



## EMODnet Thematic Lot n° 4/SI2.749773

EMODnet Chemistry Phase III - Trimonthly Report

Reporting Period: 01/03/2017 - 30/06/2017

Date: 17/07/2017

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# 1. Highlights in this reporting period

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The new phase of the EMODnet Chemistry project started on March 6<sup>th</sup> 2017. The highlights for the period March-June 2017 are listed below:

- The Technical Working Group met 3 – 4 April 2017 to prepare for the coming project kick-off meeting annex training workshop, and to develop the strategy for gathering, managing and publishing Marine Litter data, involving major stakeholders
- Set-up of the EMODnet Chemistry Board of MSFD experts, with representatives identified by RSCs, by JRC and by the marine research community
- The full consortium and the Board of MSFD experts met 16 – 18 May 2017 for the Chemistry III kick-off meeting, presenting and discussing objectives, actions and commitments of all members. The meeting also included a training workshop around the formats and tools to be used for production of metadata and data sets.
- Sharing and tuning of EMODnet Chemistry approach for the collection of Marine Litter data with major stakeholders by participating and presenting at meetings of the TG Data, MSFD TG Marine Litter, contacting UNEP MAP, ICES, OSPAR, MEDITS, and BSCS for cooperation, and participating in the Marine Litter Baselines Workshop.
- Contribution to the Black Sea State of Environment report with data on Nutrients and Contaminants
- Contribution to the Quality Status Report 2017 for the Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast, with the development of two case studies on EO5 (CI 13 and 14) with EMODnet Chemistry dataset in the Mediterranean Sea

## 2. Meetings held since last report

Date	Location	Topic	Short Description
14-15/03/2017	Brussels	Workshop on Marine Litter Baselines	Workshop dedicated to understand the availability of data on marine litter in the various compartments/matrices
28-31/03/2017	Kuala Lumpur, Malaysia	24th Session of the IOC Committee on IODE	Informative information on EMODnet Chemistry were provided to IODE representatives
03-04/04/2017	Venice	First EMODnet Chemistry Technical Working Group	With MARIS, OGS, IFREMER, ICES, AWI, ULg, ISPRA, NERC-BODC and Deltares, aimed to set the strategy for the Marine Litter data collection, the updating and optimization of viewing services, related data and metadata
10-12/04/2017	Limassol, Cyprus	EMODnet Data Ingestion Meeting	Discussing ingestion priorities for Chemistry and pathways
24-28/04/2017	Las Palmas de Gran Canaria	Maritime Spatial Planning, Ecosystem Approach and Supporting Information Systems (MaPSIS)	EMODnet chemistry results in support to EU marine policies: use cases
11/05/2017	Skype	Meeting with UNEP/MAP	Meeting with UNEP/MAP, OGS and HCMR to identify how to use EMODnet Chemistry data for the Mediterranean QSR.
16/05/2017	Trieste	1 <sup>st</sup> EMODnet Chemistry Steering Committee meeting	With OGS, MARIS, IFREMER, IMR, AU-DCE, SMHI, HCMR, NIMRD, ICES and ISPRA, aimed to agree on the 1 <sup>st</sup> year work plan and deliverables
17-18/05/2017	Trieste	1 <sup>st</sup> EMODnet Chemistry Coordination group meeting with session dedicated to the Board of MSFD experts	1 <sup>st</sup> Plenary meeting aimed to share the work plan, with deadlines and deliverables with the whole group and the Board of MSFD experts. The need to get feedback on existing data products to tune future development was strongly underlined
23/05/2017	Brussels	EMODnet Kick-off meeting	Organized by EASME with the coordinators from all lots, the secretariat and DG MARE
07/06/2017	Copenhagen	TG DATA	Discussion on data flow to fulfill MSFD Art 19.3 with EEA, INSPIRE, MS and EMODnet

08-09/06/2017	Gdansk, Poland	MSFD TG Marine Litter	EMODnet Chemistry approach was presented together with the data format defined for micro-litter
15/06/2017	Rome	Meeting with INFO/RAC	Informal meeting to discuss and agree on the integration of EMODnet standards into the Mediterranean platform

### 3. Work package updates

The new phase of the Chemistry project officially started on the 6<sup>th</sup> of March, 2017 but the partnership activity has not ended after the closing of the 2<sup>nd</sup> phase, but continued until the starting of this 3<sup>rd</sup> phase. In the following, the updates per WP mainly focused to the period March-June 2017.

#### ***WP1 – Project Management***

As soon as the outcomes of the procurement procedure were received, the coordination activity started.

The first actions concerned the collection of all administrative documents integrating the evidence already provided in the submission phase and, in the same time, the organisation of the 1<sup>st</sup> Technical Working group (TWG) and of the 1<sup>st</sup> Coordination group meeting, foreseen respectively for month 1 and month 3.

As further step, the Consortium Agreement was circulated among the 27 partners and the Subcontract template was bilaterally exchanged with the 18 subcontractors. A couple of critical requests of changes were shared with EASME to get advice on how to proceed. The final CA was sent for signing on May 30<sup>th</sup>, 2017.

The minutes of the meetings held have been published on the Chemistry portal.

#### ***WP2 – Data collection and metadata population***

During the coordination meeting, the aims, work plan and deadlines for WP2 were recalled. The focus will be on the continuation of gathering data concerning **eutrophication (nutrients, chlorophyll and oxygen)** and selected **contaminants** as an extension of the previous EMODnet Chemistry Phase 2. This scope must be expanded with **riverine input of nutrients**. A review of the data already included in the infrastructure is requested to upgrade the current metadata with additional information on monitoring/research purpose (with EDMERP references) and on Quality Assurance and Quality Control (QA/QC) procedures. Activity deadlines are the following:

all data providers will update and gather and populate new CDI and ODV entries into the SeaDataNet CDI service and review existing entries, with focus on data concerning eutrophication (**nutrients, chlorophyll and oxygen**) by **October 2017** and focus on selected **contaminants** by **May 2018**.

In order to approach problems faced during the previous phases of EMODnet Chemistry in managing data collected in sediment and biota matrixes, updated guidelines for dataset preparation and formatting have been defined, based on the well consolidated experience of the partnership and on the

outcomes of other similar EU projects, and have been circulated to the whole EMODnet Chemistry partnership.

For marine litter (including plastics), which is a new topic in EMODnet Chemistry, the focus will be on:

- Beach litter (nets, bottles etc.)
- Seafloor Litter (i.e. litter collected by fish trawl surveys)
- Micro plastics

The existing European landscape for each of these topics has been investigated in the recent TWG meeting and the following approach has been agreed.

**Beach litter and seafloor litter:** to opt for developing two central EMODnet internet databases, one for **beach litter**, modelled after the OSPAR-MCS approach, and one for **seafloor litter**, modelled after the ICES-DATRAS approach. Data exchange mechanisms and cooperations should be arranged with the relevant regional systems, their responsible managers and related networks. Further population of these systems by organisations in these regions should be encouraged. Central submission facilities should be set up and operated for covering submissions by organisations in regions that fall outside existing systems. The Technical Working Group (TWG) will give a follow-up to a series of actions for working out this planned approach for **beach litter** and **seafloor litter**. The actions are specified in the minutes of the TWG 1 Meeting.

**Micro plastics:** The MSFD descriptor 10 considers micro particles. Micro plastic is likely to be the most significant part of this. It includes particles < 5 mm. At the TWG meeting it was agreed that micro plastics observation data sets can be fit in the SeaDataNet CDI – ODV formats. As a follow-up OGS has finalised the guideline for describing marine **micro litter** data sets using CDI and ODV files and has presented it also to the TG Marine Litter that met in June 2017 with the request to review it and provide feedback for refinement. All data providers will gather CDI and ODV entries for marine micro litter following the extra guideline and populate these into the SeaDataNet CDI service - deadline by **end December 2017**.

### ***WP3 – Generation of data products***

The planning of the WP3 activities are summarized below:

A first version of concentration maps of **marine and beach litter** – **end February 2018**

Updated data collections and DIVA maps for **eutrophication** – **end April 2018**

Updated data collections and dedicated maps on **contaminants** – **end October 2018**

Higher resolution DIVA maps near **major river** mouths – **end December 2018**

## ***WP4 – Technical development and operation***

Work has started for redesigning the EMODnet Chemistry portal to give more emphasis to data and products released. Special focus will be given to the data themes managed by the Chemistry lot with reference to MSFD, namely **Eutrophication, Pollution, Ocean Acidification** and **Marine Litter**. The restyled and upgraded portal is planned for released in September 2017.

Besides, activities will be undertaken towards more robust and integrated services and for adding extra functionalities to the EMODNet Chemistry portal services such as:

- **CDI Data Discovery and Access Service**, giving facilities for searching and retrieving chemistry source data sets;
- **OceanBrowser Viewing Service**, giving facilities for viewing, browsing and downloading Chemistry data products;
- **Sextant Products catalogue service**, giving facilities for searching and downloading Chemistry data products through the link with the OceanBrowser viewing service.
- **Advanced viewing services for timeseries and profiles**, giving facilities for generating and viewing dynamic plots of time series and profiles of selected parameters from data sets, selected from the harmonised, aggregated and validated data collections.

These actions have been discussed and agreed by the Technical Working Group as detailed in the minutes of the TWG 1 meeting.

## ***WP5 – Uptake, outreach and interaction***

As part of WP5 activities, led by ICES, one fundamental element is the interaction with MSFD stakeholders and it is undertaken through contributions of EMODnet Chemistry 3 to WG-GES bodies such as the TG Data and TSG Marine Litter as well as by setting up a Board of MSFD experts.

A questionnaire dedicated to possible stakeholders, in particular to the people involved in the Board of MSFD experts, has been set-up by OGS to illustrate EMODnet Chemistry objective and needs and to facilitate collection of feedbacks needed.



## 4. Specific challenges or difficulties encountered during the reporting period

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- The involvement of MSFD experts in the first annual meeting was quite hard due to overlapping of several other commitments; to face this obstacle, we plan to continue the interaction by remote meetings
- Evaluation of the fitness for use of EMODnet Chemistry data products for the assessment of Environmental Status according to MSFD. In particular, we would need to review the parameter chosen for current visualization products (e.g. are Nitrate+Nitrite useful?), the spatial resolution and the temporal resolution (are seasonal maps useful? Would it be better to produce maps at annual basis? Would a 6 years window be more fit to the MSFD assessment cycle?)Great effort to obtain and manage the requested administrative documents
- Difficulty in obtaining timely the large amount of administrative documents requested by the contract

## 5. User Feedback

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The full Help service with telephone, online chat and email with answer in 2 working days is not operative yet. Nevertheless, we received a couple of contacts by the chat already working on the portal with some feedback as listed below:

Date	Name	Organization	Type of user feedback (e.g. <i>technical, case study etc</i> )	Response time to address user request
23/05/17	Neil	ICES	The user had urgent need for a specific presentation and couldn't find it since the portal was in updating process. The file was promptly sent to him even before updating the portal.	<1 min
09/06/17	Aysun	IHE Delft Institute for Water Education	An error. User having problem with registration to Copernicus	<1 min

## 6. Outreach and communication activities

Date	Media	Title	Short description and/or link to the activity
14-15/03/2017	<i>Presentation</i>	<i>EMODnet Chemistry</i>	<i>Focused on Marine Litter</i>
28-31/03/2017	<i>Poster</i>	<i>The Italian National Oceanographic Data Center</i>	<i>Demonstration on how EMODnet data infrastructure supports IODE objectives as it is further building over the European network of NODCs.</i>
24-28/04/2017	<i>Presentation</i>	EMODnet chemistry results in support to EU marine policies: use cases	<i>Oral presentation to Maritime Spatial Planning, Ecosystem Approach and Supporting Information Systems (MaPSIS)</i>
07/06/2017	<i>Presentation</i>	<i>EMODnet</i>	<i>For all lots, with the point of view of OSFD data reporting</i>
08-09/06/2017	<i>Presentation</i>	<i>EMODnet Chemistry</i>	<i>EMODnet Chemistry approach and the micro-litter data format</i>
15/06/2017	<i>Presentation</i>	<i>EMODnet Chemistry platform for sharing marine monitoring data for contaminants, nutrients and marine litter in support to MSFD implementation</i>	<i>EMODnet chemistry data infrastructure</i>
16-20/05/2017	<i>interview</i>		<i>Interview at local and national radio broadcast and one article in the local newspaper</i>

### *Publication:*

Matteo Vinci, Alessandra Giorgetti, and Marina Lipizer, The role of EMODnet Chemistry in the European challenge for Good Environmental Status, Nat. Hazards Earth Syst. Sci., 17, 197–204, 2017, [www.nat-hazards-earth-syst-sci.net/17/197/2017/](http://www.nat-hazards-earth-syst-sci.net/17/197/2017/), doi:10.5194/nhess-17-197-2017.

## 7. Updates on Progress Indicators

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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.

Note: because of contingency in reporting the indicators have been included since the final report of EMODnet Chemistry 2 (end June 2016) till now

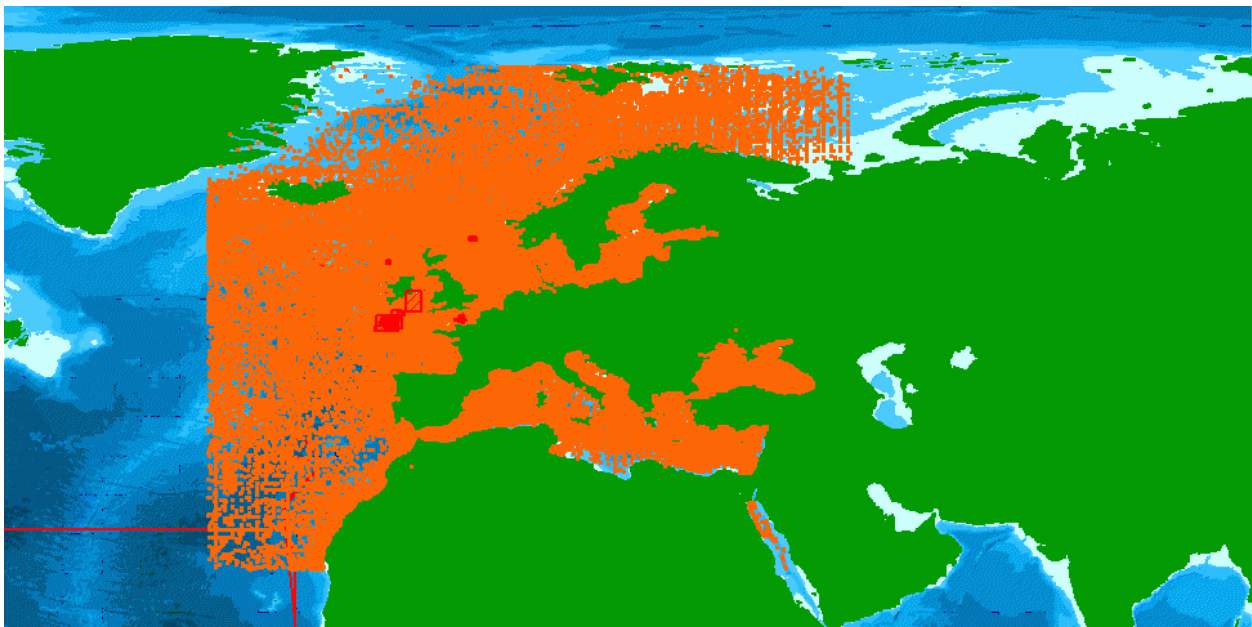
### ***Indicator 1 - Volume of data made available through the portal***

The total number of CDIs for chemistry data sets has increased from: **813309 to 847981**.

This covers the whole globe. Specifically relevant for European waters have increased from: **716062 to 741779**.

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

Of these **620969** are unrestricted (unrestricted and SeaDataNet license), while others (**120810**) require (possible) negotiation due to restrictions.



The division per **Discovery Parameter** at 30<sup>th</sup> June 2017 is as follows:

Parameter	No of CDIs	No restrictions	Restrictions
Dissolved oxygen parameters in the water column	453513	405594	47919
Salinity of the water column	438332	393090	45242
Temperature of the water column	432718	391870	40848
Phosphate concentration parameters in the water column	311255	266170	45085
Nitrate concentration parameters in the water column	267744	226370	41374
Silicate concentration parameters in the water column	251106	211188	39918
Chlorophyll pigment concentrations in water bodies	203772	181141	22631
Ammonium and ammonia concentration parameters in water bodies	188861	157051	31810
Vertical spatial coordinates	186020	139567	46453
Nitrite concentration parameters in the water column	181769	150648	31121
Alkalinity, acidity and pH of the water column	105992	82049	23943
Particulate total and organic nitrogen concentrations in the water column	101370	95008	6362
Particulate total and organic phosphorus concentrations in the water column	91466	87632	3834
Dissolved total or organic phosphorus concentration in the water column	79340	67255	12085
Density of the water column	66884	63432	3452
Dissolved total and organic nitrogen concentrations in the water column	57457	54971	2486
Phaeopigment concentrations in the water column	37358	31131	6227
Concentration of suspended particulate material in the water column	31303	22632	8671
Transmittance and attenuation of the water column	28492	27110	1382
Electrical conductivity of the water column	26145	25135	1010
Raw fluorometer output	22908	14988	7920
Particulate total and organic carbon concentrations in the water column	22275	19353	2922

Concentration of inorganic sulphur species in the water column	22172	20485	1687
Dissolved organic carbon concentration in the water column	18347	12972	5375
Inorganic chemical composition of sediment or rocks	17573	8690	8883
Reference numbers	14586	13217	1369
Concentration of other hydrocarbons in the water column	14326	13561	765
Moored instrument depth	13205	13174	31
Visible waveband radiance and irradiance measurements in the water column	12800	10814	1986
Secchi disk depth	12494	8291	4203
Pesticide concentrations in water bodies	11983	10841	1142
Date and time	11106	10781	325
Concentration of polycyclic aromatic hydrocarbons (PAHs) in sediment samples	11019	5164	5855
Temperature variation in the water column	10988	10988	0
Redox potential in sediment	10204	0	10204
Dissolved metal concentrations in the water column	8708	6723	1985
Metal concentrations in biota	8636	2991	5645
Dissolved inorganic nitrogen concentration in the water column	8520	3703	4817
Concentration of polychlorobiphenyls (PCBs) in sediment samples	8436	3468	4968
Pollution events	8134	8134	0
Carbon concentrations in sediment	8011	1245	6766
Quality control flags	7492	6803	689
Sediment grain size parameters	7049	5258	1791
Concentration of other organic contaminants in the water column	6807	3381	3426
Concentration of polychlorobiphenyls (PCBs) in biota	6413	1307	5106

Nitrogen concentrations in suspended particulate material	6285	2624	3661
Carbon concentrations in suspended particulate material	5941	2037	3904
Raw temperature and/or salinity instrument output	5295	1803	3492
Raw oxygen sensor output	5250	1822	3428
Pesticide concentrations in sediment	5062	3794	1268
Concentration of other organic contaminants in sediment samples	4785	4614	171
Optical backscatter	4532	1954	2578
Pesticide concentrations in biota	4199	1833	2366
Sound velocity and travel time in the water column	4040	3978	62
Raw light meter output	3819	1155	2664
Variable fluorescence parameters	3744	3557	187
Carotenoid and flavenoid pigment concentrations in water bodies	3665	1438	2227
Sea level	3329	696	2633
Metal concentrations in sediment pore waters	3239	2708	531
Nitrogen concentrations in sediment	3198	2155	1043
Metadata parameters	2958	2261	697
Unspecified	2957	2565	392
Concentration of polycyclic aromatic hydrocarbons (PAHs) in the water column	2757	2228	529
Concentration of polycyclic aromatic hydrocarbons (PAHs) in biota	2650	871	1779
Radioactivity in the water column	2592	1358	1234
Unclassified pigment concentrations in the water column	2500	273	2227
Organometallic and organometalloid species concentration parameters in sediments	2265	1941	324
Particulate metal concentrations in the water column	2123	1123	1000

Light absorption in the water column	2111	1477	634
Total metal concentrations in water bodies	2062	724	1338
Raw suspended particulate material concentration sensor output	1979	1849	130
Concentration of organic matter in sediments	1817	915	902
Concentration of other organic contaminants in biota	1797	113	1684
Organometallic species concentration parameters in biota	1673	1607	66
Concentration of carbohydrates, phenols, alkanols (alcohols), ethers, aldehydes and ketones in sediment	1576	664	912
Horizontal spatial co-ordinates	1574	1574	0
Lithology	1572	599	973
Dissolved concentration parameters for other gases in the water column	1336	952	384
Concentration of polychlorobiphenyls (PCBs) in the water column	1315	1041	274
Concentration of polycyclic aromatic hydrocarbons (PAHs) in suspended particulate material	1051	1051	0
Primary production in the water column	1018	648	370
Urea concentration parameters in the water column	1013	704	309
Sedimentary structure	921	0	921
Biota lipid concentrations	884	577	307
Biota properties	759	641	118
Sediment water content, porosity and surface area	695	648	47
Suspended particulate material grain size parameters	669	114	555
Horizontal velocity of the water column (currents)	655	655	0
Concentration of other organic contaminants in suspended particulate material	648	648	0
Light extinction and diffusion coefficients	634	0	634
Geological sample radioactivity	511	447	64



Total dissolved inorganic carbon (TCO <sub>2</sub> ) concentration in the water column	433	319	114
Phosphorus concentrations in suspended particulate material	397	81	316
Stable isotope enrichment in sediment	381	0	381
Dissolved trace metalloid concentrations in the water column	362	113	249
Visible waveband radiance and irradiance measurements in the atmosphere	339	205	134
Bacteria taxonomic abundance in water bodies	333	0	333
Terrestrial detritus in the water column suspended particulate material	322	322	0
Phytoplankton taxonomic abundance in water bodies	317	317	0
Trace metalloid concentrations in biota	294	260	34
Bacteria generic abundance in water bodies	293	257	36
Carbonate chemistry in sediment pore waters	285	120	165
Acoustic backscatter in the water column	283	283	0
Mineralogical composition	252	0	252
Concentration of alkanes in the water column	251	251	0
Phaeopigment concentrations in sediment	244	228	16
Water body redox potential	231	231	0
Concentration of carbohydrates, phenols, alkanols (alcohols), aldehydes and ketones in water bodies	194	194	0
Concentration of proteins in the water column	194	194	0
Zooplankton and zoobenthos morphological parameters	185	185	0
Concentration of inorganic halogens in water bodies	168	168	0
Concentration of polychlorobiphenyls (PCBs) in suspended particulate material	163	163	0
Other halocarbon concentrations in water bodies	156	0	156
Nutrient concentrations in sediment pore waters	151	120	31

Shellfish morphology, age and physiology	148	82	66
Raw in-situ nutrient analyser output	143	143	0
Regenerated production in water bodies	141	141	0
New production in water bodies	139	139	0
Sediment lipid concentrations	137	121	16
Chlorophyll pigment concentrations in sediment	136	120	16
Dissolved organic carbon concentrations in sediment pore waters	136	120	16
Oxygen production and respiration in the water column	136	136	0
Concentration of aliphatic hydrocarbons in sediment samples	133	13	120
Other physical and chemical properties of suspended particulate material	132	132	0
Concentration of inorganic sulphur species in sediment	131	46	85
Colloidal organic carbon concentration in the water column	100	100	0
Geological sample density	80	0	80
Organosulphur and organoselenium species concentration parameters in water bodies	76	76	0
Bacteria non taxonomy-related biomass expressed as carbon per unit volume of the water column	63	0	63
Radioactivity in biota	56	56	0
Excretion rate parameters in the water column	55	55	0
Nitrification rate in the water column	54	54	0
Atmospheric humidity	51	4	47
Stable isotope enrichment in the water column	46	20	26
Concentration of dissolved organic matter in the water column	44	0	44
Phytoplankton generic abundance in water bodies	41	5	36

Concentration of adenylates in the water column	38	38	0
Fish morphology, age and physiology	38	38	0
Bacterial production in the water column	36	0	36
Phytoplankton generic biomass in water bodies	36	0	36
Geotechnics	32	32	0
Water body lipid concentrations	32	32	0
Air temperature	29	27	2
Air pressure	28	28	0
Plankton biomass expressed as carbon per unit volume of the water column	27	0	27
Wind strength and direction	27	27	0
Concentration of silicon species in the water column	24	9	15
Horizontal platform movement	24	24	0
Wave direction	23	23	0
Wave height and period statistics	23	23	0
Geological sample magnetic, electrical and acoustic properties	22	0	22
Sediment accumulation rate	22	0	22
Phytoplankton taxonomic biomass in water bodies	20	20	0
Chlorofluorocarbon concentrations in the water column	16	16	0
Organometallic and organometalloid species concentration parameters in water bodies	15	2	13
Vertical platform movement	11	11	0
Water body released tracers	11	11	0
Bathymetry and Elevation	10	10	0
Solar Radiation	6	6	0

Concentration of inorganic halogens in sediment pore waters	5	0	5
Concentration of inorganic sulphur species in sediment pore water	5	0	5
Platform or instrument orientation	4	4	0
Dissolved oxygen concentration parameters in sediment pore waters	1	1	0
Engineering parameters	1	1	0
Sediment age	1	0	1

***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)***

<b>Data Centre</b>	<b>Country</b>	<b>No of CDIs</b>	<b>No restrictions</b>	<b>Restrictions</b>
British Oceanographic Data Centre	United Kingdom	62923	35940	26983
German Oceanographic Datacentre (NODC)	Germany	18444	14637	3807
OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale), Division of Oceanography	Italy	49935	24215	25720
CNR, Institute of Marine Science U.O.S. of Pozzuolo di Lerici (SP)	Italy	484	1	483
CNR, Institute of Marine Science (ISMAR) - Ancona	Italy	2974	1	2973
CNR, Institute of Atmospheric Sciences and Climate (ISAC) (Rome)	Italy	253	253	0
Institute of Fishery Resources (IFR)	Bulgaria	257	257	0
Institute of Meteorology and Water Management National Research Institute, Maritime Branch in Gdynia (IMWM MB)	Poland	2726	0	2726
Hellenic Centre for Marine Research, Hellenic National Oceanographic Data Centre (HCMR/HNODC)	Greece	11120	6829	4291
IEO/Spanish Oceanographic Institute	Spain	16094	6686	9408
Marine Institute	Ireland	324	324	0
Flanders Marine Institute	Belgium	3534	2736	798
IFREMER / IDM / SISMER - Scientific Information Systems for the SEA	France	34322	34099	223
Swedish Meteorological and Hydrological Institute	Sweden	62359	62289	70
IHPT, Hydrographic Institute	Portugal	3974	3037	937
Polish Geological Institute - National Research Institute, Branch of Marine Geology (PGI BMG)	Poland	326	0	326
Institute of Marine Research - Norwegian Marine Data Centre (NMD)	Norway	34578	34578	0
NIOZ Royal Netherlands Institute for Sea Research	Netherlands	3958	3944	14
Netherlands Institute for Ecology, Centre for Estuarine and Marine Ecology	Netherlands	12894	2145	10749
All-Russia Research Institute of Hydrometeorological Information - World Data	Russian Federation	51474	51474	0

Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)				
P.P.Shirshov Institute of Oceanology, RAS	Russian Federation	846	846	0
National Institute of Fisheries Research (INRH)	Morocco	552	0	552
Bulgarian National Oceanographic Data Centre(BGODC), Institute of Oceanology	Bulgaria	1093	1042	51
Iv.Javakhishvili Tbilisi State University, Centre of Relations with UNESCO Oceanological Research Centre and GeoDNA (UNESCO)	Georgia	505	505	0
Institute of Marine Sciences, Middle East Technical University	Turkey	7327	1304	6023
National Institute for Marine Research and Development "Grigore Antipa"	Romania	6851	3000	3851
Latvian Institute of Aquatic Ecology	Latvia	3459	3459	0
Institute of Oceanography and Fisheries	Croatia	2233	2233	0
International Ocean Institute - Malta Operational Centre (University Of Malta) / Physical Oceanography Unit	Malta	128	128	0
Cyprus Oceanography Center	Cyprus	580	580	0
Marine Systems Institute at Tallinn University of Technology	Estonia	17364	17364	0
State Oceanographic Institute (SOI)	Russian Federation	7188	0	7188
Marine Hydrophysical Institute	Ukraine	4652	2058	2594
Aarhus University, Department of Bioscience, Marine Ecology Roskilde	Denmark	185227	185227	0
International Council for the Exploration of the Sea (ICES)	Denmark	27207	27207	0
Karadeniz Technical University, Faculty of Marine Sciences	Turkey	246	29	217
Sinop University, Fisheries Faculty	Turkey	343	343	0
Dokuz Eylul University, Institute of Marine Science and Technology	Turkey	1603	0	1603
Istanbul University, Institute of Marine Science and Management	Turkey	339	171	168
Institute of Biology of the Southern Seas, NAS of Ukraine	Ukraine	998	998	0
Ukrainian Hydrometeorological Institute - Marine Branch	Ukraine	26089	26089	0
Russian State Hydrometeorological University, St-Petersburg	Russian Federation	172	172	0

National Institute of Meteorology and Hydrology, Bulgarian Academy of Sciences	Bulgaria	839	602	237
Israel Oceanographic and Limnological Research (IOLR)	Israel	3956	3623	333
BRGM / Office of Geological and Mining Resources	France	1087	0	1087
Finnish Environment Institute	Finland	10878	10878	0
Ukrainian scientific center of Ecology of Sea (UkrSCES)	Ukraine	5067	5067	0
Odessa National I.I.Mechnikov University	Ukraine	889	25	864
National Institute of Biology - NIBMarine Biology Station	Slovenia	7432	3412	4020
Institut National des Sciences et Technologies de la Mer – INSTM	Tunisia	861	21	840
Scientific - Research Firm "GAMMA"	Georgia	1194	1194	0
Rijkswaterstaat Water, Traffic and Environment	Netherlands	13197	13197	0
Institute of Geology and Geography of Nature Research Centre	Lithuania	212	212	0
Management Unit of North Sea and Scheldt Estuary Mathematical Models, Belgian Marine Data Centre	Belgium	9268	9268	0
Geological Survey of Estonia	Estonia	542	542	0
Finnish Meteorological Institute	Finland	7985	7985	0
Ankara University	Turkey	24	24	0
Danube Hydro-meteorological Observatory	Ukraine	44	0	44
Faculty of Geography and Earth Sciences, University of Latvia (LU)	Latvia	721	0	721
National Environmental Agency of the Ministry of Environment Protection and Natural Resources	Georgia	62	62	0
Institute of Marine Biology (IMBK)	Montenegro	644	597	47
ISPRA-Institute for Environmental Protection and Research	Italy	3761	3761	0
PANGAEA - Data Publisher for Earth & Environmental Science	Germany	4242	4242	0
Portuguese Institute of Ocean and Atmosphere	Portugal	919	57	862
		741779	620969	120810

These centres are government and research institutes. No industry.

Difference between end June 2016 and end June 2017:

<b>Data Centre</b>	<b>Country</b>	<b>No of CDIs</b>	<b>No restrictions</b>	<b>Restrictions</b>
British Oceanographic Data Centre	United Kingdom	206	119	87
German Oceanographic Datacentre (NODC)	Germany	399	399	0
OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale), Division of Oceanography	Italy	1110	1105	5
CNR, Institute of Marine Science U.O.S. of Pozzuolo di Lerici (SP)	Italy	0	0	0
CNR, Institute of Marine Science (ISMAR) - Ancona	Italy	0	0	0
CNR, Institute of Atmospheric Sciences and Climate (ISAC) (Rome)	Italy	0	0	0
Institute of Fishery Resources (IFR)	Bulgaria	0	0	0
Institute of Meteorology and Water Management National Research Institute, Maritime Branch in Gdynia (IMWM MB)	Poland	0	0	0
Hellenic Centre for Marine Research, Hellenic National Oceanographic Data Centre (HCMR/HNODC)	Greece	1357	50	1307
IEO/Spanish Oceanographic Institute	Spain	505	0	505
Marine Institute	Ireland	-7352	-7352	0
Flanders Marine Institute	Belgium	-13	-13	0
IFREMER / IDM / SISMER - Scientific Information Systems for the SEA	France	3968	3966	2
Swedish Meteorological and Hydrological Institute	Sweden	0	0	0
IHPT, Hydrographic Institute	Portugal	0	0	0
Polish Geological Institute - National Research Institute, Branch of Marine Geology (PGI BMG)	Poland	0	0	0
Institute of Marine Research - Norwegian Marine Data Centre (NMD)	Norway	0	0	0
NIOZ Royal Netherlands Institute for Sea Research	Netherlands	0	0	0
Netherlands Institute for Ecology, Centre for Estuarine and Marine Ecology	Netherlands	0	0	0



All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)	Russian Federation	0	0	0
P.P.Shirshov Institute of Oceanology, RAS	Russian Federation	482	482	0
National Institute of Fisheries Research (INRH)	Morocco	0	0	0
Bulgarian National Oceanographic Data Centre(BGODC), Institute of Oceanology	Bulgaria	119	72	47
Iv.Javakishvili Tbilisi State University, Centre of Relations with UNESCO Oceanological Research Centre and GeodNA (UNESCO)	Georgia	32	32	0
Institute of Marine Sciences, Middle East Technical University	Turkey	-4	-467	463
National Institute for Marine Research and Development "Grigore Antipa"	Romania	0	0	0
Latvian Institute of Aquatic Ecology	Latvia	163	163	0
Institute of Oceanography and Fisheries	Croatia	0	0	0
International Ocean Institute - Malta Operational Centre (University Of Malta) / Physical Oceanography Unit	Malta	0	0	0
Cyprus Oceanography Center	Cyprus	19	19	0
Marine Systems Institute at Tallinn University of Technology	Estonia	0	0	0
State Oceanographic Institute (SOI)	Russian Federation	4273	0	4273
Marine Hydrophysical Institute	Ukraine	0	0	0
Aarhus University, Department of Bioscience, Marine Ecology Roskilde	Denmark	0	0	0
International Council for the Exploration of the Sea (ICES)	Denmark	15378	15378	0
Karadeniz Technical University, Faculty of Marine Sciences	Turkey	0	0	0
Sinop University, Fisheries Faculty	Turkey	0	0	0
Dokuz Eylul University, Institute of Marine Science and Technology	Turkey	0	0	0
Istanbul University, Institute of Marine Science and Management	Turkey	0	0	0

Institute of Biology of the Southern Seas, NAS of Ukraine	Ukraine	0	0	0
Ukrainian Hydrometeorological Institute - Marine Branch	Ukraine	0	0	0
Russian State Hydrometeorological University, St-Petersburg	Russian Federation	0	0	0
National Institute of Meteorology and Hydrology, Bulgarian Academy of Sciences	Bulgaria	0	0	0
Israel Oceanographic and Limnological Research (IOLR)	Israel	0	0	0
BRGM / Office of Geological and Mining Resources	France	0	0	0
Finnish Environment Institute	Finland	4671	4671	0
Ukrainian scientific center of Ecology of Sea (UkrSCES)	Ukraine	267	267	0
Odessa National I.I.Mechnikov University	Ukraine	0	0	0
National Institute of Biology - NIBMarine Biology Station	Slovenia	0	0	0
Institut National des Sciences et Technologies de la Mer – INSTM	Tunisia	-24	0	-24
Scientific - Research Firm "GAMMA"	Georgia	31	31	0
Rijkswaterstaat Water, Traffic and Environment	Netherlands	0	0	0
Institute of Geology and Geography of Nature Research Centre	Lithuania	94	94	0
Management Unit of North Sea and Scheldt Estuary Mathematical Models, Belgian Marine Data Centre	Belgium	0	0	0
Geological Survey of Estonia	Estonia	0	0	0
Finnish Meteorological Institute	Finland	0	0	0
Ankara University	Turkey	0	0	0
Danube Hydro-meteorological Observatory	Ukraine	0	0	0
Faculty of Geography and Earth Sciences, University of Latvia (LU)	Latvia	0	0	0
National Environmental Agency of the Ministry of Environment Protection and Natural Resources	Georgia	36	36	0
Institute of Marine Biology (IMBK)	Montenegro	0	0	0
ISPRA-Institute for Environmental Protection and Research	Italy	0	0	0

PANGAEA - Data Publisher for Earth & Environmental Science	Germany	0	0	0
Portuguese Institute of Ocean and Atmosphere	Portugal	0	0	0
		25717	19052	6665

***Indicator 3 - Organisations that have been approached to supply data 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 2016 – 30 June 2017:

RSM => EMODNet Chemistry portal

No of CDI basket transactions: 77

No of CDIs requested: 113802

Different users: 30

Different data centres: 41

	Atlantic Sea	Baltic Sea	Black Sea	Mediterranean Sea	North Sea
water body ammonium	4671	1480	3216	5108	8464
water body chlorophyll-a	6164	4803	2283	19801	18873
water body dissolved oxygen	4813	1782	4430	15605	3345
water body nitrate	0	719	3329	22580	4792
water body nitrate plus nitrite	4371	1670	4043	3930	0
water body nitrite	0	0	0	1765	0
water body nox	38107	0	0	0	0
water body ph	0	0	0	11457	0
water body phosphate	1925	4943	5729	13747	7018
water body silicate	671	26	45154	2224	110
water body total nitrogen	0	935	0	3078	2332
water body total phosphorus	0	2490	0	2127	304

DIVA maps visualization via the WMS server.

	Atlantic Sea	Baltic Sea	Black Sea	Mediterranean Sea	North Sea
water body ammonium	86	68	87	63	72
water body chlorophyll-a	87	76	56	57	46
water body dissolved cadmium	0	0	0	18	0
water body dissolved lead	0	0	0	17	0
water body dissolved oxygen	84	73	101	69	83
water body nitrate	0	59	90	136	91
water body nitrate plus nitrite	67	65	57	53	0
water body nitrite	0	0	32	87	10
water body nox	39	0	0	0	0

water body ph	0	0	0	57	0
water body phosphate	73	164	94	135	85
water body silicate	66	55	93	65	76
water body total alkalinity	0	0	8	0	0
water body total nitrogen	0	67	0	54	72
water body total phosphorus	0	75	0	48	67
Cs-134	0	0	8	0	0
Cs-137	0	0	9	0	0
alkalinity	0	0	37	0	0
arsenic	0	0	10	0	0
chlorophyll	0	0	0	1	0
chromium	0	0	10	0	0
cobalt	0	0	9	0	0
cuprum	0	0	9	0	0
nickel	0	0	9	0	0
pH	0	0	18	0	0
plumbum	0	0	8	0	0
strontium	0	0	8	0	0
total nitrogen	0	0	17	0	0
wolfram	0	0	9	0	0
zinc	0	0	9	0	0

Download of the DIVA products

<b>Dynamic downloads using WPS via Oceanbrowser</b>				
<b>P35 description</b>	<b>P35label</b>	<b>Month</b>	<b>Year</b>	<b>Number of requests</b>
Water body phosphate	EPC00007	Jul	2016	343
Water body nitrate plus nitrite	EPC00005	Jul	2016	39
Water body ammonium	EPC00009	Jul	2016	32
Water body silicate	EPC00008	Jul	2016	75
Water body nitrite	EPC00006	Jul	2016	15
Water body total phosphorus	EPC00135	Jul	2016	15
Water body total nitrogen	EPC00134	Jul	2016	0
Water body nitrate	EPC00004	Jul	2016	0
Water body phosphate	EPC00007	Aug	2016	305
Water body nitrate plus nitrite	EPC00005	Aug	2016	45
Water body ammonium	EPC00009	Aug	2016	30
Water body silicate	EPC00008	Aug	2016	14
Water body nitrite	EPC00006	Aug	2016	0
Water body total phosphorus	EPC00135	Aug	2016	21
Water body total nitrogen	EPC00134	Aug	2016	14
Water body nitrate	EPC00004	Aug	2016	286
Water body phosphate	EPC00007	Sep	2016	585
Water body nitrate plus nitrite	EPC00005	Sep	2016	211

Water body ammonium	EPC00009	Sep	2016	73
Water body silicate	EPC00008	Sep	2016	53
Water body nitrite	EPC00006	Sep	2016	93
Water body total phosphorus	EPC00135	Sep	2016	45
Water body total nitrogen	EPC00134	Sep	2016	45
Water body nitrate	EPC00004	Sep	2016	401
Water body phosphate	EPC00007	Oct	2016	86
Water body nitrate plus nitrite	EPC00005	Oct	2016	69
Water body ammonium	EPC00009	Oct	2016	0
Water body silicate	EPC00008	Oct	2016	47
Water body nitrite	EPC00006	Oct	2016	0
Water body total phosphorus	EPC00135	Oct	2016	0
Water body total nitrogen	EPC00134	Oct	2016	0
Water body nitrate	EPC00004	Oct	2016	30
Water body phosphate	EPC00007	Nov	2016	165
Water body nitrate plus nitrite	EPC00005	Nov	2016	121
Water body ammonium	EPC00009	Nov	2016	75
Water body silicate	EPC00008	Nov	2016	117
Water body nitrite	EPC00006	Nov	2016	57
Water body total phosphorus	EPC00135	Nov	2016	0
Water body total nitrogen	EPC00134	Nov	2016	79
Water body nitrate	EPC00004	Nov	2016	558
Water body phosphate	EPC00007	Dec	2016	12
Water body nitrate plus nitrite	EPC00005	Dec	2016	51
Water body ammonium	EPC00009	Dec	2016	0
Water body silicate	EPC00008	Dec	2016	15
Water body nitrite	EPC00006	Dec	2016	15
Water body total phosphorus	EPC00135	Dec	2016	12
Water body total nitrogen	EPC00134	Dec	2016	0
Water body nitrate	EPC00004	Dec	2016	69
Water body phosphate	EPC00007	Jan	2017	346
Water body nitrate plus nitrite	EPC00005	Jan	2017	1
Water body ammonium	EPC00009	Jan	2017	0
Water body silicate	EPC00008	Jan	2017	148
Water body nitrite	EPC00006	Jan	2017	0
Water body total phosphorus	EPC00135	Jan	2017	0
Water body total nitrogen	EPC00134	Jan	2017	51
Water body nitrate	EPC00004	Jan	2017	85
Water body phosphate	EPC00007	Feb	2017	46
Water body nitrate plus nitrite	EPC00005	Feb	2017	15
Water body ammonium	EPC00009	Feb	2017	12

Water body silicate	EPC00008	Feb	2017	24
Water body nitrite	EPC00006	Feb	2017	0
Water body total phosphorus	EPC00135	Feb	2017	0
Water body total nitrogen	EPC00134	Feb	2017	81
Water body nitrate	EPC00004	Feb	2017	77
Water body phosphate	EPC00007	Mar	2017	110
Water body nitrate plus nitrite	EPC00005	Mar	2017	0
Water body ammonium	EPC00009	Mar	2017	0
Water body silicate	EPC00008	Mar	2017	72
Water body nitrite	EPC00006	Mar	2017	0
Water body total phosphorus	EPC00135	Mar	2017	0
Water body total nitrogen	EPC00134	Mar	2017	2
Water body nitrate	EPC00004	Mar	2017	147
Water body phosphate	EPC00007	Apr	2017	27
Water body nitrate plus nitrite	EPC00005	Apr	2017	0
Water body ammonium	EPC00009	Apr	2017	0
Water body silicate	EPC00008	Apr	2017	0
Water body nitrite	EPC00006	Apr	2017	0
Water body total phosphorus	EPC00135	Apr	2017	0
Water body total nitrogen	EPC00134	Apr	2017	0
Water body nitrate	EPC00004	Apr	2017	90
Water body phosphate	EPC00007	May	2017	1847
Water body nitrate plus nitrite	EPC00005	May	2017	75
Water body ammonium	EPC00009	May	2017	0
Water body silicate	EPC00008	May	2017	0
Water body nitrite	EPC00006	May	2017	0
Water body total phosphorus	EPC00135	May	2017	0
Water body total nitrogen	EPC00134	May	2017	0
Water body nitrate	EPC00004	May	2017	45
Water body phosphate	EPC00007	Jun	2017	19
Water body nitrate plus nitrite	EPC00005	Jun	2017	19
Water body ammonium	EPC00009	Jun	2017	20
Water body silicate	EPC00008	Jun	2017	0
Water body nitrite	EPC00006	Jun	2017	20
Water body total phosphorus	EPC00135	Jun	2017	25
Water body total nitrogen	EPC00134	Jun	2017	20
Water body nitrate	EPC00004	Jun	2017	33

## ***Indicator 5 - Organisations that have downloaded each data type***

From CDI service:

<b>Name</b>	<b>Organisation</b>	<b>Country</b>
Dr Alessandra GIORGETTI	OGS	Italy
Mrs Athanasia IONA	Hellenic Centre for Marine Research	Greece
Dr Alexey KHALIULIN	NATIONAL ACADEMY OF SCIENCE OF UKRAINE	Ukraine
Aikaterini Kikaki	?	Greece
Taeyoon Song	KODC	Korea, Republic of
Aristomenis Karageorgis	Hellenic Centre for Marine Research	Greece
Dr Asen Iakimov STEFANOV	IO/BAS	Bulgaria
Mrs Anna Teruzzi	OGS	Italy
Benjamin Pfeil	UiB	Norway
Etienne Dervieux	Eau et Rivières de Bretagne	France
Eleonora Lepori	UNIBO	Italy
Eugenia Molina	OGS	Italy
Mr Flavian Gheorghe	MARIS	Netherlands
Dr Giuzeppe MANZELLA	ENEA	Italy
Dr Julie GATTI	IFREMER	France
Lydie DENIS	ACRI-HE	France
Giuseppe Manzella	ETT SpA	Italy
Apostolia Maria Mavropoulou	University of Athens	Greece
Maria del Mar Chaves Montero	OGS	Italy
Dr Michele FICHAUT	IFREMER	France
Mrs Marina Lipizer	OGS	Italy
Mickaël Vasquez	IFREMER	France
Natalija Suhareva	Latvian Institute of Aquatic Ecology	Latvia
Mr Neil Holdsworth	ICES	Denmark
Dr Peter Bowyer	RES OFFSHORE UK	United Kingdom
peter bowyer	marine institute	Ireland
Samuli Korpinen	Finnish Environment Institute	Finland
Dr Seppo Kaitala	Finnish Environment Institute	Finland
Stefania Schinaia	CEFAS	United Kingdom



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

Time period 1 July 2016 – 30 June 2017:

Chemistry main portal: <http://www.emodnet-chemistry.eu/>

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jul 2016	12	26	35	44	26.59 MB
Aug 2016	13	18	24	27	9.00 MB
Sep 2016	21	39	71	87	42.05 MB
Oct 2016	9	14	61	66	10.78 MB
Nov 2016	10	12	12	19	19.65 MB
Dec 2016	48	67	117	168	145.27 MB
Jan 2017	11	14	16	28	24.71 MB
Feb 2017	13	16	20	27	22.28 MB
Mar 2017	9	13	16	19	38.32 MB
Apr 2017	2	3	11	11	34.80 KB
May 2017	23	40	51	53	6.80 MB
Jun 2017	22	35	68	80	34.69 MB

Chemistry CDI data discovery and access service:

[http://emodnet-Chemistry.maris2.nl/v\\_cdi\\_v3/search.asp](http://emodnet-Chemistry.maris2.nl/v_cdi_v3/search.asp)

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jul-16	167	366	5,621	15,056	240.89 MB
Aug-16	197	508	6,173	15,522	500.34 MB
Sep-16	197	410	7,714	18,255	216.43 MB
Oct-16	179	318	6,969	15,247	418.91 MB
Nov-16	212	392	4,470	15,240	285.03 MB
Dec-16	154	254	2,911	8,986	150.09 MB
Jan-17	198	308	5,498	13,535	334.78 MB
Feb-17	197	304	3,074	9,315	154.73 MB
Mar-17	228	564	6,679	18,378	204.77 MB
Apr-17	232	366	3,478	11,398	259.62 MB
May-17	294	592	9,932	21,818	377.69 MB
Jun-17	199	443	6,070	15,507	272.57 MB

Chemistry Products – Ocean Browser service: <http://oceanbrowser.net/emodnet/>

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jul 2016	13	23	267	805	23.22 GB
Aug 2016	17	22	53	337	4.41 GB
Sep 2016	11	21	157	463	20.73 GB
Oct 2016	8	17	49	260	3.02 GB
Nov 2016	6	36	154	428	890.98 MB
Dec 2016	10	45	144	422	27.35 MB
Jan 2017	11	42	307	857	2.48 GB
Feb 2017	9	39	139	237	2.01 GB
Mar 2017	8	40	159	301	2.61 GB
Apr 2017	20	59	189	322	2.13 GB
May 2017	77	159	277	413	1.32 GB
Jun 2017	37	89	201	295	1.53 GB

Sextant- Products metadata catalogue:

[http://sextant.ifremer.fr/en/web/emodnet\\_chemistry/catalogue#/search?sortBy=popularity&from=1&to=20](http://sextant.ifremer.fr/en/web/emodnet_chemistry/catalogue#/search?sortBy=popularity&from=1&to=20)

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jul 2016	22	54	12086	14430	238.00 MB
Aug 2016	27	49	4917	6486	132.10 MB
Sep 2016	27	53	9745	11959	257.74 MB
Oct 2016	22	40	4037	5367	172.26 MB
Nov 2016	24	44	11344	13370	323.07 MB
Dec 2016	16	21	4546	5495	220.15 MB
Jan 2017	18	19	1064	1623	68.45 MB
Feb 2017	26	50	1654	2529	146.93 MB
Mar 2017	48	99	11740	16884	496.95 MB
Apr 2017	27	76	6584	8824	285.19 MB
May 2017	36	98	9725	12092	467.91 MB
Jun 2017	31	78	4330	5846	228.18 MB

***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.)***

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

## ***Annex X***

*List in annex if you wish to provide any additional information*