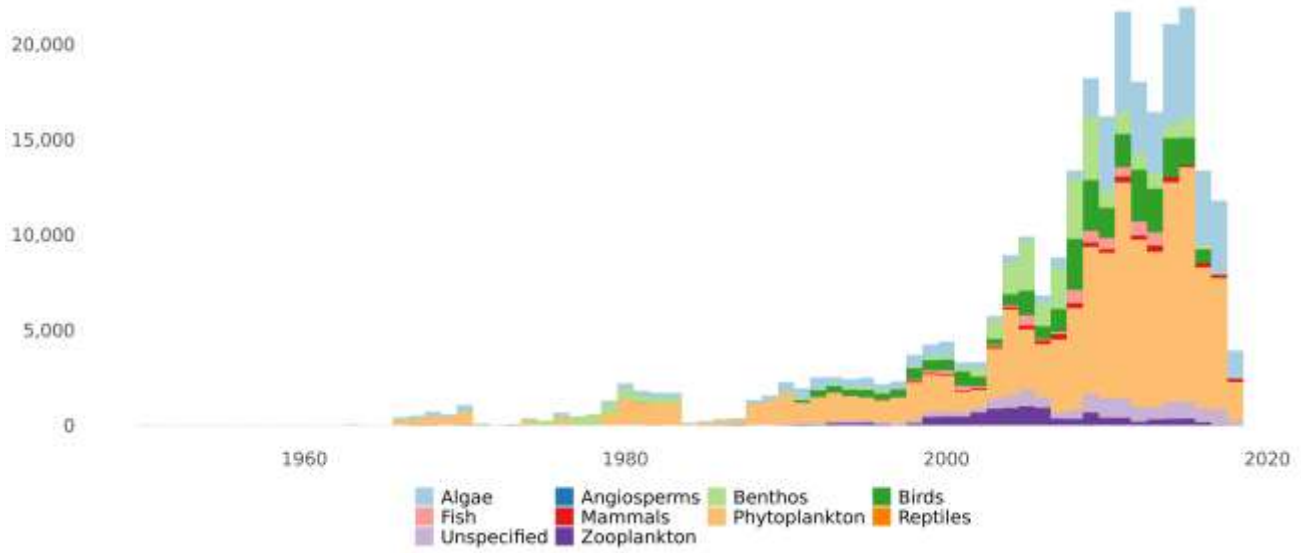

Figure 3. Number of records per occurrence year and functional group that have been harvested during the reporting period.

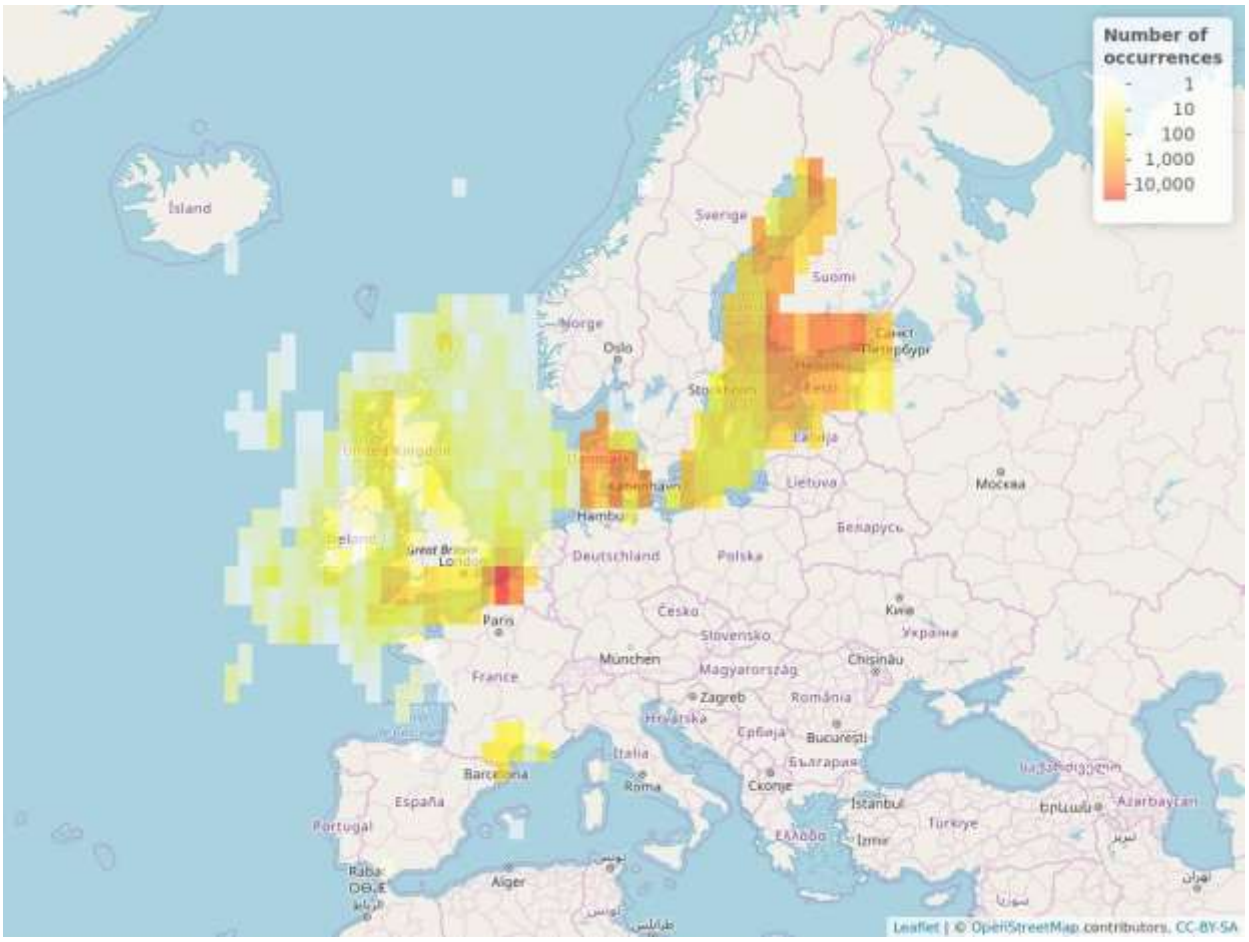

Figure 4.Map of gridded number of occurrences that have been harvested during the reporting period.

EMODnet Biology gives now access to 874 datasets and 25,279,688 occurrence records (24,480,940 with taxonomic QC, a 96.84%). Although the number of available records has steadily increased, the actual number of datasets has gone down in the last harvest. This is because all the Atlas Baleares datasets were combined into a single one. In 2012, the dataset titled "Marine biodiversity atlas of the Balearic Sea [Atlas de biodiversidad marina del Mar Balear]" was shared with the EurOBIS Data Management Team. As this atlas consisted of 40 subsets, it was decided to display each of these small datasets separately, to enhance the visibility and transparency of the Atlas. The metadata of all these individual datasets was however very limited, and in many cases, clear titles, citations, contact persons and abstracts were missing. As we have not been able to improve the metadata of these 40 subsets over the last 5 years, it has been decided to group all these data under its parent dataset, with the pre-existing datasets linked as child records.

The EMODnet Biology general meeting hosted fruitful discussions during the one-to-one breakout sessions with the WP2 partners. The main issues that were tackled referred to new datasets or future updates, how to improve the quality, fitness for use and interoperability of the data by full adoption of the DwC and increased use of BODC vocabularies for the eMoF table. Individual data flows were discussed to advance on the optimization and/or automatization of dataset updates. An individual section for each partner is provided in the meeting report.

WP3: Data archaeology and rescue (Task 1)

The main activity in this reporting period is related to the publication of the deliverable 3.5. General report on data entry with an individual section for each dataset. The full list of dataset published under the data archaeology work package was given in Annex 2 of the final report. The D3.5 recaps the main challenges

> *"A total of >135,000 records have been entered from 25 datasets from 1930s to 2010s. Additionally, a total of 22,000 records from 7 datasets have been re-checked and/or reorganized, especially to integrate the OBIS-ENV new schema. They mainly represent archeological data (from 1890s to 1950s) and rescue data (from 1960s to 2000s)."*

encountered during the data archaeology work and summarises the achievements and data published trough the MedOBIS and Black Sea IPT:

A new dataset has been published in the MedOBIS IPT: Kyklades-data of the Central Aegean Sea, which contains benthic data from a 1986 survey and gives access to over 800 occurrence records. The geographical coverage of the dataset can be seen in Figure 5.

HCMR has appointed a different staff member as the leader of EMODnet Biology WP3 due to the relocation of the previous WP leader to Canada. The new leader (Dr. Vasilis Gerovasileiou) has extensive experience working with biological data, DwC and IPT and is an editor of the World Register of Marine Species. He attended our general meeting and stakeholder event in Lisbon to get introduced into the EMODner Biology network.

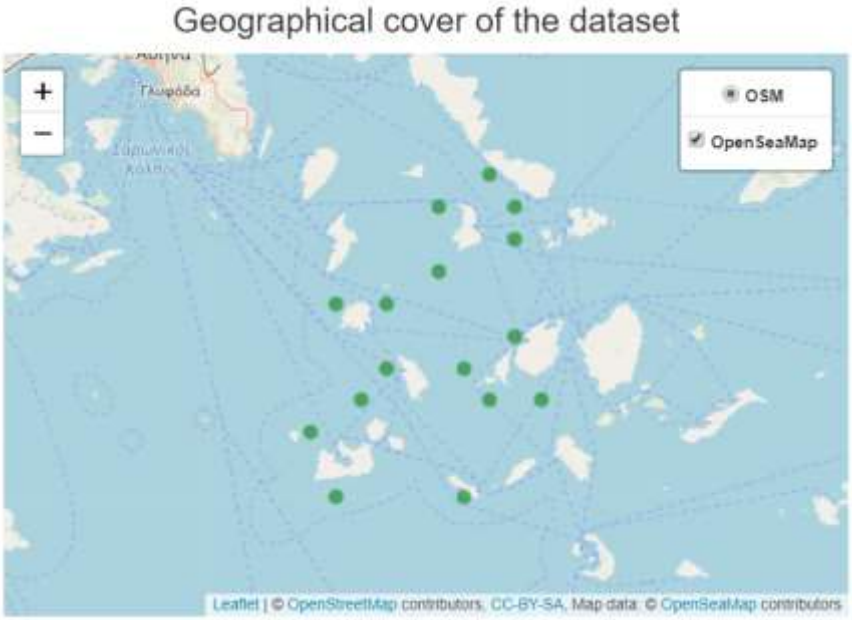

Figure 5. Geographical coverage of the Kyklades historical dataset.

WP4. Data product creation (Task 2)

The reporting period saw the submission of two deliverables from WP4 that were combined into a single report: Deliverable 4.3 and 4.4: Portfolio of modelling tools and products for European marine species and two examples of application of trait based approaches. This was decided because understanding the trait-based approaches requires contextual information on the methodology, which is detailed in the portfolio of modeling tools.

The report summarizes the origin of the data, the data curation steps and modeling approaches that were applied to construct each of the data products. It also provides detailed explanation on the different modeling tools used:

- DIVA gridding and kriging with dependence on a single environmental factor: e.g. to account for salinity as a limiting factor for zooplankton distribution in the Baltic Sea.
- DIVA interpolation in combination with a neural network to incorporate information from environmental variables: this resulted in a multivariate extension of DIVA, published at: http://doi.org/10.5281/zenodo.1407912
- Summarizing temporal trends in multi-species time series data.
- The use of trait-based approaches to model the distribution of functional types, using DIVA gridding. This method was applied for fish and benthic functional traits.

- Use of trait data derived from species occurrences (matching occurrence records to gridded temperature products), to predict future distribution of species under climate change scenarios (changes in Sea Surface Temperature).

The report highlights that a great proportion of the effort put into data product creation is spent on data curation and gives recommendations for the renewal period. These issues were also discussed during the stakeholder event, and will be compiled in a specific report.

WP5: Uptake and outreach (Tasks 5 & 6)

The main efforts from WP5 during the reporting period relate to the organization of the end-user event: "A Showcase for the European Atlas of Marine Life". Building on a focussed, small-scale workshop held in London in November 2017, the EMODnet Biology WP5 team organised a wider, stakeholder engagement event to demonstrate the current suite of data products and how they align with end-user needs. Chaired by Dan Lear (MBA, WP5 leader) and co-organised by IPMA, a one-day 'showcase' event was organised at the Cultural Centre of Belem, Lisbon, Portugal. The event was organised on the 15th of May back to back with the general meeting and as a side-meeting of the European Maritime Day conference held in Lisbon over the subsequent two days. In this way we were able to reach a wider, more varied audience, increasing the breadth of EMODnet Biology engagement, and building stronger links across both partnerships.

An introductory keynote presentation set the scene for the requirements for data products to support decision support tools and outlining the development of the EOV approach.

A broad-mix of international experts were invited to give contextual presentations alongside the technical showcase of the data products developed with the framework of EMODnet Biology. The detailed agenda and speaker biographies can be found in the Appendices.

In addition, a section on invasive species in ports and harbours and ballast water treatment was included to showcase a specific output from the last phase of EMODnet Biology and allow the participants to benefit from a presentation from the European Maritime Safety Agency (EMSA) providing an important link to policy and industrial stakeholders.

The afternoon session included plenary discussions on the current suite of data products, and some of the gaps and challenges that EMODnet Biology can seek to address in the coming years. The event closed with a viewpoint on the current landscape of global data products and the need for a global community of practice to support biological EOV networks.

A link to the agenda of the meeting and all the presentations can be found below:

http://www.emodnet-biology.eu/sites/emodnet-biology.eu/files/public/documents/EMODnet_Biology_III/Lisbon_meeting/Showcase_Atlas_Marine_Life/Essential%20Biological%20Data%20Products%20_%20agenda%20and%20presentations.pdf

WP6: Technical update EMODnet biological portal & machine to machine connections (Task 3 & 4)

One of the main improvements during this reporting period was the restructuration of the GeoServer space for the EMODnet Biology data products. Previously, the data products were accessible through two different web service URLs. These have been unified and harmonized into one single service and the metadata content has been improved to enhance the INSPIRE compliance of the GetCapabilities request. The web service URL that has been kept is:

http://geo.vliz.be/geoserver/Emodnetbio/wms?service=WMS&version=1.1.0 (workspace = "Emodnetbio")

The web services documentation is being updated to reflect the new changes and to be more comprehensive. It will soon be published, keeping the Open Sea Lab II competition deadline in mind.

Additionally, new developments have been implemented in the download-tracking system and, from 01/07/2019 onwards, it will be possible to report on the number of records together with the number of downloads. A subset of the download-tracking table with some test downloads is provided below:

identifier	start_date	data_part	download_processed_records	purpose
15d19f7f8b2cb5	01/07/2019	occ_basic	20000	test
15d19fd01d6e73	01/07/2019	occ_basic	10989	test
15d1ccb50567b6	03/07/2019	occ_full_and_parameters	445	test

Table 1. Subset of the download-tracking table. "data_part" stores whether the user chose a basic download or an occurrence and parameters download. "download_processed_records" stores the volume of the download.

Finally, an additional step has been added to the harvesting procedures to generate a view of the available data in order to feed the R Shiny based data availability or reporting tool that has been discussed in the WP1 section.

Challenges encountered during the reporting period

Main challenge	Measures taken
Change of staff (data manager)	An additional data manager was hired ensuring an overlap to transfer knowledge. All the procedures had already been documented in our internal system (Confluence). The core activities (communication with providers, data standardization, harvesting and publication) are being kept. Additional features will experience some delays (e.g. data availability tool).

User Feedback

Date	Organisation	Type of user feedback (e.g. technical, case study, etc.)	Response time
03/05/2019	Individual	Staff member from Oceana Europe asking for clarifications on additional data available from MediSEH and how to access it.	4 days
04/06/2019	Individual (PhD)	Marine biologist from NUI Galway interested in sharing part of the data from their projects.	3 days

Meetings held/attended since last report

Table: Meetings organised and attended.

Date	Location	Type event (meeting, training (workshop), etc.)	Attended (A) / Organised (O)	Short description and main results (# participants, agreements made, etc.)
2-3/04/2019	Rome	EMODnet Ingestion meeting	Attended	Presented data integrated in EMODnet Biology coming from EMODnet Ingestion
7/05/2019	Liverpool	SeaDataCloud Steering Group meeting	Attended	Presented progress in transformation tool ODV to DwC and discussed content for the SDC training workshop in June.
15/05/2019	Lisbon	EMODnet Biology stakeholder event	Organised	Showcase the Atlas of Marine life and get feedback and engage in discussion for future work with a range of end users.
16-17/05/2019	Lisbon	EMODnet Biology general meeting	Organised	Discuss progress and upcoming priorities for the EMODnet Biology consortium.
24/05/2019	Brussels	OSL II Kick-off meeting	Attended	Event to officially open registration for the second edition of the EMODnet OSL hackathon. All the EMODnet thematic lots were presented.
27/05/2019	Oostende	Meeting with OBIS	Organised	To discuss with OBIS on the new VLIZ structure and future collaborations in relation to new data types.
28/05/2019	Remote	Meeting with Aarhus University	Organised	WP2 breakout session via skype (Aarhus U. could not attend the EMODnet meeting).
13-14/06/2019	Oostende	FAIR data workshop (Assemble +)	Attended as trainer	Presented interoperability using EMODnet Biology as an example.
19 & 24/06/2019	Oostende	SDC Training session	Attended as trainer	Presented automated QC procedures for biological data.
28/06/2019	Brussels	E-BIND focus group meeting	Attended	Discussions on data accessibility to support the implementation of the Birds and Habitats Directive.
SUM			**O**	**Total # of meetings organised = 2**
SUM			**A**	**Total # of meetings attended = 5**

Outreach and communication activities

The table below summarises the communication efforts realised in the reporting period. There was a lot of Twitter activity during the celebration of the stakeholder event and stakeholder meeting. Some of the tweets are compiled in the table below. Most of the tweets come from accounts from EMODnet Biology partners or participants to the stakeholder event.

Table: Communication activities.

Date	Communica-tion action / material	Short description (of the material, title, …) and/or link to the activity	Main results (# participants, # views, # press clippings, etc.)
12/04/2019	News item	Save the date: 15/05/2019. A Showcase for the European Atlas of Marine Life	
10/05/2019	News item	EMODnet Biology General meeting	
02/05/2019	Tweet		#13 likes, #12 retweets
14/05/2019	Tweet		#6 likes

15/05/2018	Tweet		#3 likes, #1retweet
15/05/2018	Tweet		#11 likes, #4 retweets
15/05/2018	Tweet		#10 likes, #3 retweets

15/05/2018	Tweet		#4 likes, #1 retweet
16/05/2018	Tweet		#1 like, #1 retweet
17/05/2019	Tweet		#12 likes, #7 retweets
11/06/2019	Tweet		#1 like, #1 retweet
13-14/06/2019	Presentation	During a FAIR Data workshop organized by Assemble+, EMODnet Biology was used as an example on how different standards enable interoperability.	>20 participants
19&24/06/2019	Presentation	Presentation on EMODnet Biology and automatic QC procedures on two sessions of the SDC training workshops.	>70 participants

SUM of News/ tweets			**Total # of 12**
SUM of presentations			**Total # of 2**
SUM of information booths			**Total # of 0**

Table: List of known publications using EMODnet data or data products.

Date	Name of journal, conference, …	Publication title	Authors	Organisation(s)
Under revision (not published yet)	Marine Policy	Supporting the Essential - Recommendations for the development of accessible and interoperable marine biological data products	**Dan Lear (DL), Silvana Birchenough (SB), Klaas Deneudt (KD), Martin Edwards (ME), Lennert Tyberghein (LT), Amy Ridgeway (AR), Gert Van Hoey (GvH), Marina Lipizer (ML), Neil Holdsworth (NH), Ward Appeltans (WA), George Graham (GG), Simon Claus (SC), Peter Herman (PH), Frank Muller-Karger (FM), Gabrielle Canonico (GC), Daniel Kissling (DK), Henrik Nygård (HN), Nathalie Tonne (NT), Paula Oset Garcia (POG)**	
Approved	OceanObs	The European Marine Observation and Data Network (EMODnet): Visions and Roles of the gateway to marine data in Europe	**Belén Martín Míguez, Antonio Novellino, Matteo Vinci, Jan-Bart Calewaert, Henry Vallius, Thierry Schmitt, Alessandro Pititto, Alessandra Giorgetti, Natalie Askew, Sissy Iona, Dick M.A. Schaap, Nadia Pinardi, Quillon Harpham, Belinda Kater, Jacques Populus, Jun She, Oonagh McMeel, Dan Lear, Giuseppe Manzella, Gorringe Patrick, Simona Simoncelli, Kate Larkin, Neil Holdsworth, Christos Arvanitidis, Maria Eugenia Molina Jack, Maria Montero, Peter Herman, Francisco Hernandez, Simon Claus, Nathalie Tonne, Atanas Palazov**	

Annex: Other documentation attached

No annexes

New monitoring indicators

See attached excel spreadsheet with monitoring indicators.

The monitoring numbers reported as part of the progress monitoring of EMODnet performance are collected through Matomo. In some cases, numbers from other monitoring systems may also be reported (e.g. Awstats, Google Analytics). Each system uses different technical approaches and therefore has its strengths and shortcomings. Therefore, results are indicative and care should be taken with interpreting absolute numbers or comparing results from different tools. It is often more sensible to consider trends over time collected by the same monitoring tool.