



Your gateway to marine data in Europe

EMODnet Physics: a horizontal platform serving blue growth

EASME/EMFF/2016/006 - Operation, development and maintenance of a European Marine Observation and Data Network

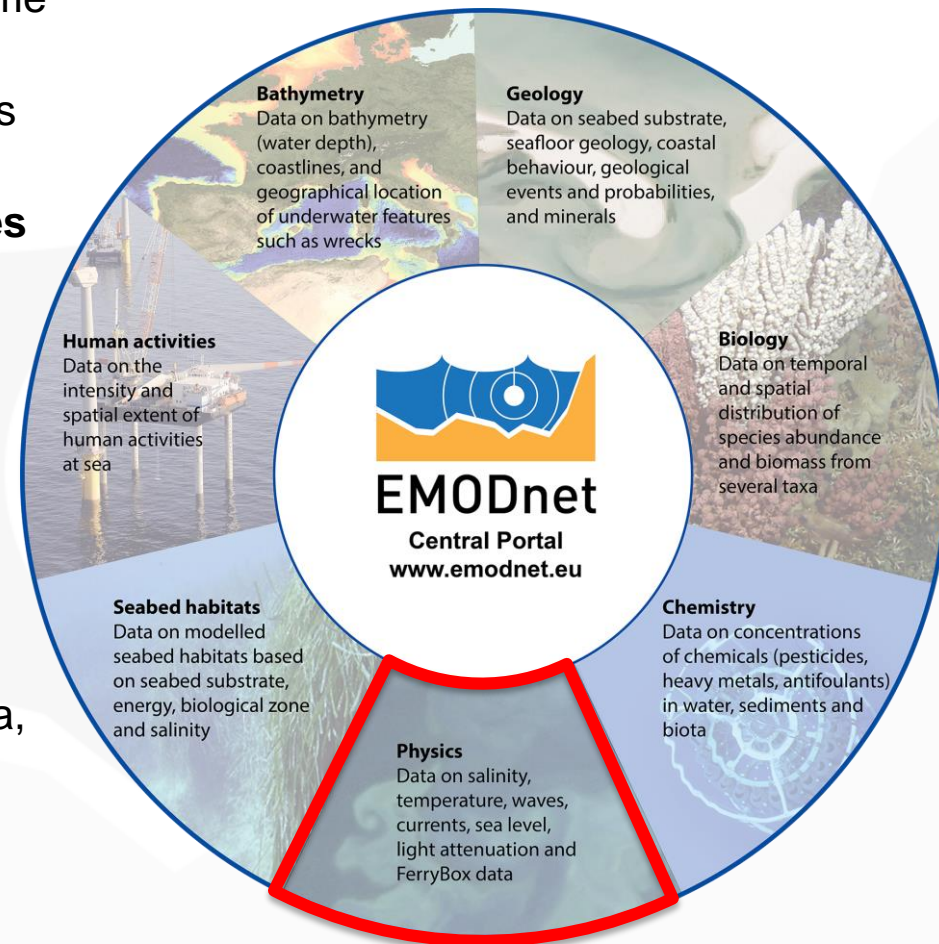
EASME/EMFF/2016/1.3.1.2 – Lot 3/SI2.749411

Antonio Novellino

antonio.novellino@ettsolutions.com

European Marine Observation and Data network

- **Long term data initiative** from the European Commission Directorate-General for Maritime Affairs and Fisheries (**DG MARE**)
- Collect marine data once, use it many times
- Data infrastructure is developed through a **stepwise approach in three major phases**
- Consists of:
 - 7 thematic portals
 - Data Ingestion and Safe Keeping
 - 6 check points
 - Central portal + Secretariat
- >160 organizations assembling marine data, products and metadata



Data age

Near real-time (NRT) data at in situ observatories at sea

Reprocessed NRT data (average/trends)

Archived data derived from further elaboration and validation

Products

- Sea Level trends
- Temp & Salinity maps
- Surface Currents fields
- Ice coverage and thick.
- River runoff & TSM
- Impulsive Noise registry
- (in situ) Wind @ sea level

Parameters

Temperature	Wind
Salinity	Atmospheric param.
Waves	Biogeochemical param.
Currents	Optical properties
Sea Level	Ice data
Under water noise	River Runoff

Services

Data portal	Catalogue
Products portal	Newsletter & digest
Monitoring tools	Reports (mail)
http & permaURLs	API REST/SOAP
OGC WMS, WFS, WCS	THREDDS
ERDDAP	widgets

A common infrastructure to serve many users

Near Real Time data/operational data

Repositories:

- CMEMS INSTAC - EuroGOOS ROOS (5 regional assembly centres + 1)
- Institutes*
- GDAC/IOOS/IMOS**

Platforms:

- fixed mooring, ferrybox, tide gauge, drifting buoy, ARGO, profiling mooring, HF Radar, ships

Time dimension:

- Daily files, Monthly aggrg., Rep long term

Metadata + Transport format:

- Netcdf (CF convention), csv

Historical validated data sets

Repositories:

- CDI: centralized
- Datasets: NODC and SeaDataNet nodes (100 centres)

Platforms:

- fixed stations (mooring, tide gauge)

Time dimension:

- Depending on datasets (ranging from month to years)

Metadata + Transport format:

- CDI + ODV4/Netcdf (CF)

Reprocessed data/Products

Repositories:

- SDN, CMEMS INSTAC, PSMSL, SONEL, GRDC, MEOP, ...

Time dimension:

- Depending on products

Geo dimension:

- Depending on products

Metadata + Transport format:

- Netcdf (CF), OGC

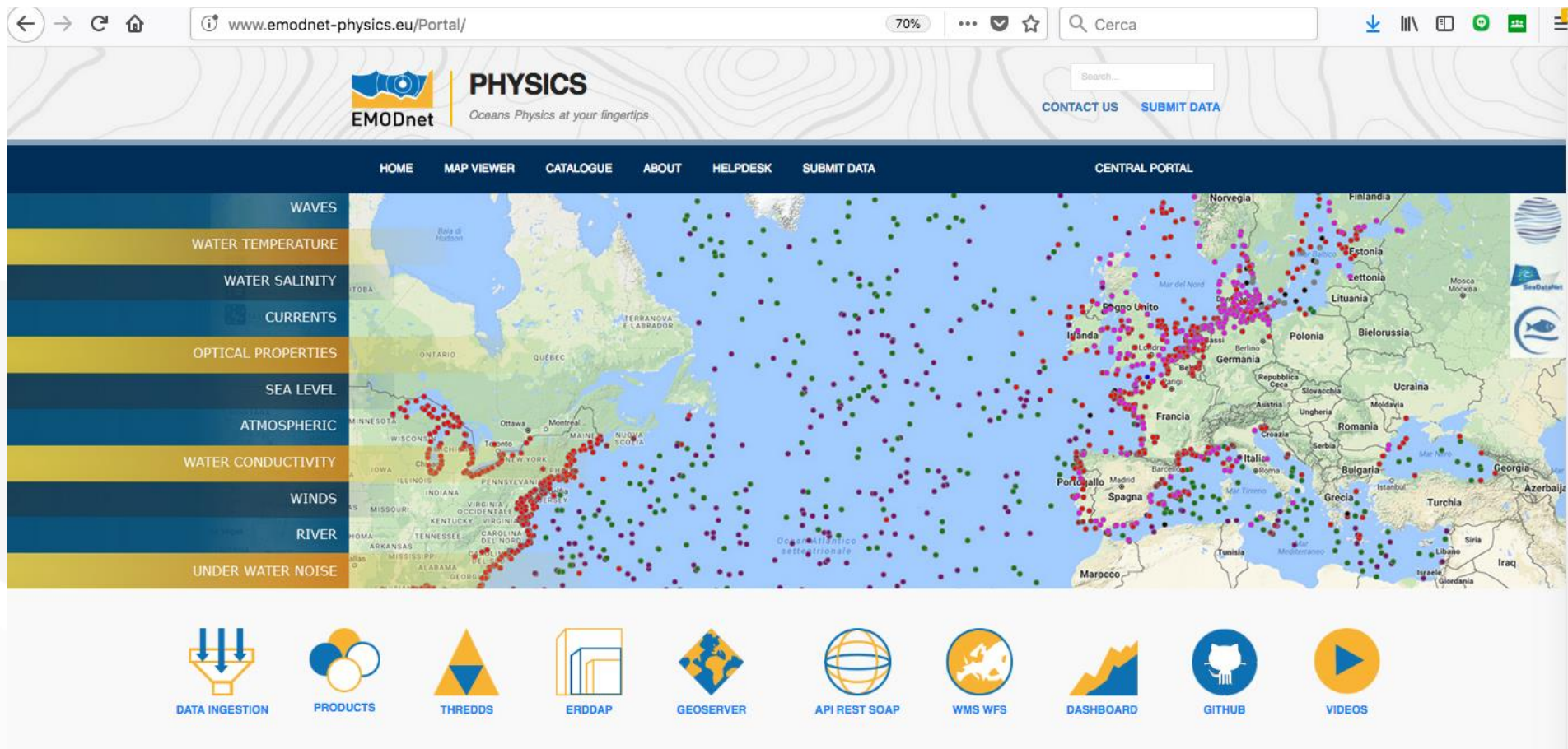
For the parameters (and platforms) that are not managed according this data flow, **EMODnet Physics is supporting/developing the full data management, hosting and dissemination chain (including RT):**

HFR, River Outflow, Water noise

International organizations sharing their data



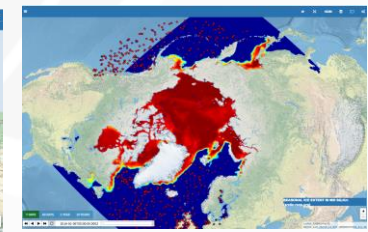
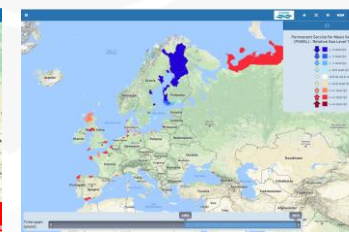
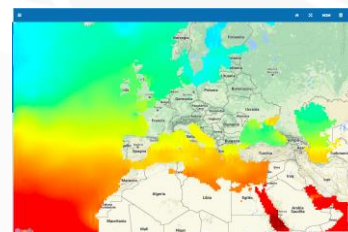
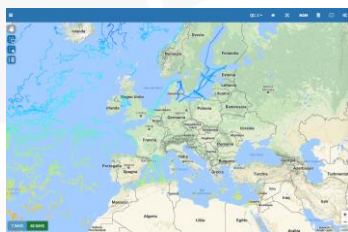
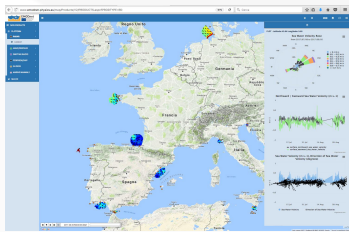
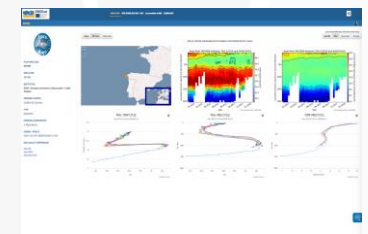
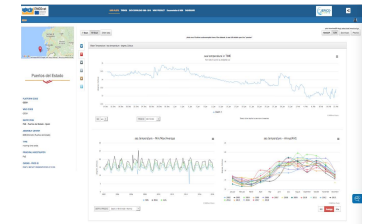
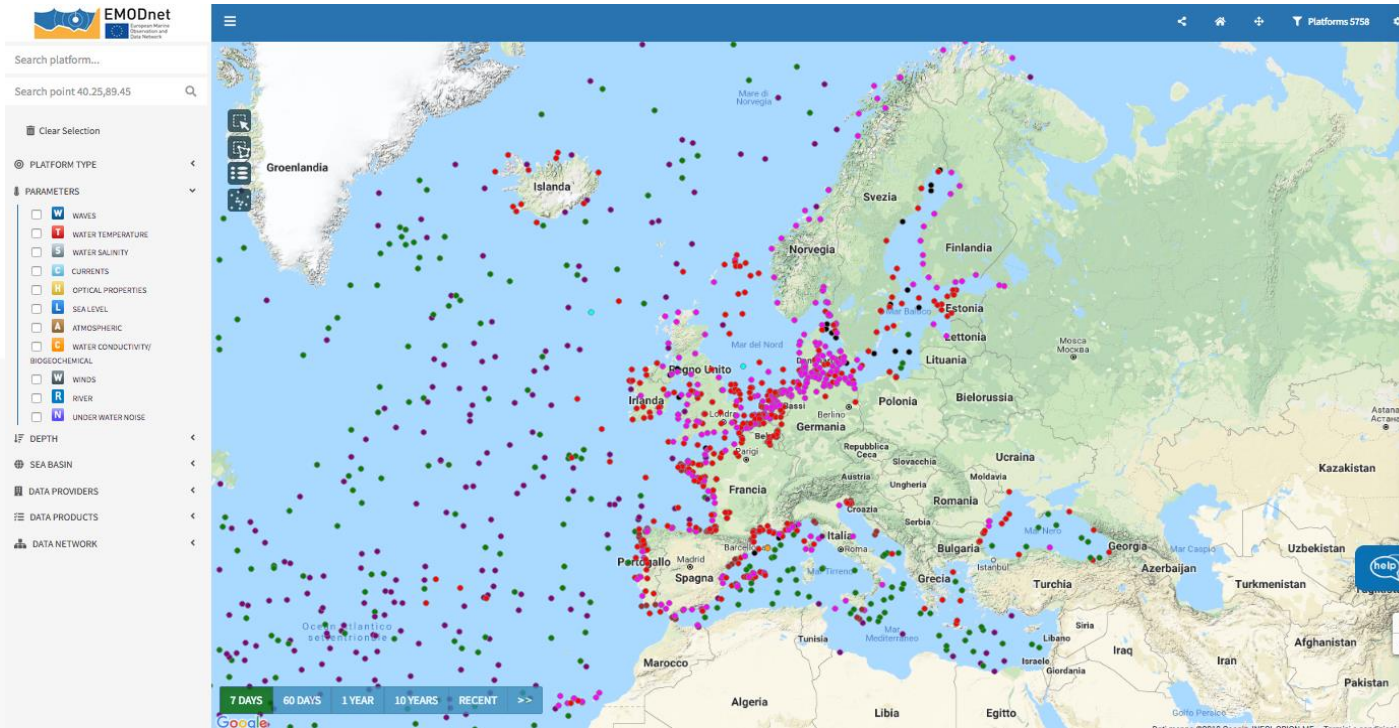
One portal, thousands of datasets, many products and services




The screenshot shows the EMODnet Physics portal interface. At the top, there is a navigation bar with the EMODnet logo, the word "PHYSICS", and the tagline "Oceans Physics at your fingertips". Below this is a search bar and links for "CONTACT US" and "SUBMIT DATA". A main navigation menu includes "HOME", "MAP VIEWER", "CATALOGUE", "ABOUT", "HELPDESK", "SUBMIT DATA", and "CENTRAL PORTAL". The central part of the page features a map of the Atlantic and Mediterranean regions, overlaid with numerous colored dots representing data points. On the left side of the map, there is a vertical menu with categories: WAVES, WATER TEMPERATURE, WATER SALINITY, CURRENTS, OPTICAL PROPERTIES, SEA LEVEL, ATMOSPHERIC, WATER CONDUCTIVITY, WINDS, RIVER, and UNDER WATER NOISE. At the bottom of the page, there is a row of icons representing various services: DATA INGESTION, PRODUCTS, THREDDS, ERDDAP, GEOSERVER, API REST SOAP, WMS WFS, DASHBOARD, GITHUB, and VIDEOS.

more than 25.000 connected platforms, more than 600.000 datasets

What you see, what you get





Puertos del Estado

PLATFORM CODE
62084

WMO CODE
62084

INSTITUTION
PdE - Puertos del Estado - Spain

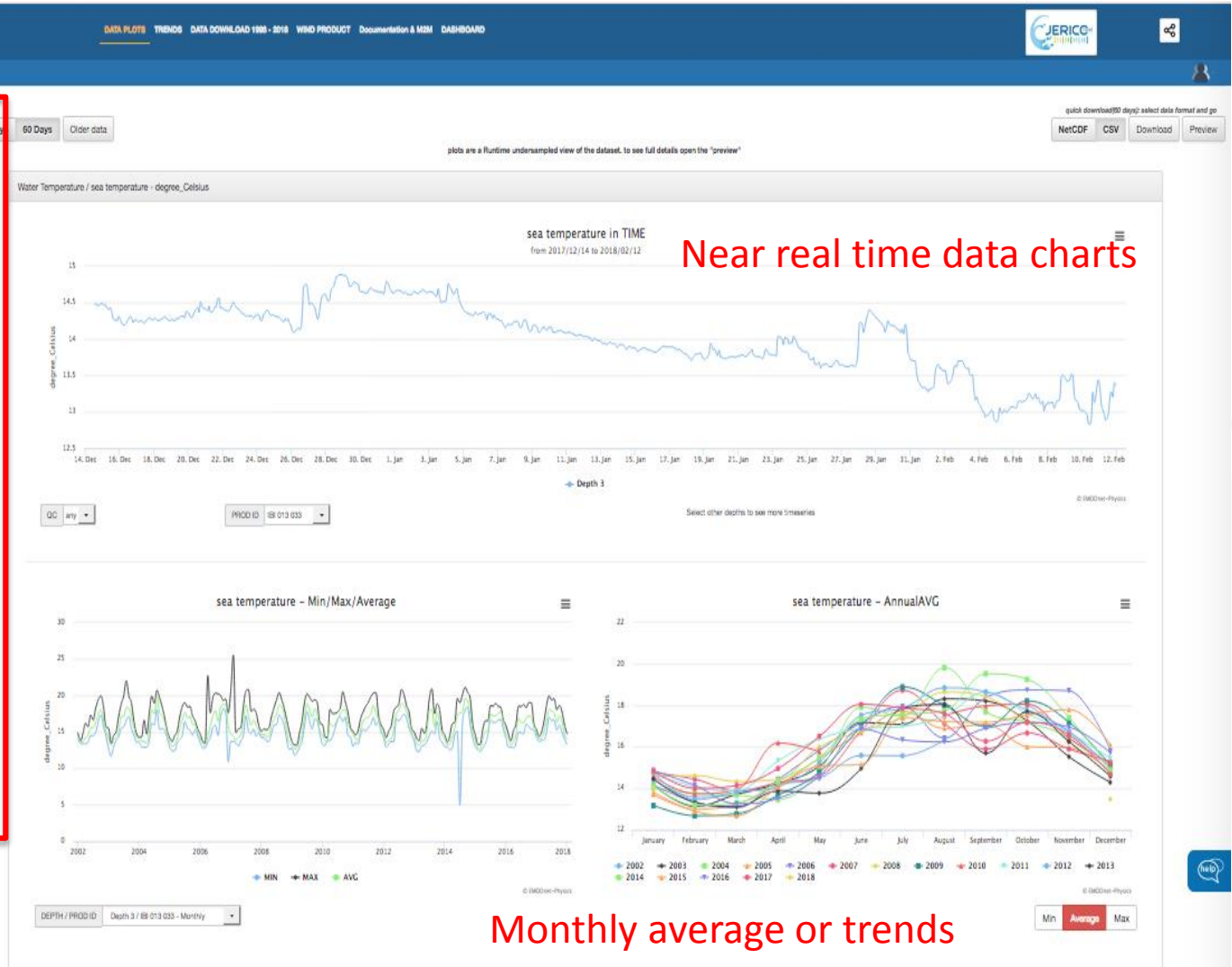
ASSEMBLY CENTER
IBIROCS DAC (Puertos del Estado)

TYPE
mooring time series

PRINCIPAL INVESTIGATOR
PdE

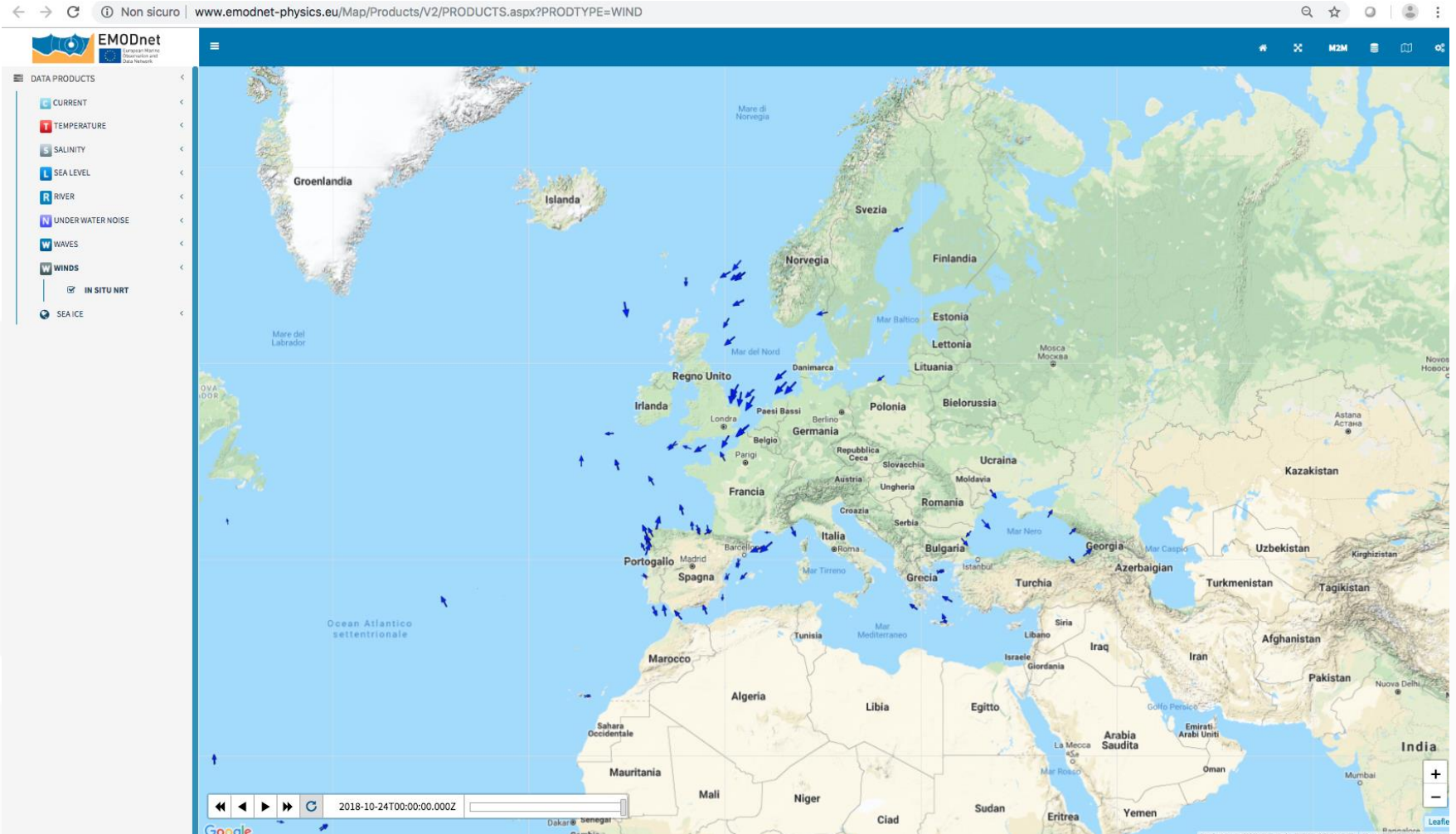
CMEMS - PROD ID
INSTU_IBI_NRT_OBSERVATIONS_013_033

metadata

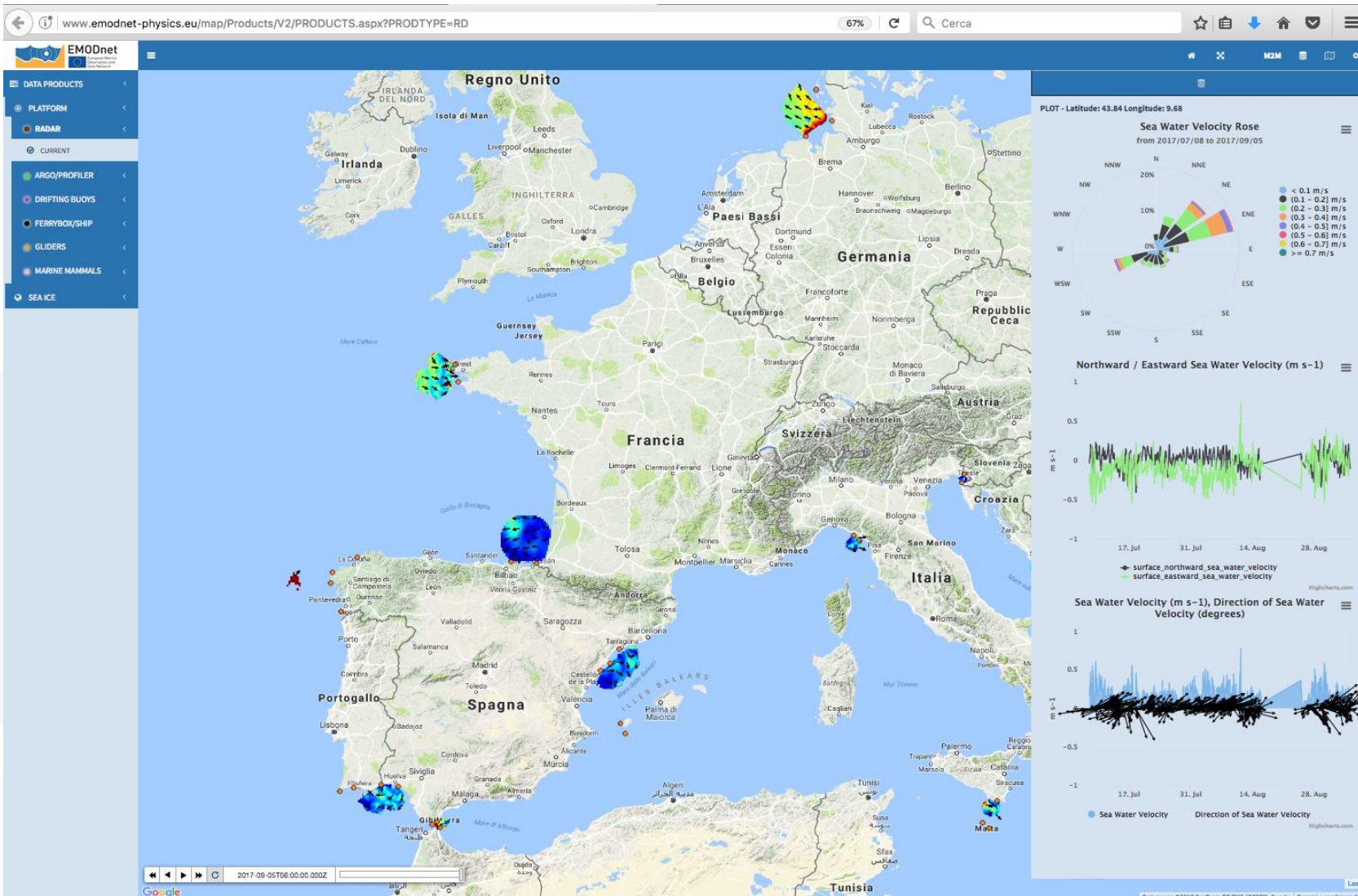


Monthly average or trends

Last 30 days of Wind direction and intensity

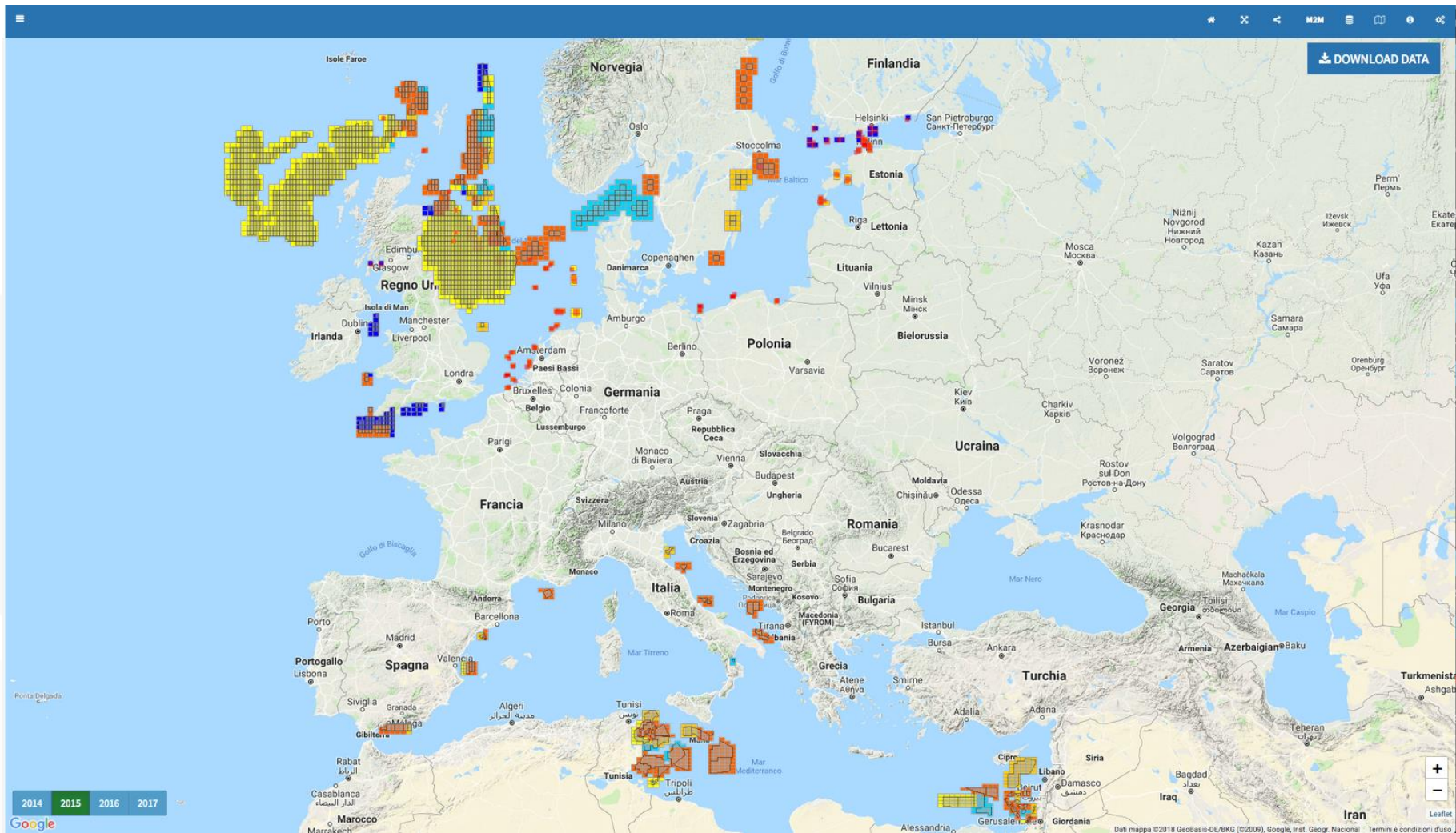


Surface Current Field Maps

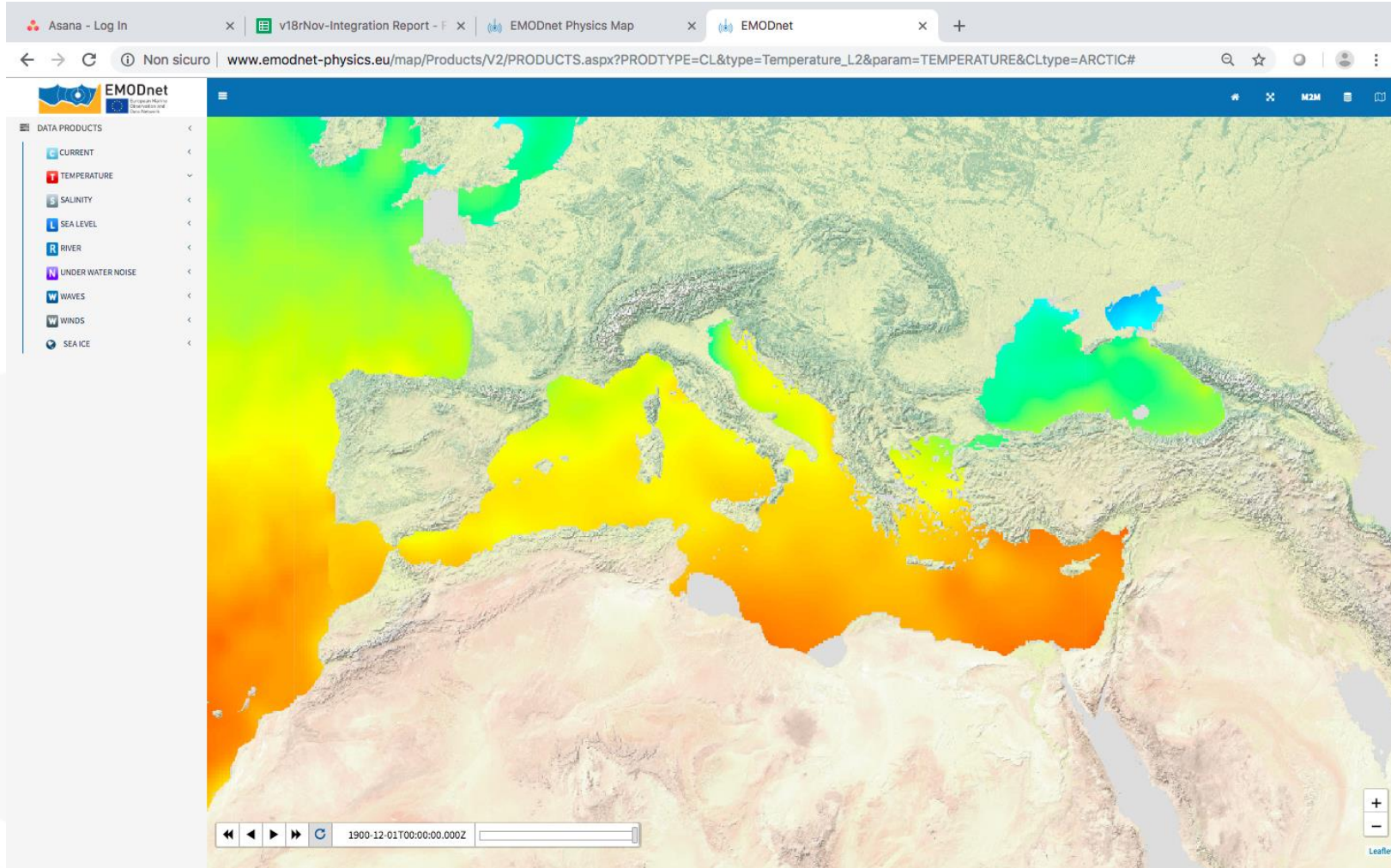
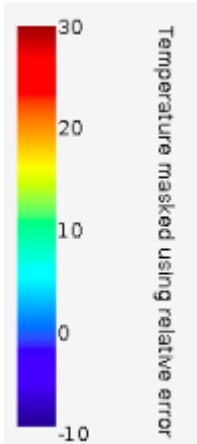


Underwater impulsive noise registry

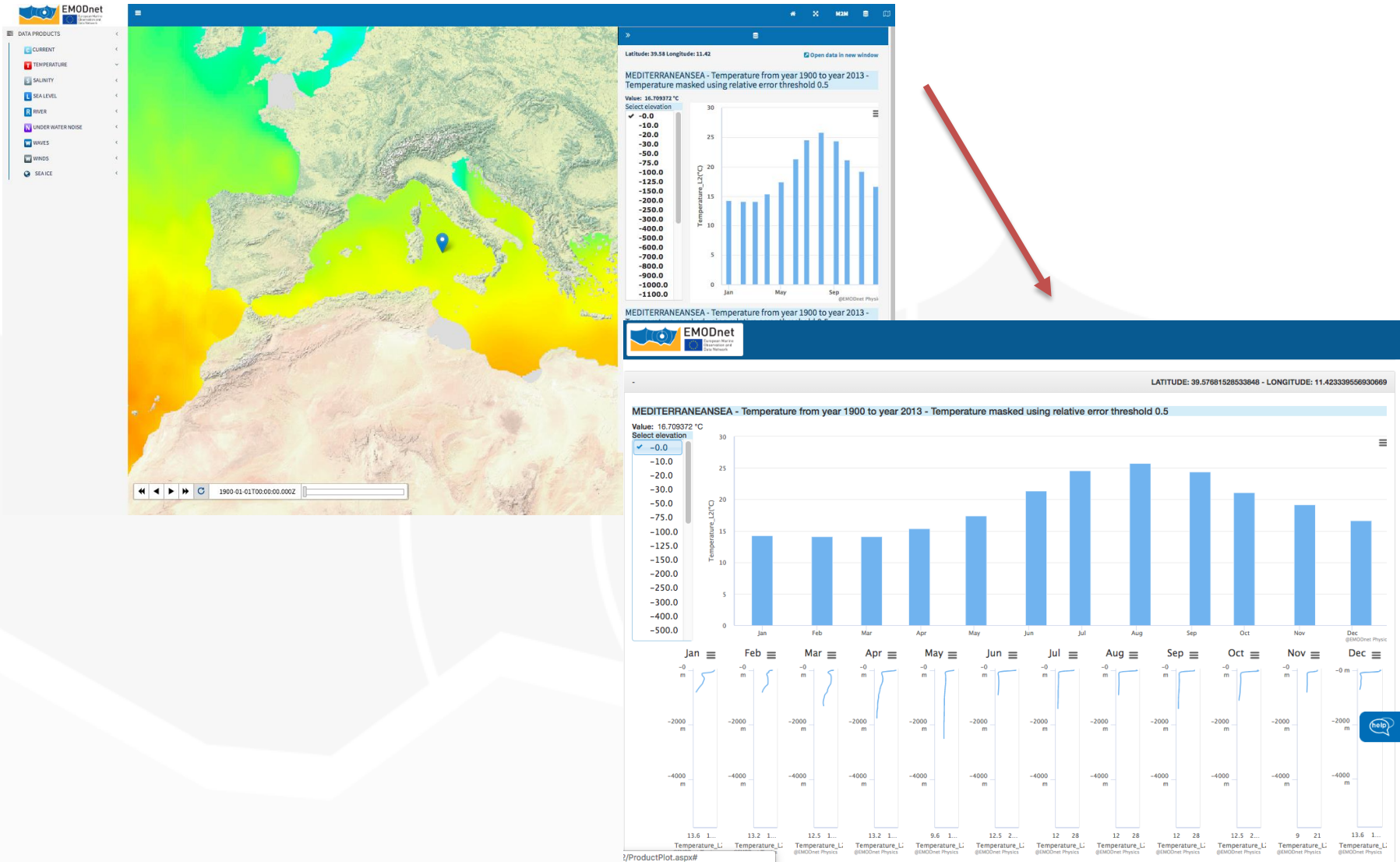
Latitudinal row 10' * longitudinal cols 20', pulse event days per block



SDN TEMP climatology



SDN TEMP climatology



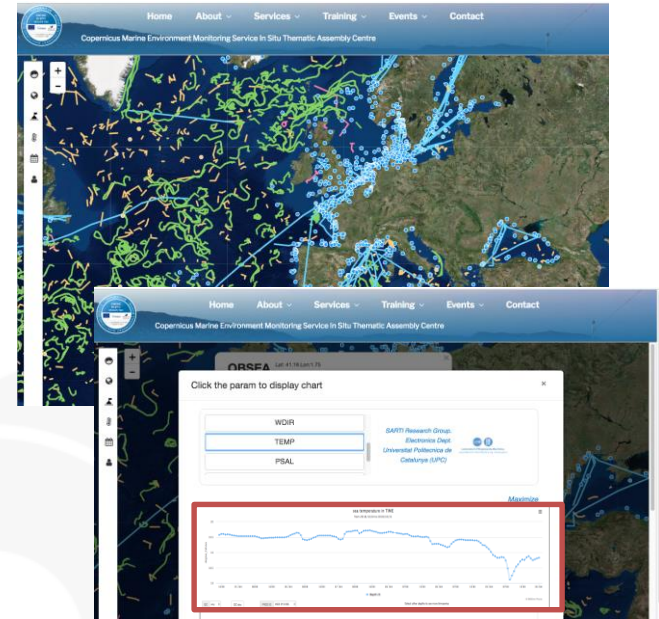
CMEMS INSTAC uses the EMODnet Physics widgets to improve the viewing service developed for outreach and promotion activities

The Copernicus Marine Environment Monitoring Service (CMEMS) In Situ Thematic Assembly Centre (In Situ TAC) is the component of the Copernicus Marine Service which ensures a consistent and reliable access to a range of *in situ* data for the purpose of service production and validation.

Service: WIDGET

<http://www.emodnet-physics.eu/MapTest/Charts/PlotDataTimeSeries.aspx?paramcode=TEMP&platid=8805&plattype=MO&timerange=7>

Paramcode: TEMP, PSAL, SLEV, WDIR, ...
Plattype: MO, FB, AP, GL ...
timerange: 7, 60,

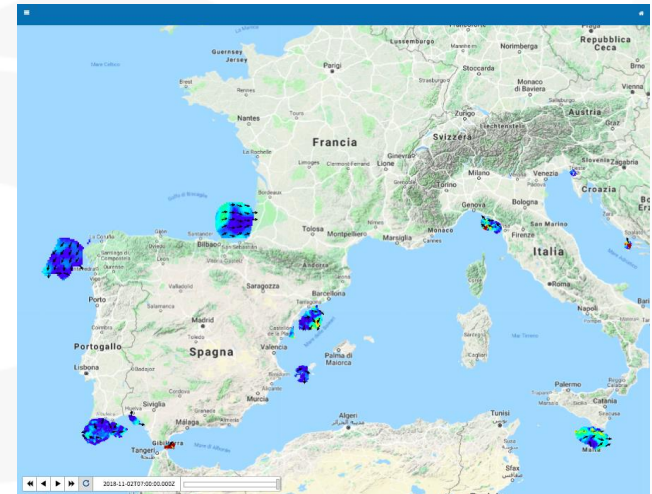


Water-pollutants-dispersion studies are usually performed with numerical codes, which require both meteorological and marine **surface current inputs**. The inputs are usually provided by circulation models and/or by radar data analysis, **such as those available in the EMODnet Physics database**.

PM_TEN (Physical Methods and Technologies for Environmental Needs) is an Italian supporting assessment on the analysis of air pollution, atmospheric impact and the effects of harbours and ships on urban air quality.

Service: THREDDS SERVER

- <http://thredds.emodnet-physics.eu/thredds/catalog.html>
- <http://thredds.emodnet-physics.eu/thredds/HFRADARCatalog.html>

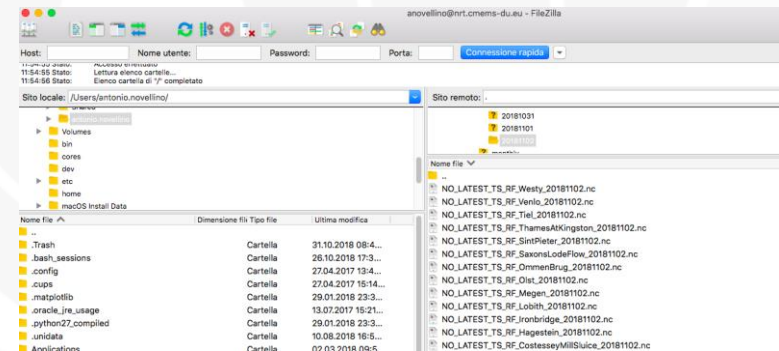


DLR's German Remote Sensing Data Center (DFD) implemented a validation chain of SAR (Synthetic Aperture Radar) satellite based products (wind and wave) on the in situ station data distributed by EMODnet Physics



The German Aerospace Center (DLR) DLR has been given responsibility by the federal government for the planning and implementation of the German space program.

Service:
ad-hoc FTP-distribution-server



<http://www.emodnet.eu/validation-sar-satellite-based-information-products-wave-height-and-combination-emodnet-station-data>

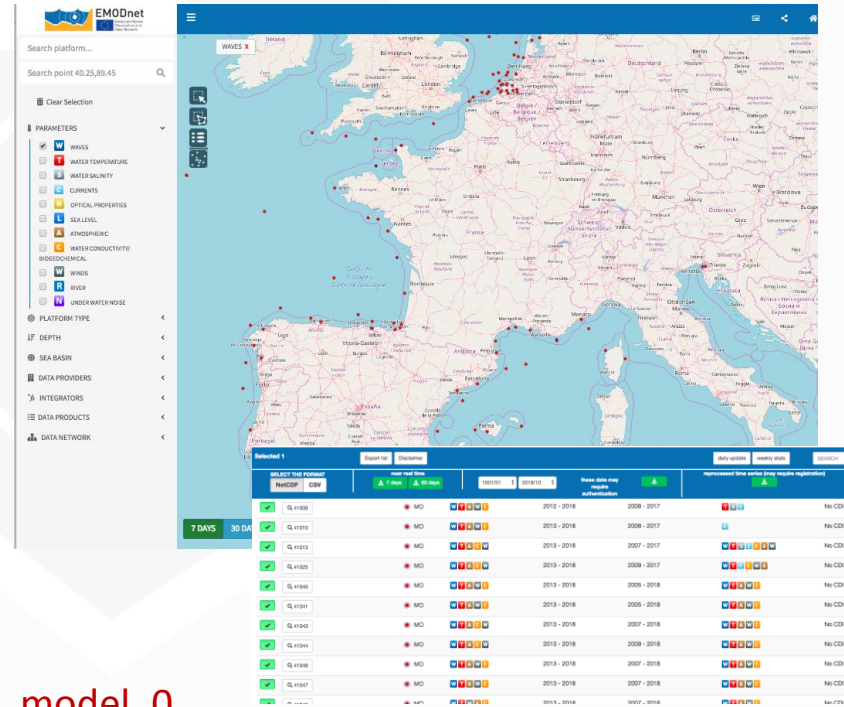


Mediterranean Wind Wave Model is a met-ocean **database** aimed at providing nearly 40 years of hourly time series of wind and wave conditions for the entire Mediterranean Sea.

EMODnet Physics data were and are used for calibration and continuous validation purposes

DHI is an international firm with its headquarters in Denmark, which specializes in delivering solutions to various water challenges.

Service: webmap and platforms list download



The screenshot displays the EMODnet web interface. On the left, there is a search bar and a filter menu with categories like PARAMETERS, PLATFORM TYPE, DEPTH, SEA BASIN, DATA PROVIDERS, INTEGRATORS, DATA PRODUCTS, and DATA NETWORK. The main area shows a map of the Mediterranean Sea with various data points marked. Below the map is a table of data products.

SELECT FIND PLATFORM	NAME	LOC	TIME RANGE	DATA PROVIDER	INTEGRATOR	DATA PRODUCT	DATA NETWORK
<input checked="" type="checkbox"/>	Q_41000	MO	2010 - 2018	2008 - 2017		No CD	x
<input checked="" type="checkbox"/>	Q_41010	MO	2013 - 2018	2008 - 2017		No CD	x
<input checked="" type="checkbox"/>	Q_41020	MO	2013 - 2018	2007 - 2017		No CD	x
<input checked="" type="checkbox"/>	Q_41030	MO	2013 - 2018	2008 - 2017		No CD	x
<input checked="" type="checkbox"/>	Q_41040	MO	2013 - 2018	2008 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41050	MO	2013 - 2018	2006 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41060	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41070	MO	2013 - 2018	2009 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41080	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41090	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41100	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41110	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41120	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41130	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41140	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41150	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41160	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41170	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41180	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41190	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41200	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41210	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41220	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41230	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41240	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41250	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41260	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41270	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41280	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41290	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41300	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41310	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41320	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41330	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41340	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41350	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41360	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41370	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41380	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41390	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41400	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41410	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41420	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41430	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41440	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41450	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41460	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41470	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41480	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41490	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41500	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41510	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41520	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41530	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41540	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41550	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41560	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41570	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41580	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41590	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41600	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41610	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41620	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41630	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41640	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41650	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41660	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41670	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41680	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41690	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41700	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41710	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41720	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41730	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41740	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41750	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41760	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41770	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41780	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41790	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41800	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41810	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41820	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41830	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41840	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41850	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41860	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41870	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41880	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41890	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41900	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41910	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41920	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41930	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41940	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41950	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41960	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41970	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41980	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_41990	MO	2013 - 2018	2007 - 2018		No CD	x
<input checked="" type="checkbox"/>	Q_42000	MO	2013 - 2018	2007 - 2018		No CD	x

EMODnet Physics River data service supports the LAMBDA project to demonstrate the quality of modelling results produced by the watershed models.

The EMODnet Physics - River data service provides a unique one stop shop for operational near real time river data in a standardised format for several countries facilitating the access, download and validation of this kind of data

Service: API and web services

<https://github.com/EMODnet-Physics/EMODnet-Physics-Documentation/blob/master/WebService.md>



THE PROJECT

The LAMBDA project aims to improve the CMEMS MFCs thermohaline circulation in coastal areas by a better characterisation of the land-marine boundary conditions, with special regard to the salinity fields, through exploring the capacities of watershed numerical modelling and its coupling to mesoscale regional ocean models. New Earth Observation sea surface salinity products and experts groups will evaluate the project products impact on ocean salinity fields.

Currently hydrological models are not generally coupled to coastal and regional ocean models because, even if regarded as a powerful and useful tool, they do not fully accomplish to estimate accurately the right volume of water reaching the coastal zone for many reasons including water management activities such as human consumption, irrigation, etc. For this reason, many coastal and ocean models continue to use river climatologies as boundary conditions for representing such an active boundary. Furthermore, continuous salinity observations in the coastal area are scarce and sensors are highly unreliable while current Earth Observation (EO) products for salinity poorly represents the coastal gradients.



GitHub, Inc. [US] | <https://github.com/EMODnet-Physics/EMODnet-Physics-Documentation/blob/master/WebService.md>

1 contributor

558 Lines (429 sloc) 16.4 KB

Raw Blame History

EMODnet Physics Web Service

Method (click method name for description of return variables)	Description	Parameters (description)	Example
GetAllDataOwner	it gives the list and details of the data owners/contributors		XML TXT
GetAllLatestData60Days	it gives the latest data (60 days) for the specified platform	PlatformID	XML TXT
GetAllLatestDataCode	it gives the latest data (60 days) for the specified platform and parameter	PlatformID ParamCode	XML TXT

<http://www.emodnet.eu/emodnet-cmems-together-build-framework-improving-land-boundary-conditions-cmems-regional-products>

SOOSmap builds on the data aggregation and sharing infrastructure of EMODnet to bring circumpolar datasets into a single web-based discovery portal.

Through SOOSmap, users can discover, plot, explore, and download datasets of relevance to biologists, ecologists, ice scientists, and physical oceanographers.

The use of EMODnet allows SOOS to develop the data-sharing tools it needs **without duplicating existing infrastructure** and without placing undue burden on its member organisations

Service: child portal

<http://www.soos.aq>

SOOSmap brings circumpolar Southern Ocean data to a computer near you

Pip Bricher¹, Antonio Novellino², Patrick Gorringer³, Marco Alba⁴, Jie Zhang⁴, and Roger Proctor

¹Southern Ocean Observing System, University of Tasmania, Private Bag 110, Sandy Bay Tasmania, 7001 Australia, email: daa@soos.aq
²EMODnet Physics, Genova, Italy; ³EuroGOOS, Sweden; ⁴Polar Research Institute of China, China; ⁵IMOS/GOON, Australia

The Southern Ocean Observing System (SOOS) is an international initiative with the mission to facilitate the collection and delivery of essential observations on dynamics and change of Southern Ocean systems to all international stakeholders (researchers, governments, industries), through design, advocacy and implementation of cost-effective observing and data delivery systems. As part of this, SOOS has a mandate to provide tools to make it easier to share and discover existing data from the Southern Ocean.

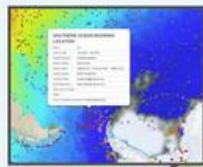


Figure 2. An example of the metadata plot pages up when you hover over a feature on SOOSmap.

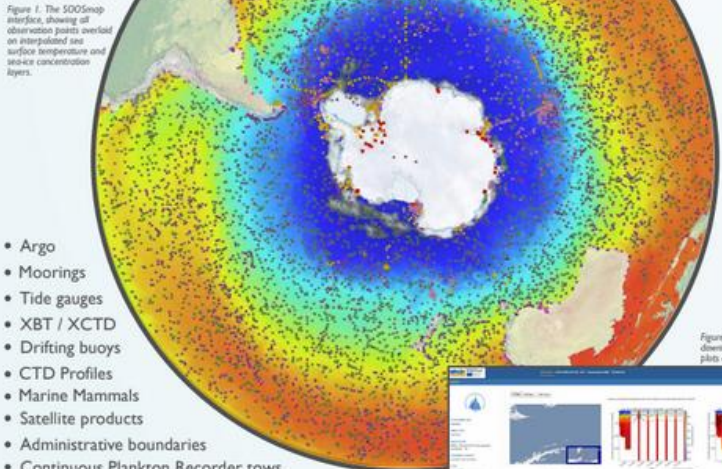


Figure 1. The SOOSmap interface, showing all observation points overlaid on an interpolated sea surface temperature and sea-ice concentration layers.

- Argo
- Moorings
- Tide gauges
- XBT / XCTD
- Drifting buoys
- CTD Profiles
- Marine Mammals
- Satellite products
- Administrative boundaries
- Continuous Plankton Recorder tows
- NECKLACE Ice Shelf Melt Observations
- **More layers coming all the time**

- Explore spatial, temporal and multi-disciplinary ocean observation data
- Overlaid on data products (e.g. SST, sea ice) and key geographic boundaries (e.g. CCAMLR)
- Discover circumpolar datasets
- Plot recent observations
- Download datasets




Figure 3. SOOSmap data download page showing plots of key variables.

The European Marine Observation and Data Network (EMODnet) is a network of organisations supported by the EU's integrated maritime policy. These organisations work together to observe the sea, process the data according to international standards and make that information freely available in interoperable data layers and data products.

SOOSmap is a collaboration between SOOS and the European Marine Observation and Data Network (EMODnet) Physics group

www.soos.aq/data/soosmap

Page 1 / 1

EMODnet Data Ingestion

WAKE UP YOUR DATA

Set them free for Blue Society

The **Data Ingestion Portal** facilitates submitting marine datasets for further processing, Open Data publishing and contributing to applications for society.

emodnet-ingestion.eu



Ocean physics at your fingertips

contacts@emodnet-physics.eu



www.emodnet.eu

Your gateway to marine data in Europe