



EMODnet



European Marine
Observation and
Data Network

EMODnet Thematic Lot n° 3 -Physics

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Start date of the project: 29/03/2017 - (24 months)

EMODnet Phase III – Quarterly Progress Report (7)

Reporting Period: 01/10/2018 – 31/12/2018



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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 was one of the co-organizer of the MONGOOS Workshop on operational oceanography downstream services. The Mediterranean Operational Network for the Global Ocean Observing System (MONGOOS) develops operational oceanography in the Mediterranean Sea and the annual workshop and assembly are the main event to have the overview of the partners monitoring infrastructures and planning. During the event it was possible to identify and finalize actions that will link more data into the regional in situ data assembly center and into EMODnet Physics.
- EMODnet Physics was one of the co-organizer of the MARTECH (MARine TECHnology) workshop that held a dedicated session to EMODnet. besides giving the general introduction on the EMODnet program, the Data Ingestion facility, EMODnet Physics and its latest results on under water noise data flow and river data flow were presented. During the workshop was possible to identify a new spot (i.e. Bay of Biscay) where to test the integration of the local sound maps.
- DATAMEQ meeting objectives were to discuss and propose a data policy for EuroGOOS, revise the DATAMEQ actions plan since 2015 and identify recommendation to maximise the impact and the outcome and link of the European programs and projects (CMEMS INSTAC, EMODnet Physics, EMODnet Chemistry, EMODnet Biology, SeaDataNet, AtlantOS, etc), review the progress made by the EuroGOOS Task Teams, identify action to improve quality of European in-situ data in a global context.
- EMODnet Physics had a proactive participation to all the EMODnet related events of the period (Technical Working Group, Steering Committee, EOOS conference) as well as provided Deloitte with all the requested information and support to run the assessment on the EMODnet program and outcomes.
- TGNOISE meeting outcome confirmed the correctness of the EMODnet Physics approach for both impulsive and continuous noise products development. Concerning to the impulsive noise event it was underlined the importance to have a homogeneous statistical grid to work on and EMODnet Physics is integrating and federating impulsive noise event registries by using an harmonized statistical grid (10' latitude and 20' longitude) for the entire Europe to provide users with a common layer to be used in combination with habitats layer to work on thresholds. Concerning the continuous noise the EMODnet Physics approach is testing in practice the TGNOISE proposed

recommendations in areas where it is possible to combine in situ Sound Pressure Level data and sound maps (from AIS data).

Task 1. Develop a common method of access to data held in repositories

Operational in situ under water noise data. While for the impulsive noise events management it was already possible to make available a preliminary version of the European Impulsive Noise event registry by integrating and federating the OSPAR registry, the HELCOM registry (both hosted @ ICES) and the ACCOBAMS one, in case of the continuous noise the framework is more complex (already reported in the previous encountered challenges). TG NOISE has progressed on this concept and lately it has started discussing on how to implement the MSFD indicator and it is likely to combine and correlate sound/noise maps vs biodiversity maps. The main source of continuous noise is human activity and in particular shipping and according the MSFD it should be extracted the Sound Pressure Level (@ 1uPa) for the two-third octave band (centered @ 63Hz and 125Hz – lately was also added 2KHz). The noise map can be based on ship density maps combined to a model of noise propagation at sea. This product should be calibrated (or it should be assessed the map uncertainty) by in situ data. EMODnet Physics is implementing such approach running the pilot for the areas in which in situ data is available and is developing a common method to manage and federate the in situ operational SPL data. Five stations tested or are already implanting this approach and more results are expected in coming months.

River runoff data management. River data runoff availability is a key need from many communities and there is a growing interest on the EMODnet Physics activities on the topic. Lately it was also suggested to work on integrating/facilitating the access to river nutrient runoff (to be discussed with Chemistry lot and implemented in next phase).

Gliders data management. As described in the previous report, EMODnet Physics is one of the co-leader of the action to implement the new data and metadata format (OceanGlider v.1.0) and make available both NRT (connection with provider and GDAC), RECCover (connection with provider) and Delayed Mode (connection with provider and NODC/SDN node) datasets

High Frequency Radars. In collaboration with SeaDataCloud the mapping of HFR data model to SDC CDI was completed, as well as the full compliance of HFR data model to SDC CF extension. Now the full data chain from data collection to long term validation and preservation is defined. All the data are and will be available in EMODnet Physics.

Furthermore, data management in EMODnet Physics was partially redesigned in order to facilitate ingestion/connection to more data sources (particularly relevant for providing the largest collection of temperature and salinity datasets).

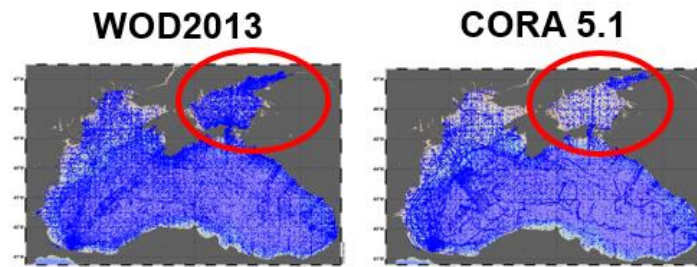


Figure 1. From SeaDataCloud WP11 report (S. Simoncelli) @ General Assembly (Barcelona, Nov. 2018)

EMODnet Physics is linked to CORA 5.1 datasets, the developed evolution will facilitate to include new data sources (e.g. WOD) resolving some data gaps. This implementation is not going to remove duplicates: it will provide the user with information to resolve duplicates. An aggregated dataset without duplicates can be developed in next EMODnet Physics phase.

Task 2. Construct products from one or more data sources that provide users with information about the distribution of parameters in time and space

During the period, we kept working on the reorganization of the available products to facilitate discoverability, and download. Moreover we kept working on proofing the concept for distributing under water noise map in Physics. As already described in the previous paragraph, the development of validated sound maps needs several assumptions and steps and it is also quite expensive (according our assessment a sound map for an area as big as the Ligurian Sea costs about 100K€ per year).

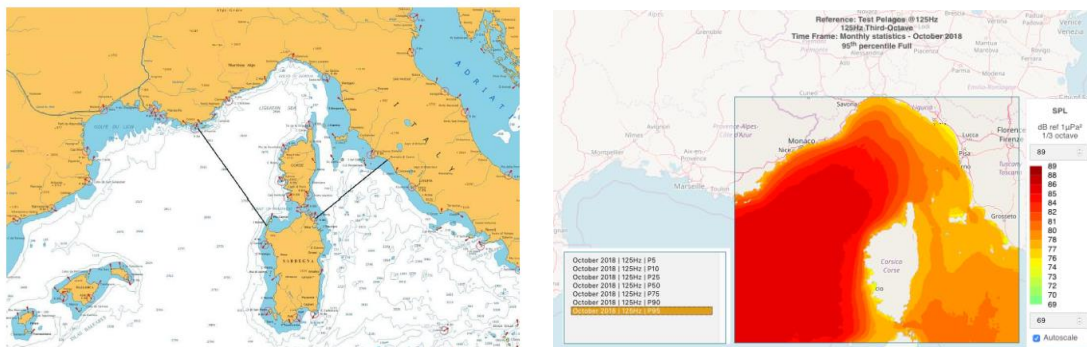


Figure 2. A. Location of the Pelagos Sanctuary for Mediterranean Marine Mammals. B. Example of a soundmap @125Hz SPL exceeding 95% percentile - October 2018

EMODnet Physics is working and integrating results from the Quonops tools. Based on AIS data¹ that are used to determine the ship noise source levels (proportional to ship size, velocity, and propeller), Quonops is modeling of sound propagation (that is proportional to temperature, salinity and pressure) by a succession of models - a

¹ AISHub – www.aishub.net

parabolic equation solver (Collins 1991, Collins 1994) and an energy distribution to Gaussian beams solver (Porter and Bucker, 1987). The developed assessment confirm that the obtained map should be verified and calibrated by means of in situ data. Figure 3 shows the calibration process. The small plots show the number of events (y) exceeding a given SPL (x) at the third octave (125Hz). Sound propagation is changing when water becomes warmer. It also shows that calibration depends on the geophysical properties of the area, and the importance of having in situ data.

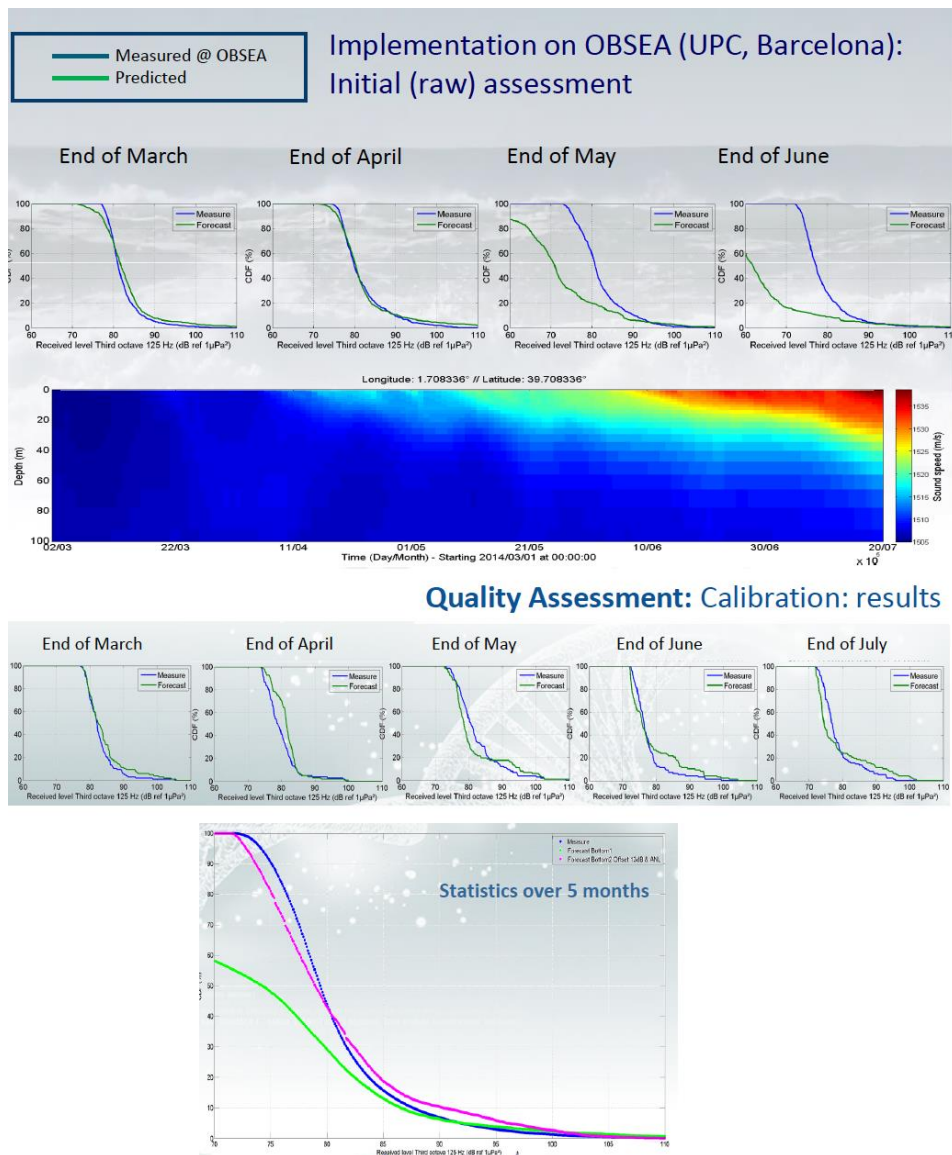


Figure 3. assessment of the soundmaps @ OBSEA

During next period, EMODnet Physics will complete this exercise making available maps for the areas that are covered by in situ data.

Task 3. *Develop procedures for machine-to-machine connections to data and data products*

We kept working on the new ERDDAP instance. Besides the general interoperability features already embedded in the ERDDAP catalogue, some of the SeaDataNet controlled vocabulary were used to map the metadata (e.g. P02). Geoserver was updated with new Temperature climatology layers (EP_TEMP_SDN_XXX where XXX is the month) to facilitate interoperability with central portal.

As planned the 8th MARTECH workshop (10-11 December, Porto) held a special session on EMODnet². After the general introduction of the EMODnet program and Data Ingestion, we introduced EMODnet Physics and its activities on under water noise data management and river runoff data management as examples of developed data flow.

One main outcome of the latest workshops/conferences (IMDIS, EOOS, MONGOOS, MARTECH) is the importance of the participation to technical dissemination initiatives to present adopted data sharing and interoperability methods, interact with people and set up basic links (networking activities) to implement data sharing and data interoperability.

Task 4. *Develop a web portal allowing users to find, visualise and download data*

EMODnet Physics products, catalog and OGC service (GeoServer) are continuously updated to fit the EMODnet Central portal needs/specifications, and end-user usability. To avoid problems with the latest update of Google Map policy, EMODnet Physics map interfaces are going to switch to openstreetmap. Map (data) viewer is already updated, we are now working on the product pages.

Task 5. *Ensure the involvement of regional sea conventions*

EMODnet Physics remotely participate to TG NOISE (6/11/2018) to present progresses on the European Impulsive Noise Registry product. One of the main outcome of the interaction is the agreement on a closer collaboration between EMODnet Physics and ICES on the topic. Given the potential mutual benefit, we are planning to involve ICES as full EMODnet Physics partners in next phase.

Task 6. *Facilitate interoperability with data distributed by non-EU organisations*

The participation (co-organization) of the MONGOOS annual assembly and some follow up calls with countries from around the Red Sea are setting the scene for future collaboration opportunities and better data interoperability with data from north Africa and Red Sea areas.

² https://sarti.webs.upc.edu/martech/documentos/program_martech2018.pdf

Task 7. *Install a process to monitor performance and deal with user feedback*

Task 8. *Operate a help-desk offering support to users*

The monitoring process and the HD are operational. More info under Section 3.

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
Complexity in the management of the noise sound maps	<p>We are facing several key issues related to the noise sound maps and, for the time of the present contract, it will only be possible to provide a proof of concept in selected areas. More specifically, the noise sound maps are based on AIS data. While waiting for the Human Activity AIS product and a study on how and if it is possible to generate noise sound maps, EMODnet Physics is using open and free source of AIS data. This data is not freely accessible all over the Europe, and so it is possible to work on spots only (http://www.aishub.net/coverage).</p> <p>Computing the monthly noise (@63Hz, 125Hz, 2KHz at 3 depth levels) for a small box (2DEG * 2DEG) takes from 2 to 3 weeks (by using the selected method that was developed by quiet-oceans).</p> <p>Once the map is generated, it has to be calibrated/validated versus in situ operational SPLs data.</p> <p>Now, EMODnet Physics is receiving SPLs data from only 2 sites (and working on integrating 2 more by end of the year).</p> <p>For these reasons, EMODnet Physics is going to focus on the proof of concept of the data flow to make calibrated sound maps on a target area (Barcelona) where we have access to both AIS data and SPLs.</p>
Download of all available dataset for a given parameter – sub setting feature	<p>Re-organization of the whole EMODnet Physics data management and data infrastructure. The system is now mainly based on an ERDDAP server and datasets collected from the federated infrastructures (CMEMS, IOOS, IMOS ...) are processed to generate and fill the EMODnet Physics DB. Dataset are now available in different transport format. The user is provided with the links to original data source.</p>

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
6/12/2018	OGS - Italy	Tech - SeaDataCloud Annual Metrics Analysis – OGS is using a custom made service to extract stats and report on the SDN related dataset in Physics. The service was not reachable	1 day
29/11/2018	Swiss Antarctic Circumpolar Expedition	Assessment of the feasibility to provide SACE M2M and hosting interfaces. We proposed the same model as developed for SOOS. We are waiting for their feedback	1 day
29/11/2019	ICloud	Tech – details on the wind direction binning methods in Black Sea stations.	A primary feedback in 1 day. We are waiting for a second level of details from the provider.
28/11/2018	Aarhus Universitet	Tech – support to download a data aggregation subset	1 day
19/11/2018	EMODnet Secretariat	Tech – sea water velocity service down	A few hours
19/11/2018	CMCC	Feasability to develop/ customize some services to facilitate data assimilation procedure	The service was discussed, designed, tested and made available in 3 weeks.
16/11/2018	University of Turku	Tech – support to download a salinity layer to study changes of species' habitats at Finnish coast under the effect of climate change and salinity decrease	1 day
13/11/2018	CNR	Permission to use snapshot from the Physics (map) portal for a scientific publication	1 day
7/11/2018	Berring Data Collective	Tech – support to download some network operators metadata	1 day
24/10/2018	EuroGOOS	Tech – support to create and download list of platforms (for gap analysis)	1 day
25/10/2018	STRATH	Tech – support to download wind and wave parameters	1 day. The user was also interested in wave energy products (not available yet,

			not in the current project scope)
23/10/2018	Deepocean	Tech – details on the Tide Gauge timing (UTC)	1 day
16/10/2018	Fertoing	Tech – details on chart datum is used in observed sea level data	1 day
16/10/2018	EuroGOOS –AltantOS project	Tech – optimization/evolution of some monitoring features developed by EMODnet Physics for the AtlantOS WP9	2 weeks to design, develop, deploy the new seervice.
10/10/2018	IFREMER	Tech – bug in one map portal filter	1 day
4/10/2018	New University of Lisbon	Tech – support to download metadata from the portal	1 day

Table 2. User Feedback

4 Meetings held/attended since last report

List here the internal and external meetings held/participated by the contractant (e.g. meeting, conference, training (workshop), etc.) since the last quarterly report. Please add a short description on the meeting as well as the nature and volume of the audience. At the bottom of the table, provide the total number of events organised and events participated.

Date	Location	Type ³	A/O	Title	Short description and main results (# participants, agreements made, etc.)
1/10/2018	Oostende	TWG	A	EMODnet TWG	EMODnet Technical Working Group meeting.
22-24/10/2018	Bilbao	workcamp	O	HFR	Technical workcamp for HFR operators. The event was intended to give the overview of HFR data flow and share common tools to apply the same QC/QF and be linked to EMODnet Physics (and other integrators) – 20 attenders
4-6/11/2018	Barcelona	Conference	A	IMDIS	International conference on Marine Data and Information Systems - 180 attenders
7-8/11/2018	Barcelona	meeting	A	SDC GA	SeaDataCloud General Assembly – SDC is one of the EMODnet Physics pillars and they cooperating for closing the gap between NRT and validated dataset and make available high value products (e.g. TEMP and PSAL climatologies) 80 attenders
19-20/11/2018	Brussels	Meeting	A	EMODnet SC	EMODnet Steering Committee - 25 attenders
20-21/2018	Brussels	Meeting	A	DATAMEQ	DATAMEQ is the EuroGOOS working Group dealing with data harmonization, standards and interoperability - 15 attenders
21-24/11/2018	Brussels	Conference	A	EOOS	EOOS conference - 350 attenders
4-5/12/2018	Genova	workshop	O	MONGOOS WS	MONGOOS Workshop on downstream applications using EMODnet Physics (and others) data services - 35 attenders
5-6/12/2018	Genova	meeting	A	MONGOOS AA	Annual assembly of the Mediterranean Operational Network for the Global Ocean Observing System (MONGOOS) is promoting partnerships and capacity building for GOOS in the

³ meeting, training (workshop), etc.

					Mediterranean Sea. MONGOOS is creating a continuous working framework with EuroGOOS and GOOS Africa - 30 attenders
10-11/12/2018	Porto	Conference	0	MARTECH	MARTECH workshop aims to bring together those working in MARine TECHnology for discussions and presentations of recent advances in the field and for cross-disciplinary knowledge exchange cutting across engineering and science - 40 attenders
SUM of O			3		(Total # of meetings organised)
SUM of A			7		(Total # of meetings attended)

Table 3. Meetings

5 Outreach and communication activities

Please list all the relevant communication/outreach activities or products you have developed/executed during this period (including presentations, lectures, trainings, demonstrations, workshops, etc., and development of communication materials such as brochures, videos, press releases, newsletters, etc.). At the bottom of the table, provide a total number for every type of communication activity you have developed/executed (e.g. total # of press releases, total # of presentations given, etc.).

Date	Communication action/material	Short description (of the material, title, ...) and/or link to the activity	Main results (# participants, # views, # press clippings, etc.)
5/11/2018	presentation	IMDIS – EMODnet Physics general presentation.	180 attenders
6/11/2018	Methodology document	TG NOISE – EMODnet Physics progresses on underwater noise data management	30 attenders
16/11/2018	presentation	Port Authority Regione Marche - EMODnet Physics and its services, benefit and opportunities.	5 attenders
20/11/2018	presentation	DATAMEQ – updates on EMODnet Physics	15 attenders
21/11/2018	Posters and poster pitches	EOOS – EMODnet Physics activities on underwater noise and river runoff	350 attenders
4/12/2018	presentations	MONGOOS – EMODnet Physics activities on underwater noise and river runoff	35 attenders
10-12/2018	presentations	MARTECH - General introduction to EMODnet, EMODnet Ingestion, EMODnet Physics, goals, infrastructures, the activity on data harmonization and interoperability with a special focus on underwater noise and river runoff data products.	40 attenders ⁴

Table 4. Outreach

⁴ During the event several tweets were posted with a good level of interaction.

Relevant scientific and/or popular publications (scientific papers, book chapters, conference papers, ...) you published or of which you know they have been published using/referring to EMODnet data or data products during this reporting period must also be reported here.

Date	type	Name of journal, conference, ...	Publication title	Authors	Other info
2013	Conference	Bollettino di Geofisica teorica ed applicata, Vol. 54 Supplement, 2013	The HNODC Data & Information Management Services: Description & Recent Upgrades	Iona S. et al.	IMDIS 2013, International Conference on Marine Data and Information Systems, 23-25 September, 2013 - Lucca (Italy)
2013	Conference	Book of Abstract: The Future of Operational Oceanography 2013	FerryBox Systems: State-of-the-art and Incorporation in European Observation Networks	Wilhelm Petersen	
2013	Conference	Bollettino di Geofisica teorica ed applicata, Vol. 54 Supplement, 2013	EMODNet Physical Parameters	A. Novellino, et al	IMDIS 2013, International Conference on Marine Data and Information Systems, 23-25 September, 2013 - Lucca (Italy)
2013	Conference	EGU General Assembly 2013, held 7-12 April, 2013 in Vienna, Austria, id. EGU2013-3126	European Marine Observation and DataNetwork (EMODNET)- physical parameters: A support to marine science and operational oceanography	Hans D. Et al.	EGU 2013
2013	Conference	Book of Abstract: The Future of Operational Oceanography 2013	EMODNet – Physical Parameters	P Gorringer, et al	IMDIS 2013, International Conference on Marine Data and Information Systems, 23-25 September, 2013 - Lucca (Italy)
2013	Report	RITMARE project Report, 2013	Rapporto tecnico-scientifico sullo stato dell'arte dei sistemi oceanografici operativi in Mare Mediterraneo e nei mari italiani con particolare riguardo ai sistemi osservativi	Ribotti A et la	
2014	Conference	HF Radar Supporting Blue Growth in NW Europe: The Brahan Project, Lisbon, 28-30 October 2014	HF Radar Supporting Blue Growth in NW Europe: The Brahan Project	W.R. Turrell, et al	
2014	Conference	EGU General Assembly 2014, held 27 April - 2 May, 2014 in Vienna, Austria, id.5765	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	Novellino, A et al	EGU 2014
2014	Conference	European HFR meeting Monday 27th October 2014, Lisbon	Introducing the EuroGOOS HFR Task Team and EMODnet	P Gorringer et al	EuroGOOS meeting

2015	Conference	IEEE Conference Publications, 2015	European marine observation data network — EMODnet physics		OCEANS 2015 - Genova
2015	Conference	EGU General Assembly 2015, held 12-17 April, 2015 in Vienna, Austria. id.8417	European Marine Observation Data Network - EMODnet Physics	Manzella GM et al	EGU 2015
2015	Conference	EGU General Assembly 2015, held 12-17 April, 2015 in Vienna, Austria. id.14714	European coordination for coastal HF radar data in EMODnet Physics	Mader J et al	EGU 2015
2015	Journal	Data Science Journal, Volume 13, 27 January 2015	IBAMAR DATABASE: FOUR DECADES OF SAMPLING ON THE WESTERN MEDITERRANEAN SEA	A Aparicio-González, et al	
2015	Journal	Journal Geophysical Research, Volume 120, Issue 11	Anatomizing one of the largest saltwater inflows into the Baltic Sea in December 2014	U Gräwe, et al.	
2016	Conference	Journal of Operational Oceanography . Volume 9, 2016 - Issue sup1: Operational Oceanography, Innovative Technologies and Applications. Pages s193-s201	An interlinked coastal observatory network for Europe	S Sparnocchia, et al	Third Meeting of the Italian National Group for Operational Oceanography
2016	Conference	instrumentation viewpOint- 19 - MARTECH 16	SEVEN YEARS OF MARINE ENVIRONMENTAL CHANGES MONITORING AT COASTAL OOCs STATIONS (CATALAN SEA, NW MEDITERRANEAN)	Bahamon, N et al	MARTECH 2016
2016	Conference	4as Jornadas de Engenharia Hidrográfica, Lisboa, 21 a 23 de junho de 2016	Plataforma integrada WebSIG para apoio à gestão da emergência em eventos de inundação em estuários	A. Oliveira, et al	
2016	Conference	EGU General Assembly 2016, held 17-22 April, 2016 in Vienna Austria, p.3831	EMODnet Physics: One-stop Portal to access Multiplatform Observing Systems	Novellino A et al.	EGU 2016
2016	Conference	Ed. D. Farace and J. Frantzen, 104 – 111, 2016;	A semantic engine for grey literature retrieval in the oceanography domain.	S. Goggi, et al	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	Ocean Sci., 12, 909–923, 2016	Accessing diverse data comprehensively – CODM, the COSYNA data portal	G Breitbach, et al.	
2016	Journal	Harmful Algae, Volume 53, March 2016, Pages 40–52	Modelling the hydrodynamic conditions associated with <i>Dinophysis</i> blooms in Galicia (NW Spain)	M Ruiz-Villarreal, et al.	

2016	Journal	Ocean Engineering & Oceanography, Vol. 6, pp 31-46, 2016	The European Marine Data and Observation Network (EMODnet): Your Gateway to European Marine and Coastal Data	JB Calewaert, et al	
2016	Newsletter	MERCATOR OCEAN JOURNAL 54, 2016	MAIN ACHIEVEMENTS FOR MYOCEAN IN SITU THEMATIC ASSEMBLY CENTER	S. POULIQUEN, et al	
2016	Report	CMEMS-INS-SRD	System Requirements Document	Carval T, et al.	
2016	Report	IFREMER IMN/IDM/ISI/TC/16-031, 30th May 2016	Catalogue of data and platforms at Network GDAC level, including the example of Copernicus In Situ TAC	Ifremer	
2016	Report	AtlantOS – 633211, D7.4, 2016	Data Management Handbook	V. Harscoat, S. Pouliquen	EU Atlantos project
2016	Report	IMARES Report C072/16	Collecting literature for identifying data sets and data sources	P de Vries, et al.	IMARES Wageningen UR, Den Helder, 14 July 2016
2017	Book chapter	Oceanographic and Marine Cross-Domain Data Management for Sustainable edited by P. Diviacco, A. Leadbetter, H. Glaves, IGI Global,	Semantic Search Engine for Data Management and Sustainable Development: Marine Planning Service Platform.	G. Manzella, et al.	
2017	Journal	Renewable Energy, Volume 101, February 2017, Pages 244–264	Assessing the European offshore wind and wave energy resource for combined exploitation	C Kalogeri, et al	
2017	Journal	Marine Science, 20 January 2017	HF Radar Activity in European Coastal Seas: Next Steps toward a Pan-European HF Radar Network	Anna Rubio, et al.	
2017	Conference	EGU General Assembly 2017, held 23-28 April, 2017 in Vienna, Austria. id.7113	EMODnet Physics in the EMODnet program phase 3	Novellino A. Et al	
2017	Book chapter	Submerged Landscapes of the European Continental Shelf. Edited by Nicholas C. Flemming, Jan Harff, Delminda Moura, Anthony Burgess, Geoffrey N. Bailey	Chapter 6: The Northwest Shelf.	Keiran Westley	
2017	Conference	EGU General Assembly 2017, held 23-28 April, 2017 in Vienna, Austria. id.194371S	EMODnet High Resolution Seabed Mapping - further developing a high resolution digital bathymetry for European seas	Schaap, Dick M. A.; Schmitt, Thierry	
2017	Journal	neurocomputing	Ocean wave height prediction using ensemble of Extreme Learning Machine	Kumar et al	http://dx.doi.org/10.1016/j.neucom.2017.03.092

2017	Report	AtlantOS Deliverable, D9.2 . AtlantOS, 73 pp.	Web-based monitoring tool of the Atlantic Ocean observing system (Europe). .	Novellino, A., et al	DOI 10.3289/AtlantOS_D9.2.
2017	Report	CMEMS-INS-SRD	System Requirements Document (updated version of the 2016 report)	Carval T eta l.	DOI:10.13155/40846
2017	Report	AtlantOs meeting report 2017	Data flow and Data Integration - WP7	Harscoat Valerie, Pouliquen Sylvie	DOI: 10.13155/51745
2017	Report	JERICO NEXT D5.9	Report on data management best practice and Generic Data and Metadata models. V. 2.1 [Deliverable 5.9]	G Manzella, A Griffa, LP de la Villéon	https://www.oceanbestpractices.net/handle/11329/354
2017	Journal	GEOMEDIA - Open Journal System, V. 21, N. 5	European Marine Observations and Data Network EMODnet Physics	A. Novellino, P. D'Angelo	http://mediageo.it/ojs/index.php/GEOMedia/article/view/889
2017	Workshop	HELCOM report - - Sopot, Poland, 23-27 October 2017	HELCOM Working Group on the State of the Environment and Nature Conservation (STATE & CONSERVATION 7-2017)	A. Novellino	https://portal.helcom.fi/meetings/STATE%2520-%2520CONSERVATION%25207-2017-470/Documents/Presentation%252018%2520EMODNet%2520Physics.pdf
2017	Conference	OCEANS – Anchorage, 2017	Oceanobs a python package to analyze data from marine observatories	R. Bardaji, et al	http://ieeexplore.ieee.org/document/8232303/
2017	Book chapter	Submerged Landscapes of the European Continental Shelf - John Wiley & Sons, 26 apr 2017 - 552 pages	Ch. 6 The North Western Shelf	K Westley	
2018	Workshop	EUROGOOS Meeting Feb 2018	EuroGOOS and EMODNet Physics Data Workshop	A. Leadbetter, P. Gorringe, A. Novellino	http://eurogoos.eu/events/4595/
2018	Journal	Neurocomputing Volume 277, 14 February 2018, Pages 12-20	Ocean wave height prediction using ensemble of Extreme Learning Machine	N. KrishnaKumar, R.Savitha, AbdullahAl Mamun	https://doi.org/10.1016/j.neucom.2017.03.092
2018	Newsletter	Challenger Society for Marine Science	Challenger Wave		https://www.challenger-society.org.uk/files/pagefiles/Documents/C%20wave/CWave_201805.pdf
2018	Conference	EGU 2018 ESSI1.1	EMODnet Physics: tackling new challenges	Patrick Gorringe and Antonio Novellino	https://meetingorganizer.copernicus.org/EGU2018/EGU2018-7770.pdf
2018	Conference	EGU 2018 ESSI1.1	Best practices in QA/QC	Catia Chiappini and Giuseppe M.R. Manzella	EGU2018-6821
2018	Conference	EGU 2018 ESSI1.1	Effortless Integration of Underwater Noise Measurements into EMODnet data portal through SensorWeb Standards	E. Martinez et al.	EGU2018-13103
2018	Conference	EGU 2018 ESSI1.1	The European common data and metadata model for real-time High Frequency Radar surface current data	L. Corgnati et al.	EGU2018-13317

2018	Conference	EGU 2018 ESSI1.1	Animal-borne instruments in EuroGOOS – EMODnet Physics	L. Boehme et al.	EGU2018-14307
2018	Conference	EGU 2018 ESSI1.1	SOOSmap brings circumpolar Southern Ocean data to a computer near you	P. Bricher et al.	EGU2018-15262
2018	Conference	EGU 2018 ESSI1.1	Multi-Platform Data Distribution Challenges from Observing Systems to Data Distribution	M.V. Charcos-Lloréns et al.	EGU2018-16380-1
2018	Conference	EGU 2018 ESSI1.1	An European initiative to provide operational river observations and forecasts	F. Campustano et al.	EGU2018-19688
2018	Journal	Modern Approaches in Oceanography and Petrochemical Sciences. 1(5)-2018. MAOPS.MS.ID.000124. Lupine Publisher	Emodnet Physics: Benefits from Marine Data Sharing	G.M.R. Manzella, A. Novellino, P. D'Angelo	http://www.lupinepublishers.com/maops/pdf/MAOPS.MS.ID.000124.pdf
2018	Journal	Modern Approaches in Oceanography and Petrochemical Sciences. 1(5)-2018. MAOPS.MS.ID.000124.	Producing Contiguous Data in Marine Environment: A Gaussian-Montecarlo Methodology.	G. M. Manzella, M. Gambetta, A. Novellino	https://juniperpublishers.com/ofoaj/pdf/OFOAJ.MS.ID.555736.pdf
2018	Report	CMEMS-INS-SIVP	System Integration and Verification Plan	T. Carval, et al.	http://dx.doi.org/10.13155/51660
2018	Report	AtlantOS – 633211 D.4.2	South Atlantic tide gauge data management plan	E. Bradshaw, L. Rickards	http://oceanrep.geomar.de/43389/1/AtlantOS_deliverable_D4.2.pdf
2018	Journal	Journal of Coastal Research: Special Issue 85 - Proceedings of the 15th International Coastal Symposium: pp. 1256 – 1260.	Wave Climate Definition on Modeling Morphological Changes in Figueira da Foz Coastal System (W Portugal).	C Ferreira, et al.	
2018	Journal	Marine Policy, Volume 97, November 2018, Pages 130-138	Data challenges and opportunities for environmental management of North Sea oil and gas decommissioning in an era of blue growth	F. Murray, et al.	https://doi.org/10.1016/j.marpol.2018.05.021
2018	Journal	Sensors 2018, 18, 2737.	Integration of Underwater Radioactivity and Acoustic Sensors into an Open Sea Near Real-Time Multi-Parametric Observation System.	S. Pensieri et al.	https://www.mdpi.com/1424-8220/18/8/2737
2018	Journal	Bollettino di Geofisica Teorica ed Applicata Vol. 59	EMODnet Physics: a horizontal platform serving blue growth	Novellino A. et al	https://imdis.seadatanet.org/content/download/121493/file/IMDIS2018_Proceedings.pdf
2018	Journal	Bollettino di Geofisica Teorica ed Applicata Vol. 59	EMODnet Physics and River Runoff data management	Campuzano F. et al.	https://imdis.seadatanet.org/content/download/121493/file/IMDIS2018_Proceedings.pdf

2018	Journal	Bollettino di Geofisica Teorica ed Applicata Vol. 59	EMODnet Central Portal data services	Oset P. et al.	https://imdis.seadatanet.org/content/download/121493/file/IMDIS2018_Proceedings.pdf
2018	Journal	Bollettino di Geofisica Teorica ed Applicata Vol. 59	SOOSmap brings circumpolar Southern Ocean data to a computer near you	Bricher P. et al.	https://imdis.seadatanet.org/content/download/121493/file/IMDIS2018_Proceedings.pdf
2018	Journal	Bollettino di Geofisica Teorica ed Applicata Vol. 59	EMODnet PP: Portugal presence	Almeida S. et al.	https://imdis.seadatanet.org/content/download/121493/file/IMDIS2018_Proceedings.pdf
2018	Journal	Bollettino di Geofisica Teorica ed Applicata Vol. 59	Generating ocean climatologies from in situ observations	Barth A. et al.	https://imdis.seadatanet.org/content/download/121493/file/IMDIS2018_Proceedings.pdf
2018	Journal	Bollettino di Geofisica Teorica ed Applicata Vol. 59	Integration of Underwater Noise Measurements into EMODnet Physics	Del Rio J et al.	https://imdis.seadatanet.org/content/download/121493/file/IMDIS2018_Proceedings.pdf
2018	Journal	Bollettino di Geofisica Teorica ed Applicata Vol. 59	Building strong foundations towards the pan-European High Frequency Radar network	Cornati L et al.	https://imdis.seadatanet.org/content/download/121493/file/IMDIS2018_Proceedings.pdf
2018	Conference	The 4th Ocean Radar Conference for Asia-Pacific	Present and future of the European HF radar network: outcomes of the INCREASE project	Rubio A. et al	http://orca2018.official.jp/wp-content/uploads/2018/05/ExtendedAbstract_Session4.pdf
2018	Report	Project AtlantOS H2020 D4.5	Gap analysis of links between coastal and open ocean networks	Akpinar A, Charria G	https://www.atlantosh2020.eu/download/deliverables/AtlantOS_D4.5.pdf
2018	Conference	An international conference on glider data management. Connecting glider data flows in Europe and beyond. 18-20 September 2018, Aquario du Genova, Italy	EMODNET: The gateway to marine data	Novellino A. et al	https://www.ego-network.org/dokuwiki/lib/exe/fetch.php?media=public:egodmmeeting:d1s1_06_20180912_emodnetphy_gliderws.pdf
2018	Workshop	MONGOOS: WORKSHOP ON OPERATIONAL OCEANOGRAPHY. DOWNSTREAM SERVICES	European Marine Observation and Data network and River Runoff data management	Novellino A. et al	
2018	Workshop	MONGOOS: WORKSHOP ON OPERATIONAL OCEANOGRAPHY. DOWNSTREAM SERVICES	EMODNET, Approaches for Integrating Underwater Noise, Measurements into ocean observation systems	Novellino A. et al	

2018	Conference	MARTEC - 8th INTERNATIONAL WORKSHOP ON MARINE TECHNOLOGY	EMODNET PHYSICS: TOWARDS AN EUROPEAN IMPULSIVE NOISE REGISTER	Novellino A. et al	https://sarti.webs.upc.edu/martech/usb_2018/paginas/Abstract_Magazine.pdf
2018	Conference	MARTEC - 8th INTERNATIONAL WORKSHOP ON MARINE TECHNOLOGY	DATAFLOW OF UNDERWATER NOISE MEASUREMENTS: FROM OBSEA TO EMODNET	Del Rio J et al.	https://sarti.webs.upc.edu/martech/usb_2018/paginas/Abstract_Magazine.pdf

Table 5. List of known publication using EMODnet data or products

6 Annex: Other documentation attached

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

6.1 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.

Description:

The consortium was highly involved in the many events that took place during the period and, as anticipated in the previous sections, EMODnet Physics was co-organizing some of them. Besides the participation and contribution to the EMODnet Technical Working Group (review of portfolio, annual report, interoperability and layers towards central portal and ATLS, etc), the EMODnet Steering Committee, provide support and assistance to Deloitte for the EMODnet assessment, and EOOS conference (2 EMODnet Physics poster were presented)⁵, the EMODnet Physics team was involved in

- The MARTECH (EMODnet Physics was one of the co-organizer) congregates a broad research community dedicated to developing innovative equipment in the fields of marine sciences and technology. In 2018, this diverse community met in Porto, Portugal. The MARTECH workshop aims to bring together those working in MARine TECHnology for discussions and presentations of recent advances in the field and for cross-disciplinary knowledge exchange cutting across engineering and science. This knowledge exchange is fundamental for the development of systems and technologies that will enable us to explore and exploit the ocean in a sustainable manner and to monitor how key issues such as climate change, ocean acidification, unsustainable fishing, pollution, loss of habitats, shipping, security, and mining are affecting ocean sustainability and stewardship. The MARTECH18 program includes one plenary talk, forty-eight presentations distributed over 8 technical sessions (Session 4 on EMODnet)⁶, one outreach session for high school students working in marine robotics, one open session for discussions, and technical exhibits.
- MONGOOS (EMODnet Physics was one of the co-organizer): the workshop was focusing on operational oceanography downstream services. Downstream services convert marine data into useful information by means of services that are tailored to user needs. The workshop hosted a total of 20 presentation covering two major topics: i) EMODnet Physics and downstream services; using integrators (e.g. EMODnet Physics, CMEMS, SDN) and integrators portal interoperability services to discover, access, download and use data and data products into downstream applications; and ii) Presentation of downstream services and uses. During the workshop it was possible to collect relevant information about the status of monitoring

⁵

<http://www.eoosconference2018.eu/sites/default/files/Poster%20Pitch%20Presentations%2019%2011%202018.pdf>

⁶ https://sarti.webs.upc.edu/martech/usb_2018/paginas/Abstract_Magazine.pdf

networks in different areas and define actions to facilitate the integration of these (new and re-established) data flow into both EMODnet and CMEMS programs and services. A clear outcome is that data quality checks should follow European harmonized procedures (e.g. DATAMEQ recommendations) and should be applied as close as possible to data source (i.e. the provider⁷) and then directly linked into the systems (that are in charge to organize the datasets to serve their users at best).

- EuroGOOS DATAMEQ working group helps improving harmonization and integration of European marine data⁸. DATAMEQ WG works hand in hand with Copernicus Marine Service (CMEMS), SeaDataNet, EMODnet, JERICO Next and AtlantOS. The working group fosters links between real-time and historical data streams and works closely with EuroGOOS Task Teams. The key objectives of the meeting were to discuss and propose a data policy for EuroGOOS, revise the DATAMEQ actions plan since 2015 and identify recommendation to maximise the impact and the outcome and link of the European programs and projects (CMEMS INSTAC, EMODnet Physics, EMODnet Chemistry, EMODnet Biology, SeaDataNet, AtlantOS, etc), review the progress made by the EuroGOOS Task Teams, identify action to improve quality of European in-situ data in a global context.
- Organized under the framework of the SeaDataCloud project, the International conference on Marine Data and Information Systems - IMDIS9 reached the 6th celebration (in 13 years) and it is one of the most relevant events for the marine data scientists (more than 180 attenders from 34 countries). Conference sessions covered data tools and services in ocean science, Technical developments for marine information and data management, Marine environmental infrastructures for observation data (data management and access), and Data products, information and knowledge. In session 1¹⁰ products from the EMODnet programme were demonstrated, as were tools such as cloud workspaces and virtual research environments which allow users to explore and analyse data. During the session it was also highlighted that there are future needs to better allow and harmonise data quality control and to harmonise the data formats. The discussion continued in session 2 when presenters showed that one part of a Data Management Plan can be to adopt Sensor Web Enablement (SWE) standards and services which enable to describe sensors and platforms in a standardized way. SWE also facilitates to streamline the flow of metadata and data from the sensors to SOS services which support distribution to processing and archiving data centres as well as to users for visualization and access in near real time. Another part is to adopt common standards for formats and vocabularies which will ease exchange, interoperability and also re-useability of collected datasets. The data management standards have to be maintained and extended for handling new data types. Examples were given for how to handle data from river runoff, flow cytometry, and EMSO deep water observatories. Besides the proactive participation of the EMODnet Physics partner network to them, Session 1 and 2 confirmed the importance and

⁷ The provider can also identify a trusted entity (e.g. the regional DAC) to apply the procedures on its behalf

⁸ <http://eurogoos.eu/data-management-exchange-quality-working-group-data-meq/>

⁹ <https://imdis.seadatanet.org/>

¹⁰ <https://imdis.seadatanet.org/Presentations/Session-1/Chairs-wrap-up;>

<https://imdis.seadatanet.org/Presentations/Session-2/Chairs-wrap-up>

relevance of many of the undertaken actions under the EMODnet Physics (and partner projects) framework.

- In 2014, TGNOISE started working on guidance on enabling monitoring¹¹ on pressure indicators (only), in 2016 it started working on impact indicators related to an assessment that should be done at a (sub)regional level. For both the impulsive and continuous noise the key issue is to identify (a set of) thresholds that indicates when noise is affecting/impacting habitats. While for impulsive noise it is possible to define thresholds (e.g. % yearly reduction of population/mortality, % of population/habitat exposed above disturbance level), for continuous noise there are knowledge gaps on direct effects on population and TGNOISE approach is to keep developing maps that include temporal information. The maps can be produced @ 63Hz, 125Hz and 2KHz and can be used to calculate statistical properties in specific areas as well as a function of time. Monthly and annual soundscape maps can be drawn. Relevant statistical measures are n:th exceedance levels (n = 5, 10, 25, 50, 75, 90, and 95%). These model outputs should be integrated with monitoring data where sensors should be deployed at two types of locations, near to shipping lanes where individual signatures from ships are obtained and in locations where noise from distant shipping dominates. Furthermore it is highly desirable to perform measurements at two depths above and below the thermo- and/or haloclines or by modelling taking the complex acoustic environment into account. In this framework the indicator can be based on the correlation between the statistical measure of the exceedance levels and % of population. In this framework, EMODnet Physics is integrating and federating impulsive noise event registries by using an harmonized statistical grid (10' latitude and 20' longitude) for the entire Europe to provide users with a common layer to be used in combination with habitats layer to work on thresholds. Concerning the continuous noise the EMODnet Physics approach is following the TGNOISE recommendations and it is working on making available in situ SPL data to be used to calibrate/correct the soundmaps (see also previous sections).

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

Besides the activities on underwater noise, EMODnet Physics features were presented (thanks to EMODnet Secretariat) to TGDATA (TG DATA meeting December, Brussels). The meeting opened a new possible framework for interacting with RSCs on some specific physics datasets/layers (e.g. salinity, temperature) that may be used in the context of some MSFD indicators.

- **Joint actions/outcomes with EMODnet Data Ingestion**

The MONGOOS workshop represented a key event to meet some new providers and have updates on the status of monitoring networks managed by attending providers, e.g. during the meeting it was possible to finalize the plan to include 6 Croatian mooring stations, it was possible to learn that some of the Italian Wave buoys are going to be re-activated, it was possible to collect dataset from repeated cruise between Genova and Palermo.

One key outcome from the period and from these coordination and networking activities is that the (technical) events such as dedicated workshops for operators in a region, or for networks operators are needed to inform about progresses, give details (and avoid misunderstandings), unlock data flow, empower and entrust the network.

¹¹ Impulsive Noise Registries are developed on data from 2015

6.2 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 organizations.

Description:

EMODnet Physics is developing an operational service where near real time and historical validated marine data are made interoperable and freely available. On top of these data and data products, EMODnet Physics keeps developing and updating interoperability and machine-to-machine interfaces according the most recent standards and catalogues (OGC WxS, API REST/SOAP, TDS and ERDDAP catalogues, GeoServer, GeoNetwork, etc).

EMODnet Physics is not running any platform, therefore, it relays on a federated structure that links data providers (or other key integrators). On top of this data flow, EMODnet Physics is providing additional search, viewing and downloading services on data. In this framework, INSTAC-CMEMS and SeaDataNet are the key European data integrators and EMODnet Physics is federating the catalogues subsets that are matching with EMODnet Physics scope and requirements. INSTAC-CMEMS and SDN subsets are integrated with other available sources to make available the most comprehensive data catalogue (i.e. the EMODnet Physics catalogue) e.g. by integrating more than 400 European tide gauge stations, the 290 Global Sea Level Observing System - GLOSS - core network, and more than 1300 Permanent Service for Mean Sea Level – PSMSL -, EMODnet Physics is offering one of the widest in situ data collections for sea-level data.

Some of the other integrated networks (catalogues) are: JericoNEXT network of coastal monitoring stations, GOSUD thermosalinographs datasets, IOOS, IMOS, IAPB, etc.

As described in the previous sections, data management in EMODnet Physics was partially redesigned in order to facilitate ingestion/connection to more data sources (particularly relevant for providing the largest collection of temperature and salinity datasets).

6.3 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 also has to develop monitoring tools of 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

Description:

EMODnet Physics products, catalog, OGC service (GeoServer) were updated both to fit the EMODnet Central portal needs/specifications, and end-user usability. To avoid any problem with latest changes in the Google map license policy, we started moving the map background layer to openstreetmap. This also allowed to enable a new feature that let the user to take snapshot of the portal.

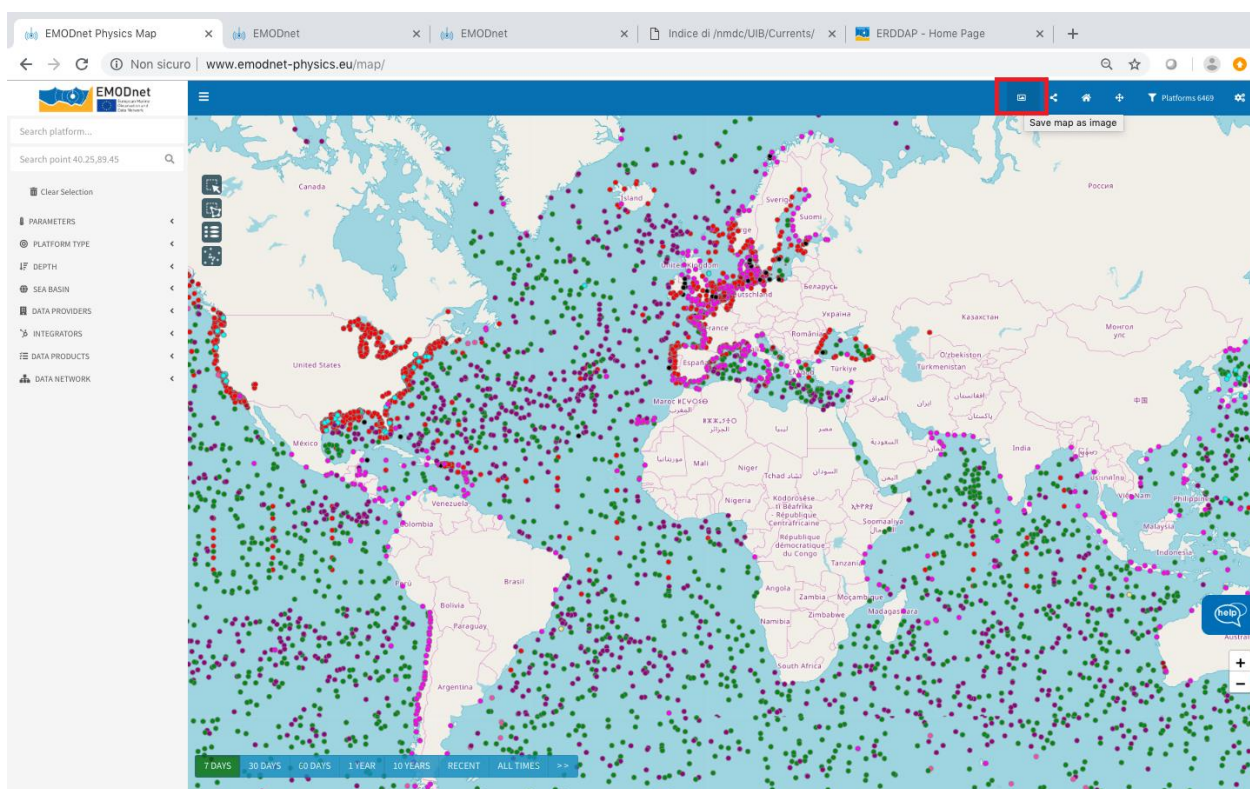


Figure 4. new map viewer background and feature

Concerning the interoperability with data from no-EU parties, there is an open dialog with some scientists from the Red Sea area¹² who are interested in setting up a collaboration similar to what has been developed with the SOOS community.

¹² PERSEA, the Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden, is an intergovernmental body dedicated to the conservation of the coastal and marine environments

6.4 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 a 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.

Description:

The system is collecting usage and traffic (number of hits, amount and type of data used, etc.) to fill and match the required Indicators.

Access and use of the Help desk facility: during this period, we registered 16 requests (Table 2); some of these were collected by direct mails (i.e. not by using the help desk service).

Information on users:

Academia/Research	63,10%	41	Marine and Coastal - tot: 33
			Climate, Seasonal and Weather Forecasting - tot: 19
			Marine Resource - tot: 7
			Maritime Safety - tot: 2
Business and private Company	13,80%	9	Marine and Coastal - tot: 7
			Marine Resource - tot: 5
			Climate, Seasonal and Weather Forecasting - tot: 4
			Maritime Safety - tot: 3
Government/Public Administration	13,80%	9	Marine and Coastal - tot: 8
			Climate, Seasonal and Weather Forecasting - tot: 4
			Marine Resource - tot: 2
			Maritime Safety - tot: 1
Other	9,20%	6	Marine and Coastal - tot: 5
			Climate, Seasonal and Weather Forecasting - tot: 5
			Marine Resource - tot: 4
			Maritime Safety - tot: 3
		65	

Table 6 presents data collected for the past three months (1/10/2018-31/12/2018) from/about authenticated users. Note this is only a limited subset of the portal traffic.

Organisation type	% users	tot users Organisation type	Main use cases and application areas
Academia/Research	63,10%	41	Marine and Coastal - tot: 33
			Climate, Seasonal and Weather Forecasting - tot: 19
			Marine Resource - tot: 7
			Maritime Safety - tot: 2
Business and private Company	13,80%	9	Marine and Coastal - tot: 7

found in the Red Sea, Gulf of Aqaba, Gulf of Suez, Suez Canal, and Gulf of Aden surrounding the Socotra Archipelago and nearby waters

			Marine Resource - tot: 5
			Climate, Seasonal and Weather Forecasting - tot: 4
			Maritime Safety - tot: 3
Government/Public Administration	13,80%	9	Marine and Coastal - tot: 8
			Climate, Seasonal and Weather Forecasting - tot: 4
			Marine Resource - tot: 2
			Maritime Safety - tot: 1
Other	9,20%	6	Marine and Coastal - tot: 5
			Climate, Seasonal and Weather Forecasting - tot: 5
			Marine Resource - tot: 4
			Maritime Safety - tot: 3
		65	

Table 6. Users and their interest (people registered in past 3 months, total # users which updated their profile 95)

7 New monitoring indicators

Please consult and fill in the designated excel template.

Indicator 1 – Volume and Coverage

Note: the figure for Atlantic Ocean is also including platforms in the South Atlantic Ocean.

Indicator 2 – Organisations supplying data and data products

For Physics is not possible to report according the proposed table, we are using the same table we were using for the past reports in which we list the Organization (provider) the country, the platform and the themes.

Concerning the products the main provider (not exhaustive list) for EMODnet Physics are:

- Mercator Ocean/Copernicus Marine Environment Monitoring Service
- SeaDataCloud (the T&S climatology is a product developed during the project by the joint effort of several SDN partners)
- PSMSL, provided and maintained by NERC BODC (UK)
- SONEL, provided and maintained by the University of La Rochette (France)
- MEOP, provided and maintained by MEOP (the data management is coordinated by University of St. Andrew – Scotland and University of Stockholm)
- Global Runoff Data Center – hosted by the Federal Institute of Hydrology (BfG) Germany
- Impulsive Noise registry – hosted by ICES (Denmark) on behalf of OSPAR and HELCOM, and the ACCOBAMS web portal for the MED

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

Nothing to report

Indicator 5 – Number and coverage of built data products

Indicator 5.1

Built data products table is reporting data according the metrics it was applied during the previous report. Now, many of the built in products are not listed in the catalogue yet. The re-organization and update of the catalogue is an on-going activity and once completed (next period) considering that the catalogue is going to list the built in products also, the 5.1 indicator will be re-organized accordingly.

Indicator 5.2.1

The EMODnet Physics catalogue was redesigned and the preliminary version was published in July. It will be updated continuously to list all the available products and datasets

Indicator 6 – Portal & Social Media visibility

See EMODnetPhysics_QuarterlyReport_Q07.xlsx file

Indicator 7 – Technical Monitoring and portal user-friendliness

See EMODnetPhysics_QuarterlyReport_Q07.xlsx file

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

Table 7. Interfaces to access or view data

Indicator 8.1.1

The process of reorganization of the services vs product mapping is on going, this re-mapping activity is influencing the table 8.1.1 that will be updated in next report. In this reporting period, we consider Table 7 as a summary of the interfaces to access or view data

Indicator 8.2.1

Volume of downloadable data is the number of platforms with a given parameter. Number of manual downloads is the number of download requests for a given platform/section.

The user can download data from each platform-page. If the user selects one day, or one month or 10 months of data, EMODnet Physics counts this such as one single download. If the user interacts with the map viewer-boxing feature, and selects and download data for a number/list of platforms, EMODnet Physics counts it as one single download request. Either the users downloads one day of data or the full DB, if the user is doing this in one single action, EMODnet Physics counts it as one single download request (it is replicated in case the platform/file contains more than one parameter)

Tracking tools to report Indicator 8.2.1 are going to be updated during next period in order to be able to report on the number of requests on the WMS, WFS, ERDDAP, WIDGET interfaces by using the same unit/metrics it is used for the manual download.

Indicator 8.2.2

External Data Products. It is considered an External data product the one on which EMODnet Physics is not doing any action/processing/optimization and it is only re-distributed. The number of external product is zero.

Indicator 8.2.3

We started using the new tracking system and some trends are available. To note that both the catalogue and the tracking system are going to be fine tuned.

Indicator 10 - Published use cases and number of readings

This indicator has to be reported only if the use-cases are re-published on the thematic lot landing page. It is not the case of EMODnet Physics.