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 (6)

Reporting Period: 01/07/2018 – 01/10/2018

Contents

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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)

During this reporting period the metadata of the datasets from the Associated data partners has been integrated into the EMODnet metadata catalogue. There are now 49 additional biological dataset descriptions from Italian, Spanish, Ukrainian, Bulgarian, Belgian, French, Irish and Estonian waters These datasets can now be discovered through the EMODnet Biology Data Catalogue (http://www.emodnet-biology.eu/data-catalog).

During this reporting phase, 6 datasets, identified at the WP2 data inventory, were made available representing 311,384 records and 14 datasets were updates representing 773,096 records.

The main new datasets include:

a. IMR: updated 6 datasets and harvested 1 new dataset (*Lophelia pertusa* reefs in Norwegian seawaters)

b. SMHI: improved quality of 2 datasets (updates of both epibenthos datasets), harvested 4 new datasets (3 seal dataset and 1 phytoplankton dataset)

c. OGS: improved quality of 2 datasets (updates)

d. Deltares: improved quality of 1 dataset (update national long term macrobenthos dataset)

e. Biomaerl: committed dataset. The dataset is at http://ipt.medobis.eu/resource?r=biomaerl. Period: 1996-02-12 / 1998-11-17. Marine benthic invertebrates ansd Algae. 1,566 species, 12 stations, 4129 occurrences. The number of corrections and amount of work was over the average we encounter so far. A detailed report its treatment will be done for the final report with comments on other datasets (e.g., attached taxonomic issues encountered).

f. WoRCS marine cave species: committed dataset. Continuous work but was delayed because unexpected verifications (mainly coordinates) further verifications. Planned for Q7.

g. Egypt: committed datasets: 4 groups done Fish eggs and larvae, Phytoplankton, *Sardinella, Cladocera*) and 3 more to be delivered soon. Digitization (metadata already on ipt) of the following historical datasets; belonging to "Egypt Expedition"

The EMODnet biology database contains now 23,945,855 occurrence records, of which 20,748,229 quality controlled records (87% QC'd) and almost 75,000.000 measurements from 882 datasets.

In parallel a lot of effort has gone into the development and publication of automatic tools and tutorials to make marine biological data accessible in EMODnet using a common methodology. This resulted in:

- Creation Data Quality Control tool, available at: http://rshiny.lifewatch.be/BioCheck/

This tool allows you to assess to what extend a dataset published on an IPT or a DwC-A file meets the EMODnet Biology Data Quality Criteria. You can also use online published R functions at https://github.com/EMODnet/LifeWatch-EMODnet-Biology-QC-tool

- -
- Training Course providing an introduction to the EMODnet Biology data format that guides you through all the necessary processing steps, from dataset describing to publishing and quality checking. The course is developed in the Ocean Teacher platform and can be accessed by anyone by self-enrolment at:

    https://classroom.oceanteacher.org/course/view.php?id=328

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

Main activities went into the further organisation and development of the Atlas of European Marine Life, to be delivered by December 2018. The Atlas will contain 4 sections and is defined as *a combination of tools, models and spatial maps that allow to visualise marine biological data. The Atlas gives an overview of the marine birds, mammals, reptiles, fish, benthos, algae and plankton that occur in European marine waters. It is using species observation data to create biological data products that showing changes in species, communities and functional traits over time*.

The products within the Atlas are structured around the Essential Ocean Variables for Biodiversity (EOV). EOVs try to harmonize biological observations across the globe - the Atlas of Marine Life provides aggregated output of biological observations following these EOV categorizations. Currently you can find products on:

- - Phytoplankton biomass and diversity
- - Zooplankton biomass and diversity
- - Fish abundance and distribution
- - Benthic invertebrate abundance and distribution
- - Marine turtles, birds, mammals abundance and distribution

The workflows that are used to create the products are documented and available – they can be reused and anyone can further build upon the products for any purpose, even commercially. The gridded products are made available for download as netcdf files and as an OGC-compliant service. For each data product, a documentation file based on the Markdown document.

The four sections of the Atlas of Marine Life, currently under development are:

- • Product mapper: on online GIS interface that gives visualizes the product in a webGIS. All the products, will be structured around the EOV's for Biodiversity. The GIS Atlas will also give access to the raw observation data in EMODnet that are used to calculate the products
- • Product catalogue: A link to detailed metadata of the data product with information on the what, how, who, where and when of the data product. The catalogue will be identical than the catalogue that is used to describe the EMODnet datasets.
- • Product gallery: a web gallery that will present in a quick, visual and intuitive way the different data products that are being produced within the project. You can compare it with a product portfolio
- • Product stories and markdown: each of the products will be presented as a story containing different elements. The elements will be: 1) Source datasets: a link to the actual dataset (in EMODnet) 2)

Description of the data product and how to interpret the product 3) A link to the product, either a spatial map available as an OGS compliant service or an online dynamic application, using open source code 4) the methodology on how to create the product available as Open source code.

The data products that are currently being finalized and will be available in a first phase are:

- Time Series analysis
  - *Phytoplankton community analysis in the Northern Adriatic*
  - *Long term zooplankton time series analysis from the West Med Sea*
- Gridded abundance maps
  - *Phytoplankton biomass and diversity*
  - *Zooplankton biomass and diversity*
  - *Fish abundance and distribution*
  - *Benthic invertebrate abundance and distribution*
  - *Marine turtles, birds, mammals abundance and distribution*
- Trait based analysis
  - *Toxic algae index around French coast*
  - *NE Atlantic fish functional groups based on life history traits*
  - *NE Atlantic benthos functional groups based on life history traits*
  - *Thermal niche maps providing average thermal affinities of assemblages of major functional groups*
- Invasive species
  - *Maps showing the occurrences of marine invasive species in European marine harbours*

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

The EMODnet biology API has the option to generate a OGC compliant webservice of any dataselection the user performs. These webservices are generated on the fly and can be used in any data analysis platform. The EMODnet biology API description page is under construction and a tutorial on how to access the services in R will be added.

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

Planning has commenced on the final WP5 deliverable (D5.3), an end-user focussed workshop that will highlight the products developed within EMODnet Biology, demonstrate where products have been developed to meet stakeholder needs and provide feedback on the products developed to date. The workshop will be held in May 2019 in Lisbon, Portugal, and will inform the future development of data products. All the regionals sea commissions will be invited to this workshop.

Feedback was given to the INSPIRE directive related to biological data. EMODnet Biology proposed to adopt Darwin Core (DwC-A) into INSPIRE Data model. The feedback from INSPIRE was encouraging, inviting representatives of the marine community are encouraged to participate and propose DwC-A as an INSPIRE encoding. Currently we are investigating this further – the final implications of such an adoption would be that all EMODnet biology data is fully INSPIRE compliant, fulfilling also the needs for official MSFD reporting.

Task 6: interoperability with non EU organizations (WP5)

Work has continued on the next deliverable (D5.2), a peer-reviewed publication on the development of data products within EMODnet Biology, how key-stakeholders have contributed and steered product development, and how the resulting products will support the Essential Ocean and Biodiversity Variable (EOV and EBV) approach. Difficulties have been encountered in collating contributions from key stakeholders as a result of their other commitments, especially those who are not formal partners in EMODnet Biology. These stakeholders are, however, key authors and as such the decision was made to delay the deliverable to ensure their contribution could be included.

A lack of a formal definition of data products within the context of EMODnet BIology was identified as an issue by WP5 and has also been recognised as a need across the EMODnet thematic lots. WP5 alongside other areas of EMODnet Biology and the wider EMODnet community have contributed to a publication containing definitions and examples of data products in a structured manner, due to be launched in Nov 2018.

WP5 has continued to develop the draft of the paper to be submitted to the special issue of Frontiers in Marine Science linked to the Ocean Obs 19 Conference. The paper is to be submitted in Oct 2018 and will promote the activity and products of EMODnet Biology on the global stage.

In addition work has taken place to liaise with EMODnet Seabed Habitats and the AtlantOS project to identify synergies and cross-promote activities at future events to increase the reach of EMODnet Biology and potentially identify new stakeholders and use-cases.

Task 7: monitor performance (WP1)

The monitor indicators are provided during the reporting cycle and usage of both website (using Matomo) and data downloads is being monitored. Besides this, there were no specific actions during this reporting period.

Task 8: help desk (WP1)

An extensive training course has been developed and is integrated in Oceanteacher. The OceanTeacher Global Academy Project aims at building equitable capacity related to ocean research, observations and services in all IOC Member States. The course which will help data providers to submit data to EMODnet Biology is entitled: '**Contributing datasets to EMODnet Biology'** and is available at https://classroom.oceanteacher.org/course/view.php?id=328. The objectives of the course are:

- Understand the general data flow for EMODnet Biology and how it interacts with other biodiversity data systems
- Understand the different biological data standards used in EMODnet Biology
- Be able to process a dataset from scratch in order to meet the EMODnet Biology data standards
- Be able to publish your standardized data in the IPT
- Understand the full data management cycle for EMODnet Biology, including data processing and data publication
- Be able to perform advanced data quality check on your data.
- Be able to access your data through the EMODnet Biology portal

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
None	

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	Organis ation	Type of user feedback (e.g. technical, case study, etc.)	Response time
02/08/ 2018	User	Problem while downloading data using a spatial filter.	It was a bug, it took 22 hours to debug
6/08/2 018	HELCOM	Requested information on how to set up a species database for HELCOM	We provided feedback and were invited to present this during their workshop.
07/09/ 2018	User	Bug in the map viewer	It was a bug, it took 2 hours to debug
15/09/ 2018	User	I'm interested in the usage of zooplankton layers for creating models of the distribution of benthic species in the North Sea. I was happy to find OOPS dataset, but I mentioned that there is a link on the page http://www.emodnet.eu/geonetwork/emodnet/eng/cata log.search#/metadata/701d7e745a6d309ae68cfd72d40 0a57a09c3625c that doesn't work correctly: http://geo.vliz.be/geoserver/Emodnetbio/ows?SERVICE =WMS&	We provided the correct WMS link
17/09/ 2018	ICES	Invitation to participate in WGFBIT working group	Immediate response
28/09/ 2018	Ifremer	Date product on toxic algae very useful for the MSFD (D5, D1 Hab Pelag) and maybe also for the InterReg S3 EuroHAB project We will look into the possibility to extent the spatial scope of the product (including UK waters)	Immediate response

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.)
28/08/2018	Skype meeting with MBA regarding data delivery	Organised	Skype meeting to discuss UK dataflow to EMODnet (including data from MBA, SAHFOS, CEFAS)
26/7/2018	Attending Open Summer of Code results	Attended	The Open Summer of Code initiates innovative open source projects, made by incredibly motivated students, coaches & organisations. One of teams used EMODnet data.
12/9/2018	Attending Marine Knowledge Expert group	Attended	The initial work on the data product looking at Same Risk Areas for the OSPAR-HELCOM region by looking at EMODnet data was presented
14/9/2018	Attending Workshop of the BaltiCheck project on database management	Attended	We presented the best practices, data model and recommendations form an EMODnet biology – WoRMS persprective. Looking into possibilities to set up a Baltic regional portal within the infrastructure.
17-21/9/2018	Attending the European Marine Biology Symposium	Attended	Present data infrastructures EMODnet biology (P)

In total 1 event was organised and 4 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.)
26/7/2018	Tweet	72 talented students have been working on 17 impactful #opensource projects at #oSoc18! @EMODnet student team, coached by @jmeesvliz, has built an application which enables to explore #marinedata via a clear map interface. See their result! https://osoc18.github.io/vliz/	43 retweets https://twitter.com/EMODnet/status/1022464316941979653
30/07/2018	Publication	Reference to EMODnet biology, WoRMS and EurOBIS in Marein Boards publication on Strengthening Europe's Capability in Biological Ocean Observations	http://www.marineboard.eu/publication/strengthening-europes-capability-biological-ocean-observations
14/09/2018	Tweet	Just presented the data systems behind @WRMarineSpecies, @EurOBIS_VLIZ & @EMODnet Bio on the BaltiCheck Workshop 1 2018-09-14, Helsinki, Finland http://www.helcom.fi/helcom-at-work/projects/balticheck … @HELCOMInfo #marinespecies	https://twitter.com/WRMarineSpecies/status/1040540087409369088

17/09/2018	Tweet	@EMODnet has the pleasure to be present at the 53rd EMBS in Ostend, we are ready to meet users and data providers! #EMBS53 @EMBSsymposium #MarineData #OpenData #OurOcean	https://twitter.com/EMODnet/status/1041649435095326720

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)
07/2018	Global Ecology and Biogeography	BioTIME: A database of biodiversity time series for the Anthropocene	Dornelas et al.	
17/9/2018	EMBS book of abstracts	The European Ocean Biogeographic Information System (EurOBIS) and its relation with international data systems	De Pootere et al.	
17/9/2018	EMBS book of abstracts	A database of benthos and plankton in Romanian Black Sea waters	Boicenco et al.	
01/07/2018	Marine Board: Future Science Brief	Strengthening Europe's Capability in Biological Ocean Observations EMODnet biology mentioned in report	Benedetti-Cecchi, L., et al.	
06/2018	ICES Annual report	EMODnet gridded abundance Copepod products part of the ICES Annual Report 2017	https://issuu.com/icesdk/docs/ices_annual_report_2017_english_for	

7   New monitoring indicators

Please consult and fill in the designated excel template.