



EMODnet



European Marine
Observation and
Data Network

EMODnet Thematic Lot n°1 – Bathymetry

EASME/EMFF/2019/1.3.1.9/Lot1/SI2.836043

Start date of the project: 20/12/2022 (24 months)

Centralisation Phase

Quarterly Progress Report 1

Reporting Period: 01/01/2023 – 31/03/2023



Contents

1. Highlights in this quarter	3
2. Identified issues: status and actions taken.....	10
3. Communication assets	12
4. Monitoring indicators.....	14
5. Annex: Other documentation attached	16

Disclaimer

The information and views set out in this report are those of the author(s) and do not necessarily reflect the official opinion of the CINEA or of the European Commission. Neither the CINEA, nor the European Commission, guarantee the accuracy of the data included in this study. Neither the CINEA, the European Commission nor any person acting on the CINEA's or on the European Commission's behalf may be held responsible for the use which may be made of the information.

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:**

During the reporting period, the number of survey data sets has increased slightly from 41315 to 41427 CDI entries, while the number of Composite DTM entries has increased from 274 to 277. Gathering and population of new survey data sets will gain more momentum soon as part of the new contract for which it is planned to bring in many new data sets in the period till end 2023. Next to survey data sets and composite DTMs, this will also concern producing and including more Satellite Derived Bathymetry (SDB) files for coastal areas without survey coverage.
- 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:**

Following all the work undertaken by the data providers and basin coordinators to gather and produce gridded dataset and integrate them into basin compilations, these have been integrated in the final product (20/12/2022) which was made available for final checks and testing to the members of the consortium. Due to the launch of the EMODnet Central Portal from 23rd January 2023 and adoption of new ways for publishing, the official release of the new **2022 version of the EMODnet DTM** has been postponed to 13th April 2023. Compared to the 2020 release, a total of **21.790** unique references to CDI entries and Composite DTMs entries are used in the overall DTM versus **16.260** in the 2020 version. The DTM is an integration of eleven regional DTMs which were prepared by regional basin coordinators, after selecting and merging pre-gridded and pre-processed datasets as received from data providers. Moreover, a twelfth region has been added, resulting in a DTM for the Caribbean region. The 2022 DTM can again be downloaded in several formats, and includes also a version with MSL vertical reference next to LAT.

The **High Resolution DTM layer** has also been expanded and now covers **308 HR-DTMs** which can be viewed and downloaded. Related metadata for all DTM tiles and HR-DTM files have been populated in the Sextant Products Catalogue CSW and has been harvested into the Central Portal Products Catalogue. The resolution of HR-DTMs varies between 1/32 and 1/512 arc minutes, depending on local data policy of data providers. The new DTM layers are provided to the Central Portal Map Viewer by means of OGC services. For performance reasons, a WMTS service has been added, while the WMS – WFS are continued to be used for interrogating features at the maps. The HR-DTM map layer allows to zoom deeper than the common DTM layer and by clicking users will retrieve the direct download links. For retrieving the DTM tiles, an extra DTM grid map layer has been added which facilitates users to select the DTM tiles and to choose from the different data formats. Also, for each map layer there is a direct metadata link to the associated records in the CP Products Catalogue. The CP map viewer presents the 2022 versions of all DTM layers, while the Product Catalogue also lists and allows downloading of the DTM tiles of the earlier 2016, 2018, and 2020 DTM versions.

Next to this structured downloading of DTM tiles and HR-DTM files, users can select an area of interest for downloading. This is arranged through the CP ERRDAP service in which an integrated DTM 2022 file (NetCDF V4) has been loaded of more than 130 GB. The new 2022 release includes updates of the

source reference, quality index, and satellite derived coastlines layers. These are also available for the Caribbean region DTM.

Task 2 activities by data providers for processing and pregridding new survey data sets and composite DTMs using the GLOBE software will start in September – October 2023 with a training workshop, also to be joined by the regional coordinators, to refresh how to use GLOBE software and to give instructions on the upgraded functionality of GLOBE. The preparation of data input by data providers for the regional DTMs will continue till end 2023, so that the regional coordinators can work on the compilation and generation of the 12 regional DTMs early 2024 till summer 2024. While, integration and publication of the new 2024 EMODnet DTM is then planned in the period after summer 2024 till end 2024. Activities by data providers for additional HR-DTMs are planned to take place in the first half of 2024.

The new 2022 release includes an update by Shom of the Quality Index layer which provides for each location of the DTM a vertical precision indicator, a horizontal precision indicator, an indicator of the age of the local survey, indicator of the purpose for which the survey was acquired and a composite or all these indicators. The QI map layers have been integrated in the OGC web services and are available in the CP Map Viewer. The associated report has been included in the CP reports catalogue. For the new contract, Shom will prepare an updated QI once the 2024 DTM is available internally.

The 2022 DTM also includes the best-estimate digital coastlines for different tidal reference levels (LAT (Lowest Astronomical Tide), MSL (Mean-Sea-Level), and MHW (Mean-High-Water)) as produced by Deltares. The data set can be downloaded as vector shapefiles. It covers the entire coastline of Europe and part of the Caribbean. The production process has been summarized in a report which is included in the CP reports catalogue. For the new contract, Deltares will update and refine the best-estimate European digital coastlines for the 3 vertical levels. This concerns further optimizing of the applied methodology, the GTSM tidal model, and introducing use of new data sources.

The 2022 inventory of national legal baselines and coastlines of EU member states has also been included in the CP reports catalogue, while for the new contract, Deltares will maintain this inventory of national baselines and coastlines and produce in time the 2024 version.

Finally, the high-resolution tidal bathymetry for the Venice Lagoon and surroundings was included as a new HR-DTM in the 2022 release. For the new contract, Deltares will focus on studying if and how to get a better insight in the bathymetry between coastline and foreshore using GTSM model, satellite images, and AI for selected study areas.

For the new contract, further upgrading of GLOBE software is planned by Ifremer, following requests and feedback from consortium members. Furthermore, IFREMER will work on improving and supporting the use by regional coordinators of the Collaborative Virtual Environment (CVE) at the DATARMOR HPC facility. The 2022 DTM will be loaded, allowing to inspect the differences between the 2020 and 2022 releases.

Furthermore, CORONIS in the new contract will work on upgrading the 3D visualisation software, and including options for highlighting and visualising the individual HR-DTMs on top of the general bathymetry background map.

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

The migration from the thematic Bathymetry portal to the EMODnet Central Portal has been finalised and the new Central Portal was launched at 23rd January 2023, while the publishing of the EMODnet Bathymetry website was halted at the same date. Redirects were configured to make sure that users following old URLs will be redirected to the Central Portal.

EMODnet Bathymetry now continues to operate and maintain several catalogue services and web services, which are being harvested and/or directly feeding the Central Portal services. The services are following INSPIRE principles and their operations are being monitored from the Central Portal with good results.

EMODnet Bathymetry is regularly testing the functionality of the Central Portal and following up feedback from users. This is aimed at spotting possible bugs in the back-office systems of EMODnet Bathymetry or at the front-office interfaces of the Central Portal. Any identified bugs are reported to JIRA for further action. Also, shortcomings or requests for improved functionality are being gathered from internal consortium testing and following user feedback and these are submitted to the CP team through JIRA as wishes for future developments. Most will be directed towards optimisation of functionalities, while also additional functionalities might come forward.

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

As indicated under Task 2 and Task 3, a lot of activities have taken place in the previous contract for arranging the migration from the thematic portal to a Central Portal. This was originally done around the 2020 EMODnet DTM version. While the publishing and release of the new 2022 DTM version has been postponed till April 2023, not to hinder the official launch of the new EMODnet Central Portal at 23rd January 2023 and the following EMODnet hackathon. Also, the publishing a new version of the DTM for the first time in the Central Portal took quite some efforts and synchronisation between EMODnet Bathymetry and the CP team. However, it was a good learning curve and it is expected that the publishing of the next release end 2024 will go much smoother, also because it is planned that the thematic groups will get more access to the online CP Content Management System and use can be made of the machine-to-machine services that have been adapted and configured for this first release updating.

- **Task 5 - Contributing content to dedicated spaces in Central Portal:**

Each thematic has its own dedicated space at the Central Portal where it publishes its so-called 'narrative'. The maintenance is done by sending an updated document to JIRA which is then processed by the EMODnet Secretariate. In the near future, the thematic lots will get more direct access to the EMODnet CMS (Drupal) for performing maintenance activities. In the reporting period, a number of additional reports and guidelines were submitted for inclusion in the CP reports catalogue. This has been done by the EMODnet Secretariate. EMODnet Bathymetry team will provide new and updated content, where required and appropriate.

- **Task 6 - Ensure the involvement of regional sea conventions:**

Secretariats of the Regional Sea Conventions are kept up-to-date of the EMODnet Bathymetry services, inter alia through regional partners. The 2022 EMODnet bathymetry full grid release, launched in April 2023, provides a good opportunity to reinforce the good relationships with the secretariats of the Regional Sea Conventions who are kept up-to-date of the EMODnet Bathymetry services and products, and where possible, engaged in wider promotion and contributing to mobilising more potential data providers and product users.

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

On a global scale, good synergy is continued with GEBCO and the Seabed 2030 project. In this context, George Spoelstra (GGSgc) and Federica Foglini (CNR), both members of the EMODnet Bathymetry consortium, act as Chair and Vice-Chair of the GEBCO subcommittee TSCOM (Technical Subcommittee on Ocean Mapping). One of their targets is to promote adoption of the metadata – data management practices in GEBCO and Seabed 2030, following SeaDataNet CDI standards and services, as applied by EMODnet Bathymetry. In an early stage, the new 2022 EMODnet DTM has already been shared with GEBCO, for inclusion in their next release. While, EMODnet has made use of the latest 2022 GEBCO release in the EMODnet 2022 DTM. Also, the collaboration with IHO will be continued and leads to data contributions by several other national hydrographic services beyond the consortium partners.
- **Task 8 - Monitor quality / performance and deal with user feedback:**

The overall performance of the portal and its services is continuously measured and its results are reported in the separate indicators spreadsheet. It demonstrates that Bathymetry and its services and products continue to be quite popular, also in the new setting on the Central Portal. Currently, the visitor and download statistics are lower than before at the thematic portal, but it is expected that users will get more acquainted with the new portal services overtime and that traffic and downloading will then increase. Considering the release of the new 2022 DTM in April 2023 and the associated promotion by press release and later article(s) in magazines, this should drive more users to the site. The user feedback is at the same level as earlier and most questions are from regular users asking about how to do queries and downloads in the new configuration. Also, some earlier functions are being missed. These are put on a wish list from EMODnet Bathymetry for future developments and will be included in JIRA. From the response it is also clear that there is a need for a Help file and/or some tutorials about how to operate the various new CP services.
- **Task 9 - Maintain the existing thematic web portal for a maximum of six months from the start of the project:**

The earlier EMODnet Bathymetry portal was maintained till 23rd January 2023 when the actual migration was finalised. The Central Portal is now the shop-window, while EMODnet Bathymetry is maintaining the operation and maintenance of the various Bathymetry catalogues and web services that feed into the Central Portal.
- **Project management:**

The existing contract for EMODnet Bathymetry has been extended by EU CINEA for another 2 years without the need for a new tender. There was only an amendment necessary to include UK partners now as subcontractors and now longer as full partners due to Brexit. Therefore, Shom as coordinator has adapted the prevailing Consortium Agreement to be signed by all partners, which is underway.

Moreover, Shom has concluded subcontracts with the UK partners. The new contract phase will run from 20 December 2022 to 20 December 2024.

Shom and MARIS prepared the Q4-2022 progress report which was reviewed and accepted by the EU CINEA. The coordinating team, led by Shom and MARIS, has also drafted the final report, including contributions and deliverables from WP and Task leaders, and has prepared the transfer protocol. All these deliverables were transferred to the EU for acceptance, including the final invoice.

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	M4, M7, M10, M13, M16, M19, M24,		M4	
D1.2: Annual Interim report	WP1	M12			
D1.3: Final report	WP1	M24			
D1.4: Plan for service continuity, incl. docs and sources	WP1	M24			
D2.1: Upgraded guidelines for data pre-processing and population of metadata	WP2	M6			
<i>D2.2i: Training Workshop for data pre-processing and metadata population</i>	WP2	M9			
D2.3: Pre-processed survey data sets and included in CDI Service	WP2	M12			
D2.4: Pre-processed composite DTMs and included in Sextant service	WP2	M12			
D2.5: Satellite Derived Bathymetry data sets and included in Sextant Service	WP2	M12			

D3.1: Upgraded guideline of EMODnet methodology for DTM production, including using prototype CVE	WP3	M9			
<i>D3.2i: Upgraded Globe software</i>	WP3	M9			
<i>D3.3i: Training and intercalibration Workshop</i>	WP3	M11			
<i>D3.4i: Processed and pre-gridded data sets as input for RDTMs</i>	WP3	M14			
<i>D3.5i: Regional DTMs with common resolution of 1/16 arc minutes grid</i>	WP3	M17			
<i>D3.6i: Best version HR DTMs for coastal waters and hotspots</i>	WP3	M20			
D3.7: New EMODnet DTM incl Quality Index and loaded in EMODnet web services for viewing and downloading	WP3	M23			
D3.8: HR-DTMs loaded as separate layer in EMODnet web services for viewing and downloading	WP3	M23			
D3.9: Source reference layer in EMODnet web services to link to CDI and Sextant Catalogue services	WP3	M23			
D3.10: Refined best-estimate European digital coastlines in EMODnet web services for a range of vertical levels	WP3	M22			
D3.11: Updated Inventory of existing and ratified baselines and registered claims /	WP3	M22			

disputes under UNCLOS, for European countries at the portal					
D3.12: Methodology for assessing bathymetry between coastline and foreshore	WP3	M23			
D4.1: Standard machine-to-machine services delivered for common functionalities	WP4	M3			
D4.2: Dedicated machine-to-machine services adapted / delivered for special functionalities	WP4	M6			
<i>D4.3i: CVE optimised for regional coordinators</i>	WP4	M14			
<i>D4.4i: Globe software + GGSGC workbench upgraded with extra functionality</i>	WP4	When required			
D5.1: Operational Help-desk	WP5	continuously			
D5.2: Monitoring data about visits and usage	WP5	continuously			
D5.3: Promotional material and up-to-date thematic space at central portal	WP5	continuously			
D5.4: Presentations at relevant conferences	WP5	Regularly			

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
EM-715 EMODnet Bathymetry URL direct to new EMODnet portal	Resolved	Redirect matrix made and deployed		23 Jan 2023
EM-82 Metadata and data URLs	Resolved	Adapted URLs in OGC web services		March 2023

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
EM-733 Add Bathymetry WMTS service info on CP webservice page	Resolved	Done by CP Team		March 2023
EM721 Rate limiting causes loading issues for tiled layer(s)	Resolved	Done by CP Team		March 2023
EM624 Question about deep links	Partly resolved	Awaiting CP team actions to provide solution	Medium	
EM-679 2022 Bathymetry DTM publication	Resolved	Done in cooperation of EMODnet Bathymetry and CP team		13 April 2023
EM-584 Supply list of rational file formats for Bathymetry downloads	Pending	Formats for ERDDAP download provided, but CP team has to undertake action for their use. ERDDAP now gives many non-usable file types	Urgent	

EM-764 Including new technical reports to CP reports catalogue	Resolved	Done by CP Team		April 2023
EM-1565 Where can we find the helpdesk form for users	Resolved	Answered by CP Team		March 2023
EM-755 Map Viewer Cache and Display issues	Resolved	Done by CP Team		March 2023
EM-703 Update of bathymetry narrative	Pending	To be done by Bathymetry in cooperation with CP Team		
EM-700 Update Bathymetry partner list in CP	Done	Done by CP Team		Jan 2023
EM-658 Problem with coastline	Pending	Awaiting CP team check if resolved		

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
13/04/2023	Public release	https://emodnet.ec.europa.eu/en/emodnet-releases-upgraded-bathymetry-digital-terrain-model-dtm-2022			Yes

--	--	--	--	--	--

For a compressive 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	There is a moderate increase of CDIs. This is due to the fact that Bathymetry has just started a new phase of the contract. The data population takes place over the full first year.
What is your opinion on the data coverage within EMODnet for your thematic?	Considering population of CDI and Sextant catalogues	Overall, EMODnet Bathymetry has brought together an excellent data collection (CDIs and Composite DTMs), covering all European sea regions and compiled by 65 data providers. In the coming year this will be further expanded.
B) Usage of data in this quarter	CDI RSM shopping ledger service	The number of downloaded CDIs went down considerably compared to previous quarter, but that quarter was exceptional. Number of users decreased to 7 from 17 in previous quarter.
2. Current status and coverage of total number of data products A) Volume and coverage of available data products	Statistics from downloading at the Bathymetry system	The 2022 DTM has been released which comprises 58 DTM tiles in 8 different formats. This covers the European seas and now also the Caribbean region. Moreover, additional HR-DTMs have been published as well as an updated version of the Satellite Derived Coastlines for Europe and Caribbean.
B) Usage of data products in this quarter	Analysing download statistics	The number of DTM tile downloads is again considerable, but lower than normal. Most probably, users have to find their way in the new Central Portal. The number of downloads of DTM tiles has increased, most probably because the downloading has been made easier through the CP Products Catalogue. The press release for the new 2022 DTM has been launched in April 2023, so we will see if that will drive up the number of downloads in the coming quarter, what we hope and expect. The number of

		WMS requests is stable and also very high, while the number of WFS requests is also stable.
3. Internal and external organisations supplying/approached to supply data and data products within this quarter	CDI catalogue service	These are the new entries for the new contract. Coming 9 months we expect considerable more entries as part of the first year activity for gathering new data sets
5.1 Daily number of page views of EMODnet Thematic entry page	Europa Analytics	Daily number of page views of the Bathymetry narrative is around 200. This is the static content. Unfortunately, we cannot see how the bathymetry map layers and products are visited
5.2 Quarterly total number of visitors, page views, unique page views and percentage of returning visitors	Europa Analytics	The quarterly numbers are reasonable as the bathymetry narrative is a static story. See the earlier remark under 5.1. The numbers are much lower than previously as thematic portal. Hopefully, the new 2022 DTM release will attract more traffic.

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

5. Annex: Other documentation attached

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