



# EMODnet Physics

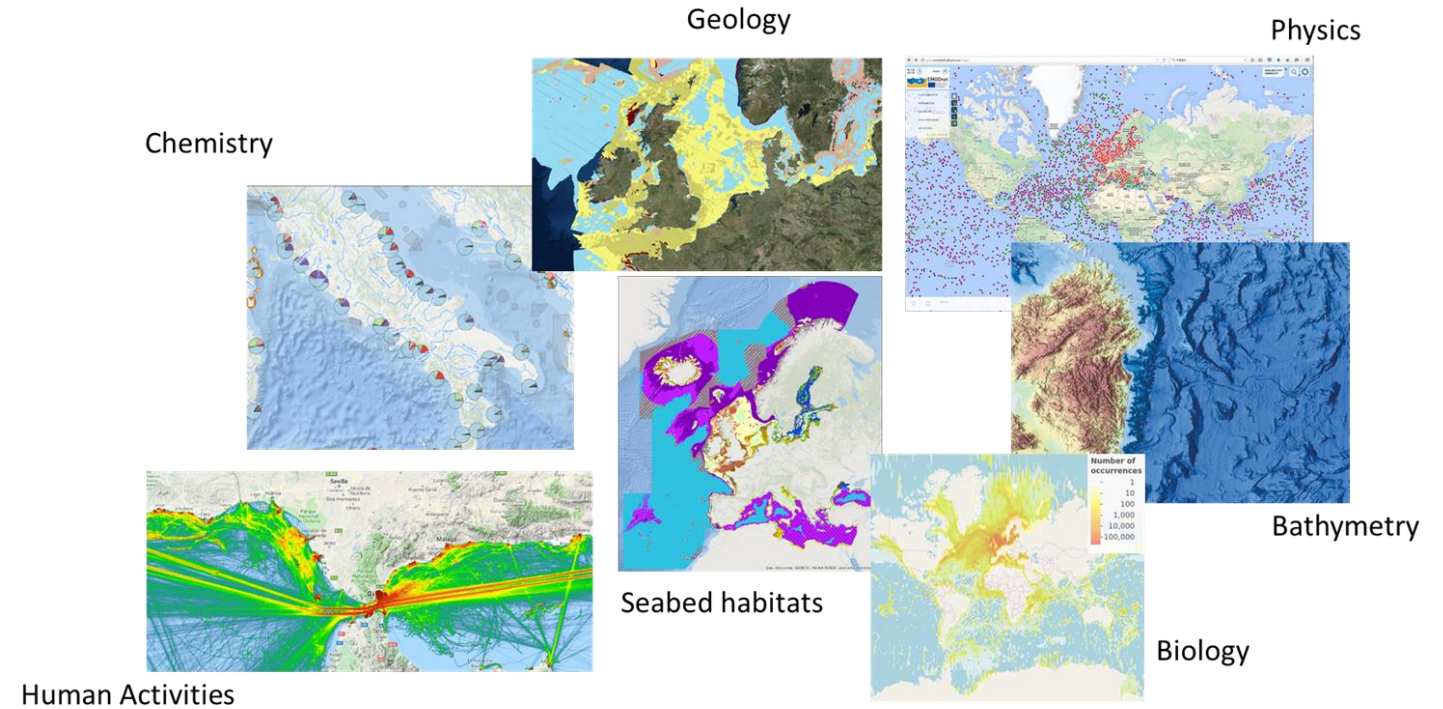
EASME/EMFF/2020/3.1.11/Lot4/SI2.838612 - EMODnet Physics

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Patrick Gorringe

EMODnet Physics  
[www.emodnet-physics.eu](http://www.emodnet-physics.eu)

# European Marine Observation and Data network

- EMODnet is an initiative by the EU DG MARE since 2008 and it has been organised by building thematic communities for physics, chemistry, geology, biology, seabed habitats, human activities, and bathymetry
- Each of the communities are in charge for data aggregation, data processing, ... data dissemination and develops its own products and services,
- In 2016 the program was complemented by the EMODnet Central portal and EMODnet Ingestion.
- 2022 Centralization Phase



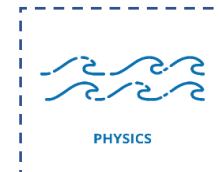
BATHYMETRY



GEOLOGY



SEABED HABITATS



PHYSICS



CHEMISTRY



BIOLOGY



HUMAN ACTIVITIES

# EMODnet Physics

*in situ data and reanalysis*

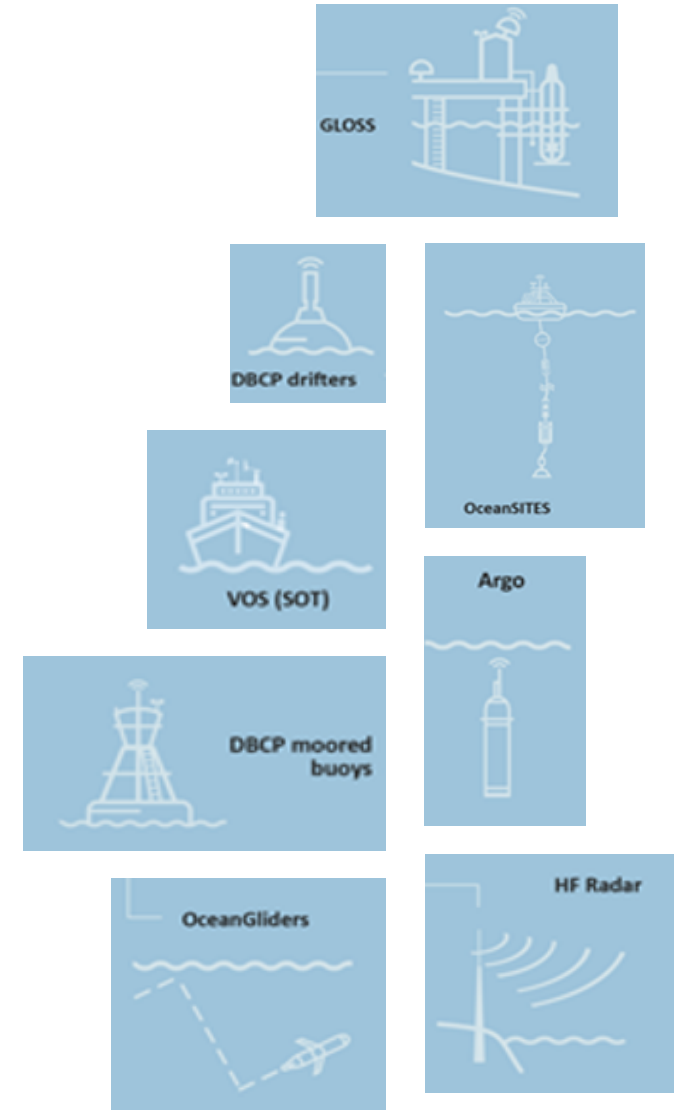
- Integrate and make available Ocean Physics data
  - Operational Real Time, Near Real Time, and Delayed Mode, Reprocessed & Validated
- Make available Products on Ocean Physics
  - Build on available infrastructures
  - redistribute available products
  - develop products (collection of data and elaborations)
- Make data, metadata and products Findable, Accessible, Interoperable, Reusable
  - Use and promote harmonization and common standards

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

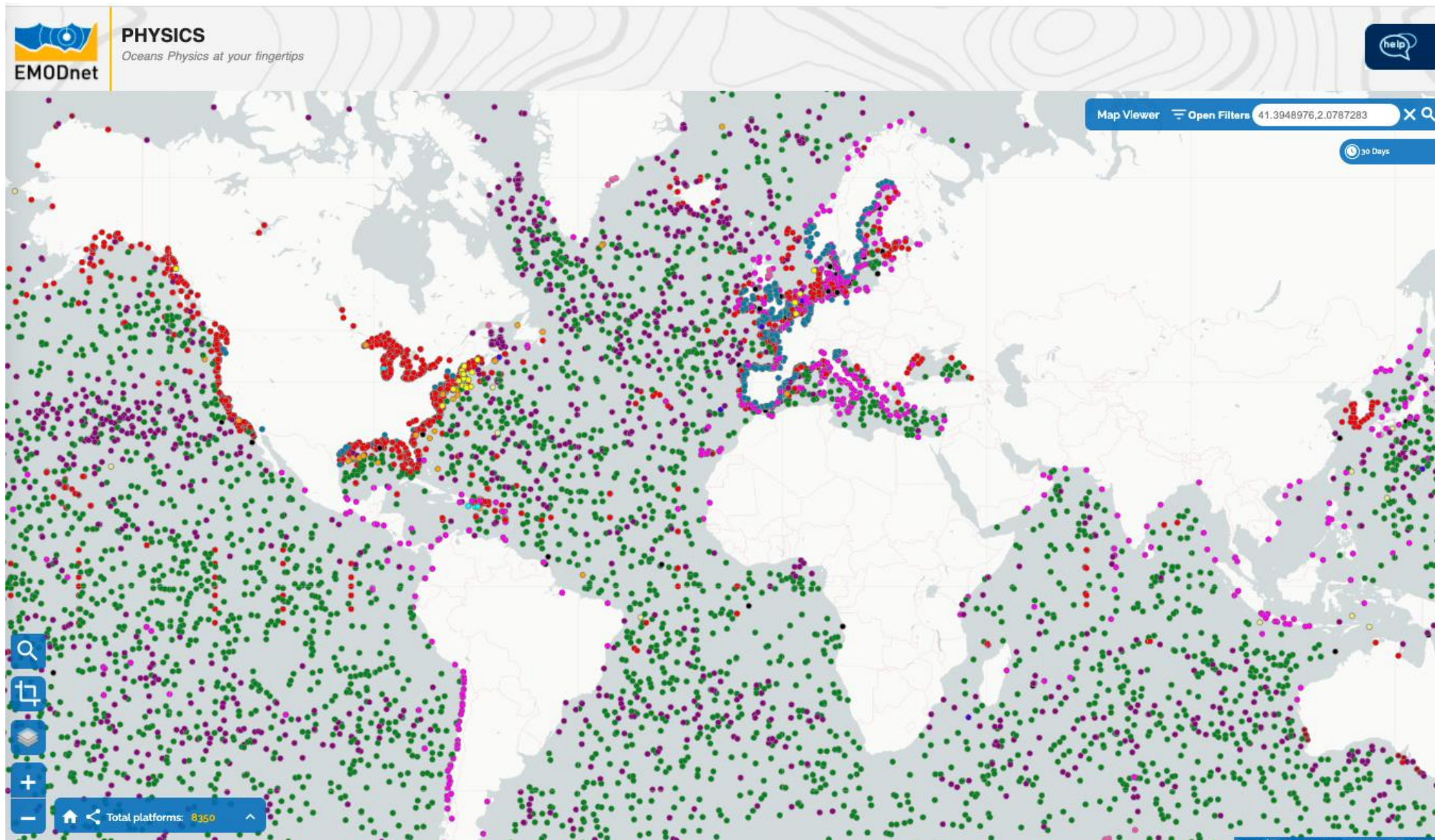
Data age
Near real-time (NRT) data at in situ observatories at sea
Delayed mode and recovered/reporcessed
Reanalysis, climatology, trend maps, ...

# Data and Scope

- Temperature in the water column
- Salinity in the water column
- Wave direction, height
- Wind @ Sea Level, direction, intensity
- Sea Currents direction, intensity
- Sea Level and sea level trends
- Optical properties
- Sea Ice
- River outflow
- Acoustic pollution
- Atmospheric - Meteorological data @ sea level

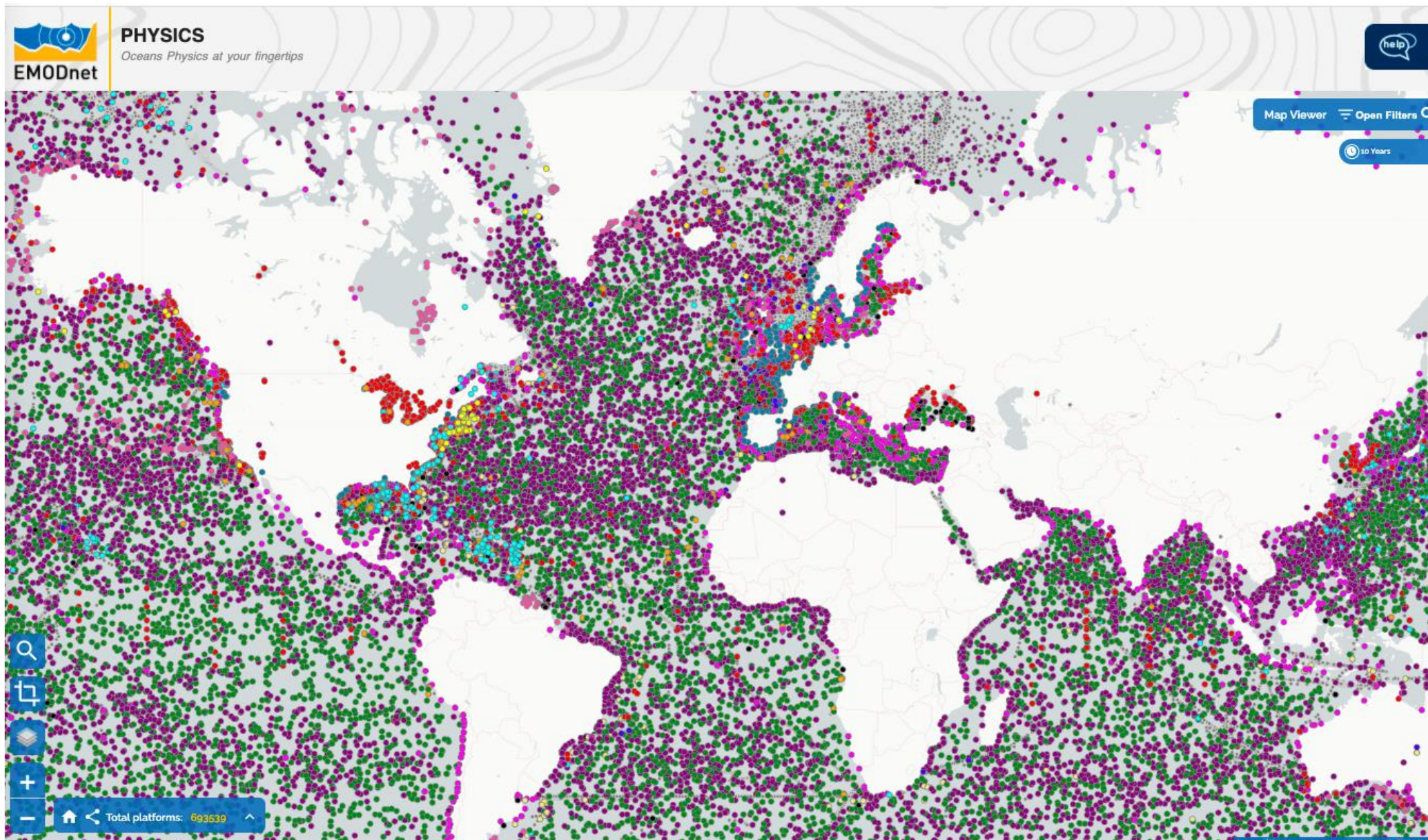






One month of platforms data

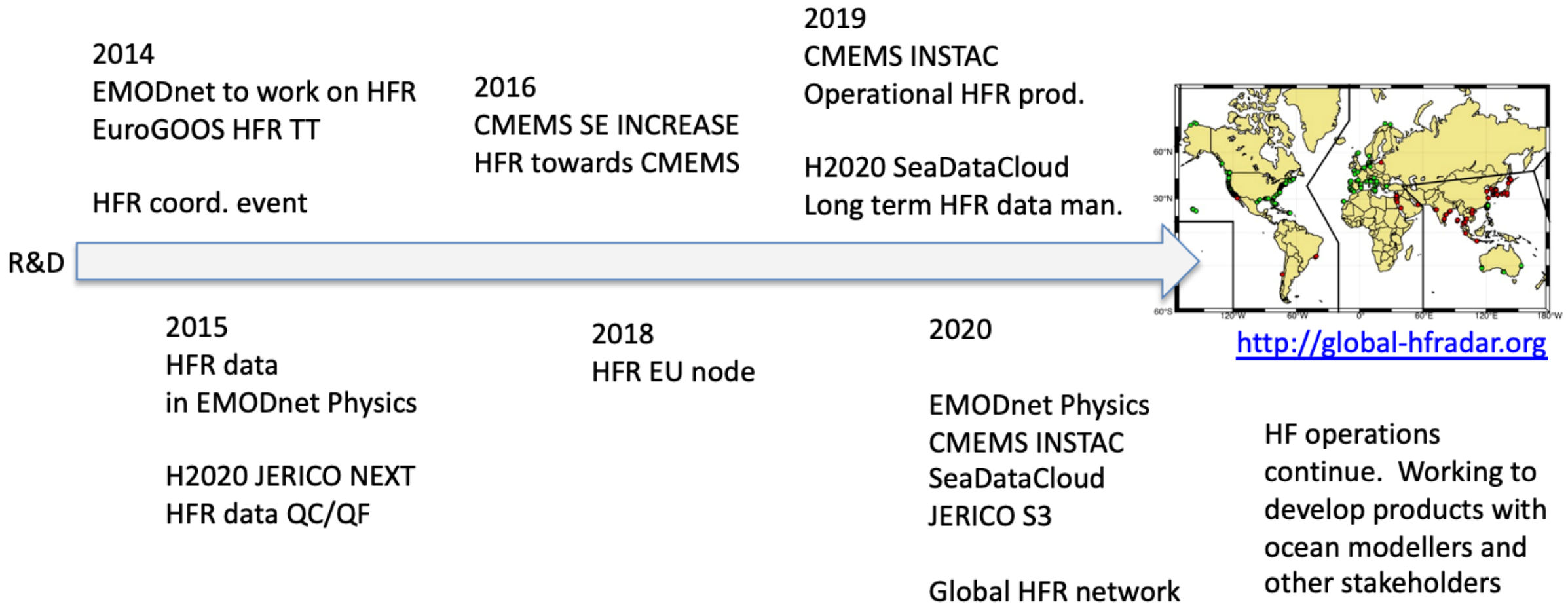




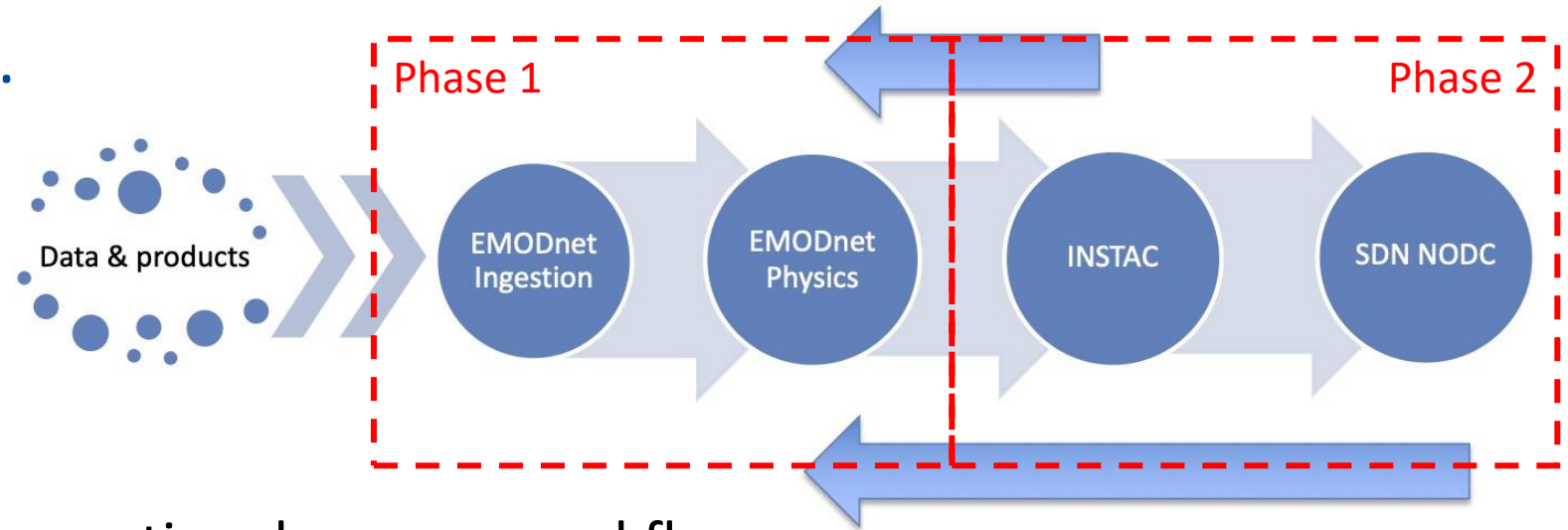
10 years of platforms data



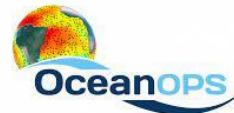
# More than a data portal



## Connecting more operators ... Ingestion Process



- Collaboration for ingesting new operational sources workflow:
  - Identification of the source
  - Analysis of the dataset, data transport format, data access protocol
  - Mapping of the minimum set of metadata (time, datum, institute, platform type, parameters, units, )
  - Presentation on EMODnet Physics (=Data Ingestion phase 1)
  - further mapping vs INSTAC metadata and application of INSTAC QC/QF
  - Integration into INSTAC products
  - Presentation on EMODnet Physics (=Data Ingestion phase 2)





## Connecting more operators ... backend workflow

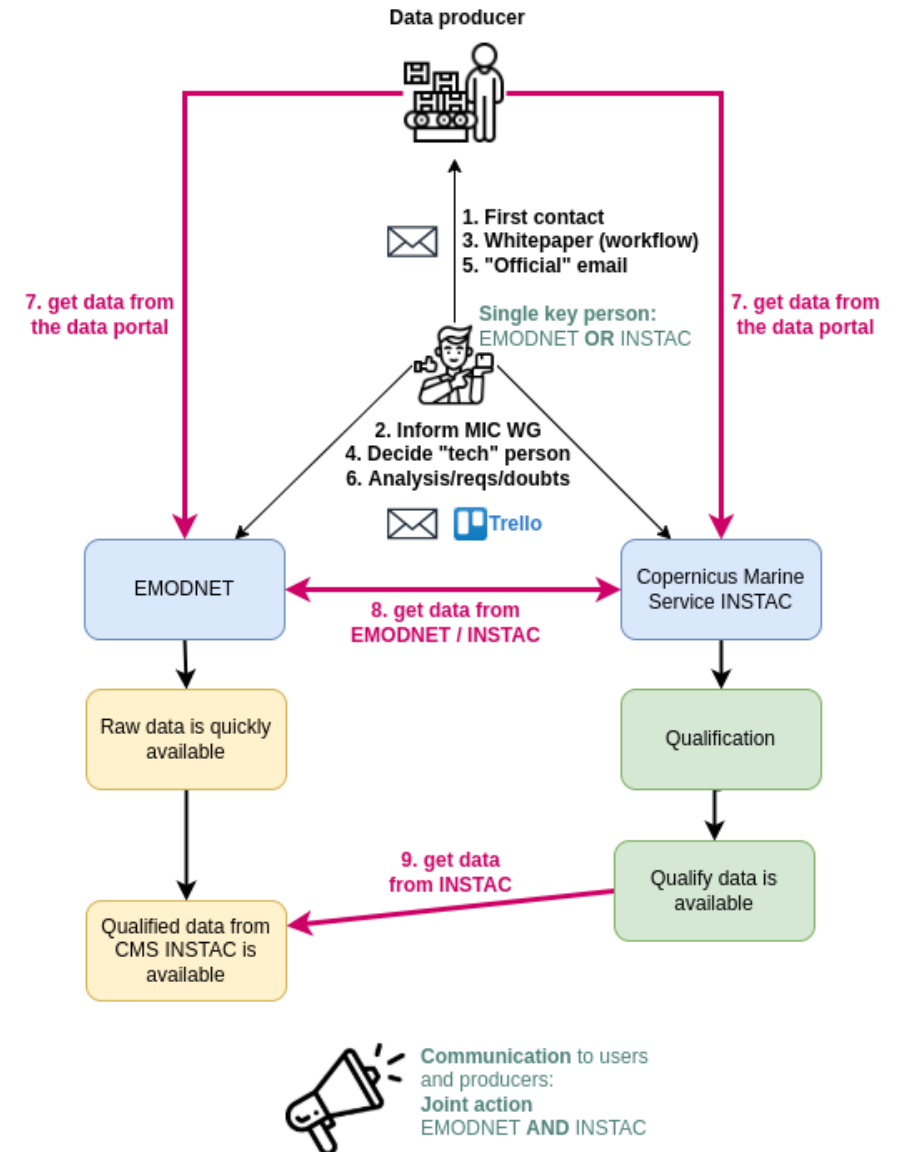
## Since November 2021

## Marine Insitu Collaboration Working Group [MIC WG]

is joining together EMODnet, EuroGOOS, SDN and CMS INS to manage better this task and sharing common tools (e.g. defined workflow, trello ...)

ongoing actions:

- review of metadata (global attributes)
- guidelines
- tools

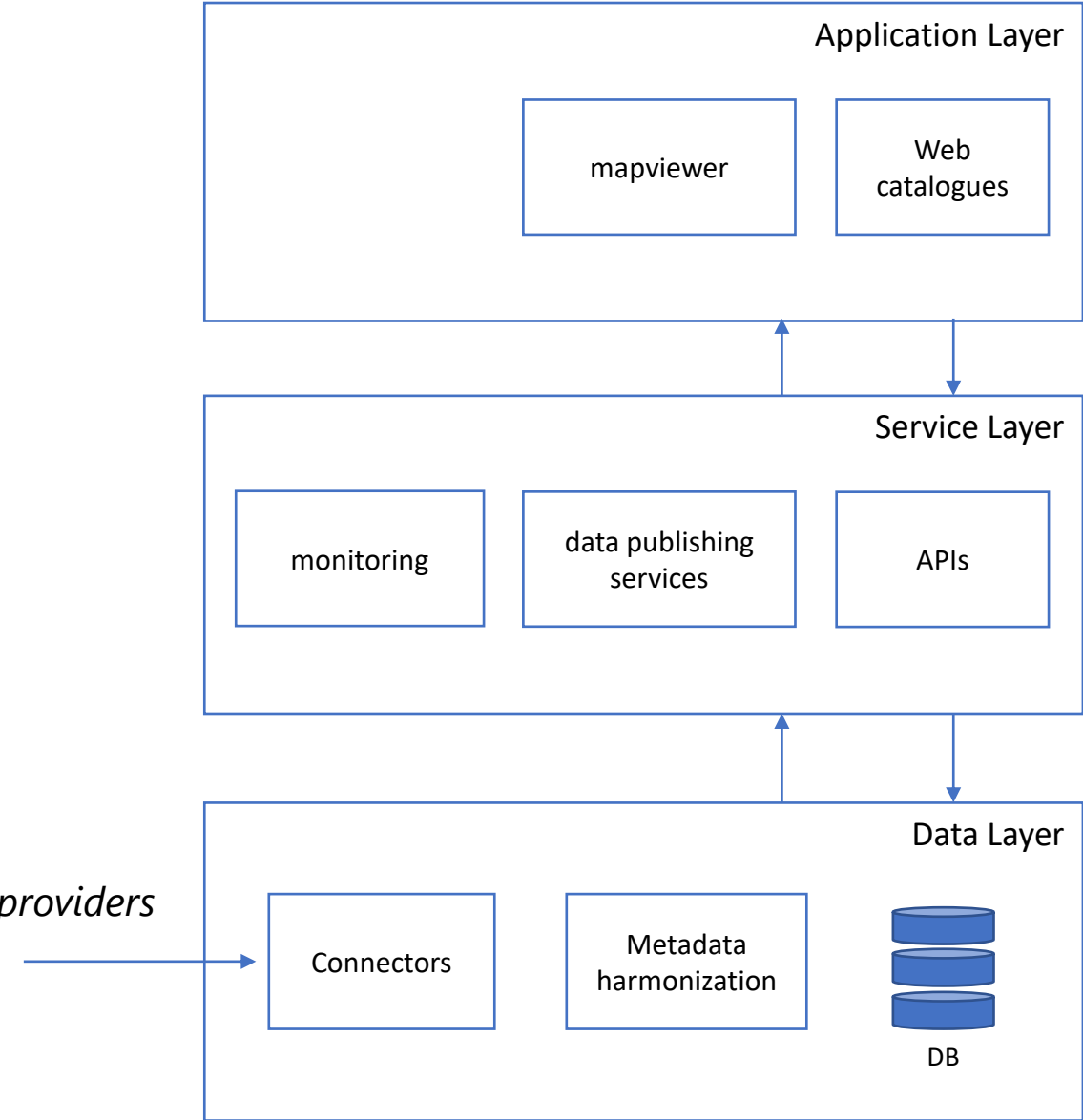


# examples of recommendations: identification

	descr	
<b><u>Platform identification.</u></b>	Each platform/station should be identified by a unique ID	WMO code - <a href="https://www.ocean-ops.org/">https://www.ocean-ops.org/</a> ICES – SHIPC <a href="https://vocab.ices.dk/?ref=315">https://vocab.ices.dk/?ref=315</a>
<b><u>Variable</u></b>	basic metadata to be associated with the variables are: the measuring device (instrument type) used, the precise definition of the variable, its standard name and abbreviation, the unit used and the quality flag associated.	<p>Instrument type, refer to SDN L22 (i.e. NETTZZZZ or TOOLZZZZ) <a href="https://vocab.seadatanet.org/v_bodc_vocab_v2/search.asp?lib=L22">https://vocab.seadatanet.org/v_bodc_vocab_v2/search.asp?lib=L22</a></p> <p>Definition of variable, refer to SDN P01 &amp; subset (i.e. SDN:P01::VVVVZZXX) <a href="https://vocab.seadatanet.org/bandit/browse_step.php">https://vocab.seadatanet.org/bandit/browse_step.php</a></p> <p>Standard name following the CF convention <a href="https://cfconventions.org/Data/cf-standard-names/79/build/cf-standard-name-table.html">https://cfconventions.org/Data/cf-standard-names/79/build/cf-standard-name-table.html</a></p> <p>Unit of the variable, refer to SDN P06 (i.e. ZZZZ, 4 uppercase letters) <a href="https://vocab.nerc.ac.uk/collection/P06/current/">https://vocab.nerc.ac.uk/collection/P06/current/</a></p> <p>Quality flag, refer to SDN L20 (i.e. number between 0 and 9 or letter: A, B, Q) <a href="https://vocab.seadatanet.org/v_bodc_vocab_v2/search.asp?lib=L20">https://vocab.seadatanet.org/v_bodc_vocab_v2/search.asp?lib=L20</a></p>
<b><u>Time</u></b>	The time associated to the data	ISO 8601 format where Date is expressed as YYYY-MM-DD time is in 24-hour mode and UTC, e.g. T13:05:15Z meaning 13 hours 5 minutes 15 seconds UTC (representing by Z)
<b><u>Geographical position</u></b>	latitude and longitude coordinates	The reference coordinate system to be used to characterise the data is the WGS84



# Backend



MapViewer and a series of standalone webGIS pages with advanced features

Combination of open sw tools (ERDDAP, GeoServer, GeoNetwork) + ad hoc tools (APIs)

Combination of tools implementing the «machinery» behind the data and products publication → EMODnet Physics Factory


# Developing tools for facilitating M2M exchange

## ERDDAP

This is an Apache based data server that offers an easy and consistent way to download subsets of gridded and tabular scientific datasets in common file formats and make graphs and maps

Initiated by NOAA nowadays it is promoted by GOOS and adopted by a large community

EMODnet Physics/Ingestion are contributing to new features development and dockerization



**EMODnet Physics ERDDAP**  
Easier access to scientific data

log in

Brought to you by EMODnet Physics

### EMODnet Physics ERDDAP

ERDDAP is a data server that gives you a simple, consistent way to download subsets of scientific datasets in common file formats and make graphs and maps. This particular ERDDAP installation has EMODnet Physics data (for example, data from mooring and buoys).

#### Easier Access to Scientific Data

Our focus is on making it easier for you to get scientific data.

Different scientific communities have developed different types of data servers.

For example, OPeNDAP, WCS, SOS, OBIS, and countless custom web pages with forms. Each is great on its own. But without ERDDAP, it is difficult to get data from different types of servers:

- Different data servers make you format your data request in different ways.
- Different data servers return data in different formats, usually not the common file format that you want.
- Different datasets use different formats for time data, so the results are hard to compare.

ERDDAP unifies the different types of data servers so you have a consistent way to get the data you want, in the format you want.

- ERDDAP acts as a middleman between you and various remote data servers. When you request data from ERDDAP, ERDDAP reformats the request into the format required by the remote server, sends the request to the remote server, gets the data, reformats the data into the format that you requested, and sends the data to you. You no longer have to go to different data servers to get data from different datasets.
- ERDDAP offers an easy-to-use, consistent way to request data: via the OPeNDAP standard. Many datasets can also be accessed via ERDDAP's Web Map Service (WMS).
- ERDDAP returns data in the common file format of your choice. ERDDAP offers all data as .html table, ESRI .asc and .csv, Google Earth .kml, OPeNDAP binary, .mat, .nc, ODV .txt, .csv, .tsv, .json, and .xhtml. So you no longer have to waste time and effort reformatting data.
- ERDDAP can also return a .png or .pdf image with a customized graph or map.

#### Start Using ERDDAP: Search for Interesting Datasets

- Do a Full Text Search for Datasets
- View a List of All 424 Datasets
- Search for Datasets by Category

Datasets can be categorized in different ways by the values of various metadata attributes. Click on an attribute (`cdm_data_type`, `institution`, `ioos_category`, `keywords`, `long_name`, `standard_name`, `variableName`) to see a list of categories (values) for that attribute. Then, you can click on a category to see a list of relevant datasets.
- Search for Datasets with Advanced Search
- Search for Datasets by Protocol

Protocols are the standards which specify how to request data. Different protocols are appropriate for different types of data and for different client applications.

Protocol	Description
<a href="#">griddap datasets</a>	Griddap lets you use the OPeNDAP hyperslab protocol to request data subsets, graphs, and maps from gridded datasets (for example, satellite data and climate model data). <a href="#">griddap documentation</a>



# ERDDAP - Docker

VOTO

Our initiatives

Blog

About us

Voice of the Ocean

The purpose of the Voice of the Ocean Foundation is to conduct, support and promote science, education, information and communication regarding the sea, marine ecosystems, and the marine environment as well as the interaction between man and the sea, historically, at the present time and in the future.

ERDDAP

Easier access to scientific data

English

Brought to you by NOAA NMFS SWFSC ERD

## ERDDAP > List of All Datasets

18 matching datasets, listed in alphabetical order.

Grid DAP Data	Sub-set	Table DAP Data	Make A Graph	W M S	Source Data Files	Title	Summary	FGDC, ISO, Metadata	Back-ground Info	RSS	E mail	Institution	Dataset ID
set	data	graph	files			* The List of All Active Datasets in this ERDDAP *		M	background			Voice of the Ocean	allDatasets
set	data	graph	files			Kapri0155-20220104T1536		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA055_M31
set	data	graph	files			Kapri0155-20220324T0939		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA055_M35
set	data	graph	files			Kapri0155-20220428T0739		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA055_M37
set	data	graph	files			Kapri0155-20220523T1012		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA055_M39
set	data	graph	files			Kvanne45-19700101T0005		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA045_M54
set	data	graph	files			Kvanne45-20220412T0807		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA045_M56
set	data	graph	files			Ljung63-20220104T1519		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA063_M33
set	data	graph	files			Ljung63-20220227T0835		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA063_M35
set	data	graph	files			Ljung63-20220428T0737		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA063_M37
set	data	graph	files			Ljung63-20220530T1231		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA063_M38
set	data	graph	files			Marviol67-20220411T1736		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA067_M26
set	data	graph	files			Marviol67-20220506T0748		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA067_M27
set	data	graph	files			Marviol67-20220601T1308		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA067_M29
set	data	graph	files			Saltarv66-20220115T1049		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA066_M16
set	data	graph	files			Vass61-20180712T1609		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA061_M50
set	data	graph	files			Vass61-20220415T1004		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA061_M56
set	data	graph	files			Vass61-20220505T0910		F I M	background	<a href="#">RSS</a>		Voice of the Ocean	nrt_SEA061_M57

Bitbucket

Your work

Repositories

Projects

More

Create

ricerca-docker-erddap

Source

Commits

Branches

Pull requests

Pipelines

Deployments

Jira issues

Security

Downloads

Ett New Media / Ricerca / ricerca-docker-erddap

docker-EnvCreationVariable.sh

Pull requests

Check out

Source

master

534452e


Full commit

ricerca-docker-erddap / docker-EnvCreationVariable.sh

Edit

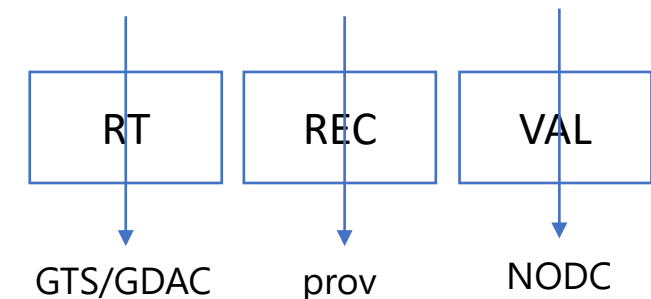
```
23 ### ERDDAP VARIABLES
24 # Environment Variables - Starting with ERDDAP v2.14, ERDDAP administrators can override any value in setup.xml by specifying an environment variable named ERDDAP_valueName
25 # $parentDirectory - Same as volume mounted in the container
26 ERDDAP_parentDirectory="/erddapData"
27 # baseUrl - Same as the URL that you setup in the web proxy that handle the communication with the container
28 ERDDAP_baseurl="http://$($APACHE_DOWNS_ROOT)"
29 # baseUrl - Same as the URL that you setup in the web proxy that handle the SSL communication with the container
30 ERDDAP_baseurlssl="https://$($APACHE_DOWNS_ROOT)"
31 # CHANGE THE FOLLOWING VARIABLES
32 ERDDAP_emailVerifyUrl="mailto:ett@ett.com"
33 ERDDAP_adminInstitution="ETT S.p.A. - People and Technology"
34 ERDDAP_adminInstitutionUrl="https://www.ettolutions.com/"
35 ERDDAP_adminIndividualName="ETT Ricerca"
36 ERDDAP_adminPosition="ERDDAP administrator"
37 ERDDAP_adminPhone="+39 010 6519116"
38 ERDDAP_adminAddress="Via Sestri 37"
39 ERDDAP_adminCity="GENOVA"
40 ERDDAP_adminStateOrProvince="GE"
41 ERDDAP_adminPostalCode="16134"
42 ERDDAP_adminCountry="ITALY"
43 ERDDAP_adminEmail="ricerca.innovazione.ett@ettolutions.com"
44 ERDDAP_flagKey="CHANGE ME!"
45 # OPTIONAL - Set ERDDAP mail parameters
46 # This enable (1) or disable (0) the mail parameters configuration
47 ERDDAP_setMailParameters=0
48 ERDDAP_emailFromAddress=""
49 ERDDAP_emailUserName=""
50 # If you use the '!' in the password, then leave the variable blank and set the parameters when the configuration is finished.
51 ERDDAP_emailPassword=""
52 ERDDAP_emailProperties=""
53 ERDDAP_emailSetFrom=""
54 ERDDAP_emailSetTo=""
55 # these variables set the minimum and maximum memory available in ERDDAP, set by default at 4 gigabytes
56 ERDDAP_minMemory="4G"
57 ERDDAP_maxMemory="4G"
58 ###
```

EMODnet Physics

 **EMODnet**

# EMODnet Physics and Gliders

- EMODnet Physics + EuroGOOS Glider TT - OceanGlider Workshop [Sept 2018] a global event to discuss on data and metadata harmonization and data flow
- Key outcomes:
  - OceanGlider data model/data format
  - Seed for OCEANOPS monitoring and KPIs
    - Registration of “Observing Program”: ONE country, agencies, contributors
    - Registration of mandatory metadata about the glider mission :
      - program, WMO ID, glider model, glider serial number,
      - deployment location (Lat, Lon, Time), deployment end date (if mission completed),
      - PI, operating agency,
      - sensor onboard.
    - Real Time data flow (GTS, GDAC) and archived data access (GDAC)
      - Platform status (Registered, Inactive, Operational, Closed).
      - Data availability





# OceanOPS Dashboard

## Glider mission uploading facility :

- JSON (EGO V1.2 and EGO V1.3),
- CSV files,
- Wizard (simplified tool with redeployment option).

## Charts:

- Summary
- Implementation

## Maps:

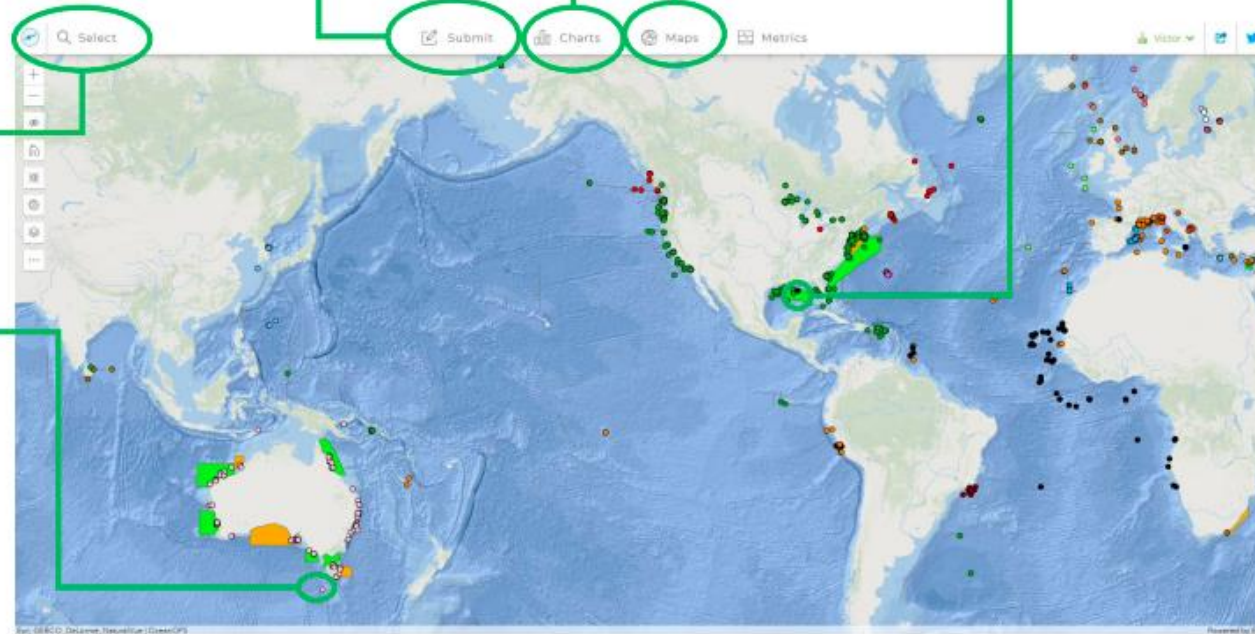
- Automated Monthly map

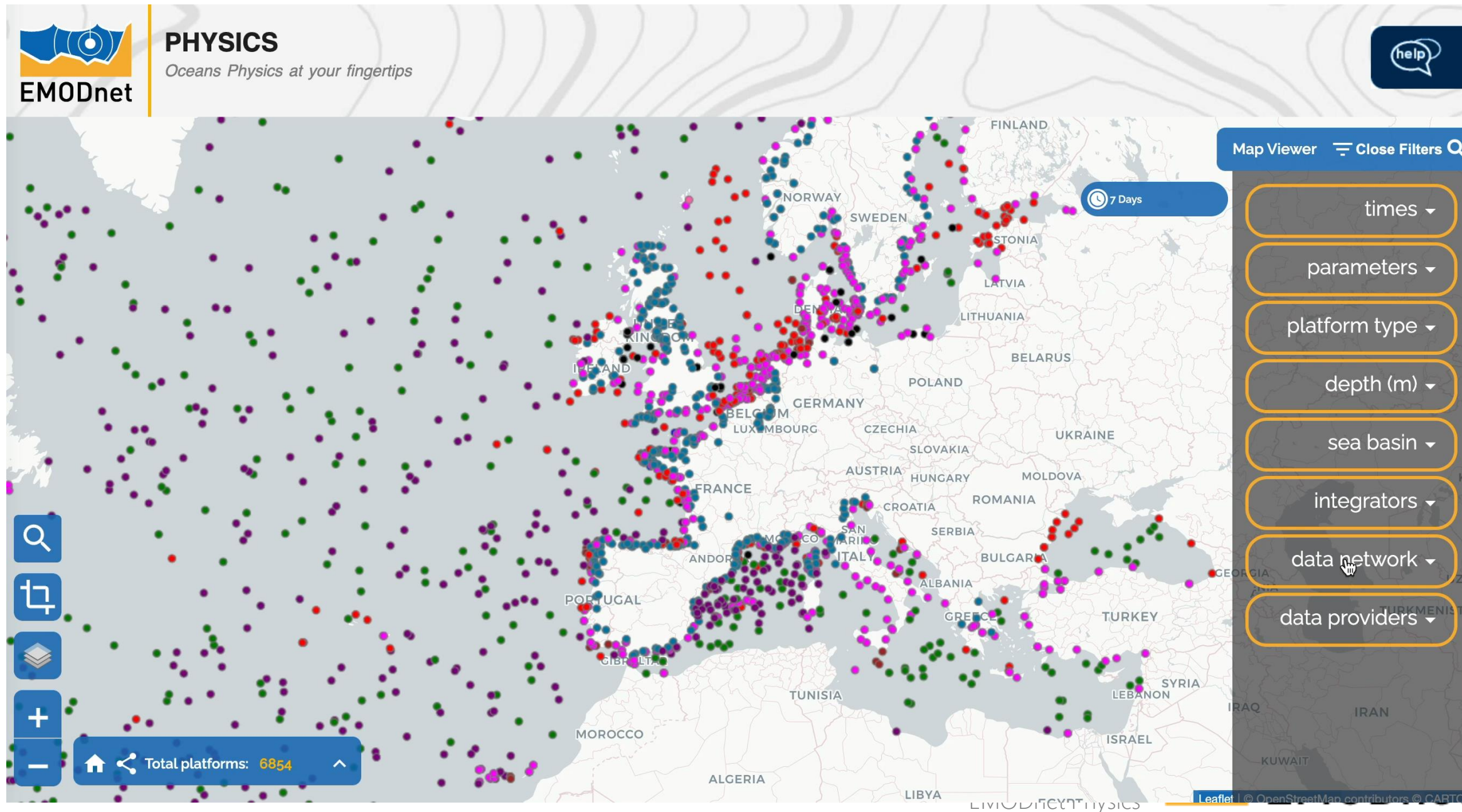
Monitoring OceanGliders sites:  
Timeline on activity

EMODnet Phy collects  
NRT data from Coriolis  
and provides  
OcenaOPS with  
metatada and info on  
data flow

Selection tool


Inspect glider  
mission









# Products

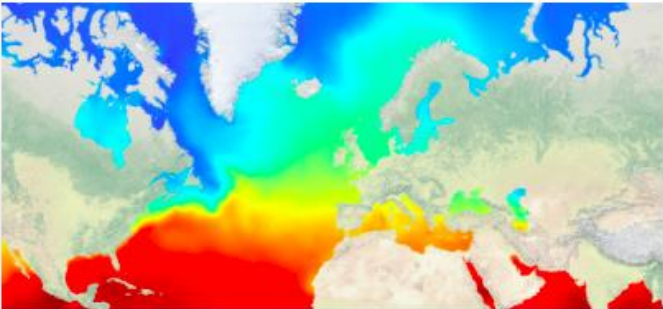


**PHYSICS**  
*Oceans Physics at your fingertips*

EMODnet Products



EP\_MAP\_TEMP\_001




EMODnet Physics - TEMP\_001 - The page presents the monthly gridded analysis fields of temperature in the water column from the reprocessed (ISAS software) in-situ data collections (1900 - 201x). Based on the Coriolis Ocean database for ReAnalysis (CORA) v.5.2 - Developed by IFREMER for CMEMS

GO TO

DETAILS


EP\_MAP\_TEMP\_002



EMODnet Physics - TEMP\_002 - near real time temperature in the water column from multi platforms observations. The product presents the latest 7-60 days of measurements from fixed and moving platforms.

GO TO

EP\_MAP\_TEMP\_003

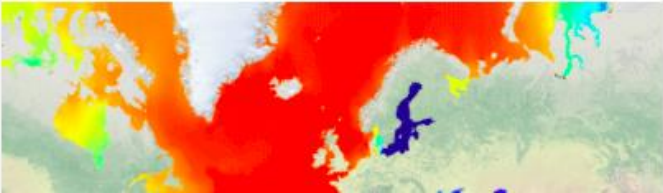


EMODnet Physics - TEMP\_007 - Collection of the temperature profiles collected by animal born instrumentation. The marine mammal data were collected and made freely available by the International MEOP Consortium and the national programs that contribute to it (<http://www.meop.net>)

GO TO

DETAILS


EP\_MAP\_PSA\_001



GO TO


DETAILS

EP\_MAP\_PSA\_002



GO TO

EP\_MAP\_PSA\_003




GO TO

DETAILS

<https://products.emodnet-physics.eu/>



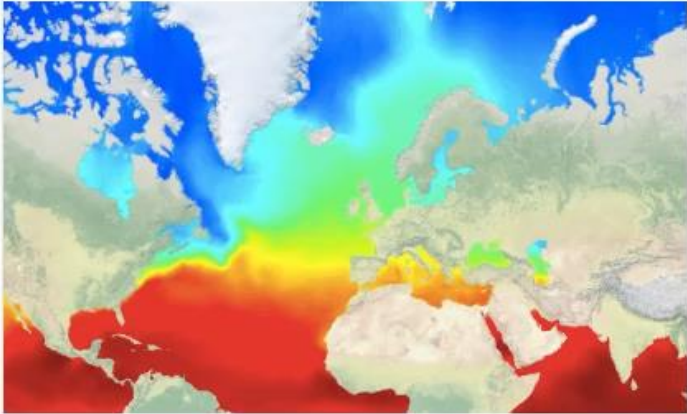


PHYSICS

Oceans Physics at your fingertips

EMODnet Products

EP\_MAP\_TEMP\_001

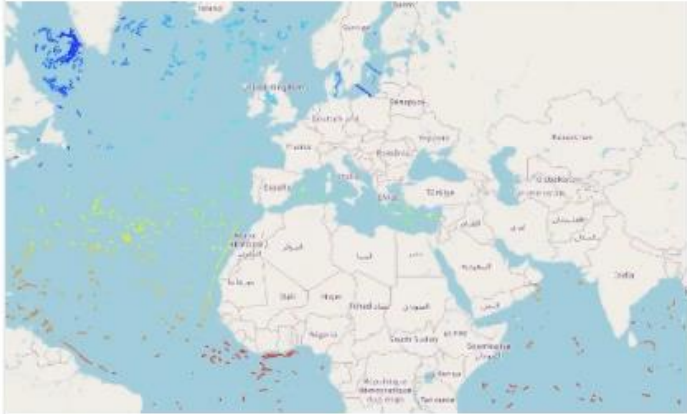


EMODnet Physics - TEMP\_001 - Monthly gridded analysis fields of temperature throughout the water column from the reprocessed (ISAS software) in-situ data collections (1990 to present). The product is based on the Coriolis Ocean database for ReAnalysis (CORA) v.5.2., developed by IFREMER for CMEMS

GO TO

DETAILS

EP\_MAP\_TEMP\_002

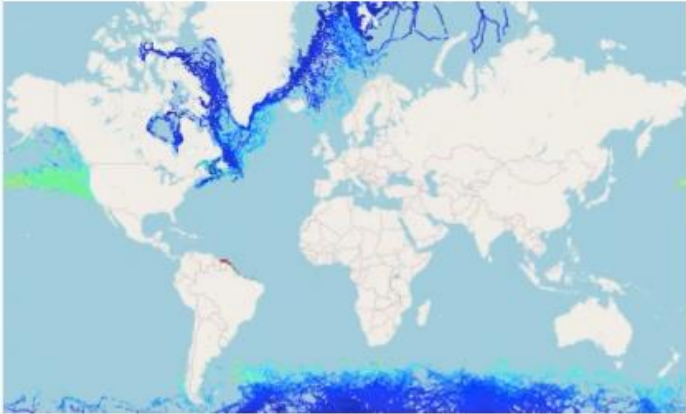


EMODnet Physics - TEMP\_002 - Near real-time temperature of the water column from multi-platform observations. The product presents the latest 7-60 days of measurements from fixed and moving platforms.

GO TO

DETAILS

EP\_MAP\_TEMP\_003



EMODnet Physics - TEMP\_003 - Temperature profiles collected by animal-borne instrumentation. Marine mammal data were collected and made freely available by the International MEOP Consortium and by the contributing national programmes (<http://www.meop.net>).

GO TO

DETAILS

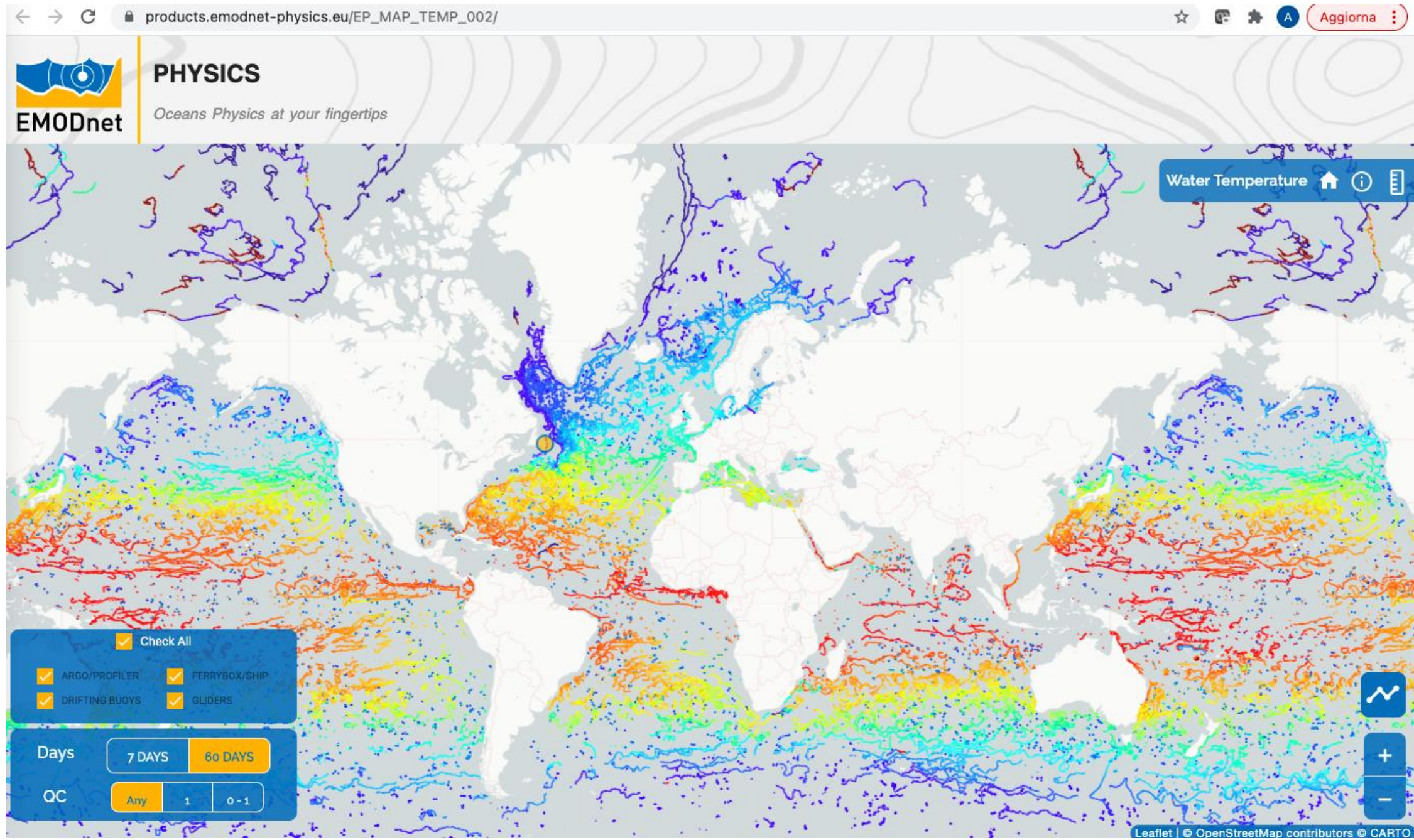
EP\_MAP\_TEMP\_004

EP\_MAP\_TEMP\_005

EP\_MAP\_PSAI\_001

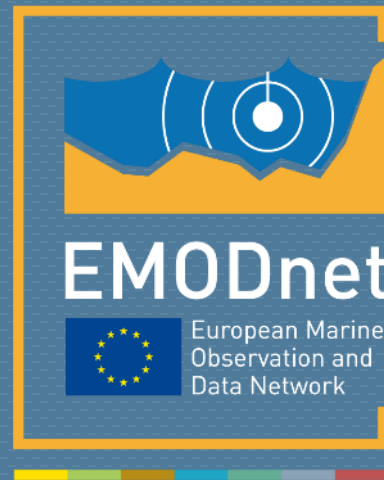


Spaghetti is ready



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*Your gateway to marine data in Europe*