

EU Coastal Use Cases Workshop

September 16, 2024



CONNECT - Local coastal monitoring service for Portugal

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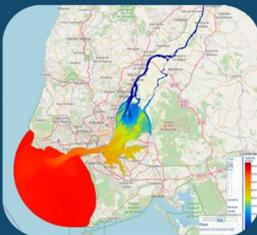


- **Project in a nutshell**





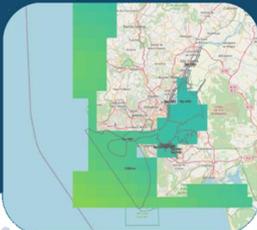
FORECASTS



IN-SITU OBSERVATIONS



SATELLITE



CONNECT delivers a local, high-resolution, coastal monitoring service that seamlessly integrates model-based forecasts and observations to provide blue (physical) and green (biogeochemical) data on Portuguese estuaries to CMEMS



PROGRAMME OF
THE EUROPEAN UNION



implemented by





- Support the evaluation of the ecological status of estuaries (WFD)
- Quantify land inputs to the adjacent coastal waters (MSFD)
- Anticipate inundation events (Floods Directive)



- **Consortium**





LABORATÓRIO NACIONAL
DE ENGENHARIA CIVIL

- **Model forecasts**, coordinates the UBEST coastal observatory and the WIFF and OPENCoastS forecast services



FCiências^{ID}
ASSOCIAÇÃO PARA A
INVESTIGAÇÃO E
DESENVOLVIMENTO
DE CIÊNCIAS



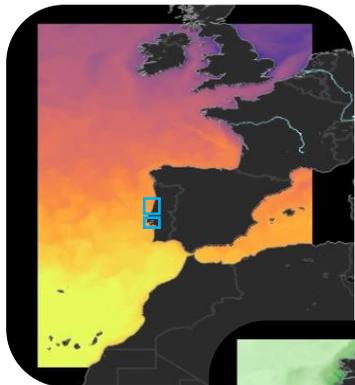
Ciências MARE
ULisboa



- **Near real time in-situ observations**, coordinates the CoastNet Research Infrastructure

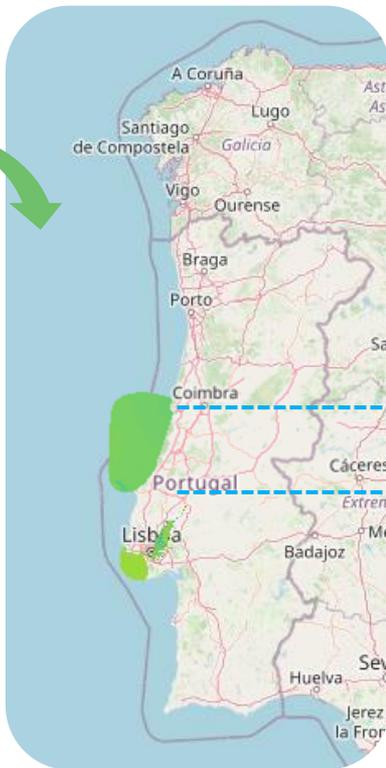


- **Copernicus Marine
Products and Coastal
model**



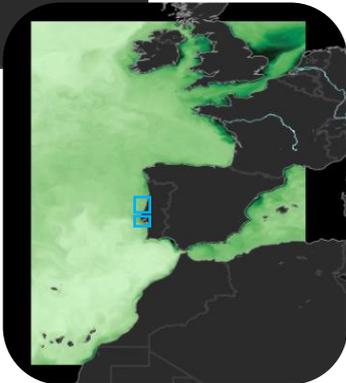
IBI Physics
IBI Biogeochemistry

Downscaling



Mondego estuary
Horizontal resolution:
5-5000m
Vertical grid:
25 SZ levels

Horizontal
resolution:
1/36°
Vertical grid:
50 levels



Tagus estuary
Horizontal resolution:
3/5-1600m
Vertical levels:
39 SZ levels



- **Seamless Coastal Marine Service**

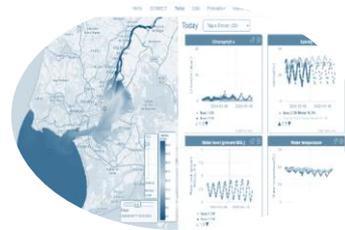




High-resolution operational modelling of estuarine - coastal circulation and water quality, forced by CMEMS regional models



Near-real time *in-situ* data acquisition and Earth-observation data

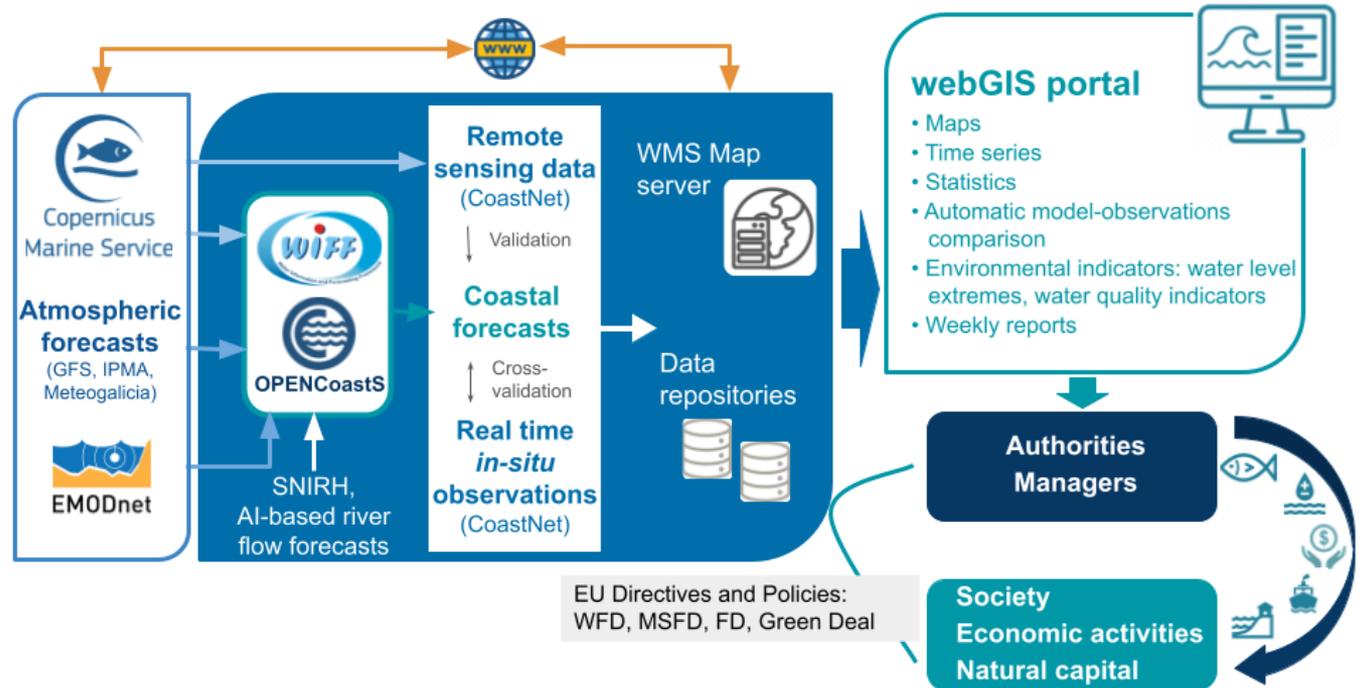


WebGIS portal to access physical and biogeochemical 2-day forecasts and observations



Seamless integration with CMEMS

CONNECT coastal service



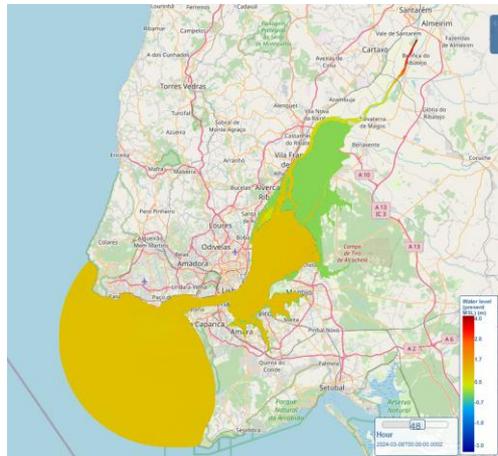


Co-design with users

- Address user's requirements and feedback on the coastal service
- Dedicated actions with users

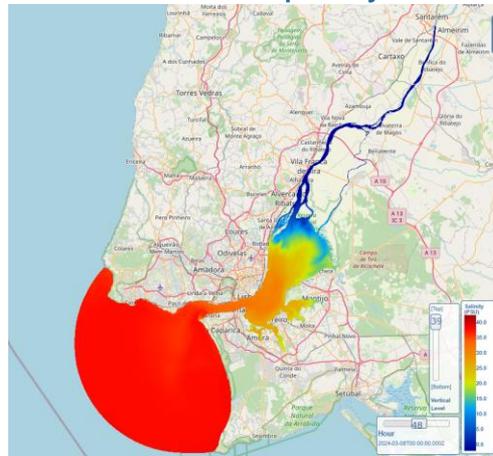


Tagus estuary: 2D barotropic model, waves-currents interaction - inundation



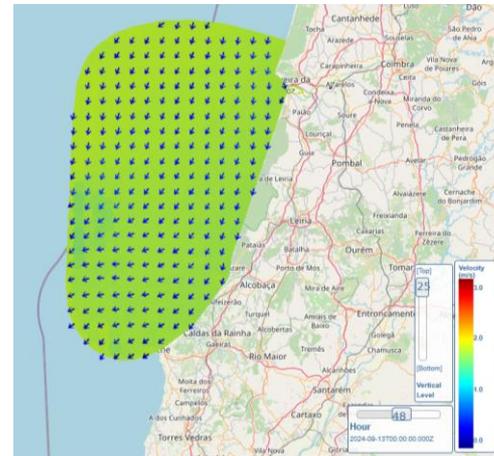
Water levels, Velocity,
Waves (Significant wave height,
Mean period, Direction)

Tagus estuary: 3D baroclinic model, coupled circulation-biogeochemistry – water quality



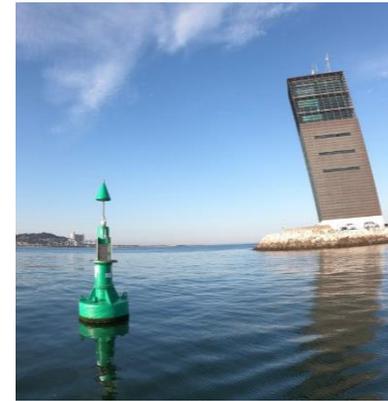
Water levels, Velocity, Salinity,
Temperature, Ammonium,
Nitrate, Phosphate, Silicate,
Dissolved oxygen, Chlorophyll-a

Mondego estuary: 3D baroclinic model, waves-currents interaction

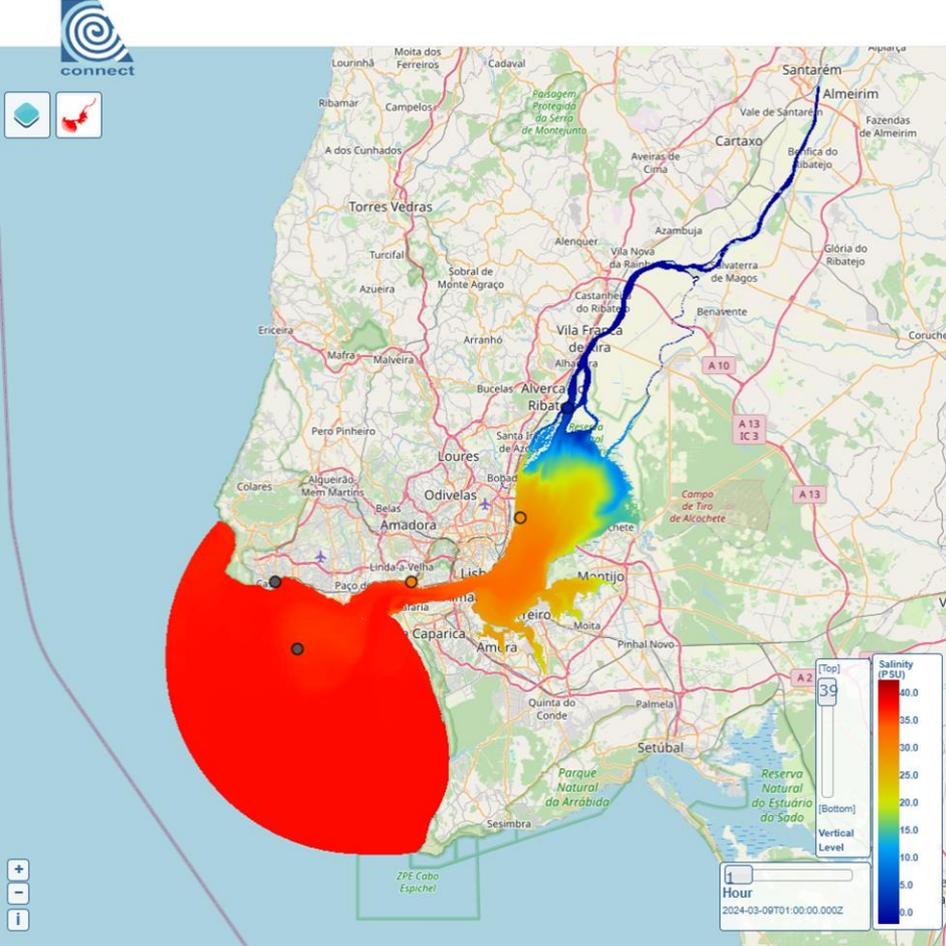


Water levels, Velocity,
Salinity, Temperature,
Waves (Significant wave height,
Mean period, Direction)

In-situ observation network

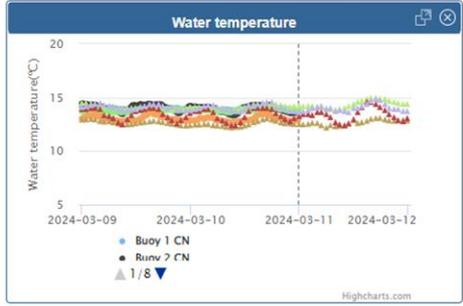
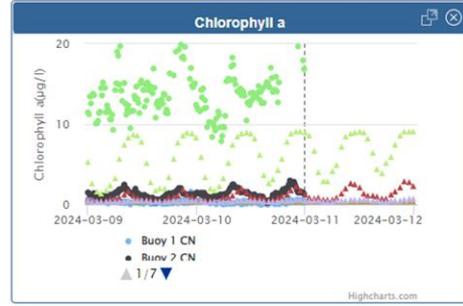
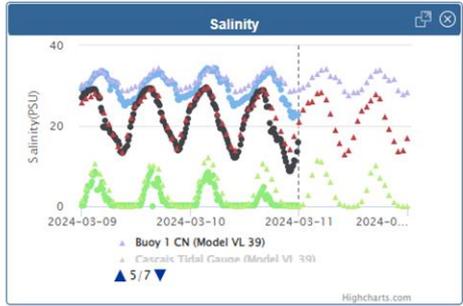
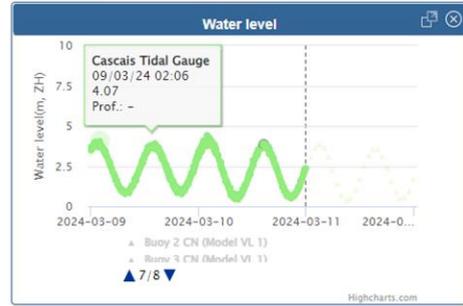


Salinity, Temperature,
pH, Dissolved oxygen,
Chlorophyll-a, Turbidity



Today

Tagus Estuary (3D)



<https://connect-portal.Inec.pt/>

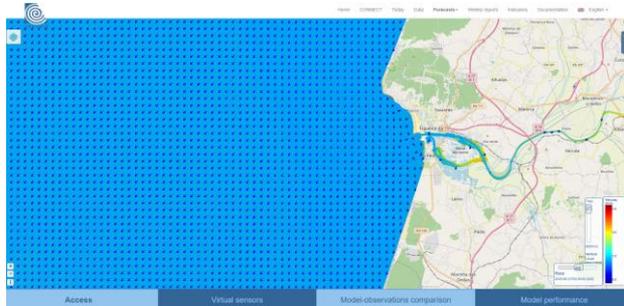


PROGRAMME OF THE EUROPEAN UNION



implemented by

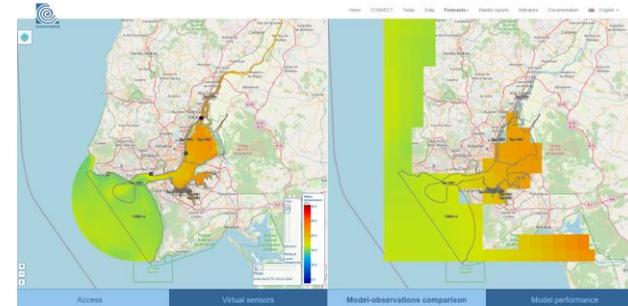




Circulation and water quality forecasts,
next 48 hours



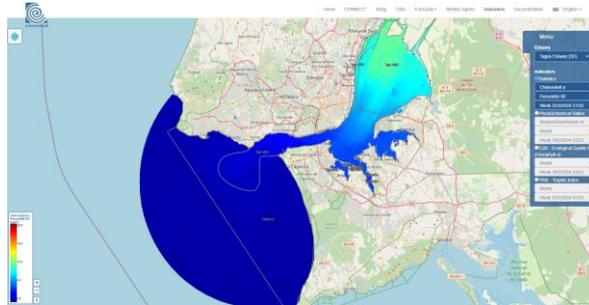
Virtual sensors



In-situ and satellite observations-model
comparison



Model performance



Indicators



Automatic weekly reports

Acknowledgements



Copernicus Marine Service
National Collaboration Programme 2022-2028

More info here:
connect.lnec.pt

Thank you for your attention!
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