EMODnet Thematic Lot n° 03 - Physics

EMODnet Phase III - Trimonthly Report

Reporting Period: 01/10/2017 – 31/12/2017

Due Date: 15/01/2018

Contents

1. Highlights in this 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 – this can be based on the indicators or any other of the reporting sections. [Provide a bullet list - maximum 5 bullets]

1. EMODnet Physics participated to TG NOISE meeting and is now an official member of TG NOISE, this new role will facilitate EMODnet Physics to be connected and make available more underwater noise data and products.
2. EMODnet Physics started a technical discussion with ICES that is hosting both HELCOM and OSPAR impulsive noise registries and integration is in progress.
3. During the period we did major updates on the portal (e.g. the new landing page was launched in December) and its interoperability services.
4. EMODnet Physics developed a specific product page to let the user to interact and plot data from the Temperature and Salinity Climatology as developed by the SeaDataNet consortium
5. The joint EMODnet Physics and Data Ingestion Real Time data management interface (V.1.0) is now available (www.emodnet-physics.eu/RealTime). The service let the user to check if its OGC SOS services can be used to ingest RT data (and so trigger the NRT data ingestion process).

2. Meetings held since last report

List here the meetings held/participated since the last trimonthly report, if relevant add short description.

Date	Location	Topic	Short Description
2-5/10/2017	Bergen (Norway)	EuroGOOS conference	International conference on Operational Oceanography.
9/10/2017	Genoa (Italy)	Tech meeting – Italian River Data	DHI Italy is providing many of the Italian Regional Environmental Agencies with services for river data management. The meeting was focused on defining how EMODnet Physics can make available more Italian River Data.
16-19/10/2017	Athens (Greece)	SeaDataClud TTG+GA	SeaDataCloud Technical Task Group and annual General Assembly. Links and cooperation between SDC and EMODnet Physics were presented and discussed with partners.
25/10/2017	Sopot (Poland)	HELCOM State & Conservation meeting	We presented the EMODnet program with a focus on EMODnet Physics and Data Ingestion services and features that can support HELCOM activities.
25-26/10/2017	Capri (Italy)	RITMARE project final meeting	Final meeting of the Italian RITMARE project on observing systems. EMODnet Physics was invited to show the European framework and discuss on data management and data access.
8-11/11/2017	Torrelodones (Spain)	TG NOISE	Meeting of the EU Technical Group on Underwater Noise (EU TG-NOISE).
11/11/2017	Madrid (Spain)	EuroGOOS Tide Gauge Task Team	The meeting was focused on discussing the integration and presentation of the sea level trends as computed by SONEL and the development of a Sea Level Anomalies product.
14-16/11/2017	Athens (Greece)	MONGOOS annual meeting	Annual meeting of the Mediterranean Operational Network for the Global Ocean Observing System (MONGOOS). We gave an update about activities and collaboration between EMODnet Physics and Data Ingestion.
15-17/11/2017	Antwerp (Belgium)	EMODnet Heckathon	EMODnet Physics took part to the event and supported the participating teams.
20-24/11/2017	Las Palmas (Spain)	AtlantOS General Assembly	Annual Meeting of the AtlantOS project. EMODnet Physics is one of the key data integrators within WP7 and is powering the AtlantOS data portal.
20/11/2017	London (UK)	NOOS annual meeting	Annual meeting of the North Sea and European North West Shelf EuroGOOS ROOS.

23/11/2017	Copenhagen (Denmark)	OSPAR data management	It was a technical meeting with ICES people to discuss about more interoperability between EMODnet Physics and ICES data portal to make more OSPAR data accessible and visible into/by EMODnet Physics
5/12/2017	webcall	Listen to Deep Ocean & SoundOcean projects	Technical meeting to discuss how to connect LIDO platforms (and datasets) to EMODnet Physics and develop some sound-maps (based on SoundOcean project experience)
12/12/2017	Webcall (SOCIB)	Glider data interoperability	Technical meeting to discuss on how to connect more (international) Glider data to EMODnet Physics
20/12/2017	webcall	Deep Ocean Observing System – Data Management Working Group	EMODnet Physics was invited to present its experience on data management and discuss about mutual synergies.

Table 1. Meetings

3. Work package updates

The project officially started 29thMarch 2017.

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.

Activities:

As part of the management activities, during the period EMODnet Physics interacted with the Secretariat and TRUST-IT for defining the new monitoring indicators. Although most of them are defined and reportable, for some indicators we may suppose that fine tuning is required once we start reporting.

The annex "EMODnetPhysics_Indicators_T3.xls" reports on new monitoring indicators (whenever possible) for the reporting period.

For some the discussion is still open and may need to continue during the Steering Committee. One of the most sensitive topic is the compulsory user registration to monitor of the users.

EMODnet Physics is integrating a federated system of data providers which apply different data policies and we are making available our products and services that since ever are free, open and without any registration/authentication. As far as for Chemistry and Bathymetry we think that introducing now a user registration for these products may affect the portal in a negative way, moreover most of our data are synoptic views and (operational) layers and asking authentication before accessing those pages is really against our philosophy.

If we go to data, according the source, we may need authentication for downloading (if the provider is not asking for authentication, if the data is already open/free/no registration available somewhere, it does not make sense to add this layer not to affect the portal in a very negative way) and the authentication is managed by third systems (e.g. the CMEMS, the CDI service for data requests, etc).

We are not managing the creation of the "new user" as we rely on the third service and their service level agreement, we can only ask the user to provide us with some data (and this is what we are doing), just before we send this request to the third system, once the user has defined its data download request and that request needs authentication (in other words in most of the case we can only have IPs). In case of use of any of the machine-to-machine services like OGS WMS, WFS and WCS services, we can track the use (IPs) but the use of registration form is against the nature of the service itself.

Participation to TG NOISE,

The participation to the meeting was very useful to get an overall overview of the TG NOISE activities. The meeting covered from the TG Noise scope, composition, and rules of procedure, CIS, the implementation of operational monitoring for the sea basins/sea conventions, the status of art of the impulsive registries, the outcome from pilot projects for ambient noise assessment. After the EMODnet Physics presentation, both OSPAR, HELCOM and Barcelona convention representatives expressed intention to see/establish connection between their registries and EMODnet Physics (that can provide the "European" gate to these federated infrastructures).

New Action:

WP1.A.1	To include/link the available impulsive noise registries into EMODnet Physics.	In progress. We had a technical meeting in ICES that is hosting the registry for both HELCOM and OSPAR.

EMODnet Physics was also asked to offer support to host data and results for projects (that are going to generate data) e.g. JOMOPANS. The needs may be different from project to project and we need to design an easy and adaptable procedure. We are going to start with a first project and then we try to extend results to the others that may be interested.

New Action:

WP1.A.2	To work in collaboration with JOMOPANS project on data management issues.	

During the meeting, presenters listed some (already or planned) operational monitoring facilities from identified sites (that represent areas) to feed tools for sound mapping assessment. We already have an action for listing the available monitoring sites (UWN.A.1), we plan to release the preliminary list by end of next reporting period.

EMODnet Physics was proposed to be the link between TG NOISE and EMODnet for exchange of information and updates (some products delivered by the other lots can be relevant for the activity of the experts of TG NOISE, e.g. the new AIS density map form EMODnet Human Activity).

New Actions:

WP1.A.3	To complete the formal procedure to have an EMODnet Physics representative participating as external expert into TG NOISE	Completed. Antonio Novellino is the EMODnet Physics representative into TG NOISE. TG NOISE EC officer is Maud Casier[1]. TG NOISE is linked to TG DATA and we were asked to lease with EMODnet Chemistry on their meetings with TG DATA.
WP1.A.4	To plan a meeting with Chemistry	The (web) meeting is planned in January (11th)

Other planned actions:

KO.A.1	ETT to draft and hand out the consortium agreement and templates for activating subcontractors.	Completed
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

[1] Maud.CASIER@ec.europa.eu

KO.A.4	EuroGOOS to work on collaboration with Regional Sea Conventions	In progress
	KO.A.4.1 keep interacting with HELCOM and identify a topic of mutual benefit	Underwater noise
	KO.A.4.2 set the meeting with OSPAR	completed
KO.A.5	ETT to contact MERCATOR to be part of the EMODnet Physics "advisory board"	Completed, the officer in charge for the activities is Dominique Obaton

The coordination with MERCATOR on how to reorganize the metadata presentation for the datasets that are validated according the CMEMS QC/QF and how to link to the technical-methodological documentation is still undergoing. MERCATOR is closing the contracts for CMEMS phase 2 during which some service update and changes are planned. To note that some of these updates are going to affect products shared with EMODnet Physics and major update are going to be needed as soon as they are going to be published. CMEMS is planning a minor release (v.3.4) in February and a major release (v.4.0) in March. At the moment, it is not possible yet to estimate the real effort that is needed to face and synch the system with the planned updates.

The following tables give a summary of the progresses on planned actions.

River Data

R.A.1	List of the rivers to be included	Completed.
R.A.2	Inventory of the (operational) fixed platforms on those rivers	In progress – about 100 river stations providing near real time data have already been connected
R.A.3	Definition of the data structure, file transport format, naming convention, data flow (as close as possible to CMEMS INSTAC for easy future uptake), conventions	Completed. Data structure follows the already adopted for the management of data coming from the other networks: transport file is going to be netcdf v3.6 (and v.4.0), data is going to be stored in a data server with three folders according the data age: latest, monthly and history. CF convention/SeaDataNet P09 are used for parameters.
R.A.4	Mapping of the available parameters for those rivers with a focus on: Level of water, river flow (also as computed by the level), water temperature, nutrients (O2, Nix ...)	The action was split into two sub-actions.
	R.A.4.1 EMODnet Physics to focus on making available the river flow (either as recorded in situ or as computed by the water level).	In progress.
	R.A.4.2 Cooperate and coordinate with EMODnet Chemistry for river chemistry	
R.A.5	Design of a "river" platform page for the portal (WP3)	Completed

R.A.6	Development of a model to compute the outflow of the river on the subsea basin (Hype like) at European level	In progress
R.A.7	Development of river climatology products (with trends)	Completed. New action: to update periodically (annually) the product – first update planned by end 2017
R.A.8	Development of Total Suspended Matter (gridded) products (with trends)	In progress

Table 2

Sea Level

SL.A.1	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	In progress
SL.A.2	Compile an inventory of the TG providing ground movement (GNSS) - (this is fundamental for having the absolute SL trends)	In progress
SL.A.3	Make map product to show both relative and absolute sea level trends. (PSMSL + SONEL)	In progress. 29th January 2017 is planned a meeting to review the products before the publication[2]
SL.A.4	Develop the NRT extreme event identification and visualization tools. It will be based on the percentile to NRT plot (p99 and p1) and display the SL	
SL.A.5	Develop the anomalies plot for historical data (year/period)	In progress[3]

Table 3

Under Water Noise

UWN.A.1	Inventory of existing UWN stations	In progress
UWN.A.2	Inventory of available UWN datasets	
UWN.A.3	Definition of the data structure, file transport format, naming convention, data flow, conventions for both UWN NRT and historical data flow	In progress. Although a preliminary data management method is designed, it has to take into consideration outcome from the TG NOISE meeting. New action: update the data management method.

[2] Test version: http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=SL&type=PSMSLSONEL

[3] Test version: http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=SL&type=PSMSLA

UWN.A.4	Design of a "under water noise" platform page for the portal (WP3)	In progress. SPLs are presented for last day, last 7 days and last month. Plots are cumulative. New action: update the platform page according outcome from TG NOISE. See also WP3.
UWN.A.5	Design and development of the methods and tools for the evaluation of: -Impulsive sounds indicator in 10Hz-10kHz band (11.1.1) -Trends in third octave bands (11.2.1) -Noise Band Monitoring: (63 and 125 Hz) (11.2.1)	

Table 4

After joining the Southern Ocean Observing System (SOOS) Data Management Steering Committee (DMSC), the EMODnet Physics team was invited to participate to the Deep Ocean Observing System (DOOS) Data Management Working group. Discussion about cooperation, mutual data exchange and service interoperability is undergoing.

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.

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

EMODnet Physics is integrating data and products and it is creating new data and new products with connected sources. The following table summarizes the concept into macro categories that consider the age and the spatial dimension of the data (in situ data are discrete by nature and spatial interpolation is needed to produce maps). The more the right the more the processing (done) on the data.

		Discrete			Gridded	
	Metadata and asset mapping	Data plot	Parameter plot as recorded by a platform	Average, Trend	Interpolated map	Climatology
Near Real Time	X[4]	X[5]	X[6]	X	X[7]	
Multi-Year historical	X	X	X	X[8]	X	X[9]

Table 5

The development of a dedicated data infrastructure to manage river station data and underwater noise data is in progress. As already reported river data management infrastructure design and implementation is processing fast: it already manages both NRT and historical Multi Year (MY) data and it is ready to host a new gridded product: the Concentration of the Total Suspended Matter (TSM). TSM (conc_tsm, mg/l) is a product of the Coastcolour L2W Concentrations Data, obtained from the OC4 algorithm for clear and moderate turbid waters, and from the CoastColour v1 neural network. The L2W product is then remapped on a regular grid, maintaining the 300 m full resolution, in order to obtain L3 products over the Seas basins and monthly averaged (at the moment the product is covering the Italian Seas and we're working to cover all the European Seas).

[4] E.g. www.emodnet-physics.eu/map the default map is showing the asset mapping for latest 7 days
[5] E.g. a platform page is showing both the data plot and averages and trends
[6] E.g. the product pages are showing a parameter as recorded by a given platform
[7] E.g. CORA products
[8] E.g. PSMSL trends
[9] E.g. SeaDatanet Climatology

During the recent meetings with HELCOM and OSPAR, EMODnet Physics was asked to be connected to the already available impulsive noise registries that are hosted at ICES. Integration is in progress.

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

KO.A.6	review data inventory and parameters	In progress
KO.A.7	ETT and EuroGOOS to contact SOCAT community to set up cooperation	In progress, the representative for SOCAT is going to be Benjamin Pfiel
KO.A.8	MARIS to design how to manage the connection between NRT CTD and validated data and CRS	
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
KO.A .10	Ifremer / EuroGOOS will specify what CMEMS needs and Maris will explore with the EMODnet Chemistry consortium what and how EMODnet Chemistry might be able to offer by means of an API and SLA	Closed.
	WP2.A.1. EMODnet Physics will made available in situ near real time chemical data when available in the CMEMS products (see Table 12)	In progress

Table 6

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

KO.A.11	to work in cooperation with SDC for the identification of a list of candidates	As planned, the topic was presented at SeaDataCloud TTG (16-20/10/2017 Athens, Greece) and after brainstorming with partners we agreed to have pilot actions in Italy, Greece, Poland and Spain New actions: WP2.A.1 – HCMR for closing the gap in Greece, WP2.A.2 – OGS for closing the gap in Italy, WP2.A.3 – PdE for closing the gap in Spain, WP2.A.4 – IOPAN for closing the gap in Poland
KO.A.12	MARIS to update/provide a new service to facilitate the mapping of CDIs on the platforms	In progress. The service was recently updated and consequently the number of platforms and CDIs increased. EMODnet Physics is now connected and offering SDN 13.064 CDIs from 997 platforms (+ca.1000 CDIs and +72 platforms)
KO.A.13	MARIS and ETT to define/verify CDI for HFR	In progress. Given the topic, MARIS and ETT are developing the action in collaboration and coordination with SeaDataCloud project and a specific delivery is planned (T9.5.1 - Ingesting, validating, long-term storage and access of HF Radar data) and due by (June 2019)

Table 7

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

KO.A.14	ETT and IFREMER/EuroGOOS to create links and synergies	In progress. See WP1 section on Rivers and UWN

Table 8

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. During the period, the activity was focused on identifying new datasets to be ingested and we started the development of a specific service for presenting Real Time data connected by OGS SWE SOS methods.

New Actions:

WP2.A.5	To work on the 2 buoys and HFR data[10] from NMI (Norwegian Meteorological Institute)	
WP2.A.6	To work on Croatian buoys[11]	

Then we also identified some HFR data in Thailand[12] that can be included in the EMODnet Physics product on sea surface currents as recorded by HFR.

WP2.5: Metadata

KO.A.15	To work on the documentation for tide gauges and sea level trends	In progress. We are going to have a join meeting with the EuroGOOS Tide Gauges Task Team, PSMSL, and SONEL (29th January).
KO.A.16	to update documentation according INSTAC QC procedures	In progress
KO.A.17	IFREMER to provide the updated list of the institute in charge of which providers - CMEMS INSTAC	MO is renewing the contracts, the new contractors will be active in January, the list is going to be updated consequently.
KO.A.18	link to the SensorML	In progress. EMODnet Physics is cooperating with EMODnet DI on this action. A living document is available on github[13]

Table 9

WP2.6. Data access

KO.A.19	improve data access features according the specificity of the platform	In progress. The results are described in WP3 data portal.

Table 10

[10] http://thredds.met.no/thredds/catalog/remotesensinghfradar/catalog.html; http://thredds.met.no/thredds/obs.html
[11] http://faust.izor.hr/autodatapub/postaje
[12] http://coastalradar.gistda.or.th/app/map/router.php?page=current
[13] https://github.com/ODIP/MarineProfilesForSWE/blob/master/README.md

WP2.7. Data Products

KO.A.20	ETT to design and propose new plot products.	In progress. See table XX
KO.A.21	ETT to work on a INSITU SST product as recorded by the different platforms	In progress. page and service under test[14]
KO.A.22	ETT to present in the portal the CORA and SDN Climatologies products	Completed. Concerning the SDN, all the 6 European Sea Basins both the Temperature and Salinity climatologies were integrated and are now discoverable. The CORA product was used to make available monthly gridded means for Temperature and Salinity (see also WP3)
KO.A.23	ETT to present periodic (e.g. monthly) map with amount of available data	
KO.A.24	IFREMER to provide info and details for the REP products	Completed
KO.A.25	ETT to consider PSMSL platforms only for the SL product	Completed
KO.A.26	to think about how to include and make visible (some) SAFHOS data	
KO.A.27	Update PSMSL trends to 2016	
KO.A.28	BODC to approach SONEL to discuss inclusion of the PSMSL+SONEL absolute sea level change product in the EMODnet Physics portal	See KO.A.15
KO.A.29	To include/interoperate with delayed mode sea level data DB hosted at BODC	

Table 11

EMODnet Physics integrates and uses CMEMS INS products to populate the map page. EMODnet Physics reorganizes the CMEMS products, provides access to dataset at platform level, and provides the users with full metadata on data providers and measuring systems. The table shows the status of integration:

NEAR REAL TIME data – (past 5 years) – Product name	Status of integration
INSITU_GLO_NRT_OBSERVATION_013_030	Already available (Phase 2)
INSITU_ARC_NRT_OBSERVATIONS_013_031	Already available (Phase 2)
INSITU_BAL_NRT_OBSERVATIONS_013_032	Already available (Phase 2)
INSITU_NWS_NRT_OBSERVATIONS_013_036	Already available (Phase 2)
INSITU_IBI_NRT_OBSERVATIONS_013_033	Already available (Phase 2)
INSITU_MED_NRT_OBSERVATIONS_013_035	Already available (Phase 2)
INSITU_BS_NRT_OBSERVATIONS_013_034	Already available (Phase 2)
REPROCESSED data - Product name	Status of integration
Arctic- In-situ Observations Yearly Delivery in Delayed Mode (1990-2014) - (CMEMS INSITU_ARC_TS_REP_OBSERVATIONS_013_037)	Integrated
Atlantic Iberian Biscay- In-situ Observations Yearly Delivery in Delayed Mode (1990-2014) - (CMEMS INSITU_IBI_TS_REP_OBSERVATIONS_013_040)	Integrated

[14] http://151.1.25.219/emodnet2/Products/V2/PRODUCTS.aspx?PRODTYPE=PR&param=TEMP

Atlantic-European North West Shelf- In-situ Observations Yearly Delivery in Delayed Mode (1990-2014), - (CMEMS INSITU_NWS_TS_REP_OBSERVATIONS_013_043)	Integrated
Baltic- In-situ Observations Yearly Delivery in Delayed Mode (1990-2014) - (CMEMS INSITU_BAL_TS_REP_OBSERVATIONS_013_038)	Integrated
Mediterranean- In-situ Observations Yearly Delivery in Delayed Mode (1990-2014) - (CMEMS INSITU_MED_TS_REP_OBSERVATIONS_013_041)	Integrated
Black Sea- In-situ Observations Yearly Delivery in Delayed Mode (1990-2014) – (CMEMS INSITU_BS_TS_REP_OBSERVATIONS_013_042)	Integrated
Global Ocean- Delayed Mode in-situ observations of ocean surface currents – (CMEMS INSITU_GLO_UV_L2_REP_OBSERVATIONS_013_044)	
Global Ocean- CORA- In-situ Observations Yearly Delivery in Delayed Mode (1950-2014) – (CMEMS INSITU_GLO_TS_REP_OBSERVATIONS_013_001_b). These data are collected from main global networks (Argo, GOSUD, OceanSITES, World Ocean Database) completed by European data provided by EUROGOOS regional systems and national system by the regional INS TAC components. It is updated on a yearly basis. The time coverage has been extended in the past by integration of EN4 data for the period 1950-1990.	Integrated

Table 12

EMODnet Physics continued to work on data access to data products. For each of the platform type/network it is possible to load one of the recorded parameters. These products are based on operational data and are managed by a sliding window of 60 days. In general, the user can select two time windows: 7 days and 60 days. The operational products are updated on daily base (automatic procedures).

Historical multi-year (MY) products are updated (about) once a year (manual procedures). The sea level trends are based on the PSMSL and they are updated once a year (last update 2016). MEOP database is updated as soon a new MEOP DB release is made available.
EMODnet Physics is collaborating with MEOP and together and a new release of the DB was published in November. The new DB is including data as recorded by sea mammals in North Sea and Manica Channel. We are now working on integrating this new version of the MEOP DB into the portal. SeaDataNet climatologies are updated every 2-3 years.

New Action:

WP2.A.6	To publish the new version of the MEOP DB	In progress

EMODnet Physics is providing access to more than 22.000 platforms and more than 580.000 datasets, and Table 13 lists the connected sources.

	ROOS	CMEMS	IOOS	SDN	IMOS	NDBC	IAPB	GOSUD	GLOSS	PSMSL	GRDC	MEOP	VOS	OS . FIXO3	Redundancy
Mooring		914		766	17	1128								72	X
Tide Gauge		356		155					37	1393					X
FB/Ship		150		3				214							X
Glider		50	134												
ARGO		7640													
Sea Mammal												1100			
River Station	160										370				X
HF Radar	30		96		16										
CTD		1290											2330		X
Drifting Buoy		>11000					1250								X

Table 13.

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.

Activities:

During the period, the team keep working on the portal. The Landing page was updated according the new specifications as agreed during and after the EMODnet Steering Committee.

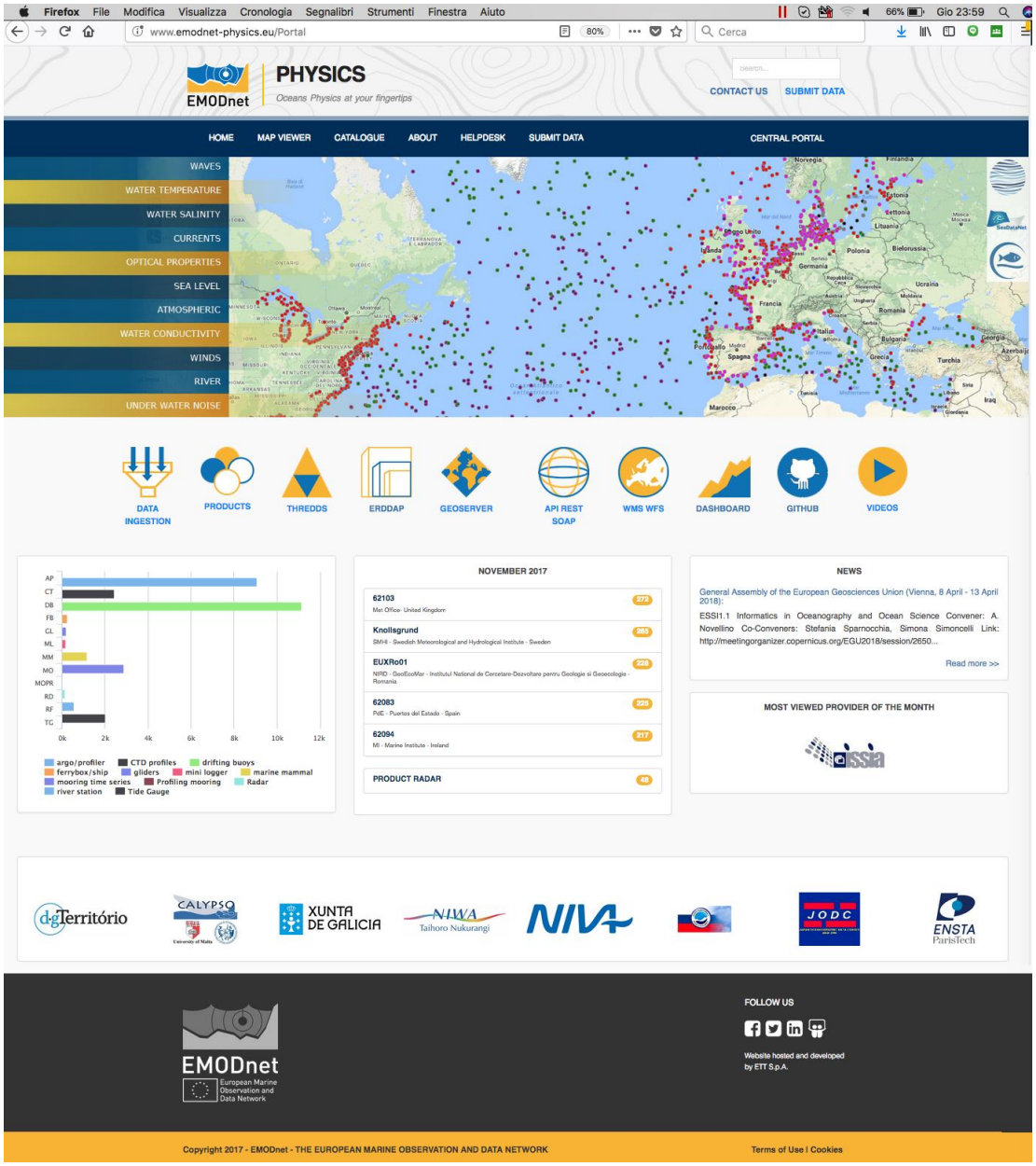


Figure 1. EMODnet Physics landing page

Monthly Gridded Averages (based on the CMEMS CORA product) and Climatology (based on SeaDataNet Climatology) for Temperature and Salinity were made available on the Product page. The pages (Figure 2Figure **1**) are interactive and when the user clicks a point, the system presents the time-series for the parameter at different depth (Figure 3). If the user open the time-series in a new panel, the system shows monthly profiles (Figure 4).

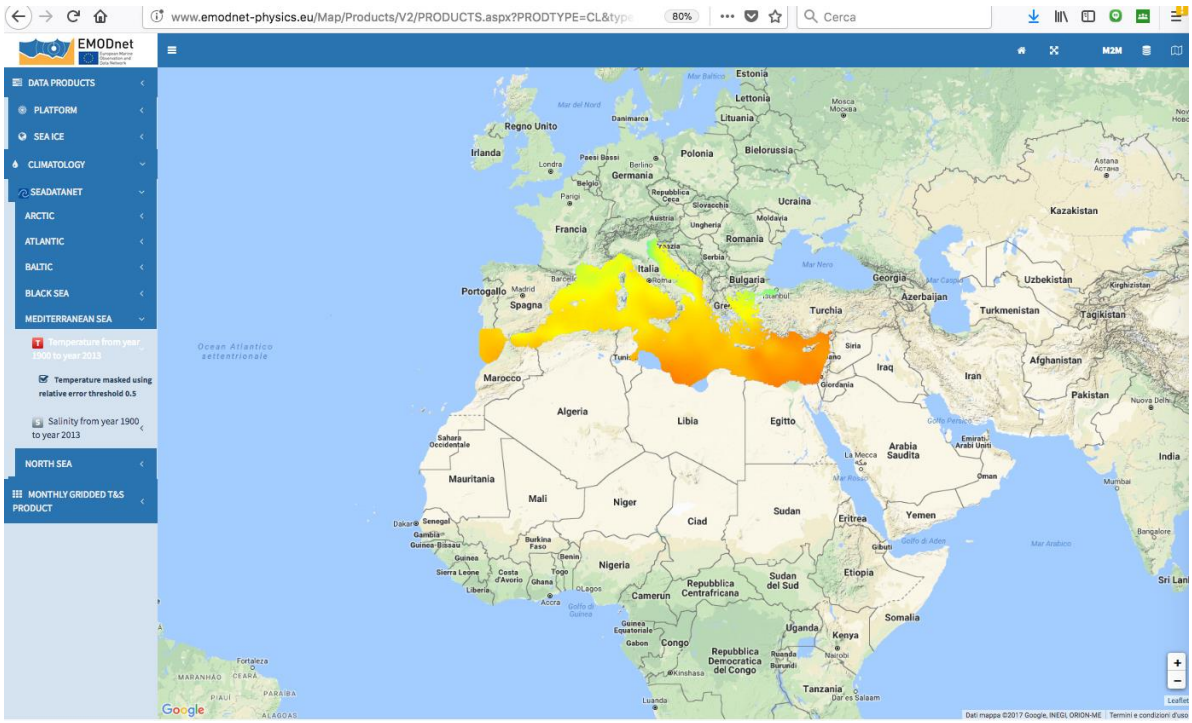


Figure 2. Example of the product page for the SDN Temperature Climatology

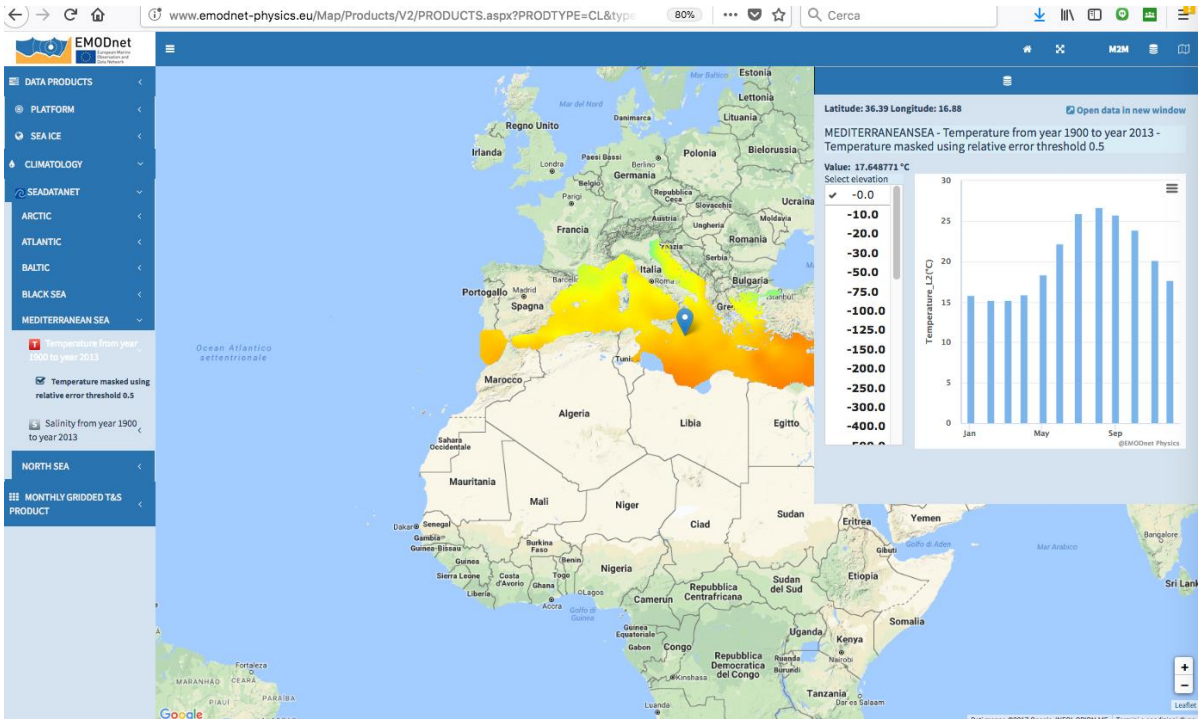


Figure 3. Climatology time-series

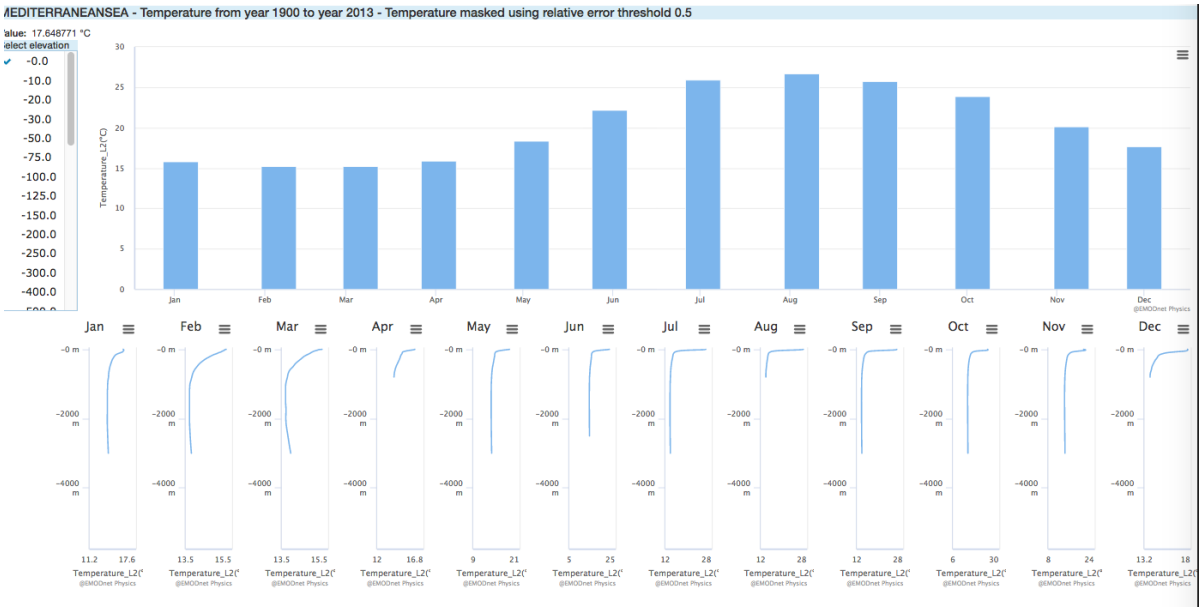


Figure 4. Climatology profiles.

The following tables summarize the progresses planned activities.

KO.A.30	ETT plot full life data for international program platforms.	In progress. The feature will exploit the recent development of the EMODnet Physics ERDDAP system.
KO.A.31	Work on the catalogue	In progress.
KO.A.32	Add FAQ page	
KO.A.33	Set up the help desk email, define the cases for the HD1L and HD2L	Completed
KO.A.34	Review the EMODnet Dashboard to have a more dynamic interface (to consider EMODnet Arctic SCP e.g. or osmc.noaa.com)	In progress.
KO.A.35	ETT to review Physics against INSPIRE	
KO.A.36	Add filters by EOVs	

Table 14

Catalogues

A "catalogue" is "complete list of items, typically one in alphabetical or other systematic order". EMODnet Physics is already presenting several catalogues, if we start from the categories as described in Table 5, EMODnet Physics is offering the following:

Near Real Time						
		Discrete			Gridded	
	Metadata and asset mapping	Data	Parameter plot as recorded by a platform	Average, Trend	Interpolated map	Climatology

API[15] SOAP and REST	X	X	X	X		
THREDDS[16]	X	X	X[17]			
ERDDAP[18]	X	X	X			
OGC WMS, WFS, WCS[19]	X		X		X[20]	

Table 15

Multi-year, reprocessed and historical data						
		Discrete			Gridded	
	Metadata and asset mapping	Data	Parameter plot as recorded by a platform	Average, Trend	Interpolated map	Climatology
API[21] SOAP and REST	X					
THREDDS[22]	X			X	X	
ERDDAP[23]	X					
OGC WMS, WFS, WCS	X				X[24]	

Table 16

In order to facilitate the user to exploit all the potential from the different catalogues (and underlining services), we developed the cross links between the different catalogues and improved the accessibility and visibility of these catalogues.

While the links to the catalogue services were already available in the "M2M" sub-section of the platform page, it is now possible to jump from the ERDDAP catalogue (Figure 5) to the Platform Info: if the user clicks the "background info" the system opens the selected platform page (e.g. http://erddap.emodnet-physics.eu/erddap/tabledap/BO_TS_MO_8391_latest.html

[15] APIs SOAP and REST are covering listing and offering data for latest 60 days from all the available platforms (i.e. the item).

[16] THREDDS is offering data for latest 60 days (full time series for HFR), ICE data

[17] Only for Currents as recorded by HFR

[18] ERDDAP is offering data for latest 60 days

[19] Implemented by means of the EMODnet Physics GeoServer service and catalogue

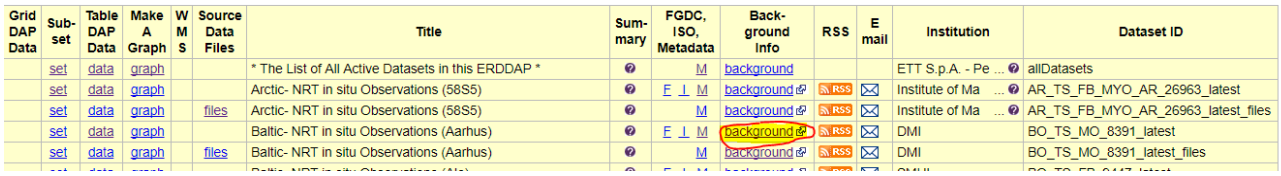
[20] SEA ICE,

[21] For some platforms (i.e. the once that are part of the CMEMS INSITU_XXX_NRT_OBSERVATION_XXX_XXX products, see Table 12) the API are offering all the data available in the monthly aggregations (min. past 5 years) per platform per parameter

[22] THREDDS is offering HFR data (locally gridded), the catalogue of the available platforms, and the PSMSL data

[23] ERDDAP is offering the catalogue of the available platforms

[24] SEA ICE,



Grid DAP Data	Sub-set	Table DAP Data	Make A Graph	WMS	Source Data Files	Title	Sum-mary	FGDC, ISO, Metadata	Back-ground Info	RSS	E mail	Institution	Dataset ID
	set	data	graph			* The List of All Active Datasets in this ERDDAP *		M	background			ETT S.p.A. - Pe ...	allDatasets
	set	data	graph			Arctic- NRT in situ Observations (58S5)		F I M	background	RSS		Institute of Ma ...	AR_TS_FB_MYO_AR_26963_latest
	set	data	graph		files	Arctic- NRT in situ Observations (58S5)		M	background	RSS		Institute of Ma ...	AR_TS_FB_MYO_AR_26963_latest_files
	set	data	graph			Baltic- NRT in situ Observations (Aarhus)		F I M	background	RSS		DMI	BO_TS_MO_8391_latest
	set	data	graph		files	Baltic- NRT in situ Observations (Aarhus)		M	background	RSS		DMI	BO_TS_MO_8391_latest_files

Figure 5. ERDDAP catalogue - http://erddap.emodnet-physics.eu/erddap/info/index.html?page=1&itemsPerPage=1000

From THREDDS to ERDDAP and to the platform page, e.g. http://thredds.emodnet-physics.eu/thredds/PlatformsCatalogLatest.html?dataset=GL_TS_MO_0n23w_latest_Agg is presenting the links:

Viewers:

- NetCDF-Java ToolsUI (webstart)
- EMODnet Physics ERDDAP Data Access Form
- EMODnet Physics ERDDAP Make A Graph
- EMODnet Physics Platform Info page

EMODnet Physics is also presenting the "Sextant" catalogue for products from partners that is going to be reorganized to present a short abstract for the different data (subsets) and products available into the portal.

New Action:

WP3.A1	Work on "abstracts" for a readable catalogue	

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

KO.A.37	Integrate ERDDAP	Almost finished. The action is taking more than supposed as the netcdf file format as adopted by the INSTAC is not fully compliant to the ERDDAP. EMODnet Physics had to develop adaptors/converters in order to reorganize data and implement the ERDDAP.
KO.A.38	Extend WMS/WFS/THREDDS/web services features and layers	In progress. this action will be open for the entire contract.
KO.A.39	Extend the tracking system and automatic email to integrators/providers	Completed. At the moment AZTI (Spain), SOCIB (Spain), IFREMER (France) and University of St. Andrews (UK) registered to the service.
KO.A.40	Develop widgets - to allow both users and providers to incorporate EMODnet Physics portal parts (e.g. the plots) into their web sites	Completed. Each platform page has a Documentation and M2M section that is also providing full details about how to use and include EMODnet Physics widgets in third systems.
KO.A.41	Integrate RT data as provided by OGC SWE (in coop with EMODnet DI)	In progress, dedicated page (V1.0) available at: www.emodnet-physics.eu/RealTime

Table 17

To facilitate the use of the available services, documentation and details on available machine-to-machine interfaces were made available on github:

https://github.com/EMODnet-Physics/EMODnet-Physics-Documentation

The following figure presents the hardware and software infrastructure that EMODnet Physics is using to deliver features and services.

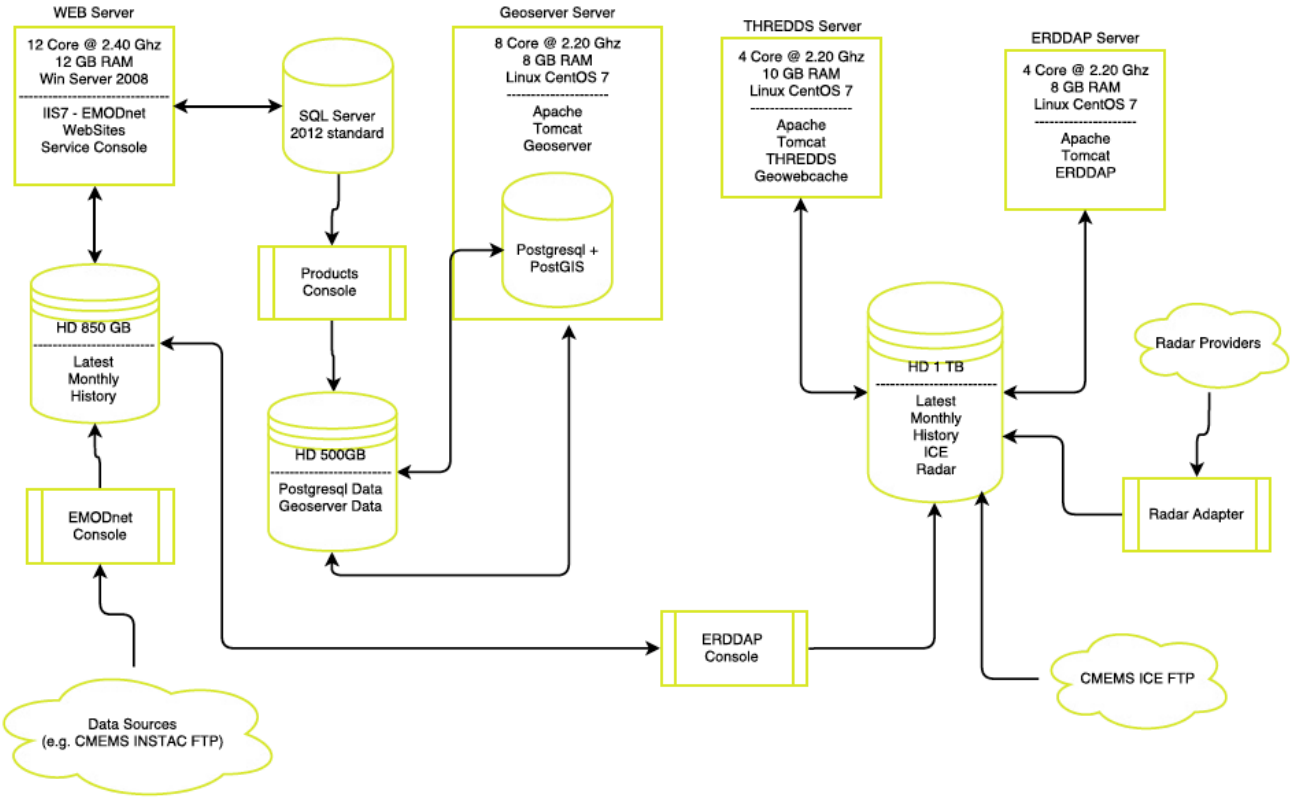


Figure 6. EMODnet Physics hw and services architecture

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	
KO.A.43	extend the capacity of EMODnet Physics to integrate historical data hosted in unstructured databases (e.g. GOSHIP).	

Table 18

EMODnet Physics is keep developing interoperability with data distributed by non-EU organizations (see also Table 13). Table 19 lists the projects/programs that are using EMODnet Physics to power their data portals.

AtlantOS	https://www.atlantos-h2020.eu/

	H2020 Ctr. No 633211;
JERICO-NEXT	http://www.jerico-ri.eu H2020 Ctr. No 654410;
South Oceans Observing System	http://www.soos.aq/data/soosmap.
EUSKOOS	http://www.euskoos.eus/en/radar-higer-en/

Table 19

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

Activities:

To get some more information about the users, we updated the service and when the users are downloading the data that request authentication they are asked to provide some details about their entities and their use of data. Table 20 is presenting data as collected for the past three months (1/10/2017-31/12/2017), while Table 21 is presenting the number of CDIs transactions on EMODnet Physics

Organisation type	*% users*	*Main use cases and application areas*
Academia/Research	56,40%	Marine and Coastal - tot: 58
Business and private Company	17,90%	Marine and Coastal - tot: 19
Government/Public Administration	12,80%	Marine and Coastal - tot: 12
Non profit	3,40%	Marine and Coastal - tot: 4
Other	9,40%	Marine and Coastal - tot: 9

Table 20. Data for 102 users (who downloaded data updated the profile)

No. of CDI basket transactions	No. of CDIs requested	Different users	Different data centres
3	150	3 (see Table 22)	3

Table 21. CDIs as requested via EMODnet Physics.

Organisation	**Country**
Swansea University	United Kingdom
VLIZ	Belgium
DMI	Denmark

Table 22

During this period, we registered an increasing use of the help desk service (see also Table 25), in particular we received 10 requests (see also Table 25) asking for technical support, errors in data/metadata are usually communicated by direct channels (email).

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	In progress. The monitoring systems was recently updated anyhow new actions and development are planned to be compliant to the specifications agreed during the EMODnet Steering committee. See also WP1

Table 23

We also included the Piwik script to EMODnet Physics pages to have the common and standardized monitoring tool. Figure 7 is showing one of the Piwik stats (country accessing the portal).

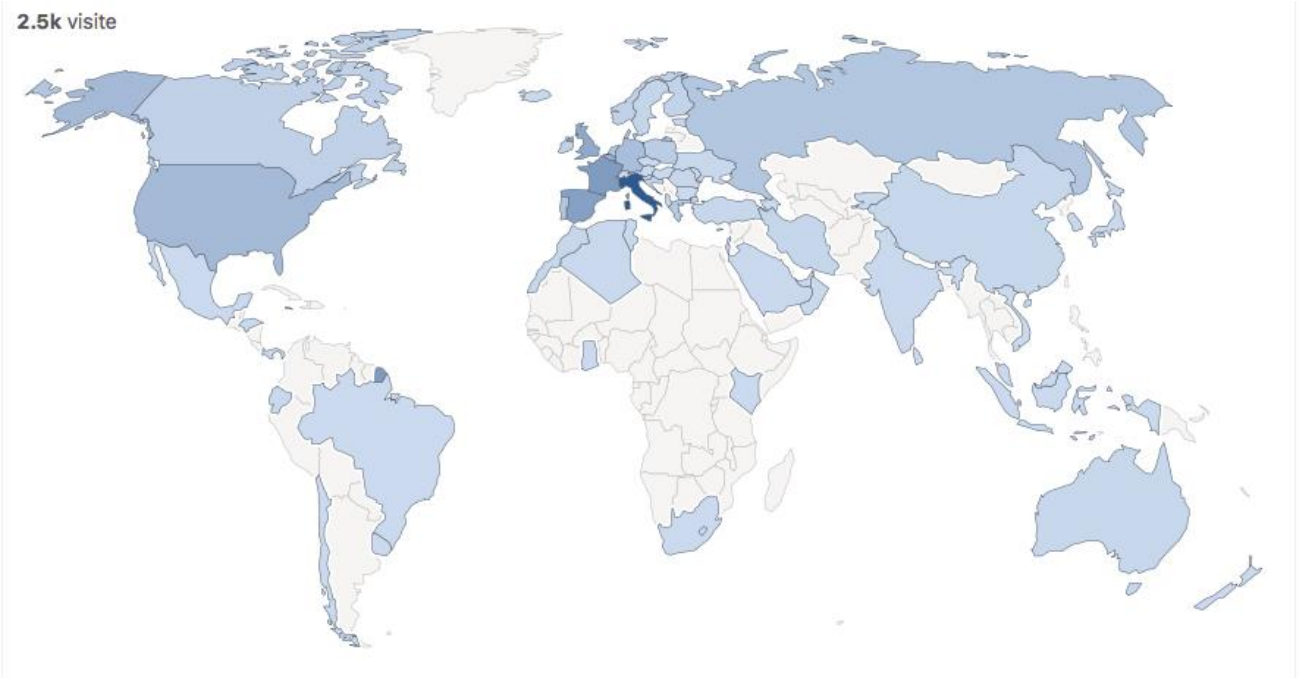


Figure 7. Piwik stats for the period 1/10/2017 – 31/12/2017

WP4.2. Operate a help desk offering support to users.

Action	Set up the on line tools to access/interact with the HD	Completed.
Action	The automatic system will send a mail and the object could be [EMODnet Physics] – id.XXXXXX – topic	Completed.

Table 24

4. Specific challenges or difficulties encountered during the reporting period

Please list specific problems you have encountered during this period, including related to technical and data provision issues. [Provide a bullet list - maximum 2 pages in total – where more information needs to be provided state 'contact XXX for more information']

We still have to work on the connection/integration of PANGEA.

5. User Feedback

List any useful feedback you received on your portal, your activities or those of other EMODnet projects/activities. Also provide any suggestions you have received for EMODnet case studies and/or future products/activities/events. [Provide information in table - attach the documentation/full user feedback to the report]

Date	Name	Organization	Type of user feedback (*e.g. technical, case study etc)*	Response time to address user request
20/12/2017	Esther Minning	Uni. Cardiff (UK)	Looking for tidal stream information around Isle of Wight	1 day (no further feedback form the user)
15/12/2017	bennis anne-claire	M2C, Caen University, France	Looking for data of wave buoy 62103 for September 2017	2 days with the support of Met No
	Holger Daedelow	Deutsches Zentrum für Luft- und Raumfahrt (DLR)	Technical support to optimize the customized ftp service for delivering (from Physics to DRL) selected platforms data	First interaction in October, then several other interactions in November and December to set the service up. More interaction are needed.
29/11/2017	Bertino Laurent (*)	NERSC (Norwey)	Technical - Argo buoy 6902671 there is a wrong salinity profile on 5th Oct	1 day to give feedback, 3 days to fix it.
9/11/2017	Ledenev Vyacheslav	STOCK COMPANY RESEARCH AND PROJECT DEVELOPMENT INSTITUTE OF MERCHANT MARINE «SOYUZMORNIIPROEKT» (Russia)	Technical – "I wanted to get information about the water level in St. Petersburg and Kronstadt from your service and compare with this data with data from other sources."	1 day
30/10/2017	Roy Anthony	CEA (France)	Technical –assessment of tidal energy in different places around the world – request for details about some tidal currents in IBI region	1 day preliminary feedback, 1 week full details with the support of Puertos del Estado and EuroGOOS Tide Gauges TT Chair
8/11/2017	Cristian Muñoz Mas	SOCIB (Spain)	Technical – instructions for exporting contents in different support format	1 day
23/10/2017	Jianting Du	Wind Energy Department, Technical University of Denmark	Technical – details on depth of recordings	1 day
18/10/2017	Andre Cattrijsse	VLIZ (Belgium)	Technical – current data in the Doverstrait	1 day
18/10/2017	Jun She	DMI (Denmark)	Technical – support to download wave data	1 day
18/10/2017	Mathieu Ouellet	DFO Canada	Technical - update of metadata for some Canadian platforms	1 day
18/10/2017	Isabel Lopes	Universidade Nova de Lisboa - Faculdade de Ciências Sociais e Humanas	Technical – need for some metadata	1 day
18/10/2017	Sjur Ringheim	IMR (Norwey)	Technical – wrong metadata assignments	1 day
17/10/2017	Marcin Wichoroswki	IPOAN (Poland)	Technical – Sopot data not flowing	1 day for feedback, 1 week to fix the bug in collaboration with SMHI
11/10/2017	Villu Kikas	TUT Department of Marine Systems	Technical – missing of coordinates data for one FB data	1 day for feedback, (coordinates were made available as soon as he – the provider – updated the dataset)
5/10/2017	LEVIER Bruno	MERCATOR OCEAN	Technical – problem with the HFR data field value	1 day feedback, 1 week to harmonized the field values in all the HFR datasets.

Table 25

*(*) from the request (id. 20170031): "*Hello, The web interface and visualization of Argo data is great"

In collaboration with TRUST-IT we are collecting feedback from selected known users.

6.Outreach and communication activities

Please list all the relevant communications activities or products you have developed/executed during this period (including presentations, lectures, trainings, demonstrations and development of communication materials such as brochures, videos, etc.). Relevant scientific and/or popular articles you know have been published using/referring to EMODnet should be reported under indicator in Section 7. [Provide information in table - Maximum 1 page]

Date	Location	Topic	Short Description
2-5/10/2017	Bergen (Norway)	EuroGOOS conference	International conference on Operational Oceanography. http://eurogoos.imr.no/resources/EuroGOOS_Conference_2017_BoA.pdf
16-19/10/2017	Athens (Greece)	SeaDataClud TTG+GA	SeaDataCloud Technical Task Group and annual General Assembly. Links and cooperation between SDC and EMODnet Physics were presented and discussed with partners. https://www.seadatanet.org/Events/Plenary-meetings/SDC-1st-annual-meeting
25/10/2017	Sopot (Poland)	HELCOM State & Conservation meeting	We presented the EMODnet program with a focus on EMODnet Physics and Data Ingestion services and features that can support HELCOM activities.
25-26/10/2017	Capri (Italy)	RITMARE project final meeting	Final meeting of the Italian RITMARE project on observing systems. EMODnet Physics was invited to show the European framework and discuss on data management and data access.
8-11/11/2017	Torrelodones (Spain)	TG NOISE	Meeting of the EU Technical Group on Underwater Noise (EU TG-NOISE).
14-16/11/2017	Athens (Greece)	MONGOOS annual meeting	Annual meeting of the Mediterranean Operational Network for the Global Ocean Observing System (MONGOOS). We gave an update about activities and collaboration between EMODnet Physics and Data Ingestion.
15-17/11/2017	Antwerp (Belgium)	EMODnet Heckathon	EMODnet Physics took part to the event and supported the participating teams.
20-24/11/2017	Las Palmas (Spain)	AtlantOS General Assembly	Annual Meeting of the AtlantOS project. EMODnet Physics is one of the key data integrators within WP7 and is powering the AtlantOS data portal.
20/11/2017	London (UK)	NOOS annual meeting	Annual meeting of the North Sea and European North West Shelf EuroGOOS ROOS.
23/11/2017	Copenhagen (Denmark)	OSPAR data management	It was a technical meeting with ICES people to discuss about more interoperability between EMODnet Physics and ICES data portal to make more OSPAR data accessible and visible into/by EMODnet Physics
20/12/2017	webcall	Deep Ocean Observing System – Data Management Working Group	EMODnet Physics was invited to present its experience on data management and discuss about mutual synergies.

Table 26

https://www.facebook.com/SOOSnews/posts/1564481993605019

7. Updates on Progress Indicators

Using the indicator as a header list the metrics collated and the time interval. If there was no activity to report leave the section under the indicator header blank.

Indicator 1 - Volume and coverage of available data and products

EMODnet Physics is providing access to both near real time and historical datasets from as recorded by different platform types. Some platforms are delivering data continuously (e.g. fixed stations, radars, ferryboxes), other platforms are delivering data as soon as they can (e.g. ARGO, glider) covering a defined time period, i.e. the mission. Since some platforms have ceased in operation only old data may be available. A platform generally measures one or more parameters.

Data are organised in files according the data age and more specifically the system is making available:

1. Daily files for the past 60 days. It is a sliding window on the latest 60 days of observations for real-time applications, data go towards automatic quality check/flag procedures and no authentication is required to download these data

2. Monthly files. By the end of the first week the month, for each platform, data for the previous month are organised into a single file. The file contains the best copy of the recent dataset according automatic quality check/flag procedures[25]. Some of these datasets download requires user authentication.

3. Long Term time series data files. Annually the monthly files are reprocessed (together with validated data from NODCs) into a single file creating a single best copy history file for each platform. Some of these datasets download requires user authentication.

4. Validated historical datasets. Organized in CDI - dataset files hosted by NODCs (validated data[26], requires user registration).

On top of these data, EMODnet Phyisics is developing and delivering operational products that are presenting a given parameters as recorded by a type of platform.

EMODnet Physics is also integrating some more static products based on the re-elaboration of physical parameters of the sea. Some of these products are developed by initiatives, infrastructures or programs collaborating with EMODnet Physics (e.g. Temperature climatology is developed by SeaDataNet). EMODnet Physics is re-organizing the data and data presentation to make them compatible to EMODnet Physics portal and make them available to more communities.

[25] http://www.emodnet-physics.eu/map/ARH/QualityCheck/recommendations_for_rtqc_procedures_v1_2.pdf
[26] Validated according the SeaDatanet Quality Check procedure - http://www.seadatanet.org/content/download/18414/119624/file/SeaDataNet_QC_procedures_V2_%28May_2010%29.pdf

Indicator 1.1 – Volume and coverage of available datasets[27]

@05/01/2018	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 27

The EMODnet Physics Dashboard is presenting details about the number of platform with a monthly file for the given month (http://www.emodnet-physics.eu/map/dashboard/Section20.aspx)

[27] http://www.emodnet-physics.eu/map/dashboard/Section16.aspx

Indicator 2 - Organisations supplying each type of data

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, etc) some are made available via common integrating infrastructures (e.g. CMEMS INSTAC and SDN).

For details on providers, see Annex 1[28]

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

Nothing to report

[28] http://www.emodnet-physics.eu/map/dashboard/Section1.aspx?typeplat=A

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 MixMind[29] (free version) – last DB update synch 30/10/2017

Indicator 4.1 - Data downloads[30] (period 01/10/2017 – 31/12/2017)

Country	NRT LATEST	NRT MONTHLY	REP.TIMESERIES	CDI	ALL	WEBSERVICE	TOT
Algeria	0	4	1	0	0	0	5
Belarus	0	0	0	0	0	7	7
Belgium	412	6	4	3	0	134567	134992
Brazil	0	0	0	0	0	2	2
Bulgaria	4	4	1	0	0	25	34
Canada	1	1	0	0	0	9	11
China	1	1	3	0	0	1060	1065
Czechia	0	0	0	0	0	18	18
Denmark	39	85	137	31	0	0	292
Estonia	0	2	2	0	0	1	5
Ethiopia	0	0	0	0	0	1	1
Finland	4	17	4	0	0	0	25
France	499	152	25	3	0	1197	1876
Germany	922	959	1369	9	0	125777	129036
Greece	224	17	9	0	0	3	253
Iceland	0	1	0	0	0	0	1
India	0	0	0	0	0	1	1
Ireland	23	16	1	0	0	38	78
Italy	37	68	56	0	0	3489	3650
Kazakhstan	0	0	0	0	0	7	7
Montenegro	0	0	0	0	0	4	4
Morocco	1	0	0	0	0	105694	105695
N.D.	3	20	17	0	0	1	41
Netherlands	0	185	2	1	0	6	194
Norway	6	1	0	0	0	9	16
Poland	1	0	0	0	0	1	2

[29] https://www.maxmind.com/en/geolite2-developer-package

[30] http://www.emodnet-physics.eu/map/dashboard/ReservedAreaSection13.aspx

Portugal	17	4758	3094	0	0	2563	10432
Republic of Lithuania	0	0	0	0	0	174	174
Republic of Moldova	0	0	0	0	0	3	3
Romania	11	5	2	0	0	10	28
Russia	29	25	15	6	0	112	187
Singapore	0	0	0	0	0	1	1
Slovakia	0	0	0	0	0	19	19
South Africa	1	0	0	0	0	18	19
Spain	16	23	162	0	0	0	201
Sweden	3	4	3	0	0	0	10
Switzerland	0	247	0	0	0	1	248
Thailand	0	0	0	0	0	22	22
Turkey	1	0	0	0	0	49	50
Ukraine	0	0	0	0	0	4	4
United Arab Emirates	0	1	1	0	0	1	3
United Kingdom	232	305	243	29	0	19	828
United States	1	4	9	0	0	4935	4949
totals	2488	6911	5160	82	0	379848	394489

Table 28

The figure for WebService call from Germany and Marocco have to be further investigated.

Indicator 4.2 - Most downloaded platforms – (period 01/10/2017 – 31/12/2017)[31]

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

Platform	Download	Web service	SeaDataNet	Total
Offshore location - Line Santander Site MG1	0	12638	0	12638
Offshore location - Line Santander Site MG2	0	12622	0	12622
NewlynTG	6	8613	1	8620
USNDBC_62050	11	7314	0	7325
StMarysTG	2	6591	0	6593
Offshore location - Eddystone	0	5268	0	5268
ADCP_18	0	5156	0	5156
ADCP_42	0	5151	0	5151
ADCP_26	0	5148	0	5148
ADCP_90	0	5141	0	5141

Table 29. List is ordered by "total"

Platform	Download	Web service	SeaDataNet	Total
MO	135	3	0	138
Europlatform	96	45	0	141
K13a	87	15	0	102
Arko	80	3	0	83

[31] http://www.emodnet-physics.eu/map/dashboard/ReservedAreaSection6.aspx

62103	79	2242	0	2321
Arkona	78	13	0	91
Helgoland	78	3	0	81
Brouwershaven	71	3	0	74
LTKiel	71	3	0	74
DarsserS	70	3	0	73

Table 30. Top 10, Manual Download

Platform	Download	Web service	SeaDataNet	Total
HuvudskarOst	52	5	10	67
Vaderoarna	22	16	8	46
Finngrundet	49	15	5	69
FinngrundetWR	25	11	5	41
Knollsgrund	24	39	5	68
HuvudskarOstWR	24	3	5	32
VaderoarnaWR	11	16	4	31
Skerries	6	3	4	13
Galway	58	3	3	64
Offshore area - COA	6	3	3	12

Table 31. Top 10 CDI requests.

Full report in the annex.

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 country[32] (period 01/10/2017 – 31/12/2017)

Country	Arctic, Barents, Greenland, Norwegian Sea	Atlantic, Bay of Biscay, Celtic Sea	Baltic Sea	Black Sea	Global	Mediterranean Sea	North Sea	Inland	all	total
Algeria	0	0	0	0	0	5	0	0	0	5
Belarus	0	0	0	0	0	0	0	7	0	7
Belgium	5	17359	91	10	0	460	1358	96716	0	115999
Brazil	0	2	0	0	0	0	0	0	0	2
Bulgaria	0	0	0	9	0	0	0	25	0	34
Canada	2	1	0	0	0	1	0	7	0	11
China	271	15	64	0	58	0	0	657	0	1065
Czechia	2	0	0	2	0	0	0	12	0	16
Denmark	1	1	246	0	3	2	5	27	0	285
Estonia	0	0	4	0	0	0	0	1	0	5
Ethiopia	0	0	0	0	0	0	0	1	0	1
Finland	0	0	25	0	0	0	0	0	0	25
France	408	196	42	6	57	96	239	485	0	1529
Germany	494	31370	698	31	49	70204	825	1028	0	104699
Greece	2	5	38	0	5	33	74	12	0	169
Iceland	0	0	0	0	0	0	0	0	0	0
India	0	0	0	0	0	0	0	1	0	1
Ireland	5	17	2	0	2	0	0	29	0	55
Italy	1	7	15	0	0	3574	0	45	0	3642
Kazakhstan	0	0	0	0	0	0	0	7	0	7
Montenegro	1	0	1	0	0	0	0	2	0	4
Morocco	7850	12809	1556	225	43690	4626	991	22085	0	93832
N.D.	0	5	16	5	1	3	1	0	0	31
Netherlands	4	0	1	0	0	0	80	27	0	112
Norway	2	1	0	0	0	3	3	7	0	16
Poland	1	0	0	0	0	1	0	0	0	2
Portugal	652	2696	197	9	1987	661	509	367	0	7078
Republic of Lithuania	0	0	0	0	0	0	0	174	0	174
Republic of Moldova	0	0	0	0	0	0	0	3	0	3
Romania	0	0	0	19	0	0	0	9	0	28
Russia	30	14	33	10	5	8	1	72	0	173
Singapore	1	0	0	0	0	0	0	0	0	1
Slovakia	0	0	0	0	0	0	0	19	0	19
South Africa	0	1	0	0	0	0	0	18	0	19
Spain	5	16	0	7	0	120	4	19	0	171
Sweden	0	0	10	0	0	0	0	0	0	10
Switzerland	1	5	46	0	0	0	93	5	0	150

[32] http://www.emodnet-physics.eu/map/dashboard/ReservedAreaSection5.aspx

Thailand	0	0	0	0	0	0	0	22	0	22
Turkey	0	0	0	0	0	1	0	49	0	50
Ukraine	0	0	0	0	0	0	0	4	0	4
United Arab Emirates	0	0	0	0	0	2	0	1	0	3
United Kingdom	10	299	2	0	0	4	46	138	0	499
United States	2151	218	363	48	311	137	9	1495	0	4732
totals	11899	65037	3450	381	46168	79941	4238	123576	0	334690

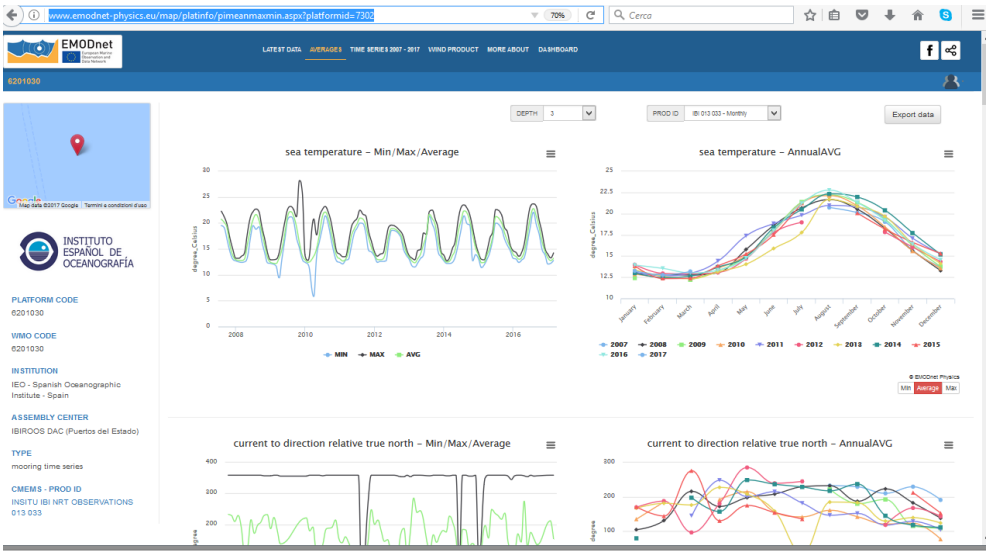
Table 32

Some countries were too active and data have to be further investigated to exclude the presence of robots.

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

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

AVGS is indicating how many times the "averages" tab in the platform page have been viewed. This page is available in each of the platforms that provide time series data (e.g. mooring buoys), e.g. platform 6200192[33]. To note that these plots have been reorganized in the portal pages and are now presented together with the near real time data (we are waiting for a decrease in the AVGS figure).

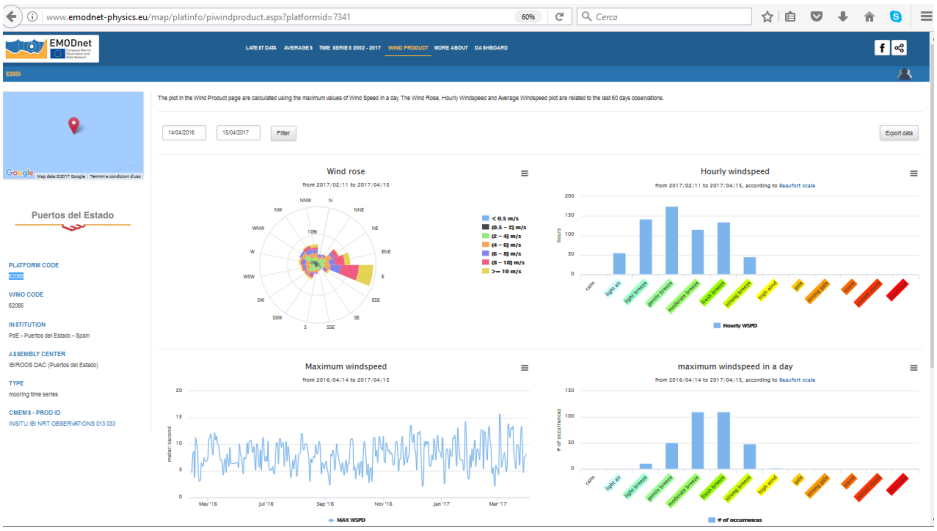


WIND is indicating how many times the "wind plot rose" tab in the platform page have been view. This page is only available for platforms[34] recoding wind data, e.g. platform 62085[35]

[33] http://www.emodnet-physics.eu/map/platinfo/pimeanmaxmin.aspx?platformid=7302

[34] http://www.emodnet-physics.eu/map/DefaultMap.aspx?sessionid=636277650091147219

[35] http://www.emodnet-physics.eu/map/platinfo/piwindproduct.aspx?platformid=7341



PR.XX are the product pages e.g. PR.AR[36] is the product page for the ARGO
WMS, WFS, WS SOAP, WS, SOS are the pages to access and use the EMODnet Physics M2M services

[36] http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=RT&type=AR

Indicator 6.1 - Pages and Services accesses[37] (period 01/10/2017 – 31/12/2017)

Country	MAP	AVGS	WIND	DASHB	PR.RD	PR.AR/PR	PR.DB	PR.FB	PR.GL	PR.MM	PR.ARCTIC	PR.ANTARCTIC	PSMSL	WMS	WFS	WSSOAP	WS	SOS	TOTAL
Albania	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Algeria	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Argentina	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Australia	178	0	0	1	2	2	1	0	0	1	0	10	4	4	1	0	1	0	205
Belarus	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	19
Belgium	306	4	2	1	9	5	4	0	1	1	4	4	0	12	11	5	65	0	434
Brazil	18	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	21
Bulgaria	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	51	0	55
Cambodia	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Canada	61	0	0	0	2	0	0	5	0	0	0	0	0	16	8	1	18	1	112
Cape Verde	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Chile	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
China	178	2	0	1	23	2	4	0	0	2	1	0	0	39	41	378	1207	17	1895
Colombia	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Croatia	7	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	9
Czechia	1	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	45	0	62
Denmark	156	0	1	1	0	0	0	1	0	0	3	0	0	3	1	0	1	0	167
Ecuador	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Estonia	15	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	2	0	20
Ethiopia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Finland	49	0	0	1	3	0	0	0	0	0	0	0	2	0	0	0	0	0	55
France	547	35	17	35	9	2	2	2	0	1	4	0	2	26	17	66	668	0	1433
Georgia	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Germany	298	2	6	6	9	0	0	0	1	2	0	6	0	38	27	124804	644	20	125863
Ghana	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Greece	111	0	4	2	2	1	0	0	0	0	0	0	1	7	3	2	6	1	140
Iceland	5	0	0	1	0	1	0	0	0	1	0	0	0	3	1	0	0	0	12
India	11	0	0	0	1	0	0	0	0	5	0	1	0	0	0	0	2	0	20
Indonesia	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Iran	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3

[37] http://www.emodnet-physics.eu/map/dashboard/Section25.aspx

Ireland	108	3	3	7	3	1	0	0	0	0	0	0	0	13	7	45	43	0	233
Israel	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Italy	256	10	6	5	43	3	3	1	2	2	0	0	0	23	3	9	15	1	382
Ivory Coast	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Jamaica	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
Japan	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Kazakhstan	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	17
Latvia	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Lebanon	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Luxembourg	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Malaysia	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Malta	6	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	8
Montenegro	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	7	0	10
Morocco	8	0	0	0	0	4	0	0	0	0	0	0	0	3	1	21	105729	0	105766
N.D.	104	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	8	0	118
Netherlands	117	1	0	0	4	0	1	0	3	5	1	3	0	8	4	13	15	0	175
New Zealand	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48
Nigeria	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Norway	62	0	0	1	0	0	1	0	0	1	17	1	3	3	2	0	13	0	104
Oman	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Paraguay	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Poland	19	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
Portugal	112	0	5	1	8	0	1	0	0	1	0	0	0	13	7	2572	7	0	2727
Qatar	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Republic of Korea	23	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	24
Republic of Lithuania	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	438	0	438
Republic of Moldova	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7
Romania	24	4	5	4	0	0	0	0	0	0	0	0	4	1	0	0	40	0	82
Russia	203	17	20	9	1	1	0	2	0	0	2	0	0	6	9	3	174	1	448
Saudi Arabia	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4
Serbia	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Singapore	59	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	60
Slovakia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	0	40
Slovenia	11	0	0	0	7	2	0	0	1	1	1	0	0	0	0	0	0	0	23
South Africa	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	14
Spain	239	8	4	23	9	1	1	0	4	0	0	2	5	2	1	3	1	0	303

Sweden	124	0	0	0	0	0	1	3	0	8	0	2	0	0	0	0	0	0	138
Switzerland	19	0	0	1	0	0	0	0	0	0	0	1	0	2	1	0	2	0	26
Thailand	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0	44
Tunisia	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Turkey	12	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	99	0	119
Ukraine	742	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	746
United Arab Emirates	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3
United Kingdom	344	15	49	16	6	2	0	1	1	1	3	0	1	19	10	25	76	7	576
United States	889	0	3	1	56	4	4	12	9	8	5	4	0	57	17	40	357	0	1466
Uruguay	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Vietnam	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
TOTAL	5560	102	126	129	209	32	23	28	22	64	41	34	23	298	172	127987	109871	48	244769

Indicator 6.2 - Landing portal accesses[38] (period 01/10/2017 – 31/12/2017)

Country	About	Admin	Associ.	Backgr.	Catalo.	Cookie.	Docume.	Google.	HelpDe.	Home	Host	Host S.	How to.	Insert.	Login	Meetin.	Near R.	News	News -.	Pages	QA/QC.	Schedu.	Terms.	TestHo.	User A.	User's.	Videos.	TOTAL
Albania	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Algeria	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3
Australia	0	0	0	1	0	0	0	0	0	7	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	11
Austria	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Barbados	0	0	0	0	0	0	0	0	0	5	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Belgium	0	0	2	4	5	0	3	0	0	128	0	0	0	0	0	0	0	2	0	0	2	0	4	0	0	2	0	152
Brazil	0	0	0	0	6	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
Bulgaria	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Cameroon	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Canada	0	0	5	5	11	2	5	0	0	96	0	0	5	0	4	0	4	3	0	0	5	0	4	0	0	5	3	157
Cape Verde	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
China	3	0	16	10	23	27	16	0	8	130	0	0	17	0	174	0	13	4	0	0	13	0	16	0	0	14	12	496
Croatia	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	6
Czechia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2

[38] http://www.emodnet-physics.eu/map/dashboard/Section30.aspx

Denmark	0	0	1	1	1	0	0	0	0	41	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	46
Estonia	0	0	0	0	1	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Finland	0	0	0	0	0	1	0	0	0	12	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	14
France	1	0	2	1	10	2	8	0	0	206	0	0	1	0	0	1	1	1	0	0	2	0	9	0	0	3	1	249
Gambia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Germany	3	0	11	8	11	10	11	0	0	65	0	0	6	0	37	1	7	0	0	0	10	0	7	0	0	10	9	206
Greece	0	0	1	0	3	1	0	0	0	73	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	80
Hong Kong	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Iceland	0	0	0	0	0	0	0	0	0	6	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	2	0	11
India	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Indonesia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Ireland	1	0	6	9	9	8	11	0	0	163	0	0	7	0	34	0	7	0	0	0	6	0	11	0	0	7	5	284
Israel	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3
Italy	0	0	2	4	19	1	1	0	0	204	0	0	5	0	0	0	3	1	0	0	1	0	4	0	0	3	6	254
Latvia	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Luxembourg	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Malta	0	0	0	1	0	0	0	0	0	8	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	10
Martinique	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Montenegro	0	0	0	0	1	0	0	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6
Morocco	0	0	0	0	2	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
N.D.	0	0	1	0	2	1	0	0	0	14	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
Netherlands	0	0	0	1	6	0	4	0	0	67	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	80
New Zealand	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Norway	0	0	0	0	0	0	0	0	0	29	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	30
Oman	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Poland	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	11
Portugal	0	0	2	2	1	0	1	0	0	86	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	95
Republic of Korea	0	0	0	0	1	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Republic of Lithuania	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Romania	0	0	0	0	1	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	6
Russia	2	0	7	1	4	6	7	0	0	77	0	0	1	0	4	0	1	0	0	0	1	0	4	0	0	7	0	122
Saudi Arabia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
Singapore	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Slovenia	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Spain	0	0	5	2	7	0	0	0	0	674	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	689
Sweden	0	0	1	0	1	0	0	0	0	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44

Switzerland	0	0	0	2	5	0	0	0	0	15	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	24
Taiwan	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Tunisia	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Turkey	0	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Ukraine	0	0	3	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	7
United Arab Emirates	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
United Kingdom	1	0	1	3	4	0	6	0	0	139	0	0	2	0	0	0	2	0	0	0	0	0	5	0	0	2	0	165
United States	7	1	24	20	54	45	24	1	2	502	3	1	44	10	41	4	44	31	6	1	21	1	62	4	2	22	10	987
Uruguay	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL	18	1	91	75	189	104	97	1	10	2872	3	1	98	10	294	8	86	48	7	1	64	1	135	4	2	79	49	4348

Table 33

The Piwik script is also active.

Indicator 7 - List of what the downloaded data has been used for (divided into categories e.g. Government planning, pollution assessment and (commercial) environmental assessment, etc.)

The team is working on a system to get this information. For the time being is not available yet.

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

EMODnet Physics is offering different web-services and machine-to-machine data distribution services. By means of a GeoServer based infrastructure, EMODnet Physics is offering OGC compliant catalogues and services (WMS, WFS, etc.). The following links redirect to the landing page of each of the available service and presents the available features and services in details.

- ***UniqueURL***

www.emodnet-physics.eu/map/spi.aspx

e.g.

www.emodnet-physics.eu/map/platinfo/pidashboard.aspx?platformcode=arkona

www.emodnet-physics.eu/map/platinfo/pidashboard.aspx?platformid=8427

- ***API (REST, SOAP) → web services [latest 60 days of data]***

www.emodnet-physics.eu/map/Service/WSEmodnet2.aspx

www.emodnet-physics.eu/map/service/WSEmodnet2.asmx

- ***OGC (WMS, WFS, …) → postgresql + geoserver***

www.emodnet-physics.eu/map/service/GeoServerDefaultWMS

www.emodnet-physics.eu/map/service/GeoServerDefaultWFS

geoserver.emodnet-physics.eu/geoserver/web

- ***Opendap/THREDDS [HFR data, Ice, climatologies]***

thredds.emodnet-physics.eu/thredds/catalog.html

- ***Widgets***

www.emodnet-physics.eu/Map/Charts/PlotDataTimeSeries.aspx?paramcode=TEMP&platid=8427&timerange=7

- ***Sextant***

www.emodnet-physics.eu/portal/Catalogue

- ***GeoServer***

geoserver.emodnet-physics.eu/geoserver/web/wicket/bookmarkable/org.geoserver.web.demo.MapPreviewPage?1

- ***ERDDAP (new) → latest 60 days***

erddap.emodnet-physics.eu

Indicator 9 – List of identified publication 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. Gorringe, 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; Gorringe, Patrick; Manzella, Giuseppe; Maudire, Gilbert; Novellino, Antonio; Pagnani, Maureen; Petersson, Sian; Pouliquen, Sylvie; Rickards, Lesley; Schaap, Dick; Tijsse, 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 Gorringe, 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	HF Radar Supporting Blue Growth in NW Europe: The Brahan Project	HF Radar Supporting Blue Growth in NW Europe: The Brahan	

			, B. Pereira , A. Alonso-Martirena		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; Sagarminaga, 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., Gordoa, 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; Gorringe, Patrick; Thjisse, 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 *Dinophysis* 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 Gorringe, , Antonio Novellino	The European Marine Data and Observation Network (EMODnet): Your Gateway to European Marine and Coastal Data	Ocean Engineering & Oceanography, Vol. 6, pp 31-46, 2016	

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. CHALKIOPOULOS, 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 Sciemce, 20 January 2017	
2017	Conference	Yes	Novellino, Antonio; Gorringe, Patrick; Schaap, Dick; Pouliquen, Sylvie; Rickards, Lesley; Thijsse, 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.194371S	
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 Fernando, Jandt Simon, Ringheim Lid Sjur, Hammarklint Thomas, Marinova Veselka	System Requirements Document (updated version of the 2016 report)	CMEMS-INS-SRD	DOI:10.13155/40846
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

8. Annex

Description of the EMODnet Physics_TrimonthlyReport_XX (Excel File)

The EMODnet Physics portal makes available the following data type:

- **Latest data** → freely available up to 60 days (automatic quality check/flag procedures)
- **Recent data** → organized in monthly data files (post 60 days, automatic quality check/flag procedures[39], requires user registration)
- **Long Term time series data** → organized one data file for platform (automatic quality check/flag procedures, requires user registration)
- **Historical validated data** → organized in CDI - dataset files hosted by NODCs (validated data[40], requires user registration).

The following table lists the full data availability, in particular it lists the typology of platform (MO= mooring buoy/fixed platform; FB=ferrybox; GL= glider, DB = drifting buoy, AR = Argo), whether it is providing data (NRT true/false), recent data time coverage (from to) and number of files (if the first number is lower than the second there are temporal gaps in the monthly data files; if the first number is higher than the second the platform hosts different data acquisition sets – e.g. Arkona), long term time series files (from to), if there are historical validated data for that platform (CDI) in SeaDataNet-NODCs network (from to, and the number of available CDIs covering the specified time range).

Summary table of all the data (latest, recent, long term and validated historical) by Country, Organization, Platform type and Data availability

Column name	Description
Platform ID	EMODnet Physics internal code to identify the platform
Latitude	Latitude
Longitude	Longitude
Country	Country of the data provider
Data provider	Name of the data provider
EdmoCode	EDMO code of the data provider
EdmoDescr	EDMO full description
Platform	Platform name
Type	Typology of the plaform (AR, DB, MO, GL, RD, FB, …)
Data assembly center	Name of the DAC
NODC	National Oceanographic Data Center or SeaDataNet node in charge for the CDIs

[39] http://www.emodnet-physics.eu/map/ARH/QualityCheck/recommendations_for_rtqc_procedures_v1_2.pdf

[40] Validated according the SeaDatanet Quality Check procedure - http://www.seadatanet.org/content/download/18414/119624/file/SeaDataNet_QC_procedures_V2_%28May_2010%29.pdf

Recent data From - To	Time coverage of the Near Real Time data as aggregated in monthly files
Recent data #files	Number of NRT.Monthly files
Long term TS From - To	Time coverage of the REPROCESSED NRT data as aggregated in REP files
CDI dataset ID - validated historical data From - To	Time coverage of the CDIs for the specified platform
CDI dataset ID #files	Number of CDIs for the specified platform
State	EMODnet Physics Internal flag
Operational	Platform is delivering operational data? YES/NO
Water Temperature	X in the cell, if the platform is delivering the parameter
Water salinity	X in the cell, if the platform is delivering the parameter
Currents	X in the cell, if the platform is delivering the parameter
Light Attenuation/ Absorption / Fluorescence/ Back Scattering	X in the cell, if the platform is delivering the parameter
Sea Level	X in the cell, if the platform is delivering the parameter
Atmospheric	X in the cell, if the platform is delivering the parameter
Other Parameters	X in the cell, if the platform is delivering the parameter
Water conductivity/ BioGeoChemical	X in the cell, if the platform is delivering the parameter
Waves	X in the cell, if the platform is delivering the parameter
Winds	X in the cell, if the platform is delivering the parameter
River	X in the cell, if the platform is delivering the parameter

Where N.D. means that metadata or data is not available yet or it is under check procedure.
M: YY/XX → if YY = XX there are no temporal gaps in monthly time series

EMODnet Physics Products

Operational products:

ARGO	
Water column Temperature	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=RT&type=AR&param=TEMP
Water column salinity	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=RT&type=AR&param=PSAL
Drifting Buoys	
Sea Surface Temperature	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=RT&type=DB&param=TEMP
Sea Surface Salinity	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=RT&type=DB&param=PSAL
Pressure at Sea Surface	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=RT&type=DB&param=ATMS
Temperature in the bulb	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=RT&type=DB&param=DRYT
Ferrybox and Ships	
Sea Surface Temperature	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=RT&type=FB&param=TEMP
Sea Surface Salinity	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=RT&type=FB&param=PSAL
Sea Surface Chlorophylls	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=RT&type=FB&param=CHLT
Tide Gauge	
Relative Sea Level Trend (PSMSL)	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=SL&type=PSMSL
Sea Level Trend Anomalies (PSMSL)	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=SL&type=PSMSLA
HF Radar	
Sea Surface Currents (direction and intensity)	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=RD

Table 34

Sea Ice products: Sea Ice products are both for operational (daily information on the ice is also made available on the WMS/WFS service) and (re)analysis use (e.g. long term time-series and trends).

Arctic Sea Ice	
Ice concentration	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=ICE&Antarctic=0&param=Concentration
Ice edge	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=ICE&Antarctic=0&param=Edge
Ice type	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=ICE&Antarctic=0&param=Type
Antarctic Sea Ice	
Ice concentration	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=ICE&Antarctic=1&param=Concentration
Ice edge	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=ICE&Antarctic=1&param=Edge

Ice type	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=ICE&Antarctic=1&param=Type

Table 35

EMODnet Physics is using the CMEMS - SEAICE_GLO_SEAICE_L4_NRT_OBSERVATIONS_011_001 product to generate the dynamic maps and parameters time series.

Other Products

Marine Mammals[41]	
Water column temperature	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=RT&type=MM&param=TEMP
Water column salinity	http://www.emodnet-physics.eu/map/Products/V2/PRODUCTS.aspx?PRODTYPE=RT&type=MM&param=PSAL
Sea Level Trends	
PSMSL	http://www.emodnet-physics.eu/map/Products/PRPSMSL.aspx

Table 36

EMODnet Physics is using the Permanent Service for Mean Sea Level database to make available the sea level trends product

Climatology products

Arctic	
Temperature from year 1900 to year 2014	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=CL&type=Temperature_L2&param=http://thredds.emodnet-physics.eu/thredds/wms/SeaDataNetHidden/Arctic/Temperature.19002014.4Danl.nc?&CLtype=ARCTIC
Salinity from year 1900 to year 2014	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=CL&type=Salinity_L2&param=http://thredds.emodnet-physics.eu/thredds/wms/SeaDataNetHidden/Arctic/Salinity.19002014.4Danl.nc?&CLtype=ARCTIC
Atlantic	
Temperature from year 1900 to year 2013	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=CL&type=Temperature_L2&param=http://thredds.emodnet-physics.eu/thredds/wms/SeaDataNetHidden/Atlantic/Temperature.19002013.4Danl.nc?&CLtype=ATLANTIC
Salinity from year 1900 to year 2013	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=CL&type=Salinity_L2&param=http://thredds.emodnet-physics.eu/thredds/wms/SeaDataNetHidden/Atlantic/Salinity.19002013.4Danl.nc?&CLtype=ATLANTIC
Baltic	

[41] The MEOP product let the user to see animation of the parameter along the animal route for the past 10 years. This product was ingested in cooperation with EMODnet Data Ingestion

Temperature from year 1900 to year 2012	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=CL&type=Temperature_L2&param=http://thredds.emodnet-physics.eu/thredds/wms/SeaDataNetHidden/Baltic/Temperature.19002012.4Danl.nc?&CLtype=BALTIC
Salinity from year 1900 to year 2012	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=CL&type=Salinity_L2&param=http://thredds.emodnet-physics.eu/thredds/wms/SeaDataNetHidden/Baltic/Salinity.19002012.4Danl.nc?&CLtype=BALTIC
Black Sea	
Temperature from year 1900 to year 2013	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=CL&type=Temperature_L2&param=http://thredds.emodnet-physics.eu/thredds/wms/SeaDataNetHidden/BlackSea/Temperature.4Danl.nc?&CLtype=BLACKSEA
Salinity from year 1900 to year 2013	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=CL&type=Salinity_L2&param=http://thredds.emodnet-physics.eu/thredds/wms/SeaDataNetHidden/BlackSea/Salinity.4Danl.nc?&CLtype=BLACKSEA
Mediterranean Sea	
Temperature from year 1900 to year 2013	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=CL&type=Temperature_L2&param=http://thredds.emodnet-physics.eu/thredds/wms/SeaDataNetHidden/MediterraneanSea/Temperature.19002013.4Danl.nc?&CLtype=MEDITERRANEANSEA
Salinity from year 1900 to year 2013	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=CL&type=Salinity_L2&param=http://thredds.emodnet-physics.eu/thredds/wms/SeaDataNetHidden/MediterraneanSea/Salinity.19002013.4Danl.nc?&CLtype=MEDITERRANEANSEA
North Sea	
Temperature from year 1975 to year 2005	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=CL&type=TEMP_L2&param=http://thredds.emodnet-physics.eu/thredds/wms/SeaDataNetHidden/NorthSea/JRA8_TEMP.19752005.4Danl.nc?&CLtype=NORTHSEA
Salinity from year 1975 to year 2005	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=CL&type=PSAL_L2&param=http://thredds.emodnet-physics.eu/thredds/wms/SeaDataNetHidden/NorthSea/JRA8_PSAL.19752005.4Danl.nc?&CLtype=NORTHSEA

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Monthly Gridded T&S products

Temperature from year 1990 to year 2014	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=CL&type=TEMP&param=http://tds0.ifremer.fr/thredds/wms/CORIOLIS-GLOBAL-CORA05.0-OBS_FULL_TIME_SERIE?&CLtype=CMEMS
Practical salinity from year 1990 to year 2014	http://www.emodnet-physics.eu/Map/Products/V2/PRODUCTS.aspx?PRODTYPE=CL&type=PSAL&param=http://tds0.ifremer.fr/thredds/wms/CORIOLIS-GLOBAL-CORA05.0-OBS_FULL_TIME_SERIE?&CLtype=CMEMS

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