



EMODnet



European Marine
Observation and
Data Network

EMODnet Thematic Lot n° 3 -Physics

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EMODnet Phase III – Quarterly Progress Report (4)

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1 Highlights during the reporting period

*Provide a short summary of the key achievements and/or events of interest to a wider audience within this reporting period you wish to highlight. **Please make sure that progress in each of the tasks specified in Section 1.4.1 of the Tender Specifications is covered. For those tasks not experiencing significant progress, please state so.** You can also consider the indicators or any other of the reporting sections.*

- **EMODnet Physics, EMODnet Data Ingestion and EuroGOOS joint Workshop in Galway (13/02/2018).** A number of new data providers, platforms and data sets were identified. Among them data from cable observatories, lighthouses, research cruises, gliders and will be followed up by the Physics/Data Ingestion teams. Many participants appreciated the additional, European, dimension added to the local activities (Task 1 and Task 3).
- **Participation to the CMEMS-EMODnet coordination meeting.** CMEMS INSTAC is one of the EMODnet Physics pillars: EMODnet Physics is using many of the CMEMS INSTAC product to plot, redistribute data and create new products. While doing this, EMODnet Physics is supporting CMEMS INSTAC to update the infrastructure, improve the quality of data, and unlock and connect more providers and new data to this common backbone infrastructure. It is important to work on common communication strategy and materials to highlight the importance of collaboration, synergy and complementarity (Task 1, Task 3).
- **EMODnet Physics core coordination meeting (20-21/2/2018).** In less than one year of activities, the system went through many developments and updates, a not exhaustive list is: the look and feel; development of new interoperability layers e.g. ERDDAP; inclusion and connection of new datasets, e.g. CTD, XBTs, new platforms e.g. river stations, underwater noise, etc. this together with the development of new products (all tasks).
- **Follow up on the engagement of the RSCs and Under Water Noise.** We the meetings with HELCOM and OSPAR, and TG NOISE is that one specific EMODnet Physics theme is of interest for RSCs, i.e. underwater noise. Making available more operational data (in terms of parameters and format that are close to MSFD I.11 requirements), offer a single European entry point to impulsive noise registries (MSFD I.11.1) and work on (regional) sound maps are three key identified activities for Physics (Task 5, Task 1, Task 4)
- **Absolute Sea Level Trends.** The coordination meeting with SONEL, PSMSL and EuroGOOS Tide Gauge Task Team permitted to define better the methodology to interoperate and cross link with these key European actions, as well as to design the EMODnet Physics web interface to present and make available the absolute sea level trends (and review the product page for the relative sea level trends) (Task 1, 2, 3, 4, 6, 7)
- **Glider Task Team.** The coordination meeting was aimed at the identification of the current bottlenecks for achieving better data interoperability and availability, and to organize an international Glider Workshop in September to discuss about data management in the framework of EMODnet and other European programs.

Details are reported in the annex.

2 Challenges encountered during the reporting period

Provide an overview of the main challenges encountered during the reporting period and the measures taken to address them, including those related to technical and data provision issues.

Main challenge	Measures taken
Interoperate with the OAI-PMH that is a widely used standard by both European entities (e.g. PANGAEA) and non-EU organizations	<p>The analysis of the system indicates that the PANGAEA system is not interoperable at data level. PANGAEA is exposing metadata and it is literature results oriented.</p> <p>The interoperability/connection can only be developed on a selected list of datasets. Some datasets (e.g. data from Polastern and other vessels) are of interest of different communities and EMODnet Physics users/partners (SOOS, SDN etc), therefore Physics will focus on these specific datasets.</p>
Extend the capacity of EMODnet Physics to integrate historical data hosted in unstructured databases (e.g. GOSHIP).	Many GOSHIP data are already integrated either in CMEMS INS REP products or in SDN. Some of these are already available in the system. We need to work on shortcuts to facilitate the user to find these datasets.

Table 1. Challenges

3 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	Organization	Type of user feedback (e.g. technical, case study etc.)	Response time
11/01/2018	University of Plymouth	Request for further documentation for atmospheric data in Physics	First follow up within 1 day, in parallel the request was forwarded to platform owner. They were able to answer partially.
15/01/2018	University of Gothenburg	Support to download specific datasets	Within the day of the request
16/01/2018	Royal Belgian Institute of Natural Sciences	Wrong metadata in some Belgian stations	1 day and corrections in 2 days
16/01/2018	IUEM	Support to understand differences in some datasets and file naming convention	Within the day of the request
01/02/2018	LNEC	Info about the vertical datum in the tide gauge stations	Follow up in 1 day (datum was not shown but present in the file. Now it is also presented in the platform page)
12/02/2018	ENIM	Support to download HFR data	1 week to identify and fix the bug.
20/02/2018	COWI	Support to download a specific dataset in CSV format	Within the day of request.

Table 2. User Feedback

4 Meetings held/attended since last report

List here the internal and external meetings held/participated by the contractor since the last quarterly report. Please add short description on the meeting as well as the nature and volume of the audience.

Date	Location	Title	Internal/External + Short Description
23-25/01/2018	Athens (Greece)	INSTAC Meeting	External - Links between INSTAC and EMODnet Physics discussed
23/01/2018	Porto (Portugal)	EUDAT Conference - SeaDataCloud Workshop	External – workshop on cloud based data management. The roles and cooperation between EMODent and SeaDataCloud were presented
29/01/2018	Brussels (Belgium)	Absolute Sea Level Trends	External - Technical meeting to discuss about connection, links and interoperability with the SONEL product
30/01/2018	Brussels (Belgium)	EuroGOOS Tide Gauge TT	Internal - Technical meeting about Tide Gauge data management
31/01/2018	Oostende (Belgium)	IODE - ODIS meeting	External – The roles and cooperation between EMODent and SeaDataCloud were presented
13/02/2018	Galway (Ireland)	EuroGOOS, EMODnet Physics and Data Ingestion Workshop	External - Workshop to discuss about programs, projects, data management and connections between local providers and integrators to European ones.
14/02/2018	Brussels (Belgium)	Coordination meeting CMEMS – EMODnet	External
14/03/2018	London (UK)	Oceanology International 2018	External - presentation on SeaDataNet - EMODnet for Ocean ICT programme
15/03/2018	London (UK)	Oceanology International 2018	External - Sensor Web Enablement (SWE) Workshop. Real time data flow in the context of EMODnet Ingestion, Physics and SeaDataCloud
20-21/02/2018	Paris (France)	EMODnet Physics core team annual meeting	Internal - Annual meeting of the consortium core team
20/02/2018	Web seminar	GOOS seminar	External - The history and integration of animal-borne instruments into a sustained ocean observing system
05/03/2018	call	BIAS under water noise data management heritage	External - Technical (web) meeting to discuss about the results of the BIAS project on under water noise data and products the possible role of EMODnet Physics in the data management
06-07/03/2018	WebEx	ODIS	External - Intersessional working group to develop Concept Paper for an Ocean Data and Information System (ODIS)
07/03/2018	call	SoundMaps	Internal - Technical (web) meeting on the soundmaps development methods
09/03/2018	call	Coordination for a EMODnet workshop in Italy	Internal - (web) meeting with Italian representatives from the EMODnet lots to set up a EMODnet (phase 3) Workshop in Italy
14/03/2018	London (UK)	OI, Oceanology International	External - Presentation on EMODnet in general and Physics in detail
15/03/2018	London (UK)	JERICONEXT WP5 meeting	External - European Coastal observatories data management

20-21/03/2018	Alcudia (Mallorca)	EMODnet Technical Working group	Internal
21-23/03/2018	Alcudia (Mallorca)	EMODnet Steering committee	Internal
26-27/03/2018	Milan (Italy)	Glider Workshop organization meeting	Internal/External – technical meeting to design the workshop and its sessions

Table 3. Meetings

5 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.).

Date	Media	Title	Short description and/or link to the activity
13/02/2018	Oral presentation	EuroGOOS, EMODnet Physics and Data Ingestion Workshop	Workshop to discuss about programs, projects, data management and connections between local providers and integrators to European ones
20/02/2018	Web seminar	The history and integration of animal-borne instruments into a sustained ocean observing system	See note ¹
14-15/03/2018	Oral presentation	Oceanology International 2018	See note ²

Table 4. Outreach

Relevant scientific and/or popular articles you know have been published using/referring to EMODnet must also be reported here.

See annex cfr. Pag. 28

¹ http://www.goosoocean.org/index.php?option=com_content&view=article&id=60&Itemid=169

² <http://www.oceanologyinternational.com/en/Sessions/52333/Widening-Access-to-Ocean-Data>

6 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. Please note that this list can be subject to revision.

Indicator 1 - Volume of data made available through the portal

@29/03/2018	Temperature	Salinity	Currents	Light Attenuation	SeaLevel	Atmospheric	Waves	Wind	BioChemical	River	Underwater noise	Total
Number of platforms providing operational data for latest 60days	7029	4885	1698	42	419	1460	606	471	422	96	1	17129
Number of platforms providing operational data	19879	9425	3587	54	625	5839	1637	735	671	177	1	42630
Number of platforms providing historical data	19779	10059	1937	50	505	5655	1426	841	765	131	0	41148
Number of platforms providing validated historical data (CDI)	453	71	387	41	421	47	322	186	38	0	0	1966

Table 5³. Volume of data

ARGO	CTDs	Drifting B	FB	gliders	sea mammals	mini logger	mooring	radar	river station	tide gauge
9247	130361	11024	259	192	1766	172	2510	142	467	1702

Table 6. Available platforms (@03/04/2018)

Starting from next report we are going to use the new indicators system, some of the table reported in this section are not included in the new system.

The file EMODnetPhysics_Indicators_Q4.xlsx presents the new Indicator system and reports the indicators for Q4. To note that we are re-organizing the naming and number of the products, therefore Indicator 5.1 and 5.2 and Indicator 8.2.2 may be reviewed during next months to be more in line with the new definitions.

³ <http://www.emodnet-physics.eu/Map/service/sections/Section16.aspx>

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

EMODnet Physics is receiving, integrating and presenting data and products from many providers in Europe and outside Europe. In Europe, NRT data flow is based on formal data sharing agreements and e.g. all the EuroGOOS and ROOSs members are delivering data to EMODnet Physics. Some data and products are directly connected to Physics (e.g. HFR data, rivers data, underwater noise, etc) some are made available via common integrating infrastructures (e.g. CMEMS INSTAC and SDN).

For details on providers, see EMODnetPhysics_QuartelyReport_04_Annex1.xls⁴

Indicator 3 - Organisations that have been approached to supply data with no result

Nothing to report

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

EMODnet Physics is tracking the IP address where the request comes from. Internal requests (ETT IPs) and known internet page-indexing/sniffing robots (e.g. Google) are filtered out. If data is requesting authentication (e.g. monthly files) EMODnet forwards the request to the CAS service and if the acknowledgment is positive the user can download data, if it is not the user is requested to fill up the registration form to receive a login and password.

To resolve the ip vs the country, EMODnet Physics is using the GEOLite2DB from MixMind⁵ (free version) – last DB update synch 30/10/2017

Following tables are for period 01/01/2018 – 29/03/2018

Indicator 4.1 - Data downloads⁶

Country	NRT LATEST	NRT MONTHLY	REP.TIMESE RIES	CDI	ALL	WEBSERVICE	TOT
Algeria	1	3	1	0	0	0	5
Australia	12	6	0	0	0	0	18
Bahrain	0	1	13	0	0	7	21
Belgium	19	1	1	0	0	53040	53061
Brazil	4	0	0	0	0	0	4

⁴ <http://www.emodnet-physics.eu/Map/Service/Indicators/Section1.aspx>

⁵ <https://www.maxmind.com/en/geolite2-developer-package>

⁶ <http://www.emodnet-physics.eu/map/dashboard/ReservedAreaSection13.aspx>

Bulgaria	3	0	0	0	0	0	3
Canada	2	6	2	0	0	112	122
China	0	0	0	0	0	220	220
Colombia	0	3	0	0	0	0	3
Czechia	0	0	0	0	0	5	5
Denmark	1	47	17	4	0	0	69
Estonia	0	4	0	0	0	0	4
Finland	2	1	1	0	0	0	4
France	50	153	101	50	0	75218	75572
Germany	7	1351	161	31	0	118851	120401
Greece	681	367	176	0	0	0	1224
Hong Kong	0	0	0	0	0	2	2
India	12	13	7	0	0	5	37
Iraq	0	0	0	0	0	1	1
Ireland	3	0	0	0	0	21	24
Italy	28	382	558	9	0	695	1672
Japan	0	7	0	0	0	0	7
Latvia	0	0	0	0	0	1	1
Morocco	145	12	0	0	0	7	164
N.D.	1	6	0	0	0	0	7
Netherlands	7	169	14	25	0	16	231
New Zealand	0	0	2	0	0	0	2
Norway	6	5	1	0	0	2	14
Portugal	46	19	4	0	0	2884	2953
Republic of Korea	0	0	0	0	0	27	27
Romania	0	2	0	0	0	0	2
Russia	6	3	0	0	0	202	211
Slovakia	0	0	0	0	0	97	97
Slovenia	21	21	49	5	0	0	96
Spain	19	37	12	0	0	75	143
Sweden	8	21	0	0	0	6	35
Turkey	50	30	3	0	0	2	85
Ukraine	0	0	0	0	0	25	25
United Kingdom	37	189	35	1	0	6	268
United States	114	5	17	0	0	7650	7786
Vietnam	0	0	0	0	0	2	2
	1285	2864	1175	125	0	259179	264628

Indicator 4.2 - Most downloaded platforms⁷

The following tables report on the most downloaded data-platform (top 10), for the full report see the attachment.

Platform	Provider	Download	Web service	SeaDataNet	Total
62305	Met Office- United Kingdom	21	8080	0	8101
Melilla-coast-buoy	PdE - Puertos del Estado - Spain	9	3742	0	3751
68422	HCMR - Hellenic Centre for Marine Research, Institute of Oceanography - Greece	26	3714	0	3740

⁷ <http://www.emodnet-physics.eu/map/service/indicators/ReservedAreaSection6.aspx>

61499	SOCIB - Balearic Islands Coastal Observing and Forecasting System	11	3705	0	3716
ANDRATX	SOCIB - Balearic Islands Coastal Observing and Forecasting System	12	3701	0	3713
MYKON	HCMR - Hellenic Centre for Marine Research, Institute of Oceanography - Greece	12	3701	0	3713
13130	PdE - Puertos del Estado - Spain	9	3703	0	3712
POLLENSA	SOCIB - Balearic Islands Coastal Observing and Forecasting System	11	3701	0	3712
SA-RAPITA	SOCIB - Balearic Islands Coastal Observing and Forecasting System	11	3701	0	3712
Barcelona-coast-buoy	PdE - Puertos del Estado - Spain	11	3700	0	3711
13131	PdE - Puertos del Estado - Spain	1	3709	0	3710

Table 7. Top 10, ordered by "total"

Platform	Provider	Download	Web service	SeaDataNet	Total
62103	Met Office- United Kingdom	139	448	0	587
68422	HCMR - Hellenic Centre for Marine Research, Institute of Oceanography - Greece	26	3714	0	3740
VIDA	NIB - National Institute of Biology - Slovenia	25	54	0	79
61284	IFREMER - Institut Français de Recherche pour l'Exploitation de la Mer - France	24	20	0	44
6100001	Not Defined	24	2	0	26
62305	Met Office- United Kingdom	21	8080	0	8101
KOPER	ARSO - Slovenian Environment Agency - Slovenia	19	2	0	21
LTKielWR	BSH - Bundesamt für Seeschifffahrt und Hydrographie - Germany	18	2	0	20
61417	PdE - Puertos del Estado - Spain	17	405	0	422
61280	PdE - Puertos del Estado - Spain	17	7	0	24

Table 8. Top 10, Manual Download

Platform	Provider	Download	Web service	SeaDataNet	Total
ADCP_10		0	1682	11	1693
NorthShields	NOC - National Oceanography Centre Southampton - UK	4	2	5	11
Offshore location - OWS India	NIO - National Institute of Oceanography - UK	0	2	5	7
FinngrundetWR	SMHI - Swedish Meteorological and Hydrological Institute - Sweden	5	49	3	57
Knollsgrund	SMHI - Swedish Meteorological and Hydrological Institute - Sweden	5	18	3	26
HuvudskarOst	SMHI - Swedish Meteorological and Hydrological Institute - Sweden	5	16	3	24
HuvudskarOstWR	SMHI - Swedish Meteorological and Hydrological Institute - Sweden	4	2	3	9
MalinHead	MI - Marine Institute - Ireland	3	2	3	8
AberdeenTG	Met Office- United Kingdom	2	3	3	8
MillportTG	Met Office- United Kingdom	2	2	3	7

Table 9. Top 10 CDI requests.

Full report in EMODnetPhysics_QuartelyReport_04_Annex1.xls

Indicator 5 - Organisations that have downloaded each data type

Indicator 5 shows the Country (rows) where a request came from versus the sea basin (columns) where the dataset - platform is belonging to.

Indicator 5 - Downloads by country⁸

@29/03/2018	Arctic, Barents, Greenland, Norwegian Sea	Atlantic, Bay of Biscay, Celtic Sea	Baltic Sea	Black Sea	Indian Ocean	Mediterranean Sea	North Sea	Pacific Ocean	Southern Ocean	Inland	Total
Algeria	0	0	0	0	0	5	0	0	0	5	10
Australia	0	2	0	0	10	0	0	9	2	18	41
Bahrain	2	0	0	0	15	1	0	0	0	21	39
Belgium	3	47502	527	44	0	2687	2698	0	0	53061	106522
Brazil	0	6	0	0	0	0	0	0	0	4	10
Bulgaria	0	0	0	3	0	0	0	0	0	3	6
Canada	102	10	0	0	0	6	0	0	0	122	240
China	41	0	8	0	0	3	11	8	0	220	291
Colombia	0	3	0	0	0	0	0	0	0	3	6
Czechia	0	0	0	0	0	0	0	0	0	5	5
Denmark	0	2	67	0	4	0	3	0	0	69	145
Estonia	0	0	4	0	0	0	0	0	0	4	8
Finland	0	6	0	0	0	0	0	0	0	4	10
France	5604	21583	1346	283	11066	4611	1923	24514	2182	75573	148685
Germany	225	52173	455	6	12	66716	653	25	2	120433	240700
Greece	11	195	5	21	0	1057	4	12	0	1224	2529
Hong Kong	0	0	0	0	0	0	0	0	0	2	2
India	0	30	0	0	3	0	0	0	0	37	70
Iraq	0	0	0	0	0	0	0	0	0	1	1
Ireland	0	3	1	0	0	0	0	0	0	24	28
Italy	18	170	36	43	12	1163	280	2	1	1677	3402
Japan	0	7	0	0	0	0	0	0	0	7	14
Latvia	0	0	0	0	0	0	0	0	0	1	1
Morocco	2	51	0	0	8	28	3	66	0	164	322
Netherlands	1	36	8	0	0	0	180	0	0	231	456
New Zealand	2	0	0	0	0	0	0	0	0	2	4
Norway	3	3	3	0	0	1	2	0	0	14	26
Portugal	4	2699	0	0	0	2	11	0	0	2953	5669
Republic of Korea	1	0	0	0	0	0	1	0	0	27	29
Romania	0	0	0	2	0	0	0	0	0	2	4
Russia	57	3	6	13	0	0	7	10	0	211	307
Slovakia	30	0	4	0	0	0	6	4	0	97	141
Slovenia	0	1	0	0	0	93	2	0	0	96	192
Spain	16	54	10	0	0	19	18	0	0	143	260
Sweden	1	3	28	0	3	0	2	0	0	35	72
Turkey	0	4	0	0	0	93	0	0	0	85	182
Ukraine	18	2	0	2	0	0	0	0	0	25	47

⁸ <http://www.emodnet-physics.eu/Map/Service/Indicators/ReservedAreaSection5.aspx>

United Kingdom	2	246	0	0	0	9	33	0	0	268	558
United States	887	1409	349	14	870	156	167	2538	131	7791	14312
Vietnam	0	0	0	0	0	0	0	0	0	2	2
	7030	126203	2857	431	12003	76650	6004	27188	2318	264664	525348

Table 10. Indicator 5

Indicator 6 - User statistics to determine the main pages utilised and identify user navigation routes

This report is indicating how many times the pages/services have been viewed/used.

See EMODnetPhysics_QuartelyReport_04_Annex1.xls

Indicator 6.1 reports on the access and use of EMODnet Physics dynamic map, products, and services.

Indicator 6.2 provides users statistics about navigation on the landing portal

The most viewed page is the map page (5982 sessions – Ind.6.1 map), then the landing page (3959 sessions – Ind. 6.2 home). WS services are used quite intensively (about 200.000 interactions exchange).

Indicator 7 - List of what the downloaded data has been used for

See WP4 – analysis evaluation and feedback section (annex)

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

Service	Description	Examples
PermaURL	All platforms	http://www.emodnet-physics.eu/map/platinfo/piradar.aspx?platformid=10273 http://www.emodnet-physics.eu/map/platinfo/pidashboard.aspx?platformid=10273 Service description @ http://www.emodnet-physics.eu/map/spi.aspx
API REST/SOAP	Latest 60 days of data	www.emodnet-physics.eu/map/Service/WSEmodnet2.aspx www.emodnet-physics.eu/map/service/WSEmodnet2.asmx
OGS WMS, WFS, WCS	Postgresql + Geoserver	geoserver.emodnet-physics.eu/geoserver/web examples and service description @ www.emodnet-physics.eu/map/service/GeoServerDefaultWMS www.emodnet-physics.eu/map/service/GeoServerDefaultWFS
THREDDS (OpenDAP, WMS, WCS)	Latest 60 days + HFR data + Ice	thredds.emodnet-physics.eu/thredds/catalog.html
ERDDAP	Latest 60 days	erddap.emodnet-physics.eu
Widgets	All plots	www.emodnet-physics.eu/Map/Charts/PlotDataTimeSeries.aspx?paramcode=TEMP&platid=8427&timerange=7

List of known organizations (constantly/continuously) connected to those services:

- AZTI, they are integrating the EMODnet Physics widget into their regional portal
- SOOS, South Oceans Observing System, EMODnet Physics is powering the SOOS data portal
- DRL, German Space Agency, we were asked to set up a data delivery flow for a selection of platform measuring wave data to be assimilated in their models.
- EMSA, they are using EMODnet Physics M2M services to collect data into their internal information system
- METOFFICE UK, they assimilate HFR radar data (currents) into their models – NWS area.

7 Annex: Other documentation attached

List in Annex if you wish to provide any additional information.

7.1 WP1 – Project Management

The general objectives of WP1 are the project management and the coordination of all project activities ensuring timely delivery and high quality of documentation, tools, results and products. Project management includes the collaboration with the other EMODnet activities and involvement of regional sea conventions. This work package is including Task 5. Ensure the involvement of regional sea conventions

Activities:

- **EMODnet Physics, EMODnet Data Ingestion and EuroGOOS joint Workshop in Galway**

We had 25 participants from 15 Irish and Scottish organizations (public, research and private sector) and 15 possible data providers were introduced to ongoing European initiatives and data aggregators (EMODnet, EMODnet Physics, EuroGOOS, CMEMS INSTAC, SDN, ...) to motivate and support those potential data providers to release their datasets for safekeeping and subsequent freely distribution by means of the EMODnet Data Ingestion service. This was followed by presentations from the participating organisations covering existing platforms, availability of data, how data are served etc. A number of new data providers, platforms and data sets were identified. Among them data from cable observatories, lighthouses, research cruises, gliders and will be followed up by the Physics/Data Ingestion teams. Many participants appreciated the additional, European, dimension added to the local activities.

- **Participation to the CMEMS-EMODnet coordination meeting**

CMEMS INSTAC is one of the EMODnet Physics pillars: EMODnet Physics is using many of the CMEMS INSTAC product to plot, redistribute data and create new products. While doing this, EMODnet Physics is supporting CMEMS INSTAC to update the infrastructure, improve the quality of data, and unlock and connect more providers and new data to this common backbone infrastructure. It is important to work on common communication strategy and materials to highlight the importance of collaboration, synergy and complementarity.

Technical note.

Synchronization with the CMEMS v.4.0 – as anticipated in the previous report CMEMS is going to have a major update end of March. This will hardly impact the metadata and data exchange between CMEMS INSTAC and EMODnet Physics and at the moment it still not possible to estimate the real effort to deal with changes due to the planned update.

- **EMODnet Physics core coordination meeting.**

The check and review of the planned actions and development is indicating that the project is processing well and in line with the schedule and planned actions (see annex). In less than one year of activities, the system went through many developments and updates, a not exhaustive list is: the look and feel; development of new interoperability layers e.g. ERDDAP; inclusion and connection of new datasets, e.g. CTD, XBTs, new platforms e.g. river stations, underwater noise, etc. this together with the development of new products (e.g. total suspended matter) and inclusion of third parties products (e.g. SDN climatology, impulsive noise registries) is generating too much activity and dynamism of the portal features that is also preventing the

development of standard tools to help the user to navigate the system (e.g. user guide, or first visit wizards, a FAQ page). One main outcome of the coordination meeting is the decision to have two parallel system interfaces – one official interface that makes available consolidated and planned updates (in terms of features, products etc) and one more dynamic in which it is possible to see and play with data/products/features under development.

This versioning approach will facilitate the development of a user-oriented EMODnet Physics catalog (EMODnet Physics is exposing several catalogs mainly oriented to machine-to-machine interoperability), it will facilitate the management of the system evolution as well as the re-scheduling of features and products not ready yet.

- **Follow up on the engagement of the RSCs and under water noise**

As discussed in the previous report the main outcome from the meetings with HELCOM and OSPAR, and TG NOISE is that one specific EMODnet Physics theme is of interest for RSCs, i.e. underwater noise. Making available more operational data (in terms of parameters and format that are close to MSFD I.11 requirements), offer a single European entry point to impulsive noise registries (MSFD I.11.1) and work on (regional) sound maps are three key identified activities for Physics.

We had a specific follow up (5/3/2018) with Mathias Andersson (Swedish Defence Research Agency - FOI) to discuss about the sound scape mapping tools developed during the BIAS⁹ project. One specific topic was how EMODnet Physics can follow up on the developed tools and help the HELCOM members to manage data flow and product accessibility (the BIAS project is ending now). To note that the BIAS project already developed a prototype to provide Member States indicators compliant to the MSFD I.11 requirements, we are discussing if/how EMODnet Physics can take over this result and extend it at European level.

- **Under Water Noise**

We defined a preliminary list of the UWN stations:

⁹ <https://biasproject.wordpress.com/abouttheproject/>

System	Geographical Scale	Location	Coordinates	Human Activity	Natural Activity	Projected Change	Acoustics Operational
CTBTO	basin	Wake Island Cape Leewin Ascension Diego Garcia Juan Fernandez Crozet Island		low low			yes yes yes yes yes
ALOHA	100 km	Hawaii					yes
NEPTUNE	100 km	Juan de Fuca British Columbia		shipping	whales, geophysical		yes
VENUS	50 km	Strait of Georgia British Columbia		shipping	whales, fish, geophysical		yes
ANTARES	50 km	Ligurian Sea	43.0846N, 5.2115E	shipping, Navy, seismic	whales, geophysical		yes
OBSEA	10 km	Northwest Mediterranean Sea	41.1819N, 1.7523E	shipping	whales, fish		yes
NEMO	25 km	East Sicily	37.3211N, 15.3625E	shipping, Navy, seismic	whales, geophysical		yes
JAMSTEC	100 km	Hatsushima, Japan	35.0031N, 139.2247E	shipping	whales		yes
	100 km	Kushiro 1, Japan	41.6870N, 144.3945E	shipping	whales		yes
	100 km	Kushiro 2, Japan	45.9408N, 145.0562E	shipping	whales		yes
	100 km	Kushiro 3, Japan	49.2528N, 144.8107E	shipping	whales		yes
	50 km	DONET					yes
OOIRSN	1000 km	Juan de Fuca Plate (Oregon/ Washington USA)		shipping, fishing, some Navy	whales, odontocetes, pinnipeds, hydrothermal vents	climate changes in animal distributions possible	yes, but limited - opportunity for expanded capabilities
SOSUS	~3000 km ²	Northeast Pacific	various	shipping	whales		yes/no
AUTEC	~1250 km ²	Bahamas		military	beaked whale, odontocetes		yes
SOCAL	~1350 km ²	Southern California		military/shipping	beaked whale, odontocetes, mysticetes		yes
PMRF	~2500 km ²	Hawaii		military/shipping	beaked whale, odontocetes, mysticetes		yes
PALAOA	100s km	Antarctica		low/none	whales, geophysical		yes
ARGOMARINE	regional	Ligurian Sea		shipping			yes
GOOS							no
IOOS							no
OOS							no
PLOCAN	coastal	Canary Islands	27.9833N 15.3667W	ocean renewable energy, shipping	beaked whale, odontocetes, mysticetes	ocean renewable energy	none planned (2012-2013)

Figure 1. Cabled Observatories

System	Geographical Scale	Location	Coordinates	Human Activity	Natural Activity	Projected Change	Acoustics Operational
HAFOS	basin	Weddell Sea		low/none	whale migration	no	yes
HARP	regional	Pacific Ocean, Atlantic Ocean, Gulf of Mexico, Gulf of Alaska, Hawaiian Islands, Chukchi Sea, etc.	30 deployments, see http://cetus.ucsd.edu/projects_Main.htm	shipping, sonar, oil & gas exploration	marine mammals, fish, ice, wind, rain, earthquakes	biological and human sound sources	yes
SBNMS	regional	SBNMS Arctic		shipping	whales		yes
EARS	regional	Ligurian Sea		shipping	whales		yes
NOAA EcoFOCI	regional	Bering Sea		low	seasonal ice	climate, shipping, fishing	yes
	regional	Bering		low	seasonal ice	climate, shipping, fishing	yes
PAL	regional	Station PAFA, Pacific Ocean		low			yes
	regional	Ionian Sea		shipping	whales		yes
PCI	100 km	Sakhalin Island (Russia)		oil exploration/production	whales	increased industrial activity	yes
Hydra	regional	Ligurian Sea		shipping	whales		yes
IOPAS	regional	Baltic Sea		shipping, oil platform	fish migrations		yes
		Spitsbergen Fjord		shipping	diving birds		yes
BIMET	coastal	N. Atlantic (Spain)		shipping, geophysics	whales		yes
SEAWAYS	regional	St. Lawrence Seaway	Lower St. Lawrence Estuary	shipping	whales	shipping	yes
ARCTIC-NET+	regional	Eastern Beaufort Sea, Canadian Archipelago, Hudson Strait, Hudson Bay		none to occasional shipping and airgun seismic	whales, Arctic marine life	climate, shipping, fishing	yes
PMEL	large scale	Pacific Ocean, Atlantic Ocean, Davis Strait			whales	climate, shipping	
DASAR	regional	Arctic Ocean	Beaufort Sea	oil & gas	whales	shipping, fishing	
AURALS	regional	Arctic Ocean	Beaufort Sea, Chukchi Sea	oil & gas	whales	climate, shipping, fishing	
ESTOC-PLOCAN	regional	Central-Eastern Atlantic (ESTOC site)	29.1667N, 15.3000W	shipping, volcanic tremor	whales (migratory and permanent)		no, but planned
IMOS Perth Canyon	regional	Perth Canyon, Western Australia		shipping, seismic surveys	whales	shipping, increase from whales	yes
IMOS Portland	regional	shelf break south Portland		shipping, seismic surveys	whales, fish, ocean noise		yes
IMOS NSW Australia	regional	shelf break west Cape Howe		shipping	fish, whales	unknown	yes
IMOS Northwest WA	regional	northwest shelf, Western Australia		shipping, seismic surveys	fish, whales	unknown	yes
JASCO-AMARs	regional	Chukchi Sea	8-160 km offshore	oil & gas exploration, climate	mysticetes, odontocetes, pinnipeds		yes
ABB (SIO RAS)	regional	Black and Baltic seas		shipping, fishing			yes
AUSOMS	regional	Andaman Sea, Okinawa Island		variable	variable		yes
PAMBUOY	100 to 100s kms	Sakhalin Island variable	n/a	shipping, oil platform, shipping, sonar, pile driving, seismic	whales and other marine mammals	biological and human sound sources	yes

Figure 2. Fixed Autonomous Stations

System	Geographical Scale	Location	Coordinates	Human Activity	Natural Activity	Projected Change	Acoustics Operational
WaveGlider HARP	regional	Pacific Ocean, Atlantic Ocean, Gulf of Mexico, Gulf of Alaska, Hawaiian Islands, Chuckchi Sea, etc.	30 existing deployments	shipping, sonar, oil & gas exploration	marine mammals, fish, ice, wind, rain, earthquakes	biological and human sources	yes
Argo	basin	global		variable	variable		no
AQARIUS	basin	global		variable	variable		yes
SPURS	basin	North Atlantic Ocean		variable	variable		yes
CPAM	local	Ligurian Sea		shipping	whales		yes
NURC-Glidors	regional	Ligurian Sea		shipping	whales		yes
PLOCAN-Glidors	basin	global		shipping, volcanic tremor	whales		no, but planned

Figure 3. mobile autonomous systems

• River Data

The activity of EMODnet Physics is focusing on River Runoff and development of a total suspended matter product. Whenever possible, links and joint activities with EMODnet Chemistry are done. Specific progress on the river data inclusion activities are:

- Ingestion of more and new operational systems: EMODnet Physics is now connecting platforms from Portugal, Spain, France, Germany, Belgium, Ireland, UK, and Italy¹⁰.
- Integration of Global Runoff Database: completed with data coverage until 31/12/2016
- Total Suspended Matter product: in progress, already available for Ligurian, Tyrrhenian and Adriatic Seas (2002-2016).

• Sea Level

The coordination meeting with SONEL, PSMSL and EuroGOOS Tide Gauge Task Team permitted to define better the methodology to interoperate and cross link with these key European actions, as well as to design the EMODnet Physics web interface to present and make available the absolute sea level trends (and review the product page for the relative sea level trends).

Inventory of the TG (identification of gaps in time and space). The inventory will be shared with EMODnet DI to closely and proactively work on it and include/make available missing stations

• Other

In collaboration with the Secretariat, we are organizing the attendance and presence at the SEAFUTURE exhibition (<http://seafuture.it/index.php/euronaval>)

Planned actions update:

WP1.A.1	To include/link the available impulsive noise registries into EMODnet Physics.	In progress.
WP1.A.2	To work in collaboration with JOMOPANS project on data management issues.	
WP1.A.4	To plan a meeting with Chemistry	Closed

Table 11

¹⁰ France, Germany, Belgium and UK are integrated via CMEMS INSTAC which do not perform any QC/QF

KO.A.2	all the partners to provide ETT with the list of meetings/workshops/conferences and relevant events in which EMODnet Physics is presented	Open action for entire duration of the project. Progress reported in Table 1
KO.A.3	to keep updating partners about EMODnet Data Ingestion progresses, needs, and activities.	Open action, progress reported in WP2.4
KO.A.4	EuroGOOS to work on collaboration with Regional Sea Conventions	In progress

Table 12

7.2 WP2 – Data Collection, Metadata Compilation, Data Access and Products

The objectives of WP2 are to identify specific additional data sources that contribute to the EMODnet physical parameters portfolio (Argo, profiling floats, gliders, radar, CTD from ships, river outflow, water noise, etc.), and reduce spatial and temporal gaps in cooperation and collaboration with the underlying EuroGOOS ROOSs, CMEMS INS TAC, and SeaDataNet NODCs infrastructures, as well as EMODnet Data Ingestion. Part of this activity is to develop EMODnet Physics services with user friendly interfaces for data and metadata uploading, data tracking and provide guidance and documents on preferred data, common data and metadata models. This WP is including Task 1. Develop a common method of access to data held in repositories, Task 2. Construct products from one or more data sources that provide users with information about the distribution of parameters in time and space, and Task 6. Facilitate interoperability with data distributed by non-EU organisations.

Description:

EMODnet Physics is developing an **operational service where near real time and historical validated marine data are made interoperable and freely available.**

WP2.1 Expand the existing measurements from fixed and moving platforms

The review of the data inventory is processing well and some more datasets and parameters that are under the CMEMS INSTAC scope are going to be connected to EMODnet Physics. CMEMS INSTAC elaborates in situ data and produces harmonized and quality controlled both NRT and Reprocessed products on the following parameters:

- Temperature and Salinity
 - NRT updated continuously
 - (bi-Yearly) Reprocessed Historical Data collection product
- Current
 - NRT updated continuously
 - (bi-Yearly) Reprocessed Historical Drifter only Data collection product
- Sea Level
 - NRT updated continuously for European seas
- Wave
 - NRT updated continuously
 - (bi-Yearly) Reprocessed Historical Data collection product
- BGC (O₂ and Chl_a) (*)
 - NRT updated continuously

- (bi-Yearly) Reprocessed Historical Data collection product

(*) CMEMS INSTAC is already working on the integration of water dissolved Carbon data. The new product that is going to integrate both the SOCAT product and NRT data will be published in 2019. To avoid duplication of effort, EMODnet Physics will integrate it as soon as it is ready.

One specific focus for next period is to make available in Physics more historical datasets as validated by NODC, in particular repeated measurement by means of moving platforms on the same positions. To note that some (delayed mode) data that are flowing into the ICES repository, are usually available from either or both SDN and CMEMS INSTAC. To keep working on common method and techniques to identify univocally data source and data sets (unique id).

KO.A.6	review data inventory and parameters	closed
KO.A.8	MARIS to design how to manage the connection between NRT CTD and validated data and CRS	In progress
KO.A.9	XBT can be clustered in an area of about 10miles to be showed as data acquired in the same cruise	In progress
	WP2.A.1. EMODnet Physics will made available in situ near real time chemical data when available in the CMEMS products	Data will be integrated in 2019.

Table 13

WP2.2 closing the gap in data flow between operational repository and validated archives

As planned, we are moving on some pilot actions in Greece, Italy, Spain and Poland.

In collaboration with Data Ingestion and SeaDataCloud, we are planning a workshop 26/04/2018 in Sopot (Poland). The workshop will discuss about recent OGC SWE standards, data model (SensorML), and protocols (SOS) to provide real time access to data. EMODnet program, EMODnet Physics, which builds upon CMEMS-INSTAC, EuroGOOS and SeaDataNet to streamline operational and historical data flow, and EMODnet Data Ingestion will be presented to facilitate Polish operators to participate and exchange data.

- HFR radar data management

As already presented in the previous report, together with SeaDataCloud, we are working on the task "Ingesting, validating, long-term storage and access of HF Radar data" (June 2019). Thanks to the work done by EMODnet Physics II (in collaboration with EuroGOOS, JERICONEXT, and CMEMS SE INCREASE), CMEMS INSTAC is now working the integration of HFR data into the Currents product (2019). This joint effort represents an excellent example of how to close (not to create) the gap in data flow from European platforms operators to data infrastructures and integrators.

WP2.3. Include new parameters: inflow from rivers and sound

As already described in the previous section, the activity is processing well in line with the expectations.

WP2.4. Collaboration with EMODnet Data Ingestion project

EMODnet Physic and Data Ingestion are collaborating on a daily base, results from the joint effort to connect and ingest more data. The service for presenting Real Time data connected by OGS SWE SOS methods is already available in its beta version @ www.emodnet-physics.eu/realtime

Both EMODnet DI and EMODnet Physics have updated the landing portals to provide the user with information and instructions to connect their data to the infrastructures and contribute to expand the catalogues¹¹.

Some further actions are planned in order to unlock, ingest and connect more platform/network specific data:

- Italian EMODnet Day, Trieste (Italy) 8 June 2018 (TBC):
 - Giving an update on the portals
 - Raising awareness of EMODnet data ingestion and possibly convince people to submit their data
 - Stimulating cross-fertilisation between research, public authorities and industry (we'd like to invite external organisations that have used EMODnet data, especially from industry)
 - Getting feedback on the project(s)
- Glider Workshop Genoa (Italy) Sept 2018: goal is to discuss and harmonize data management and facilitate interoperability
- FerryBox Workshop Genoa (Italy) Spring 2019: : goal is to discuss and harmonize data flow and facilitate interoperability

Replicate the dissemination WS held in Galway-Ireland in other states, candidates are Spain-Portugal-Morocco and UK

WP2.A.5	To work on the 2 buoys and HFR data ¹² from NMI (Norwegian Meteorological Institute)	In progress (data were submitted to DI)
WP2.A.6	To work on Croatian buoys ¹³	In progress (in collaboration with CMEMS INS TAC MED)

Table 14

WP2.5: Metadata

Metadata are present and well linked in the portal. During the core meeting we decided the portal to have more links with documentation (procedures, sensors, validation methods). The goal is to let the user to get in easy and fast way all the information about data source, data processing, applied QC/QF, etc. (data provenience).

WP2.6. Data access

The goal of the task is to set up a smooth process for harvesting both NRT and validated data. EMODnet Physics is already providing many features, some are easy accessible some need a better knowledge of the interface. During the coordination meeting we decided to develop both a "first visit" user guide/wizard and shortcuts to specific datasets or data packages/collections.

¹¹ <https://www.emodnet-ingestion.eu/operational-data>
<https://www.emodnet-physics.eu/portal/Submit-Data/How-to-contribute>
<https://www.emodnet-physics.eu/portal/Submit-Data/Near-Real-Time-data-exchange>

¹² <http://thredds.met.no/thredds/catalog/remotesensinghfradar/catalog.html>; <http://thredds.met.no/thredds/obs.html>

¹³ <http://faust.izor.hr/autodatapub/postaje>

WP2.7. Data Products

As discussed in previous sections, the activity was focused on the integration and development of the interfaces for the absolute sea level trends (SONEL) and total suspended matter (TSM). The MEOP DB was also updated and the new version has data covering the Canadian Seas.

7.3 WP3 – Portal technical Development and operation

The objectives of WP3 are to implement and extend the www.emodnet-physics.eu portal allowing users to find, visualize and download data and data products and their metadata. This includes the development of procedures for machine-to-machine connections to metadata, data and data products and services compatible with INSPIRE, EMODnet and OGS standards and requirements. The portal has also to develop monitoring tools of the website performance and usage.

This WP is including Task 3. Develop procedures for machine-to-machine connections to data and data products, and Task 4. Develop a web portal allowing users to find, visualise and download data

Activities:

During the period, the team keep working on the portal. As already described in previous sections (see WP1) we decided to have two parallel systems: one presenting the consolidated development and programmed releases, and one development system to make available and perform test on new features and service.

The following tables summarize the progresses planned activities.

KO.A.31/ WP3.A1	Work on the catalogue	In progress.
KO.A.32	Add FAQ page	
KO.A.34	Review the EMODnet Dashboard to have a more dynamic interface (to consider EMODnet Arctic SCP e.g. or osmc.noaa.com)	Dashboard page was reorganized.
KO.A.35	ETT to review Physics against INSPIRE	
KO.A.36	Add filters by EOVs	

Table 15

During the period we completed the development of the cross links between the different catalogues (and underlining services) available in Physics. Now it is possible to access to the ERDDAP and THREDDS catalog from the platform pages directly. For next period, we are going to work on the FAQ page and on a new “user readable” catalog.

WP3.2 EMODnet Physics machine-to-machine (M2M) and interoperability features

Extend the tracking system and automatic email to integrators/providers:

Registered users: At the moment AZTI (Spain), SOCIB (Spain), IFREMER (France) and University of St. Andrews (UK) registered to the service, NIB (Slovenia), PDE (Spain), UPC (Spain), OGS (Italy), HCMR (Greece), BSH (Germany), DMI (Denmark), MI (Ireland) and IOPAS (Poland). The deputy for the MEOP project, as well as the technical office of SeaDataNet and JericoNext project are registered to the service.

1. From EMODnet Physics to end-users

Service	Description	Examples
permaURL	All platforms	http://www.emodnet-physics.eu/map/platinfo/piradar.aspx?platformid=10273 http://www.emodnet-physics.eu/map/platinfo/pidashboard.aspx?platformid=10273 Service description @ http://www.emodnet-physics.eu/map/spi.aspx
API REST/SOAP	Latest 60 days of data	www.emodnet-physics.eu/map/Service/WSEmodnet2.aspx www.emodnet-physics.eu/map/service/WSEmodnet2.asmx
OGS WMS, WFS,	Postgresql + Geoserver	geoserver.emodnet-physics.eu/geoserver/web examples and service description @ www.emodnet-physics.eu/map/service/GeoServerDefaultWMS www.emodnet-physics.eu/map/service/GeoServerDefaultWFS
THREDDS (OpenDAP, WMS, WCS)	Latest 60 days + HFR data + Ice	thredds.emodnet-physics.eu/thredds/catalog.html
ERDDAP	Latest 60 days	erddap.emodnet-physics.eu
widgets	All plots	www.emodnet-physics.eu/Map/Charts/PlotDataTimeSeries.aspx?paramcode=TEMP&platid=8427&timerange=7

Table 16

2. From providers to EMODnet Physics

In collaboration with Data Ingestion we are working on Sensor Web Enablement and SensorML templates for identified sensors/platforms.

A first draft of the SWE profiles is now published under <https://odip.github.io/MarineProfilesForSWE/>

This site includes a story that narrates how projects, people, technologies and vocabularies were brought together to formulate meaningful and semantically rich profiles for the marine domain. The related EU-projects that have funded this effort are listed under the above mentioned URL.

Examples of sensors described with SensorML following the SWE Marine profiles and can be found at:

- A model of an Aanderaa oxygen optode: http://linkedsystems.uk/system/prototype/TOOL0969_current/
- An instance of an oxygen optode: http://linkedsystems.uk/system/instance/TOOL0969_prospect_current/
- An instance of a Wind Monitor-JR:
http://europa.ogs.trieste.it/OGS_SOS/SensorML_3_0/Sensor_V3_E2M3A_WIND.xml
- An instance of SBE 37-SMP-ODO MicroCAT high-accuracy conductivity and temperature recorder:
http://europa.ogs.trieste.it/OGS_SOS/SensorML_3_0/Sensor_V3_E2M3A_CT.xml

WP3.3 interoperability with data distributed by non-EU organizations

KO.A.42	interoperate with the OAI-PMH that is a widely used standard by both European entities (e.g. PANGAEA) and non-EU organizations	the analysis of the system indicates that the PANGAEA system is not interoperable at data level. PANGAEA is exposing metadata and it is literature results oriented. The interoperability/connection can only be developed on a selected list of datasets. Some datasets (e.g. data from Polastern and other vessels) are of interest of different communities and EMODnet Physics users/partners (SOOS, SDN etc), therefore Physics will focus on these specific datasets
KO.A.43	extend the capacity of EMODnet Physics to integrate historical data hosted in unstructured databases (e.g. GOSHIP).	Many GOSHIP data are already integrated either in CMEMS INS REP products or in SDN. Some of these are already available in the system. We need to work on shortcuts to facilitate the user to find these datasets.

Table 17

7.4 WP4 – Analysis Evaluation and Feedback

WP4 is aimed at reporting effectiveness of the system in meeting the needs of users and other EMODnet portals, assess the robustness of the developed information system and operate help desk to deal with user feedback and need for support. This WP is including Task 7. Install a process to monitor performance and deal with user feedback, Task 8. Operate a help desk offering support to users.

Activities:

The system is collecting (number of hits, amount and type of data used, etc.) and reporting:

- monthly page views;
- most popular page in past month and past year;
- number of data, and data products downloaded;
- types of user downloading data (where known);
- databases connected to system;
- number of providers, type and amount of provided data and data products.

EMODnet Physics dashboard was reorganized and integrate with some new features. The new entry point is:

<http://www.emodnet-physics.eu/map/service/Dashboard/default.aspx>.

A web form is collecting information from/about authenticated users to map their interest (<http://www.emodnet-physics.eu/map/service/Indicators/Section34.aspx>). To note that this is only a limited subset of the portal traffic. Table 18 is presenting data as collected for the past three months (1/1/2018-31/3/2018).

Organisation type	% users	tot users Organisation type	Main use cases and application areas
Academia/Research	65,30%	81	Marine and Coastal - tot: 75
			Climate, Seasonal and Weather Forecasting - tot: 28
			Marine Resource - tot: 21
			Maritime Safety - tot: 14
Business and private Company	15,30%	19	Marine and Coastal - tot: 19
			Climate, Seasonal and Weather Forecasting - tot: 11
			Maritime Safety - tot: 6
			Marine Resource - tot: 6
Government/Public Administration	8,90%	11	Climate, Seasonal and Weather Forecasting - tot: 10
			Marine and Coastal - tot: 8
			Marine Resource - tot: 3
			Maritime Safety - tot: 2
Non profit	3,20%	4	Marine and Coastal - tot: 3
			Marine Resource - tot: 3
Other	7,30%	9	Marine and Coastal - tot: 6
			Climate, Seasonal and Weather Forecasting - tot: 3
			Marine Resource - tot: 2
total		124	

Table 18. Users and their interest (03/04/2018)

During this period, we registered 7 requests to the help desk (Table 2).

WP4.1. Monitor performances and deal with user feedback

The plan is to monitor performance in terms of usage and user satisfaction. Typical indicators are:

- monthly page views;
- most popular page in past month and past year;
- number of data, and data products downloaded;
- types of user downloading data (where known);
- databases connected to system;
- number of providers, type and amount of provided data and data products.

These data are daily collected and used to fulfil indicators and inform providers about the use of their data: the system is now offering a monthly report (the user has to subscribe to receive it) with stats on its platforms use and downloads (see KO.A.39).

Action	Set up the tracking and monitoring tools	Closed.
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Table 19

List of identified publications citing EMODnet Physics

Year	Type	EMODnet Authors	Authors	Title	Publication	other info
2013	Conference	No	Sissy Iona, Stavroula Balopoulou, Pelopidas Karagevrekis, Angelo Lykiardopoulos	The HNODC Data & Information Management Services: Description & Recent Upgrades	Bollettino di Geofisica teorica ed applicata, Vol. 54 Supplement, 2013	IMDIS 2013, International Conference on Marine Data and Information Systems, 23-25 September, 2013 - Lucca (Italy)
2013	Conference	No	Wilhelm Petersen	FerryBox Systems: State-of-the-art and Incorporation in European Observation Networks	Book of Abstract: The Future of Operational Oceanography 2013	
2013	Conference	Yes	A. Novellino, G. Manzella, D. Schaap, P. Gorringer, L. Rickards, S. Pouliquen	EMODNet Physical Parameters	Bollettino di Geofisica teorica ed applicata, Vol. 54 Supplement, 2013	IMDIS 2013, International Conference on Marine Data and Information Systems, 23-25 September, 2013 - Lucca (Italy)
2013	Conference	Yes	Dahlin, Hans; Gies, Tobias; Giordano, Marco; Gorringer, Patrick; Manzella, Giuseppe; Maudire, Gilbert; Novellino, Antonio; Pagnani, Maureen; Petersson, Sian; Pouliquen, Sylvie; Rickards, Lesley; Schaap, Dick; Tijssse, Peter; van der Horste, Serge	European Marine Observation and DataNetwork (EMODNET)- physical parameters: A support to marine science and operational oceanography	EGU General Assembly 2013, held 7-12 April, 2013 in Vienna, Austria, id. EGU2013-3126	EGU 2013
2013	Conference	Yes	Patrick Gorringer, Antonio Novellino, Giuseppe Manzella, Dick Schaap, Lelsy Richards, Sylvie Pouliquen	EMODNet – Physical Parameters	Book of Abstract: The Future of Operational Oceanography 2013	IMDIS 2013, International Conference on Marine Data and Information Systems, 23-25 September, 2013 - Lucca (Italy)
2013	Report	Yes	Ribotti, Alberto and Ciuffardi, Tiziana and Pes, Aandrea and Manzella, Giuseppe M.R. and Sparnocchia, Stefania	Rapporto tecnico-scientifico sullo stato dell'arte dei sistemi oceanografici operativi in Mare Mediterraneo e nei mari italiani con particolare riguardo ai sistemi osservativi	RITMARE project Report, 2013	

2014	Conference	No	W.R. Turrell, B. Berx, A. Gallego, S. Hughes, R. O'Hara-Murray, J. Sanchez, B. Pereira, A. Alonso-Martirena	HF Radar Supporting Blue Growth in NW Europe: The Brahan Project	HF Radar Supporting Blue Growth in NW Europe: The Brahan Project, Lisbon, 28-30 October 2014	
2014	Conference	Yes	Novellino, Antonio; Gorringe, Patrick; Schaap, Dick; Pouliquen, Sylvie; Rickards, Lesley; Manzella, Giuseppe	Knowledge base for growth and innovation in ocean economy: assembly and dissemination of marine data for seabed mapping - European Marine Observation Data Network - EMODnet Physics	EGU General Assembly 2014, held 27 April - 2 May, 2014 in Vienna, Austria, id.5765	EGU 2014
2014	Conference	Yes	Patrick Gorringe	Introducing the EuroGOOS HFR Task Team and EMODnet	European HFR meeting Monday 27th October 2014, Lisbon	EuroGOOS meeting
2015	Conference	Yes	Antonio Novellino; Paolo D'Angelo; Giacomo Benedetti; Giuseppe Manzella; Patrick Gorringe; Dick Schaap; Sylvie Pouliquen; Lesley Rickards	European marine observation data network — EMODnet physics	IEEE Conference Publications, 2015	OCEANS 2015 - Genova
2015	Conference	Yes	Manzella, Giuseppe M. R.; Novellino, Antonio; D'Angelo, Paolo; Gorringe, Patrick; Schaap, Dick; Pouliquen, Sylvie; Loubrieu, Thomas; Rickards, Lesley	European Marine Observation Data Network - EMODnet Physics	EGU General Assembly 2015, held 12-17 April, 2015 in Vienna, Austria. id.8417	EGU 2015
2015	Conference	Yes	Mader, Julien; Novellino, Antonio; Gorringe, Patrick; Griffa, Annalisa; Schulz-Stellenfleth, Johannes; Montero, Pedro; Montovani, Carlo; Ayensa, Garbi; Vila, Begoña; Rubio, Anna; Sagarmínaga, Yolanda	European coordination for coastal HF radar data in EMODnet Physics	EGU General Assembly 2015, held 12-17 April, 2015 in Vienna, Austria. id.14714	EGU 2015
2015	Journal	No	A Aparicio-González, J L López-Jurado, R Balbín, J C Alonso, B Amengual, J Jansá, M C García, F Moyá, R Santiago, M Serra, M Vargas-Yáñez	IBAMAR DATABASE: FOUR DECADES OF SAMPLING ON THE WESTERN MEDITERRANEAN SEA	Data Science Journal, Volume 13, 27 January 2015	
2015	Journal	No	U Gräwe, M Naumann, V Mohrholz, H. Burchard	Anatomizing one of the largest saltwater inflows into the Baltic Sea in December 2014	Journal Geophysical Research, Volume 120, Issue 11 November 2015 Pages 7676–7697	

2016	Conference	No	Stefania Sparnocchia, Michela Martinelli, Srdjan Dobricic, Rajesh Nair, Alessandro Crise, Patrick Farcy, Glenn Nolan, Joaquin Tintorè	An interlinked coastal observatory network for Europe	Journal of Operational Oceanography . Volume 9, 2016 - Issue sup1: Operational Oceanography, Innovative Technologies and Applications. Pages s193-s201	Third Meeting of the Italian National Group for Operational Oceanography
2016	Conference	No	Bahamon, N., Ahumada-Sempoal, M.A., Bernardello, R., Aguzzi, J., Gordo, A., Carreras, G., Velasquez, Z., Cruzado, A.	SEVEN YEARS OF MARINE ENVIRONMENTAL CHANGES MONITORING AT COASTAL OOCs STATIONS (CATALAN SEA, NW MEDITERRANEAN)	instrumentation viewPoint- 19 - MARTECH 16	MARTECH 2016
2016	Conference	No	A. Oliveira, J. Rogeiro, J.L. Gomes, P. Pinto, A. B. Fortunato, P. Freire, R. T., Costa, L. Sá, R. Pablo, A. Mendes	Plataforma integrada WebSIG para apoio à gestão da emergência em eventos de inundação em estuários	4as Jornadas de Engenharia Hidrográfica, Lisboa, 21 a 23 de junho de 2016	
2016	Conference	Yes	Novellino, Antonio; Benedetti, Giacomo; D'Angelo, Paolo; Gorringer, Patrick; Thijse, Peter; Schaap, Dick; Pouliquen, Sylvie; Manzella, Giuseppe	EMODnet Physics: One-stop Portal to access Multiplatform Observing Systems	EGU General Assembly 2016, held 17-22 April, 2016 in Vienna Austria, p.3831	EGU 2016
2016	Conference	Yes	S. Goggi, G. Pardelli, R. Bartolini, F. Frontini, M. Monachini, G. Manzella, M. De Mattei and F. Bustaffa:	A semantic engine for grey literature retrieval in the oceanography domain.	Ed. D. Farace and J. Frantzen, 104 – 111, 2016;	Seventeenth International Conference on Grey Literature - A New Wave of Textual and Non-Textual Grey Literature. December 1st - 2nd 2015 at the Royal Netherlands Academy of Arts and Sciences in Amsterdam.
2016	Journal	No	Gisbert Breitbach, Hajo Krasemann, Daniel Behr, Steffen Beringer, Uwe Lange, Nhan Vo, and Friedhelm Schroeder	Accessing diverse data comprehensively – CODM, the COSYNA data portal	Ocean Sci., 12, 909–923, 2016	
2016	Journal	No	Manuel Ruiz-Villarreal, Luz M. García-García, Marcos Cobas, Patricio A. Díaz, Beatriz Reguera	Modelling the hydrodynamic conditions associated with <i>Dinophysis</i> blooms in Galicia (NW Spain)	Harmful Algae, Volume 53, March 2016, Pages 40–52	
2016	Journal	Yes	Jan-Bart Calewaert, Phil Weaver, Vikki Gunn, Patrick Gorringer, , Antonio Novellino	The European Marine Data and Observation Network (EMODnet): Your Gateway to	Ocean Engineering & Oceanography, Vol. 6, pp 31-46, 2016	

				European Marine and Coastal Data		
2016	Newsletter	Yes	S. POULIQUEN, T. CARVAL, D GUILLOTIN , C. COATANOAN, T. LOUBRIEU, C. GUYOT, K. BALEM, T. SZEKELY, J. GOURRION, A. GROUAZEL, K. VON SCHUCKMANN, H. WEDHE, L.S. RINGHEIM, T. HAMMARKLINT, A. HARTMAN, K. SOETJE, T. GIES, S. JANDT, L. MULLER, M. DE ALFONSO, F. MANZANO MUÑOZ, L. PERIVOLIOTIS, D. KASSIS, A. CHALKIPOULOS, V. MARINOVA, P. JACCARD, A. LEDANG, K. SORENSEN, G. NOTARSTEFANO, J. TINTORE , S. KAITALA, P. ROIHA, L. A. LEDANG, K. SORENSEN, G. NOTARSTEFANO, J. TINTORE , S. KAITALA, P. ROIHA, L. RICKARDS, G. MANZELLA, F. RESEGHETTI	MAIN ACHIEVEMENTS FOR MYOCEAN IN SITU THEMATIC ASSEMBLY CENTER	MERCATOR OCEAN JOURNAL 54, 2016	
2016	Report	No	Carval Thierry, Chalkiopoulos Antonis, Perivoliotis Leonidas, De Alfonso Alonso-Muñoyerro Marta, Manzano Munoz Fernando, Jandt Simon, Ringheim Lid Sjur, Hammarklint Thomas, Marinova Veselka	System Requirements Document	CMEMS-INS-SRD	
2016	Report	Yes	Ifremer	Catalogue of data and platforms at Network GDAC level, including the example of Copernicus In Situ TAC	IFREMER IMN/IDM/ISI/TC/16-031, 30th May 2016	
2016	Report	Yes	V. Harscoat, S. Pouliquen	Data Management Handbook	AtlantOS – 633211, D7.4, 2016	EU Atlantos project
2016	Report	Yes	Pepijn de Vries, Jacqueline Tamis, Martine van den Heuvel-Greve, Peter Thijsse & Belinda Kater	Collecting literature for identifying data sets and data sources	IMARES Report C072/16	IMARES Wageningen UR, Den Helder, 14 July 2016
2017	Book chapter	Yes	G. Manzella, R. Bartolini, F. Bustaffa, P. D'Angelo, M. De Mattei, F. Frontini, M. Maltese, D. Medone, M. Monachini, A. Novellino and A. Spada:	Semantic Search Engine for Data Management and Sustainable Development: Marine Planning Service Platform.	Oceanographic and Marine Cross-Domain Data Management for Sustainable edited by P. Diviacco, A. Leadbetter, H. Glaves, IGI Global,	

2017	Journal	No	Christina Kalogeri, George Galanis, Christos Spyrou, Dimitris Diamantis, Foteini Baladima, Marika Koukoula, George Kallos	Assessing the European offshore wind and wave energy resource for combined exploitation	Renewable Energy, Volume 101, February 2017, Pages 244–264	
2017	Journal	Yes	Anna Rubio, Julien Mader, Lorenzo Corgnati, Carlo Mantovani, Annalisa Griffa, Antonio Novellino, Céline Quentin, Lucy Wyatt, Johannes Schulz-Stellenfleth, Jochen Horstmann, Pablo Lorente, Enrico Zambianchi, Michael Hartnett, Carlos Fernandes, Vassilis Zervakis, Patrick Gorringe, Angélique Melet and Ingrid Puillat	HF Radar Activity in European Coastal Seas: Next Steps toward a Pan-European HF Radar Network	Marine Science, 20 January 2017	
2017	Conference	Yes	Novellino, Antonio; Gorringe, Patrick; Schaap, Dick; Pouliquen, Sylvie; Rickards, Lesley; Thijssse, Peter; Manzella, Giuseppe	EMODnet Physics in the EMODnet program phase 3	EGU General Assembly 2017, held 23-28 April, 2017 in Vienna, Austria. id.7113	
2017	Book chapter	No	Keiran Westley	Chapter 6: The Northwest Shelf.	Submerged Landscapes of the European Continental Shelf. Edited by Nicholas C. Flemming, Jan Harff, Delminda Moura, Anthony Burgess, Geoffrey N. Bailey	
2017	Conference	Yes	Schaap, Dick M. A.; Schmitt, Thierry	EMODnet High Resolution Seabed Mapping - further developing a high resolution digital bathymetry for European seas	EGU General Assembly 2017, held 23-28 April, 2017 in Vienna, Austria. id.1943715	
2017	Journal	no	Kumar et al	Ocean wave height prediction using ensemble of Extreme Learning Machine	neurocomputing	http://dx.doi.org/10.1016/j.neucom.2017.03.092
2017	Report	Yes	Novellino, A., Fernandez, V. and Buch, E. and WP9 partners	Web-based monitoring tool of the Atlantic Ocean observing system (Europe). .	AtlantOS Deliverable, D9.2 . AtlantOS, 73 pp.	DOI 10.3289/AtlantOS_D9.2.
2017	Report	No	Carval Thierry, Chalkiopoulos Antonis, Perivoliotis Leonidas, De Alfonso Alonso-Muñoyerro Marta, Manzano Munoz	System Requirements Document (updated version of the 2016 report)	CMEMS-INS-SRD	DOI:10.13155/40846

			Fernando, Jandt Simon, Ringheim Lid Sjur, Hammarklint Thomas, Marinova Veselka			
2017	Report	Yes	Harscoat Valerie, Pouliquen Sylvie	Data flow and Data Integration - WP7	AtlantOs meeting report 2017	DOI: 10.13155/51745
2017	Report	Yes	G Manzella, A Griffa, LP de la Villéon	Report on data management best practice and Generic Data and Metadata models. V. 2.1 [Deliverable 5.9]	JERICO NEXT D5.9	https://www.oceanbestpractices.net/handle/11329/354
2017	Journal	Yes	A. Novellino, P. D'Angelo	European Marine Observations and Data Network EMODnet Physics	GEOMEDIA - Open Journal System, V. 21, N. 5	http://mediageo.it/ojs/index.php/GEOMedia/article/view/889
2017	Workshop	Yes	A. Novellino	HELCOM Working Group on the State of the Environment and Nature Conservation (STATE & CONSERVATION 7-2017)	HELCOM report - - Sopot, Poland, 23-27 October 2017	https://portal.helcom.fi/meetings/STATE%2520-%2520CONSERVATION%25207-2017-470/Documents/Presentation%252018%2520EMODNet%2520Physics.pdf
2017	Conference	No	R. Bardaji, J. Piera, R. Bartolomé, J. Dañobeitia, O. Garcia	Oceanobs a python package to analyze data from marine observatories	OCEANS – Anchorage, 2017	http://ieeexplore.ieee.org/document/8232303/
2017	Book chapter	No	K Westley	Ch. 6 The North Western Shelf	Submerged Landscapes of the European Continental Shelf - John Wiley & Sons, 26 apr 2017 - 552 pages	
2018	Workshop	Yes	A. Leadbetter, P. Goringe, A. Novellino	EuroGOOS and EMODNet Physics Data Workshop	EUROGOOS Meeting Feb 2018	http://eurogoos.eu/events/4595/
2018	Journal	No	N. KrishnaKumar, R.Savitha, AbdullahAl Mamun	Ocean wave height prediction using ensemble of Extreme Learning Machine	Neurocomputing Volume 277, 14 February 2018, Pages 12-20	https://doi.org/10.1016/j.neucom.2017.03.092

Table 20. Scientific publications mentioning EMODnet Physics.