



EMODnet Thematic Lot n°5 - Chemistry

EASME/EMFF/2020/1.3.1.11/Lot 5/SI2.846161

Start date of the project: 03/10/2021 (24 months + 24 months)

Centralisation Phase

Quarterly Progress Report (10th)

Reporting Period: 01/01/2024 – 31/03/2024

V2



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1. Highlights in this quarter

[List the quarterly progress for each of the tasks specified in Section 1.4.1 of the Tender Specifications; provide an explanation for any tasks in which progress has not been noted. Provide in the table a list of all Milestones and Deliverables as from the technical workplan in numerical order, the date due, status and date delivered. Max 2 pages]

Task 1: Maintain and improve a common method of access to data held in repositories

EMODnet Chemistry uses the SeaDataNet infrastructure and standards to integrate and harmonise the marine chemistry datasets managed by its network of expert data centres (mainly NODCs). During the reporting period, 25,336 new datasets were added to the EMODnet Chemistry distributed system, which manages eutrophication, contaminant and microlitter data, and to the centralised system, which manages beach and seafloor litter data. Several datasets were also reviewed and removed. CDI metadata has been systematically created for all datasets to ensure their accessibility via the CDI Data Discovery and Access Service. At the same time, harmonised, standardised, and validated data are made available as regional collections for i) eutrophication (nutrients, chlorophyll and oxygen) and acidification (alkalinity and pH) in seawater, ii) contaminants in seawater, biota and sediments and iii) marine litter in seawater and sediments.

On 30 and 31 January 2024, the EMODnet Chemistry training was organised for all data providers, with more than 50 participants to share the metadata formats, data transport formats, vocabularies and QC procedures for all data types processed by EMODnet Chemistry. The main objective was to practise the use of the available tools and guidelines.

Task 2: Construct products from one or more data sources that provide users with information about the distribution and quality of parameters in time and space

EMODnet Chemistry develops and gives access to data products on a regular 3D grid and on coastal data points. Both provide information on the spatial and temporal distribution and quality of the measured data and are generated for a selected number of parameters chosen by the Chemistry network together with the MSFD Expert Panel. As the eutrophication data show a broad and continuous distribution at the basin scale (and in time), the creation of 3D grid maps is possible, and the DIVA interpolation software is used. The pollutant measurements (contaminants but also beach litter) are mainly carried out along the coast and cover the last years. Since the “EMODnet Chemical Data Products Experts Workshop”, which took place in Venice in 2010, we have been recommended to display the stations on a map and show time series with a link to the method of data collection for repeated coastal points in time. In addition, the source data points are regionally aggregated, validated and harmonised to data collections for eutrophication, pollutants, and marine litter, which are made available to users and are attracting increasing interest.

In February 2024 respectively March 2024, two data harvests have been undertaken for eutrophication data sets and contaminants data sets. Following the data harvest, all six regional coordinators received data packages for their region as well as lists showing which datasets had been added or updated since the last round of harvesting and which datasets were still the same as before. The latter helps the regional coordinators as it means that they do not have to repeat their validation and harmonisation activities for these "old" datasets. Following the harvest distribution, the six regional leaders have been working intensively on data aggregation and validation, and a meeting is planned to coordinate the process for creating the eutrophication and contaminants data products, i.e. regional aggregated, validated and harmonised data collections for both substance groups as well as DIVA-interpolated maps for selected eutrophication parameters only. The release of the regional data collections for eutrophication and contaminants is expected in May 2024 (according to a timeline set by the EEA).

Finally, specific subsets for beaches, seafloor and microlitter were created for TG ML and released during the reporting period.

Task 3: Develop procedures for machine-to-machine connections to data and data products:

All EMODnet Chemistry data products are hosted by ULiege (in the Ocean Browser for the eutrophication maps), HCMR Geoserver (for the contaminants maps) and IFREMER Geoserver (for the marine litter maps). These map layers are easily accessible as OGC layers via the Map Viewer of the central portal. In addition, all interpolated DIVA eutrophication maps are available in NetCDF format via the EMODnet ERDDAP service.

For all these products, metadata records have been included in the EMODnet Chemistry products catalog, which is based on the SeaDataNet sextant catalogue, and an OGC CSW service is in operation for the sextant product catalogue, which is used by the central portal to include metadata records of data products in the CP product catalogue.

During the reporting period, a start was made on creating an ERDDAP dataset from the regional aggregated, validated and harmonised data collections for eutrophication and pollutants (including marine litter). The most critical step is the handling of the data structure (no regular gridded data, but irregular measurement series treated as profiles or time series) and the mapping of the complex metadata. As soon as the collections are available in ERDDAP, we will act to provide the CP Map Viewer with a WMS service to display the stations. The same datasets are now accessible via a special OGC WMS-WFS service with dataset locations per chemical group (P36). In the Map Viewer of the central portal, users can click on map objects and go to the CDI Data Discovery & Access Service.

Task 4: Contribute data, data products and content to a central portal that allows users to find, view and download data and data products:

All EMODnet Chemistry data, data products and content are made available through the EMODnet Map Viewer, the EMODnet Product Catalogue and the narrative in the central portal. Two EMODnet Chemistry catalogues are kept updated: 1) the CDI Catalogue, that facilitates the discovery and access of datasets, serving as an 'external' service accessible through the narrative area and CDI map layers in the CP Map Viewer; 2) the Sextant Product Catalogue, updated with metadata records for new data products (DIVA maps v23, eutrophication and contaminants data collections v23, and marine litter maps v23). The central portal collects this content for inclusion in the Products Catalog, making associated data products directly downloadable.

During the reporting period, the interpolated DIVA maps on eutrophication created in June 2023 (Eutrophication (all European seas), Eutrophication (by sea regions) and Eutrophication (coastal regions)) were successfully uploaded to the map viewer while the contaminants maps were refined. The list Further efforts are being made to finalise the publication of five map layers illustrating the potential of webODV services for creating scientific data maps, accessible via the GetCapabilities service at <https://emodnet-chemistry.webodv.awi.de/api/wms?SERVICE=WMS&REQUEST=GetCapabilities>

Task 5: Contributing content to dedicated spaces in the Central Portal:

EMODnet Chemistry continuously revises the narrative section and contributes to both news updates and the monthly newsletter in accordance with the specified guidelines. During the reporting period, 4 new use cases were drafted and are at different level of finalisation and publication.

Task 6: Ensure the involvement of regional sea conventions:

During the reporting period, EMODnet Chemistry participated in the online meeting of the MSFD Expert Group on Contaminants (7 February 2024) and worked closely with the JRC to prepare the data availability analysis to be presented at the GES meeting on 15 April 2024. The dialogue with all RSCs is also maintained through the MSFD Technical Group on Marine Litter.

Task 7: Contribute to the implementation of EU legislation and broader initiatives for open data:

EMODnet Chemistry contributes to the implementation of EU legislation by participating in the Working Group on Data, Information and Knowledge Exchange (WG DIKE) and the Technical Group on Data (TG Data), which have recently been re-established, as well as in the MSFD Expert Group on Contaminants and the MSFD Technical Group on Marine Litter. These meetings discuss the adoption of EMODnet Chemistry as a data platform for the collection of Marine Litter, Eutrophication and Contaminants data.

During the reporting period, through interaction with the JRC and other members of TG ML, contributions were made to the Coastline Litter Trend report and to the analysis of data availability focussing on pollutants and eutrophication. EMODnet Chemistry also responded to the European Commission's consultation launched by DG ENV on the assessment of the Nitrates Directive.

In addition, EMODnet Chemistry, together with NOAA and UNESCO's IOC, contributed to the organisation of the International Workshop to advance ocean carbon and acidification data management and interoperability, which will take place in Venice on 7 and 8 May 2024.

It also participated in the International Expert Meeting on Marine Plastic Litter Monitoring Data Sharing Project, promoted by the Ministry of the Environment of Japan (MOEJ) on 1 March 2024.

Finally, EMODnet Chemistry was invited by VLIZ to a first meeting on 15 March 2024 to discuss how EMODnet Chemistry data can be linked to EDITO-Infra.

Task 8: Monitoring quality/performance and dealing with user feedback:

Since centralisation, the visualisation of the website is monitored via Europa Analytics and the EMODnet secretariat provides quarterly statistics. Chemistry has developed a new tool (Greylog) to monitor the viewing and downloading of EMODnet Chemistry data products from their sources (notably Ocean Browser, IFREMER Geoserver, HCMR Geoserver and DOI landing pages). Chemistry is currently in the process of configuring the collection of inputs received by each of the partner servers to count the various log files and generate the overall download statistics for reporting in the quarterly reports. EMODnet Chemistry Helpdesk is also centralised: all user interactions are recorded by the EMODnet Secretariat Helpdesk and redirected to the lots via JIRA tickets. Relevant JIRA tickets are answered immediately.

Task 9: Maintain the existing thematic web portal for a maximum of 6 months from the start of the project:

This Task refers to the first project phase. No activity is reported for the renewal period, as the previously existing thematic web portals were shut down in January 2023. Since then, EMODnet Chemistry maintains back-office infrastructure and web services for interaction with the Map Viewer and Product Catalogue services at the Central Portal.

Status of the Milestones and Deliverables listed in the workplan					
Milestone/Deliverable in numerical order	WP	Date due	Status (To do/ Delivered/ Delayed)	Date delivered	If Delayed: reason for delay and expected delivery date
D1.1 Quarterly concise progress reports	WP1	M3 (03/01/2024), M6 (03/04/2024), M9 (03/07/2024), M12 (03/10/2024),	Delivered (M3 Q42023, M6 Q12024)	15/01/2024, 15/04/2024	

Status of the Milestones and Deliverables listed in the workplan					
Milestone/Deliverable in numerical order	WP	Date due	Status (To do/ Delivered/ Delayed)	Date delivered	If Delayed: reason for delay and expected delivery date
		M15 (03/01/2025), M18 (03/04/2025), M21 (03/04/2025)			
D1.2 Annual Interim report	WP1	M13			
D1.3 Final report	WP1	M26			
D1.4 Handover plan for service continuity	WP1	M26			
D1.5i Short minutes/action list of project meetings	WP1	M1 (03/10/2023), M6 (03/04/2024), M12 (03/10/2024), M18 (03/04/2025), M23 (03/09/2025)	Delivered (M1)	28/11/2023 (PFG meeting)	
D1.6 Providing content to the central portal	WP1	Continuously	Delivered		
D2.2i Training activity for DC	WP2	M4 (03/02/2024)	Delivered	30-31/01/2024	
D2.2i Data harvested for eutrophication, including rivers	WP2	M3 (03/01/2024), M12	Delivered (M3) 15/02/2024	15/02/2024	
D2.3i Data harvested for contaminants	WP2	M4 (03/02/2024), M14	Delivered (M4)	28/03/2024	
D2.4i Data harvested for beach and seafloor	WP2	M7, M17			
D2.5i Data harvested for microlitter	WP2	M7, M17			
D2.6i Data harvested for new litter types	WP2	M16			
D2.7 Updates on marine litter guidelines	WP2	M6 (03/04/2024)	Delayed	May 2024	To be presented and endorsed by TG ML, May 2024

Status of the Milestones and Deliverables listed in the workplan					
Milestone/Deliverable in numerical order	WP	Date due	Status (To do/ Delivered/ Delayed)	Date delivered	If Delayed: reason for delay and expected delivery date
D3.1 Validated pan-European collections for eutrophication, including rivers	WP3	M7, M19			
D3.2 Validated collections for contaminants	WP3	M7, M19			
D3.3 Validated collections for beach and seafloor litter	WP3	M11, M21			
D3.4 Validated collections for microlitter	WP3	M11, M21			
D3.5 Validated collections for new litter types	WP3	M20			
D3.6 High-resolution DIVA maps near river mouths	WP3	M21			
D3.7 New maps for contaminants	WP3	M15			
D3.8 New pan-European and regional DIVA maps for eutrophication	WP3	M21			
D3.9 New maps for microlitter	WP3	M17			
D3.10 New maps for beach and seafloor litter	WP3	M17			
D4.1 Standard machine-to-machine services delivered for common functionalities	WP4	M3			
D4.2 Dedicated machine-to-machine services and APIs adapted / delivered for special functionalities	WP4	M9			
D4.3 Upgraded databases for new litter types	WP4	M12			
D4.4 Improved services for eutrophication	WP4	M10			

Status of the Milestones and Deliverables listed in the workplan					
Milestone/Deliverable in numerical order	WP	Date due	Status (To do/ Delivered/ Delayed)	Date delivered	If Delayed: reason for delay and expected delivery date
D4.5 Improved services for marine litter	WP4	M10			
D4.6 Improved services for contaminants	WP4	M12			
D4.7 Improved webODV tool and integration in central portal	WP4	M18			
D4.8 Monitoring data about visits and usage	WP4	Continuously	On-going		
D5.1 Operate Help-desk via Jira tickets	WP5	Continuously	Delivered		
D5.2 Meetings of Board of MSFD experts	WP5	M16, M18, M22			
D5.3 International cooperation and interoperability	WP5	Continuously	Delivered		
D5.4 Promotional material and up-to-date thematic space at central portal	WP5	Continuously	Delivered		
D5.5 Presentations at relevant conferences	WP5	Regularly	Delivered		

2. Identified issues: status and actions taken

[Provide an **overview of issues** identified by CINEA/ DG MARE/ Secretariat (Table A) in the past quarter - new as well as pending ones, the status of those issues, and actions taken to address them and/or roadmap with remaining actions planned to resolve the issues. In Table B, provide information about any issues and challenges identified by yourself.]

A. Priority issue(s) identified and communicated by CINEA/ DG MARE/ SECRETARIAT				
Priority issue	Status (Pending/ Resolved)	Action(s) taken/ remaining actions planned	Date due	Date resolved
Chemistry to review layer legends and add units where they are missing (EM-648)	Pending	Chemistry will include units in the maps "Concentration values"	n.a.	
Chemistry - Web Services MetadataUrl and DataUrl fields (EM-84)	Pending	OGS will support OGS to solve the issues.	n.a.	

B. Issues / challenges identified by the thematic assembly group itself				
Priority issue / challenge	Status (Pending/ Resolved)	Action(s) taken / remaining actions planned	Date due	Date resolved
Map Viewer - add new Subfolder for Chemistry - webODV maps (EM-894)	Pending	Chemistry (AWI) will add/replace the EDMO ID with/by the organisation name. The download link will point to a file.	n.a.	
Eutrophication product updates for EMODnet Chemistry	Resolved			15/03/2024
Products download in the Map Viewer (EM-962)	Pending	Add the functionality to download the full product (data product) to the Download button.		
View and Download in the Products Catalogue (EM-963)		Add the product download functionality to the Download icon in the catalogue (Main page, on the top at the right). Add the direct links from the product catalogue to the viewer in the selected product layer. This functionality was already available in the Chemistry portal, so there should be no problems with multiple UUIDs.		

3. Communication assets

[In Table A, list peer reviewed publications directly (co-)authored by consortium and project partners in the reporting period. In Table B, list all non-peer reviewed publications (co-)authored. In all cases, indicate the type of publication, provide the full reference incl. title, volume and issue etc., and whether the publication is open or closed access.]

A. (Co-)Authored peer-reviewed publications in the quarter					
Date of publication	Type of publication	Full reference	ISBN	DOI	Is it open access? Yes/No
	e.g. paper; conference proceedings; book chapter; ...				

B. Other/non-peer reviewed types of publications (co-)authored in the quarter					
Date of publication	Type of publication	Full reference	ISBN	DOI	Is it open access? Yes/No
	e.g. paper; conference				

B. Other/non-peer reviewed types of publications (co-)authored in the quarter					
Date of publication	Type of publication	Full reference	ISBN	DOI	Is it open access? Yes/No
	proceedings; book chapter; ...				

For a comprehensive overview of publications referring to/making use of EMODnet data and/or data products, please consult Google Scholar.

4. Monitoring indicators

[Refer to the standardised monitoring tool, i.e. Europa Analytics, to complete the indicators excel template, and provide a short explanation in the table below on the numbers and trends for each indicator when possible/applicable. Indicate clearly if monitoring was carried out using tools other than Europa Analytics.]

Comments on the progress indicators in the indicators spreadsheet		
Progress indicator	Means of collecting figures	Comment
1. Current status and coverage of total available thematic data A) Volume and coverage of available data	CDI catalogue service	Several new data sets have been entered, while also a number of data sets have been reviewed and deprecated. Overall, it results in a steady increase of data.
What is your opinion on the data coverage within EMODnet for your thematic? B) Usage of data in this quarter	CDI catalogue service	The data coverage is very good for all sea regions and there is a steady increase for most regions
	CDI RSM shopping ledger service and personal requests	The number of CDI downloads is much lower (-70%) than in the previous quarter.
2. Current status and coverage of total number of data products A) Volume and coverage of available data products	Sextant Product Catalogue	Products for eutrophication and contaminants has increased due to the publications of regional data collections in the Products catalogue and several map layers in the map viewer. The amount of products for PCBs has slightly decreased because some products have been moved in the subtheme pesticides&biocides.
B) Usage of data products in this quarter	Download Tracking service for data products	Status: https://docs.google.com/document/d/1-fewGda5K4WdENuAQbV6dsC6iDvz-kBo/edit
3. Internal and external organisations supplying/approached to supply data and data products within this quarter	CDI catalogue service	New data has been supplied by 24 regular data providers. Also, one provider made corrections.
4. Online 'Web' interfaces to access or view data	Manual compilation	No changes

Comments on the progress indicators in the indicators spreadsheet		
Progress indicator	Means of collecting figures	Comment
5.1 Daily number of page views of EMODnet Thematic entry page	Europa Analytics	The Chemistry section is visited every day with a maximum of 20 visitors per day. In this respect there is no difference between the current and previous quarter.
5.2 Quarterly total number of visitors, page views, unique page views and percentage of returning visitors	Europa Analytics	The numbers in the last quarter are somewhat (circa 20%) higher than in the previous quarter, except for the % of returning visitors which is 9% lower this quarter.

The monitoring numbers reported as part of the progress monitoring of EMODnet performance are collected through Europa Analytics, unless reported otherwise.

5. List of abbreviations and acronyms

AWI: Alfred Wegener Institute.

CDI: Common Data Index, which provides a highly detailed description of the data, answering the questions: where, when, how, and who collected the data, and how to get them. One CDI describes a data series which can be a vertical profile on a fixed location, a timeseries or a trajectory dataset.

CINEA: the European Climate, Infrastructure and Environment Executive Agency.

CMEMS: the Copernicus Marine Environment Monitoring Service (led by Mercator-Océan).

CP: Central Portal

DIVA: Data-Interpolating Variational Analysis, a software tool that allows to spatially interpolate (or analyse) observations on a regular grid in an optimal way.

DOI: Digital object identifier.

EC -JRC: European Commission Joint research Centre.

EDMO: European Directory for Marine Environmental Data.

EEA: European Environment Agency.

HCMR: Hellenic Centre for Marine Research.

HELCOM Convention: Baltic Marine Environment Protection Commission, the governing body of the Convention on the Protection of the Marine Environment of the Baltic Sea Area, known as the Helsinki Convention.

ICES: International Council for the Exploration of the Sea.

IFREMER: French Research Institute for Exploitation of the Sea.

MSFD is the Marine Strategy Framework Directive.

NODC: National Oceanographic Data Centre defined within the International Oceanographic Data Exchange (IODE) System of the UNESCO Intergovernmental Oceanographic Commission (IOC).

Ocean Browser: the EMODnet Chemistry data products viewing and downloading service that allows users to visualize gridded fields on-line. It is based on open standards from the Open Geospatial Consortium (OGC), in particular Web Map Service (WMS) and Web Feature Service (WFS).

webODV: the Ocean Data View – online, the online service to explore, subset, visualize, and extract data sets in multiple formats from the harmonized, standardized, validated data collections that EMODnet Chemistry is regularly producing and publishing for all European sea basins for eutrophication and contaminants.

OGC: Open Geospatial Consortium.

OGC CSW: the Open Geospatial Consortium Catalog Service for the Web.

OGC WMS-WFS: the Open Geospatial Consortium Web Map Service and Web Feature Service.

OSPAR Convention: the Convention for the Protection of the Marine Environment of the North- East Atlantic.

RSCs: Regional Sea Conventions.

SeaDataNet: the pan-European infrastructure for ocean & marine data management sponsored within FP7 (grant agreement 283607, 1/10/2011-30/9/2015) linking more than 100 national oceanographic data centres and marine data centres from 35 countries riparian to all European seas.

Sextant products metadata catalogue: the EMODnet Chemistry data products discovery service used for searching Chemistry data products and linking to the viewing service.

TG Data: the MSFD Common Implementation Strategy Technical Group on Marine Data.

TG ML: the MSFD Common Implementation Strategy Technical Group on Marine Litter.

ULiege: University of Liège.

WG DIKE: Working Group on data, information and knowledge exchange.