

# Introduction to EMODnet

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Torino, 14-15 Ottobre 2015



Italian DHI Conference 2015

# What is EMODnet?

- Initiated by the European Commission in response to the EU Future Maritime Policy and Blue Growth, launched in June 2006 – now core part of Marine Knowledge 2020 initiative
- **network of (>130) organisations** assembling **marine data, metadata & data products** from diverse sources within Europe in a **uniform** way to
- unlock fragmented/hidden marine data
- make marine **data** more (i) easily accessible, (ii) free of restrictions on use and (iii) interoperable
- Develop **data products** of common interest



# Core principles for development

- **Collect data once; use many times** -> reduce costs
- Sustainable funding at a European level to **maximise benefit from the efforts of individual Member States**
- **Free and unrestricted access** to data and data products
- **Build on existing efforts** where data communities have already organised themselves - **develop new initiatives** where necessary to actively fill gaps and breakdown barriers
- **Put the user first** when developing priorities and taking decisions
- Develop data **standards across disciplines as well as within** them
- Process and validate data at different scales: regional, basin and pan-European
- Provide statements on data ownership, accuracy and precision

# Why EMODnet?

## An effective pan-European marine data infrastructure will

- Improve efficiency of **marine planning and legislation** (e.g. environment – MSFD in particular, fisheries, transport, etc.);
- **Reduce uncertainty** in our knowledge and ability to forecast the behaviour of the sea;
- **Improve offshore operators' efficiency and costs** in gathering and processing marine data for operational and planning purposes → estimated at **1 billion € per year**
- **Stimulate competition and innovation** in established and emerging maritime sectors → est. at **200-300 million € per year**



## Uses of EMODnet data uncertainty reduction – better routing



- *improved charts will allow faster transit for deeper draughts*
- *NOAA estimate that one additional foot of draught may account for between \$36,000 and \$288,000 additional profit per transit*

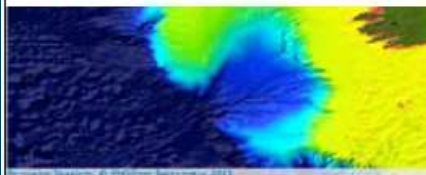
- sediment
- local hur
- tempera

- 2009: Start EMODnet phase 1 – 59 Institutes  
(budget 6.45M€)
- 2013: Start EMODnet phase 2 – 120 Institutes  
(budget 16.3M€)
- Now – 7 thematic portals + 6 regional CP + EMODnet central and Secretariat – (>130 Institutes)
- 2016: EMODnet phase 3 – towards a seamless multi-resolution digital mapping of European waters by 2020

# EMODnet

## Seven portals

Bathymetry (Dick Schaap)



Data on bathymetry (water depth), coastlines, and geographical location of underwater features: wrecks.

Geology (Alan Stevenson)



Data on seabed substrate, sea-floor geology, coastal behaviour, geological events and probabilities, and minerals.

Human Activities (Alvise Bragadan)



*coming soon*  
Data on the intensity and spatial extent of human activities at sea.

Seabed Habitats (Jacques Populus)



Data on modelled seabed habitats based on seabed substrate, energy, biological zone, and salinity.

Chemistry (Alessandra Giorgetti)



Data on the concentrations of chemicals (pesticides, heavy metals, antifoulants) in water, sediments and biota.

Biology (Simon Claus)



Data on temporal and spatial distribution of species abundance and biomass from several taxa.

Physics (Antonio Novellino)



Data on salinity, temperature, waves, currents, sea-level, light attenuation, and FerryBoxes.

EMODnet  
thematic portals  
and coordinators

[www.emodnet-bathymetry.eu](http://www.emodnet-bathymetry.eu)

[www.emodnet-geology.eu](http://www.emodnet-geology.eu)

[www.emodnet-seabedhabitats.eu](http://www.emodnet-seabedhabitats.eu)

[www.emodnet-chemistry.eu](http://www.emodnet-chemistry.eu)

[www.emodnet-biology.eu](http://www.emodnet-biology.eu)

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

[www.emodnet-humanactivities.eu](http://www.emodnet-humanactivities.eu)

# EMODnet Bathymetry

## Scope:

- Overview and access to **bathymetric survey data**
- Free access to harmonised medium resolution **Digital Terrain Model (DTM)** for European seas

## Data source:

- single beam, multibeam, plummets, LIDAR, .. comes from national hydrographic services, marine research institutes and industry
- Adopted SeaDataNet CDI Data Discovery and Access service for survey data sets

## Output:

- **Bathymetry Viewer and Download service**





# EMODnet Geology

**Open access** to information primarily held by national geological surveys (from **30 countries**):

- harmonised **sea-bed substrate** and bedrock geology at 1:250,000 scale where available;
- Information on **coastal behaviour** (migration; erosion; accretion);
- Locations of earthquake activity, volcanoes, submarine landslides. Links to updated sources of information using WMS;
- **Mineral localities**; oil and gasfields; aggregate resources.



Seabed substrate



Coastal behaviour



Minerals

# EMODnet Seabed Habitats

## Scope:

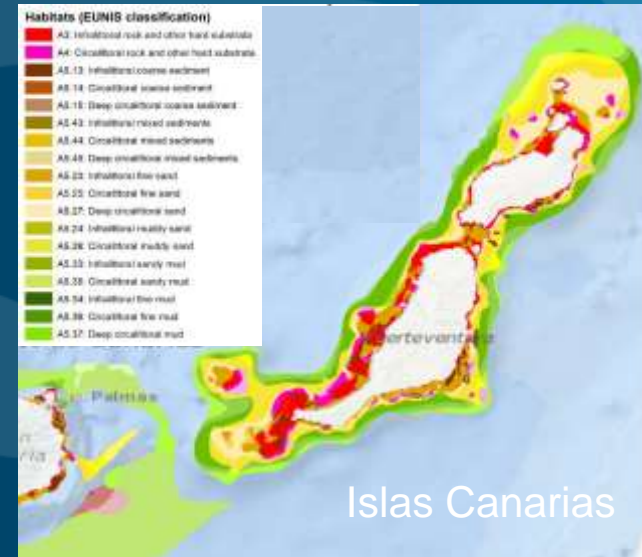
- **Broad-scale map of Eunis habitats** at  $1/8 * 1/8$  NM - along with confidence map - and investigate feasibility of reaching  $1/16 * 1/16$

## Based on:

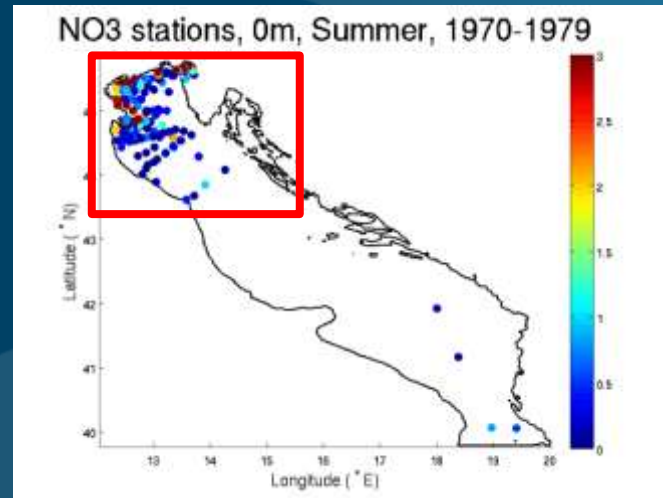
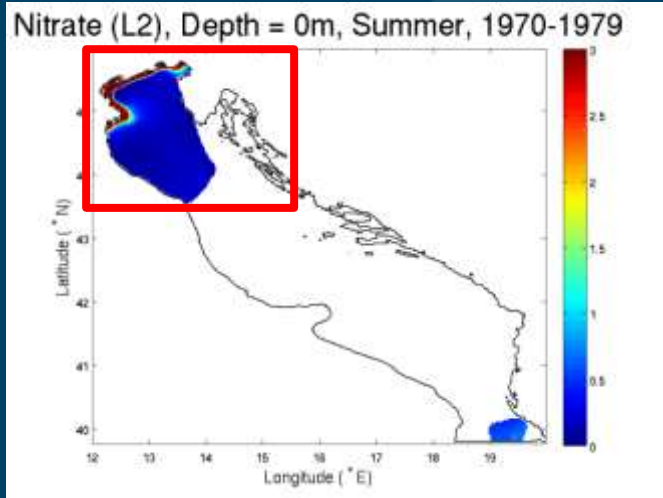
- Maps from surveys
- Modelled distributions of single habitats (e.g. Mediseh, Habmap)
- Habitat sample data (e.g. Ospar's) - no biology in map form! (only samples)

## Data come from?

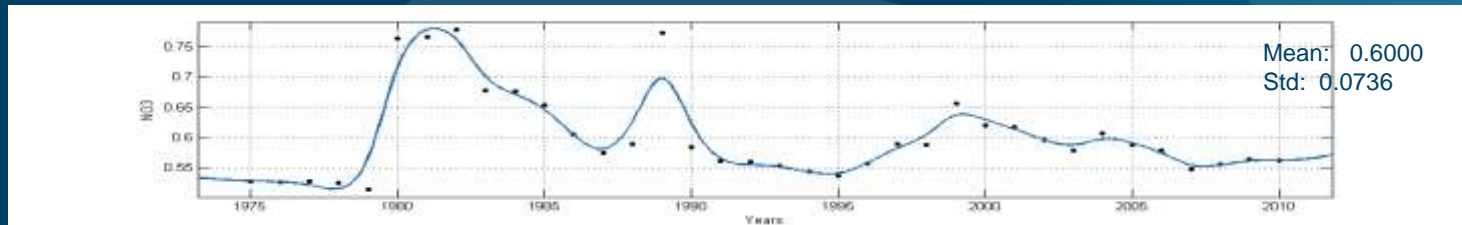
- **EMODnet, EuroGOOS, MyOcean**
- A number of single organisations (habitat samples)



# EMODnet Chemistry



Horizontal distribution maps, produced with 10-year moving window



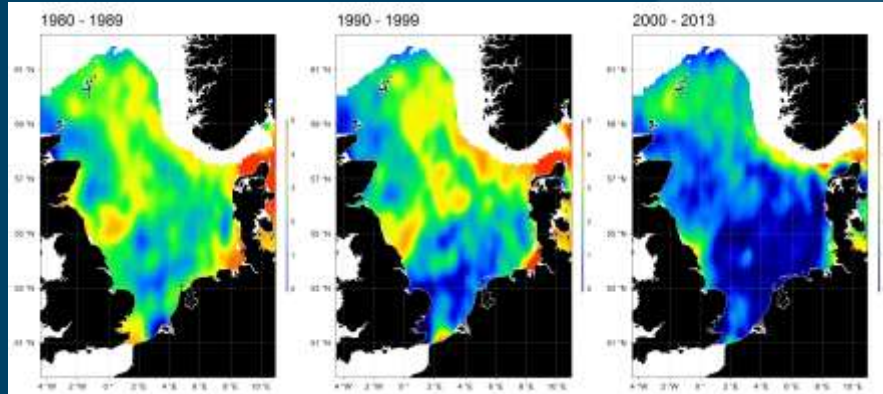
Mean summer NO3 at first 10 m, over the area N43.5-46, E12-15

# EMODnet Biology

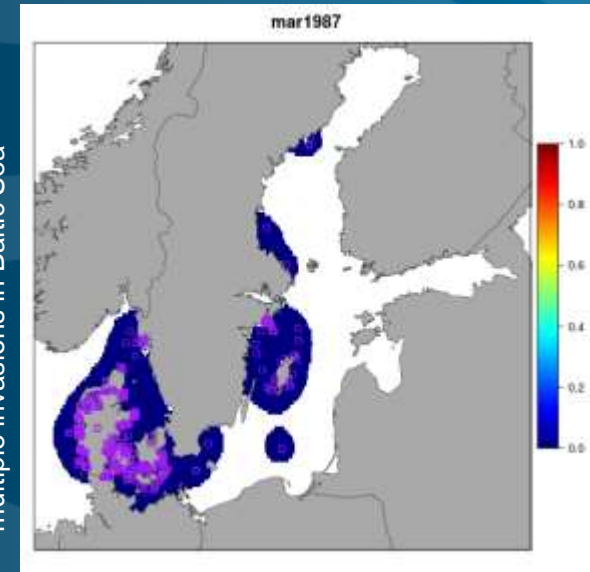
## Scope

Data on **temporal and spatial distribution of species abundance and biomass** from several species groups.

- Both raw data, and data products - stores taxonomic and functional data
- Include both research oriented and monitoring data – using common standards
- Focus on ‘indicator’ species



© DHI *Gridded Cod (Gadus morhua) abundance illustrating the dramatic decrease of the cod stock in the North Sea.*



*Marenzelleria* abundance showing multiple invasions in Baltic Sea

# EMOD

Scope:

- Geographical
- carrying capacity
- maritime

Data:

- from various sources
- Prioritization

The screenshot shows the EMOD web application interface. At the top, there is a navigation bar with links for Home, View Data, Search Data, Submit Data, Help, About, and Documents. Below this is a 'View Data' header. The main area features a map of the Iberian Peninsula with various colored overlays representing different maritime activities. A 'Layers' panel on the left lists several categories with checkboxes and icons:

- Aggregate Extraction**
  - Aggregate Extraction
- Dredging**
  - Dredging
- Fishery Zones**
- Hydro-Carbon Extraction**
  - Hydro-Carbon Extraction
  - Active
  - Abandoned
  - Suspended
  - Unknown
  - Other
- Main Ports**
- Mariculture**
  - Shellfish Production
- Ocean Energy Facilities**
  - Ocean Energy Facilities
- Other Forms of Area Management/Designation**
- Protected Areas**
  - Natura2000
  - CDDA
- Waste Disposal**
  - Dredge Spoil Dumping
  - Dumped Munitions
- Wind Farms**

A data popup window is open over a specific location on the map, displaying the following information:

facid	CE-ES2
Position Info	Original
Country	Spain
Location	Mutriku, Gipuzkoa
device_pro	Mutriku BreakwaterWave Plant
start_year	2011
end_year	N/A
resource	Wave
Technology	Oscillating Water Column
project_sc	Commercial
device_sca	Full scale
Status	operational
project_ca	296
project_pr	Ente Vasco de la Energia (EVE)
Web Page	<a href="http://www.eve.es/Proyectos-energeticos/Proyectos/Energia-Marina.aspx">http://www.eve.es/Proyectos-energeticos/Proyectos/Energia-Marina.aspx</a>
Source	web page
link_to_sis	<a href="http://sovfa.hidromod.com/PyrodMapViewer/ViewData/index">http://sovfa.hidromod.com/PyrodMapViewer/ViewData/index</a> <a href="http://mhk.pnnl.gov/annee-r/sites/mutriku-wave-power-plant">http://mhk.pnnl.gov/annee-r/sites/mutriku-wave-power-plant</a>
Distance from Coast	0

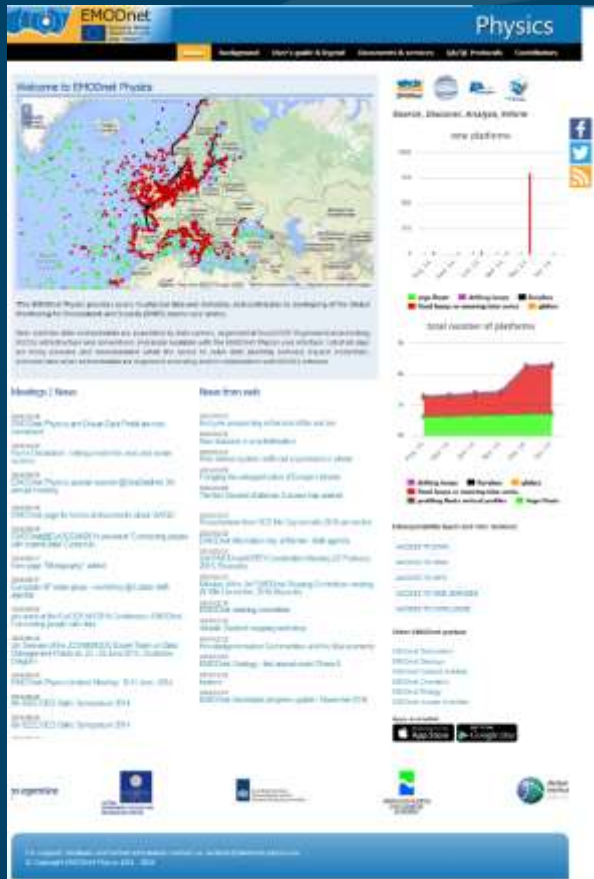
activities  
multiple energy,



# EMODnet Physics

- Provides a **single point of free and open access to marine real-time and archived data** on **physical conditions of all European Seas** as monitored by fixed platforms, ferry boxes, ARGOs, gliders...
- Make available basic **products** (monthly average/max/min, sea level, ice)
- Attract and provide access to **any user and stakeholder**
- Facilitate **integration and interoperability** with further systems (INSPIRE compliant, WMS, WFS, etc)
- **Attract new and better data and new data owners/providers** (new platforms, e.g. HFR, VOS...)
- **Build on existing infrastructures** (ROOSs, CMEMS, SDN-NODCs) and **avoid duplication** of effort

# EMODnet Physics



## INSPIRE Services

DISCOVER

VIEW

DOWNLOAD

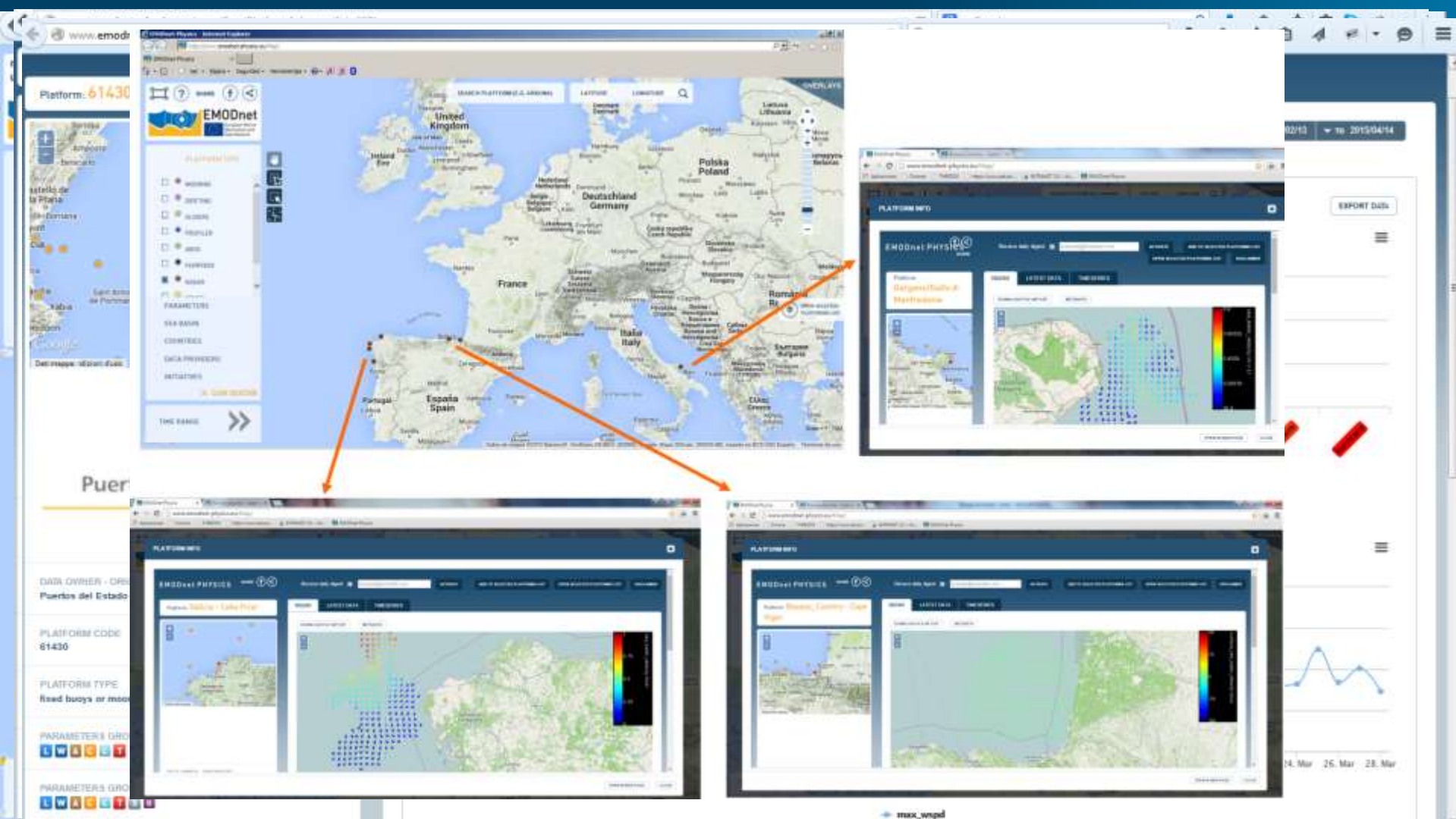
WMS/WFS

*Data Policy*

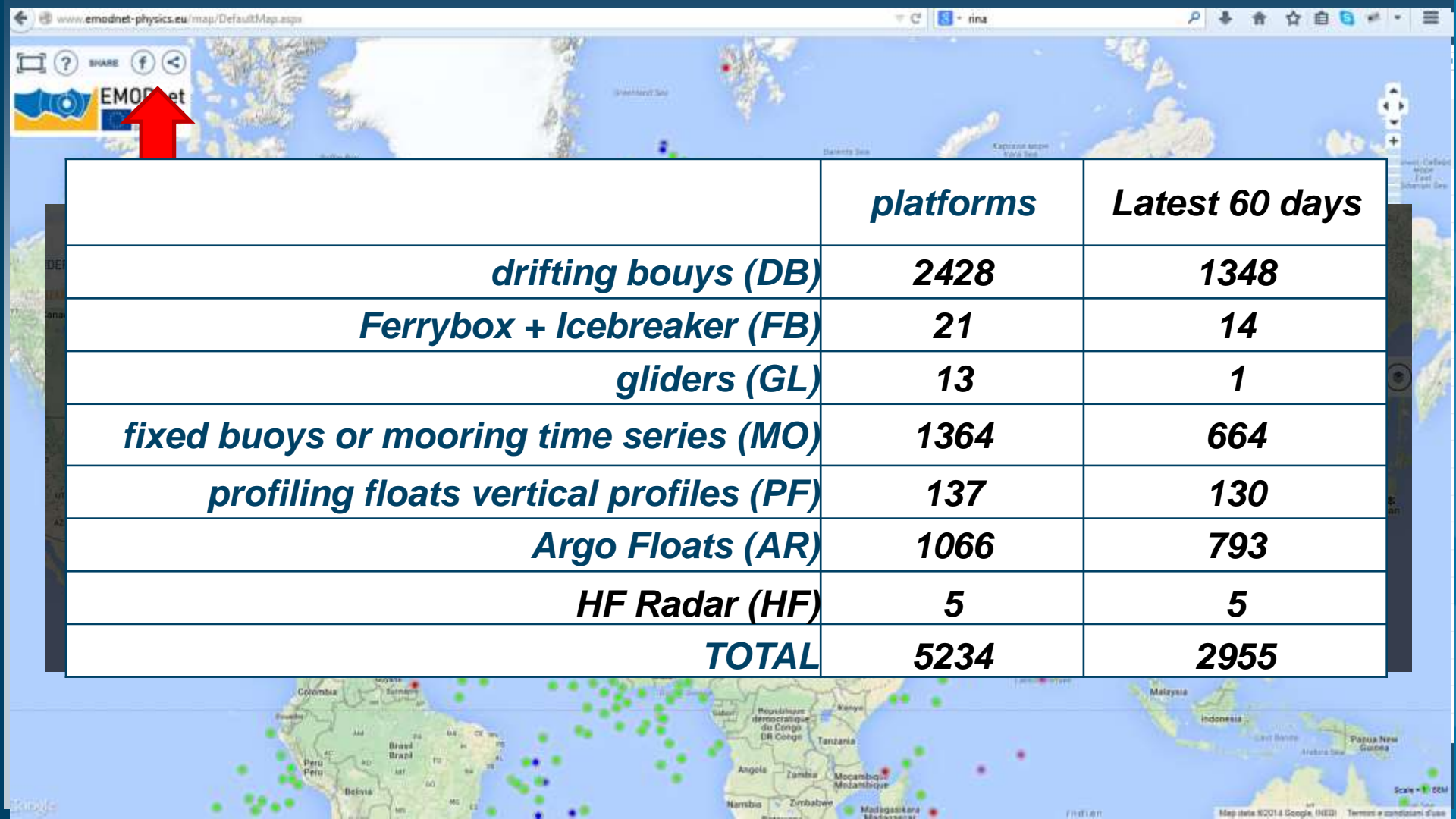
Open & Free

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









	<i>platforms</i>	<i>Latest 60 days</i>
<i>drifting bouys (DB)</i>	<b>2428</b>	<b>1348</b>
<i>Ferrybox + Icebreaker (FB)</i>	<b>21</b>	<b>14</b>
<i>gliders (GL)</i>	<b>13</b>	<b>1</b>
<i>fixed bouys or mooring time series (MO)</i>	<b>1364</b>	<b>664</b>
<i>profiling floats vertical profiles (PF)</i>	<b>137</b>	<b>130</b>
<i>Argo Floats (AR)</i>	<b>1066</b>	<b>793</b>
<i>HF Radar (HF)</i>	<b>5</b>	<b>5</b>
<b><i>TOTAL</i></b>	<b>5234</b>	<b>2955</b>

## Landing pages

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

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

## Background, meetings, news

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

[www.emodnet-physics.eu/portal/news](http://www.emodnet-physics.eu/portal/news)

[www.emodnet-physics.eu/portal/bibliography](http://www.emodnet-physics.eu/portal/bibliography)

[www.emodnet-physics.eu/portal/meetings](http://www.emodnet-physics.eu/portal/meetings)

## Operational System

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

[www.emodnet-physics.eu/map/dashboard](http://www.emodnet-physics.eu/map/dashboard)

[www.emodnet-physics.eu/map/service/GeoServerDefaultWMS](http://www.emodnet-physics.eu/map/service/GeoServerDefaultWMS)

[www.emodnet-physics.eu/map/service/GeoServerDefaultWFS](http://www.emodnet-physics.eu/map/service/GeoServerDefaultWFS)

[www.emodnet-physics.eu/map/service/WSEmodnet2](http://www.emodnet-physics.eu/map/service/WSEmodnet2)

[www.emodnet-physics.eu/map/service/catalogue](http://www.emodnet-physics.eu/map/service/catalogue)

# Grazie

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