



**EMODnet**  
European Marine  
Observation and  
Data Network

 **LIÈGE**  
université

 **GHER**  
Geodynamics and  
Environment - Research

# *Open Sea Lab Bootcamp Hackathon*

*Working with Diva gridded fields*

How to get the prepared  
EMODnet Chemistry  
data?

## Overview



### Selection

22<sup>nd</sup> of September to 23<sup>rd</sup> of October  
Selection process opens. Apply via  
[opensealab.eu](http://opensealab.eu)



### Explore the data

Explore the data and get familiar with the EMODnet environment. Check out the thematic portals and the data page on this site.



### Competition

15<sup>th</sup>, 16<sup>th</sup> & 17<sup>th</sup> November EMODnet Open Sea Lab Workshops & Open Data Competition

## Programme & Venue



## Data Services & Data Downloads

EMODnet - your gateway to marine data in Europe - holds a wealth of marine data. There are 8 thematic portals in a consortium made up of more than 160 organisations assembling marine data, products and metadata to make these fragmented resources more available to public and private users relying on quality-assured, standardised and harmonised marine data which are interoperable and essentially free of restrictions on use.

We understand that it may be a bit overwhelming to find your way around the data from EMODnet, so we tried to make it easier for you by listing the web services and providing some datasets for you to use during the Open Sea lab. Get inspired by exploring the data made available here. If there is a particular theme or dataset that you'd like to see listed here, don't hesitate to send us an email and we'll get back to you straight away.

[Click here to access the data page.](#) (This page is being continuously updated)

## Competition

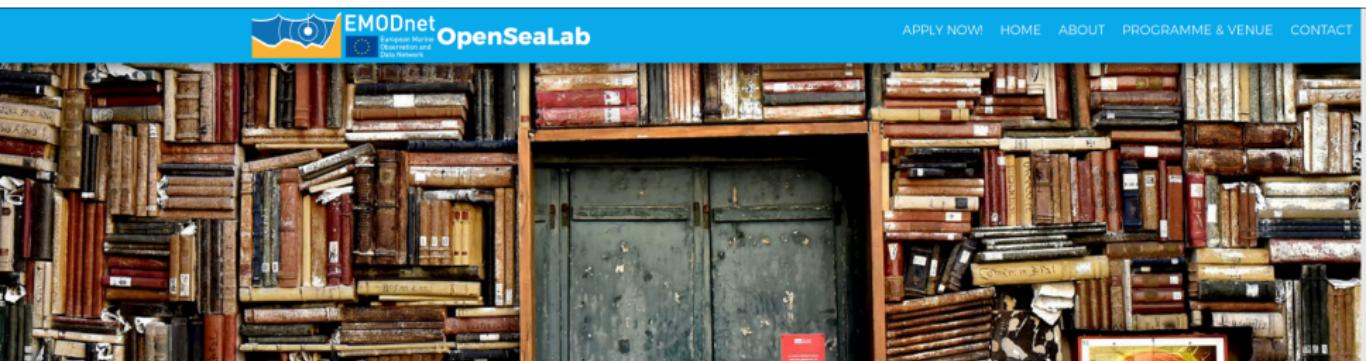
### 3 day Boot Camp

The bootcamp means three days of stimulation for those with big ideas and for those who develop and design very well! Each day from 9am til 6pm you can dive into a mind-boggling wealth of data and get started to create the next money making application, develop new solutions, conceive new business models or use cases based on one of the chosen themes for the Open Sea Lab data competition.

## Marine data

Use, re-use and combine archived and near-real time open marine data and observations from the European Marine Observation and Data Network (EMODnet) , get support from different experts including marine data specialists, developers, experts in business modelling, pitching coaching etc.. and use their expertise to build or shape up your idea. Work together with your team and spend your time wisely. You will be amazed at how fast your progress will be with all the support that is on offer.

# Data access

EMODnet  
European Marine  
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## Data & Web Services

### From EMODnet

[EMODNET BATHYMETRY](#)[EMODNET GEOLOGY](#)[EMODNET CHEMISTRY](#)[EMODNET PHYSICS](#)[EMODNET BIOLOGY](#)[EMODNET HUMAN ACTIVITIES](#)[EMODNET SEABED HABITATS](#)

### From others

[LIFEWATCH MARINE](#)[OBIS](#)[MARINE REGIONS](#)[WORLD REGISTER OF MARINE SPECIES \(TAXONOMY\)](#)[MARINE COPERNICUS](#)[EUROPEAN DATA PORTAL](#)

# Data access



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Download data for the Adriatic

CDI Data Discovery and Access service:

Data product Viewing and Downloading service:

Dynamic Timeseries visualizations and requests for graphs:

## EMODnet Physics

Access [EMODnet GitHub](#) for more complete documentation

Documents & services

## EMODnet Biology

EMODnet Biology API

## EMODnet Human Activities

HELCOM AIS Data

Data and Web Services



# Data access



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Download data for the Adriatic

Download DIVA products

Download ODV files

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Documents & services

## EMODnet Biology

EMODnet Biology API

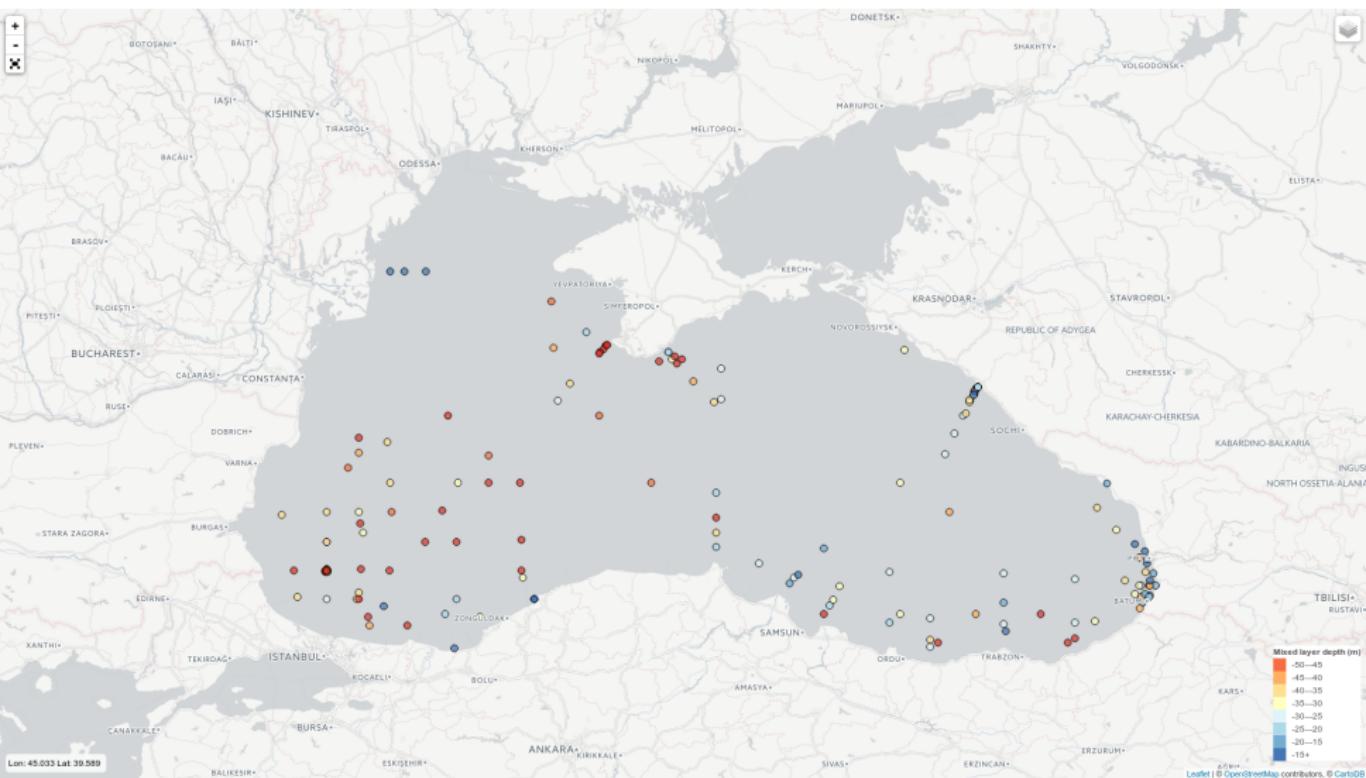
## EMODnet Human Activities

HELCOM AIS Data

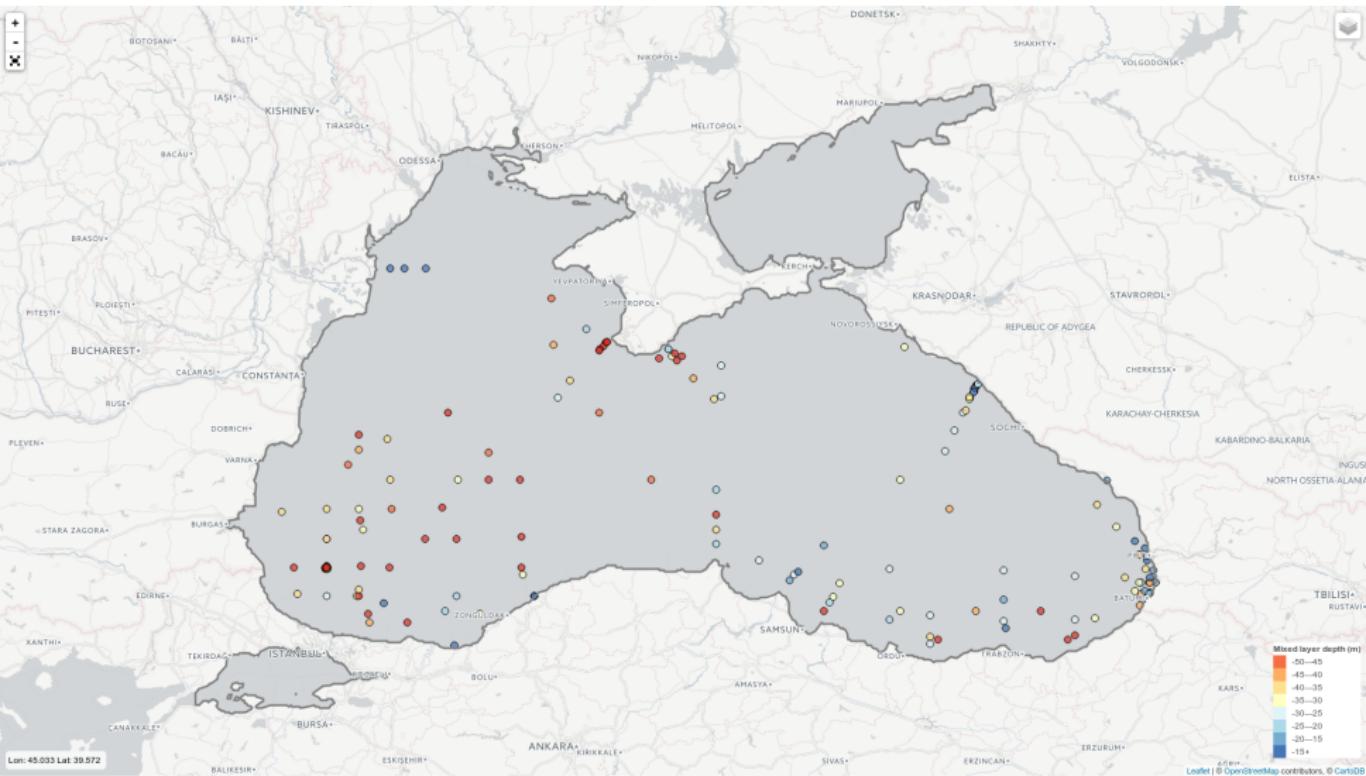


What are the "Diva products"?

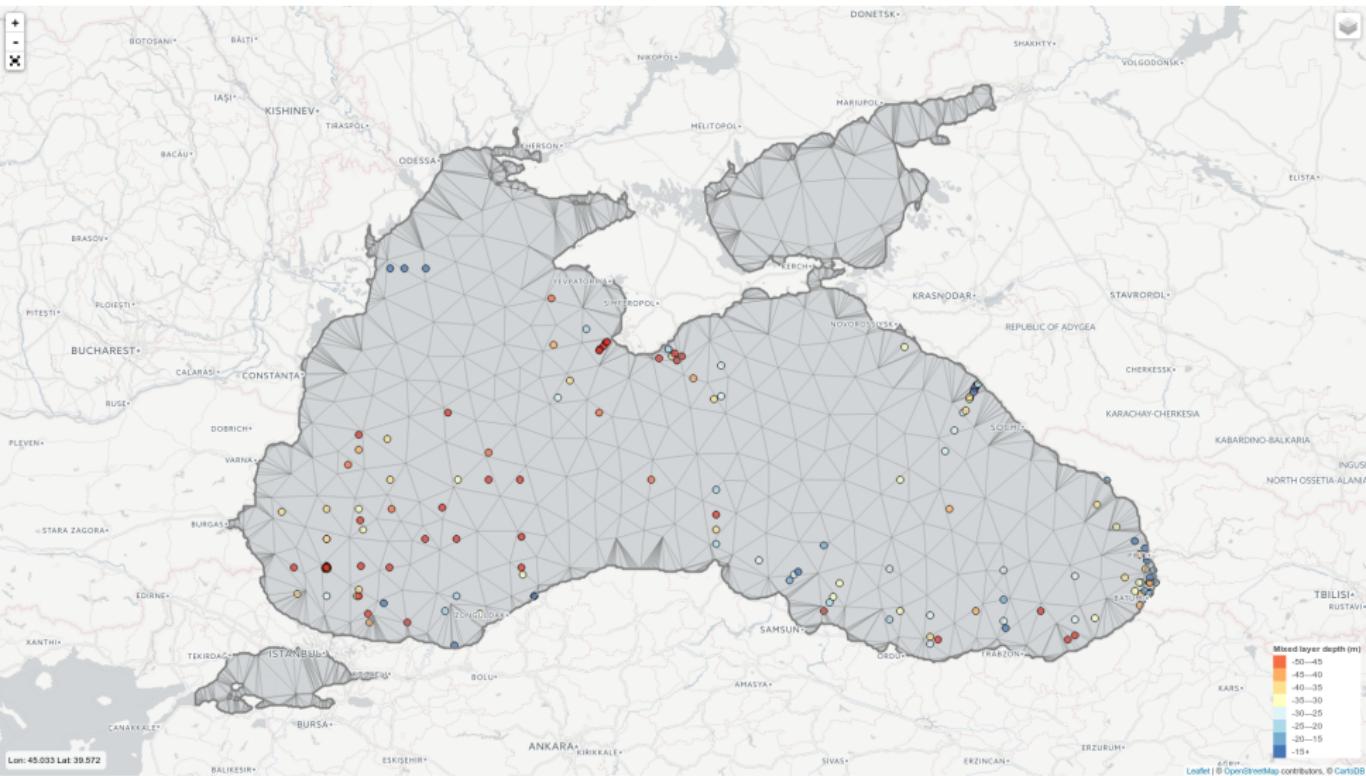
# Diva: from in situ data to gridded fields



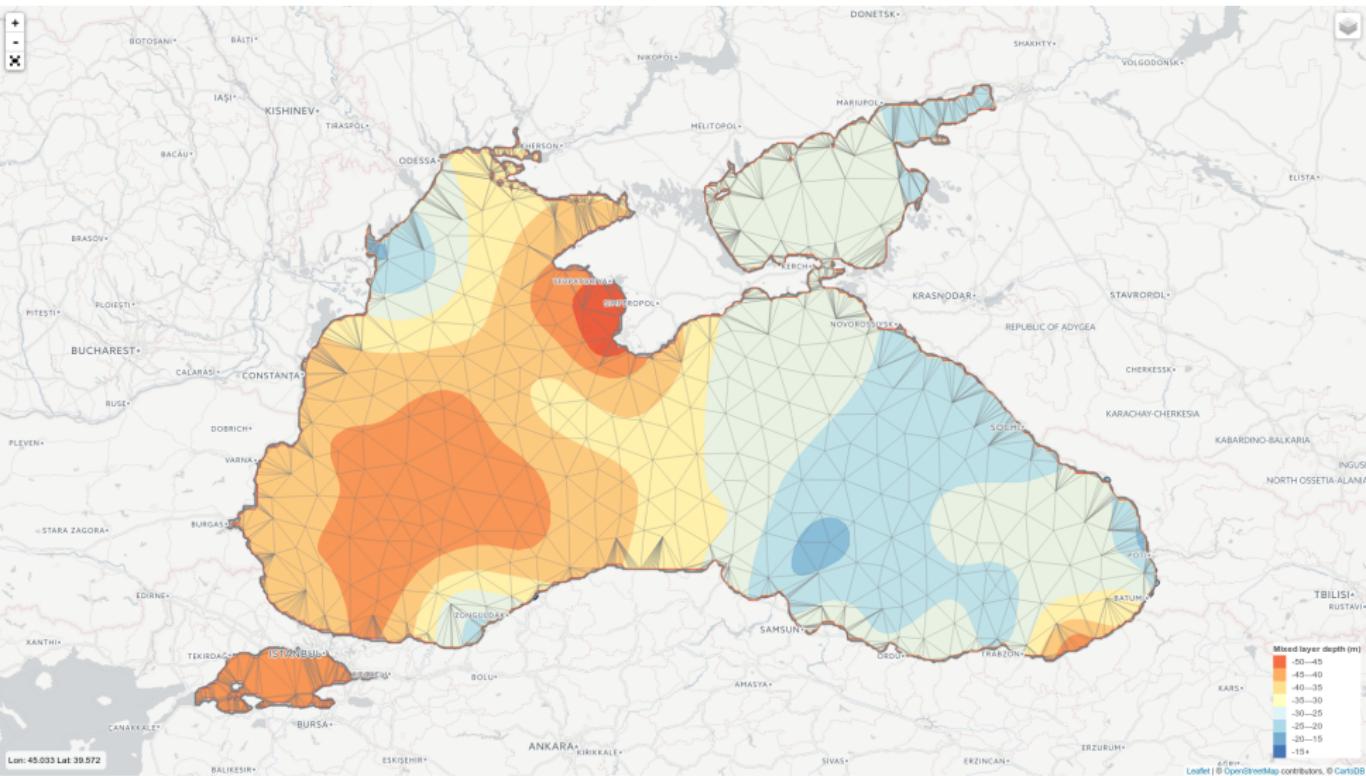
# Diva: from in situ data to gridded fields



# Diva: from in situ data to gridded fields



# Diva: from in situ data to gridded fields



What is the netCDF  
format of the files?

NetCDF = network Common Data Form (not format!)  
= software libraries and self-describing, machine-independent data formats

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Language	Library
 python	<a href="https://github.com/Unidata/netcdf4-python">https://github.com/Unidata/netcdf4-python</a>
Fortran	<a href="https://github.com/Unidata/netcdf-fortran">https://github.com/Unidata/netcdf-fortran</a>
 C	<a href="https://github.com/Unidata/netcdf-c">https://github.com/Unidata/netcdf-c</a>
 Java	<a href="https://github.com/Unidata/thredds">https://github.com/Unidata/thredds</a>
 JS	<a href="https://www.npmjs.com/package/netcdf4">https://www.npmjs.com/package/netcdf4</a>
 GNU Octave	<a href="https://github.com/Alexander-Barth/octave-netcdf">https://github.com/Alexander-Barth/octave-netcdf</a>
 Julia	<a href="https://github.com/meggart/NetCDF.jl">https://github.com/meggart/NetCDF.jl</a>
Matlab	Native support since R2010b

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`ncdump` : generates a text representation of a netCDF dataset  
on standard output

`ncview` : visual browser for netCDF files

`nco` (netCDF operators): toolkit to manipulate and  
analyze data stored in netCDF

What do you find inside  
the directory?

```
$ tree -L 3

.
autumn
    Water_body_ammonium.4Danl.nc
    Water_body_chlorophyll-a.4Danl.nc
    Water_body_dissolved_oxygen_concentration.4Danl.nc
    Water_body_nitrate.4Danl.nc
    Water_body_nitrite.4Danl.nc
    Water_body_pH.4Danl.nc
    Water_body_phosphate.4Danl.nc
    Water_body_silicate.4Danl.nc
    Water_body_total_nitrogen.4Danl.nc
    Water_body_total_phosphorus.4Danl.nc

spring
    Water_body_ammonium.4Danl.nc
    Water_body_chlorophyll-a.4Danl.nc
    Water_body_dissolved_oxygen_concentration.4Danl.nc
    Water_body_nitrate.4Danl.nc

...
summer
...
```

# Directory structure

- 1 One directory per season: winter = January-March  
spring = April-June  
summer = July-September  
autumn = October-December
- 2 One file per variable: ammonium, chlorophyll, oxygen, nitrate, nitrite, pH, phosphate, silicate, nitrogen

# File structure

See Jupyter-notebook