Document Title: Indicators for EMODnet Chemistry Jan – March 2018

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Abstract: This deliverable describes the new indicators and procedures of the EMODnet technical monitoring system and includes the output of the pilot phases conducted to test the feasibility of the proposed new procedure.

Prepared by Trust-IT Services
Communicating ICT to markets

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Log Table

Issue	Date	Description	Author/Partner
V0.1	13 April 2018	Drafting	OGS + MARIS
V0.2			
V0.3			
V0.9			
V0.10			
V1.0			

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1. New monitoring indicators

1.1. Indicator 1.1: Volume and coverage of available acquired data

1.1. Volume of available acquired data	*Date*	*Portal*	*Unit*					*Total Volume*	*Trend*
	31/03/2018	*Chemistry*	*Data sets*					*822128*	*+0.6%*
Sea basins	Atlantic	Arctic	Baltic	Black Sea	Med Sea	North Sea	*Other Seas*	*Total Volume per theme*	*Trend*
Sub-theme:									
Antifoulants	403	77	565	40	836	2075	71	4067	?
Chlorophyll	25910	21807	65998	4167	37258	79513	27062	261707	?
Dissolved gasses	82484	23035	146744	48051	97235	153397	69353	620298	?
Fertilisers	56290	41056	100680	38369	43799	124233	41661	446084	?
Heavy metals	9083	329	3916	5824	6918	13938	3368	43374	?
Hydrocarbons	6140	974	2561	25590	4852	10754	11061	61932	?
Organic matter	4795	83	10552	1665	7254	15509	7236	47094	?
Polychlorinated biphenyls	4772	2	932	1759	2092	7143	169	16869	?
Pesticides and biocides	1844	557	1411	15301	2169	3804	849	25935	?
Radionuclides	0	19	416	1699	132	730	211	3207	?
Silicates	32839	35155	76330	32636	32836	91511	27607	328913	?

Notes:

- Sea Regions are defined by MSFD
- Trends cannot be calculated as this as we have no values at 31st December 2017

Portal	Measurement unit	Redundancy	Reported unit
Chemistry	Number of CDIs = Number of datasets	Yes, one CDI can cover several themes	Datasets

1.2. Indicators 1.2: Number and coverage of acquired external data products

This is not applicable for EMODnet Chemistry

1.3. Indicators 2: Organisations supplying data and data products

2. Organisations supplying each type of data	*Date*	*Portal*			
	31/03/2018	*Chemistry*			

Data provider	Type	Country	No of data sets	No restrictions	Restrictions
British Oceanographic Data Centre	Research	United Kingdom	65741	39543	26198
German Oceanographic Datacentre (NODC)	Research	Germany	18444	14637	3807
OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale), Division of Oceanography	Research	Italy	49969	24215	25754
Institute of Marine Science S.S. of Lerici (SP)	Research	Italy	484	1	483
CNR, Institute of Marine Science (ISMAR) - Ancona	Research	Italy	4368	50	4318
CNR, Institute of Atmospheric Sciences and Climate (ISAC) (Rome)	Research	Italy	552	552	0
Institute of Fishery Resources (IFR)	Research	Bulgaria	257	257	0
Institute of Meteorology and Water Management National Research Institute, Maritime Branch in Gdynia (IMWM MB)	Government	Poland	2726	0	2726

Data provider	Type	Country	No of data sets	No restrictions	Restrictions
Hellenic Centre for Marine Research, Hellenic National Oceanographic Data Centre (HCMR/HNODC)	Research	Greece	11120	6829	4291
IEO/Spanish Oceanographic Institute	Research	Spain	21208	6965	11209
Marine Institute	Research	Ireland	6615	6615	0
Flanders Marine Institute	Research	Belgium	3645	2847	798
IFREMER / IDM / SISMER - Scientific Information Systems for the SEA	Research	France	36167	35944	223
Swedish Meteorological and Hydrological Institute	Government	Sweden	67107	67037	70
IHPT, Hydrographic Institute	Government	Portugal	3974	3037	937
Polish Geological Institute - National Research Institute, Branch of Marine Geology (PGI BMG)	Research	Poland	326	0	326
Institute of Marine Research - Norwegian Marine Data Centre (NMD)	Research	Norway	42186	42186	0
NIOZ Royal Netherlands Institute for Sea Research	Research	Netherlands	4044	4030	14
Netherlands Institute for Ecology, Centre for Estuarine and Marine Ecology	Research	Netherlands	12894	2145	10749
All-Russia Research Institute of Hydrometeorological Information - World Data Centre (RIHMI-WDC) National Oceanographic Data Centre (NODC)	Research	Russian Federation	52235	52235	0
P.P.Shirshov Institute of Oceanology, RAS	Research	Russian Federation	876	876	0
National Institute of Fisheries Research (INRH)	Research	Morocco	552	0	552
Bulgarian National Oceanographic Data Centre(BGODC), Institute of Oceanology	Research	Bulgaria	1376	1325	51

Data provider	Type	Country	No of data sets	No restrictions	Restrictions
Iv.Javakhishvili Tbilisi State University, Centre of Relations with UNESCO Oceanological Research Centre and GeoDNA (UNESCO)	Research	Georgia	551	551	0
Institute of Marine Sciences, Middle East Technical University	Research	Turkey	8492	2155	6337
National Institute for Marine Research and Development Grigore Antipa""	Research	Romania	8210	3000	5042
Latvian Institute of Aquatic Ecology	Research	Latvia	3867	3867	0
Institute of Oceanography and Fisheries	Research	Croatia	2320	2320	0
International Ocean Institute - Malta Operational Centre (University Of Malta) / Physical Oceanography Unit	Research	Malta	168	168	0
Cyprus Oceanography Center	Research	Cyprus	580	580	0
Marine Systems Institute at Tallinn University of Technology	Research	Estonia	18275	17764	511
State Oceanographic Institute (SOI)	Research	Russian Federation	11243	0	11243
Marine Hydrophysical Institute	Research	Ukraine	4652	2058	2594
Aarhus University, Department of Bioscience, Marine Ecology Roskilde	Research	Denmark	200451	200451	0
International Council for the Exploration of the Sea (ICES)	Research	Denmark	32814	32814	0
Karadeniz Technical University, Faculty of Marine Sciences	Research	Turkey	246	29	217
Sinop University, Fisheries Faculty	Research	Turkey	343	343	0
Dokuz Eylul University, Institute of Marine Science and Technology	Research	Turkey	1603	0	1603
Istanbul University, Institute of Marine Science and Management	Research	Turkey	339	171	168
Institute of Biology of the Southern Seas, NAS of Ukraine	Research	Ukraine	998	998	0

Data provider	Type	Country	No of data sets	No restrictions	Restrictions
Ukrainian Hydrometeorological Institute - Marine Branch	Research	Ukraine	26089	26089	0
Russian State Hydrometeorological University, St-Petersburg	Research	Russian Federation	172	172	0
National Institute of Meteorology and Hydrology, Bulgarian Academy of Sciences	Research	Bulgaria	839	602	237
Israel Oceanographic and Limnological Research (IOLR)	Research	Israel	3956	3623	333
BRGM / Office of Geological and Mining Resources	Research	France	1087	0	1087
Finnish Environment Institute	Research	Finland	11535	11535	0
Ukrainian scientific center of Ecology of Sea (UkrSCES)	Research	Ukraine	5512	5512	0
Odessa National I.I.Mechnikov University	Research	Ukraine	889	25	864
National Institute of Biology - NIBMarine Biology Station	Research	Slovenia	7837	3745	4020
Institut National des Sciences et Technologies de la Mer â€“ INSTM	Research	Tunisia	868	21	847
Scientific - Research Firm GAMMA""	Industry	Georgia	1194	1194	0
Rijkswaterstaat Water, Traffic and Environment	Government	Netherlands	13197	13197	0
Institute of Geology and Geography of Nature Research Centre	Research	Lithuania	212	212	0
Management Unit of North Sea and Scheldt Estuary Mathematical Models, Belgian Marine Data Centre	Government	Belgium	9760	9760	0
Geological Survey of Estonia	Research	Estonia	542	542	0
Finnish Meteorological Institute	Research	Finland	25064	25064	0
Ankara University	Research	Turkey	24	24	0
Danube Hydro-meteorological Observatory	Research	Ukraine	44	0	44
Faculty of Geography and Earth Sciences, University of Latvia (LU)	Research	Latvia	721	0	721

Data provider	Type	Country	No of data sets	No restrictions	Restrictions
National Environmental Agency of the Ministry of Environment Protection and Natural Resources	Government	Georgia	62	62	0
Institute of Marine Biology (IMBK)	Research	Montenegro	805	758	47
ISPRA-Institute for Environmental Protection and Research	Government	Italy	4540	4540	0
PANGAEA - Data Publisher for Earth & Environmental Science	Research	Germany	4242	4242	0
Portuguese Institute of Ocean and Atmosphere	Government	Portugal	919	57	862

Overview for European waters defined as Lat Lon box: N80, W-30 ; N20, E45

1.4. Indicators 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.

1.5. Indicator 4: Quality Control and Quality Assurance steps

4. Quality Control & Quality Assurance	*Date*	*Portal*		
	31/03 /2018	*Chemistry*		
QA /QC steps	✔	Short Description	By whom?	Automatic/Semi-automatic/Manual
Metadata curation	✔	Performed at all data management stages	All EMODnet nodes (NODCs, MARIS,	Manual retrieve of missing/wrong metadata, semi-automatic compilation of

			Deltares, ULg…)	metadata directories, automatic check of format and content
Data standards compliance checks	✔	SeaDataNet developed tools for automatic check (NEMO, MIKADO, OCTOPUS)	NODCs, MARIS, AWI	Automatic check with available tools, Semi-automatic check by importing data into ODV software
Geographic Location Control	✔	Applied to measured data, related metadata, aggregated datasets and data products	All EMODnet nodes (NODCs, MARIS, Deltares, ULg …)	Automatic check with tools developed by NODCs or with ODV software, Manual check by visual inspection
Error Detection thanks to thematic expertise	✔	QC is applied by NODCs prior to submit data, by regional experts when aggregating and interpolating data as part of the **data validation loop** reporting back any outliers to the data sources	All EMODnet nodes (NODCs, ULg …)	Automatic check with tools developed by NODCs and by using ODV software, Manual check by visual inspection
Quality Index / Accuracy assessment	✔	A quality flag is assigned to metadata and data, defining the compliance to the QC and changes made, when possible	All EMODnet nodes (NODCs mainly)	Automatic check with tools developed by NODCs and by using ODV software, Manual check by visual inspection
Data aggregation	✔	Per sea region	MARIS, Regional Leaders	Automatic with Robot Harvester and ODV

Other	✔	Check with pre-existing statistics, check for spikes or instabilities	NODCs	Automatic check with tools developed by NODCs or by using ODV software
Harmonization	✔			
Language	✔	Needed for Marine Litter only because data were not reported in English	OGS and JRC	Manual
Units	✔	Harmonization to pre-fixed units performed at regional level	Regional Leaders	Automatic with ODV
Terminology	✔	Common vocabularies are adopted for most of the terms	All EMODnet nodes (NODCs, MARIS, Deltares, ULg …)	Automatic check with available tools (NEMO, MIKADO, OCTOPUS, ODV)
Coordinate Systems	✔	Standard coordinate system are recommended (as WGS 84)	All EMODnet nodes	Manual check, automatic conversion
Data format	✔	Standard data formats are adopted for measured data, aggregated data and data products	All EMODnet nodes	Automatic with available tools (NEMO, MIKADO, OCTOPUS, ODV, DIVAtoXML), semiautomatic by home made routines
Metadata	✔	Standard metadata catalogues are used for organizations	All EMODnet nodes (NODCs mainly)	Automatic with MIKADO

		(EDMO), datasets (EDMED), projects (EDMERP), cruises (CSR)		
Other	✔	The same data processing tools are used to guarantee consistency in the results at European scale	All EMODnet nodes	

1.6. Indicator 5.1: Number and coverage of built data products

5.1. Number and coverage of built data products	*Date*	*Portal*	*Unit*				*Total Volume*	*Trend*
	31/03/2018	*Chemistry*	*#data products*					
Sea basins							*1920*	-
Sub-themes	Atlantic	Arctic	Baltic	Black Sea	Med Sea	North Sea	All sea basins	Trend
Chlorophyll	48	0	48	48	48	48	240	-
Dissolved gasses	48	0	48	48	48	48	240	-
Fertilisers	144	0	288	192	336	240	1200	-
Silicates	48		48	48	48	48	240	-
Marine litter	3	1	2	0	0	3	9	-

1.7. Indicator 5.2: List of data product releases by the portal

5.2. Data Product Releases		*Date*	*Portal*	*#of EMODnet data products*
		31/03/2018	*Chemistry*	*1929*
EMODnet data product name	Last release date (< 3 months)	Last release date (> 24 months)	Creation or Update	Description
DIVA maps for D5		1920	2015	The products available were released during Phase II
Marine Litter	9		28/03/2018	Fist maps for seafloor litter and for beach litter at European scale.

1.8. Indicator 6.1: Portal & Social Media visibility by TRUST-IT

http://piwik.vliz.be/index.php?module=CoreHome&action=index&idSite=24&period=day&date=yesterday&updated=1#?idSite=24&period=range&date=2018-01-01,2018-03-23&category=General_Actions&subcategory=Actions_SubmenuPageTitles

6.1.1 Visibility & Analytics	*Date*	*Portal*	*Analytics tool*				
	01/01/2018 23/03/2018	*Chemistry*	*Matomo*				
Pages	Page views		Trend	Unique page views		Trend	Exit Rate
	Last Report	Actual Report	%	Last Report	Actual Report	%	%
Data discovery and access service (extended search)	n.a.	15	n.a.	n.a.	1	n.a.	7%
Data discovery and access service (quick search)	n.a.	6	n.a.	n.a.	4	n.a.	67%
Documents	n.a.	1	n.a.	n.a.	n.a.	n.a.	0%

Landing pages	Number of visits		Trend	Number of unique visitors		Trend	Bounce Rate
	Last Report	Actual Report	%	Last Report	Actual Report	%	%
Home Page	n.a.	230	n.a.	n.a.	143	n.a.	87%

REMARK: The Numbers are very low and not at all in conformance to own AW stats => doubt that the MATOMO registration works well for the portal and related services

6.1.2 Social Media performance	*Date*	
	01/01/2018 *23/03/2018*	
	# in the reporting period	Trend
Twitter followers	2305	n.a.
Twitter impressions	102.8K	n.a.
Twitter engagement rate	1,1%	n.a.
Twitter Likes	185	n.a.
Facebook Likes	58	n.a.
LinkedIn connections	n.a.	n.a

6.1.3 SEO assessment – brand monitoring	*Date*[1]		
	01/01/2018 *23/03/2018*		
URL	BM scores[2]	Total Mentions	Mentions with backlinks
No mentions yet			

[1] Date is the date of measurement, preferably on the 1st of each month

[2] Measures the domain's authority on a 100-point scale, based on SEMrush's Domain Score.

6.1.4 SEO assessment - Acquisitions	*Date*[3]				
	Acquisitions			*Behavior*	
	Visits	Visits %	Bounce rate	Action/visit	Average time on website
Direct	670	94,9%	29%	341.2	03:01:00
Organic Search	19	2,7%	53%	2.8	00:04:00
Referral	17	2,4%	18%	5.4	0:04:20

6.1.5 SEO assessment - performances	*Date*	*Portal*					
	31/03/201	*Chemistry*					
Keyword	CPC[4]	Volume[5]	Portal Positioning	organic-chemistry.org		https://www.merlot.org/merlot/Chemistry.htm	
Dynamic plots	n.a.	n.a.	n.a.	n.a.		n.a.	
Diva maps	n.a.	n.a.	n.a.	n.a.		n.a.	

[3] Date is the date of measurement, preferably on the 1st of each month

[4] The average minimum price that advertisers pay for a user's click on an AdWords ad that popped up for a given keyword

[5] The average number of search queries per month for the queried keyword over the last 12 months.

1.9. Indicator 6.2: Efforts to increase visibility (newsletters, press releases, events)

6.2. Efforts to increase visibility	*Date*	*Portal*
	31/03/2018	*Chemistry*
	Quantity	*Main results*
Number of events organized	5	#participants, #new contacts established, etc.
Number of events attended	6	#new contacts established, etc.
Number of news pieces written[6]	6	#views
Number of newsletters[7]	0	#views
Number of press releases	4	#press clippings

1.10. Indicator 7.1: Technical monitoring by TRUST-IT

7.1 Technical monitoring	*Date[8]*	*Portal*	
Portals	*Website availability[9] (Average value in the period)*	*Response time[10] (Average value in the period)*	*Responsiveness[11](Average value in the period)*
Chemistry	100%	228ms	99,583%

[6] This will be reported by the Secretariat because it concerns only the Central Portal
[7] This will be reported by the Secretariat because it concerns only the Central Portal
[8] Date is the date of measurement, preferably on the 1st of each month
[9] usually calculated in percentage polling the website home page every minute, if there is no reply or an error message it's calculated as a downtime. Usually anything over 99.5% in a month should be acceptable
[10] The time to download the whole homepage. This measurement is affected by network connection speed
[11] Polling the website, if the homepage is slower than 1500ms (this value can be changed) the website is flagged as slow. Usually displayed as the percentage of the "not slow" requests

1.11. Indicator 7.2: Portal user-friendliness by TRUST-IT

User friendliness

7.2 User-friendliness	*Date*	*Portal*			
Page	*Average duration of visit*			Trend* (%)	*Page Type*[12]
Home page	00:01:16			n.a.	Landing
Data discovery and access service (extended search)	00:01:15			n.a.	Content
Data discovery and access service (quick search)	n.a.			n.a.	Content
Documents	n.a			n.a.	Navigation
Data	n.a.			n.a.	Navigation
User registration	n.a.			n.a.	Navigation
Contribute	n.a.			n.a.	Navigation
Products	n.a.			n.a.	Navigation
Viewing and downloading service	n.a.			n.a.	Content
News&Events	n.a			n.a.	

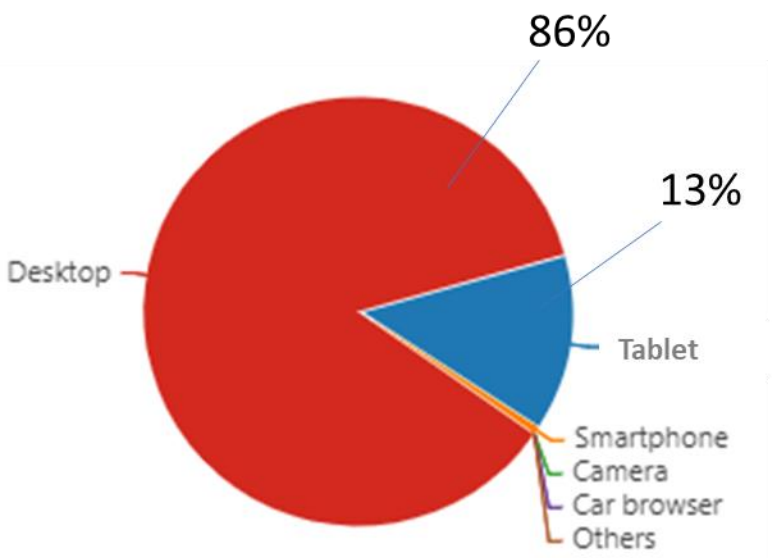
REMARK: The Numbers are very low => doubt that the MATOMO registration works well for the portal and related services

Automatic user flow

Not yet available

[12] Three different types of pages have been defined: content page [maps, tables, articles…], navigation page [menus, lists of links for services or other kinds of content…], landing page (see the Monitoring Support Document)

Usage of the portals on different devices



Visual harmonisation score

7.2 Visual Harmonisation score		*Date*	*Portal*	*Visual harmonization score*	
		13 March 2018	*Chemistry*	*70*	
Harmonisation elements		*Description*		*Score[13] (3 1 0)*	*Trend (+ - =)*
Logo usage		*subtotal*		*8/12*	
	Logo position			*3*	(+ - =)
	Logo type	Wrong font		*1*	
	Logo size			*3*	
	Logo url	*The logo in the header should redirect to the thematic portal home page*		*1*	

[13] Compliant with the visual guidelines (3pt), Not completely compliant with the visual guidelines (1pt), Not compliant (0 pt)

Font usage		*subtotal*	*15/15*	
	Font type		*3*	(+ - =)
	Font usage (capital letters, etc.)		*3*	
	Font spacing		*3*	
	Font colour		*3*	
	Font justification		*3*	
Webportal header		*subtotal*	*18/21*	
	Pattern usage		*3*	
	Header size		*3*	
	Search box		*3*	
	Contact Us button		*3*	
	Submit Data button		*3*	
	Favicon		*0*	
	Stripline colour		*3*	
Footer structure		*subtotal*	*19/21*	(+ - =)
	Footer size		*3*	
	Footer elements		*3*	
	Footer visuals		*3*	
	EC Acknowledgment		*3*	
	EC flag	*Wrong flag*	*1*	
	Link to social media		*3*	
	Social Media icons		*3*	
Policy Privacy		*subtotal*	*3/6*	
	Presence		*3*	(+ - =)
	GDPR compliant	*Yes/No*		

Main menu		*subtotal*	*7/12*	
	User experience		*3*	(+ - =)
	Sub menu		*0*	
	Menu tabs terminology	*Documents, Data, Products*	*1*	
	Menu size		*3*	
Responsive			*3/3*	

1.12. Indicator 8.1: Interfaces to access or view data

8.1.1 List of interfaces	**DATA**	*Date*	*Portal*		
		31/03/2018	*Chemistry*		
	Manual download	**Map viewer**	**WCS**	**WFS**	**…**
Chemistry	100%	YES	NO	YES	

8.1.3 List of interfaces	**EMODnet DATA PRODUCTS**	*Date*	*Portal*		
		31/03/2018	*Chemistry*		
	Manual download	**Map viewer**	**WCS**	**WFS**	**…**
Chemistry	100%	YES	NO	YES	

Remarks: Data products concern DIVA basin maps

1.13. Indicator 8.2: Usage of data and data products per interface and per theme

8.2 DATA	Date		Portal		Redundancy		Use of WMS for map viewer?			
	31/03/2018		Chemistry		NO		YES			
	Downloadable Volume	trend	Number of manual downloads	trend	Number of WMS requests	trend	Number of map visualisations	trend	...	trend
Chemistry	822128	+0.6 %	177485	+16%	?	?	?	?		

Note: We can only fill in the first column with number of downloads. Use of web services needs to be monitored by MATOMO or alternative and is not yet solved by EMODnet Central Technical team.

8.2 EMODnet DATA PRODUCTS	Date		Portal		Redundancy		Use of WMS for map viewer	
	31/03/2018		Chemistry		NO		YES	
	Downloadable Volume	trend	Number of manual downloads	trend	Number of WMS requests	trend	Number of map visualisations	trend
Chemistry	1929	+0.5 %	101	+77.2 %	2439	+49%	66387	+69.2%

Note: For this reporting, regional DIVA maps + marine litter were considered in downloadable volume + manual download + visualisations (from Ocean Browser) while dynamic downloads using WPS via Ocean Browser is computed as WMS requests.

1.14. Indicator 9: Distribution of users that have used the portal's data and data products per organisations type and country, and their main use cases.

Date	*Portal*	Interfaces	Means of information collection	Number of users giving information	Total number of users
31/03/2018	Chemistry	Data – CDI service	Registration as part of shopping mechanism	39	39
Organization type	**% of users**	**Main use cases and application areas**			
Research	88%	• Input for master theses • Input for PhD studies • Input for model validations • Input for scientific research • Input for environmental assessments			
Industry	12%	• Input for water quality modelling study • Input for study of environmental impacts			

EMODnet USER FORM
Compulsory fields for all portals:

- Organisation type (dropdown)
- Use case (free text)
- Email

Portal are also encouraged to insert in their forms the field "Country". So far many of them can track the geographical provenance of the users from the IP address.
Portals need also to add a sentence with the consensus for the Privacy Policy. The Data Privacy Disclaimer created by the Secretariat for the Central Portal will be circulated to the portals as an example. All the portals need to be aware that modifications may occur when the forthcoming GDPR regulation (May 2018) enters officially in action.

1.15. Indicator 10.1: External products (websites, apps,…) built on top of web-services

10.1 Organisations who built on top of EMODnet web-services	*Date*	*Portal*		
	31/3/2018	*Chemistry*		
	Type	**Country**	**Web-service type**	**Link to product or short description of usage**
IPCheM, the European Information Platform for Chemical Monitoring	All chemical monitoring	All Europe	Component of EU SCIENCE HUB enhancing access to chemical data	Covering 4 chemical monitoring data categorizations: Environmental monitoring, Human Bio-Monitoring, Food and Feed, Products and Indoor Air. EMODnet Chemistry is contributing with contaminants data
Organisation 2				
Organisation 3				
…				

1.16. Indicator 10.2: Published use cases and number of readings

10.2 Published use cases and number of readings	*Date*	*Portal*	
	31/3/2018	Chemistry	
Use case title	Release date	Number of views in reporting period	Appears in Central Portal
EMODNET CHEMISTRY CONTRIBUTES TO UNEP/ MAP QUALITY STATUS REPORT 2017	n.a.	4	✓

1.17. Bonus Indicator: List of known publications using EMODnet data or products

Bonus Indicator: Known publications	*Date*	*Portal*		
Date of publication	Journal, conference...	Title	Authors	Organization
13/03/2018 In press	Ocean and Coastal Management	EMODnet Chemistry Spatial Data Infrastructure for marine observations and related information	A. Giorgetti, E. Partescano, A. Barth, L. Buga, J. Gatti, G. Giorgi, A. Iona, M. Lipizer, N. Holdsworth, M.M. Larsen, D. Schaap, M. Vinci, M. Wenzer	OGS, ULG, NIMRD, IFREMER, ISPRA, ICES, AU, MARIS, SMHI
1/2/2018	Ocean & Coastal Management	Maritime spatial planning supported by infrastructure for spatial information in Europe (INSPIRE)	A. Abramic, E. Bigagli, V. Barale, M. Assouline, A. Lorenzo-Alonso, C. Norton	JRC
Under revision	Publication	Seasonal and interannual trends of trophic status in northern Adriatic Sea in relation to nutrient loadings	Grilli F., F. Bernardi Aubry, M. Bastianini, C. Bergami, M. Cabrini, E. Camatti, A. Campanelli, B. Cataletto, S. Cozzi, P. Del Negro, M. Giani, S. Guicciardi, M. Marini, A. Penna, P. Penna, A. Pugnetti, M. Ravaioli, F. Riminucci, A. Rinaldi, F. Ricci, C. Totti, P. Viaroli	CNR, OGS