EMODnet Thematic Lot n°3 – Physics

EASME/EMFF/2020/3.1.11/Lot4/SI2.838612

Start date of the project: 23/08/2023 (24+24 months)

Centralisation Phase

Quarterly Progress Report (Q2.2024)

Reporting Period: 01/04/2024 – 30/06/2024

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Contents

1. Highlights in this quarter

Task 1: Maintain and improve a common method of access to data held in repositories

Now that the new central portal is operational, Task 1 is primarily focused on improving the data flow towards this new central portal interface. This consists of refining the back-end interfaces to serve the central portal requirements. Now, the focus is to keep updating the organization of metadata, data, data collections and products in the Physics backend.

As already reported, we are considering the following definitions: 1) data is a series of values sampled by an in-situ platform, 2) data collection is a grouping of similar in situ data, 3) product is the outcome of a reprocessing method. The outcome of a numerical model (that uses in situ data) is a product. The result of the QC/QF procedure is a qualified dataset or data collection. In-situ data are harmonized and normalized in terms of metadata, and each new data source may contribute to one or more data collections. Data collections are organized by a

Data collections are organized according to the dedicated controlled vocabulary, P33[1] (hosted in NVS-BODC service), and each P33 data collection includes two (e.g., one for time series, one for profiles) or more P01 collections.

For example, the Water Salinity and Conductivity theme (NVS::P33::WARERSALINITY) includes: sea water salinity (NVS::01::PSAL), sea water electrical conductivity (NVS::01::CNDC), sea water density (NVS::01::DENS), and sound velocity in sea water (NVS::01::SVEL). For each parameter, we may have time series or profiles.

Table 1 lists the available P33 collections[2]

Table 1. Availble P33 collections:

ERD_EP_CARBONSYSTEM_INSITU_METADATA	EMODnet Physics - Collection of Carbon System (SDN:P33::CARBONSYSTEM) variables - MultiPointsObservation - METADATA
ERD_EP_CURRENTS_INSITU_METADATA	EMODnet Physics - Collection of Currents (SDN:P33::CURRENTS) variables - MultiPointsObservation - METADATA
ERD_EP_TS_DOXY_NRT_METADATA	EMODnet Physics - Collection of dissolved oxygen (DOXY) TimeSeries - MultiPointTimeSeriesObservation - METADATA
ERD_EP_DISSOLVEDOXYGEN_INSITU_METADATA	EMODnet Physics - Collection of Dissolved Oxygen (SDN:P33::DISSOLVEDOXYGEN) variables - MultiPointsObservation - METADATA
ERD_EP_TS_VGHS_NRT_METADATA	EMODnet Physics - Collection of generic significant wave height (Hs) (VGHS) TimeSeries - MultiPointTimeSeriesObservation - METADATA
ERD_EP_METEOROLOGICAL_INSITU_METADATA	EMODnet Physics - Collection of Meteorological (SDN:P33::METEOROLOGICAL) variables - MultiPointsObservation - METADATA
ERD_EP_OPTICAL_INSITU_METADATA	EMODnet Physics - Collection of Optical Properties (SDN:P33::OPTICAL) variables - MultiPointsObservation - METADATA
EP_PLATFORMS_METADATA	EMODnet Physics - Collection of platforms metadata
ERD_EP_PR_PSAL_NRT_METADATA	EMODnet Physics - Collection of practical salinity (PSAL) Profiles - MultiPointProfilesObservation - METADATA
ERD_EP_TS_PSAL_NRT_METADATA	EMODnet Physics - Collection of practical salinity (PSAL) TimeSeries - MultiPointTimeSeriesObservation - METADATA
ERD_EP_RIVER_INSITU_METADATA	EMODnet Physics - Collection of River (SDN:P33::RIVER) variables - MultiPointsObservation - METADATA
ERD_EP_TS_RVFL_NRT_METADATA	EMODnet Physics - Collection of river flow rate (RVFL) TimeSeries - MultiPointTimeSeriesObservation - METADATA
ERD_EP_TS_DENS_NRT_METADATA	EMODnet Physics - Collection of sea density (sigma-theta) (DENS) TimeSeries - MultiPointTimeSeriesObservation - METADATA

[1] https://vocab.nerc.ac.uk/collection/P33/current/.

[2] https://data-erddap.emodnet-physics.eu/erddap/index.html.

ERD_EP_SEALEVEL_INSITU_METADATA	EMODnet Physics - Collection of Sea Level (SDN:P33::SEALEVEL) variables - MultiPointsObservation - METADATA
ERD_EP_PR_TEMP_NRT_METADATA	EMODnet Physics - Collection of sea temperature (TEMP) Profiles - MultiPointProfilesObservation - METADATA
ERD_EP_TS_TEMP_NRT_METADATA	EMODnet Physics - Collection of sea temperature (TEMP) TimeSeries - MultiPointTimeSeriesObservation - METADATA
ERD_EP_TS_TEMP_DOXY_NRT_METADATA	EMODnet Physics - Collection of sea temperature from oxygen sensor (TEMP_DOXY) TimeSeries - MultiPointTimeSeriesObservation - METADATA
ERD_EP_PR_PSAL_TEMP_NRT_METADATA	EMODnet Physics - Collection of sea temperature, practical salinity (PSAL_TEMP) Profiles - MultiPointProfilesObservation - METADATA
ERD_EP_TS_PSAL_TEMP_NRT_METADATA	EMODnet Physics - Collection of sea temperature, practical salinity (PSAL_TEMP) TimeSeries - MultiPointTimeSeriesObservation - METADATA
ERD_EP_TS_CHLT_NRT_METADATA	EMODnet Physics - Collection of total chlorophyll (CHLT) TimeSeries - MultiPointTimeSeriesObservation - METADATA
ERD_EP_WATERSALINITY_INSITU_METADATA	EMODnet Physics - Collection of Water Salinity and conductivity (SDN:P33::WATERSALINITY) variables - MultiPointsObservation - METADATA
ERD_EP_WATERTEMPERATURE_INSITU_METADATA	EMODnet Physics - Collection of Water Temperature (SDN:P33::WATERTEMPERATURE) variables - MultiPointsObservation - METADATA
ERD_EP_TS_VDIR_NRT_METADATA	EMODnet Physics - Collection of wave direction rel. true north (VDIR) TimeSeries - MultiPointTimeSeriesObservation - METADATA
ERD_EP_WAVES_INSITU_METADATA	EMODnet Physics - Collection of Waves (SDN:P33::WAVES) variables - MultiPointsObservation - METADATA
ERD_EP_WINDS_INSITU_METADATA	EMODnet Physics - Collection of Winds (SDN:P33::WINDS) variables - MultiPointsObservation - METADATA

Regarding in-situ data provision, EMODnet Physics now provides access to: 18462 ARGO profiles, 28341 Drifting Buoys observations, 2651 Glider missions, 6571 Moorings datasets, 1635 operational River Station data, 330 Underway Data Vessels records, 5074 Tide Gauge readings, and more than 5,000,000 data from CTD/XBT/bottles, etc.

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

A new global climatology for salinity and temperature, in-situ wave stations and in situ sea level stations layers are now published in the production system. During the next period more in situ layer products will be pushed to the staging system. Annex reports the updated situation.

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

Activities were focused on supporting Ingestion to link in WHOS data (which need further processing to be fully included in data collections) and in promoting the adoption of ERDDAP as the tool for implementing native machine-to-machine interoperability (also in support to some projects, the Italian ITINERIS and the RHE-MEDiation Horizon Europe projects willing to deploy the system).

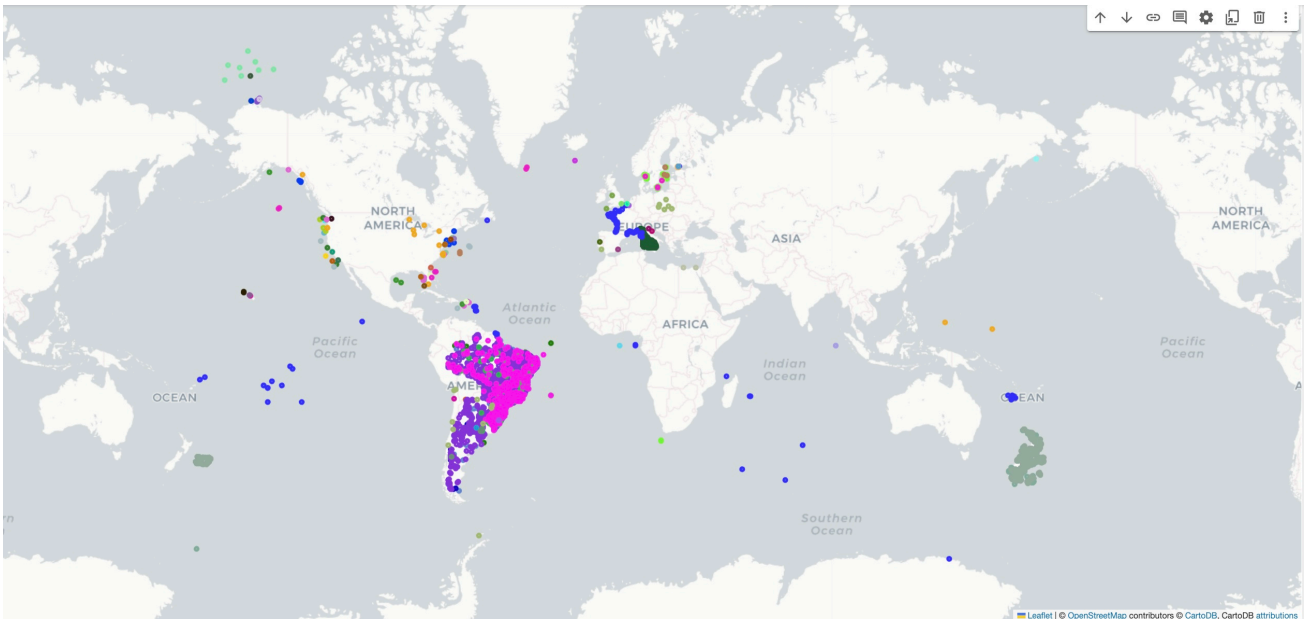
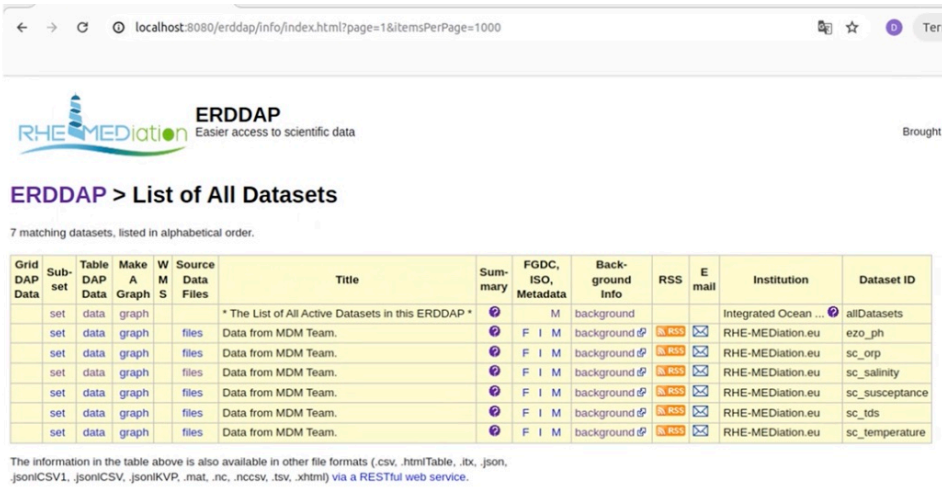


Figure 1. Snapshot of the ingestin of as-is datasets where WHOS data are in pink



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			Integrated Ocean ...	allDatasets
	set	data	graph		files	Data from MDM Team.		F I M	background	RSS		RHE-MEDiation.eu	ezo_ph
	set	data	graph		files	Data from MDM Team.		F I M	background	RSS		RHE-MEDiation.eu	sc_orp
	set	data	graph		files	Data from MDM Team.		F I M	background	RSS		RHE-MEDiation.eu	sc_salinity
	set	data	graph		files	Data from MDM Team.		F I M	background	RSS		RHE-MEDiation.eu	sc_susceptance
	set	data	graph		files	Data from MDM Team.		F I M	background	RSS		RHE-MEDiation.eu	sc_tds
	set	data	graph		files	Data from MDM Team.		F I M	background	RSS		RHE-MEDiation.eu	sc_temperature

Figure 2. RHE-MEDiation prj working on ERDDAP

Task 4. Contribute data, data products and content to a central portal that allows users to find, view and download data and data products

Task 4 continued improving the user experience when downloading in situ data from EMODnet Physics layers. Obsolete products were removed. All these activities are reported on JIRA tickets. (see section 2)

Task 5. Contributing content to dedicated spaces in Central Portal

Static contents on EMODnet Physics consolidated and published: https://emodnet.ec.europa.eu/en/physics

Other means of supporting the central space include contributing news, posting on social media, organizing events, and providing materials (documents, presentations, feedback) when necessary.

Task 6. Ensure the involvement of regional sea conventions

We continued the dialogue with the "Catalogue of Underwater Sound Signatures from Shallow Seas" project to review the metadata and datasets organization for an easy and straightforward integration under the EMODnet Physics area under the central portal.

Task 7. Contribute to the implementation of EU legislation and broader initiatives for open data

We continued the dialogue with the Ocean Best Practice System (OBPS) [3] to facilitate clearer connections between the data and products (accessible under the Physics section) and the application of OBP for data collection. Moreover, we signed a MoU with SSI International that is leading an action to facilitate (citizen science) diving data towards EMODnet Physics.

The collaboration and support of EMODnet (Physics) to CMEMS for organizing and facilitating the access to in situ data was largely awarded during the CMEMS General Assembly (4-5/06/2024).

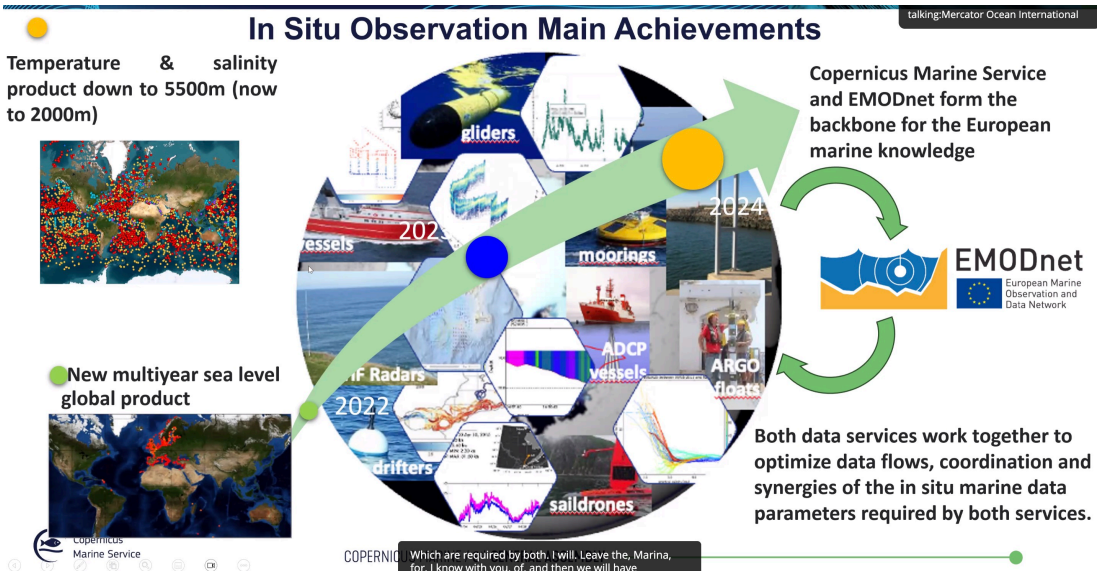


Figure 3. Silde from In Situ TAC achievements during the CMEMS GA

Task 8. Monitor quality/performance and deal with user feedback

EMODnet Physics contents (accessible at https://emodnet.ec.europa.eu/en/physics) are of interest, but these static contents are not the most visited among EMODnet sections. Internal monitoring indicates that users interacting with EMODnet Physics data (every time a platform page is opened we have a query on ERDDAP, which is monitored by logs) are about 10 times more numerous than those interacting with the static content pages. Concerning the requests for support that are coming from the CP, these are tracked and managed with the JIRA system (see section 2 for details).

[3] https://www.oceanbestpractices.org/

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Status of the Milestones and Deliverables listed in the workplan					
Milestone/Deliverable in numerical order	**WP**	**Date due**	**Status (To do/ Delivered/ Delayed)**	**Date delivered**	**If Delayed: reason for delay and expected delivery date**
D1.01: Annual assembly (Q2.2024)	WP1	31/12/2024	Delivered	27/11/2023	27th Nov 2023, back-to-back the EMODnet Jamboree
D1.02: Annual assembly (Q2.2025)	WP1	31/12/2025			
D1.03: EMODnet SC (Q4.2023)	WP1	31/12/2023	Delivered	01/12/2023	1st Dec 2023, back-to-back the EMODnet Jamboree
D1.04: Quarterly report Q3.2023	WP1	15/10/2023	Delivered	15/10/2023	
D1.05: EMODnet TWG (Q4.2023)	WP1	31/12/2023	Delivered	18/10/2023	18th Oct online
D1.06: EMODnet SC (Q1.2024)	WP1	31/12/2024	Delivered	29/04/2024	
D1.07: EMODnet TWG (Q1.2024)	WP1	31/12/2024	Delivered	13/03/2024	
D1.06.2: EMODnet SC (Q2.2024)	WP1	31/12/2024			
D1.07.2: EMODnet TWG (Q2.2024)	WP1	31/12/2024			
D1.08: EMODnet SC (Q2.2025)	WP1	31/07/2025			
D1.09: EMODnet TWG (Q2.2025)	WP1	31/07/2025			
D1.10: EMODnet event (Q4.2025)	WP1	31/07/2025			
D1.11: Quarterly report Q4.2023	WP1	15/01/2024	Delivered	15/01/2024	
D1.12: Quarterly report Q1.2024	WP1	15/04/2024	Delivered	15/04/2024	
D1.13: Quarterly report Q2.2024	WP1	15/07/2024	Delivered	15/07/2024	This report
D1.14: Quarterly report Q3.2024	WP1	15/10/2024			

Status of the Milestones and Deliverables listed in the workplan					
Milestone/Deliverable in numerical order	**WP**	**Date due**	**Status (To do/ Delivered/ Delayed)**	**Date delivered**	**If Delayed: reason for delay and expected delivery date**
D1.15: Quarterly report Q4.2024	WP1	15/01/2025			
D1.16: Quarterly report Q1.2025	WP1	15/04/2025			
D1.17: Quarterly report Q2.2025	WP1	15/07/2025			
D1.18: Annual progress report	WP1	23/08/2024			
D1.19: Final progress report	WP1	22/08/2025			
D1.20: Handover note	WP1	22/08/2025			
D1.21: Guideline on data ingestion procedures for new real time and near real time streams v.2024	WP1	23/08/2024			
D1.22: Guideline on data ingestion procedures for new real time and near real time streams v.2025	WP1	22/08/2025			
D1.23: Contribution to central space with background information and EMODnet Physics contents, Contribution to the EMODnet Annual report	WP1	22/08/2025			
D1.24: TGs - RSCs events attendance	WP2	22/08/2025			
D2.01: Data sources gap analysis v.2024	WP2	22/08/2024			
D2.02: Data sources gap analysis v.2025	WP2	22/08/2025			
D2.03: EMODnet Physics data management including metadata and metadata governance v.2024	WP2	22/08/2024			
D2.04: EMODnet Physics data management including metadata and	WP2	22/08/2025			

Status of the Milestones and Deliverables listed in the workplan					
Milestone/Deliverable in numerical order	**WP**	**Date due**	**Status (To do/ Delivered/ Delayed)**	**Date delivered**	**If Delayed: reason for delay and expected delivery date**
metadata governance v.2025					
D2.05: EMODnet Physics List of products v.2024	WP2	22/08/2024			
D2.06: EMODnet Physics List of products v.2025	WP2	22/08/2025			
D3.01: Tools and methods to implement interoperability v.2024	WP3	22/08/2024			
D3.02: Tools and methods to implement interoperability v.2025	WP3	22/08/2025			
D3.03: Maintenance and update of the back-end services and infrastructure	WP3	-			This activity is continuous and special actions or issues (if any) will be reported in the quarterly reports.

2. Identified issues: status and actions taken

A. Priority issue(s) identified and communicated by CINEA/ DG MARE/ SECRETARIAT				
Priority issue	**Status (Pending/ Resolved)**	**Action(s) taken/ remaining actions planned**	**Date due**	**Date resolved**
EM-829 Map physics layers used in the Atlas from old physics geoserver to new physics geoserver	Resolved	Layers used in the European Atlas made available on the new Physics GeoServer		18/06/2024 3:31 PM
EM-842 Arrange dimensions for TSM layers	Resolved	Rearrange dimension of Baltic TSM, Mediterranean TSM		08/04/2024 11:04 AM
EMODNET-1623 EMODnet analytics - PLOCAN	Resolved	It has not been possible to provide support because of the dismantling of the analysis services. New metrics (from the CP) have to be identyfied.		13/06/2024
EMODNET-1772 Question for time-series of Discharge Data	Resolved	ERDAPP connection planned for the beginning of April		02/05/2024
EMODNET-1799 a question over in-situ wave data	Pending	Support for how download in-situ wave data		
EMODNET-1820 Archival tides	Resolved	Support for how download tide data and bug fixed		28/05/2024

B. Issues / challenges identified by the thematic assembly group itself				
Priority issue / challenge	**Status (Pending/ Resolved)**	**Action(s) taken / remaining actions planned**	**Date due**	**Date resolved**
EM-863 CORA Climatology Data Download error	Resolved	Update of download link for CORA dataset		02/04/2024 6:07 PM
EM-908 EMODnet Physics - New layer - Sea Level Platforms	Resolved	New layer added		11/04/2024 2:17 PM
EM-909 EMODnet Physics - New layer - Waves Platforms	Resolved	New layer added		02/05/2024 5:29 PM
EM-911 EMODnet INGESTION - New Ingestion layer - As is Platforms	Pending	New layer added		
EM-912 EMODnet INGESTION - New Ingestion layer - Validated Platforms	Pending	New layer added		
EM-946 Layer animation: requests made after removing and adding a layer	Pending	Control of layer animation, after noticing strange behaviour		
EM-947 EMODnet Physics: Seawater alkalinity - GLODAPv2_2016b GetFeatureInfo error	Resolved	Fix the profile graph that was not displayed has been fixed		18/04/2024 1:01 PM
EM-948 EMODnet Physics: Seawater alkalinity - GLODAPv2_2016b Wrong Download link	Resolved	The download link has been corrected		02/04/2024 11:40 AM
EM-949 EMODnet Physics: Seawater Practical Salinity from GLODAPv2_2016b GetFeatureInfo error	Resolved	Fix the profile graph that was not displayed has been fixed		02/04/2024 1:25 PM
EM-950 EMODnet Physics: Seawater Practical Salinity from GLODAPv2_2016b Wrong Download link	Resolved	The download link has been corrected		02/04/2024 6:04 Pm
EM-951 EMODnet Physics: SMOS BEC global SSS product v2 L4 (Psu) Time Fix	Resolved	Time dimension has been fixed		04/04/2024 2:33 PM
EM-952 EMODnet Physics: SMOS BEC global SSS product v2 L4 (Psu) Wrong Download	Pending	The problem of multiple files download has been solved		
EM-953 EMODnet Physics: Seawater Temperature from GLODAPv2_2016b Wrong Download link	Resolved	The download link has been corrected		02/04/2024 5:45 PM
EM-954 EMODnet Physics: Seawater Temperature from	Resolved	Fix the profile graph that was not		02/04/2024 1:34 PM

B. Issues / challenges identified by the thematic assembly group itself				
Priority issue / challenge	**Status (Pending/ Resolved)**	**Action(s) taken / remaining actions planned**	**Date due**	**Date resolved**
GLODAPv2_2016b GetFeatureInfo error		displayed has been fixed		
EM-955 EMODnet Physics - Salinity Climatology layer replacement	Resolved	Salinity climatology local layers replaced with one single global layer		18/04/2024 4:55 PM
EM-956 EMODnet Physics - Temperature Climatology layer replacement	Resolved	Temperature climatology local layers replaced with one single global layer		19/04/2024 3:42 PM
EM-961 EMODnet Physics - Seawater alkalinity error in descroption	Resolved	Corrected the layer description		11/04/2024 2:17 PM

3. Communication assets

A. (Co-)Authored peer-reviewed publications in the quarter					
Date of publication	**Type of publication**	**Full reference**	**ISBN**	**DOI**	**Is it open access? Yes/No**
	e.g. paper; conference proceedings; book chapter; …				

B. Other/non-peer reviewed types of publications (co-)authored in the quarter					
Date of publication	**Type of publication**	**Full reference**	**ISBN**	**DOI**	**Is it open access? Yes/No**
	e.g. paper; conference proceedings; book chapter; …				

B. Other/non-peer reviewed types of publications (co-)authored in the quarter					
Date of publication	**Type of publication**	**Full reference**	**ISBN**	**DOI**	**Is it open access? Yes/No**

During IMDIS EMODnet activities and outcomes were largely discussed and presented. This activity is well reported in the IMDIS Proceedings book.

For a comprehensive overview of publications referring to/making use of EMODnet data and/or data products, please consult Google Scholar.

4. Monitoring indicators

Comments on the progress indicators in the indicators spreadsheet		
Progress indicator	**Means of collecting figures**	**Comment**
1. Current status and coverage of total available thematic data A) Volume and coverage of available data	*Number of platforms*	EMODnet Physics input data is sparse, and for this indicator, we consider the "platform" as the "unit" for monitoring assessment. A platform is a logical system that hosts data, where data may consist of a single dataset (e.g., a profile in the case of CTD), a time series (e.g., a sea-level station), or a series of profiles (e.g., ARGO). For indicator 1.A, we report the percentage variation in the number of platforms for the given basin. It's worth noting that some platforms may move from one basin to another. Since we report figures based on the latest position, the percentages are significantly influenced by this movement. EMODnet Physics integrates data from several sources, which can result in duplicates in the system. Cleaning duplicates is an ongoing activity and also affects the percentage of available platforms. When a duplicate is identified, the two sources are linked to the same dataset to show full provenance. Some of the platforms that were originally categorized under 'Other Seas' are now classified under the Caribbean Sea. We continued cleaning duplicates. This process is not yet completed. Importantly, as reported, we are moving to the new controlled NVS::P33 vocabulary for sub-theme management that implies a some re-mapping of the datasources. As an example: Atmospheric parameters will be meteorlogical, water conductivity will be grouped with salinity and density, etc. Although this affects the stats of trends in some themes, it is a very important updated to better match both Central Portal and stakeholders needs. During the querter some new stations have been added (and some where cleaned), these are all reported under "other seas" as we need to complete the correct assignment to the sea-basin (to be updated with next report)
What is your opinion on the data coverage within EMODnet for your thematic?		The available coastal data is still very limited and new data sources (e.g. Citizen Science projects) have to be approached, and the MoU with SSI (diving community) may represent a new use case for proofing the concept. Metadata on Wind data should be improved. In situ underwater noise is still very limited. Data on Ice should include new data type (e.g. cameras). We need some focus actions to link in some other integrators

Comments on the progress indicators in the indicators spreadsheet		
Progress indicator	**Means of collecting figures**	**Comment**
		(e.g. SIOS). We are keeping working on the availble CTDs in INSTAC (already starting flowing see e.g. the number of the platform providing temperature and salinity in the water colum).
B) Usage of data in this quarter	*Server logs*	The Physics team can only report on the overall volume of downloaded data when it is mediated by the EMODnet Physics backend (as some products are cached centrally, EMODnet Physics cannot track this volume). Previously, the volume of data downloaded for each theme was calculated using an algorithm that considered the number of viewed map pages. However, since EMODnet Physics is no longer hosting the map viewer, this indicator can no longer be applied. EMODnet Physics reports on the number of available platforms (units - col C) and the overall volume of downloaded gigabytes (col D) from ERDDAP, which is hosting the in-situ data.
2. Current status and coverage of total number of data products A) Volume and coverage of available data products	*Number of platforms*	The EMODnet Physics backend has been reorganized to better serve the central portal with products and data collections. Table 2A now lists the products available at prod-erddap.emodnet-physics.eu, which are linked through the central portal (plus the underwaternoise products that are availble on prod-geoserver)
B) Usage of data products in this quarter		As reported previously, we are implementing the following concepts: data, data collections, and products. Indicator 2A reports on the products available in the prod-env (prod-erddap.emodnet-physics.eu). As planned, we have begun updating the data-env by removing obsolete products. We have also introduced a new controlled vocabulary (NVS:P33) to better organize data collections. The system now offers five collections under this new arrangement (https://data-erddap.emodnet-physics.eu/erddap/search/index.html?page=1&itemsPerPage=1000&searchFor=P33).
3. Internal and external organisations supplying/approached to supply data and data products within this quarter	*Please specify*	There are a number of new sources integrated (some are old provders that inlcuded new sources in the package). During the period we focussed on integrating river data from Southern America, by implementing interoperability with WHOS. As already reported above some of these data need more cleaning during coming months.

Comments on the progress indicators in the indicators spreadsheet		
Progress indicator	**Means of collecting figures**	**Comment**
5.1 Daily number of page views of EMODnet Thematic entry page	Europa Analytics	We monitor the typical working hours' usage of the portal. The system tracks the EMODnet Physics static page, which provides a general overview of the activity and is in line with the previous period. According to Matomo stats (internal monitoring) on the HTML populating the geoviewer contents, we record five times more traffic on Physics. If we look at the interaction on the ERDDAP that populates the in situ Physics layers, we recorded about ten times more interactions. The current version of the Europe Analytics report monitors the geoviewer, which is the most visited page, but it does not give details on specific themes
5.2 Quarterly total number of visitors, page views, unique page views and percentage of returning visitors	Europa Analytics	We recorded interactions similar to the previous period. It would be more interesting to observe user interaction with the GeoViewer, where data are not as static as on the static Physics presentation page.

The monitoring numbers reported as part of the progress monitoring of EMODnet performance are collected through Europa Analytics, unless reported otherwise.

5. Annex: Other documentation attached

EMODnet Physics data and products (on CP geoviewer) status and planning:

Theme	Product name	status	Planned actions/next delivery
Carbon Cycle	Seawater alkalinity - GLODAPv2_2016b (micro-mol kg-1)	This product is presenting the Alkalinity. GLODAP Data is gridded by DIVA.	None.
River outflow	River outflow	This product layer groups all the platforms collecting river outflow. The layer shows the position of the recording station and on clicking the platform page (presenting station metadata and latest data) is popped up. The product layer offers filtering options.	
Sea level	In situ platform	This product layer groups all the platforms collecting sea level. The layer shows the position of the recording station and on clicking the platform page (presenting station metadata and latest data) is popped up. The product layer offers filtering options.	Published Figure 4
Sea level	Absolute Sea Level Trend (GLORYS12V) (m)		None.
Sea level	Absolute Sea Level Trend (DUACS) (mm/yr)		None.
Sea level	SONEL - In situ Absolute Sea Level Trends		None.
Sea level	Monthly maps of Absolute Sea Level data (DUACS) (m)		None.
Sea Optical Properties	In situ platform	This product layer groups all the platforms collecting sea optical properties. The layer shows the position of the recording station and on clicking the platform page (presenting station metadata and latest data) is popped up. The product layer offers filtering options.	To be added to the CP staging system. CP to use the specific filters specification json.
Sea Optical Properties	TSM Baltic Sea (%)		None.
Sea Optical Properties	TSM Mediterranean Sea (%)		None.
Sea Optical Properties	TSM North Sea (%)		None.
Salinity and Conductivity	In situ platforms	This product layer groups all the platforms collecting sea surface salinity and salinity in the water column. The layer shows the position of the recording station and on clicking the platform page (presenting station metadata	To be added to the CP staging system. CP to use the specific filters specification json.

		and latest data) is popped up. The product layer offers filtering options.	
Salinity and Conductivity	Monthly climatology (SDN.V2)	Updated the product (now global instead of many regionals). Template changed: the user can select the specific month to be loaded.	Published Figure 5.
Salinity and Conductivity	Climatology (CORA)	Made available in two versions, one to be visualized in the geoviewer and one to be offered for download.	Download is not yet compliant with CP requirements as it points to an external page for managing the subsetting. The team is working on a method to provide the CP a list of files to overcome the subsetting page.
Salinity and Conductivity	Mediterranean Sea Salinity Climatology (PSU)	Out of date: SDN.V1	removed.
Salinity and Conductivity	North Atlantic Ocean Salinity Climatology (PSU)	Out of date: SDN.V1	removed.
Salinity and Conductivity	North Sea Salinity Climatology (PSU)	Out of date: SDN.V1	removed.
Salinity and Conductivity	Sea surface Salinity annual anomaly [base line 1990-2020] (PSU)		None.
Salinity and Conductivity	Seawater Practical Salinity from GLODAPv2_2016b (PSU)		None.
Salinity and Conductivity	SMOS BEC global SSS product v2 L4 (Psu)		None.
Temperature	In situ platforms	This product layer groups all the platforms collecting sea surface temperature and temperature in the water column. The layer shows the position of the recording station and on clicking the platform page (presenting station metadata and latest data) is popped up. The product layer offers filtering options.	To be added to the CP staging system. CP to use the specific filters specification json.
Temperature	Monthly climatology (SDN.V2)	Updated the product (now global instead of many regionals). Template changed: the user can select the specific month to be loaded.	published
Temperature	Climatology (CORA)	Made available in two versions, one to be visualized in the geoviewer and one to be offered for download.	Download is not yet compliant with CP requirements as it points to an external page for managing the subsetting. The team is working on a method to provide the CP a list of files to overcome the subsetting page.

Temperature	Black Sea Temperature Climatology (°C)	Out of date: SDN.V1	removed.
Temperature	Mediterranean Sea Temperature Climatology (°C)	Out of date: SDN.V1	removed.
Temperature	North Atlantic Ocean Temperature Climatology (°C)	Out of date: SDN.V1.	removed.
Temperature	North Sea Temperature Climatology (°C)	Out of date: SDN.V1.	removed.
Temperature	Sea Temperature Anomaly 30 Years (ºC)		None.
Temperature	Seawater Temperature from GLODAPv2_2016b (ºC)		None.
Underwater Noise	EMODnet Physics Continuous Noise fix platforms		None.
Underwater Noise	EMODnet Physics European Impulsive Noise Events Registry		None.
Waves	In situ platform	This product layer groups all the platforms collecting waves. The layer shows the position of the recording station and on clicking the platform page (presenting station metadata and latest data) is popped up. The product layer offers filtering options.	Published
Wind	In situ platform	This product layer groups all the platforms collecting waves. The layer shows the position of the recording station and on clicking the platform page (presenting station metadata and latest data) is popped up. The product layer offers filtering options. This product should replace the current available one (In situ wind speed and direction)	To be added to the CP staging system. CP to use the specific filters specification json.

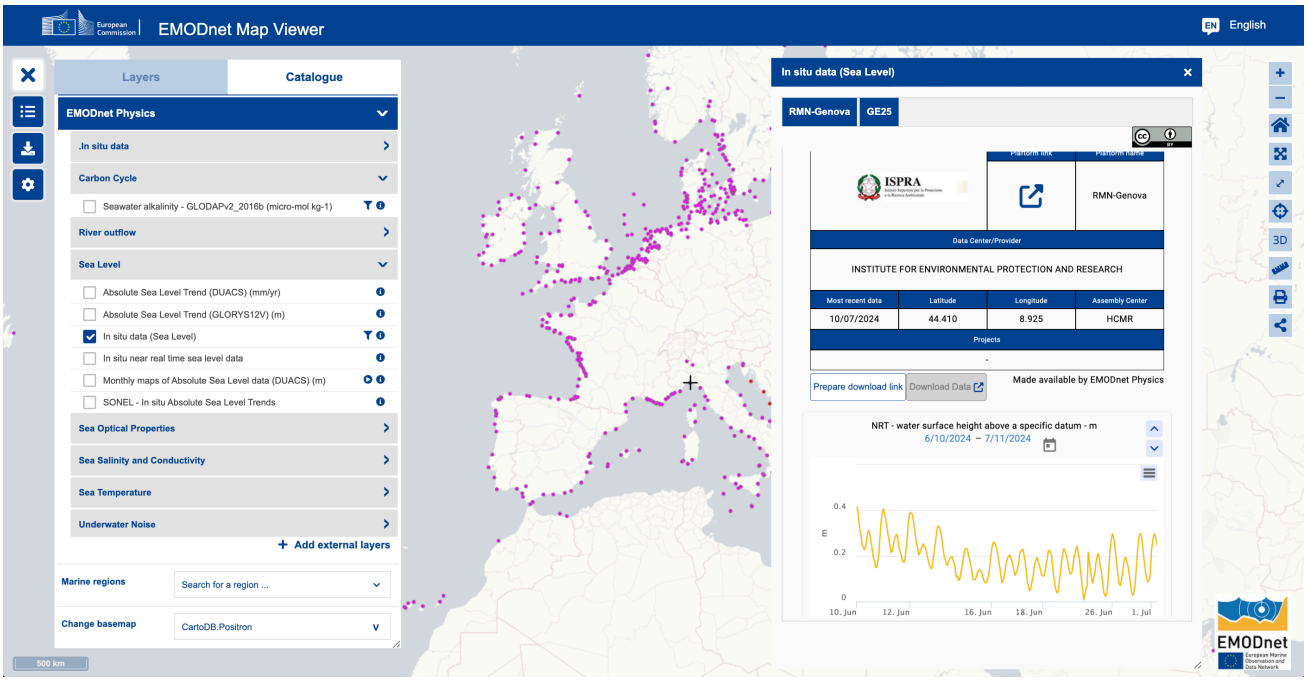

Figure 4. Sea Level

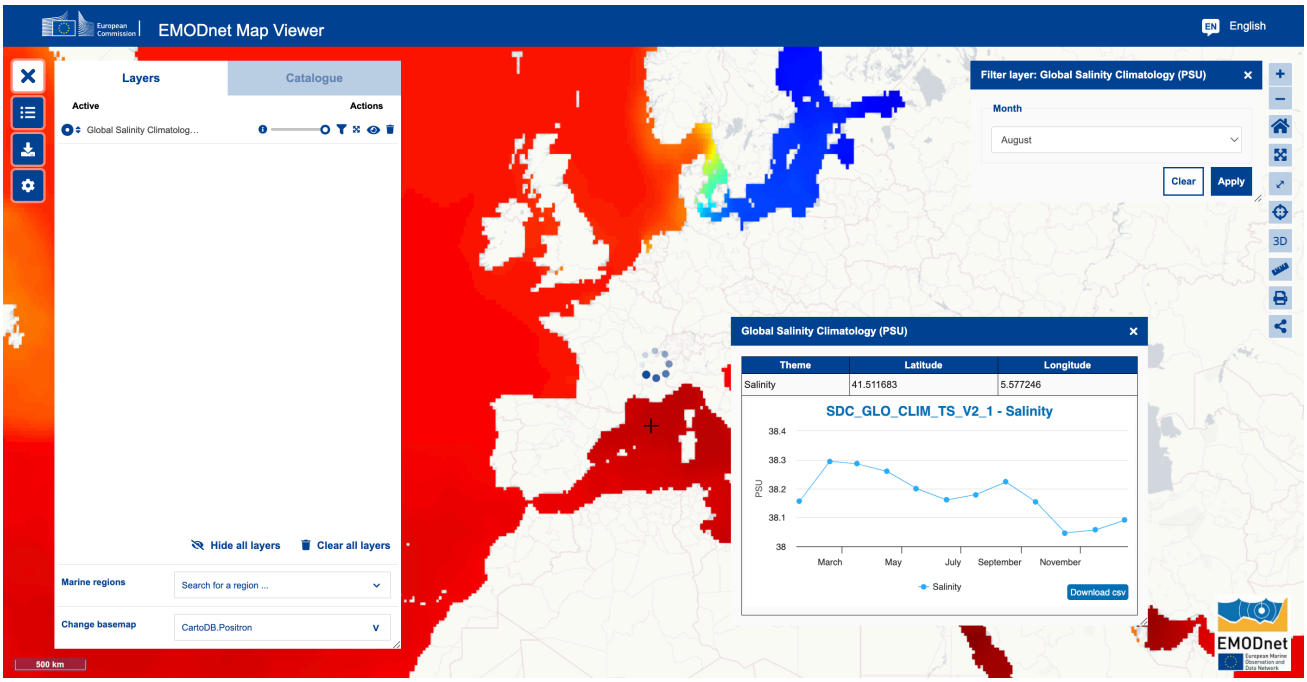

Figure 5. Salinity in the Water Column, Climatology

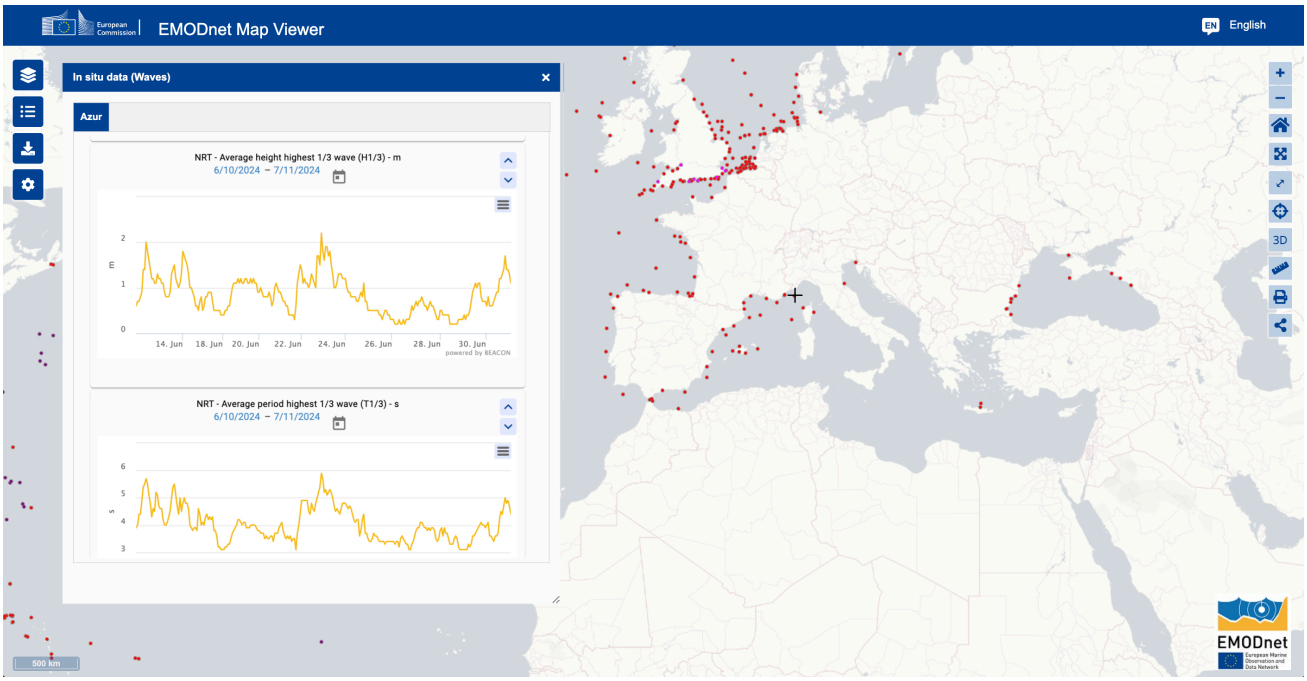

Figure 6. In situ Waves

Meeting and events organised and attended in the reference period and planned for next months

A. Meetings/events organised and attended							
From	To	Location	Type event (internal or external meeting, training/ workshop)	PPT given	A/O	Link ppt doi/ web	Short description and main results (# participants, agreements made, etc.)
03/04/2024	05/04/2024	Malta	Meeting	yes	A		EMODnet Ingestion Plenary meeting, presentation of the annual results and future goals.
08/04/2024	12/04/2024	Barcelona	Meeting	yes	A		Beyond the Climate Change: Sustained Observation in support of the Blue Economy
15/04/2024	19/04/2024	Creta	Conference + workshop	yes	A		Nautilos Summer Course.
23/04/2024		Web	Webinar	yes	A		BlueCloud2026 - Making Marine Data FAIR: FAIR assessment of marine data & information. The second in a series of three Blue-Cloud 2026 Training Academy webinars on FAIR Data Principles. With input by EMODnet, Copernicus Marine and several leading marine Research Infrastructures, the Horizon Europe Blue-Cloud initiative developed a collaborative web-based environment that enables open and simplified access to an unprecedented wealth of marine data resources and interoperable tools.
17/04/2024	19/04/2024	Bremerhaven, Germany	Conference	yes	A		Kick off Polarin - Antonio Novellino gave a presentation about the contribution that ETT will give in Polarin mentioning the experience of the company in EMODnet.
29/04/2024	30/04/2024	Web	Internal meeting		A		EMODnet Steering Committee – periodic meeting between hematic assembly groups, data providers, and stakeholder organisations, working together to ensure the coordination, integration, and effective dissemination of marine data across Europe.
02/05/2024		Genova, Italy	Webinar	yes	A		Seminar on Data Management - University of Genova - Seminar on data management. A seminar to present best practices, tools, and strategies for effective data handling in research and academia. Although the students were from Biomedical Engineering courses, EMODnet was largely discussed as an example of how to manage data and work towards FAIRness.
09/05/2024		Genova, Italy	Conference	yes	A		“Glocal Comunicazioni," the Ligurian edition of the Digital Journalism Festival discussed the multidimensionality of the digital era and its communication, covering every aspect from journalism, corporate, and institutional communication to scientific dissemination. EMODnet was discussed as one example of this multidimensional dialogue.

A. Meetings/events organised and attended							
From	To	Location	Type event (internal or external meeting, training/ workshop)	PPT given	A/O	Link ppt doi/ web	Short description and main results (# participants, agreements made, etc.)
27/05/2024	29/05/2024	Bergen, Norway	Conference	yes	A		IMDIS - International Conference on Marine Data and Information Systems. Antonio Novellino gave 2 presentations titled "EMODnet near real time river data and land boundary condition services" and "A first roadmap for data management solutions of low-cost ocean observing technology" in which he talked about EMODnet.
06/06/2024	07/06/2024	Palma, Balearic Islands, Spain	Conference		A		MARTECH - Presentation of the projects of RAISE Spoke 3 in which EMODnet was mentioned for marine data management.
11/06/2024		web	Internal meeting	yes	A		SOOS Scientific Commitee As a co-chair of the SOOS DMSC, Antonio Novellino presented on the recommended data management practices for the SOOS community. EMODnet is a consolidated infrastructure and an element that each SOOS partner can rely on.
12/06/2024	13/06/2024	Brusels, Belgium	Conference	yes	A		Digital Ocean Forum 2024 - EMODnet was presented along with other projects in which EMODnet is involved.
21/06/2024		Genova, Italy	Workshop	yes	A		Presentation about EMODnet to the cadets of the Maritime Academy of Panama during the visiting program at the Italian Academy.

B. Meetings/events planned							
From	To	Location	Type event (internal or external meeting, training/ workshop)	PPT given	A/O	Link ppt doi/ web	Short description and main results (# participants, agreements made, etc.)
04/09/2024	05/09/2024	Dublin					AquaBioSens project
09/09/2024	13/09/2024	Valencia					Erasmus Maris Week
23/09/2024	24/09/2024	Copenhagen					EMODnet Chemistry AM

B. Meetings/events planned							
From	To	Location	Type event (internal or external meeting, training/ workshop)	PPT given	A/O	Link ppt doi/ web	Short description and main results (# participants, agreements made, etc.)
23/09/2024	27/09/2024	Halifax					Ocean 2024 – Halifax
25/09/2024	27/09/2024	Copenhagen					OCEANI:ICE AM
30/09/2024	04/10/2024						GOOS Ocean Decade WS
01/10/2024	03/10/2024	Barcelona					MONGOOS
03/10/2024	04/10/2024	Venice					LandSeaLot