

EMODnet



European Marine
Observation and
Data Network

EMODnet Thematic Lot n°3 – Physics

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

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

Operational Phase

Quarterly Progress Report (Q1.2025)

Reporting Period: 01/01/2025 – 31/03/2025



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1. Highlights in this quarter

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

Task 1 focuses 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.

Physics is adopting 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 according to the dedicated controlled vocabulary, P33¹ (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 describes the published collections (P33 and linked P01). The team is working to publish the missing P01 collections (not ready yet).

Table 1. P33 and related P01 collection in EMODnet Physics

metadata_dataset_id (P33)	Description	metadata_dataset_id (P01)	title
ERD EP CARBONSYSMETM INSITU METADATA	EMODnet Physics - Collection of Carbon System (SDN:P33::CARBONSYSMETM) variables - MultiPointsObservation - METADATA		
ERD EP CURRENTS INSITU METADATA	EMODnet Physics - Collection of Currents (SDN:P33::CURRENTS) variables - MultiPointsObservation - METADATA		
ERD EP DISSOLVEDOXYGEN INSITU METADATA	EMODnet Physics - Collection of Dissolved Oxygen (SDN:P33::DISSOLVEDOXYGEN) variables - MultiPointsObservation - METADATA	ERD EP PR DOXY NRT	EMODnet Physics - Collection of dissolved oxygen (DOXY) Profiles - MultiPointProfilesObservation
		ERD EP TS DOXY NRT	EMODnet Physics - Collection of dissolved oxygen (DOXY) TimeSeries - MultiPointTimeSeriesObservation

¹ <https://vocab.nerc.ac.uk/collection/P33/current/>.

		ERD EP TS DOXY NRT METADATA	EMODnet Physics - Collection of dissolved oxygen (DOXY) TimeSeries - MultiPointTimeSeriesObservation - METADATA
		ERD EP PR TEMP DOXY NRT	EMODnet Physics - Collection of sea temperature from oxygen sensor (TEMP_DOXY) Profiles - MultiPointProfilesObservation
		ERD EP TS TEMP DOXY NRT	EMODnet Physics - Collection of sea temperature from oxygen sensor (TEMP_DOXY) TimeSeries - MultiPointTimeSeriesObservation
		ERD EP TS TEMP DOXY NRT METADATA	EMODnet Physics - Collection of sea temperature from oxygen sensor (TEMP_DOXY) 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	ERD EP PR CHLT NRT	EMODnet Physics - Collection of total chlorophyll (CHLT) Profiles - MultiPointProfilesObservation
		ERD EP TS CHLT NRT	EMODnet Physics - Collection of total chlorophyll (CHLT) TimeSeries - MultiPointTimeSeriesObservation
		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 PR PSAL NRT	EMODnet Physics - Collection of practical salinity (PSAL) Profiles - MultiPointProfilesObservation
		ERD EP PR PSAL NRT METADATA	EMODnet Physics - Collection of practical salinity (PSAL) Profiles - MultiPointProfilesObservation - METADATA
		ERD EP TS PSAL NRT	EMODnet Physics - Collection of practical salinity (PSAL) TimeSeries - MultiPointTimeSeriesObservation
		ERD EP TS PSAL NRT METADATA	EMODnet Physics - Collection of practical salinity (PSAL) TimeSeries - MultiPointTimeSeriesObservation - METADATA
		ERD EP PR DENS NRT	EMODnet Physics - Collection of sea density (sigma-theta) (DENS) Profiles - MultiPointProfilesObservation

		ERD_EP_TS_DENS_NRT	EMODnet Physics - Collection of sea density (sigma-theta) (DENS) TimeSeries - MultiPointTimeSeriesObservation
		ERD_EP_TS_DENS_NRT_METADATA	EMODnet Physics - Collection of sea density (sigma-theta) (DENS) TimeSeries - MultiPointTimeSeriesObservation - METADATA
ERD_EP_RIVER_INSITU_METADATA	EMODnet Physics - Collection of River (SDN:P33::RIVER) variables - MultiPointsObservation - METADATA	ERD_EP_TS_RVFL_NRT	EMODnet Physics - Collection of river flow rate (RVFL) TimeSeries - MultiPointTimeSeriesObservation
		ERD_EP_TS_RVFL_NRT_METADATA	EMODnet Physics - Collection of river flow rate (RVFL) TimeSeries - MultiPointTimeSeriesObservation - METADATA
ERD_EP_SEALEVEL_INSITU_METADATA	EMODnet Physics - Collection of Sea Level (SDN:P33::SEALEVEL) variables - MultiPointsObservation - METADATA		
		ERD_EP_TS_SLEV_NRT_5m	EMODnet Physics, Collection of Water Surface Height Above a Specific Datum (SLEV) TimeSeries, MultiPointTimeSeriesObservation - 5 minutes frequency
		ERD_EP_TS_SLEV_NRT_60m	EMODnet Physics, Collection of Water Surface Height Above a Specific Datum (SLEV) TimeSeries, MultiPointTimeSeriesObservation - 60 minutes frequency
ERD_EP_WATERTEMPERATURE_INSITU_METADATA	EMODnet Physics - Collection of Water Temperature (SDN:P33::WATERTEMPERATURE) variables - MultiPointsObservation - METADATA	ERD_EP_PR_TEMP_NRT	EMODnet Physics - Collection of sea temperature (TEMP) Profiles - MultiPointProfilesObservation
		ERD_EP_PR_TEMP_NRT_METADATA	EMODnet Physics - Collection of sea temperature (TEMP) Profiles - MultiPointProfilesObservation - METADATA
		ERD_EP_TS_TEMP_NRT	EMODnet Physics - Collection of sea temperature (TEMP) TimeSeries - MultiPointTimeSeriesObservation
		ERD_EP_TS_TEMP_NRT_METADATA	EMODnet Physics - Collection of sea temperature (TEMP) TimeSeries - MultiPointTimeSeriesObservation - METADATA
ERD_EP_WAVES_INSITU_METADATA	EMODnet Physics - Collection of Waves (SDN:P33::WAVES) variables - MultiPointsObservation - METADATA	ERD_EP_TS_VDIR_NRT	EMODnet Physics - Collection of wave direction rel. true north (VDIR) TimeSeries - MultiPointTimeSeriesObservation
		ERD_EP_TS_VDIR_NRT_METADATA	EMODnet Physics - Collection of wave direction rel. true north (VDIR) TimeSeries - MultiPointTimeSeriesObservation - METADATA

		ERD_EP_TS_VGHS_NRT	EMODnet Physics - Collection of generic significant wave height (Hs) (VGHS) TimeSeries - MultiPointTimeSeriesObservation
		ERD_EP_TS_VGHS_NRT_METADATA	EMODnet Physics - Collection of generic significant wave height (Hs) (VGHS) TimeSeries - MultiPointTimeSeriesObservation - 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: 19199 ARGO profiles, 2431 BioArgo, more than 28034 Drifting Buoys observations, about 2700 Glider missions, about 4200 Moorings datasets, about 2500 operational River Station data, 330 Underway Data Vessels records, 3300 Tide Gauge stations (some duplicates were solved), and more than 5,000,000 data from CTD/XBT/bottles, etc.

To discover the list of in-situ platforms, two new datasets were published, in addition to those already available:

metadata_dataset_id (P33)	link	Description
EP_PLATFORMS_METADATA_V2	https://data-erddap.emodnet-physics.eu/erddap/tabledap/EP_PLATFORMS_METADATA_V2.html	EMODnet Physics - Collection of platforms metadata
EP_PLATFORMS_METADATA_CTD_V2	https://data-erddap.emodnet-physics.eu/erddap/tabledap/EP_PLATFORMS_METADATA_CTD_V2.html	EMODnet Physics - Collection of platforms metadata ctd
EP_PLATFORMS_METADATA_V1	https://data-erddap.emodnet-physics.eu/erddap/tabledap/EP_PLATFORMS_METADATA_V1.html	EMODnet Physics - Collection of platforms metadata (dismissing)
EP_PLATFORMS_METADATA_CTD_V1	https://data-erddap.emodnet-physics.eu/erddap/tabledap/EP_PLATFORMS_METADATA_CTD_V1.html	EMODnet Physics - Collection of platforms metadata ctd (dismissing)

The annex includes a python script to extract the number of platforms.

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

The team is working to make more in-situ layers available, such as temperature and salinity. In addition to layers providing specific parameters, stakeholders have shown increasing interest in layers that depict the trajectories of moving platforms. These are also under development.

Regarding the published products, the annex contains an updated status report and planning details.

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

Activities focused on supporting EMODnet Ingestion in updating the ingestion workflow for the operational data.

integrating data from gliders and vessels, importantly some of these data need further work on metadata. Other efforts involved supporting projects working on adopting ERDDAP and other native machine-to-machine tools to facilitate data sharing with EMODnet. Examples from this reporting period include INGV and their new data center, as well as the HE POLARIN project and its Data Management Plan (DMP). The following figures provide the reader an overview of the location and type of data which will be processed further to complete the metadata harmonization and clearance.

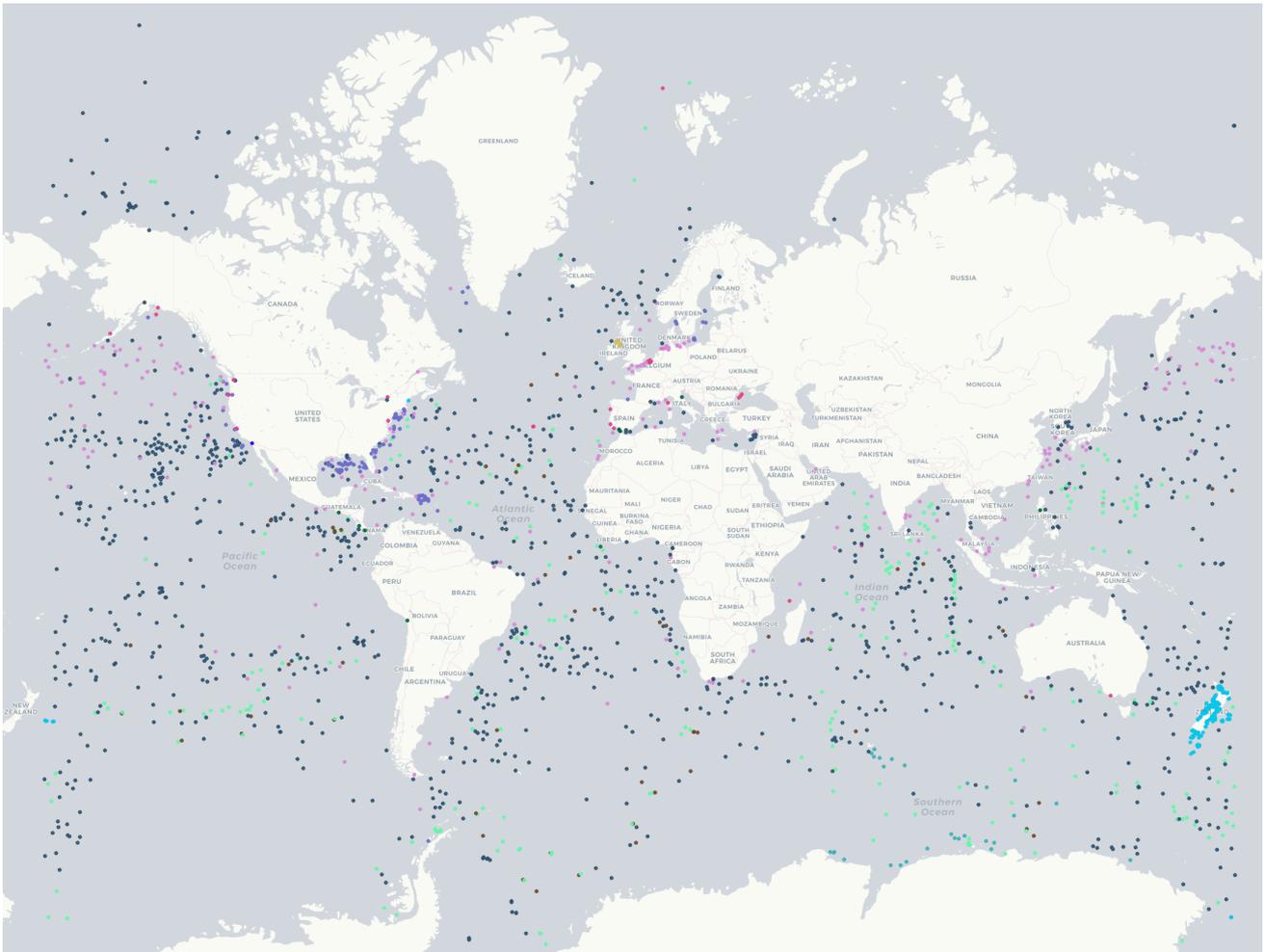


Figure 1. newly integrated platforms². XBT/CTD are not shown. Notably most of the added platforms are managed under international initiatives. BT or XCTD Profiles 1259453, Fishing Vessels 680, Sea Mammals 28, Argo/Profilers 281, ADCP 19, Thermosalinographers 227, Mooring 56, Drifting Buoys 1187, Argo BGC 72, Gliders 138, River Station 10, Tide Gauge 15.

2 https://data-erddap.emodnet-physics.eu/erddap/tabledap/EP_PLATFORMS_METADATA_V2.csv?PLATFORMCODE%2Ccall_name%2Clatitude%2Clongitude%2Cdatafeaturetype%2Cfirstdateobservation%2Clastdateobservation%2Cp33_water%2Cp33_currents%2Cp33_optical%2Cp33_river%2Cp33_sea%2Cp33_waves%2Cp33_winds%2Cp33_biochemical%2Cp33_carbonsystem%2Cp33_dissolvedoxygen%2Cp33_seaice%2Cp33_underwatersound%2Cp33_watersalinity%2Cp33_meteorological%2Cdataownername%2Cdataownercountryname%2Cdataassemblycenter%2Cplatformtypecode%2Cplatformtypedescription%2Cintegrator_id%2Cingestion%2Cofficial_repository%2Ccreationdate%2Cupdate%2Cdatafiles%2Cintegrator%2Cavailabledates&creationdate%3E=202205-01-01%22

dataownername	ADCP	Argo BGC	Argo/Profiler	Drifting Buoys	Fishing Vessels	Gliders	Mooring	River Station	Sea Mammals	Thermosalinographers	Tide Gauge
AGENCY FOR MARITIME SERVICES AND COAST- DEPARTMENT COAST (MOK)	0	0	0	0	0	0	25	0	0	0	5
ALFRED WEGENER INSTITUTE HELMHOLTZ CENTRE FOR POLAR AND MARINE RESEARCH	0	0	0	1	0	0	0	0	0	0	0
ATLANTIC OCEANOGRAPHIC AND METEOROLOGICAL LABORATORY , NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	0	0	0	105	0	0	0	0	0	0	0
COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION	0	4	5	0	0	0	0	0	0	0	0
DANMARKS TEKNISKE UNIVERSITETET	0	0	1	0	0	0	0	0	0	0	0
DEPARTMENT FOR INFRASTRUCTURE, NORTHERN IRELAND	0	0	0	0	0	0	0	10	0	0	0
EURO-MEDITERRANEAN CENTRE ON CLIMATE CHANGE (CMCC FOUNDATION)	0	0	0	0	0	0	0	0	0	0	2
EUROPEAN ORGANIZATION FOR THE EXPLOITATION OF METEOROLOGICAL SATELLITES	0	0	0	11	0	0	0	0	0	0	0
FEDERAL MARITIME AND HYDROGRAPHIC AGENCY	0	11	12	0	0	0	0	0	0	0	0
FIRST INSTITUTE OF OCEANOGRAPHY, MINISTRY OF NATURAL RESOURCES	0	1	1	0	0	0	0	0	0	0	0
GERMAN WEATHER SERVICE - MARITIME WEATHER OFFICE HAMBURG	0	0	0	0	0	0	0	0	0	16	0
GULF OF MAINE LOBSTER FOUNDATION, NOAA FISHERIES	0	0	0	0	1	0	0	0	0	0	0
HYDROGRAPHIC AND OCEANOGRAPHIC SERVICE	0	0	0	0	0	0	0	0	0	0	1
HYDROGRAPHIC INSTITUTE	0	0	0	0	0	0	3	0	0	0	0
HYDROGRAPHIC INSTITUTE OF THE NAVY	0	0	0	0	0	0	0	0	0	0	4
IEO-CSIC, SPANISH OCEANOGRAPHIC INSTITUTE	0	1	2	0	0	1	0	0	0	0	0
IFREMER HEAD OFFICE	0	1	15	0	0	0	0	0	0	0	0
INDIAN NATIONAL CENTRE FOR OCEAN INFORMATION SERVICES	0	4	38	0	0	0	0	0	0	0	0
INSTITUTE OF MARINE RESEARCH	0	0	2	0	0	0	0	0	0	0	0
INSTITUTO NACIONAL DE SISTEMOLOGÍA, VULCANOLOGÍA, METEOROLOGÍA E HIDROLOGÍA (INSIVUMEH)	0	0	0	0	0	0	0	0	0	0	1
INTEGRATED MARINE OBSERVING SYSTEM	0	0	0	0	0	0	0	0	27	0	0
INTERNATIONAL ARCTIC BUOY PROGRAM	0	0	0	3	0	0	0	0	0	0	0
IRD - CENTRE DE BRETAGNE	0	0	0	0	0	0	0	0	0	2	0
JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY	0	2	0	0	0	0	0	0	0	0	0
JAPAN METEOROLOGICAL AGENCY	0	0	0	1	0	0	0	0	0	3	0
LABORATORY OF OCEANOGRAPHY OF VILLEFRANCHE	0	1	1	0	0	0	0	0	0	0	0
LAGRANGIAN DRIFTER LABORATORY	0	0	0	8	0	0	0	0	0	0	0
LOWER SAXONY WATER MANAGEMENT- COASTAL DEFENSE AND NATURE CONSERVATION AGENCY	0	0	0	0	0	0	1	0	0	0	0
MET OFFICE - EXETER	0	0	0	0	0	0	0	0	0	1	0
MET OFFICE, EXETER	0	0	11	0	0	0	0	0	0	0	0
METEO FRANCE	0	0	0	0	0	0	0	0	0	2	0
METEOROLOGICAL SERVICE OF NEW ZEALAND LTD	0	0	0	0	679	0	0	0	0	0	0
NATIONAL INSTITUTE OF MARINE GEOLOGY AND GEOECOLOGY	0	0	0	0	0	0	3	0	0	0	0
NATIONAL INSTITUTE OF OCEANOGRAPHY AND APPLIED GEOPHYSICS - OGS - DIVISION OF OCEANOGRAPHY	0	0	0	3	0	0	0	0	0	0	0
NATIONAL INSTITUTE OF OCEANOGRAPHY AND APPLIED GEOPHYSICS - OGS, DIVISION OF OCEANOGRAPHY	0	2	7	0	0	0	0	0	0	0	0
NATIONAL INSTITUTE OF WATER AND ATMOSPHERIC RESEARCH (DUPLICATE)	0	2	2	0	0	0	0	0	0	0	0
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION - NATIONAL DATA BUOY CENTER	0	0	0	0	0	0	2	0	0	0	0
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, NATIONAL DATA BUOY CENTER (NOAA NDBC)	0	0	0	0	0	0	7	0	0	0	0
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, PACIFIC MARINE ENVIRONMENTAL LABORATORY	0	1	14	0	0	0	0	0	0	0	0
NATIONAL OCEANOGRAPHY CENTRE (LIVERPOOL)	0	0	0	0	0	1	0	0	0	0	0
NATIONAL OCEANOGRAPHY CENTRE (SOUTHAMPTON)	0	0	0	0	0	1	0	0	0	0	0
NATIONAL WEATHER SERVICE - NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	0	0	0	0	0	0	0	0	0	7	0
PILOT (QINGDAO) NATIONAL LABORATORY FOR MARINE SCIENCE AND TECHNOLOGY (QINLM)	0	0	11	0	0	0	0	0	0	0	0
PLYMOUTH MARINE LABORATORY	0	3	1	0	0	0	0	0	0	0	0
SCOTTISH ASSOCIATION FOR MARINE SCIENCE	0	0	0	0	0	1	0	0	0	0	0
SCRIPPS INSTITUTION OF OCEANOGRAPHY	0	2	14	73	0	0	0	0	0	0	0
SEA MAMMAL RESEARCH UNIT	0	0	0	0	0	0	0	0	1	0	0
U.S. INTEGRATED OCEAN OBSERVING SYSTEM	0	0	0	0	0	114	0	0	0	0	0
UNIVERSIDAD NACIONAL COSTA RICA, SINAMOT (COSTA RICA)	0	0	0	0	0	0	0	0	0	0	2
UNIVERSITY OF MIAMI	0	0	0	0	0	1	0	0	0	0	0
UNIVERSITY OF WASHINGTON	0	17	25	0	0	0	0	0	0	0	0
UNKNOWN	19	11	102	982	0	1	15	0	0	196	0
VOICE OF THE OCEAN FOUNDATION	0	0	0	0	0	18	0	0	0	0	0
WOODS HOLE OCEANOGRAPHIC INSTITUTION	0	9	17	0	0	0	0	0	0	0	0

Figure 2. Details about source and type of platform

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 works on the user experience when downloading in situ data from EMODnet Physics layers. Activities are reported on JIRA tickets. (see section 2). From now on, this task includes and reports on the activities of the Central Portal Task Team, which was introduced at the last coordinators' meeting (on April 4th).

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.

During this period, the team contributed to and finalized the EMODnet Annual Report 2024, which highlights key achievements such as the ongoing effort to include new data sources—extending beyond traditional ones—to

incorporate citizen science data. It also emphasizes the importance of EMODnet (Physics) in supporting global scientific communities, including the Southern Ocean Observing System (SOOS), and its contribution to climate change studies and assessments by the Intergovernmental Panel on Climate Change (IPCC).

The team also contributed to the “Ocean-Driven Solutions for a Sustainable Economy and Resilient Communities” workshop (15/01/2025) to present how to consume EMODnet Physics data with scripting and processing tools and the EMODnet - Open Sea Lab 4.0 Hackaton (OSL 4.0).

Task 6. Ensure the involvement of regional sea conventions

Participation in TG NOISE activities continued as planned. In parallel with decisions on Threshold Values, the TG NOISE group progressed on several key topics, primarily focusing on developing guidelines for Articles 10 (Targets) and 13 (Measures). EMODnet Physics is contributing to the T&M subgroup, which has held several meetings with experts to identify critical issues and review relevant findings. The goal of the T&M subgroup is to finalize guidelines—well before the 2028 revision of Article 13—that support the implementation of targets and measures aligned with Threshold Values to achieve Good Environmental Status (GES). The objective is to help define how and where to gather relevant information (using EMODnet as a source wherever possible), clarify terminology, and support the tracking of noise-reducing measures linked to specific targets and Threshold Values.

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 OBPS for data collection. As anticipated, under the framework of the OBSSEA4CLIM project (<https://obssea4clim.eu/>), the reanalysis of the available data in EMODnet Physics is going to contribute to the Rolling Review of Requirements (RRR) process to provide a systematic and transparent process to support the high-level design and evolution of the WMO Integrated Global Observing System (WIGOS) aligned with its Vision in 2040. In turn the exercise is also highlighting which data should be available in EMODnet Physics and is not yet linked. The following figure shows the number of recording days for a given grid cell (1°x1°) where if in a grid cell we have at least one data every day (within the given temporal interval), the grid is red. Figure 3 shows 1990-2000 and Figure 4 shows 2000-2010, and it's already evident that EMODnet Physics is missing some repeated

³ <https://www.oceanbestpractices.org/>

cruises data (Pacific and Indian Oceans) during the decade 2000-2010 (and an action to retrieve and include them has already been initiated).

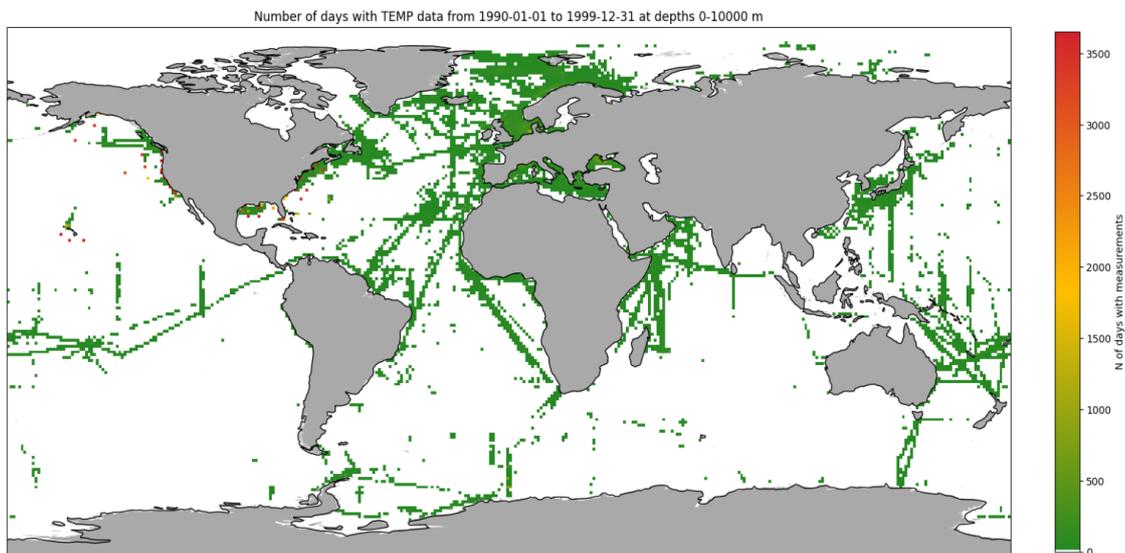


Figure 3. density of recordings between 1990-2000 available in EMODnet Physics

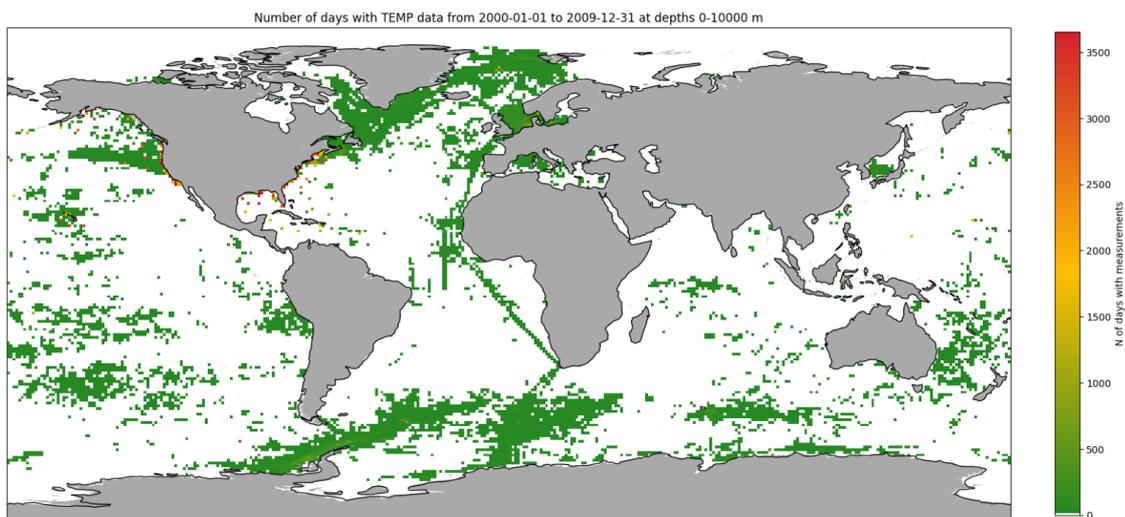


Figure 4. density of recordings between 2000-2010 available in EMODnet Physics

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 presented, we record a request to 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).

Events—especially those with in-person attendance—continue to be the main source of feedback. At some of these events, we asked participants: “When you need in situ data, which portal or service comes to mind first?” and “When you work with or browse for in situ data, what is the first feature you look for in a data portal?”

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
D1.04: 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	18 th 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	Delivered	07/10/2024	
D1.07.2: EMODnet TWG (Q2.2024)	WP1	31/12/2024	Delivered	08/10/2024	
D1.08: EMODnet SC (Q2.2025)	WP1	31/07/2025	Planned 7-8/5/2025		
D1.09: EMODnet TWG (Q2.2025)	WP1	31/07/2025	Delivered	08/04/2025	
D1.10: EMODnet event (Q4.2025)	WP1	31/07/2025	Planned: OOS2025 Jun Jamboree Oct		
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	
D1.14: Quarterly report Q3.2024	WP1	15/10/2024	Delivered	15/10/2024	
D1.15: Quarterly report Q4.2024	WP1	15/01/2025	Delivered	15/01/2025	
D1.16: Quarterly report Q1.2025	WP1	15/04/2025	Delivered	15/03/2025	This report
D1.17: Quarterly report Q2.2025	WP1	15/07/2025			
D1.18: Annual progress report	WP1	23/08/2024	Delivered	13/08/2024	
D1.19: Final progress report	WP1	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
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	Delivered	13/08/2024	
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	Delivered	13/08/2024	
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	Delivered	13/08/2024	
D2.04: EMODnet Physics data management including metadata and metadata governance v.2025	WP2	22/08/2025			
D2.05: EMODnet Physics List of products v.2024	WP2	22/08/2024	Delivered	13/08/2024	
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	Delivered	13/08/2024	

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
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-145: Physics Quality of Service Monitoring	Done	This ticket deals with a continuous monitoring of the EMODnet OGC services. Problems and solutions are tracked by tickets.		20/01/2025
EM-87: Some layers are missing a metadata URL.	In progress	Working on it		
EM-957: EMODnet lots to check if filter values are displayed in the preferred order	Done	Instruction provided		14/01/2025
EM-1015: EMODnet Ingestion layers: wrong urls for filters	In review	To test the updated version		
EM-1018: Physics layer animations not working	In progress	Problem with the definition and use of the timestamp between the CP and Physics. Under discussion		
EM-1019: EMODnet Physics - Absolute Sea Level trend map	Closed	Fixed		18/11/2024
EM-1021: EMODnet Physics - Change layer - Absolute Sea Level Trend (GLORYS12V) (m).	Closed	Fixed		18/11/2024
EM-1050: Provide ECAS	Done	Fixed		04/03/2025
EMODNET – 1938: EMODnet Impulsive Noise layer	Closed	Provided the requested info		13/12/2024

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

3. Communication assets

A. (Co-)Authoried 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-)authoried 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

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
<p>1. Current status and coverage of total available thematic data</p> <p>A) Volume and coverage of available data</p>	<i>Number of platforms</i>	<p>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 the 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. This process is ongoing and continuous, forming a major activity for the team. During the quarter we focused on information about the XBT and CTD resulting in an increase of data (e.g. temperature, salinity, dissolved oxygen.) related to these tools. Concerning the volume of data we report the "total volume" that includes both raw data and data products. This was decided to avoid confusion: some data collections or products contain multiple parameters (e.g., temperature and salinity), and assigning the volume to a single parameter could result in double-counting, undercounting, or misrepresentation. We the aim of the indicator is to provide a general overview of whether data storage is increasing or decreasing, bearing in mind that storage volume can be significantly influenced by compression techniques</p>
<p>What is your opinion on the data coverage within EMODnet for your thematic?</p>		<p>The available coastal data is still very limited. We are continuing the identification and actions on new data sources (e.g. Citizen Science projects). 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</p>

Comments on the progress indicators in the indicators spreadsheet		
Progress indicator	Means of collecting figures	Comment
		integrators (e.g. as anticipated CS acts). We are keeping working on synchronization of complementary source already available in INSTAC.
B) Usage of data in this quarter	<i>Server logs</i>	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	<i>Number of platforms</i>	Table 2A lists the products available in the Central Portal Geoviewer. These products are made available by the backend infrastructure were gridded and externally produced datasets are organized under the prod-erddap.emodnet-physics.eu, and operational data collections are organized under the data-erddap.emodnet-physics.eu.
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 Central Portal, where concepts are mapped using the controlled vocabulary (NVS::P33). As mentioned above, some products are organized under the EMODnet Physics ERDDAP, some under ERDDAP/ncWMS, and others under GeoServer. Indicator 2B captures the interaction with those services. Figures show some fluctuations, but overall indicate a positive increase in the use of the services. We added one metrics that is the number of visualizations (clicks) of the platform pages that indicates more than 7600 views in 3 months, that is (in average) 2500 views per month, that is showing a positive trend towards the number of views that the EMODnet Physics was used to receive.

Comments on the progress indicators in the indicators spreadsheet		
Progress indicator	Means of collecting figures	Comment
3. Internal and external organisations supplying/approached to supply data and data products within this quarter	<i>Please specify</i>	There are a number of new sources integrated (some are old providers that included new sources in the package) this activity goes back to back with metadata normalization and data cleaning (duplicates removal).
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 periods (peaks are twice the previous period, but the overall interaction is steady). According to Matomo stats (internal monitoring) on the HTML populating the geoviewer contents, we record from 3 to 5 times more traffic on Physics. If we look at the interaction on the ERDDAP or platform pages that populates the in situ Physics layers, we recorded about ten times more interactions. The current version of the Europa 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 (a bit lower due to the Xmas break). It would be more interesting to observe user interaction with the GeoViewer (the Physics segment), 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.	None.
Sea level	In situ platform	This product layer groups all the platforms collecting sea level (frequency 5m). 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.	None
Sea level	In situ platform	This product layer groups all the platforms collecting sea level (frequency 60m). 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.	None
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		SONEL published a new API to interoperate with data, the team is planning to update the services and product accordingly.
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.
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 and latest data) is popped up. The product layer offers filtering options.	To be added to the CP staging system.
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.	None
Salinity and Conductivity	Climatology (CORA)	Made available in two versions, one to be visualized in the geoviewer and one to be offered for download.	
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.
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.	None.
Temperature	Climatology (CORA)	Made available in two versions, one to be visualized in the geoviewer and one to be offered for download.	None.
Temperature	Sea Temperature Anomaly 30 Years (°C)		None.
Temperature	Seawater Temperature from GLODAPv2_2016b (°C)		None.

Underwater Noise	EMODnet Physics Continuous Noise fix platforms		None.
Underwater Noise	EMODnet Physics European Impulsive Noise Events Registry		To be updated with the latest data.
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.	None.
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)	None.

ECOSS products

Theme	Product name	status	Planned actions/next delivery
Underwater Noise	ECOSS - DB of annotated sounds - DATA	Product developed by ECOSS project, hosted by EMODnet (Physics)	None
Underwater Noise	ECOSS - DB of annotated sounds - METADATA	Product developed by ECOSS project, hosted by EMODnet (Physics)	None
Underwater Noise	ECOSS - DB of enhanced4AI sounds - DATA	Product developed by ECOSS project, hosted by EMODnet (Physics)	None
Underwater Noise	ECOSS - DB of enhanced4AI sounds - METADATA	Product developed by ECOSS project, hosted by EMODnet (Physics)	None
Underwater Noise	ECOSS - DB of sound signatures - DATA	Product developed by ECOSS project, hosted by EMODnet (Physics)	None
Underwater Noise	ECOSS - DB of sounds for testing - DATA	Product developed by ECOSS project, hosted by EMODnet (Physics)	None

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.)
13/01/2025		web	External		A		EuroGOOS – DATAMEQ meeting
19/1/2025		Lisbon, Portugal			A		LandSeaLot AM - key stakeholder for EMODnet
31/01/2025		web	internal		A		1 st DG MARE – CINEA – EMODnet Coordination meeting
03/02/2025	05/02/2025	Lecce, Italy	External		A		Coastal Predict & DCC Event – key stakeholder for EMODnet
10/03/2025	13/03/2025	Sopot, Poland	External		A		OBSSEA4CLIM Annual meeting - key stakeholder for EMODnet
14/03/2025		Genova, Italy	External		A		RAISE SPOKE 3 workshop – regional project that develops innovative services for EOVs monitoring
17/03/2025	19/03/2025	Palma, Italy	External		A		FOCCUS Annual Meeting - key stakeholder for EMODnet
21/03/2025		web	Internal		A		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.)
03/6/2025		Nice, France					OOS2025

```

%matplotlib inline
from shapely.geometry import Point
import os
import geodatasets
import pandas as pd
import geopandas as gpd
from geopandas import GeoDataFrame, read_file

import folium
import matplotlib as plt
import mapclassify

```

Script to extract the number of stations measuring a given parameter in a given seabasin (e.g. NWS)

```

#vers 2025-04-12
#PIATTAFORME

csv_url = 'https://data-erddap.emodnet-physics.eu/erddap/tabledap/EP_PLATFORMS_METADATA_V2.csv?'

csv_url = csv_url + 'PLATFORMCODE'
csv_url = csv_url + '%2Ccall_name'
csv_url = csv_url + '%2Clatitude'
csv_url = csv_url + '%2Clongitude'
csv_url = csv_url + '%2Cdatafeaturetype'
csv_url = csv_url + '%2Cfirstdateobservation'
csv_url = csv_url + '%2Clastdateobservation'

csv_url = csv_url + '%2Cp33_watertemperature'
csv_url = csv_url + '%2Cp33_currents'
csv_url = csv_url + '%2Cp33_optical'
csv_url = csv_url + '%2Cp33_river'
csv_url = csv_url + '%2Cp33_sealevel'
csv_url = csv_url + '%2Cp33_waves'
csv_url = csv_url + '%2Cp33_winds'
csv_url = csv_url + '%2Cp33_biochemical'
csv_url = csv_url + '%2Cp33_carbonsystem'
csv_url = csv_url + '%2Cp33_dissolvedoxygen'
csv_url = csv_url + '%2Cp33_seaice'
csv_url = csv_url + '%2Cp33_underwatersound'
csv_url = csv_url + '%2Cp33_watersalinity'
csv_url = csv_url + '%2Cp33_meteorological'

csv_url = csv_url + '%2Cdataownername'
csv_url = csv_url + '%2Cdataownercountryname'
csv_url = csv_url + '%2Cdataassemblycenter'

csv_url = csv_url + '%2Cplatformtypecode'
csv_url = csv_url + '%2Cplatformtypedescription'
csv_url = csv_url + '%2Cintegrator_id'
csv_url = csv_url + '%2Cingestion'
csv_url = csv_url + '%2Cofficial_repository'
csv_url = csv_url + '%2Ccreationdate'
csv_url = csv_url + '%2Cupdatedate'
csv_url = csv_url + '%2Cdatafiles'
csv_url = csv_url + '%2Cintegrator'
csv_url = csv_url + '%2Cavailabledates'

```

```

#load
try:
    #new_points = pd.read_csv(new_points, skiprows=[1])
    all_points = pd.read_csv(csv_url, skiprows=[1])
    print("Successfully loaded data")
    print(len(all_points))
except Exception as e:
    print("Error loading data:", e)
    print("csv_url:", csv_url)

```

```
ns_platform_type_counts = all_points[platformtypedescription].value_counts()  
print(ns_platform_type_counts.to_string())
```