



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 (5)

Reporting Period: 01/04/2018 – 01/07/2018



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1 Highlights during the reporting period

Provide a short summary of the key achievements and/or events of interest to a wider audience within this reporting period you wish to highlight. **Please make sure that progress in each of the tasks specified in Section 1.4.1 of the Tender Specifications is covered. For those tasks not experiencing significant progress, please state so.** In addition, you can (but not required) also consider the indicators or any other of the reporting sections.

Task 1: a common method of access to data held in repositories (WP2; WP3)

There is now a metadata record for all the datasets that will be delivered by the project partners through WP2. For some of these metadata records, the last details will be fixed when the data is actually delivered. All datasets can now be discovered through the EMODnet Biology Data Catalogue (<http://www.emodnet-biology.eu/data-catalog>).

During this reporting phase, a major update of the EMODnet biology database took place. 29 datasets, identified at the WP2 data inventory, were made available representing 2,183.747 records and 8 major dataset updates (including the Continuous Plankton recorder with observation data till 2016). After one year of the project, we see that about 50% of the identified datasets in WP2 are now made freely available through the EMODnet Biology dataportal. In addition, 5 datasets were added to EurOBIS and ingested into EMODnet Biology

Since the EMODnet Biology Second General Assembly meeting (May 2018), the nine new associated data partners (Bulgarian Academy of Sciences; Odessa National I.I. Mechnikov University; CoNISMA – Local Research Unit of Lecce; Tallinn University of Technology; Agri-Food and Biosciences Institute; Roscoff Marine Station, France; Universidad de Cantabria; Norwegian Institute for Water Research; Royal Belgian Institute of Natural Sciences) started providing the metadata of the datasets that will be delivered. At the moment metadata from 40 datasets, from 7 associated data partners was provided to EMODnet and are now being ingested into the metadata catalogue.

WP 3 on data archaeology updated deliverable D3.5 Datasets including following datasets:

- Biomaerl: committed dataset. The corrections and quality control were continued (stations, species). Remain one station with its species to go and the dataset will be delivered (end of July). Although quite recent, the dataset was not internally consistent and required a huge effort of standardization.
- WoRCS marine cave species: committed dataset. The work started on the collection of the dataset about the caves. These dataset is to be delivered to MarineRegions first (mid-September).
- Egypt: committed datasets: Metadata are being reviewed to make them consistent. Remain 5 taxonomic group to do before complete delivery.
- Review of all datasets in the MedOBIS IPT (including the EMN2 Plankton from Villefranche), with corrections and uploading updates. Remain 15 to be uploaded. A short report will be written about the issues we encountered.

Regarding D3.4: Policy report on biodiversity data management sent to research organizations following activities were completed:

- A questionnaire with 10 questions has been discussed during the General Meeting. A draft version was written and circulated for further remarks and corrections.

- The final version has some delays so the sending has been postponed to September, the summer being not a good period.
- Still in discussion: Should this the questionnaire be sent to all EMODNAT partners, not only to the EMN-Biology partners?
- The recommendation will be finalized for the next Quarterly Report.

Task 2: products constructed from one or more data sources (WP4)

During the GA meeting in May, a concrete implementation plan for the content and launch of the Atlas of Marine Life was discussed. It was decided to document the working up of datasets in preparation for the Atlas using Markdown documents. These documents combine comments and general observations with R code, and constitute an important part of the documentation of the products. Because the documents contain the code actually used to filter and transform the datasets, they contribute to the transparency and repeatability of the data products. A hands-on workshop to finalize the data products for the Atlas is planned for 8-10 October, 2018. The Atlas will be launched 1 December 2018. There will be a specific communication on the launch, organised together with the secretariat.

Content of the Atlas and strategy for preparation of the products

- **Time Series**
There are a large number of datasets that are too spatially isolated to produce gridded maps as output for the Atlas. Interpolation between a few data points in a regional sea is not meaningful. Yet these datasets may contain important information, in particular on the temporal evolution of important variables. It was decided that for these datasets a map will be produced showing the places where time series data are available. The map will be clickable on the points, and will then direct to a shiny application that shows the time series and some basic statistics (e.g. significant trends) of the series.
- **Data explorer**
Apart from mapping occurrences for selected species or groups, the data explorer should also be capable of showing, for a limited bounding box, the number of sampling events, number of species discovered, temporal range and possibly other statistics. These should be, preferably, broken down by major ecological groups ('phytoplankton', 'benthos', etc.). This development will take place in the framework of the portal maintenance.
- **Essential ocean biodiversity variables**
The EMODNET biology products will contribute to the documentation of essential ocean biodiversity variables, as defined in the framework of GOOS. It will not be possible to document all EOVs based on the database of EMODNET biology. Some variables (e.g. phytoplankton biomass as chlorophyll, phytoplankton biomass estimated from remote sensing, modelled primary production,...) should be derived from other EMODNET lots or from COPERNICUS products.
- **Gridded abundance maps**
Gridded abundance maps are an important product of EMODNET. Preferably, maps exceeding the range of single datasets and reaching the size of a regional sea, will be produced. Where possible and appropriate, the maps will take into account relevant co-variables, in order to produce as reliable interpolations as possible. Special attention will have to be paid to validation of the maps. It is envisaged to do so on a technical basis, by leaving out part of the database and use it as a validation control. Moreover, validation by experts should also contribute to the quality of the product. The

organisation of this type of validation will be started during this phase of EMODNET, but cannot be guaranteed to be finished by the end of the project.

The following abundance maps will be produced based on data sets with sufficient spatial coverage:

- Phytoplankton. Only data for the French coast and (parts of) the Baltic have sufficient spatial resolution for the production of gridded maps over limited domains. Most phytoplankton data will be shown as time series rather than as gridded maps. Baltic phytoplankton data have to be compiled. The French phytoplankton data have already been used for a product in a previous phase of EMODNET biology.
- Zooplankton (Baltic, N. Atlantic) - based on datasets from different Baltic countries (currently being compiled at SMHI), and on CPR (currently already used for OOPS)
- Macrobenthos. Sufficient data are available for North and Celtic Seas, Baltic and possibly Portuguese shelf. The analysis will be enriched with trait-based classifications
- Fish. Trait-based and possibly species-based analyses will be based on the IBTS, after correction for changes in catchability
- Mammals. Tom Webb informed with the originators of a recent data compilation. This group plans to publish an atlas of marine mammals in the near future. They are willing to consider publishing the underlying data with EMODNET biology afterwards. Tom Webb will recontact them and inquire if some derived products (e.g. total abundance or diversity) could already be 'pre-published' as a data product. Current data in EMODNET on mammals are too outdated to justify independent products
- Birds. Also with respect to birds, there is also an ongoing initiative to recompile and complete the international database. EMODNET holds a significant database on birds that would allow making products, but Tom Webb will inform with the originators of the more recent compilation if their work could also be used for the data products.

Additionally, upon request from DGMARE, we explored what EMODNET could offer to the efforts devoted to the decision which ship movements could be pre-empted from extensive ballast water checks. This pre-emption is possible when the harbours have very similar fauna and essentially the same invasive species, because under this condition transport of water from one harbour to the other would change nothing in the distribution pattern of the invasive species. We documented the technical approach to the problem, which is extensively documented in the exact procedure followed for the data analysis. This is included not only for transparency, but also to facilitate adoption of this approach by others. We discussed some examples of results, and their possible implications for the decision support tool. Finally, we give a short discussion of the entire approach and the possibilities it might (and might not) offer. We believe this could evolve into an excellent use case for EMODnet, beneficial for the regional sea commissions.

Task 3: Machine-to-machine connections (WP6)

From a technical point of view, the standardisation of the EurOBIS Database and its technical arrangement have been improved. This includes the following items:

- Standardization:
 - calculate standardized values for each parameter, to improve the download option
 - Standardize units, and include their conversion factors
 - Mapping the given terms to the PO1 vocabulary
- Technical improvements:
 - 3 new tables were added to the database, all related to the MeasurementsOrFacts that are being captured in EurOBIS (related to the type, unit & value)

- A lot of thought has gone into how the needed quality control procedures can be improved and further automated.

All these improvements will have a positive and valuable impact on the EMODnet Download tool, making data extraction more easy and more specific for the users.

Task 4: Web Portal (WP6)

During this reporting period, the developments for the implementation of a new GIS viewer, linked with the download toolbox were finalized. At the moment the new GIS viewer is available as a hidden link (<http://www.emodnet-biology.eu/geoviewer/#!/>), and data selections made using the download toolbox can be mapped with the new GIS viewer. There is significant improvement in performance. The example below shows how to select and plot all species observations available in EMODnet from the Mediterranean Sea. This new GIS viewer will also become an important component of the Atlas of Marine Life and will also be used to visualise and animate the gridded abundance maps of EMODnet Biology.

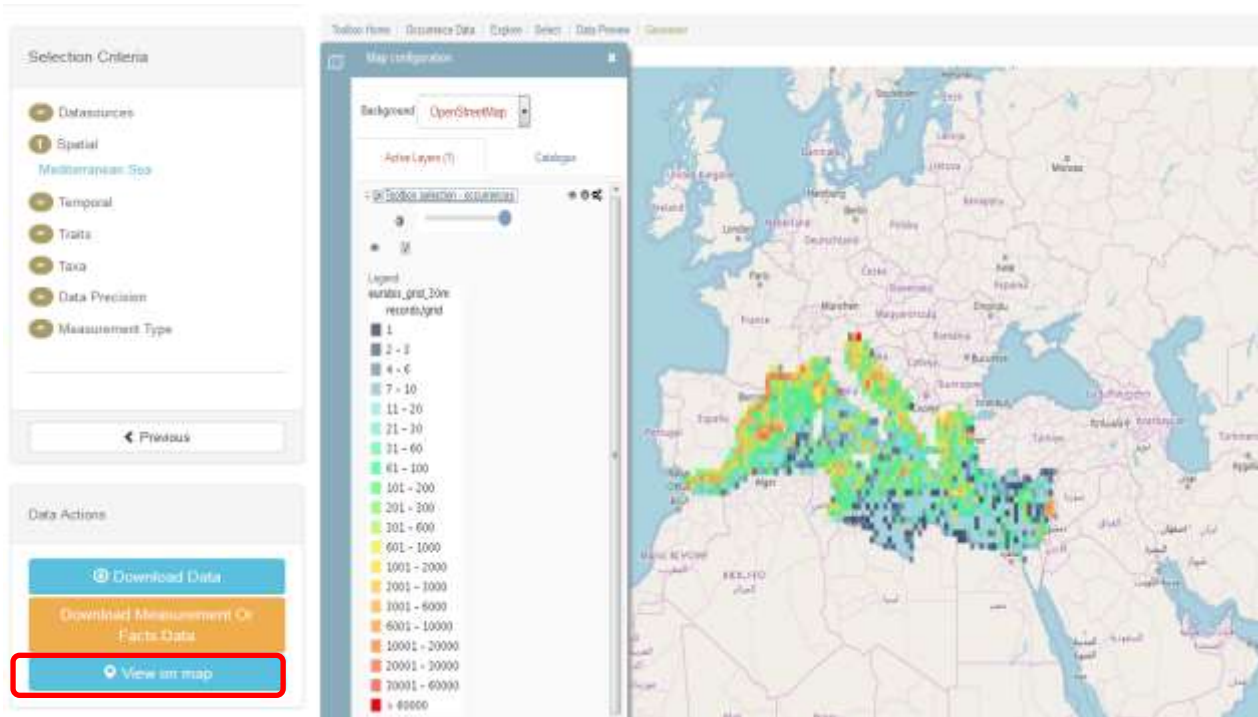


Fig 1: Selection and plotting of all species observations from the Mediterranean Sea, using the new EMODnet Biology GIS-Viewer.

Task 5: coherence with efforts of regional sea conventions (WP5)

The WP5 team and key stakeholders in the US prepared and submitted an abstract for the Ocean Obs 19 conference. That abstract was accepted. The regional sea commissions – were invited to participate in this submission.

Significant discussion were also initiated relating to D5.3, an event planned to showcase the progress in data product development within this phase of EMODnet. The importance was stressed of ensuring that key, relevant stakeholders would be invited and these invitations will be informed by the specifics of the data products developed within WP4, and in turn by the data availability resulting from WP2 and WP3. The event

will be links to the annual EMODnet Biology partners meeting in M24 of the current project activity and would be used to launch and promote the Atlas of Marine Life, the key deliverable of WP4.

In addition, attention was drawn to the draft MSFD recommendations for the publication of datasets (Article 19(3)), prepared by the Technical Group on Marine Data (TG DATA) a source of current best practice and in order to provide a legislative framework.

Task 6: interoperability with non EU organizations (WP5)

The focus during this reporting period was on the next immediate deliverable (D5.2), the paper on the stakeholder-led development of marine biological data products. Following a review of progress to date, the group discussed the current contributions, and areas that still require submission. Section leads have been identified and are coordinating their contributions with relevant colleagues. It was recommended that the paper includes a clear definition of what constitutes a data product in the context of EMODnet Biology, and further discussion will be needed to clearly define and document potential data product 'levels' in a similar manner to those used by the remote sensing community.

Existing links with the WP7 of AtlantOS on Data Flow and Data Integration will be explored to ensure there is no duplication of effort and synergies are fully explored.

Task 7: monitor performance (WP1)

The first interim report of EMODnet Biology (19/04/2017-18/04/2018) has been compiled, was accepted and is published on the EMODnet Biology website at http://www.emodnet-biology.eu/sites/emodnet-biology.eu/files/public/documents/EMODnet_Biology_III/Reporting/EMODnetBiology_InterimReport.pdf After acceptance, the interim payment was received, and at the moment paid to almost all project partners (still waiting on the invoices of 5 partners).

A general meeting (GA meeting) was organised 3-4 May in Trieste with all project partners present and 7 associated data partners. A detailed meeting report and all presentations for that meeting are available at: http://www.emodnet-biology.eu/documents#elf_l1_ZG9jdW1lbnRzXEVNT0RuZXRfQmlvbG9neV9JSUlCVHJpZXN0ZV9NZWV0aW5n

Task 8: help desk (WP1)

The Data Management Team has given a training course on biological Data Management, during two technical SeaDataCloud trainings that took place in Oostende in June. All information on this 2 day training is available at <https://classroom.oceanteacher.org/course/view.php?id=335>

2 Challenges encountered during the reporting period

Provide an overview of the main challenges encountered during the reporting period and the measures taken to address them, including those related to technical and data provision issues.

Main challenge	Measures taken
Partner SAHFOS merged with MBA	We requested an amendment of the contract to EASME. As MBA is also partner in the project, the expertise to perform the contract was not jeopardized.

3 User Feedback

List any useful feedback you received on your portal, your activities or those of other EMODnet projects/activities. Also provide any suggestions you have received for EMODnet case studies and/or future products/activities/events.

[Please, provide information in the table. If you wish to include the full user feedback in the report you can attach it in Annex.]

Date	Organisation	Type of user feedback (e.g. technical, case study, etc.)	Response time
25/05/2018	EMODnet	I've been trying to download the "Measurement or Facts Data" of the dataset with ID number 15b08128989186, but I keep getting an error.	It was a bug, it took 16 hours to debug
22/05/2018	CEFAS	The download request had been running for over an hour so far. I see the following information in the status panel.	It was a performance issue, I took one 30 minutes to provide the requested information
30/05/2018	DGMARE	Request to provide information on invasive species for ballast water the Management Convention	It took 29 days to perform a detailed analysis and use case on how and what EMODnet data could be used to facilitate the development of a decision support tool.

4 Meetings held/attended since last report

List here the internal and external meetings held/participated by the contractant (e.g. meeting, conference, training (workshop), etc.) since the last quarterly report. Please add a short description on the meeting as well as the nature and volume of the audience. At the bottom of the table, provide the total number of events organised and events participated.

Table: Meetings organised and attended.

Date	Type event (meeting, training (workshop), etc.)	Attended (A) / Organised (O)	Short description and main results (# participants, agreements made, etc.)
03/05/2018-04/05/2018	Second General Assembly Meeting EMODnet Biology	Organised	During the second General Meeting of EMODnet Biology, 42 project partners and associated data partners gathered to discuss progress next years' activities. A full report and all supporting material is published online at the EMODnet Biology website http://www.emodnet-biology.eu/sites/emodnet-biology.eu/files/public/documents/EMODnet_Biology_III/Trieste_Meeting/ReportGM_Trieste.docx
3-6/04/2018	Liege	DIVA data product workshop	Participation in DIVA workshop, creation of gridded abundance data products.
26/04/2018 – 28/04/2018	Hack Belgium	Attended – organised a workshop on digital marine data	During Hack Belgium, we organised a workshop on marine data and EMODnet within the Ocean challenge. This challenged looked for innovative solutions related to ports of the future, ocean plastics and blue tourism.
13/04/2018	Skype	Teleconference on INSPIRE-EMODnet	Discuss compatibility of EMODnet data with INSPIRE. We discussed the possibility if INSPIRE could adopt the standards used by EMODnet Biology (Darwin Core data scheme, WoRMS, OBIS Env)
30/05/2018 – 01/06/2018	Data and Information working group, ICES	Attended	Attended the DIG working group of ICES. During this meeting we discussed the coorganisation between the ICES Hackaton and the EMODnet hackaton in 2019
07/06/2018	Meeting between EMODnet Biology (VLIZ) and EMODnet Seabed habitats (JNCC)	Organised	Discussions on cocreation of biological dataproducts from EMODnet biology and EMODnet seabed habitats fitting within the Atlas of Marine Life and the EOVS. Discussion on the integration of the habitat point observations in the OBIS Env datascheme
20/06/2018	Seadatacloud training meeting	Attended presented	– Training course on biological Data

		biological data management principles	Management
25/06/2018	Seadatacloud training meeting	Attended – presented biological data management principles	Training course on biological Data Management
20/06/2018	Meeting between Deltares and VLIZ	Organised	Data transfer protocol between Deltares and EMODnet Biology

In total 3 events were organised and 6 were attended.

5 Outreach and communication activities

Please list all the relevant communication/outreach activities or products you have developed/executed during this period (including presentations, lectures, trainings, demonstrations, workshops, etc., and development of communication materials such as brochures, videos, press releases, newsletters, etc.). At the bottom of the table, provide a total number for every type of communication activity you have developed/executed (e.g. total # of press releases, total # of presentations given, etc.).

Table: Communication activities.

Date	Communication action/material	Short description (of the material, title, ...) and/or link to the activity	Main results (# participants, # views, # press clippings, etc.)
16/04/2017	News item + Tweet	Major EurOBIS and EMODnet Biology update	Thanks to a huge effort of the EMODnet biology consortium, 39 new and updated datasets representing more than six million distribution records are made available as open marine biodiversity data. http://www.emodnet-biology.eu/news?p=show&id=5350 https://twitter.com/EurOBIS_VLIZ/status/985894042427895809
3/04/2016	Tweet	GA meeting EMODnet biology in Trieste	https://twitter.com/EMODnet/status/992066565884514304
30/06/2018	Exhibition	Request exhibition booth at EOOS Conference	European marine biological data infrastructures, biosensor developments and emerging data networks

6 Annex: Other documentation attached

List in Annex if you wish to provide any additional information.

Relevant scientific and/or popular publications (scientific papers, book chapters, conference papers, ...) you published or of which you know they have been published using/referring to EMODnet data or data products during this reporting period must also be reported here.

[Please, provide information in the table.]

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

Date	Name of journal, conference, ...	Publication title	Authors	Organisation(s)
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11/2016	Global Ecology and Biogeography	Prevalence of multimodal species abundance distributions is linked to spatial and taxonomic breadth.	Antao, Laura & Connolly, Sean & Magurran, Anne & Soares, Amadeu & Dornelas, Maria.	
09/2017	Scientific Data	Fish and fishery historical data since the 19th century in the Adriatic Sea, Mediterranean	AU - Fortibuoni, Tomaso AU - Libralato, Simone AU - Arneri, Enrico AU - Giovanardi, Otello AU - Solidoro, Cosimo AU - Raicevich, Saša	
07/2017	Science Advances	Community-level regulation of temporal trends in biodiversity	Nicholas J. Gotelli ^{1,*} , Hideyasu Shimadzu ^{2,3} , Maria Dornelas ³ , Brian McGill ⁴ , Faye Moyes ³ and Anne E. Magurran ³	
07/2017	Current Biology	Marine Biodiversity, Biogeography, Deep-Sea Gradients, and Conservation	Mark J .Costello, Chhaya Chaudhary	
05/2018	Journal of Marine Systems	Multimodel inference to quantify the relative importance of abiotic factors in the population dynamics of marine zooplankton	Gert Everaert ,Yana Deschutter, Marleen De Troch, Colin R.Janssen, Karel De Schampelaere	
11/2017	Global Ecology and Biogeography	BioTIME: A database of biodiversity time series for the Anthropocene	Maria Dornelas et al.	
10/2018	Ecological Indicators	Trait-based approaches in rapidly changing ecosystems: A roadmap to the future polar oceans	Renate Degen et al.	
07/2018	RIO	The use of biodiversity data in spatial planning and impact assessment in Europe	Evelyn Underwood , Katie Taylor , Graham Tucker	
01/2017	Ecological Indicators	The use of multiple biological traits in marine community ecology and its potential in ecological indicator development	O. Beaucharda,b,* , H. Verísimoc, A.M. Queirósd, P.M.J. Hermane	

7 New monitoring indicators

Please consult and fill in the designated excel template.