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

EMODnet Phase III

2nd Trimonthly Report

Reporting Period: 01/04/2017 – 30/06/2017

Date: 03/07/2017

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Contents

1. Highlights in this reporting period

- The Consortium Agreement between Shom as coordinator and all full partners of the EMODnet High Resolution Seabed Mapping (HRSM) Consortium has been agreed and signed by all parties on 28/06/2017. Also all bilateral Subcontracts between Shom and subcontractors in the Consortium have been agreed and signed, except for the subcontract with the Danish Geodata Agency – Danish Hydrographic Office (GST).
- The minutes and action list of the HRSM kick-off meeting 19 – 22 March 2017 have been drafted and agreed. These focus in particular on actions for the first year.
- Following the training at the kick-off meeting detailed guidelines have been prepared and circulated to all data providers concerning how to pre-process survey data sets and composite DTMs using the GLOBE software considering the new common target grid resolution for the overall EMODnet DTM of 1/16 arc minutes. Moreover the formulation of the EMODnet DTM Quality Index has been revised and derived from this a guideline has been drafted and circulated to all data providers concerning extra metadata attributes that should be provided when describing survey data sets by CDI format and composite DTMs by Sextant format.
- The EMODnet HRSM project has been presented at the EGU 2017 Conference in Vienna, Austria, and at the the International Hydrographic Organization (IHO) Assembly meeting in Monaco.

2. Meetings held since last report

No formal meeting has been held since our kick off meeting in March 2017. Meetings have been held through conference calls.

Date	Location	Topic	Short Description
April / May /June 2017	Brest, France	Tuning between Shom and IFREMER	Drafting of guidelines for data pre-processing and DTM Quality Index formulation.

3. Work package updates

WP0 – Project Management

Following the kick-off meeting extensive minutes and list of actions have been prepared, circulated as draft and agreed with all Consortium members. The minutes give a detailed action plan for the first year of the project. The earlier prepared draft Consortium Agreement has been further reviewed and this has resulted in a version that has been accepted and signed by all partners in the Consortium. In addition subcontracts have been agreed and signed by nearly all subcontractors, except by Danish Geodata Agency – Danish Hydrographic Office (GST). Just like in the previous EMODnet Bathymetry project it appears difficult for GST to contribute their data to EMODnet due to their data policy and business modus. It is hoped that a solution can be found as the Danish data represent an important input for both the North Sea and the Baltic Sea regional DTMs. Following the kick-off meeting consortium members have been encouraged to start working on the agreed priority actions.

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

At the training workshop during the project kick-off meeting, end March 2017, all data providers had been instructed and trained in the software tools and services made available by the project and to be used for the production of metadata (Mikado), pre-processing of their data sets (GLOBE) and production of regional DTMs (GLOBE). This has been followed up by a team of Shom, IFREMER, GGSGC, MARIS and RNLN upgrading the formulation of the Quality Index for the EMODnet DTM which has resulted in requirements for extra metadata attributes to be supplied by data providers. Therefore a guideline has been drafted and circulated to all data providers concerning the Quality Index and what extra metadata to provide for new metadata entries, but also for already existing metadata entries. Furthermore a guideline has been drafted and circulated to all data providers how to pre-process their data submissions to regional DTM coordinators using the GLOBE software. This way it is strived that all survey data and composite DTMs will be pre-gridded and pre-processed in the standard EMODnet DTM methodology.

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

A team of Shom and IFREMER has been working on upgrading the EMODnet methodology for generating the regional DTMs considering the new target resolution of 1/16 arc minute for the overall EMODnet DTM and insets with higher resolution, where possible. Moreover IFREMER has been working on upgrading the GLOBE software to make it ready for data providers (see WP1) and regional

coordinators (WP2). An update version is ready for data producer to use to produce to their data. A new version will be provided early fall to the basin coordinator to help them merging multiple data sources.

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:

Following the earlier launch of the upgraded EMODnet Bathymetry portal further work has been undertaken for upgrading also the look & feel and including responsive design of the related services. The Sextant catalogue service for composite DTMs has recently been upgraded by IFREMER and is now operational, embedded by API. For the CDI Data Discovery and Access service new screens have been designed by MARIS and work is ongoing for the development and implementation. GGSGC has drafted new screens for the Bathymetry Viewing and Download service which are being evaluated. Moreover IFREMER, GGSGC and MARIS have been analysing the technical requirements for possibly migrating the hosting of the Bathymetry Viewing and Download service to the DATARMOR computing facility, run by IFREMER, in Bretagne, France. This will be continued. Finally a first analysis has been made of the cloud computing pilot that is planned in the 2nd year for developing regional DTMs as part of a Virtual Research Environment (VRE) and using online GLOBE software. This analysis is tuned with the VRE developments

WP5 – Coastlines, legal baselines and vertical reference levels:

Data providers have started providing elements concerning their national baselines

WP6 – Outreach, helpdesk and evaluation

The EMODnet Bathymetry projects and its products and services have been presented by MARIS in the ESSI1.1 session of the EGU 2017 Conference, 24 April 2017, in Vienna - Austria. Also an outlook was given about the new High Resolution Seabed Mapping phase.

The International Hydrographic Organization (IHO) held its Assembly in Monaco, 24 – 28 April 2017. Thirteen partners of the EMODnet HRSM consortium were present. EMODnet HRSM was cited on multiple occasions as a successful regional project involving both hydrographic offices and research institutes with complementing approaches in terms of data coverage and methodologies (acquisition, processing and validation). The Seabed 2030 initiative (https://seabed2030.gebco.net/), led by the IHO-IOC GEBCO, under the financial sponsorships of the Nippon Foundation and launched on the 6/6/2017, recognised EMODnet Bathymetry as a worldwide key actor of bathymetric data production (https://seabed2030.gebco.net/documents/seabed_2030_roadmap_v10_low.pdf).

EMODnet HRSM was introduced at the EMODnet Geology kick-off meeting as a proof of active and future collaborations. The helpdesk has received multiple questions. The user questions received and answered are detailed in chapter 5 and Annex 1.

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

The acceptance and signing of the Consortium Agreement has taken more time than anticipated due to legal discussions with some new members. Also the subcontracts have only recently been signed by nearly all subcontractors. This delay had a side effect that data providers did not yet start with their metadata and data population and pre-processing activities which are on the critical path of the project planning because most other activities depend on these results. The coordinating team has sent out emails to encourage / urge data providers to start their activities.

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
2017-04-03	Hani	UNESCO, IHE, Netherlands	Question about historic data sets	Three days later
2017-04-07	David Harrison	FUGRO	Question about using EMODnet DTM in publication.	Three days later
2017-04-12	Bjarni Pjetursson	GEUS, Denmark	Question about shaded WMS	Three days later
2017-04-13	Valentina Vannuchi	?	Question about vertical reference.	Two days later
2017-04-14	Hugo Lopez-Castrillo	?	Downloading DTM for Mediterranean.	One day later
2017-05-08	David Harrison	FUGRO	Continuation of earlier communication about using EMODnet DTM in publication and	Not applicable

			sharing FUGRO data.	
2017-05-15	malcolm.herring	?	Reference level for bathymetry	Two days later
2017-06-14	Iker Blasco	IGME, Spain	How to download the DTM	Two days later
2017-06-30	Marian Mierla	DDNI, Romania	Change of website URL and email for DDNI in EDMO	Two days later

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
2017-04-24	Presentation at EGU 2017 Conference, Vienna, Austria	EMODnet High Resolution Seabed Mapping – further developing a high resolution digital bathymetry for European seas	Web link: Presentation by MARIS
2017-04-24 to 28	Presence of 13 members of the consortium at the IHO Assembly		Refer to https://www.iho.int/mtg_docs/conf/19IHC2017/letters/A1_WP1_01_EN.pdf
2017-05-30 to 31	Emodnet Geology Kick Off meeting	EMODNet High Resolution Seabed Mapping (HRSM)	Technical presentation done in order to introduce potential collaboration between both thematic portals
2017-05	Short insert in the French review Geomètre	Portal.emodnet-bathymetry.eu	Gémoètre – Revue des géomètres-experts n°2147 – Mai 2017
2017-06-21	Oral presentation at the 16th International User Conference, CARIS 2017	Data Dissemination and Interpretation at the British Geological Survey	Technical presentation done by BGS in front of the community of users of the bathymetric softwares CARIS
2017-06-21	Oral presentation at the 16th International User Conference, CARIS 2017	Coastal and Marine Spatial Data Infrastructure in Flanders, Belgium	Technical presentation done by MDK in front of the community of users of the bathymetric softwares CARIS
2017-06-01	Popular journal “le Marin”	L’hydrographie vers un partage de données	http://www.lemarin.fr/archives/search/shom/Le%20Marin/2017-06-01/2017-06-01

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.

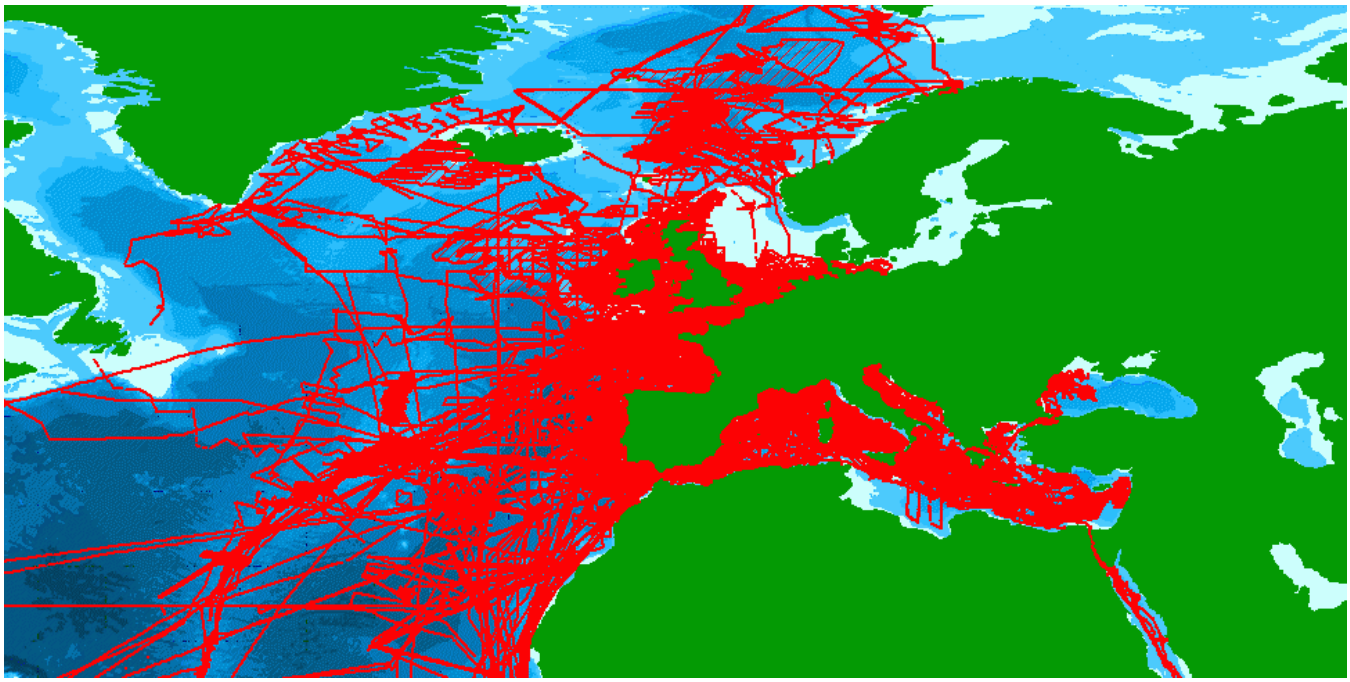
Indicator 1 - Volume of data made available through the portal

The total number of CDIs for bathymetric survey data sets has slightly increased from **14857 to 14864.**

The total in production covers the whole globe. Specifically relevant for European waters has not increased: **11570.**

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
Shom	France	4651	0	4651
Rijkswaterstaat Centrale Informatievoorziening	Netherlands	2165	0	2165
OceanWise Limited	United Kingdom	2066	0	2066
IFREMER / IDM / SISMER - Scientific Information Systems for the SEA	France	729	292	437
Royal Netherlands Navy, Hydrographic Service	Netherlands	313	0	313
IHPT, Hydrographic Institute	Portugal	275	0	275
German Oceanographic Datacentre (NODC)	Germany	256	256	0
Flemish Ministry of Mobility and Public Works; Agency for Maritime and Coastal Services; Coastal Division	Belgium	248	0	248
Geological Survey of Ireland	Ireland	223	223	0
British Oceanographic Data Centre	United Kingdom	100	68	32
Management Unit of North Sea and Scheldt Estuary Mathematical Models, Belgian Marine Data Centre	Belgium	93	93	0
Hellenic Centre for Marine Research, Hellenic National Oceanographic Data Centre (HCMR/HNODC)	Greece	76	0	76

CNR, Institute of Marine Science (ISMAR) - Bologna	Italy	73	0	73
IEO/Spanish Oceanographic Institute	Spain	66	0	66
Hydrographic Institute of the Navy	Spain	58	0	58
Portuguese Institute of Ocean and Atmosphere	Portugal	54	0	54
NIOZ Royal Netherlands Institute for Sea Research	Netherlands	30	0	30
OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale), Infrastructures Division	Italy	24	0	24
Bulgarian National Oceanographic Data Centre(BGODC), Institute of Oceanology	Bulgaria	20	0	20
OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale), Division of Oceanography	Italy	10	0	10
GRID-Arendal	Norway	10	0	10
National Institute of Marine Geology and Geoecology	Romania	9	0	9
Marine Technology Unit. Mediterranean Marine and Environmental Research Centre	Spain	6	0	6
Jardfeingi, the Faroe Islands Earth and Energy Directorate	Faroe Islands	5	0	5
Institute of Marine Sciences. Mediterranean Marine and Environmental Research Centre (CMIMA-ICM-CSIC). Department of Marine Geology	Spain	5	0	5
International Ocean Institute - Malta Operational Centre (University Of Malta) / Physical Oceanography Unit	Malta	4	0	4
SC Marine Research SRL	Romania	3	0	3

Totals		**11570**	**932**	**10638**

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 April 2017 – 30 June 2017:

CDIs:

No of CDI basket transactions: **22**
No of CDIs requested: **2846**
Different users: **14**
Different data centres: **16**

Data products – DTMs:

Tile	Downloads
Area of interest	5789
B3	749
C3	494
B4	394
C4	349
D4	341
B2	320
C2	289
D3	266

A4	147
A3	111
A2	106
D2	96
C1	71
B1	63
D1	54
A1	52
	9691

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	4469
32 bit float GeoTiff	1284
GeoTiff	1153
RGB GeoTiff	1035
XYZ	691
NetCDF	580
EMO	207
SD	164
EMO (without GEBCO data)	108
	9691

Indicator 5 - Organisations that have downloaded each data type

Organisation	Country
?	Germany
RPS	United Kingdom
UPCT	Spain
MARIS	Netherlands
Faculdade de Ciências da Universidade de Lisboa	Portugal

UNIVERSITY OF THE AZORES	Portugal
UNESCO-IHE	Netherlands
Ulster university	United Kingdom
Arcadis	Netherlands
QUB	United Kingdom
??	Croatia
Marine Institute	Ireland
MARIENE INFORMATIE SERVICE MARIS B.V.	Netherlands
Deltares	Netherlands

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 April 2017 – 30 June 2017:

Bathymetry main portal:

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Apr-17	7,013	8,395	29,746	77,222	3.09 GB
May-17	7,058	8,729	47,399	153,443	3.98 GB
Jun-17	7,122	8,682	78,472	191,738	4.72 GB

Visitors in June 2017:

Pages-URL (Top 10) - Full list - Entry - Exit

5,347 different pages-url	Viewed	Average size	Entry	Exit
/	57,069	6.50 KB	7,943	6,952
/fonts/raleway-regular-webfont.woff	1,158	30.25 KB	36	47
/fonts/raleway-bold-webfont.woff	1,091	30.22 KB	19	195
/fonts/fontawesome-webfont.woff	1,072	80.04 KB	23	117
/content/content.php?menu=3	1,039	12.40 KB	135	445
/v_cdi_v3/dummy.asp	752	181 Bytes	4	
/content/content.php?menu=2	670	11.25 KB	47	74
/content/feedback_iframe.asp?menu=0000022_000000	425	1.50 KB	13	11
/v_cdi_v3/browse.asp?screen=1&time_series=false&&page_size=20	391	27.37 KB	1	2
/v_cdi_v3/browse_step_questions.asp?step_question=7&	385	628 Bytes	2	
Others	14,420	52.87 KB	459	826

Bathymetry DTM viewer service:

Month	Unique visitors	Pages	Hits	Bandwidth
April 2017	3654	8921	14172	109.66 Gb
May 2017	4137	14626	21406	108.79 Gb
June 2017	3809	9450	1436	168.54 Gb

Visitors

Hosts

Top Hosts

	Host	Country	Hits	Visitors	Bandwidth (KB)
1	60.red-192-148-213.customer.static.ccgg.telefonica.net	Spain	14,236	701	121,630
2	unknown.shom.fr	France	237	97	7,118,047
3	u-152-61-128-50.xr.usgs.gov	United States	630	90	4,774
4	mail.rvpetro.ru	Russian Federation	61	57	316
5	google-proxy-66-249-93-7.google.com	United States	58	56	313
6	140.red-212-128-98.customer.static.ccgg.telefonica.net	Spain	216	53	15,437,337
7	google-proxy-66-249-93-35.google.com	United States	53	53	275
8	google-proxy-66-249-93-5.google.com	United States	55	51	285
9	google-proxy-66-249-93-40.google.com	United States	50	49	259
10	lpr83-2-78-239-25-91.fbx.proxad.net	France	59	49	306
11	webdefence.cluster-x.websense.net	Netherlands	55	47	417,696
12	google-proxy-66-249-93-3.google.com	United States	48	45	261
13	static-5-51-41-68.ftth.abo.bbox.fr	France	226	36	1,174
14	google-proxy-66-249-93-38.google.com	United States	38	35	197
15	static.kpn.net	Netherlands	62	33	498,970
16	78.187.110.46.dynamic.ttnet.com.tr	Turkey	65	33	343
17	5.22.198.10	Iran	55	31	280
18	nat.bo.ismar.cnr.it	Italy	53	30	1,069,245
19	u-152-61-192-232.xr.usgs.gov	United States	180	28	1,343
20	112.144.108.93.rev.vodafone.pt	Portugal	28	27	145
21	185.51.254.254	United Kingdom	40	26	207
22	fw1.marum.de	Germany	58	26	1,746,031
23	195.251.37.190	Greece	61	26	316
24	150-70-173-11.trendmicro.com	Japan	27	25	444
25	17-142-150-32.applebot.apple.com	United States	44	25	250
26	62.61.142.22.generic-hostname.arrownet.dk	Denmark	37	24	192
27	150-70-173-12.trendmicro.com	Japan	25	24	404
28	modemcable251.250-178-173.mc.videotron.ca	Canada	24	24	124
29	190-135-168-194.static.virginm.net	United Kingdom	64	24	2,142,653
30	santander.st.ieo.es	Spain	46	23	1,568,061
31	proxy-b.ecmwf.int	United Kingdom	31	23	161
32	193.136.242.245	Portugal	62	22	3,281,887
33	194.78.98.59	Belgium	117	22	1,304,544
34	95.58.154.104.bc.googleusercontent.com	United States	31	22	156
35	64.62.252.164	United States	56	22	318
36	users-1190.st.net.au.dk	Denmark	43	21	1,268,655
37	193.1.186.252	Ireland	61	21	316
38	pub151248133007.dh-hfc.datazug.ch	Switzerland	29	21	150
39	Nautilus.MathStat.Dal.Ca	Canada	147	21	26
40	net-188-219-205-42.cust.vodafonedsl.it	Italy	55	21	2,315,125
41	194.254.35.128	France	21	21	109
42	9.red-212-170-218.customer.static.ccgg.telefonica.net	Spain	23	21	119
43	ecascr.ecatou.fr	France	22	21	114
44	labecolftp.env.duth.gr	Greece	39	20	447,245

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.

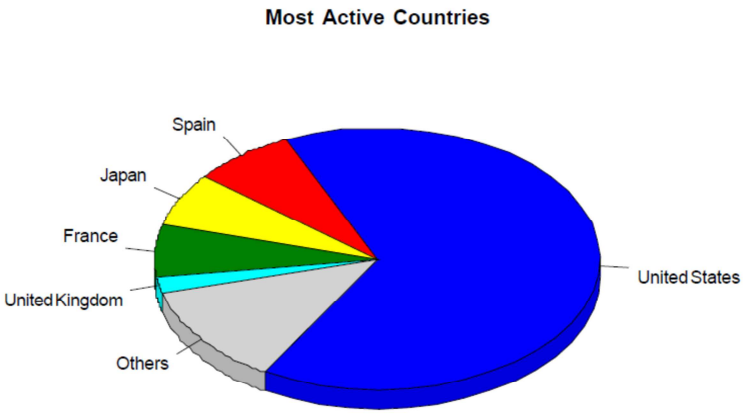
Bathymetry is also an important parameter next to geological and geophysical parameters for companies involved in the planning and construction of offshore windmill farms which need high resolution geophysical and soil information for calculating the stability of the sea bed conditions. The dredging 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	6,722,918
Average Page Views per Day	73,878
Average Page Views per Visitor	113.87
Visitors	
Total Visitors	59,040
Average Visitors per Day	648
Total Unique IPs	9,710

The total number of pageviews is more than 6.7 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.



Hosts

Top Hosts

	Host	Country	Hits	Visitors	Bandwidth (KB)
1	52.56.127.87	United States	244,425	816	4,846,708
2	52.57.254.165	United States	501,137	588	8,350,034
3	52.57.254.97	United States	547,112	580	8,989,407
4	52.56.127.124	United States	135,993	488	2,625,488
5	35.167.191.183	United States	14,973	410	342,795
6	34.195.252.64	United States	47,215	377	784,226
7	34.195.252.5	United States	46,556	356	770,190
8	130.206.32.66	Spain	171,844	332	3,808,854
9	34.195.252.184	United States	34,548	331	588,982
10	52.56.127.106	United States	108,743	309	2,242,636
11	52.56.127.5	United States	9,539	302	192,168
12	52.56.127.13	United States	10,569	300	216,219
13	52.56.127.121	United States	8,434	297	182,373
14	52.56.127.109	United States	8,304	296	170,519
15	52.56.127.89	United States	10,433	291	199,949
16	52.56.127.11	United States	9,689	287	180,230
17	52.56.127.66	United States	9,598	285	193,008
18	52.56.127.99	United States	8,494	285	174,660
19	52.56.127.57	United States	10,391	283	206,293
20	52.56.127.29	United States	9,357	282	191,173
21	52.56.127.78	United States	10,539	281	207,320
22	52.57.254.221	United States	8,697	281	125,167
23	52.57.254.212	United States	8,110	278	148,905
24	52.57.254.17	United States	8,226	277	157,436
25	52.57.254.195	United States	7,190	277	127,305
26	52.57.254.74	United States	7,331	277	128,495
27	52.57.254.128	United States	8,086	277	147,638
28	52.57.254.236	United States	7,750	275	135,173
29	52.57.254.210	United States	7,782	274	140,965
30	52.57.254.203	United States	7,521	273	137,991
31	52.57.254.170	United States	7,211	272	132,422
32	52.57.254.111	United States	7,208	272	131,198
33	52.57.254.112	United States	8,145	272	148,149
34	52.57.254.0	United States	7,931	272	136,782
35	52.57.254.241	United States	7,657	271	127,506
36	52.57.254.177	United States	8,366	271	145,458
37	52.57.254.213	United States	7,393	270	133,287
38	52.57.254.81	United States	8,935	270	139,218
39	52.57.254.234	United States	7,410	269	133,050
40	52.57.254.185	United States	7,359	269	122,683
41	52.57.254.123	United States	8,162	268	139,094
42	52.57.254.126	United States	7,707	268	145,760
43	52.57.254.187	United States	7,641	267	139,968
44	35.162.63.239	United States	12,408	267	311,144

Indicator 9 – List of publications referencing to EMODnet Bathymetry

The following references to EMODnet Bathymetry can be found using Google Scholar on the 03/07/2017. References are given for accepted papers and edited books from 01/04/2017 onwards. This list is not an exhaustive list of all existing publications.

June 2017	*Renewable and Sustainable Energy Reviews.* *(Peer review journal)*	Feasibility study of an offshore wind farm in the Aegean Sea, Turkey	http://www.sciencedirect.com/science/article/pii/S1364032117310055
June 2017	*Geo-Marine Letters* *(Peer review journal)*	Morphology of the last subaerial unconformity on a shelf: insights into transgressive ravinement and incised valley occurrence in the Gulf of Cádiz.	https://link.springer.com/article/10.1007/s00367-017-0511-9
May 2017	*Natural Hazards* *(Peer review journal)*	Tsunami hazards in the Catalan Coast, a low-intensity seismic activity area	doi:10.1007/s11069-017-2918-z
February 2017	*Thesis report*	Estudio sobre la viabilidad económica de un parque eólico Offshore en España	http://oa.upm.es/45981/1/TFG_JOSE_IGNACIO_DIAZ_VILLAMOR.pdf
May 2017	*Wind Engineering* *(Peer review journal)*	Assessment of levelized cost of electricity of offshore wind energy in Egypt	http://journals.sagepub.com/doi/abs/10.1177/0309524X17706846
May 2017	*Uder the Sea: Archaeology and Palaeolandscapes of the Continental Shelf* *(Book Chapter)*	Palaeotopography and Transgression Velocity on the Continental Shelf	https://link.springer.com/chapter/10.1007/978-3-319-53160-1_3
May 2017	*Stochastic Environmetal Research and Risk Assessment* *(Peer review journal)*	Source characterisation by mixing long-running tsunami wave numerical simulations and historical observations within a metamodel-aided ABC setting	https://link.springer.com/article/10.1007/s00477-017-1423-y
May 2017	*Submerged Landscapes of the European Continental Shelf: Quaternary*	Standard Core Variables for Continental Shelf Prehistoric Research and Their Availability	https://books.google.fr/books?hl=fr&lr=&id=x5jCDgAAQBAJ&oi=fnd&pg=PA83&dq=%22emodnet+bathymetry%22+-habitat&ots=Xfquy7b5qv&sig=tl28lW1-

	Paleoenvironments *(Book Chapter)*		MoeCiKXii0mIceHBjEc#v=onepage&q=%22emodnet%20bathymetry%22%20-habitat&f=false
April 2017	*Journal of Applied Ecology.* *(Peer review journal)*	Seals and shipping: quantifying population risk and individual exposure to vessel noise.	http://onlinelibrary.wiley.com/doi/10.1111/1365-2664.12911/full
April 2017	*Proceeding of the Royal Society* *(Peer review journal)*	Statistical emulation of landslide-induced tsunamis at the Rockall Bank, NE Atlantic.	http://rspa.royalsocietypublishing.org/content/473/2200/20170026
April 2017	*AIMS ENERGY* *(Peer review journal)*	Assessment of offshore wind power potential in the Aegean and Ionian Seas based on high-resolution hindcast model results	https://www.researchgate.net/profile/Takvor_Soukissian/publication/315464558_Assessment_of_offshore_wind_power_potential_in_the_Aegean_and_Ionian_Seas_based_on_high-resolution_hindcast_model_results/links/58d8eb9f92851c44d4ae3363/Assessment-of-offshore-wind-power-potential-in-the-Aegean-and-Ionian-Seas-based-on-high-resolution-hindcast-model-results.pdf

Annex 1: Feedback from and to users

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Subject: Re: EMODnet Bathymetry Feedback form
Date: Tue, 6 Apr 2017 16:51:59 +0200
From: Dick M.A. Schaap <dick@maris.nl>
To:moham152@unesco-ihe.org

Dear Hani,
The EMODnet Bathymetry portal has a CDI Data Discovery and Access service which allows to search for data and then to request access to these data sets from their data owner.
See: http://www.emodnet-bathymetry.eu/metadata-and-data
It contains circa 15.000 entries and many are historic. The User Interface allows you to search for a specific lat lon box to see if there are multiple data sets available for that area.
Hope this helps.
Kind regards
Dick M.A. Schaap
Technical coordinator

On 4/3/2017 11:32, noreply@maris.nl wrote:

Name	Hani
Email	moham152@unesco-ihe.org
Feedback / Question	I am a master student of the IHE institute Delft, the Netherlands. I have some questions regarding how to obtain data. I would like to know if I could obtain historical bathymetry data because my research is concerning the changes to the sea bed and sea level. Thank you.

On 4/10/2017 17:28, Dick M.A. Schaap wrote:
Dear David,
Sorry for some delay in answering.
You are very welcome to refer to the EMODnet Bathymetry portal and to use extracts of the DTM for your paper.
Please use the following acknowledgement:

EMODnet Bathymetry Consortium (2016): EMODnet Digital Bathymetry (DTM).
http://doi.org/10.12770/c7b53704-999d-4721-b1a3-04ec60c87238

and website: www.emodnet-bathymetry.eu

Also we would like to receive a copy or link to your paper once it is published so that we can highlight it in the portal.
We recently started a new phase of the project to include also coastal areas, to bring the overall DTM resolution to 1/16 arc minute from 1/8 now, and to expand coverage to include the European arctic and Barentz sea. Moreover to add extra functionality to the DTM viewer and download service, aiming for adding 3D in the browser.
For this development we are always in search of more bathymetry data that can be indexed in our metadata services and then used internally at an agreed resolution to enrich the overall DTM.
Would Fugro be interested to contribute?
Kind regards,
Dick M.A. Schaap
Technical Coordinator EMODnet HRSM

On 4/7/2017 10:40, noreply@maris.nl wrote:

Name	David Harrison
Email	dp.harrison@fugro.com
Feedback / Question	Good morning, My name is David Harrison, I am a geologist at Fugro in the UK, with my work focusing on submarine geohazards and data integration for offshore pipelines, wind farms, oil and gas development etc. We are currently writing a paper for a the Offshore Site Investigation and Geotechnics (OSIG) committee's 8th international conference "Smarter Solutions for Future Offshore Developments" later this year. Would you be happy for us to use extracts of the EMODnet bathymetry data for some figures in the paper, and if so, how would you like us to reference you in the paper? Also, many thanks for all your work on the database, the level of detail in the data, and the portal interface is fantastic. How often do you update the database? And have you any plans to expand the extents in the future? Regards, David Harrison

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Subject: Re: EMODnet Bathymetry Feedback form
Date: 15 Apr 2017 17:41:02 +0200
From: Dick M.A. Schaap <dick@maris.nl>
To:bpj@geus.dk

Dear Bjarni,
I discussed with one of my technical colleagues and he suggested the following:

Try to use the WCS. A grayscale WMS is almost the same. Only it gives te lowest point with 0 and the highest with 100 (or 255) . The WCS gives of course real depths but it shuld not be too difficult for you to work with the WCS service.
http://ows.emodnet-bathymetry.eu/wcs

Hope this helps.

Kind regards
Dick M.A. Schaap
Technical coordinator

On 4/12/2017 11:06, noreply@maris.nl wrote:

Name	Bjarni Pjetursson
Email	bpj@geus.dk
Feedback / Question	Dear EMODnet collegues. Would it be possible to add an extra WMS layer to your service, to provide a gray-scaled layer, where the level of gray is proportional to the depth? I experiment with HTML5 3D viewing of deep layer data by using gray-scaled WMS sources. See example here: http://data.geus.dk/geoterm/get_3d.jsp?bbox=556490,6321102,591922,6356535#layers=dtm,BunterSstFm_BasisDybde (On-shore deep sand formations - in Danish) Best wishes Bjarni Pjetursson (Part of EMODnet3 Geology) GEUS

Subject: Fwd: Re: EMODnet Bathymetry Feedback form
Date: 15 Apr 2017 17:36:16 +0200
From: Dick M.A. Schaap <dick@maris.nl>
To:valentina.vannucchi@gmail.com

Dear Valentina,
All depth values are referenced to Lowest Astronomical Tide (LAT). See also page :
http://www.emodnet-bathymetry.eu/data-products/qaqc-and-dtm-production-details
Kind regards
Dick M.A. Schaap
Technical coordinator

On 4/13/2017 18:12, noreply@maris.nl wrote:

Name	Valentina
Email	valentina.vannucchi@gmail.com
Feedback / Question	In the bathymetric data the zero above the average sea level to what is reported? Thanks. Valentina

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Subject: Re: EMODnet Bathymetry Feedback form
Date: Tue, 15 Apr 2017 18:08:48 +0200
From: Dick M.A. Schaap <dick@maris.nl>
To:hugolcp@gmail.com

Dear Hugo,
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 the Help section:
http://portal.emodnet-bathymetry.eu/help/help.html
The Mediterranean Sea consists of a number of tiles that you can download.
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 the full Mediterranean Sea in 3D view. Please do read the manual of that software.
Hope this helps.
Kind regards
Dick M.A. Schaap
Technical Coordinator

On 4/14/2017 1:50, noreply@maris.nl wrote:

Name	Hugo Lopez-Castrillo
Email	hugolcp@gmail.com
Feedback / Question	Hello, I would like to know if it's possible to obtain bathymetric data for the whole Mediterranean Sea. As part of an educational project I would like to print a 3D model of the volume of water seafloor

-------- Forwarded Message --------
Subject:RE: EMODnet Bathymetry Feedback form
Date: Mon, 8 May 2017 10:52:58 +0000
From: Harrison, David [FGBML] <dp.harrison@fugro.com>
To:'Dick M.A. Schaap' <dick@maris.nl>

Dick,
I've been away for a couple of weeks so please forgive my late reply.
Thank you for your response. We have included an acknowledge in the paper, which will form a keynote at the OSIG 8th International Conference "Smarter Solutions for Future Offshore Developments" in September this year. Once reviewed and published I will send you a link.
Regarding provision of bathymetry data for your database, the data that Fugro acquires is owned by our clients and so unfortunately we cannot provide our datasets for public use. However, we do get permissions off some of our clients to present their data in papers, and so in some of these cases, they may be more inclined to make the data available for the EMODnet database. I will enquire and get back to you on this.
Kind regards
David Harrison
Engineering Geologist
Fugro GB Marine Limited
Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB, UK
Registered in England No. 1135456 | VAT No. GB 579 3459 84

From: Dick M.A. Schaap [mailto:dick@maris.nl]
Sent: 25 April 2017 16:29
To: Harrison, David [FGBML]
Subject: Re: EMODnet Bathymetry Feedback form

Dear David,
Sorry for some delay in answering.
You are very welcome to refer to the EMODnet Bathymetry portal and to use extracts of the DTM for your paper.
Please use the following acknowledgement:

EMODnet Bathymetry Consortium (2016): EMODnet Digital Bathymetry (DTM).
http://doi.org/10.12770/c7b53704-999d-4721-b1a3-04ec60c87238
and website: www.emodnet-bathymetry.eu

Also we would like to receive a copy or link to your paper once it is published so that we can highlight it in the portal.
We recently started a new phase of the project to include also coastal areas, to bring the overall DTM resolution to 1/16 arc minute from 1/8 now, and to expand coverage to include the European arctic and Barentz sea. Moreover to add extra functionality to the DTM viewer and download service, aiming for adding 3D in the browser.
For this development we are always in search of more bathymetry data that can be indexed in our metadata services and then used internally at an agreed resolution to enrich the overall DTM.
Would Fugro be interested to contribute?
Kind regards,
Dick M.A. Schaap
Technical Coordinator EMODnet HRSM

Subject: Re: EMODnet Bathymetry Feedback form
Date: Wed, 17 May 2017 00:25:39 +0200
From: Dick M.A. Schaap <dick@maris.nl>
To:malcolm.herring@btinternet.com
Dear Malcolm,
All depths are to LAT (Lowest Astronomical Tide).
Kind regards
DMA Schaap
Technical Coordinator
On 5/15/2017 9:45, noreply@maris.nl wrote:
Name: Malcolm Herring
Emailaddress: malcolm.herring@btinternet.com
Feedback: What vertical datum are the depths referenced to?
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-------- Forwarded Message --------
Subject: Re: EMODnet Bathymetry Feedback form
Date: Tue, 16 Jun 2017 17:12:55 +0200
From: Dick M.A. Schaap <dick@maris.nl>
To:i.blasco@igme.es
Dear Iker,
Thanks for your interest. Please follow the steps:
* go to: www.emodnet-bathymetry.eu
* click on: EMODnet DTM - Bathymetry Viewing and Download service

* click on: the MAP Picture => this brings you to: portal.emodnet-bathymetry.eu
* open the layer menu on the left in the top bar
* activate a waterdepth layer, e.g.: Mean depth full coverage
* you will then see a map of European waters with the bathymetry
* in the top bar at the right you will see a button: Download products
* click on this button and a grid with 16 tiles will appear
* click on a tile and you will be able to download the selected tile in a format of your choice.

There is also a HELP ? in the Bathymetry Viewing and Download service which explains additional functionality for this service. Moreover there is additional information about the EMODnet DTM and ways to use the downloaded files in the section: http://www.emodnet-bathymetry.eu/data-products
Hope this helps.
Kind regards,
Dick M.A. Schaap
Technical Coordinator
On 6/14/2017 13:16,
noreply@maris.nl wrote:

Name	Iker
Email	i.blasco@igme.es
Feedback / Question	Dear Mr/Mss I am really interested in new EMODnet DTM released with high resolution of 1/8*1/8 arc minutes grid. I would thank you so much if you could guide me how to download it. Best regards, Iker Blasco

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-------- 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
Feedback / Question	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