



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

EMODnet Phase III

3rd Trimonthly Report

Reporting Period: 01/07/2017 – 30/09/2017

Date: 09/10/2017

Prepared by: Thierry Schmitt (Shom) and Dick M.A. Schaap (MARIS)

Contents

1. Highlights in this reporting period	3
2. Meetings held since last report	3
3. Work package updates	4
WP0 – Project Management	4
WP1 – Bathymetric data collection and metadata compilation for all maritime basins	4
WP2 – QA-QC, data processings and producing Digital Terrain Models for the basins	5
WP3 – Integration and inclusion of the DTMs into the portal	5
WP4 – Technical Development & Operation of portal, tools and services:	5
WP5 – Coastlines, legal baselines and vertical reference levels:	6
WP6 – Outreach, helpdesk and evaluation	6
4. Specific challenges or difficulties encountered during the reporting period.....	7
5. User Feedback	8
6. Outreach and communication activities.....	9
7. Updates on Progress Indicators.....	10
Indicator 1 - Volume of data made available through the portal.....	10
Indicator 2 - Organisations supplying each type of data based on (formal) sharing agreements and broken down into country and organisation type (e.g. government, industry, science).....	10
Indicator 3 - Organisations that have been approached to supply with no result, including type of data sought and reason why it has not been supplied.....	12
Indicator 4 - Volume of each type of data and of each data product downloaded from the portal ...	12
Indicator 5 - Organisations that have downloaded each data type	14
Indicator 6 - Using user statistics to determine the main pages utilised and to identify preferred user navigations routes.....	14
Indicator 7 - List of what the downloaded data has been used for (divided into categories e.g. Government planning, pollution assessment and (commercial) environmental assessment, etc.)....	17
Indicator 8 – List of web-services made available and user organisations connected through these web-services.....	17
Indicator 9 – List of publications referencing to EMODnet Bathymetry	20

1. Highlights in this reporting period

- All the data producers are actively producing their contribution (metadata and formatted dataset) according to the methodology prepared earlier and with the adapted tools.
- A technical core meeting has been held in Brest – France with the objectives of tracking the progress of the collaborators of the project and prepare the coming plenary meeting in October.
- Experimental results concerning the processing of the coastline using satellite data has been developed. Generalisation of the method and tools are underway.
- The missing subcontract agreement signature with GST has been ratified.
- The coordinator of the EMODnet HRSM project has taken part in the workshop “Global Reference Grid Systems for Big Geospatial Data” held by the Joint Research Centre, to present the perspective of the marine community with respect to widely adopted gridded datasets.

2. Meetings held since last report

Date	Location	Topic	Short Description
4-7 July 2017	Genua, Italy	EMODnet Technical Group meeting	Shom and MARIS have participated to discuss plans for new key indicators, central statistics and revamping of EMODnet portal styling.
July 2017; September 2017	Brest, France	Bilateral phone meetings	Discussion with respect to Quality Index use in the production of the DTM.
13 – 15 September 2017	Rome, Italy	EMODnet Steering Committee meeting	Shom and MARIS have participated to give a project progress update and to contribute to various discussions
21 - 22 September 2017	Brest, France	Technical Core Meeting	Shom, MARIS, Ifremer, GGSGc, Deltares met to discuss project progress, individual Work package progress and to prepare next plenary meeting (October 2017)

3. Work package updates

WP0 – Project Management

The members of the technical core management team (Shom, MARIS, GGSGc, Ifremer, Deltares) met the 21st and 22nd of September 2017 in order to prepare the next plenary meeting, planned end of October 2017, to monitor the evolution of metadata and data provision, and to prepare next steps. The signature of one missing subcontractor, GST from Denmark, has finally been provided. This makes the Consortium Agreement and associated Subcontract Agreement fully signed by all the collaborators. Shom and MARIS have participated in the EMODnet Steering Committee 13 – 15 September 2017, presenting the project progress and contributing to discussions.

WP1 – Bathymetric data collection and metadata compilation for all maritime basins

After some encouragement from Shom and MARIS before and after the summer period, all data providers have started preparing their expected contributions in terms of metadata and data for the project (Task 1 and Task 3). This includes updating of existing metadata entries, completing extra fields for the new Quality Index. Moreover it includes preparing and submitting new metadata entries and making related bathymetric datasets available for the Discovery and Access services. They follow the methodology for data gathering, metadata generation and population as agreed and instructed at the kick-off meeting and make use of the provided software (Mikado and Sextant). There are several new data providers and they required extra guidance and support by MARIS and Ifremer.

Partner EOMAP will produce satellite derived bathymetry (SDB) data products for coastal areas of Spain and Greece. The associated metadata will be included in the Sextant catalogue as the SDB data products are considered as composite DTMs. Ongoing is an SDB test for 2 samples areas for the Balearic Islands and Channel Islands which were generated as part of a collaboration with the BASE-Platform project (<http://base-platform.com> - Horizon 2020 grant agreement N°687323).

Overall good progress is being made with Task 1 and Task 3 and it is expected that all metadata for the new datasets will be populated, following the earlier inventory, by end October 2017, allowing for the next steps as part of WP2. An important progress monitoring will take place at the coming plenary project meeting, end October 2017.

WP2 – QA-QC, data processings and producing Digital Terrain Models for the basins

Most data providers are also making progress with pre-gridding and pre-processing all their dataset contributions, following the EMODnet data processing methodology and using the GLOBE software as trained during the kick-off meeting (Task 1, Task 2 and Task 3). This way it is strived that all survey data and composite DTMs will have an internal interoperability when they are handed over to the regional DTM Coordinators (Task 7). The deadline for this process and transfer is set to end November 2017.

Despite a similar processing methodology, EMODnet collaborators acknowledge that sources of data might have different quality (various sounders, various positioning system, age of the survey ...). In order to qualify these differences, new fields have been added to the metadata, which will support regional Coordinators to select better which datasets to prefer in case of multiple choices. Moreover this will enable to produce later the composite Quality Indicator for each DTM gridcell. Shom and Ifremer are currently evaluating how this quality indicator can be used as part of the data fusion and in the final product.

Regional Coordinators are in contact with individual data providers for their region to stimulate and tune the pre-processing of datasets and making these available to them for the regional DTM production which is planned from December 2017 to March 2018. The coming plenary project meeting will provide a good monitoring opportunity.

WP3 – Integration and inclusion of the DTMs into the portal

No activity to report in this quarter.

WP4 – Technical Development & Operation of portal, tools and services:

As part of the technical core meeting, held at Ifremer and Shom, Brest - France, half a day was devoted to discussing the status of possibly migrating the hosting of the Bathymetry Viewing and Download service to the Datarmor hosting and high performance computing facilities at Ifremer in Brest – France (as part of Task 5). The ambition behind this migration is that the DTM viewing and download service and the planned Collaborative Virtual Environment (CVE) might be centralised on the same hosting facility. GGSGc will stay overall responsible for the development and management of the Bathymetry Viewing and Download service. In the reporting period Ifremer with support of GGSGc has configured a mirror of the Bathymetry Viewing and Download service at Datarmor. The next step is to test the performance and uptime of the configuration, and to make practical arrangements between GGSGc,

IFREMER and MARIS for maintenance, operation and further developments, respecting the different responsibilities. Operational migration will take place once all is satisfactory arranged.

Concerning the Collaborative Virtual Environment (CVE), Ifremer has made an initial analysis of the use cases with respect to the various roles (data provider, basin coordinator, final integration, administrator) associated with the workflow for the EMODnet DTM production. This ongoing analysis of the workflow will enable to define the specifications and the corresponding implementation of the CVE planned for the second year. Synergy takes place with the EU SeaDataCloud project in which Ifremer and MARIS lead the analysis and development of a Virtual Research Environment.

Furthermore GGSGc has made progress with designing a responsive version of the Bathymetry Viewing and Download service which is now being reviewed by technical partners. And GGSGc and CORONIS discussed and agreed on the way forward for stable and performing 3D viewing in the Bathymetry Viewing and Download service. The approach and timing will be presented and discussed at the coming plenary project meeting.

Work has started by MARIS for updating the EMODnet Bathymetry portal and catalogue services following the new EMODnet styling as agreed at the EMODnet Technical and Steering Committee meetings. Moreover, as part of preparations for the Open Sea Lab hackaton, MARIS and GGSGc are preparing improved instructions for the existing machine-to-machine services (Task 4). These extended instructions will be published at the portal.

WP5 – Coastlines, legal baselines and vertical reference levels:

Data providers have started gathering and providing their existing national information concerning their national baselines and coastlines (as part of Task 3). In parallel, Deltares has been working on a methodology dedicated to the automatic extraction of a coastline from satellite views (typically Sentinel 2B). Further work is needed especially in estuaries to define their limits. This methodology will be presented and further discussed at the coming plenary project meeting in order to establish a feasible approach for determining the coastlines.

WP6 – Outreach, helpdesk and evaluation

The web portal was maintained (as part of Task 5), statistics about use of portal and services were collected (as part of Task 9) and several questions were received and answered by the helpdesk (as part of Task 6). The user questions received and answered are detailed in chapter 5 and Annex 1.

The project coordinator was invited to present the view of the marine community in the workshop entitled “Global Reference Grid Systems for Big Geospatial Data” organised by the Joint Research Centre between July the 11th and 12th. In this workshop the current state of global grids with respect to efficiency and interoperability has been discussed.

Furthermore an abstract about EMODnet Bathymetry was submitted and accepted for the Hydro 2017 Conference in Rotterdam – Netherlands, November 2017, and AGU 2017 Fall meeting in New Orleans – USA in December 2017.

International interoperability (Task 7) is ensured in a number of ways. First of all, the EMODnet HRSM consortium consists of organisations that have international networks and are well acquainted with international cooperation also aiming at international interoperability. This includes relationships concerning standards such as: ISO, OGC, INSPIRE, SeaDataNet, IHO, IOC and ODIP. It also includes collection and sharing of metadata, data and DTMs such as GEBCO, IBCAO, BSBD, NSBD, and NOAA/NCEI. Both levels results in formats and controlled terms that are applied to the metadata and datasets in EMODnet HRSM and which are therefore interoperable with international practices. It also comes back in the web services that are based upon OGC standards and tools which are broadly used by international communities. Another element ensuring coherence and interoperability is the fact that bathymetry data are collected in-situ by remote sensing techniques and instruments which are used by the global community of hydrographers and bathymetric researchers, with relatively similar principles, methodologies and practices. This implicates that the original collected data sets are comparable in formats. Finally there is a long tradition on a global scale, such as through IHO and the GEBCO project, to share bathymetry methods and resulting datasets which also results in international interoperability.

4. Specific challenges or difficulties encountered during the reporting period

Please list specific problems you have encountered during this period, including related to technical and data provision issues

A challenge has been to get all data providers into action with the agreed activities for data gathering, metadata generation and data pre-processing. This was solved by a number of group mailing by the coordinating team, followed by bilateral direct mails encouraging data providers to start and make progress within the agreed planning. These activities as part of WP1 and WP2 are now underway and progress is being made. Also the 1st annual progress meeting was planned end October 2017 in order to increase the pressure and to ensure that all data providers will undertake action.

5. User Feedback

List any useful feedback you received on your portal, your activities or those of other EMODnet projects/activities. Also provide any suggestions you have received for EMODnet case studies and/or future products/activities/events.

Date	Name	Organization	Type of user feedback (e.g. technical, case study etc)	Response time to address user request
2017-8-31	Nathan Mooney	?	Question about using LAT	Immediately
2017-8-31	Sebastien Legrand	RBINS, Belgium	Question about how to download the DTM	A few days later
2017-9-5	Graham Glanfield	GeoCento - UK	Question about OpenSearch / API's for EOBroker project	Next day
2017-9-15	Enda O'Dea	UK MetOffice - UK	Question about anomalies near coasts	10 days later in order to have a good answer

Annex 1 gives more details.

6. Outreach and communication activities

Please list all the relevant communications activities or products you have developed/executed during this period (including presentations, lectures, trainings, demonstrations and development of communication materials such as brochures, videos, etc.). Relevant scientific and/or popular articles you know have been published using/referring to EMODnet should be reported under indicator 9 in Section 7.

See also WP6 report in Chapter 3.

Date	Media	Title	Short description and/or link to the activity
2017-09-29	General public presentation	“Nuit européenne des chercheur(e)s”	Demonstration of Shom’s activities to the general public including the bathymetry of european waters as part of EMODnet Bathymetry – Horizon 2020 Marie Curie Sklodowska – Grant Agreement N°722266.
2017-09-27	Oral presentation	IHO EU Network Working Group	Oral presentation of the general objectives and recent progresses of the EMODnet High Resolution Seabed Mapping to
2017-09-13 to 15	Oral presentation	8th EMODnet Steering Committee	Oral presentation giving recent updates to the other thematic lots, Check Point lots and the EMODnet Secretariat.
2017-07-11 to 12	Oral presentation, discussion and portal demonstration	Workshop on “Global Reference Grid Systems for Big Geospatial Data”	Invited to provide input in terms of technical descriptions and need in terms of representation of marine environmental data and more especially bathymetric data.

7. Updates on Progress Indicators

Using the indicator as a header list the metrics collated and the time interval. If there was no activity to report leave the section under the indicator header blank.

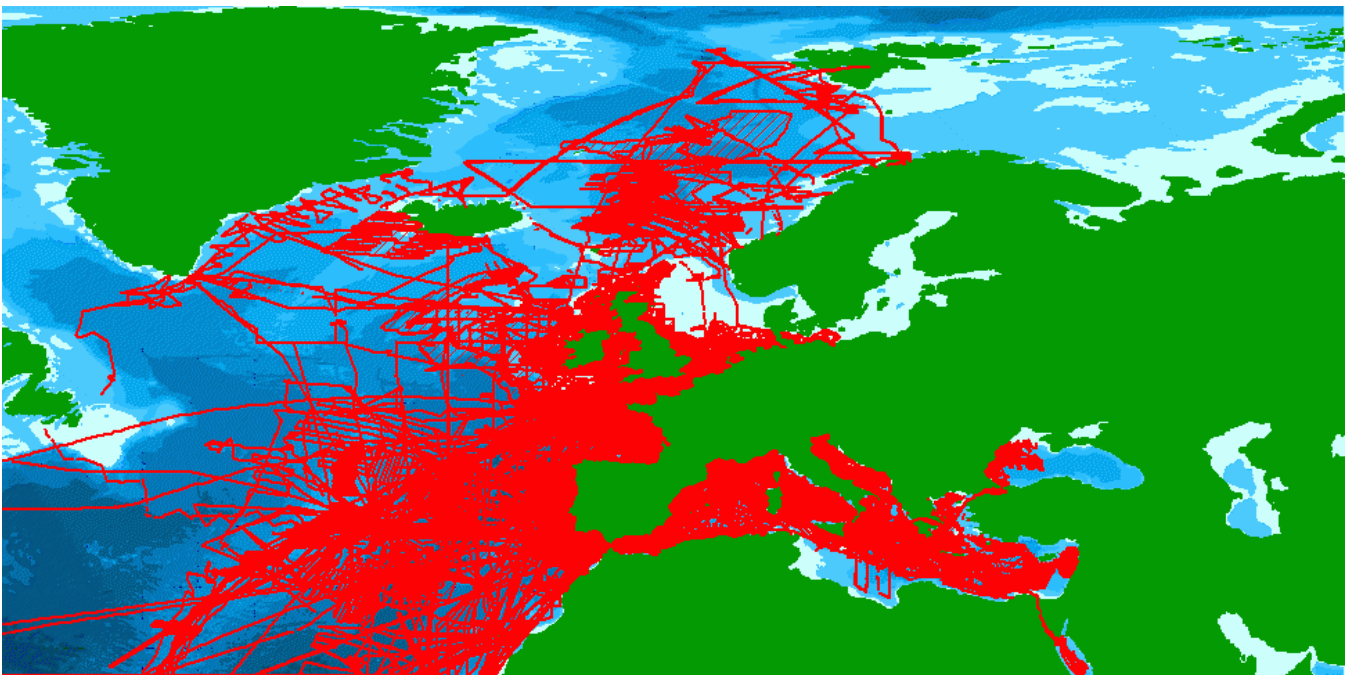
Indicator 1 - Volume of data made available through the portal

The total number of CDIs for bathymetric survey data sets has slightly increased from **14864** to **14927**.

The total in production covers the whole globe. Specifically relevant for European waters has increased from **11570** to **11622**.

Lat Long box: **N80, W-30 ; N20, E45**

Of these **932** are unrestricted, while all other require negotiation.



The EMODnet DTM covers all European sea regions.

Indicator 2 - Organisations supplying each type of data based on (formal) sharing agreements and broken down into country and organisation type (e.g. government, industry, science).

Data Centre	Country	No of CDIs	No restrictions	Restrictions
British Oceanographic Data Centre	United Kingdom	100	68	32
German Oceanographic Datacentre (NODC)	Germany	256	256	0
OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale), Division of Oceanography	Italy	10	0	10
CNR, Institute of Marine Science (ISMAR) - Bologna	Italy	107	0	107
Hellenic Centre for Marine Research, Hellenic National Oceanographic Data Centre (HCMR/HNODC)	Greece	76	0	76
IGME, Geological Survey of Spain	Spain	8	0	8
IEO/Spanish Oceanographic Institute	Spain	66	0	66
Geological Survey of Ireland	Ireland	223	223	0
IFREMER / IDM / SISMER - Scientific Information Systems for the SEA	France	737	292	445
Shom	France	4650	0	4650
Royal Netherlands Navy, Hydrographic Service	Netherlands	313	0	313
IHPT, Hydrographic Institute	Portugal	275	0	275
NIOZ Royal Netherlands Institute for Sea Research	Netherlands	30	0	30
Bulgarian National Oceanographic Data Centre(BGODC), Institute of Oceanology	Bulgaria	20	0	20
International Ocean Institute - Malta Operational Centre (University Of Malta) / Physical Oceanography Unit	Malta	6	0	6
National Institute of Marine Geology and Geoecology	Romania	9	0	9
Hydrographic Institute of the Navy	Spain	58	0	58
Rijkswaterstaat Centrale Informatievoorziening	Netherlands	2165	0	2165
Management Unit of North Sea and Scheldt Estuary Mathematical Models, Belgian Marine Data Centre	Belgium	93	93	0
Institute of Marine Sciences. Mediterranean Marine and Environmental Research Centre (CMIMA-ICM-CSIC). Department of Marine Science.	Spain	5	0	5

Flemish Ministry of Mobility and Public Works; Agency for Maritime and Coastal Services; Coastal Division	Belgium	248	0	248
OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale), Infrastructures Division	Italy	24	0	24
Marine Technology Unit. Mediterranean Marine and Environmental Research Centre	Spain	6	0	6
GRID-Arendal	Norway	10	0	10
OceanWise Limited	United Kingdom	2066	0	2066
Portuguese Institute of Ocean and Atmosphere	Portugal	53	0	53
Jardfeingi, the Faroe Islands Earth and Energy Directorate	Faroe Islands	5	0	5
SC Marine Research SRL	Romania	3	0	3
TOTALS		11622	932	10690

Most centres are government and research institutes. Industry parties are: OceanWise and SC Marine Research SRL.

Indicator 3 - Organisations that have been approached to supply with no result, including type of data sought and reason why it has not been supplied.

Nothing to report.

Indicator 4 - Volume of each type of data and of each data product downloaded from the portal

Time period 1 July 2017 – 30 September 2017:

CDIs:

No of CDI basket transactions: **12**

No of CDIs requested: **327**

Different users: **10**

Different data centres: **11**

Data products – DTMs:

Tile	Downloads
Area of interest	5062
B3	714
C3	476
C4	336
B2	330
D4	302
C2	289
B4	262
D3	219
D2	111
A4	96
A2	85
A3	77
A1	64
C1	53
B1	47
D1	46
	8569

This also includes the WCS service by which users can draw and download their own ‘area of interest’. This appears quite popular.

Formats

Format	Downloads
ESRI ASCII	3888
32 bit float GeoTiff	1173
GeoTiff	1071
RGB GeoTiff	1002
XYZ	670
NetCDF	374
EMO	181
SD	129
EMO (without GEBCO data)	81
	8569

Indicator 5 - Organisations that have downloaded each data type

organisation	country
GMX	Germany
Friedrich-Schiller-Universität Jena - IGW	Germany
Geological Survey of Ireland	Ireland
Geospatial Information Agency	Indonesia
ARGONGRA	Spain
TNO	Netherlands
CGI	Netherlands
ACRI-HE	France
IDEN	Spain
Universitat Politècnica de Catalunya	Spain

This concerns users of the CDI service. There is no registration for users that download EMODnet DTM tiles.

Indicator 6 - Using user statistics to determine the main pages utilised and to identify preferred user navigations routes





















Time period 1 July 2017 – 30 September 2017:

Bathymetry main portal:

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jul-17	7,669	9,105	76,228	159,438	6.09 GB
Aug-17	9,560	10,976	72,012	108,401	2.29 GB
Sep-17	10,945	12,399	73,670	132,839	4.22 GB

Visitors in September 2017:

Visitors domains/countries (Top 10) - Full list

Domains/Countries		Pages	Hits	Bandwidth	
 Commercial	com	43,650	63,879	984.38 MB	
 Unknown	ip	12,583	26,557	1.14 GB	
 Network	net	3,574	8,264	285.17 MB	
 Italy	it	2,114	5,030	627.00 MB	
 France	fr	1,943	4,508	190.36 MB	
 Spain	es	1,150	3,180	64.54 MB	
 Germany	de	750	2,609	135.11 MB	
 Greece	gr	626	2,052	67.41 MB	
 Netherlands	nl	609	2,123	102.62 MB	
 Romania	ro	530	779	17.39 MB	
Others		6141	13858	680.01 MB	

Bathymetry DTM viewer service:

Month	Unique visitors	Pages	Hits	Bandwidth
July 2017	3189	6801	10820	89,71 Gb
Aug 2017	3884	7614	11768	119,78 Gb
Sept 2017	3808	7342	11476	103.45 Gb

Visitors

Hosts

Top Hosts

	Host	Country	Hits	Visitors	Bandwidth (KB)
1	129.10.159.27	United States	463	180	1,494,523
2	br167-092.ifremer.fr	France	282	122	51,424
3	Nautilus.MathStat.Dal.Ca	Canada	644	92	116
4	u-152-61-128-50.xr.usgs.gov	United States	644	92	4,880
5	flab14.agro.auth.gr	Greece	475	84	568,079
6	141.163.104.116	United Kingdom	188	74	111,448
7	google-proxy-66-249-93-7.google.com	United States	72	69	452
8	81-174-35-146.v4.ngi.it	Italy	224	69	199,636
9	fw1.marum.de	Germany	103	64	249,172
10	google-proxy-66-249-93-5.google.com	United States	67	64	427
11	google-proxy-66-249-93-3.google.com	United States	70	64	523
12	host107-87-static.225-95-b.business.telecomitalia.it	Italy	202	62	1,170,658
13	lja.lv	Latvia	106	61	3,222,263
14	unknown.shom.fr	France	106	48	601,559
15	host86-156-152-92.range86-156.btcentralplus.com	United Kingdom	92	40	483
16	79.99.17.50	Russian Federation	40	39	207
17	188.64.156.195	Denmark	74	37	1,558,565
18	webdefence.cluster-x.websense.net	Netherlands	42	35	93,905
19	u-152-61-192-232.xr.usgs.gov	United States	238	34	1,803
20	17-142-150-32.applebot.apple.com	United States	60	32	311
21	proxy-b.ecmwf.int	United Kingdom	43	31	223
22	ip-82-151-63-85.dyn.kabeltex.nl	Netherlands	180	30	935
23	67.128.147.147.dyn.plus.net	United Kingdom	51	29	1,416,902
24	ec2-50-112-194-65.us-west-2.compute.amazonaws.com	United States	30	28	1,249
25	ppp079166126117.access.hol.gr	Greece	123	27	73,918
26	proxy.dam.intra.cea.fr	France	69	26	2,148,724
27	ec2-52-27-2-86.us-west-2.compute.amazonaws.com	United States	29	26	1,056
28	150-70-173-12.trendmicro.com	Japan	25	25	415
29	adsl-84-227-209-9.adslplus.ch	Switzerland	65	24	4,305,913
30	user.vliz.be	Belgium	41	24	697,141
31	host222-156-static.227-95-b.business.telecomitalia.it	Italy	100	23	519
32	gra94-5-82-226-238-40.fbx.proxad.net	France	136	22	553,846
33	nat-service.aws.kontera.com	United States	61	22	323
34	ns.imr.no	Norway	43	21	218
35	dce.dongenergy.dk	Denmark	51	20	1,852,834
36	140.203.12.3	Ireland	26	20	109,143
37	217.169.229.156	Netherlands	30	20	161
38	bolegweb.geof.unizg.hr	Croatia	40	20	353
39	89.148.149.170	Italy	45	19	233
40	petro061.geol.u-psud.fr	France	45	19	4,156,885
41	cpc76244-cosh15-2-0-cust593.6-1.cable.virginm.net	United Kingdom	41	19	1,446,587
42	152.115.128.146	Denmark	49	19	4,425,604
43	c174-163.i02-4.onvol.net	Malta	21	18	367
44	nat.bo.ismar.cnr.it	Italy	24	18	859,657

Indicator 7 - List of what the downloaded data has been used for (divided into categories e.g. Government planning, pollution assessment and (commercial) environmental assessment, etc.)

There is no registration for what purpose users are using the downloaded survey datasets and the downloaded DTM tiles. However generally speaking bathymetry is an important parameter for many applications. Detailed and accurate mapping of the seabed and shallow sub-seabed environment is important for a large number of research, policy, and commercial groups. In particular, the acquisition of swath bathymetry data has become a fundamental dataset for multiple scientific disciplines including physical oceanography, marine geology, and benthic ecology. High-resolution bathymetry data provides an opportunity to characterize the processes which formed and actively govern the physical seabed environment, as well as to provide the necessary boundary conditions for numerical modellers to investigate both active (e.g. oceanographic) and past (e.g. glacial) environmental phenomena. The bathymetry data are also highly complementary to seismic and high-resolution sub-bottom profiler data, together providing a 3-D characterization of the shallow sub-seabed environment.

Bathymetry is also an important parameter next to geological and geophysical parameters for companies involved in the planning and construction of offshore windmill farms which need high resolution geophysical and soil information for calculating the stability of the sea bed conditions. The dredging industry needs high resolution bathymetric, geophysical and soil information of the seabed for quantity and quality of the resources and the presence of obstacles in the sea bed for i.e. deepening and widening of shipping routes, beach nourishment and coastal extensions. The oil- and gas industry needs, besides 3D-multichannel seismics for oil- and gas exploration, bathymetric and geophysical information for the stability of platforms and planning of pipeline routes. Companies involved with ecological issues for the determination of habitats in the offshore, need images collected with side scan sonar and multibeam for morphological and characterization of the sea bed.

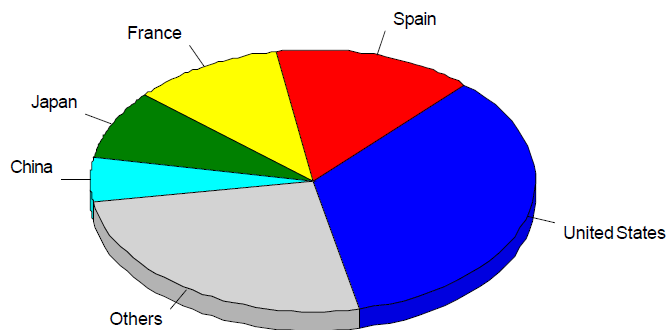
Indicator 8 – List of web-services made available and user organisations connected through these web-services

Web services concern the Bathymetry Viewing and Downloading service: the OGC compliant web services comprise various layers and their URLs are advertised in the HELP section of the Viewing Service and also at the main portal. The web services concern WMS, WFS, WMTS and WCS and are applied by various users. These services are very popular with more than 59.000 users in the 3 months as can be seen from its statistics in the tables below.

Page Views	
Total Page Views	4,486,581
Average Page Views per Day	48,767
Average Page Views per Visitor	193.48
Visitors	
Total Visitors	23,189
Average Visitors per Day	252
Total Unique IPs	7,017

The total number of pageviews is more than 4.4 million, but these is somewhat misleading as a full page can be composed of multiple views. The top visiting countries and sites are indicated below.

Most Active Countries



Visitors

Hosts

Top Hosts

	Host	Country	Hits	Visitors	Bandwidth(KB)
1	52.57.254.97	United States	303,048	427	5,010,121
2	52.57.254.165	United States	260,012	413	4,320,257
3	34.195.252.68	United States	18,499	316	356,537
4	34.195.252.184	United States	18,293	313	335,611
5	34.195.252.64	United States	18,867	308	358,465
6	34.195.252.5	United States	18,585	296	349,936
7	35.167.191.183	United States	6,077	240	132,422
8	130.206.32.66	Spain	89,859	229	2,892,490
9	35.162.63.239	United States	7,703	227	176,877
10	52.56.127.81	United States	70,520	218	1,366,058
11	193.191.134.34	Belgium	86,089	215	1,339,296
12	52.56.127.58	United States	62,160	188	1,203,621
13	130.206.32.226	Spain	36,722	186	590,278
14	35.167.191.144	United States	7,431	182	172,913
15	185.24.184.194	France	7,173	176	5,644,267
16	52.56.127.106	United States	28,499	176	526,390
17	52.56.127.57	United States	48,350	175	982,043
18	52.56.127.87	United States	29,143	167	541,054
19	35.162.63.199	United States	4,863	150	111,701
20	195.200.179.106	France	4,077	144	108,631
21	52.57.254.205	United States	123,280	134	1,972,839
22	217.167.130.4	France	77,943	131	3,834,739
23	52.57.254.137	United States	118,074	128	1,835,209
24	95.120.191.200	Spain	6,916	128	100,950
25	52.57.254.181	United States	110,266	127	1,716,318
26	52.56.127.117	United States	39,708	126	775,330
27	52.57.254.62	United States	135,169	124	2,198,387
28	13.59.250.19	United States	18,749	123	360,345
29	212.128.98.140	Spain	9,053	118	133,612
30	134.246.144.44	France	43,662	115	2,177,885
31	52.56.127.36	United States	53,113	104	1,053,301
32	52.56.127.14	United States	54,380	99	1,056,657
33	52.15.127.142	United States	14,306	90	256,539
34	194.57.229.5	France	4,023	90	762,699
35	35.167.191.131	United States	5,222	84	130,024
36	79.98.220.15	Spain	250,424	83	741,167
37	35.167.191.188	United States	4,897	80	124,173
38	35.167.191.171	United States	2,806	79	44,809
39	160.92.152.213	France	951	77	54,904
40	150.178.42.5	Italy	370	77	23,934
41	34.195.252.73	United States	3,416	76	48,238
42	194.176.95.161	United Kingdom	180	75	12,126
43	34.195.252.236	United States	3,126	75	45,010
44	52.15.127.168	United States	9,190	70	162,393

Indicator 9 – List of publications referencing to EMODnet Bathymetry

The following references to EMODnet Bathymetry can be found using Google Scholar on the 03/10/2017. References are given for accepted papers and edited books from 01/07/2017 onwards. This list is not exhaustive.

September 2017	<i>Tectonophysics</i> (Peer review journal)	Feasibility study of an offshore wind farm in the Aegean Sea, Turkey	https://doi.org/10.1016/j.tecto.2017.09.010
September 2017	<i>Nature Scientific report</i> (Peer review journal)	Fine-scale harbour seal usage for informed marine spatial planning.	10.1038/s41598-017-11174-4
September 2017	<i>Natural Scientific Data</i> (Peer review journal)	Fish and fishery historical data since the 19th century in the Adriatic Sea, Mediterranean.	10.1038/sdata.2017.104
August 2017	<i>Biogeography</i>	The importance of temporal resolution for niche modelling in dynamic marine environments.	https://doi.org/10.1111/jbi.13080
August 2017	<i>Marine Micropaleontology.</i> (Peer review journal)	Comparison of qualitative and quantitative dinoflagellate cyst approaches in reconstructing glacial-interglacial climate variability at West Iberian Margin IODP 'Shackleton' Site U1385.	https://doi.org/10.1016/j.marmicro.2017.08.003
August 2017	<i>Marine and Petroleum Geology</i> (peer review paper)	Intra-salt deformation: Implications for the evolution of the Messinian evaporites in the Levant Basin, eastern	https://doi.org/10.1016/j.marpetgeo.2017.08.027

		Mediterranean.	
May 2017	<i>Coastal Engineering</i> (Peer review journal)	Implementation and validation of a multi-domain coastal hazard forecasting system in an open bay.	https://doi.org/10.1016/j.coastaleng.2017.08.008
August 2017	<i>Earth System Science Data Discussion</i> (Peer review journal)	A synthetic map of the northwest European Shelf sedimentary environment for applications in marine science.	https://doi.org/10.5194/essd-2017-88
August 2017	<i>Science of the total environment</i> (Peer review journal)	Multi-objective spatial tools to inform maritime spatial planning in the Adriatic Sea.	https://doi.org/10.1016/j.scitotenv.2017.07.264
July 2017	<i>Environmental Science & Technology</i> (Peer review journal)	Shallow gas migration along hydrocarbon wells—An unconsidered, anthropogenic source of biogenic methane in the North Sea.	10.1021/acs.est.7b02732
July 2017	<i>Bulletin of the Geological Society of Greece</i> (Peer review journal)	Deformation pattern in the western North Aegean trough: Preliminary results.	http://dx.doi.org/10.12681/bgsg.11708
July 2017	Geomorphology (Peer review journal)	Seabed geodiversity in a glaciated shelf area, the Baltic Sea.	https://doi.org/10.1016/j.geomorph.2017.07.014
July 2017	Submarine geomorphology	Submarine Canyons and Gullies.	Amblas, D., Ceramicola, S., Gerber, T. P., Canals, M., Chiocci, F. L., Dowdeswell, J. A., ... & Iacono, C. L. (2018). In <i>Submarine Geomorphology</i> (pp. 251-272). Springer, Cham.

	(Book section)		
July 2017	<i>Frontiers in Marine Science</i> (Peer review journal)	Habitat Suitability Modeling to Identify the Potential Nursery Grounds of the Atlantic Mackerel and Its Relation to Oceanographic Conditions in the Mediterranean Sea.	Giannoulaki, M., Pyrounaki, M. M., Bourdeix, J. H., Ben Abdallah, L., Bonanno, A., Basilone, G., ... & Valavanis, V. D. (2017).
July 2017	Coastal Engineering (Peer review paper)	Tsunami taxonomy and detection from recent Mediterranean tide gauge data.	https://doi.org/10.1016/j.coastaleng.2017.06.007
July 2017	<i>Frontiers in Marine Science</i> (Peer review paper)	Habitat Suitability Modeling to Identify the Potential Nursery Grounds of the Atlantic Mackerel and Its Relation to Oceanographic Conditions in the Mediterranean Sea.	
July 2017	Coastal Engineering (Peer review paper)	Tsunami taxonomy and detection from recent Mediterranean tide gauge data.	
July 2017	Geoscientific	AMM15: A new	https://www.geosci-model-dev-discuss.net/gmd-

	Model Development Discussion (peer reviewed paper	High resolution NEMO configuration for operational simulation of the European North West Shelf	2017-127/gmd-2017-127.pdf
--	--	--	---------------------------

Annex 1: Feedback from and to users

----- Forwarded Message -----

Subject:EMODnet Bathymetry Feedback form

Date:Sun, 2 Jul 2017 10:07:15 +0200

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

To:marian.mierla@ddni.ro

Dear Marian,

Your change has been updated in the SeaDataNet EDMO directory which also feeds into the EMODnet Bathymetry website.

Kind regards

Dick M.A. Schaap

Technical coordinator

noreply@maris.nl wrote:

Name Marian Mierla

Email marian.mierla@ddni.ro

Dear colleagues, Let me introduce myself: I work for Danube Delta National Institute for Research and Development (DDNI) from Tulcea (RO) since December 2012 within the Information System and Geomatics. I am part of the bathymetrical studies team together with PhD. eng. Iulian Nichersu and MSc. Cristian Trifanov. Within this message, I kindly want to inform you that that www address of our institute is www.ddni.ro and the e-mail address is office@ddni.ro. Thank you for your attention! With kind regards, Marian Mierla

----- Forwarded Message -----

Subject:Re: EMODnet Bathymetry Feedback form

Date:Thu, 31 Aug 2017 14:06:08 +0200

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

To:nathanjamesmooney@gmail.com

Dear Nathan,

Yes, the water depths in the EMODnet Bathymetry data product are relative to LAT. This applies for all the areas. LAT can be quite different compared to Mean Sea Level, depending on where you are. In areas with high tidal ranges the difference between LAT and MSL can be quite large (several meters) while in areas with hardly tidal ranges, such as most of the Mediterranean Sea it can be negligible.

Kind regards

Dick M.A. Schaap

Technical coordinator

On 8/31/2017 13:46, noreply@maris.nl wrote:

Name Nathan Mooney

Email nathanjamesmooney@gmail.com

Hi there, Thanks for providing this great service and range of products. I was hoping you could confirm for me whether or not the bathymetry surface is measured at the LAT standard or if it is something else? I am especially interested in data for the North and Baltic Seas. Thanks again, Nathan Mooney

----- Forwarded Message -----

Subject:Re: EMODnet Bathymetry Feedback form

Date:Tue, 5 Sep 2017 08:29:34 +0200

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

To:sebastien.legrand@naturalsciences.be

Dear Sebastien,

You can download the EMODnet DTM in tiles from the EMODnet Bathymetry portal. Have a look at:

<http://www.emodnet-bathymetry.eu/data-products>

and use the Bathymetry Viewing and Downloading service at:

<http://portal.emodnet-bathymetry.eu/>

This is quite user friendly. Otherwise read its Help section:

<http://portal.emodnet-bathymetry.eu/help/help.html>

The EMODnet DTM is divided over 16 tiles that you can download in several formats.

The vertical reference level is always LAT.

Thereafter you might load these tiles in the dedicated 3D software that you can also download from another portal:

http://www.geo-seas.eu/content/content.asp?menu=0290000_000000

which allows you then to have all (NetCDF) tiles in 3D view. Please do read the manual of that software.

Hope this helps.

Kind regards

Dick M.A. Schaap

Technical Coordinator

On 8/31/2017 17:54, noreply@maris.nl wrote:

Name Sebastien Legrand

Email sebastien.legrand@naturalsciences.be

Feedback / Question Dear Sir or Madam, Could you please explain me how I can download in netcdf the Emodnet bathymetry for the full area? The vertical datum should be MSL if possible (or the geoid)?

----- Forwarded Message -----

Subject:Re: EMODnet Bathymetry Feedback form

Date:Wed, 6 Sep 2017 19:55:56 +0200

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

To:graham.glanfield@geocento.com

Dear Graham,

For EMODnet Bathymetry we are giving viewing and downloading access to the EMODnet DTM in 16 tiles in a number of formats. This is complemented by OGC WMS and WCS services, which can be found at:

<http://www.emodnet-bathymetry.eu/data-products/web-services-and-standards>

There is no implementation of OpenSearch or APIs.

Kind regards

Dick M.A. Schaap

Technical Coordinator

On 9/5/2017 18:03, noreply@maris.nl wrote:

Name Graham Glanfield

Email graham.glanfield@geocento.com

Feedback / Question Dear EMODNET, We (Geocento Ltd) are currently leading a consortium of companies for an ESA funded GSTP project called the EOBroker. We are currently adding content, and would be keen to understand if you have implemented any OpenSearch functionality or other API interfaces? Best regards, Graham

On 9/25/2017 15:33, Thierry Schmitt wrote:

Dear Enda, Dear Iain,

First of all thank you for pointing out these coastal issues to us. This should be largely due to using and interpolating with GEBCO where we have no other data sources near the coast. GEBCO is quite coarse with a grid of 1km * 1 km and does not have a real coastline. Between the EMODnet 2015 and 2016 version there is also a slightly different methodology used as we moved from a grid of circa 500 meter to 250 meter.

A major issue is that we are missing bathymetry data for the near-coastal and coastal zones in most of the current EMODnet DTM and therefore it is more fit for open seas. However we are aiming to overcome this in the ongoing EMODnet HRSM project where we are gathering bathymetry data for the coastal zones and land - sea interactions, also taking into account tidal elevations, where possible and available. The gathering is focused on multibeam, LIDAR and also Satellite Derived Bathymetry data products in order to generate a more reliable DTM, both for open seas and coastal zones. Thereby we also will improve the grid resolution to circa 125 meter overall. And for sure we will take your issues into account.

So far for UK waters we have access to bathymetry data of UKHO (through OceanWise) and NERC institutes; however these do not include coastal surveys. Are you possibly in contact with regional authorities that manage coastal and near coastal surveys. If so, can you inform us of their names and contacts including email so that we can approach them for possible data deliveries.

Hoping to hear from you.

Kind regards

Thierry Schmitt and Dick M.A. Schaap
Coordinating team EMODnet HRSM

Datum: 15 september 2017 13:44:42 CEST

Aan: <dick@maris.nl>

Onderwerp: EMODnet Bathymetry Feedback form

Antwoord aan: <enda.odea@metoffice.gov.uk>

Name: Enda O'Dea

Emailaddress: enda.odea@metoffice.gov.uk

Feedback: Problematic data near coastal points. Dear Sir/Madam, we are using the data in the NEMO model. However, there are problems in the data set with regards to near coastal points in proximity to mountains. Points that are designated sea are often 10s of metres above sea level which cant be correct. (There are plenty of examples of this around the Scottish coast.) Older versions of Emodnet (Pre Sept 2015) did not have this particular issue. Please contact me for further details.