EMODnet Thematic Lot n° 0 – High Resolution Seabed Mapping (HRSM)

EASME/EMFF/2015/1.3.1.7/SI2.742125
Start date of the project: 20/12/2016 - (24 months)

EMODnet Phase III – Quarterly Progress Report (8)

Reporting Period: 01/10/2018 – 31/12/2018

Contents

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1 Highlights during the reporting period

- **Task 1 - Gather and give access to bathymetric survey data**: data providers finalised their gathering and making bathymetric data sets ready for transfer and use by the basin coordinators. Globe software was used for processing and pre-gridding. Guidance and support was given by MARIS and IFREMER for populating the CDI and Sextant metadata catalogues. Total number of CDIs has slightly increased from **27158 to 27168** records and Composite DTM entries has increased from **143** to **147.** There are contributions from **51** data providers. A snapshot of the overall CDI coverage shows that also many data sets are now included for the Baltic Sea and the Arctic region.
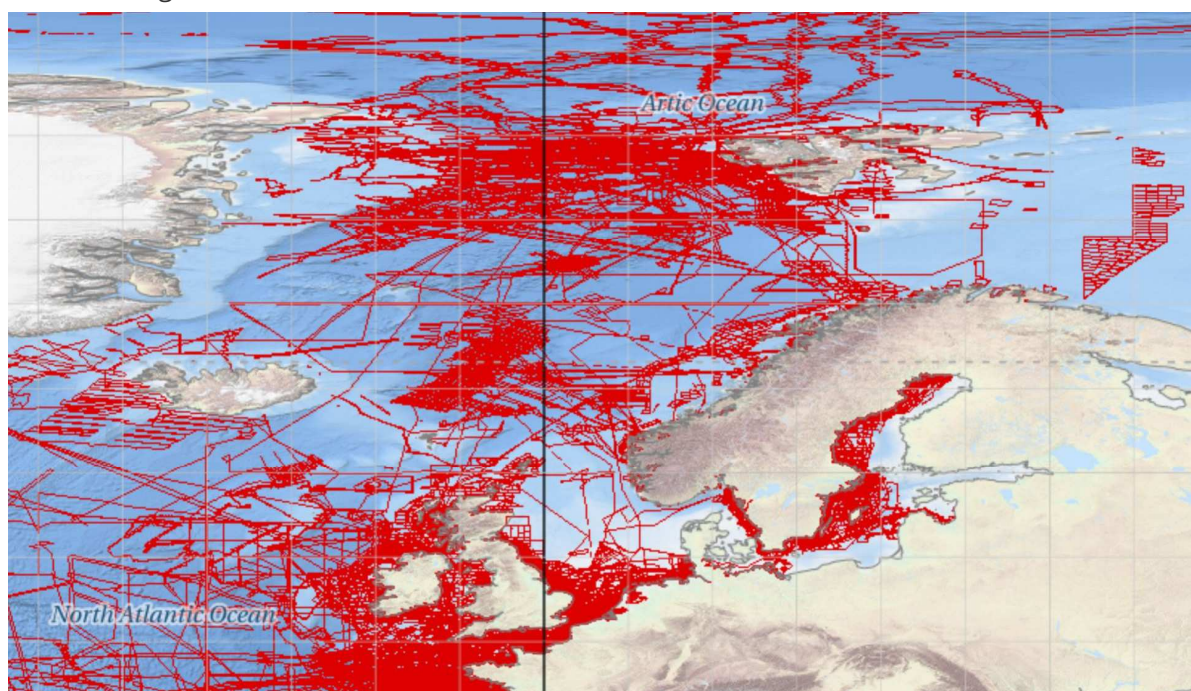

Figure: Snapshot of CDI coverage in Northern Europe

- **Task 2 - Compile a multi-resolution digital terrain model of European seas:**
  The latest version of the EMODnet DTM (Digital Terrain Model) has been released 24th September 2018 and is a great success with its improved resolution of 1/16 * 1/16 arc minutes (circa 115 * 115 m2) and its increased number of used of 9369 unique CDI references and 87 DTM references. It is available free of charge for viewing and downloading by users, and sharing by OGC web services from the EMODnet Bathymetry portal.

  In the reporting period great effort has been dedicated to building an additional collection of even higher resolution composite DTMs for selected areas. Therefore following the project progress meeting in October 2018 in Split – Croatia the data providers have worked on identifying, processing and making available higher resolution bathymetry data sets into HR-DTMs files. The processing of these files has been done using the Globe software and applying the EMODnet methodology which comprises including references to survey data by CDIs and composite DTMs by CPRDs. The resolution of the HR-DTMs files conforms to the EMODnet grid range and lies between 1/32 and 1/512 arc minutes, depending on the local data policy of the data provider. All HR-DTMs have also been described by their data providers with metadata with support of IFREMER in a special section of the Sextant Catalogue, while internally in the files

references are made to CDI and CPRD. The consistency of all these references has been checked by GGSGC, MARIS and IFREMER. In total circa 200 HR-DTM files have been provided which will be made available to users through an additional HR-DTM layer in the Bathymetry Viewing and Download service.

Generating an updated and improved source reference layer with quality indication. Along with the full DTM comes a layer indicating the local contribution of each of the data sources known as source layer. Polygons forming this layer are individually related to metadata. As part of the information provided by the data contributors in the metadata, characterization of the dataset by vertical, horizontal and temporal indicators is provided. A fourth element of characterization relates to the purpose of the survey and the respect of commonly adopted standards (namely IHO S 57).

QI_horizontal	QI_vertical	QI_age	Purpose of the survey Respect of a standard
-1 : Multisources – unable to assess	- 1 : Multisources – unable to assess		
0: Unknown or > 500m (That is grossly equivalent to TACAN, OMEGA systems or similar)	0: Unknown, plummet, leadline	0 : > 30 y	0 : Purpose of the survey unknown (historical survey with no associated information).
1: between 500m and 50m (That is grossly equivalent to LORAN, DECCA systems or similar)	1: SBES Low Frequency, SDB (similar than 2+5%d)	1 : 10-30 y	1: Transit and/or opportunity
2: between 50m and 20m (That is grossly equivalent to natural GPS systems)	2: MBES low frequency (lower than 100kHz) (similar than 1+2%d)	2 : 5y -10 y	2: Bathymetric/morphologic survey
3: < 20m (GPS with correction) (That is grossly equivalent to aided GPS system DGPS, RTK …)	3: Lidar, SBES High Frequency	3 : 0y – 5y	3: Hydrographic survey or compatible with hydrographic standards
	4: MBES High frequency (higher that 100kHz) (1+0.5%d)		

Definition of the EMODnet bathymetry QI

Table 1: Meaning of individual indicators for the vertical, horizontal, temporal characteristics along with description of the purpose of the data acquisition for each individual surveys.

Following preliminary analysis, it was noticed that a certain number of data sources were not properly filled and needed individual corrections. This has been finalised in December 2018. While, each of the individual indicators can be geographically displayed (source reference colour-coded by the value of the selected indicator), a synthetic descriptor composed of the 4 components described above is also provided to enable the user to assess the confidence he/she can have on the DTM. At the present stage, this unique descriptor consists of a sum of the values given for each of the individual descriptor, all brought to 100.
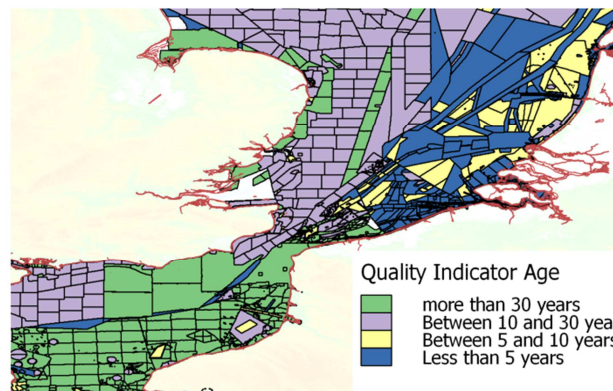
Figure 1 Geographical display of the Age indicator for the Channel and the south-western Norh Sea.

Both ways of providing confidence elements about the DTM (either using individual indicators, or using the combination) are currently being implemented on the portal.

- **Task 3 - Establish best-estimate European digital coastlines and compile overview of legal baselines**: Deltares has finalised a report presenting baseline and coastline data collected from 21 national authorities amongst partners. Numerous partners have provided comments and concerned. As preliminary statement, a disclaimer has been written to stress out the prerogatives that national states have on this type of information, including legal implications. It also states that the main objective of this report is to provide the contracting authority with an inventory of these available dataset at a fixed date in time.

  Production of best-estimate coastlines determined from satellite data (described in more detail in previous quarterly reports) associated with tidal level modelling has been achieved and documented in a second report from Deltares. A comparison with existing coastline objects (Open Street Map, national coastline) is providing arguments on the benefits of this methodology:

  - The homogeneity in production: the generation of the coastline objects is based on the same methodology anywhere along the European coasts.

  - The flexibility of the selection by the user of the coastline object that best satisfies his/her definition and usage of the coastline delineation, being the intersection either of the Lowest Astronomical tide level, the Mean Sea Level tide level or the Mean High Water tide level with the topography.

  - The level of detail is bound to the resolution of the satellite sensor (e.g. 10m for Sentinel 2)

  - The temporal detail: the coastline products are based on the interpretation of recent satellite images. Update can be as frequent as the satellite revisit frequency allows it (e.g. for Sentinel 2, the revisit frequency is 5 days, excluding cloud coverage).
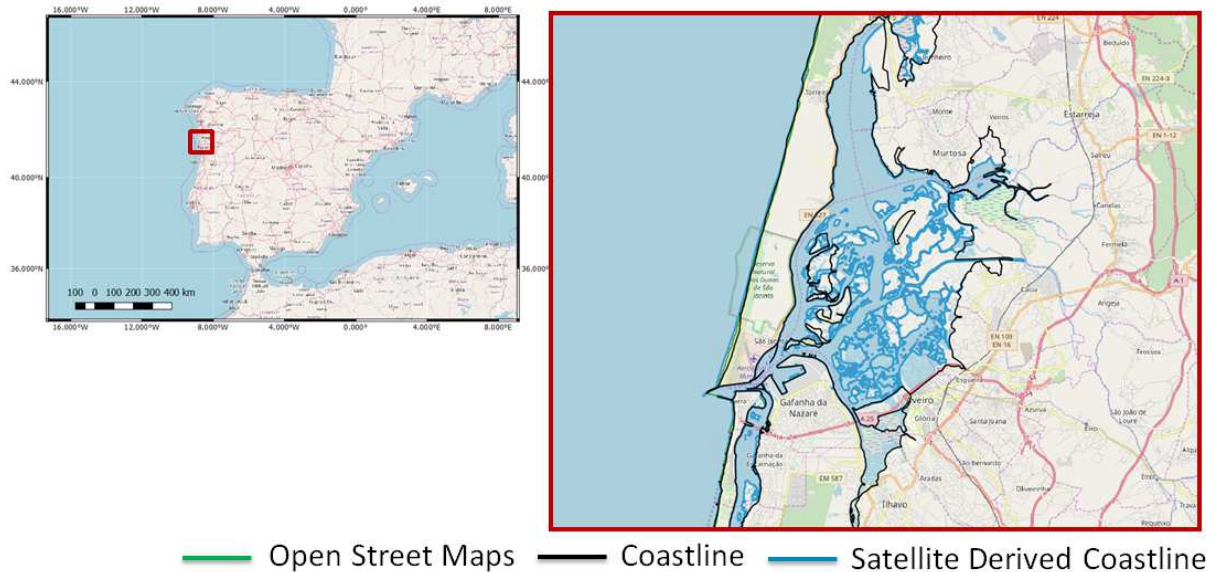
Figure 2 Portugal (Aveiro): comparison between SDC, OSM and coastline from offical sources

Finally, improvements have been undertaken for the Global Tide-Surge Model (GTSM) of Deltares, which now enables the production of a conversion surface between the Lowest Astronomical Tide (LAT) to the Mean Sea Level (MSL) vertical references. With this conversion, the new DTM is now being generated at the MSL reference, next to the existing LAT reference. With these two vertical references, the EMODnet bathymetry portal will allow the user to get access to the DTM at the vertical reference of his/her choice.

- **Task 4 - Establish machine-to-machine connections to data and data products**: The Bathymetry Viewing and Download service includes an extra functionality for 3D viewing (in Beta mode) of the latest EMODnet DTM. This was developed by GGSGC in cooperation with CORONIS who has generated the 3D model from the new DTM. In the reporting period CORONIS has documented the developed 3D software and has made the software available at GitHub (https://github.com/coronis-computing/emodnet_qmgc). The documentation and GitHub link will be made available at the Bathymetry website.

Great progress has been made with developing the additional HR-DTM layer in the Bathymetry Viewing and Download service (see also Task 2). The circa 200 HR-DTM files as prepared by data providers have been integrated by GGSGC in the overall grid and switching on the HR-DTM layer in the Bathymetry Viewing and Download service will allow users to identify the HR hotspot areas by a demarcation, to click on an HR hotspot to retrieve its metadata from the dedicated Sextant Catalogue as well as the constituent CDI and CPRD references, and to zoom in locally from the overall DTM resolution of 1/16 arc minute grid to the highest resolution as provided. The HR-DTM files can also be downloaded as EMODnet emo files through the shopping mechanism with user and reason registration which has been set up earlier for downloading the new DTM tiles. The HR-DTM layer is now in test mode and will be made public on short term.

The Satellite Derived coastlines (see also Task 3) will be made available to users through an additional SD Coastlines layer in the Bathymetry Viewing and Download service. Users can switch on the layer and view the SD coastlines for different vertical reference levels. Digital files of the SD coastlines can also be downloaded through the shopping mechanism with user and reason

registration which has been set up earlier for downloading the new DTM tiles. The digital zip files include a disclaimer. The SD coastlines layer and download service is in test mode and will be made public on short term.

The pilot Collaborative Virtual Environment (CVE) as led by IFREMER has been finalised. The pilot focused on generating 2 neighbouring RDTMs (West Med and Central Med) and 1 additional RDTM (Bay of Biscay) using online Globe (in the cloud) and involving only basin coordinators, namely IFREMER, CNR-ISMAR and Shom. IFREMER has reserved a storage space of 3TB on the DATARMOR cloud infrastructure and all relevant pre-processed and pre-gridded data sets have been loaded that have been used for the new regional DTMs. IFREMER has also set up 2 ways for working with the GLOBE software on the cloud: 1) as a full package and installed as a Docker container instance and 2) as a set of OGC WPS services for selected GLOBE functions. Examples of both had been made available to CNR-ISMAR and Shom and have been successfully tried out. The pilot has provided insights into the practical feasibility of adopting the cloud for the EMODnet Bathymetry workflow and where it should be improved. Also it demonstrated how two basin coordinators for neighbouring regions can collaborate, in particular for establishing seamless boundaries between their two regional DTMs. This experience will be used in the new EMODnet phase for upgrading the pilot set-up to an operational configuration which will be used by a few Regional Coordinators for generating new Regional DTMs.

- **Task 5 - Maintain a web portal**: under Task 4 already a lot of activities are described which were related to integrating the new DTM into the web portal and its services. In addition editorial activities took place to update several pages of the web portal for announcing and describing the new EMODnet DTM and its extended features. The web portal has been operating without any disturbances, also when there was quite a peak of visitors after the press release circulation. Furthermore news and promotion items have been added regularly.

- **Task 6 - Operate a help-desk**: several questions were received and answered by the helpdesk. The user questions received and answered are detailed in chapter 3 and Annex 1.

- **Task 7 - Achieve international interoperability**: activities are on-going as earlier reported in the 'Report on Interoperability and International Collaboration' which was submitted to the EU together with the 1st Annual Progress report. With the benefit of the new EMODnet Bathymetry grid published in September 2018, international collaborators are planning updates of their respective global products (GMRT grid updated in December, GEBCO grid to be updated shortly).

- **Task 8 - Achieve INSPIRE compliance**: a further dialogue has taken place with the INSPIRE team from JRC at the TG-DATA meeting in December 2018 in which MARIS participated. At the meeting JRC indicated to undertake measures for making the INSPIRE implementation more flexible and forthcoming to change requests as heard from several communities in order to achieve more success. This seems to be positive for the change requests which have been submitted together with the SeaDataCloud and EMODnet Chemistry projects.

- **Task 9 - Monitoring of performance**: the overall performance of the portal and its services is continuously measured and its results are reported in the separate indicators spreadsheet.

- **Task 10 – Project management**: The coordinator and technical coordinator prepared the 7th quarterly progress report which was accepted by EU (EASME and DG MARE). The final plenary project meeting has been held the 30-31/October 2018, in October 2018 in Split – Croatia.

During this meeting, remaining actions needed to finalise the project were discussed, while the technical achievements were also reminded to the group. Final reporting is currently undergoing and should be delivered at the latest by the end of February. Finally, on the 22nd of November, the coordinator was informed of the successful bid presented by the consortium, as follow-on of EMODnet Bathymetry.

2 Challenges encountered during the reporting period

Main challenge	Measures taken
Establishing a High Resolution DTM collection and layer for viewing and downloading	The data providers have all used Globe software and the common EMODnet methodology to prepare High Resolution DTM files which have been described with metadata in a separate Sextant catalogue section. The resulting HR-DTM files of different resolutions have been integrated by GGSGC into an additional layer for viewing and downloading. The latter has been integrated in the existing download mechanism for DTM tiles.
Establishing the European coastlines	As major input use is made of satellite images from Sentinel and Landsat, next to in-situ data. A European tidal model is used to cope with tidal elevations and to determine the coastlines at different references. Issues are still areas with ice coverage and complex intertidal areas whereby it is difficult to determine the coastlines.

3 User Feedback

Date	Organisation	Type of user feedback (e.g. technical, case study, etc.)	Response time
2018-10-01	??,??	Question about tile overlap	Same day
2018-10-04	Atkins Global, UK	Question about handy tool for splitting large files	Same day
2018-10-15	??,??	Problem with 3D viewer	Same day
2018-10-10	ARPAE, Italy	Identified issue with NetCDF tiles	Few days later
2018-10-22	FCOO, Denmark	Identified issue with NetCDF tiles	Same day
2018-10-24	NIOZ, Netherlands	Question about LAT – MSL conversion	Week later
2018-11-01	UN-IHE, Netherlands	Question about coastlines	Same day
2018-11-01	UKHO, United Kingdom	Identified issue with NetCDF tiles	Same day
2018-11-05	Spirit Energy, United KIngdom	Question about UTM versus Lat-Lon	Week later
2018-11-18	NGI, Norway	Question about use of Mapper software	Few days later
2018-12-04	ESAT University, Tunesia	Looking for a job	Few days later
2018-12-11	STFC, United Kingdom	Issues with ordering	Same day

Annex 1 gives more details.

4 Meetings held/attended since last report

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.)
30-31st/10/2018	Final EMODnet HRSM (Phase 1) meeting, Split, Croatia.	O	Progress meeting with the full consortium. Results were discussed along with final actions needed to finalise the contract.
20-21/11/2018	10th EMODnet Steering Committee, Brussels, Belgium.	A	Oral presentation on progress made by the consortium.
21/11/2018	9th IHO-EU Network Working Group, Brussels, Belgium.	A	Oral presentation to the European hydrographic offices on the results of the EMODnet Bathymetry project. Discussions on limitation and need for disclaimers on the products.
13-15/11/2018	EMODnet Seabed Habitat progress meeting, Brest, France.	A	Oral presentation on the DTM update and the generation of Quality indicators. Discussion on the use or the later for Seabed Habitat confidence assessment.
5/12/2018	7th meeting of the Technical Group on Marine Data, Copenhagen, Denmark.	A	Mentions of the EMODnet Bathymetry portal and metadata content as a support for MSFD. Discussions on INSPIRE implementation.
SUM of O		1	**(Total # of meetings organised)**
SUM of A		4	**(Total # of meetings attended)**

5 Outreach and communication activities

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.)
5-7/11/2018	International conference on Marine Data and Information System (IMDIS), Barcelona, Spain	Oral presentation for practitioners of marine geographic information systems.	Ca 200 participants (data practitioners from research institutes or governmental bodies).
21-23/11/2018	EOOS Conference 2018 - The European Ocean Observing System, Brussels, Belgium.	Poster and numerous contributions in presentations to a public of ocean observing stakeholders from the scientific community, public authorities, industry and civil society.	Ca 200 participants
14/11/2018	GEBCO – Map the Gaps, Canberra, Australia	Oral presentation dedicated to international experts in bathymetry.	Ca 200 participants
10-14/12/2018	AGU Fall Meeting, Washington, USA	Poster dedicated to the international community of R&D in earth, oceanographic and spatial sciences.	Ca 24,000 participants from 113 countries
11/12/2018	EMODnet Bathymetric data in practice	Video, describing the benefit of EMODnet Bathymetry	Displayed on youtube
7/12/2018	Nippon Foundation-GEBCO Seabed 2030 Project regional mapping meeting for Atlantic and Indian Oceans - Palisades, New York, USA	Oral presentation of the EMODnet Bathymetry coverage and metadata content to the SEABED2030/GEBCO	Ca 15 participants, essentially from the fields of bathymetric data acquisition, processing and management.
5/10/2018	What the UTM does and what can do with the data of your oceanographic cruises, at national and international level (SeaDataCloud, EMODNet) Given at the Institute of Marine Science, ICM - CSIC, Barcelona,	Internal oral presentation	Ca 20 participants, essentially researchers from the Institute de Ciences del Mar
17-19/10/2018	On the computation of LAT grids	Oral presentation given at the JONSMOD conference	Ca 40 participants from the oceanographic modelling field. Discussion on the generation of conversion surface between LAT and MSL for the EMODnet

			Bathymetry grid coverage.
SUM …			(Total # of …)
SUM …			(Total # of …)

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)
12/2018	IOP Conference Series: Earth and Environmental Science.	Computing complex for modeling the Black Sea.	Dymova, O. A., and S. G. Demyshev.	Marine Hydrophysical Institute RAS, Ruusia
12/2018	ASME 2018 1st International Offshore Wind Technical Conference. American Society of Mechanical Engineers, 2018.	Fatigue Load Reductions in Offshore Wind Turbine Monopile Foundations in Co-Located Wind-Wave Arrays.	Clark, Caitlyn E., Joey Velarde, and Jannie Sønderkær Nielsen.	Oregon State University, Corvallis, OR Aalborg University, Aalborg, Denmark
12/2018	Boreas.	Glacio-isostatic age modelling and Late Weichselian deglaciation of the Lögurinn basin, East Iceland.	Norðdahl, Hreggviður, et al.	Institute of Earth Sciences, University of Iceland, Iceland
12/2018	Remote Sensing of Environment	Wind-induced cross-strait sea level variability in the Strait of Gibraltar from coastal altimetry and in-situ measurements.	Gómez-Enri, J., et al.	University of Cadiz, Spain
12/2018	The Holocene	Millennial-scale Holocene hydrological changes in the northeast Atlantic: New insights from 'La Grande Vasière'mid-shelf mud belt.	Mojtahid, Meryem, et al.	Université d'Angers, France Insttitut Universitaire Européen de la Mer, France Ifremer, France UMR EPOC, France
12/2018	Marine Geology	Impact of dense bottom water on a continental shelf: An example from the SW Adriatic margin.	Rovere, M., et al.	ISMAR CNR, Italy

12/2018	Thesis	Estratigrafia sísmica da plataforma continental ao largo da cadeia da Arrábida: contributo para o conhecimento da evolução pós-miocénica.	Costa, André Vinhas da.	Universidade de Lisboa, Portugal
12/2018	PloS one	North Sea demersal fisheries prefer specific benthic habitats	van der Reijden, Karin J., et al.	University of Groningen, the Netherlands
11/2018	Hydro International	A GIS case study from the Atlantic: Where do we map next?.	Wölfl, Anne-Cathrin, Colin Devey, and Jennifer Jencks.	Helmholtz Centre for Ocean Research Kiel, Geomar, Kiel, Germany
11/2018	Future Generation Computer Systems	Workflow-based automatic processing for Internet of Floating Things crowdsourced data.	Montella, Raffaele, et al.	University of Napoli "Parthenope", Italy The University of Chicago, United States Aalborg University, Denmark Argonne National Laboratory, United States
11/2018	Quaternary Science Reviews	Middle–Late Pleistocene landscape evolution of the Dover Strait inferred from buried and submerged erosional landforms.	García-Moreno, David, et al.	Ghent University, Belgium Royal Observatory of Belgium, Belgium Imperial College, UK University of Lille, France VLaams Instituut voor de Zee, Belgium Institut de Radioprotection et de Sûreté Nucléaire, France
11/2018	Journal of Volcanology and Geothermal Research	Deep volcanic morphology below Lanzarote, Canaries, from gravity inversion: New results for Timanfaya and implications.	Camacho, Antonio G., et al.	Instituto de Geociencias CSIC, UCM, Spain Universidad Politécnica de Madrid, Spain Universidad Complutense de Madrid, Spain
11/2018	Bulletin of the Geological Society of Greece 52.1 (2018): 98-130.	A 20-yr database (1997-2017) of co-seismic displacements from GPS recordings in the Aegean area and their scaling with Mw and hypocentral distance.	Ganas, Athanassios, et al	Institute of Geodynamics, National Observatory of Athens, Greece National and Kapodistrian University of Athens, Greece
11/2018	Marine Geology	Mass Transport Deposits and geo-hazard assessment in the Bradano Foredeep (Southern Apennines, Ionian Sea).	Artoni, Andrea, et al.	University of Parma, Italy CNR ISMAR, Italy ENI S.p.A., Italy

11/2018	Geomorphology	Geomorphic evolution of the Malta Escarpment and implications for the Messinian evaporative drawdown in the eastern Mediterranean Sea.	Micallef, Aaron, et al.	University of Malta, Malta
				Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS), Italy
				University College Dublin, Ireland
				CSIC, Spain
				Institut Universitaire Européen de la Mer, France
				University of Southampton, UK
				NIWA, New Zealand
				Monteray Bay Aquarium, USA
11/2018	Geoscientific Model Development (2018).	FESOM-C: coastal dynamics on hybrid unstructured meshes.	Androsov, Alexey, et al.	Alfred Wegener Institute, Germany
				Helmoltz-Zentrum Geesthacht, Germany
				Shirshov Institute of Oceanology, Russia
				Institute of Atmospheric Physics, Russia
10/2018	Marine Geology	Post-spreading deformation and associated magmatism along the Iberia-Morocco Atlantic margins: Insight from submarine volcanoes of the Tore-Madeira Rise.	Sanchez, Guillaume, et al.	Frogtech Geoscience, Australia
				Swedish Museum of Natural History, Sweden
				Université de Tours, France
				French Geological survey-BRGM, France
				Université de Nantes, France
10/2018	BSc. thesis.	Cost estimation for the Helsinki-Tallin fixed link connection.	Arranz Compte, Marc.	Universitat Politècnica de Catalunya, Spain
10/2018	ICES Journal of Marine Science	Structure in a sea of sand: fish abundance in relation to man-made structures in the North Sea.	Wright, Serena R., et al.	CEFAS, UK
10/2018	Journal of Physics: Conference Series	Mesoscale variability of the Black Sea circulation by the simulation results in 2011 and 2016.	Dymova, O. A.	Marine Hydrophysical Institute of RAS, Russia
10/2018	Marine Geology 407 (2019): 94-110.	Active tectonics and seismic hazard in Skyros Basin, North Aegean Sea, Greece.	Papanikolaou, D., et al.	National and Kapodistrian University of Athens, Greece
				Agricultural University of Athens, Greece

				Hellenic Centre for Marine Research, Greece
10/2018	Science of The Total Environment	Development of physical modelling tools in support of risk scenarios: A new framework focused on deep-sea mining.	Lopes, Carina L., et al.	University of Porto, Portugal Portuguese Institute for Sea and Atmosphere, Portugal University of Aveiro, Portugal University of Lisbon, Portugal
12/2018	IOP Conference Series: Earth and Environmental Science.	Computing complex for modeling the Black Sea.	Dymova, O. A., and S. G. Demyshev.	Marine Hydrophysical Institute RAS, Ruusia
12/2018	ASME 2018 1st International Offshore Wind Technical Conference. American Society of Mechanical Engineers, 2018.	Fatigue Load Reductions in Offshore Wind Turbine Monopile Foundations in Co-Located Wind-Wave Arrays.	Clark, Caitlyn E., Joey Velarde, and Jannie Sønderkær Nielsen.	Oregon State University, Corvallis, OR Aalborg University, Aalborg, Denmark

6 Annex: Other documentation attached

Feedback from and to users

Subject: Re: EMODnet Bathymetry Feedback form

Date: Mon, 1 Oct 2018 22:12:01 +0200

From: Dick M.A. Schaap <dick@maris.nl>

To:

Dear ....,

The tiles are generated with an overlap of 12 grid cells. This is done deliberately to avoid visual steps in the data if more than one tile is used in an application. One could use feathering to visually blend one tile into the other in case GeoTiff is used for example. Also, the EMODnet resolution is 1/16 of an arc minute. The value specified in the header (0.00104166667) is smaller than 1/16. To avoid rounding errors. We decided to create the tiles with a slight overlap.

Hope this helps.

Kind		regards
Dick	M.A.	Schaap

Technical Coordinator

On	10/1/2018	16:42,	noreply@maris.nl	wrote:

Name	.....
Email	[.....](#)
Feedback / Question	I am using the Bathymetry Viewing and Downloading service. I have downloaded 2 tiles (D5 and D6) in .asc format. The basic properties of the tiles: Cellsize: 0.00104166667 NRows: 9024 Ncols: 9504 xllcorner of D5: 3.48750001 xllcorner of D6: 13.36250004 When I calculate the range in horizontal direction in degrees, I result in an overlap of the last number of tile D5 and the xllcorner of tile D6. My calculation of the last point in tile D5: xllcornerD5 + (Ncols-1)*CellSize = 13.386458375 which is higher than xllcorner of tile D6. Am I missing something or are the tiles supposed to be overlapping? Thank you in advance.

Subject: Re: EMODnet Bathymetry Feedback form

Date: Thu, 4 Oct 2018 08:52:19 +0200

From: Dick M.A. Schaap <dick@maris.nl>

To: ....

Dear ....,

https://github.com/dubasdey/File-Splitter/releases (filesplitter) provides a programme for easily splitting large files. This allows you to make the large files more handable for you.

It is a commandline tool that does not require installation. Example that splits a file(C:\data\D4.txt) in pieces of 20 million rows: fsplit -split 20000000 l C:\data\D4.txt -fe UTF-8-NOBOM -fe UTF-8-NOBOM arranges that it stays flat ASCII.

fsplit -split -h allows you to ask for help.

Hope this will help you to use the EMODnet DTM for your purpose.

Kind   regards
Dick   M.A.   Schaap
Technical Coordinator
===

On 10/1/2018 17:49, … wrote:

Hi Dick,

Thank you for your response. I managed to download all the data I required apart from the D4 cell bathymetry. As you say this is over 2GB so maybe beyond what my computer can handle. I don't need the whole extent as it is for a model I am building that has a boundary from West Scotland to Denmark. Do you have any thoughts on how I might access the data.

Regards,

Asunto: EMODnet Bathymetry Feedback form
Para: ….
Fecha: lunes, 15 de octubre, 2018 10:20

Dear ….,
For the 3D visualisation we make use of Cesium. This requires that the browser supports WebGL. The error message indicates that the Direct3D module can not be found by Cesium which points to an issue with your browser-version or 3D-driver version. Can you try it with another Browser or maybe newer Browser version? For troubleshooting make use of: https://get.webgl.org/
Kind regards
Dick M.A. Schaap
Technical coordinator

On 15 October 2018 Victor wrote:

Name:	…..
Emailaddress:	…..
Feedback:	Hi, recently when I try to enter on 3D mode, I get this: An error occurred while rendering. Rendering has stopped. RuntimeError: Program failed to link. Link log: D3D compiler module not found. t@http://portal.emodnet-bathymetry.eu/cesium~map-3d.bundle.js:30:36890 m/i<@http://portal.emodnet-bathymetry.eu/cesium~map-3d.bundle.js:30:116682

m@http://portal.emodnet-bathymetry.eu/cesium~map-3d.bundle.js:30:115163 r

---

Subject: Re: EMODnet Bathymetry Feedback form)
Date: Wed, 24 Oct 2018 15:38:22 +0200
From: Dick M.A. Schaap <dick@maris.nl>
To: …..

Dear ….,
The NetCDF files have been replaced with the correct ones. Please try again.
Kind regards,
Dick M.A. Schaap
Technical Coordinator

On 10/15/2018 11:13, Dick M.A. Schaap wrote:
Dear ….,
Thanks for your interest in EMODnet Bathymetry. We checked what might be the issue and have established that indeed some of the NetCDF files seem to have been created with an incorrect resolution. This is caused by an automatic batch process that we were using and which apparently gives incorrect resolution in case of partially covered tiles (we only supply bathymetry DTM). We are upgrading the batch process and will thereafter update the downloadable NetCDF files. The issue should only concern the NetCDF format; the other formats should be ok. can you wait a while or make use of another format?
Will hear from you.

Kind   regards
Dick   M.A.   Schaap
Technical Coordinator

On 10/10/2018 15:25, noreply@maris.nl wrote:

Name	…..
Email	…..
Feedback / Question	Dear Mr./Mrs., I just downloaded the bathymetry dataset for the Mediterranean Sea in the netcdf format. I just noticed that the E6_2018.dtm has a resolution of 0.00555555555555 degrees against all other pieces, which have a resolution of 0.00104166666667 degrees. Is it on purpose? I couldn't find any explanations about it. Thank you Best regards Hydro-Meteo-Climate service, Regional Agency for Prevention, Environment and Energy in Emilia-Romagna (Arpae/SIMC) tel. +39 051 525937

Subject: Re: EMODnet Bathymetry Feedback form
Date: Wed, 24 Oct 2018 15:37:57 +0200
From: Dick M.A. Schaap <dick@maris.nl>
To: …

Dear ….,
The NetCDF files have been replaced with the correct ones. Please try again.
Kind regards,
Dick M.A. Schaap
Technical Coordinator
On 10/22/2018 14:28, Dick M.A. Schaap wrote:

Dear …..,
Thanks for your interest in EMODnet Bathymetry. We checked what might be the issue and have
established that indeed some of the NetCDF files seem to have been created with an incorrect
resolution. This is caused by an automatic batch process that we were using and which apparently
gives incorrect resolution in case of partially covered tiles (we only supply bathymetry DTM).
We are upgrading the batch process and will thereafter update the downloadable NetCDF files. The
issue should only concern the NetCDF format; the other formats should be ok.
Can you wait a while or make use of another format?
Will hear from you.
Kind regards
Dick M.A. Schaap
Technical Coordinator

On 10/22/2018 13:37, noreply@maris.nl wrote:

Name	…
Email	…
Feedback / Question	Dear Helpdesk The resolution of the bathymetry data in Tile D6 is about a factor five lower than for the other tiles. Would it be possible for you to upload a version of the bathymetry for tile 6 that has the same resolution as for the other tiles? Best Regards Dr. Johan Sӧderkvist Joint GeoMETOC Support Center Denmark TLF. +45 7281 5623 MOBIL +45 4078 7321

Subject: Fwd: Re: EMODnet Bathymetry Feedback form
Date: Wed, 24 Oct 2018 15:35:18 +0200
From: Dick M.A. Schaap <dick@maris.nl>
To: ….

Dear ….,
Thanks for your interest. We are working on this. By using the GTSM model of Deltares we will be
able to calculate the MSL - LAT conversion for the EMODnet grid and thus making all DTM tiles also
available with reference to MSL.
The resulting tiles will become available in due course end November - early December 2018 from
the portal.
Kind regards
Dick M.A. Schaap
Technical Coordinator

On 10/12/2018 13:45, noreply@maris.nl wrote:

Name	….
Email	….
Feedback / Question	Hi, I would like to know if it is possible to obtain the DTM referred to MSL instead of LAT? Or if there is an easy way of converting form LAT to MSL in the total North Sea area? Thanks in advance

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Subject: Re: EMODnet Bathymetry Feedback form
Date: Thu, 1 Nov 2018 14:59:17 +0100
From: Dick M.A. Schaap <dick@maris.nl>
To: ….

Dear ….,
It seems you are interested in coastline data. Coastline data is available as a WFS function and can be accessed by most GIS packages like QGIS, ArcGis, global mapper etc by connecting to the WFS:
https://ows.emodnet-bathymetry.eu/wfs
Also have a look at: http://www.emodnet-bathymetry.eu/data-products/web-services-and-standards and: http://portal.emodnet-bathymetry.eu/services/ where these kind of web services are explained in more detail.

Concerning the Esri Asci grid format we refer to the following webpage:
https://en.wikipedia.org/wiki/Esri_grid

Note: The 'area of interest' download will result in a bathymetric grid (in either GeoTiFF or Esri ascii grid and can not be used to download coastline data.

Kind regards,
Dick M.A. Schaap
Technical Coordinator

On 11/1/2018 7:07, noreply@maris.nl wrote:

Name	….
Email	…
Feedback / Question	To whom it may concern, Dear Sir/Madam, I downloaded the coatline file: "Area of interest.asc". I would like to ask about the file please: The file starts with: "NCOLS 1705 NROWS 844 XLLCORNER -10.687499195337296 YLLCORNER 42.5258794426918 CELLSIZE 0.0020833333333 NODATA_VALUE -32767.0 4985.4599609375 4986.7001953125 4986.91015625 4986.35009765625 4985.52978515625 ..." So: + What is the meaning of "NODATA_VALUE -32767.0" ? + "4985.4599609375 4986.7001953125 ..." are the depth values? and depth=positive, then negative=land elevation? But this is supposed to be the coaslines with depth=0m, so is there any

other meaning here? + User should reconstruct the coordinates of all (NCOLS 1705 x NROWS 844= 1439020 points) from (XLLCORNER, YLLCORNER, CELLSIZE)? Or is there any standard way to download or to read files to get directly xyz of all the points? Thank you very much in advance and hope to hear from you soon! Best regards!

Subject: Re: EMODnet Bathymetry Feedback form
Date: Mon, 12 Nov 2018 17:39:28 +0100
From: Dick M.A. Schaap <dick@maris.nl>
To: ………

Dear Katherine,
D6 should be ok now.
Kind regards
Dick M.A. Schaap
Technical Coordinator

On 11/1/2018 15:04, Dick M.A. Schaap wrote:
Dear ………,
Thanks for your interest in EMODnet Bathymetry. We checked what might be the issue and have established that indeed some of the NetCDF files seem to have been created with an incorrect resolution. This is caused by an automatic batch process that we were using and which apparently gives incorrect resolution in case of partially covered tiles (we only supply bathymetry DTM).
We are upgrading the batch process and will thereafter update the downloadable NetCDF files. The issue should only concern the NetCDF format; the other formats should be ok.
I will inform you once relevant tiles have been corrected.
Kind regards
Dick M.A. Schaap
Technical Coordinator

On 10/31/2018 16:30, noreply@maris.nl wrote:

Name: ….

Emailaddress: ….

Feedback: Investigating the use of the DTM. Seems really useful. However the NetCDF cells in row D east of the UK (seemingly into the Baltic Area too) do not have the same resolution as the cells north or south (C and E). The ASCII files seem fine, and notably are different to the NetCDF files

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Subject: Re: EMODnet Bathymetry Feedback form
Date: Mon, 12 Nov 2018 17:48:06 +0100
From: Dick M.A. Schaap <dick@maris.nl>
To: ……

Dear …,

The coordinates are in Lat-Lon and not in the UTM system.
Kind regards
Dick M.A. Schaap
Technical coordinator

On 11/5/2018 16:10, noreply@maris.nl wrote:

Name:	…
Emailaddress:	….
Feedback:	I have downloaded the D4 tile over the North Sea but I was wondering what UTM co-ordinate reference it uses? Thanks

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Subject: Re: EMODnet Bathymetry Feedback form
Date: Wed, 21 Nov 2018 22:57:27 +0100
From: Dick M.A. Schaap <dick@maris.nl>
To: …..

Dear ….,
It is correct that Global Mapper can not read the EMODnet NetCDF files. It is advised to use the Esri Grids in Global mapper or use the EMO files with the ASCII import option.
Kind regards,
Dick M.A. Schaap
Technical Coordinator

On 11/18/2018 14:14, noreply@maris.nl wrote:

Name	….
Email	……
Feedback / Question	Hello, I have downloaded the EMODnet 2018 bathymetry data set as netCDF. However, when trying to load the data in Global Mapper or using Generic Mapping Tools, I get error messages claiming that the data format is not correct. Have other users similar experiences? Kind regards, …

Subject: Re: EMODnet Bathymetry Feedback form
Date: Fri, 7 Dec 2018 11:18:39 +0100
From: Dick M.A. Schaap <dick@maris.nl>
To: ….

Dear ….,
Thank you for your interest. However we can not help you as we are not hiring.
Kind regards
DMA Schaap
Technical Coordinator EMODnet Bathymetry project

On 12/4/2018 11:11, noreply@maris.nl wrote:

Name	….
Email	……
Feedback / Question	dear sir or madam I am am writing to apply for internship with your company for six months (from 02/2019 to 07/2019) my name is hamdi bilel mathlouthi 24 years old and I am a geomatics &topography (land survey) engineering Student at ESAT University, I have been interested in geomatics and land survey during my studies . So I had the opportunity to using different measuring devices , During my 3 years as a student, I have had the opportunity to being able to work in groups and being empathetic, appreciating different values, perspectives and viewpoints on different aspects of topography, establishing and justifying personal value positions, contributing and participating in the community achievement. This experience will allow me to take on new responsibilities with your company rapidly. please dont hesitate to contact me if you have any questions or need further information I look forward to hearing from you. Yours sincerely

Subject: Re: EMODnet Bathymetry Feedback form
Date: Wed, 12 Dec 2018 12:34:43 +0100
From: Dick M.A. Schaap <dick@maris.nl>
To: ….

Dear …,
We have checked our logs and apparently there were some issues with the secured connection to the ordering service.
Can you please try again and let me know if it worked?
I am very sorry for this disturbance.
Kind regards
Dick M.A. Schaap
Technical Coordinator

On 12/11/2018 17:31, noreply@maris.nl wrote:

Name	….
Email	…..
Feedback / Question	Firstly, I am having a problem downloading bathymetry products. I fill in the orderform and get an error "There was an error sending your request to the server. Please try again. If the problem persists, try refreshing the page". I have refreshed and tried a few times. Secondly, are there any restrictions on how the data are used?