



EMODnet



European Marine
Observation and
Data Network

EMODnet ingestion and safe-keeping of marine data

CINEA/EMFAF/2021/3.4.10/02/SI2.868290

Start date of the project: 30/03/2022 (48 months)

Centralisation Phase

Quarterly Progress Report (9)

Reporting Period: 01/04/2024 – 30/06/2024



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1. Highlights in this quarter

On 3-5 April 2024 the EMODnet Ingestion 3 Final Meeting of Phase 1 and Kick-Off of Phase 2 took place in La Valetta, Malta, hosted by the University of Malta at the historic Old University Campus. A total of 64 consortium members actively participated, with 40 attending in person and 24 joining remotely. It was a productive meeting which laid the groundwork for the continuation of the good progress and promising results.

Task 1: Maintain, further develop and migrate a web-portal

Migration to Central Portal, Submission service:

The migration implementation plan, which includes the division between the backend and frontend components, has progressed further. The backend, encompassing the database, cloud storage, and API, will remain on the servers of HCMR. While, the frontend will be hosted on the Central Portal (CP) servers at VLIZ, for both testing and production environments.

Actions:

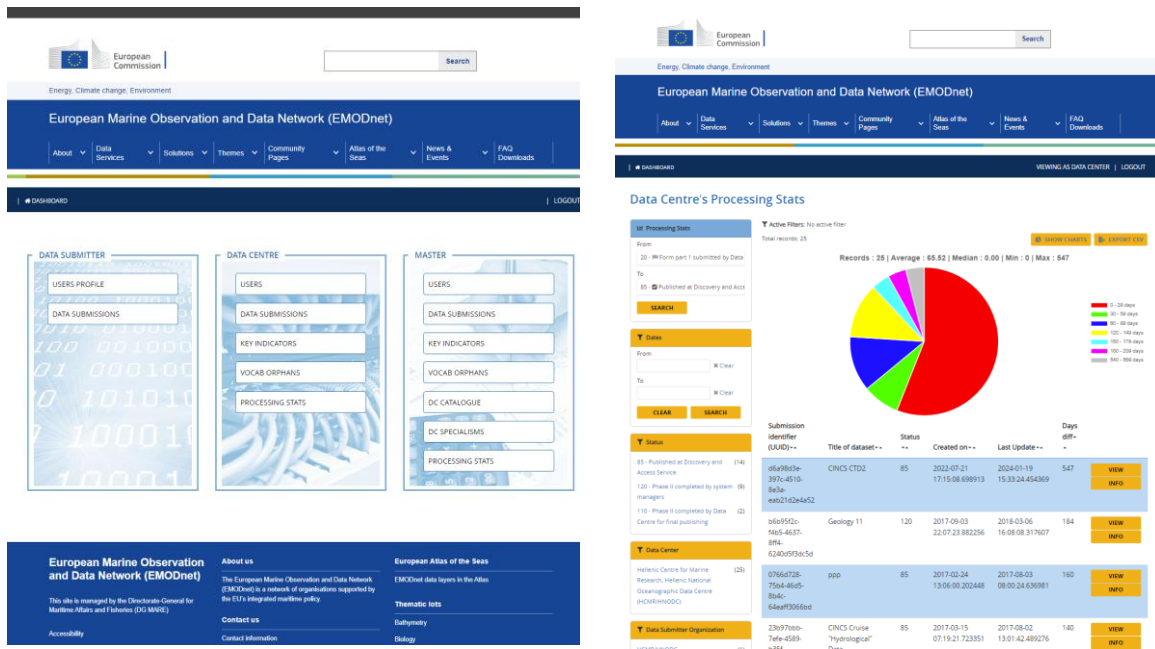
- The test version deployed on the EMODnet CP development environment has been updated to comply with the header and footer specifications of the EMODnet CP.
- The Processing Stats module of the Ingestion Service has been enhanced by introducing a pagination function. This new feature significantly improves overall performance and usability.
- An additional development environment has been established to facilitate broader testing of the new API-based approach by members of the Ingestion consortium. The operational testing environment¹, remains unchanged until the migration procedure is fully accepted and operational. The new environment² can be accessed to utilize the test database and cloud storage while offering the latest API and frontend to users.
- The Central Portal development environment³ will serve as the staging development environment, adding an additional layer to the testing workflow.
- Extensive testing is ongoing to ensure the new application functions as intended. This includes unit tests, integration tests, and user acceptance testing.
- The integration of ECAS as the authentication mechanism has commenced. Development efforts are focused on:
 - a) Implementing a process to inform, guide, and connect existing Marine-ID users to the new authentication schema.
 - b) Adjusting the existing Marine-ID centric user/role management to align with the new schema.

¹ <https://submission-test.emodnet-ingestion.eu/>

² <https://ingestion2.getmap.gr/ingestion/>

³ <https://emodnet.development.ec.europa.eu/ingestion/>

In addition a structure was drafted for the narrative of EMODnet Ingestion, that will be published at the EMODnet Central Portal. Use was made of the initial draft by the CP team which was expanded and refined for better coverage of the objectives, activities, services, and results of EMODnet Ingestion. This draft structure will be elaborated into a full narrative that will be discussed at a CP migration meeting for following publishing at the EMODnet development server.



Figures 1 and 2: illustrations of the new submission pages under testing

Task 2: Implement pathways for delivering data to final repositories

The total number of received submissions increased from 1646 to 1681, while the number of processed and published data submissions increased from 1503 to 1548, and of which, the number of fully elaborated data submissions went from 671 to 710 data. The KPI excel sheet provides more details.

Task 3: Facilitate machine-to-machine transfers

During the reporting period, the team continued working on ingesting new data sources, supporting the CP to include the Ingestion activities and layers, and dissemination (by participating to events such e.g. IMDIS)

As known, the inclusion of the source "as is" (phase one) involves the utilization of machine-to-machine technologies, ranging from FTP file access to web APIs for real-time exchange. It also involves the adoption of services like the Data Access Broker (DAB) or ERDDAP. This data is made available under the "ingestion-erddap.emodnet-physics.eu" that provides the user an easy way to interact with latest ingested RT collections that nowadays lists more than 2300 datasets.

While the ingestion-erddap.emodnet-physics.eu provides the user an easy way to interact with latest ingested RT collections, the data is in parallel integrated into the metadata-controlled collections. This way, the RT data end up in a dedicated collection, which is offered to CP under a specific WMS layer.

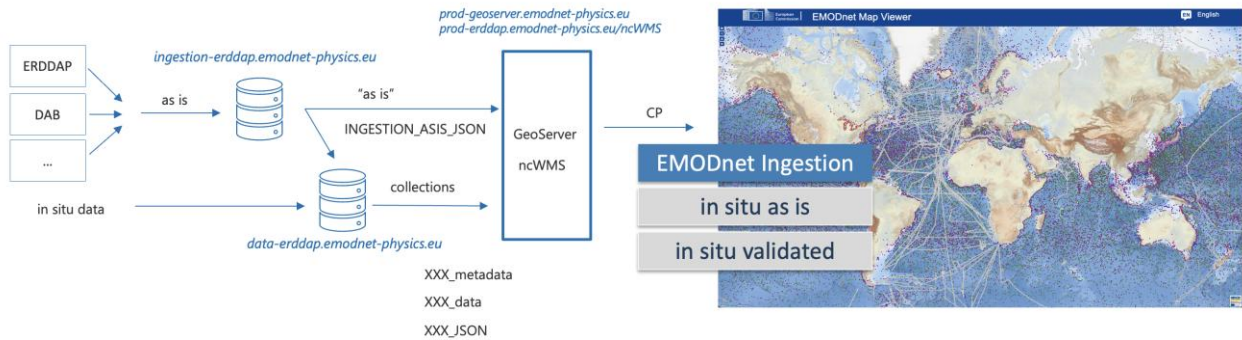


Figure 3. simplified Ingestion architecture

As illustrated in the Figure 3 EMODnet geoserver (prod-geoserver.emodnet-physics.eu) provides the CP with layers WMS/WFS. For the in-situ data and collections, the layer is offering the position of the platform (type of the platform) and the WFS is offering the platform page html (metadata and charts). The html pages are populated with data from the collections in the ERDDAP. This way, the RT data end up in a dedicated collection, which is offered to CP under a specific WMS layer

This update also pushed a review in the operational data ingestion workflow

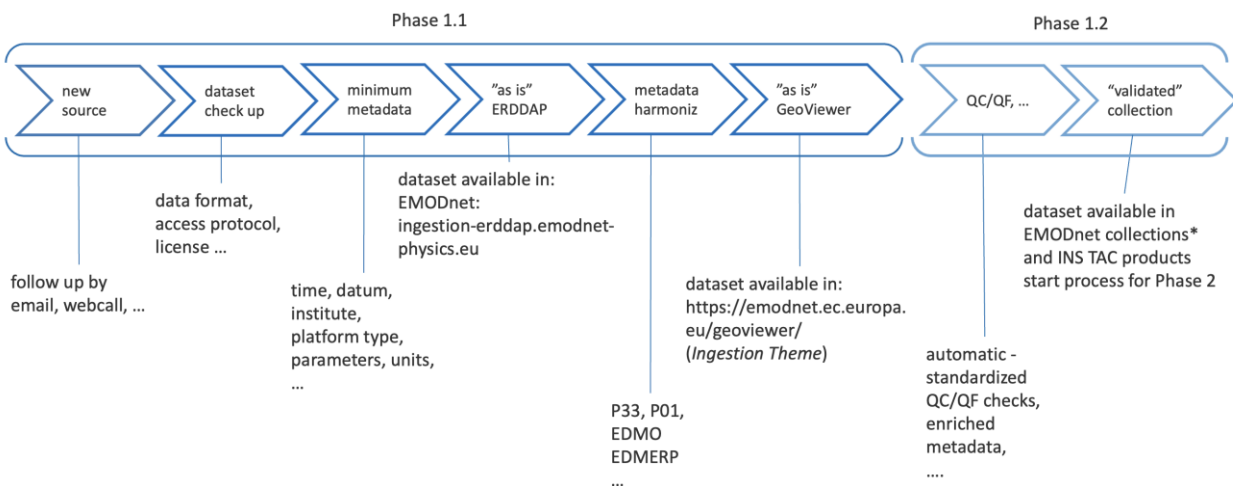


Figure 4. new workflow for the operational data ingestion

Connecting more providers and stations:

In line with planning and on-going engagement actions, several additional operational stations have been integrated into the system. Figure 5 shows the newly connected “as is” stations that are coming from four main sources covering Mediterranean Sea (ENEA – INGV), New Zealand, Southern America.

Southern America data are coming from WHOS and Meteorological service, hence some data are more inland than the primary target of EMODnet, these data will be further processed (and subset) in order to be included into validated data-collections.

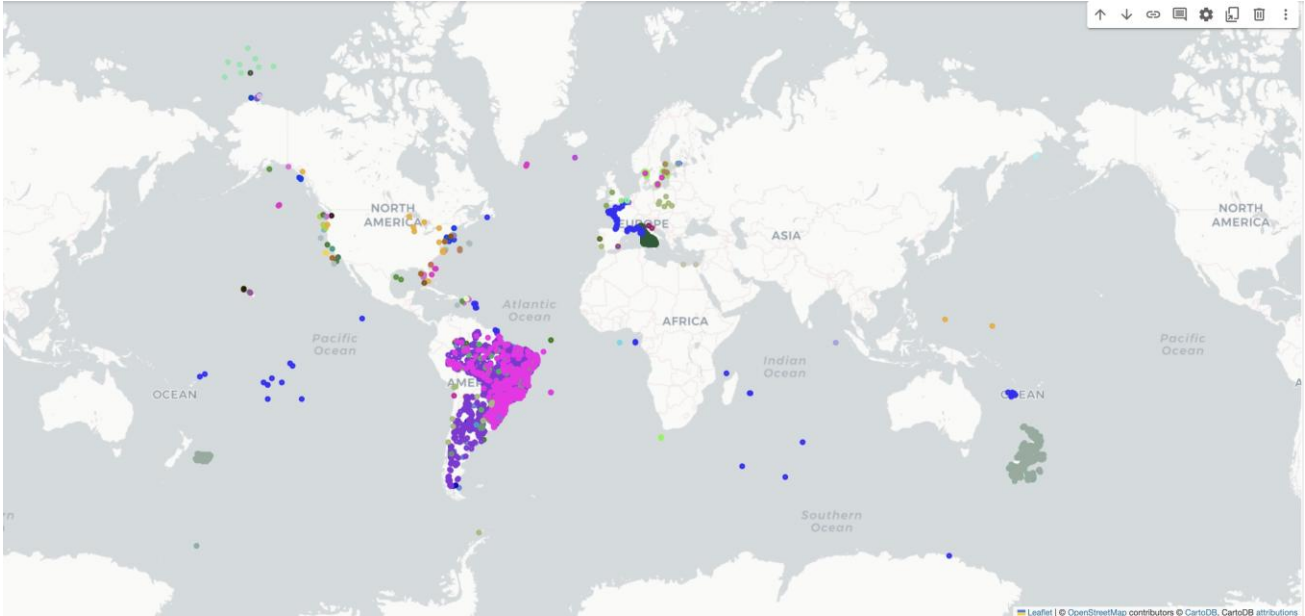


Figure 5. newly integrated platforms⁴

Some data were directly integrated into the CMEMS INSTAC validated collections, mostly coming from Coriolis (GDAC). Notably, when CMEMS directly includes data into operational collections, it may happen that metadata are not fully updated. Considering the latest developments in metadata management for operational data by EMODnet Ingestion+Physics, this result suggests that EMODnet should also re-process data coming from CMEMS – CORIOLIS/GDAC to ensure harmonized and cleaned data collections. For the cleanliness of workflows and data management, until a new source is associated with the EMODnet metadata standards, the incoming data should (would it be better to) be considered “as is”.

⁴https://data-erddap.emodnet-physics.eu/erddap/tabledap/EP_PLATFORMS_METADATA.csv?PLATFORMCODE%2Ccall_name%2Clatitude%2Clongitude%2CdataFeatureType%2CfirstDateObservation%2ClastDateObservation%2Cdata_owner_longname%2Cdata_owner_country_code%2Cdata_assembly_center_longname%2Cplatform_type_longname%2Cintegrator_id%2CIntegrationDate&IntegrationDate%3E=2024-04-01&integrator_id!=%22argo%22&integrator_id!=%22hfradarrv%22&integrator_id!=%22instac%22&integrator_id!=%22tad%22&call_name!=%22UNKNOWN%22



Figure 6. new data already in CMEMS INSTAC⁵

Last but not least the ingestion-erddap instance:

<https://ingestion-erddap.emodnet-physics.eu/erddap/info/index.html?page=1&itemsPerPage=1000> provides access to more than 2300 (“as is”) datasets.

Task 4: Operate a help-service for users to provide their data in the most appropriate format

Users can either email their questions or ask for a call back. All queries are saved and tracked in the Open-source Ticket Request System (OTRS) at Ifremer. In the reporting period four questions were received and answered. As part of the migration the proprietary system at Ifremer will be replaced by using the CP help forms, which are assigned to Thematics / Ingestion by the EMODnet Secretariat. Responses will then be given through JIRA tickets.

Task 5: Allow providers of data to track the progress of their data from submission through to their storage in a repository

⁵https://ercompwebapps.emodnet-physics.eu/erddap/tabledap/EP_PLATFORMS_METADATA.csv?PLATFORMCODE%2Ccall_name%2Clatitude%2Clongitude%2CdataFeatureType%2CfirstDateObservation%2ClastDateObservation%2Cdata_owner_longname%2Cdata_owner_country_code%2Cdata_assembly_center_longname%2Cplatform_type_longname%2Cintegrator_id%2CIntegrationDate&lastDateObservation%3E=2024-04-01&IntegrationDate%3E=2024-04-01&integrator_id!=%22argo%22&integrator_id!=%22hfradarrv%22&integrator_id!=%22tad%22&call_name!=%22UNKNOWN%22&integrator_id=%22instac%22

Data providers can follow the processing of their data submissions in the Submission Service, which is done in several steps each indicated by a status field. Data providers are contacted by assigned data centres, in case there are additional questions about the ingested data sets.

Task 6: Participate in discussions with EMODnet partners in order to improve the efficiency of the whole collection, assembly and dissemination process

All coordinators of EMODnet Thematic projects are partners in EMODnet Ingestion which guarantees a mutual tuning with EMODnet Ingestion. Moreover, EMODnet Ingestion coordinators are involved in the communication of the EMODnet Steering Committee and Technical Working Group.

Task 7: Maintain a summary record of data delivered

This function is offered by the View Submissions service. Each completed submission is migrated to that service for publishing as part of a discovery and access service. Distinction is made in phase I and II which is one of the search facets. Editing activities take place aimed at replacing so-called orphan data for organizations from free text into controlled EDMO terms, orphan data for projects into controlled EDMERP terms, and orphan terms for Cruises into controlled Cruise Summary Reports (CSR) terms in order to improve the integrity and richness of the metadata.

Task 8: Engage in outreach activities towards significant holders of marine data whose data are not yet available.

A central document compiling all outreach activities and events of partners promoting the project is being continuously updated with input by all the partners. A full overview will be given in the interim and final reports. The current document is available here⁶.

At the start of the new phase, a meeting at RBINS took place to brainstorm and organise activities and a workplan related to the tasks within EMODnet Ingestion WP4, for which RBINS is in charge, following the Kick-Off meeting in Malta (2-5 April 2024). During the meeting, documents were shared of former phases of EMODnet and the design was discussed of potential new and upgraded promotional material and the approach for outreach for the program's next phase.

In May 2024, a new EDMOnet leaflet was created for communication purposes. This leaflet derived from the EMODnet's **Guidance document**⁷ on European project data submissions to EMODnet. It condenses the four-page guidance document into a simple A5 format. It provides a brief overview of potential challenges associated with managing marine data, outlines the support, guidance, and data submission services offered by EMODnet, and encourages readers to adopt EMODnet's best practices for data management, and to upload their data to EMODnet Ingestion through QR codes and web links. The leaflet was diffused at the IMDIS conference in Norway (May 27-29) and can be reused at future events.

⁶<https://docs.google.com/document/d/1cwuwM1oZYon1vAPwqLqSguLdSkSlt4ioR9MKh7cN9Yw/edit>

⁷https://emodnet.ec.europa.eu/sites/emodnet.ec.europa.eu/files/public/Data%20Ingestion/EMODnetEUprojectDataSubmissionGuidelines_March2024.pdf



Figure: Screenshot of the new EMODnet leaflet

EMODnet Ingestion participated in the 2024 **International Conference on Marine Data and Information Systems (IMDIS 2024)**⁸, held in Bergen – Norway, 27-29 May 2024, presenting the latest achievements of the EMODnet Data Ingestion, at the Session dedicated to Data Services and tools in ocean science. The presentation highlighted EMODnet approach to streamline the ingestion process from data sources towards marine data infrastructures and EMODnet for improving data sharing among the marine community. At IMDIS also a poster was presented on EMODnet Ingestion that was well perceived, and promotion material was diffused, including the new leaflet.

Finally, in June 2024, a Use Case for EMODnet Ingestion, focusing on the Eurofleets+ cooperation for data management was prepared to feature on the European Commission's EMODnet webpage⁹. Based on the

⁸ <https://imdis.seadatanet.org/>

⁹ <https://emodnet.ec.europa.eu/en/use-cases#>

reports by Le et al. (2023) and Schaap et al. (2023), this two-page document introduces the Eurofleets+ initiative and the 164 interdisciplinary datasets generated during the project's 28 cruises. It discusses common challenges faced by scientists in managing marine data and highlights the EMODnet services available to address these challenges. The Use Case concludes with the positive effects of EMODnet's services on the scientific community. Overall, it demonstrates how EMODnet is a powerful initiative for managing, harmonising, standardising, and ensuring FAIR (Findable, Accessible, Interoperable, and Reusable) data, and how leveraging EMODnet's services enabled Eurofleets+ to efficiently manage and provide access to marine data for the broader scientific community.

The above activities directly contribute to the WP4 – Marketing and outreach activities of the EMODnet workplan 2024-2026, and specifically to Task 8 *Engage in outreach activities towards significant holders of marine data whose data are not yet available*. They contribute to fulfilling 2 of the expected outcomes of this work package, namely the development of promotional material and of several use cases, including EU RTD projects.

Task 9: Improve and document the availability of data provided for coastal and offshore licensing.

The activities as a follow-up to the earlier pilot activities have officially commenced. Currently the focus is on the selection of pilot cases. This initial phase involves developing and distributing a dedicated survey among project partners. The survey is currently under development and will be shared after the summer period. The objective is to identify four pilot cases that will form the core of the project: two for offshore aquaculture and two for offshore renewable energy. Alongside this, results from the earlier phase will be utilized to enhance the selection process. This includes the insights and discussions from the "Webinar on Marine Data Management in Offshore License Procedures," which took place on 29 February 2024. The webinar highlighted key data management challenges and opportunities and forms a valuable source for identifying relevant stakeholders.

Remark: A summary of the Webinar, along with the PowerPoint slides, is available by means of a dedicated news item on the EMODnet Ingestion website¹⁰.

Task 10: Service continuity during operation and for transition

Coordination of the consortium is undertaken by MARIS and HCMR to ensure the continuity of the EMODnet Ingestion portal and its array of services. The Q8 report and the Final Report including transfer protocol have been prepared and submitted which were recently accepted by the EU. A plenary meeting for EMODnet Ingestion has been organized at 3 – 5 April 2024 in Malta, serving as a meeting for finalizing the first two years of the Ingestion contract and as kick-off for the new workplan for the coming two years.

The EU had decided to continue the EMODnet Ingestion for another 2 years. As follow-up a revised Workplan has been made together with the full group during the Malta meeting and this Workplan was discussed with and accepted by the EU (CINEA and DG-MARE). As a follow-up MARIS has drafted an amended partner contract

¹⁰ <https://www.emodnet-ingestion.eu/promotion/news/summary-of-webinar-marine-data-management-in-offshore-license-procedures/50>

and subcontracts for all members of the consortium to administer the contract extension and the revised Workplan. The signature process is well underway.

EMODnet Data Ingestion joined the three EMODnet Vision 2035 Drafting Group (VDG) on-line meetings for contributing and sharing perspectives to shape the future evolution of EMODnet (5 April 2024: 1st VDF e-briefing, 16 April 2024: 1st VDG meeting, and 24 June 2024: 2nd VDG meeting).

On 29-30 April 2024, EMODnet Data Ingestion participated at the EMODnet 20th Steering Committee meeting for presenting the service current offer, recent updates and the future outlook.

During this reporting period, also two meetings took place with the EMODnet Central Portal (CP) technical team (29 April 2024 and 17 June 2024) to overview and discuss the further progress of the migration of the Submission service to the CP.

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
D0.1: Quarterly concise progress reports	0.1	M4, M7, M10, M13, M16, M19, M22, M25	D0.1- a,b,c,d,e,f,g, h	M4	
D0.2: Interim report	0.1	M12	To do		
D0.3: Final report	0.1	M24	To do		
D0.4: Transition and hand over protocol	0.1	M24	To do		
<i>D0.5i: Consortium Agreement and subcontracts</i>	0.1	M1	Subcontracts well underway		
<i>D0.6i: Short minutes - action lists of internal coordination meetings</i>	0.1	Regularly			
D1.1: Migrated Ingestion site maintained at Central Portal	1.1	M6 – M24	Underway		
D1.2: Users migrated from Marine-ID to ECAS	1.2	M6	Underway		
D1.3: Migrated Data Submission Service operational	1.3	M6 – M24	Underway		

D1.4: Data tracking service operational	1.3	M1 – M24	Delivered	Operational since M0	
D1.5: Migrated View Submissions service operational	1.4	M1 – M24	Delivered	Operational since M0	
D2.1: Pathways operational	2.1	M1 – M24	Delivered	Operational since M0	
D2.2: Many submissions processed and published at phase 1 and phase 2	2.1	M12, M24	Underway		
D2.3: Help service operational	2.2	M1 – M24	Delivered	Operational since M0	
D3.1: Updated documentation, standards, tools, and procedure for NRT and RT data published	3.1	M12, M24	Will be integrated in Interim Report		
D3.2: Connections with new NRT and RT monitoring stations operational	3.1	M12, M24	Underway		
D3.3: Upgraded Viewing service for NRT and RT stations operational	3.2	M6 – M24	Underway		
D4.1: Inventory of data providers and use cases engaged in EMODnet Ingestion	4.1	M12, M24	Will be integrated in Interim Report		
D4.2: Updated promotion material	4.3	M12, M24	Will be integrated in Interim Report		
D4.3: Pilot cases selected for interviews about licensing data	4.2	M9	To do		
D4.4: Interviews done with selected pilot case stakeholders	4.2	M16	To do		
D4.5: Pilot case Workshop hosted	4.2	M22	To do		

D4.6: Final Webinar hosted	4.2	M23	To do		
D4.7: Roadmap for harmonisation of Data Management within Offshore Licensing Procedures	4.2	M24	To do		

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.				
EM-768: An epic to collect together JIRA for the DIP centralisation	Pending	Folder to follow all DIP migration activities	End September 2024	
EM-783 Risk Analysis on using ECAS for whole DIP system	Pending	CP Team to analyse; results also relevant for DIP Submission service	End June 2024	
EM-305/322 Content Inventory Data Ingestion	Pending	CP team has made a narrative compilation and composed a first Ingestion narrative at CP test site for check and completion by DIP; Ingestion is underway with a revised structure and drafting the narrative	End August 2024	
EM-893 Setup EMODnet styled page for the submission service	Resolved	CP team to set up an example page with the EMODnet/Europa styling header/footer/page styling	End Jan 2024	
EM-888 Ingestion metadata harvesting by CP Geonetwork - issues to be checked by CP	Resolved	Harvesting of Ingestion XML is operational	Early March 2024	
EM-965 Grafana gave no data for 2024	Resolved	Grafana gave no KPI info for 2024; recently resolved	June 2024	

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
EMODCOM-176 Link to guideline document is no longer working	Resolved	Link to DM Guideline doc for EU Projects gave a 404; recently repaired	June 2024	
EM-976 Not all details of Ingestion records are displayed	Pending	CP Team to check and update the presentation	End July 2024	

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
in the HTML pages of the Central Products Catalogue		pages of the Central Products Catalogue		
EM-912 New Ingestion layer – validated platforms	Pending	New map layers for Physics as part of Ingestion	End July 2024	
EM-911 New Ingestion layer – as-is platforms	Pending	New map layers for Physics as part of Ingestion	End July 2024	

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

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

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	Submission Viewing service	The total number of new phase 1 + phase 2 submissions in the current quarter is 46 and of this 39 were elaborated to phase 2. The overall number of published submissions went from 1503 to 1548.
B) Usage of data in this quarter	Cloud storage of Submission Viewing service	The total number of download transactions is the same as previous quarter and with 1.000 downloads quite high.
3. Internal and external organisations supplying/approached to supply data and data products within this quarter	Submission Viewing service	46 new data submissions were received from 11 organisations, mostly academic and research.
9) Visibility & analytics for web pages	Grafana	The visits to the Homepage, Submission service and Viewing service are slightly decreasing over the quarter. The homepage is most visited.
10) Visibility & analytics for web sections	Grafana	The Viewing Service which publishes the completed submissions generates most traffic, but is decreasing slightly over the last quarter. Overall, there is no high traffic on the site, but is also not to be expected considering the function of EMODnet Ingestion in the EMODnet framework.
11) Average visit duration for web pages	Grafana	The average visit duration for the Homepage is about 30 seconds.

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