



EMODnet



European Marine
Observation and
Data Network

Your gateway to marine data in Europe

The EMODnet data offer for the aquaculture sector

Copernicus marine Service for Aquaculture Sector

Amalia hotel – September 24-25 2019

Pascal Derycke

EMODnet

Technical coordinator



The European Marine Observation and Data Network (EMODnet) is financed by the European Union under Regulation (EU) No 508/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund.

Copernicus marine service / EMODnet

2 complementary EU programmes for marine resource applications

 Earth observations

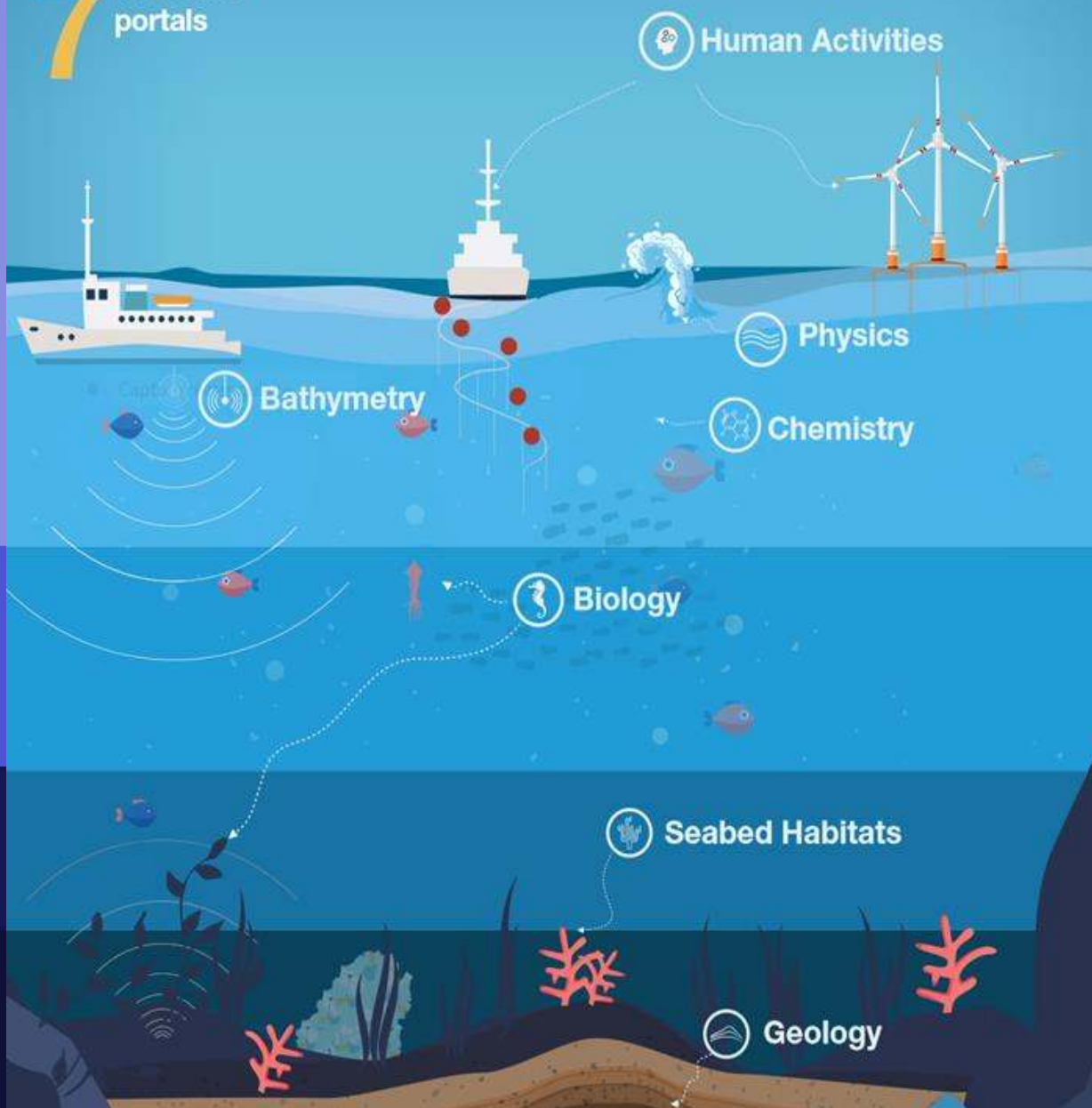


 Ground observations
7 thematic portals and a central portal



Open marine data for improving the planning of aquaculture farm sitting, understanding of the environmental conditions, allowing a better management.

7 Thematic portals



Findable

Accessible

Bathymetry

Data on bathymetry (water depth), depth contours, survey tracks, and geographical location of underwater features such as wrecks

Geology

Data on seabed substrate, seafloor geology, coastal behaviour, sediment accumulation rates, geological events and probabilities, and mineral occurrences

Biology

Data on species temporal and spatial occurrences, biotic measurements, and abiotic parameters

Chemistry

Data on concentrations of chemicals related to eutrophication and contamination in water, sediments and biota, and marine litter

Physics

Data on salinity, temperature, waves, currents, sea level, light attenuation, winds, underwater noise, river, water conductivity, atmosphere, optical properties

Seabed habitats

Data on seabed habitats and surveys, environmental variables, and seabed habitat models

Human activities

Data on the intensity and spatial extent of human activities at sea



EMODnet

Central Portal
www.emodnet.eu

Interoperable

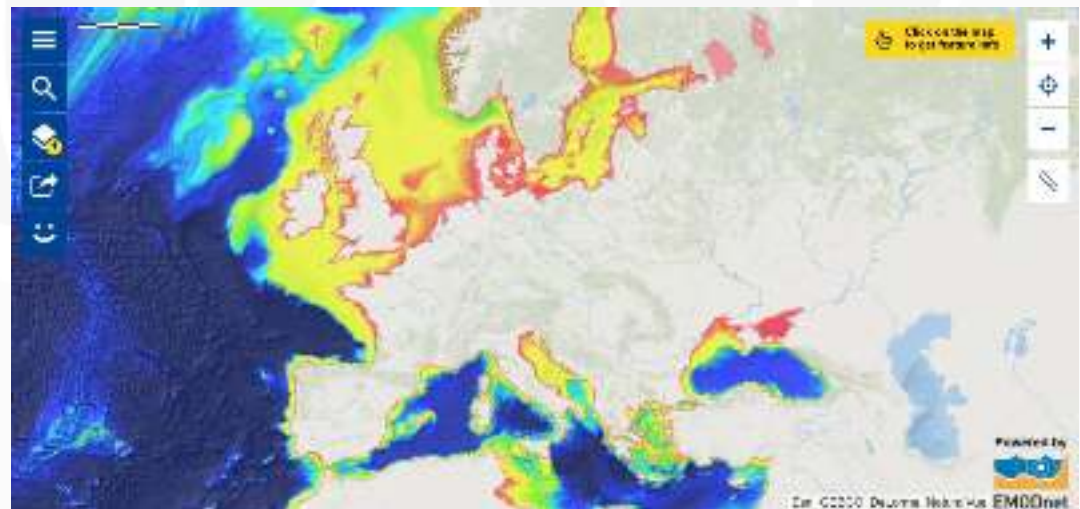
Reusable

EMODnet Bathymetry

<http://www.emodnet-bathymetry.eu>

- Digital Terrain Model
- Survey tracks
- Water depth and depth profiles
- Undersea features
- Wrecks
- **High resolution bathymetry in coastal areas**

Map of EMODnet Digital Terrain Model



Occurrences and abundances
of species:

- **Phytoplankton**
- Zooplankton
- Macro-algae
- Angiosperm
- Fish
- Reptile
- Benthos
- Bird
- Sea mammal
- **Alien species**

Map of EMODnet Oops product



EMODnet Chemistry

<http://www.emodnet-chemistry.eu>

- **Acidity**
- Antifoulants
- **Chlorophyll**
- Dissolved gases
- Fertilisers
- Hydrocarbons
- Marine litter
- Heavy metals
- Organic matter
- Polychlorinated biphenyls
- Pesticides and biocides
- Radionuclides
- Silicates

Map of EMODnet Beach marine litter





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EMODnet Physics

<http://www.emodnet-humanactivities.eu>

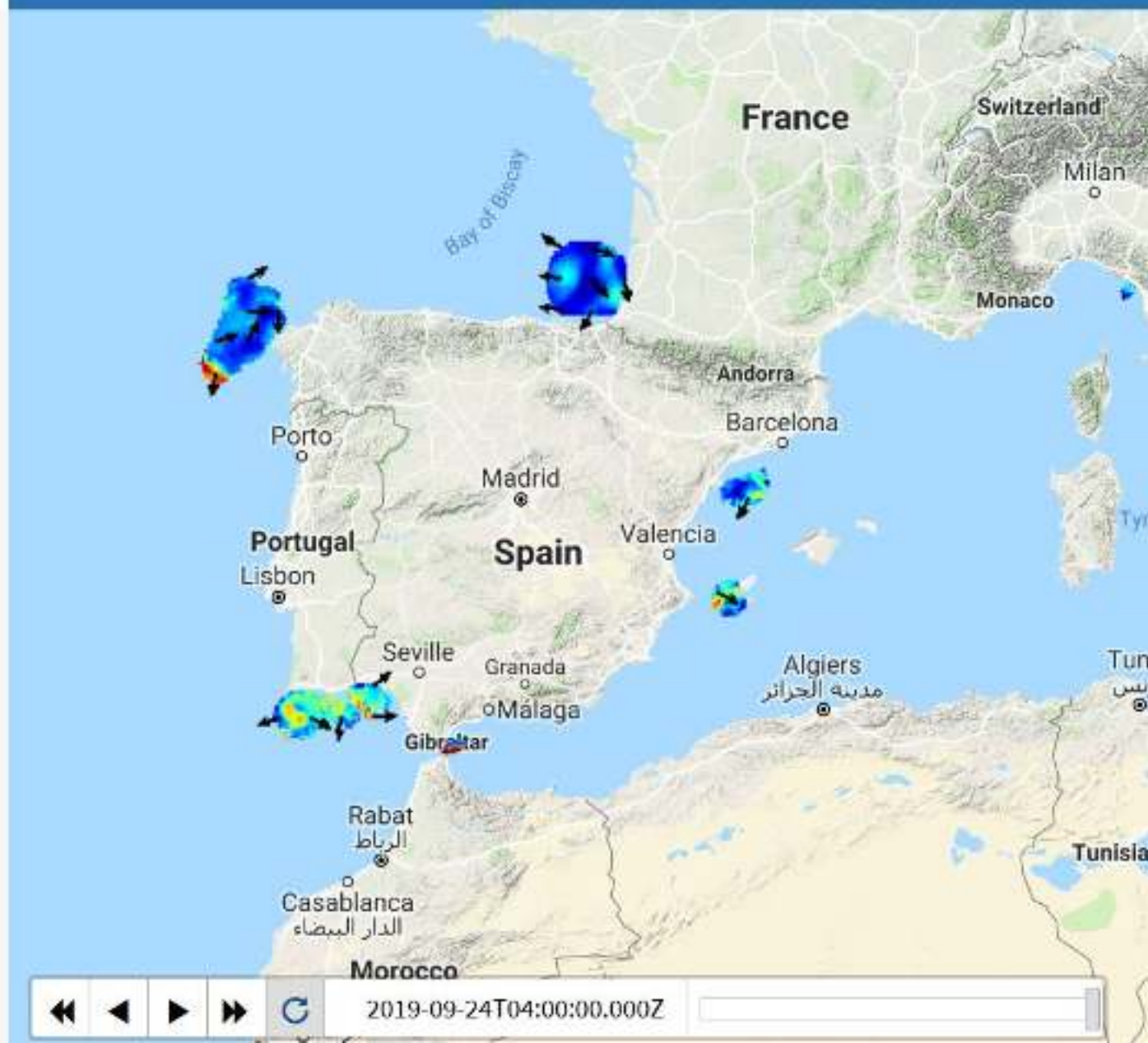
- Wave height and duration
- **Sea temperature**
- **Wind speed and direction**
- Horizontal speed of the water column
- Water clarity
- **Changes in sea level**
- Inflow from rivers
- Water conductivity/biogeochemical parameters
- Atmospheric parameters
- Ice cover
- Underwater noise

Map of EMODnet Sea level trends



DATA PRODUCTS

- ☒ CURRENT
- ☐ RADAR
- ☐ TEMPERATURE
- ☐ SALINITY
- ☐ SEA LEVEL
- ☐ RIVER
- ☐ UNDER WATER NOISE
- ☐ WAVES
- ☐ WINDS
- ☐ SEA ICE

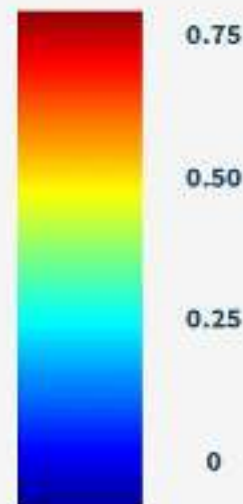




M2M



SEA WATER VELOCITY (m/s)



Style

vector



19-09-24T04:00:00.000Z

Pomarez

- Seabed substrate
- Sediment accumulation rates
- Seafloor lithology
- Seafloor stratigraphy
- **Coastal behaviour**
- Geological events and probabilities
- Mineral occurrences

Map of EMODnet coastal migration

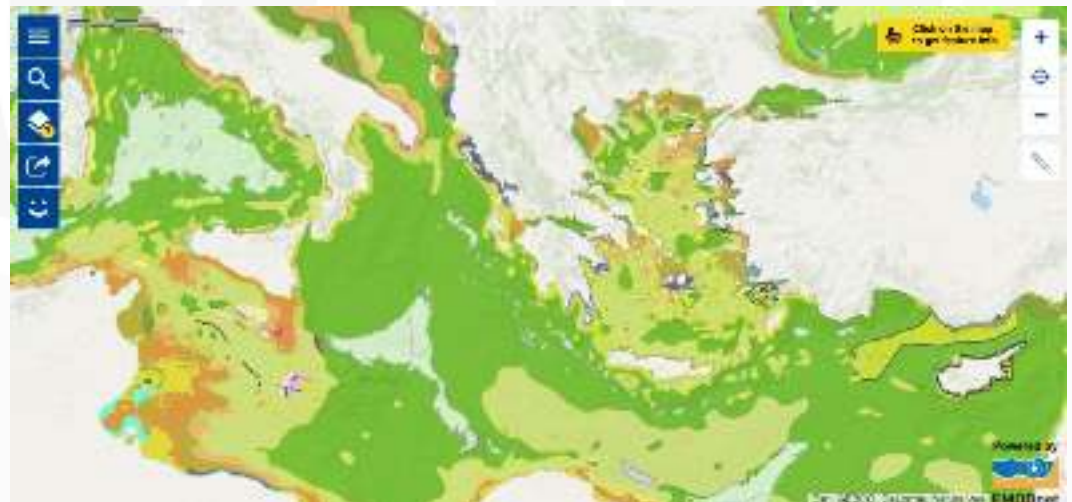


EMODnet Seabed habitats

<http://www.emodnet-seabedhabitats.eu>

- Seabed habitat maps (broad-scale and specific per basin)
- **Individual seabed habitat maps from surveys**
- Environmental variables influencing habitat type

Map of EMODnet EUNIS seabed habitat

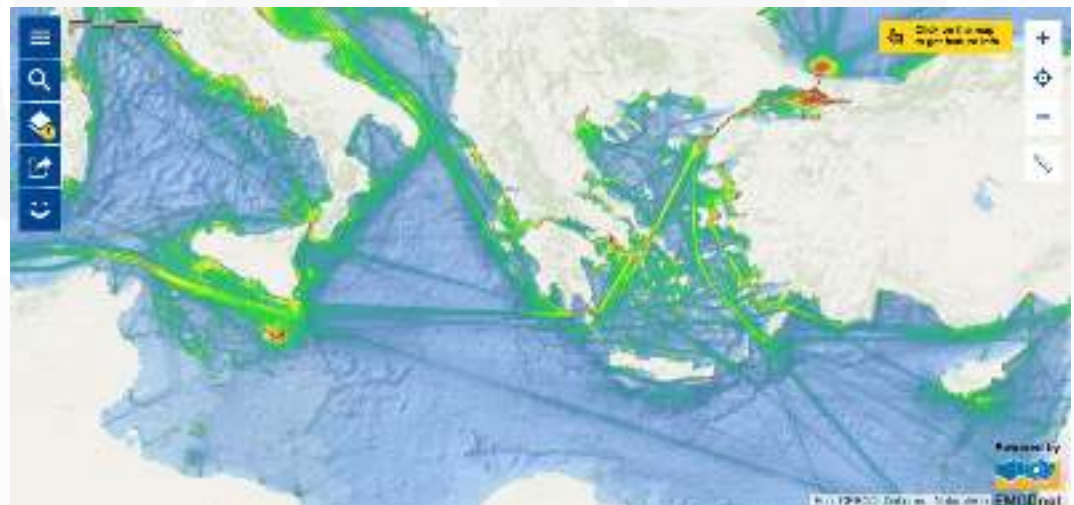


EMODnet Human activities

<http://www.emodnet-humanactivities.eu>

- Aggregate extraction
- **Aquaculture**
- Cultural heritage
- Dredging
- Fisheries
- Hydrocarbon extraction
- Traffic in main ports
- Ocean energy facilities
- Pipelines and cables
- Protected areas
- Status of bathing sites
- **Vessel density**
- Waste disposal (solids)
- Wind farms
- Other forms of area management

Map of EMODnet Vessel density





EMODnet



EMODnet services

- How to search/discover data?
- How to visualise data?
- How to access/download data?
- How to process data?
- How to get support?

Get started

Search over 327 data sets, services and maps,



EMODnet Data Portal

Here you will find data, services and maps and more.

Browse by topics



Oceans

213



Climatology, meteor...

25



Utilities communica...

20



Environment

18



Geoscientific inform...

12



Biota

11



Boundaries

6



Economy

4



Planning cadastre

3



Transportation

2



Elevation

2



Intelligence military

1



Farming

1



Structure

1

Browse resources



Dataset

200



Series

111



Service

9

1 Working with data from EMODnet bathymetry

1.1 Access raster data through WCS

1.2 Creating maps

1.3 Creating 3D visualisations

1.4 Exporting graphics

1.5 Summarising raster data

1.6 Exporting data

1.7 Accessing the original survey data

2 Working with data from EMODnet human activities

2.1 Access vector data with WFS

2.2 Access raster time series data with WCS

3 Working with data from EMODnet physics

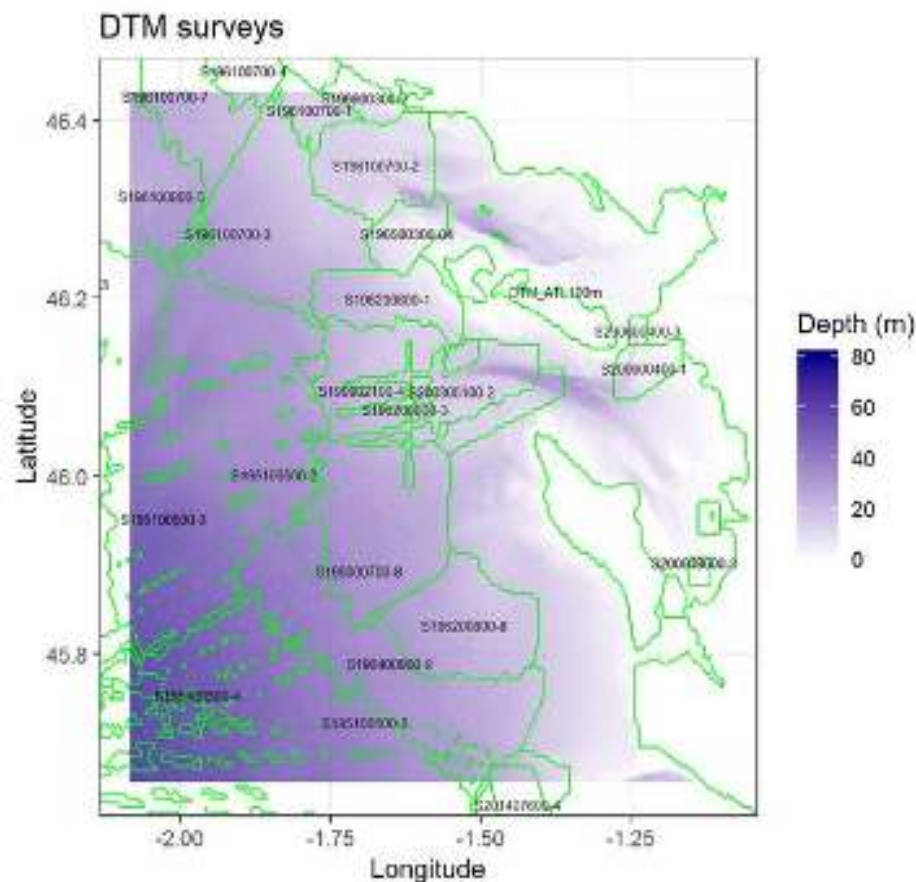
3.1 EMODnet physics WFS

3.2 Alternative EMODnet physics web services

4 Working with data from EMODnet seabed habitats and EMODnet geology

```
geom_text(check_overlap = TRUE) +  
  # geom_text(check_overlap = TRUE) +  
  geom_text(data=centroid, aes(label = Name, x = Longitude, y = Latitude), size=2, check_  
TRUE) +  
  coord_quickmap(xlim=range(xmin, xmax), ylim=range(ymin, ymax)) +  
  ggtitle("DTM surveys")+xlab("Longitude")+ylab("Latitude")
```

map



Finally, we export the survey dataset to a geoJSON file.

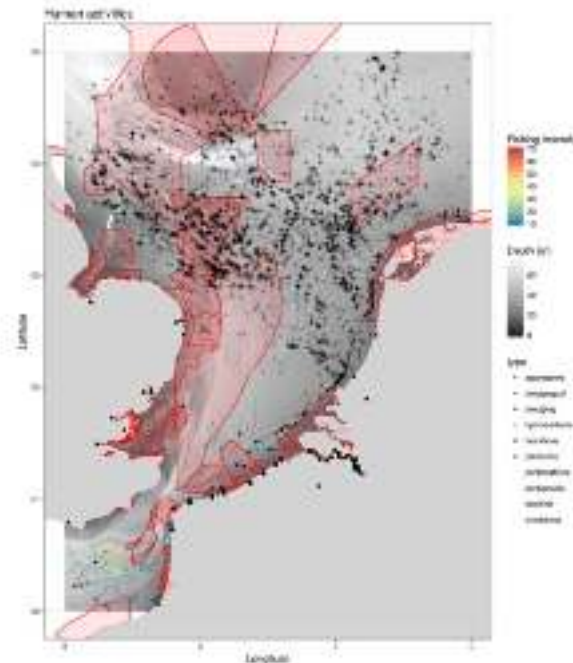
```
geojson_write(DTM_Surveys, file = "bathy.geojson")
```


A 3 days hackathon on Open Marine data



Aquaculture

the overall winner of 'Best Product' developed an EU wide tool for identifying suitable areas at sea to farm seaweed. The tool is open source and has potential for adaptation to other sectors.



[Map created based on
EMODnet webservices]



A close look at the challenge « Seaweed farming »

- ④ **Objective:** design of an assessment tool able to identify suitable areas at sea to farm seaweed
- ④ **Method:** establishing a decision tree classification scheme by mixing MSP maps and ecological, physical & biological data
- ④ **Output:** multivariable clustering
« Where are the suitable areas? »

EMODnet Human Activities

<https://www.emodnet-humanactivities.eu/blog>

Algae, the next big thing in the blue bioeconomy



Marine aquaculture zoning and site selection

Where does our wastewater go?



@EMODnet
www.emodnet.eu

Your gateway to marine data in Europe