# Oceanographic Data Management Platforms

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Ulisses

UNIVERSITY OF LISBON
INTERDISCIPLINARY STUDIES
ON SUSTAINABLE ENVIRONMENT AND SEAS

ulisses.ulisboa.pt

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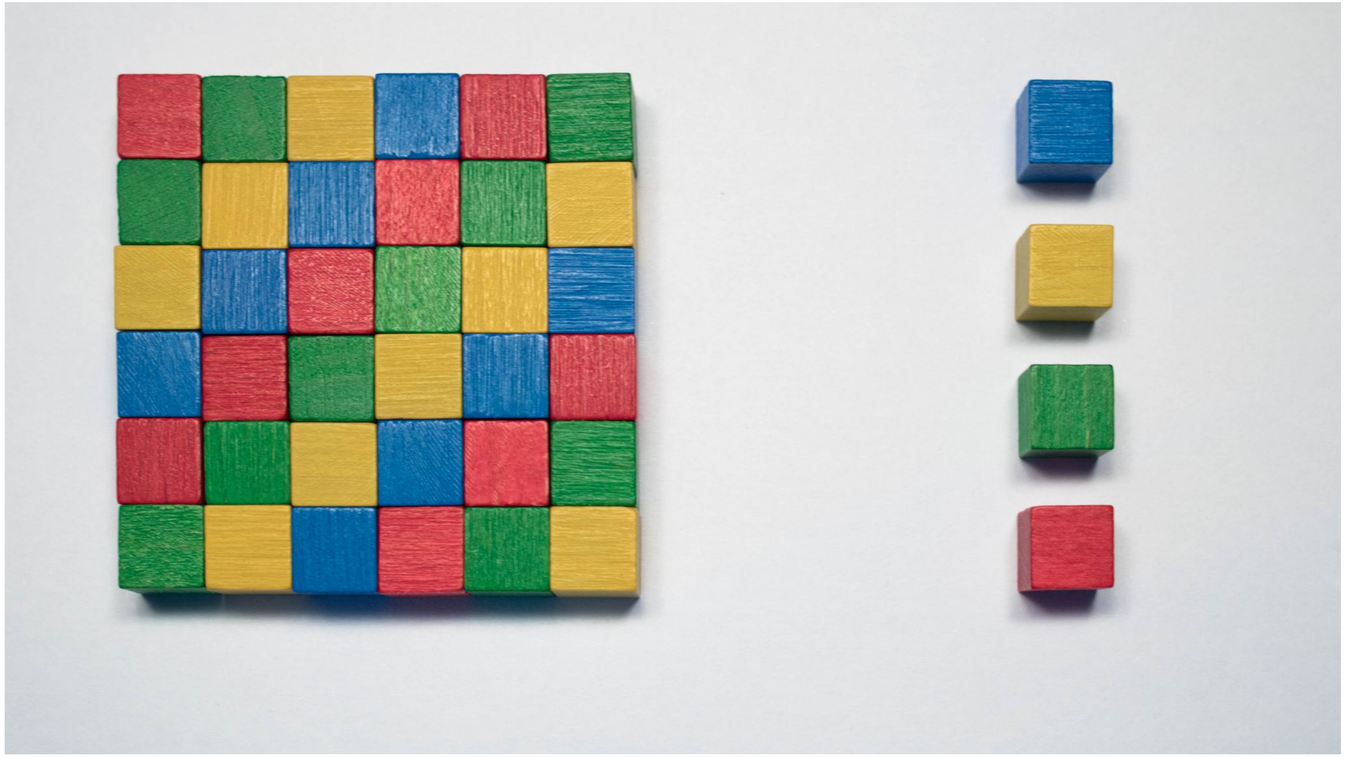

# Main Objective

to show and disseminate the desired oceanographic information to the target end-users in a easy way



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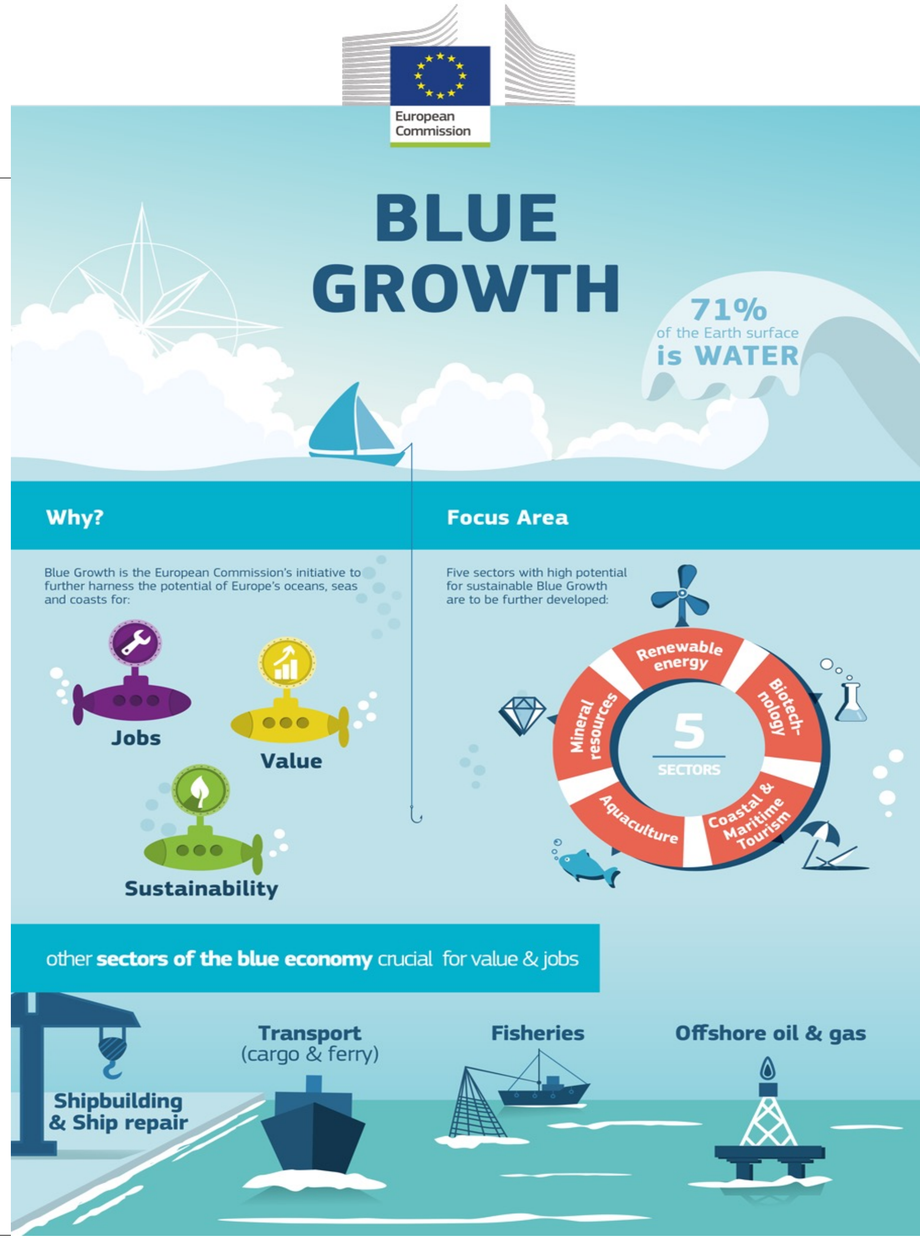
# Ulisses Blue economy

Many economic activities take place in the near ocean i.e. marine renewable energy production, fisheries and aquaculture, coastal and maritime tourism, ship transport, oil and gas exploration, etc.

These activities are subjected to risks and need to be sustainable. Numerical operational models are capable to analyse and forecast the environmental suitability of those activities.

Other services such as oil spill forecast, HABs propagation and search and rescue operations may also rely in the accuracy of numerical models forecasts near the coastal area.

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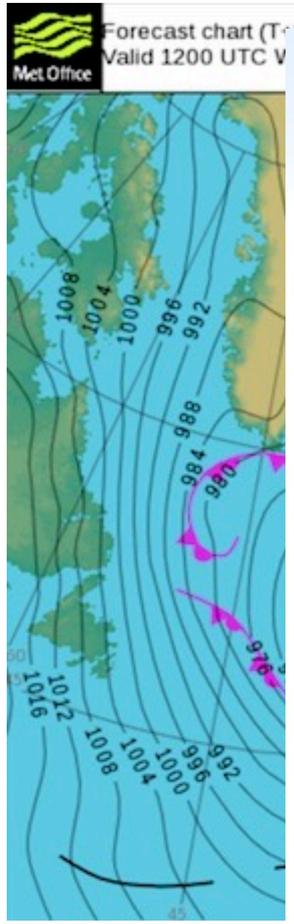
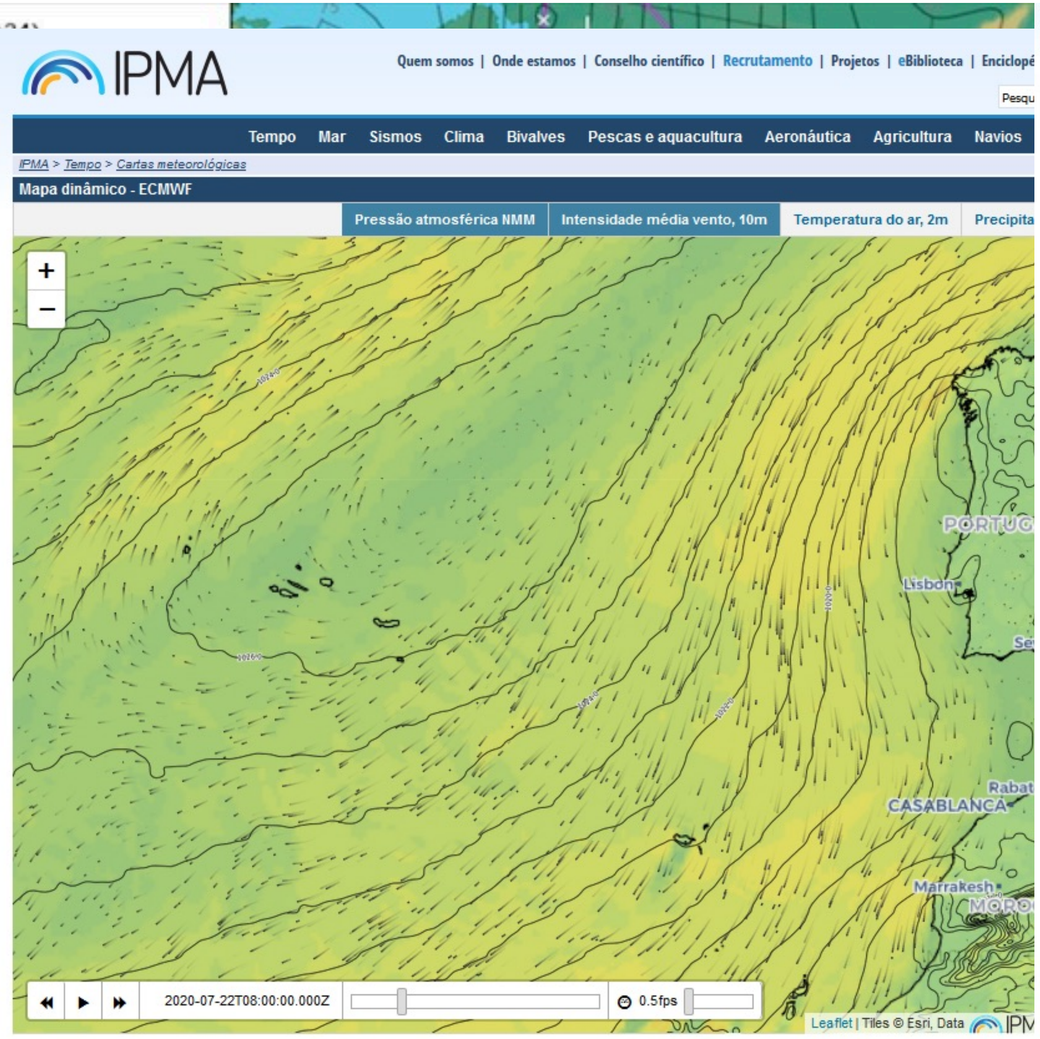
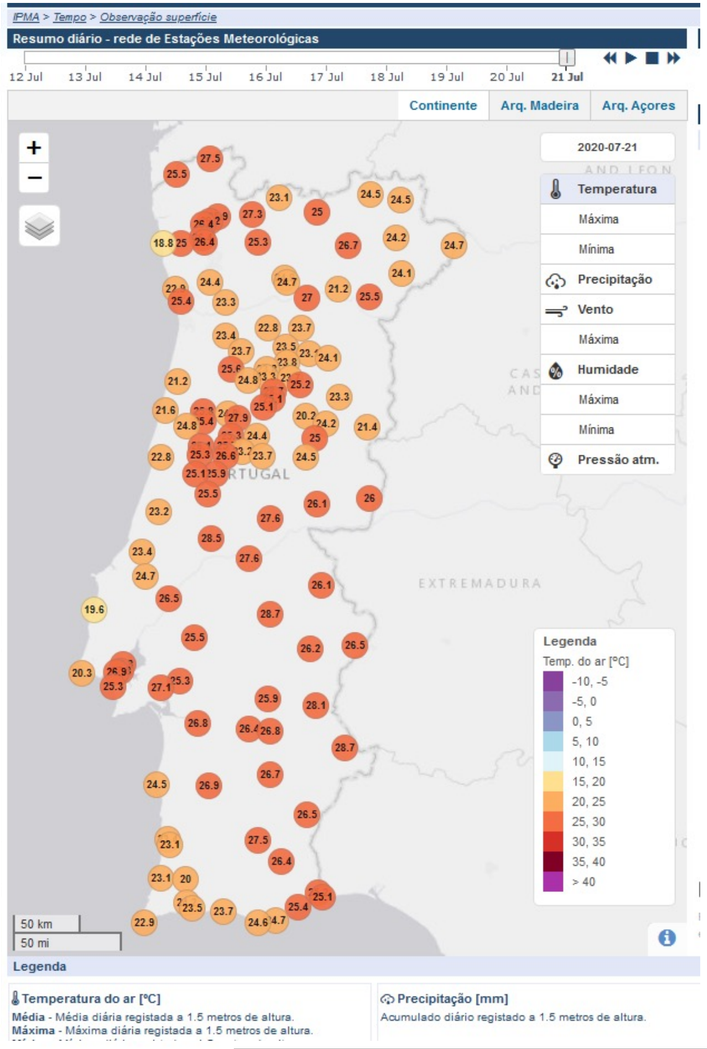
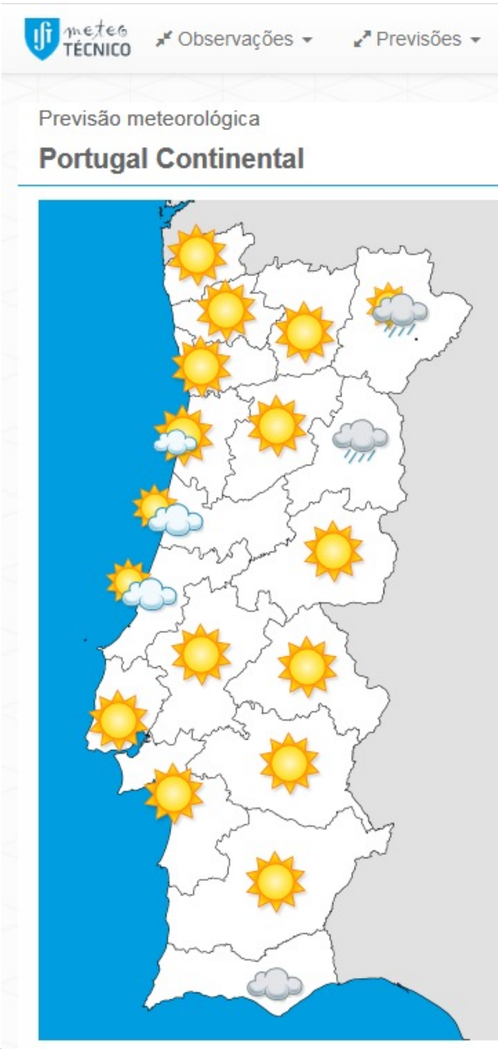



ECMWF

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# Presentation Outline

- Ocean Observing Systems
  - How do we measure?
  - What do we observe?
- Types of information
- What is an end-user?
- Examples of Ocean Data Platforms
  - Main European platforms
  - End-user platforms



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# Oceanographic Data Management Platforms
# Part I: Observing Systems

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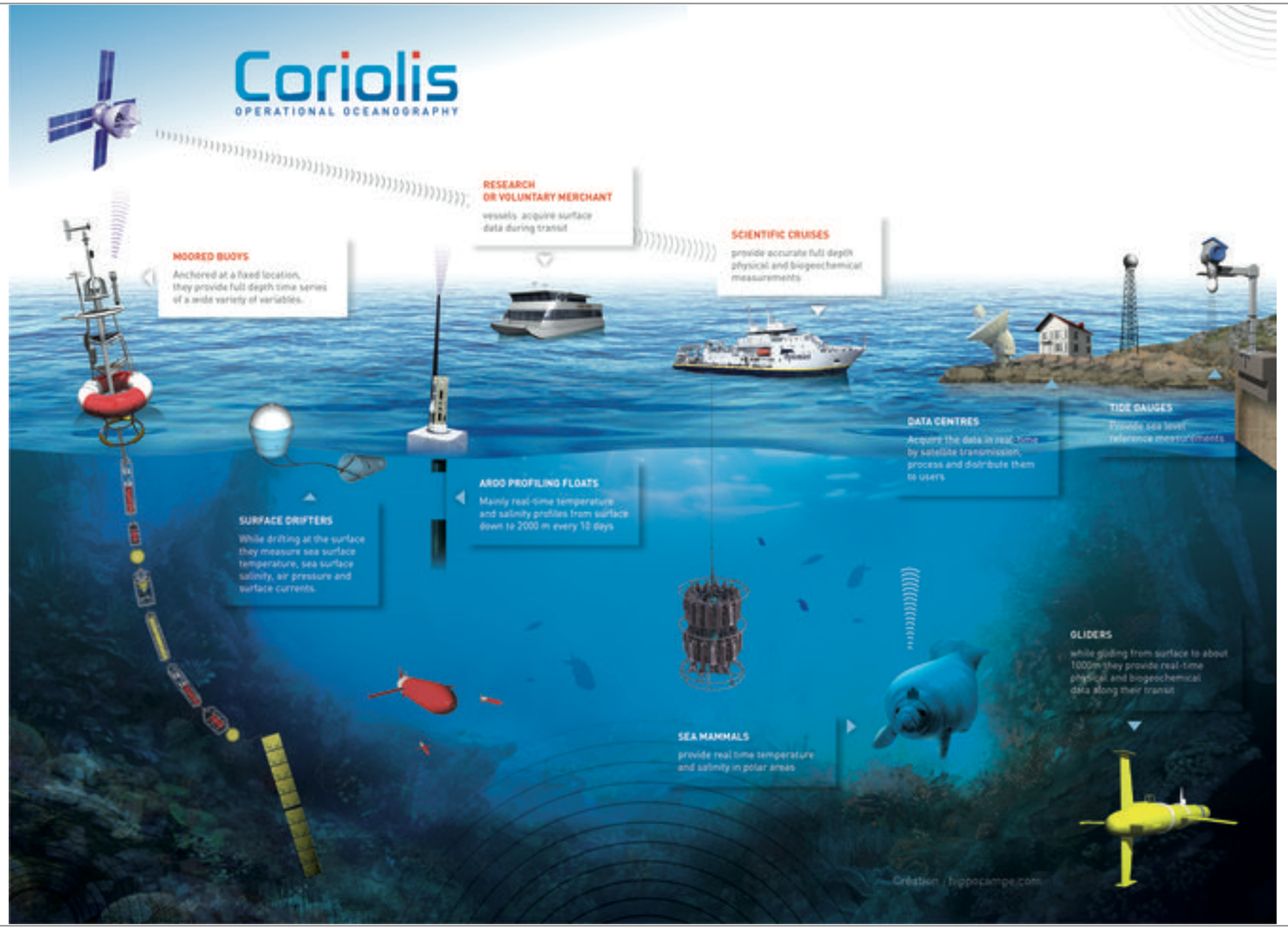
# How do we observe "operationally" the ocean?




All these systems need to talk to each other in a common language!

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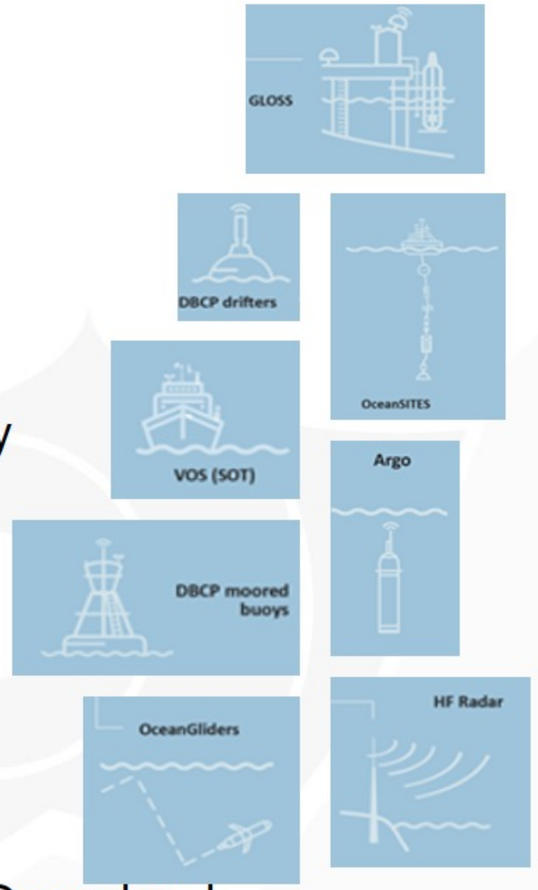
# Data and Scope

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

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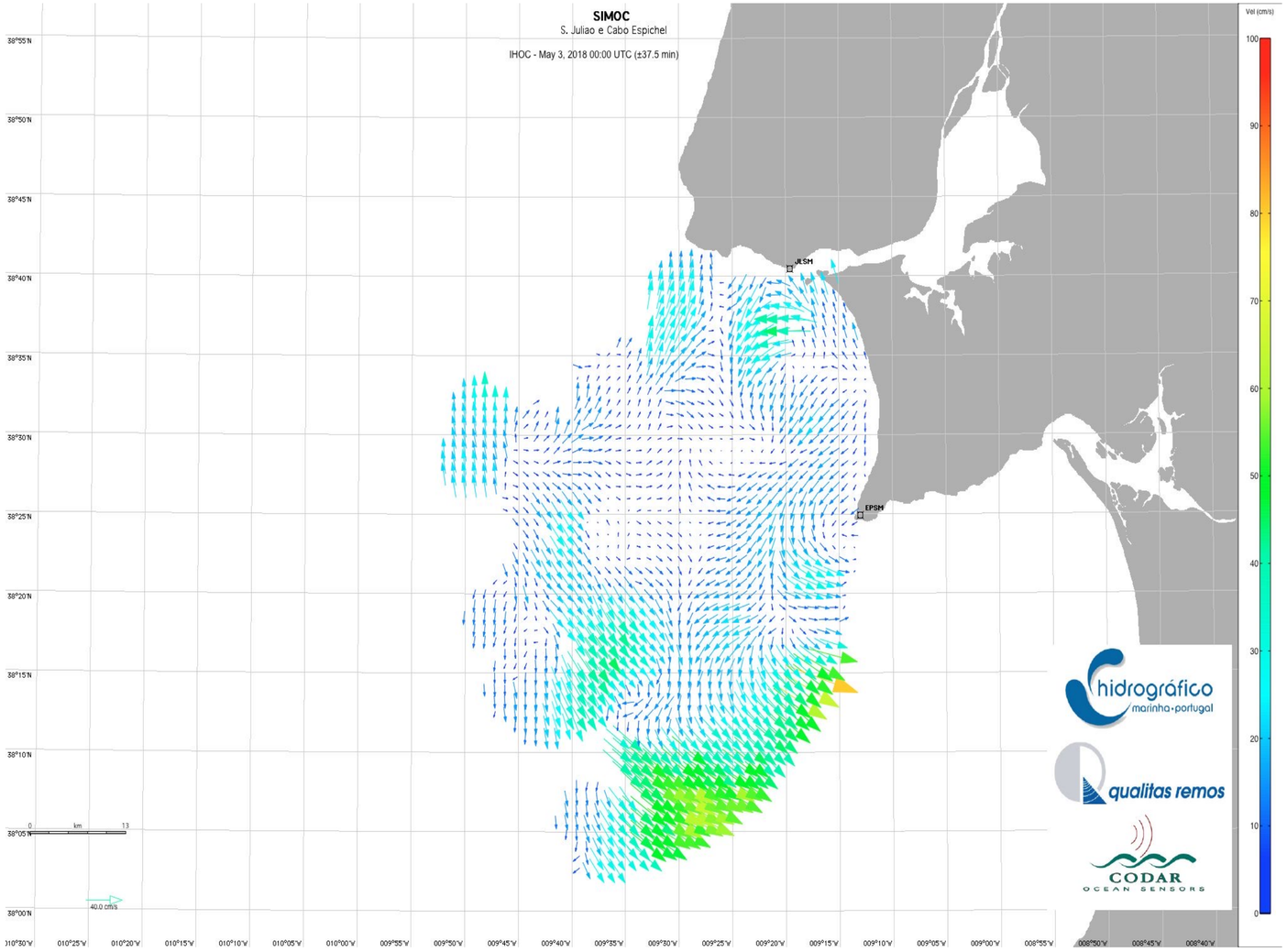
# HF Radar

- Source:  Instituto Hidrografico
- Grid Spacing: ~1.4 Km
- Frequency: every hour
- Format .tuv (ASCII file)
- The output is already pre-processed by SeaDisplay 6.7.8
- Averaging Radius: 4.000 km
- DistanceAngularLimit: 20.0
- CurrentVelocityLimit: 100.0 cm/s




HF Data source: http://www.hidrografico.pt/simoc.php

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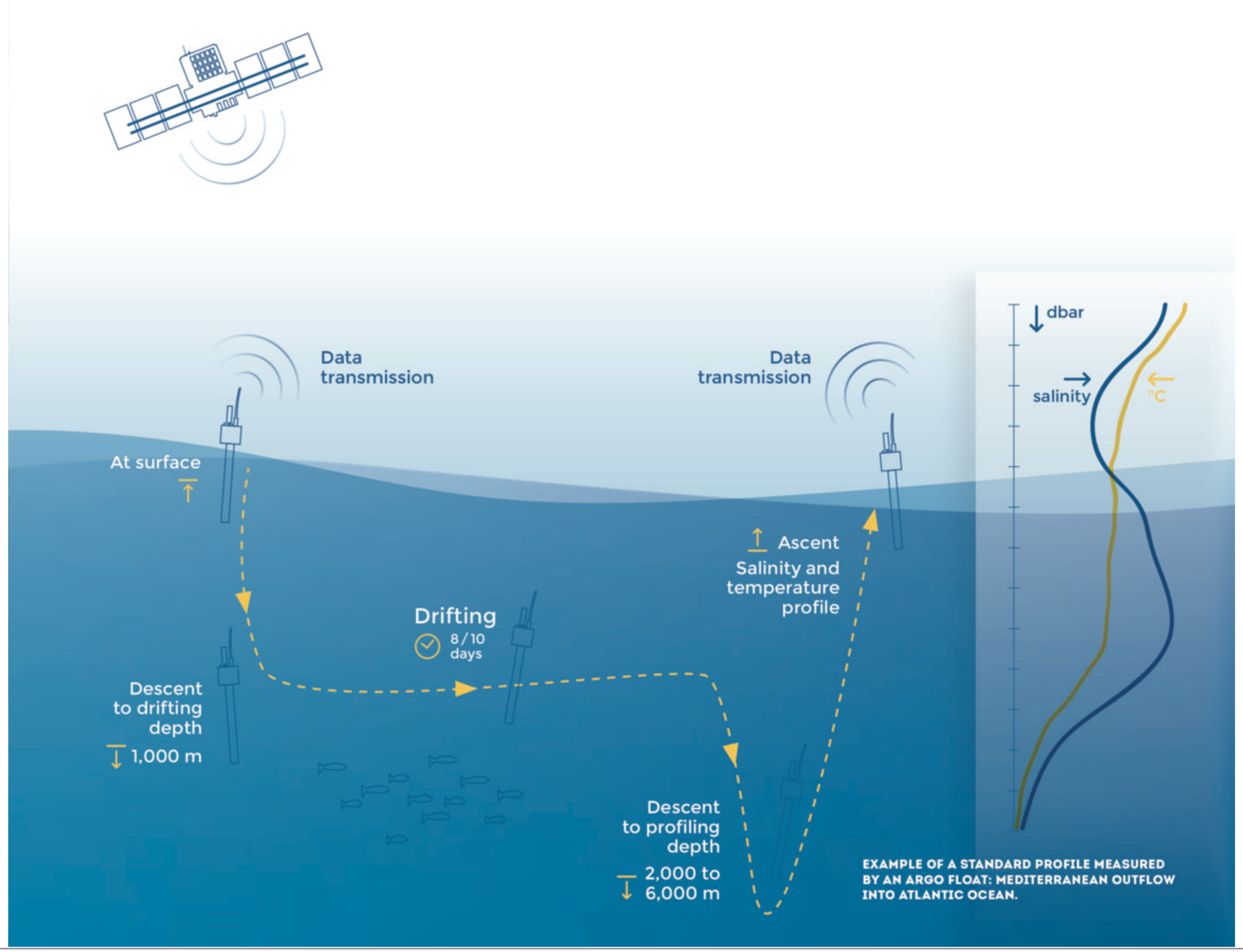
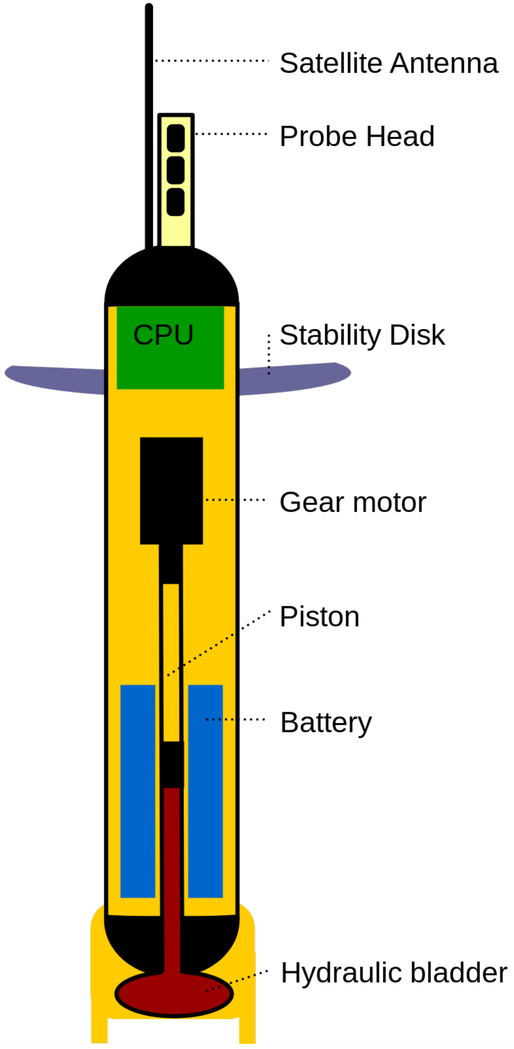
# ARGO Floats

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# Ulisses Gliders

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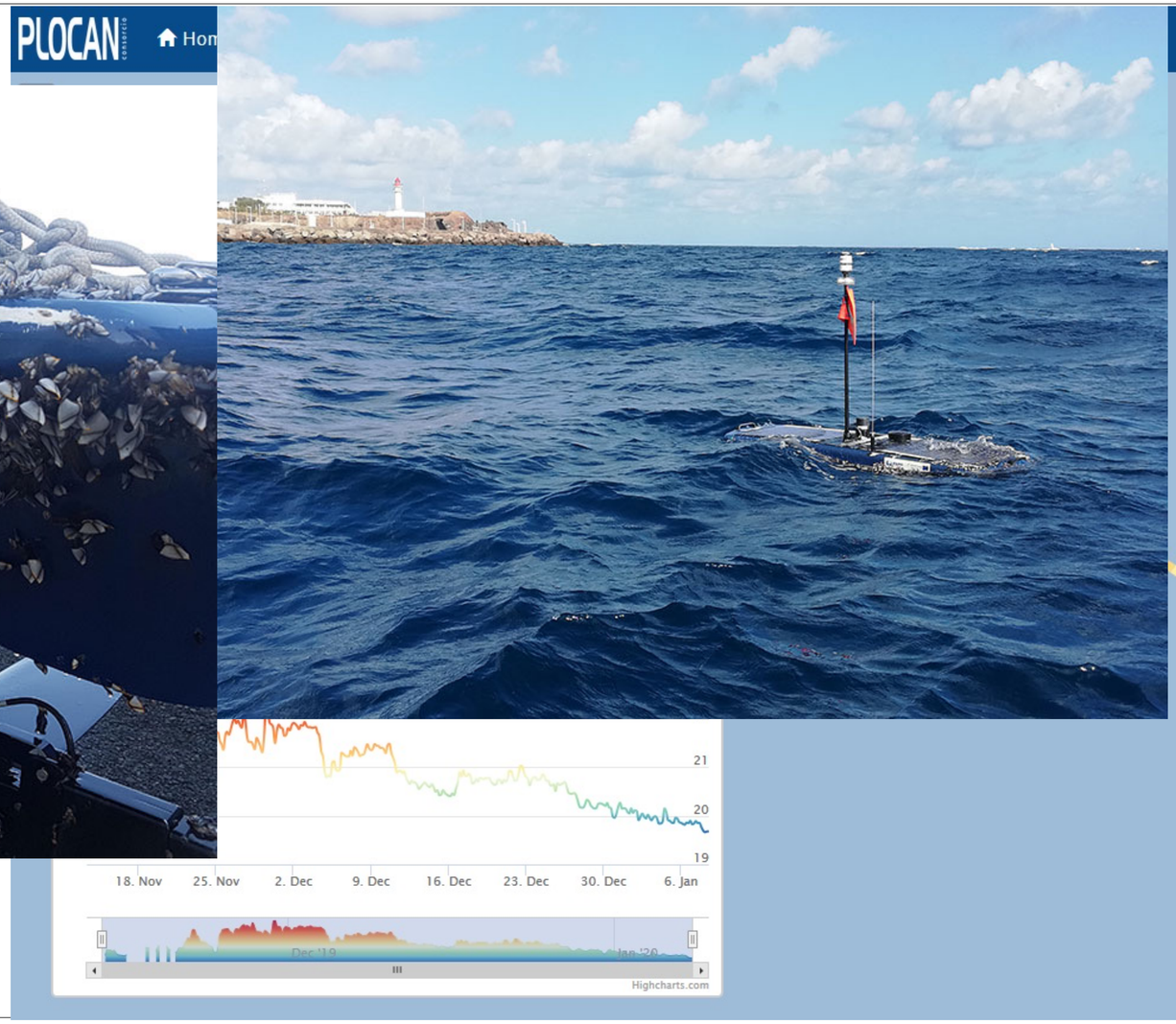


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# Ulisses Ferryboxes

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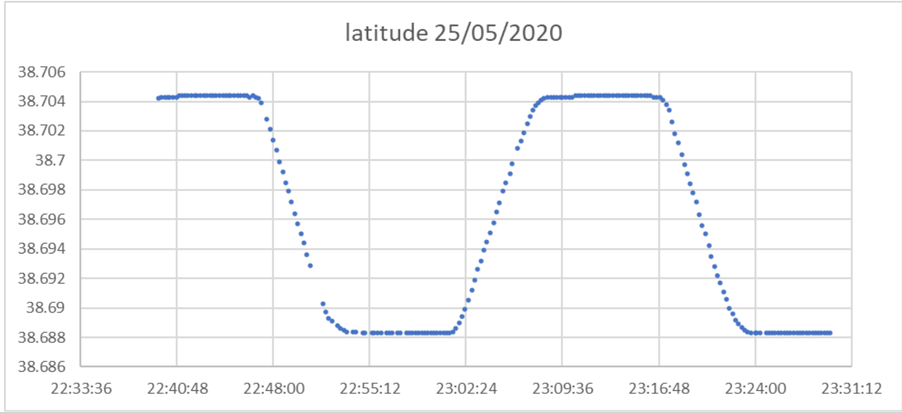
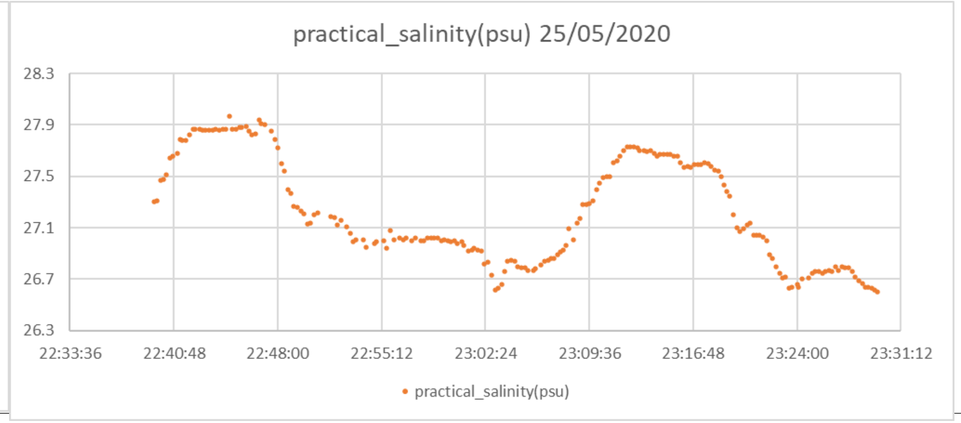
## Cacilheiro "DAFUNDO"

TTSL TRANSTEJO SOFLUSA


**Connect:** Cacilhas - Cais do Sodre
**Entry into service:** between 1980 and 1982
**Capacity:** 476 passengers

**Length:** 29,20m
**Beam:** 7,25m
**Draft:** 1.80 m
**Gross Tonnage:** 304
**Boat Hull:** Steel
**Speed:** 10 Knots




MyCoast!
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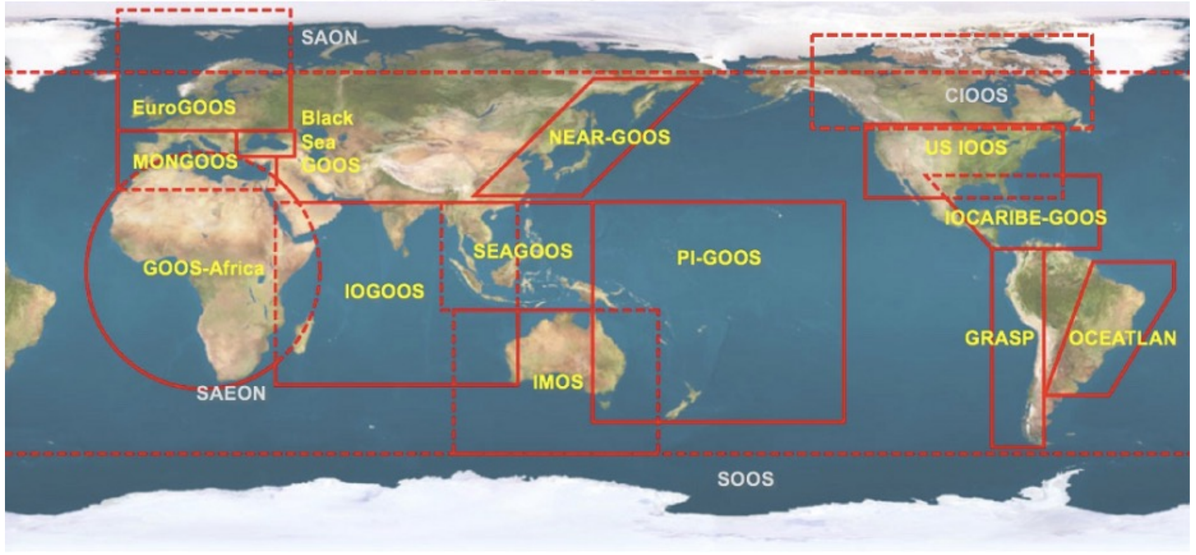
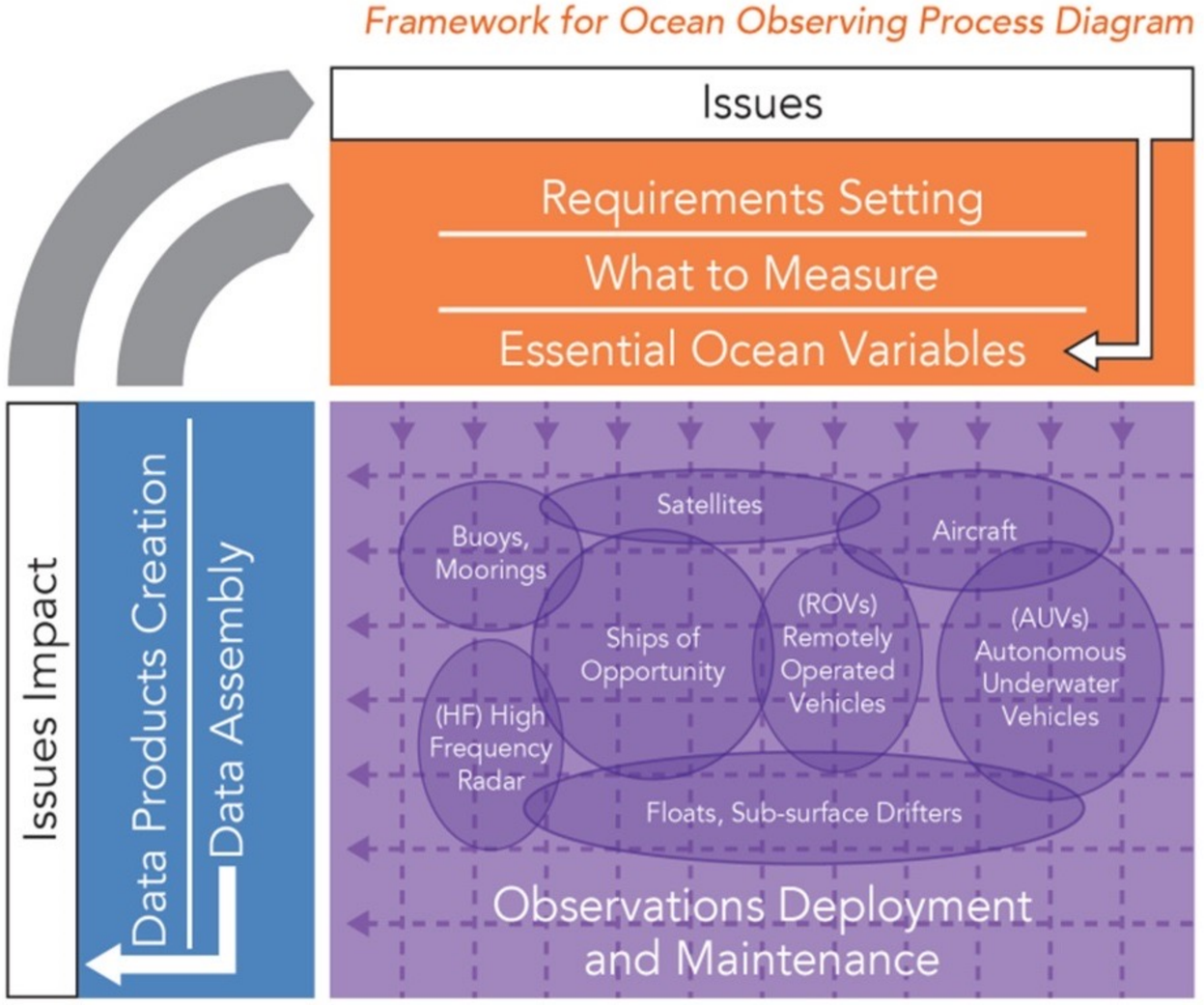
# The Global Ocean Observing System

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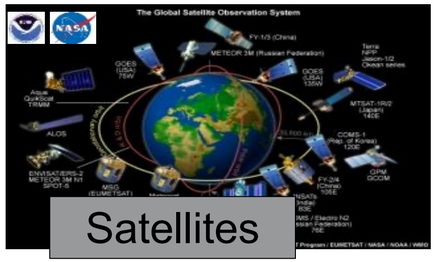
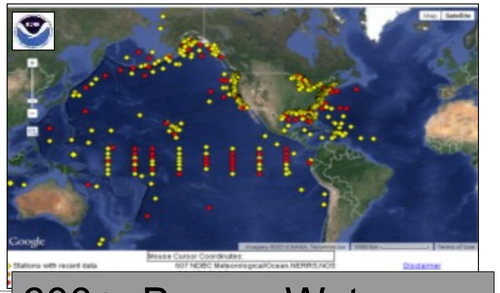
# The U.S. Integrated Ocean Observing System (IOOS)

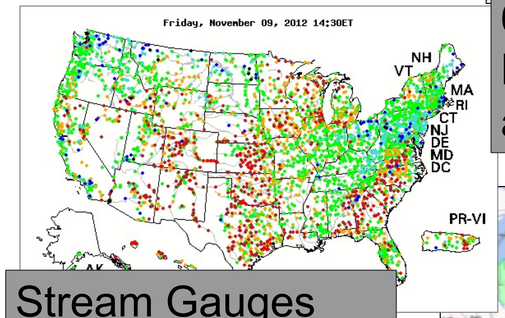
## Federal



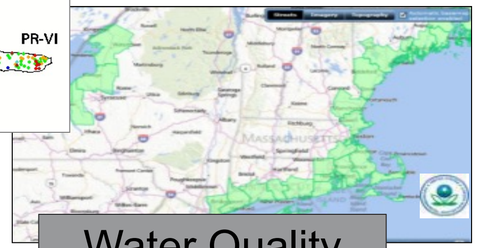

Satellites



600+: Buoys, Water Level stations, Coastal and Estuary stations




Stream Gauges



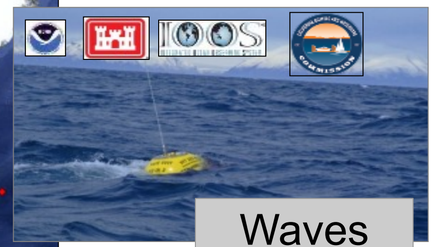
Water Quality

PORTS®

Research Infrastructure

## Regional


High Frequency Radar


Waves

450: Buoys, Water Level stations, Coastal and Estuary stations

Tagging


Gliders

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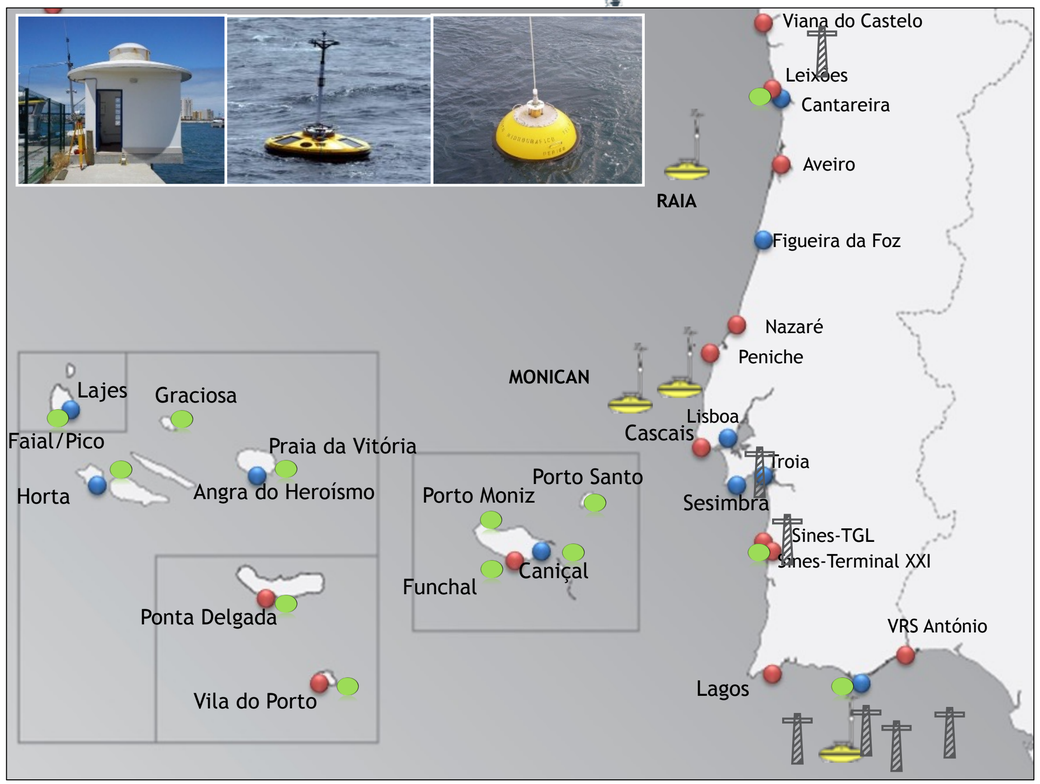
# MONIZEE

Sistema Integrado de Monitorização Ambiental da ZEE Portuguesa




Boias ondógrafo dos Açores em colaboração com a Univ. Açores

Boias ondógrafo da Madeira em colaboração com os Portos da Madeira

- *4 Boias multi-paramétricas*
- *13 Boias ondógrafo*
- *10 Marégrafos*
- *13 Marégrafos (online)*
- *7 Radares HF*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# Observation: Mooring Buoys Network

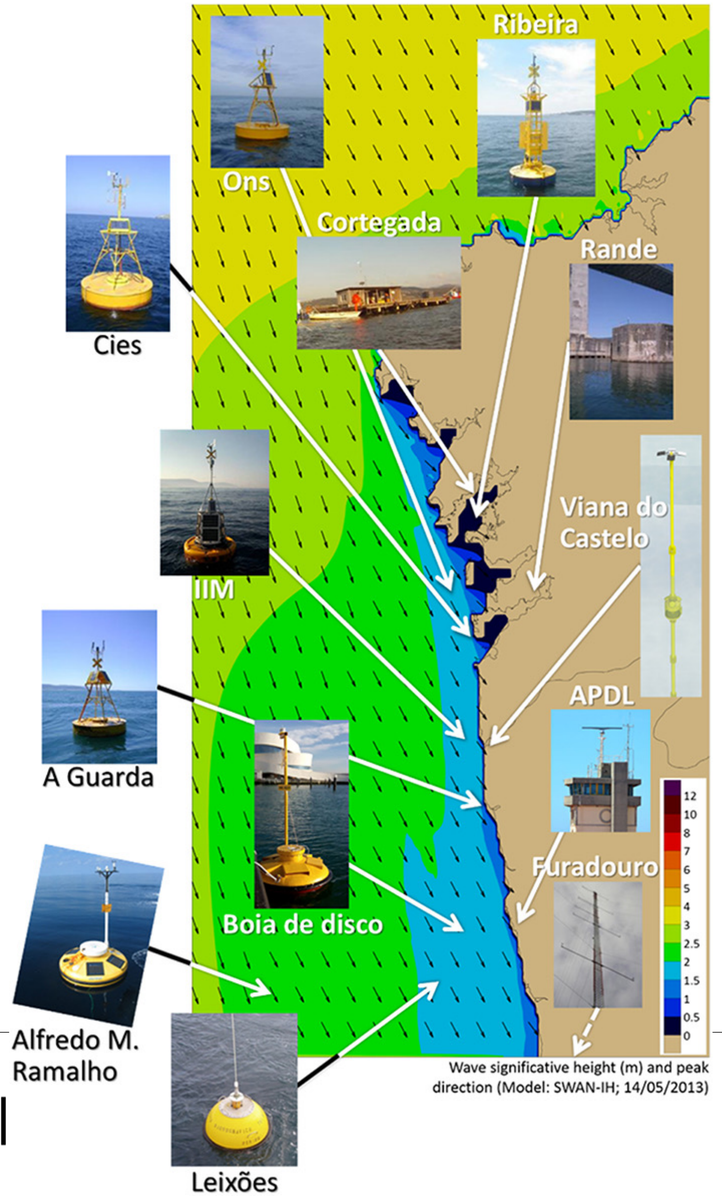
Since 2008

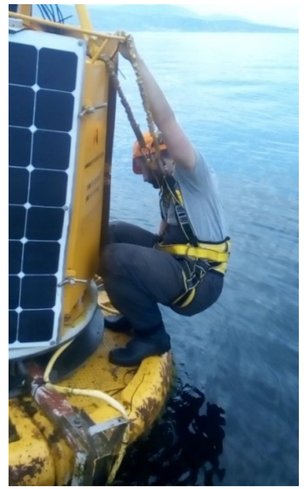
**Essential Ocean Variables:**

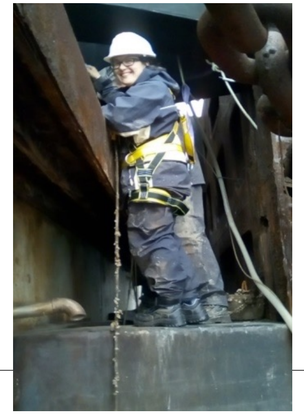
- wind
- air temperature,
- humidity,
- solar radiation
- sea temperature
- salinity
- currents
- oxygen
- chlorophyll

Time acquisition periods: 10 min

**QA/QC**





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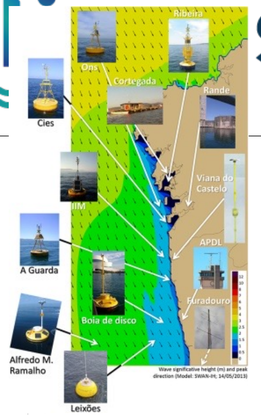
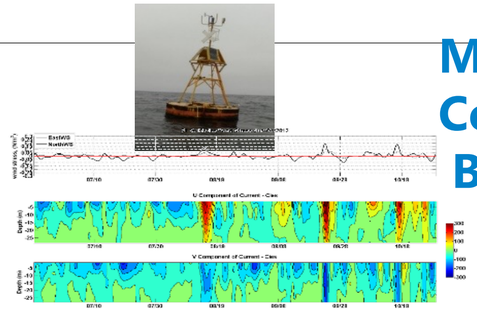
# Current Observatory Facilities

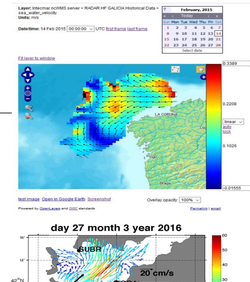
RAIA COASTAL OBSERVING FACILITIES

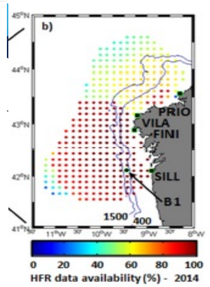
## Moored Coastal Buoys



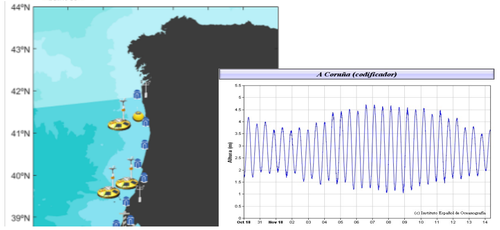




## HF Radar




## Tide Gauge Network






Marégrafo
Boia Datawell
Boia Oce
Radar co
Est. mete

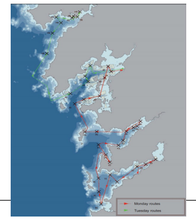
## Meteorological Stations

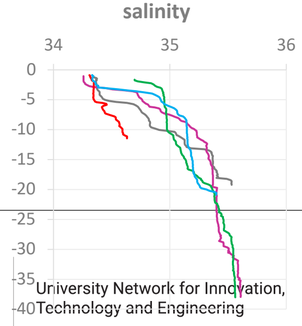
## Drones and vehicles

## Continuous underwater station

## Underway transects

## Weekly-CTD profiles



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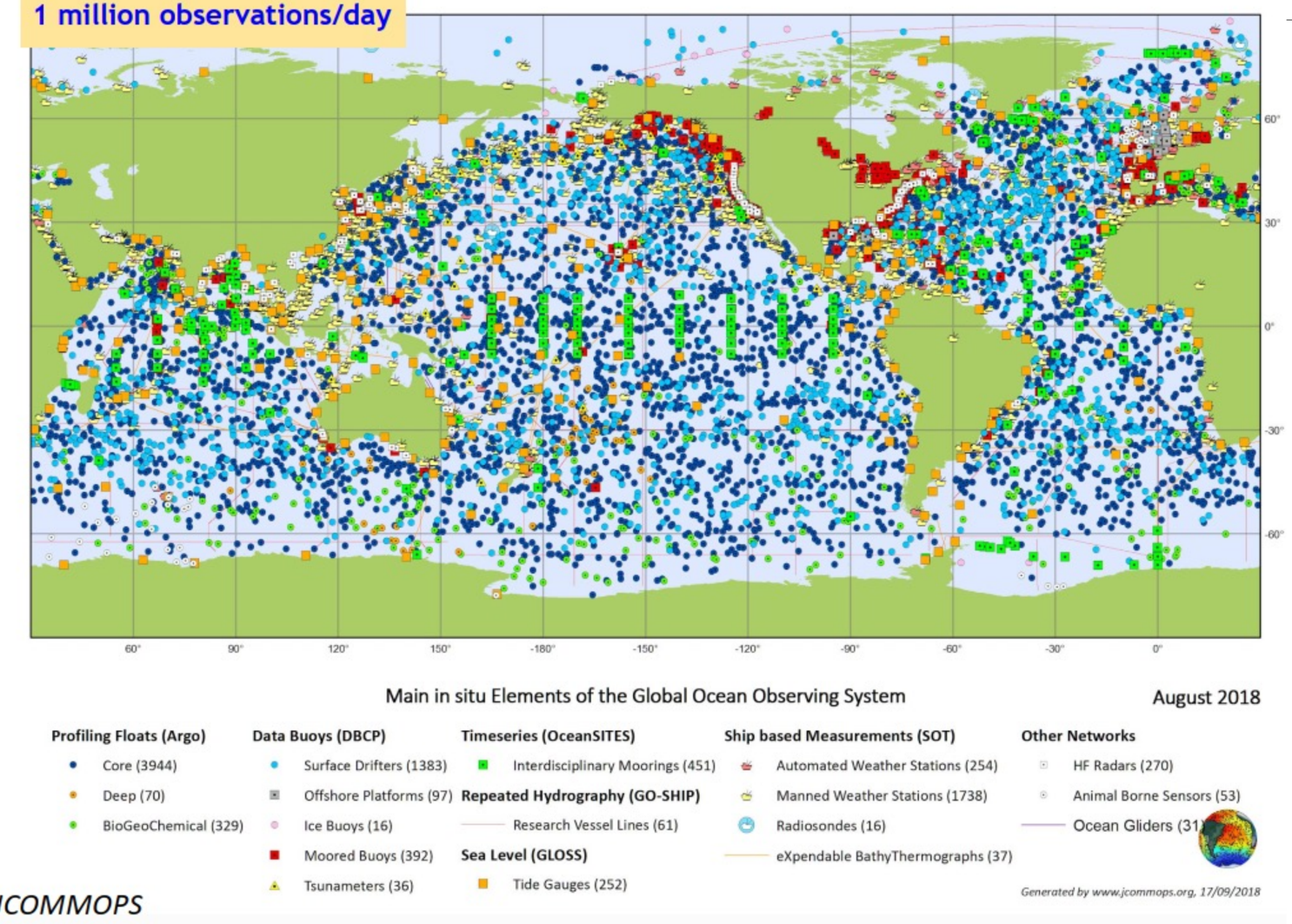
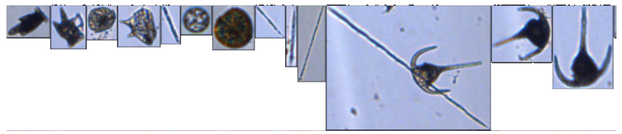
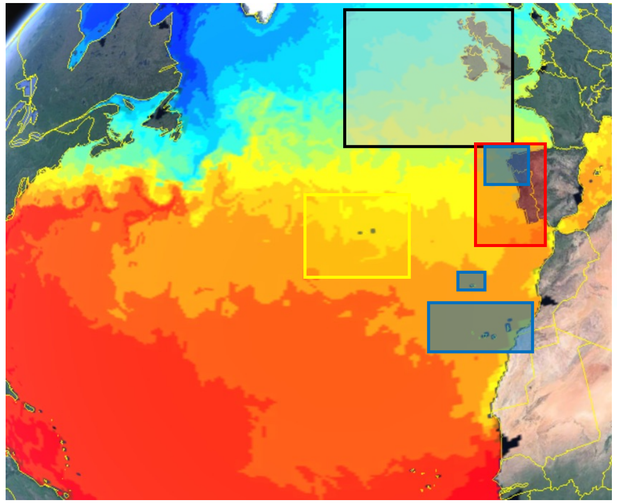
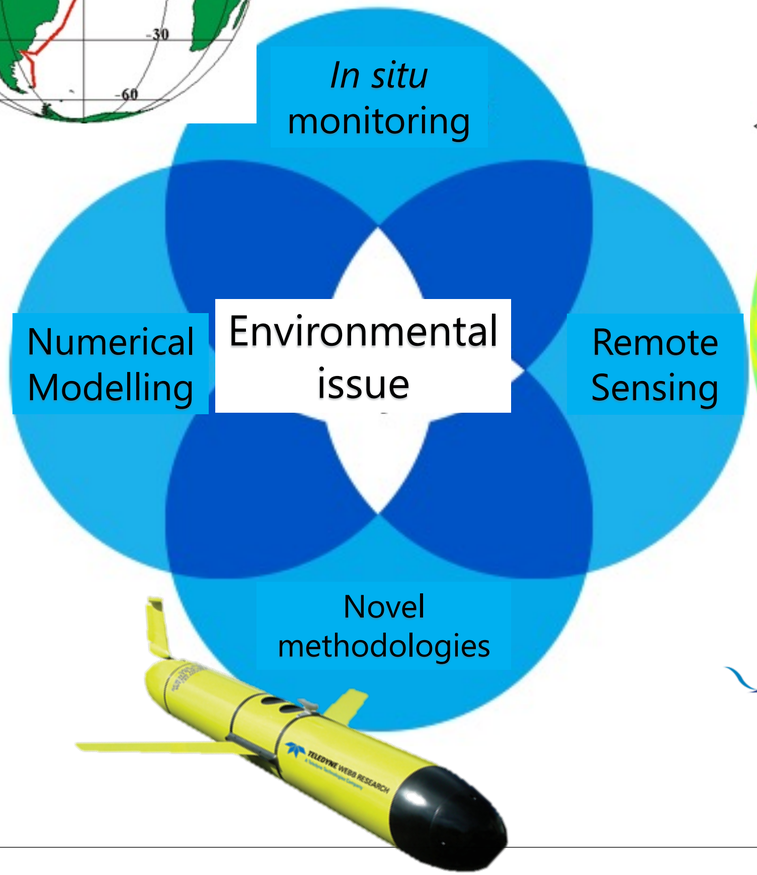
**1 million observations/day**

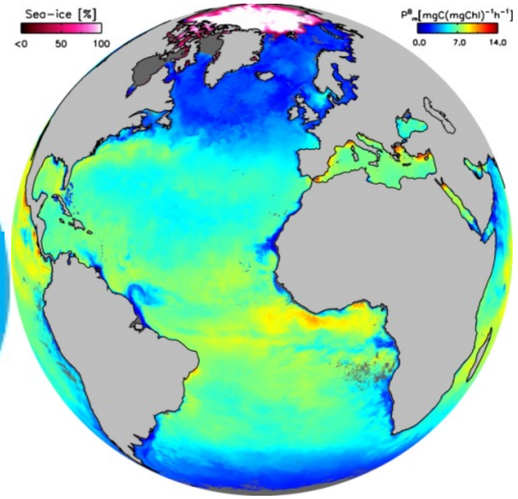


# Quadruple Helix Research Fields





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# Ulisses Ocean models assimilate information

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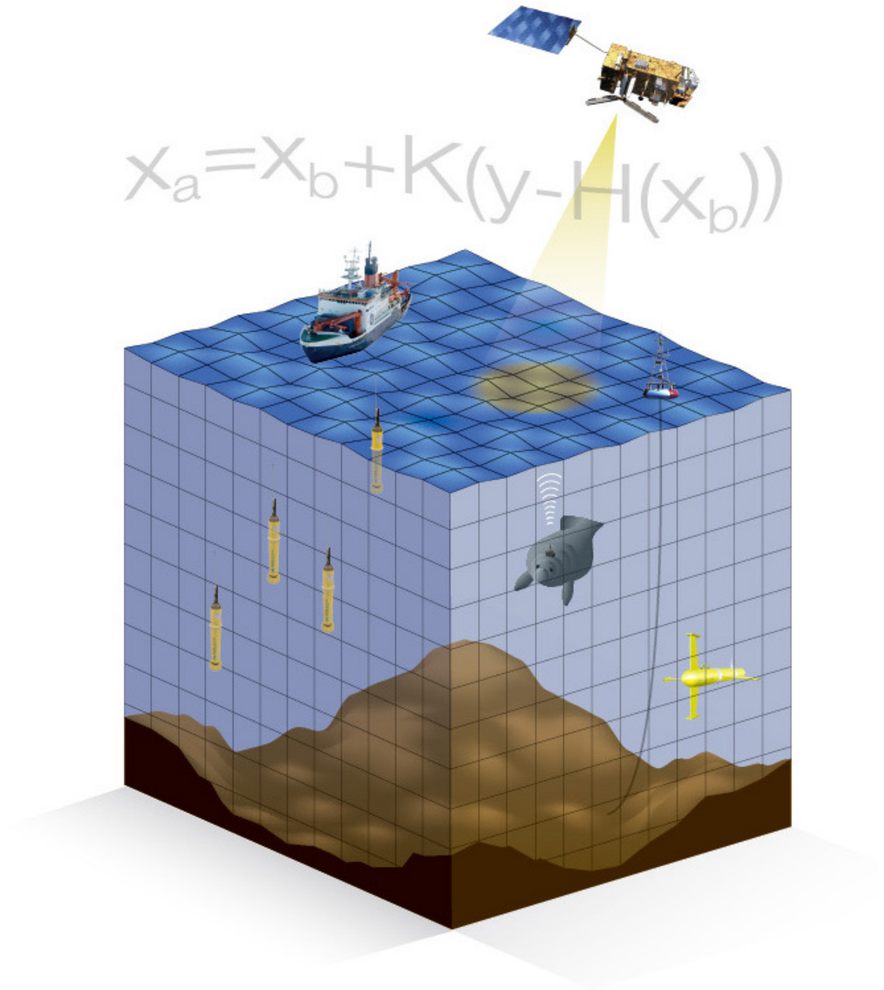


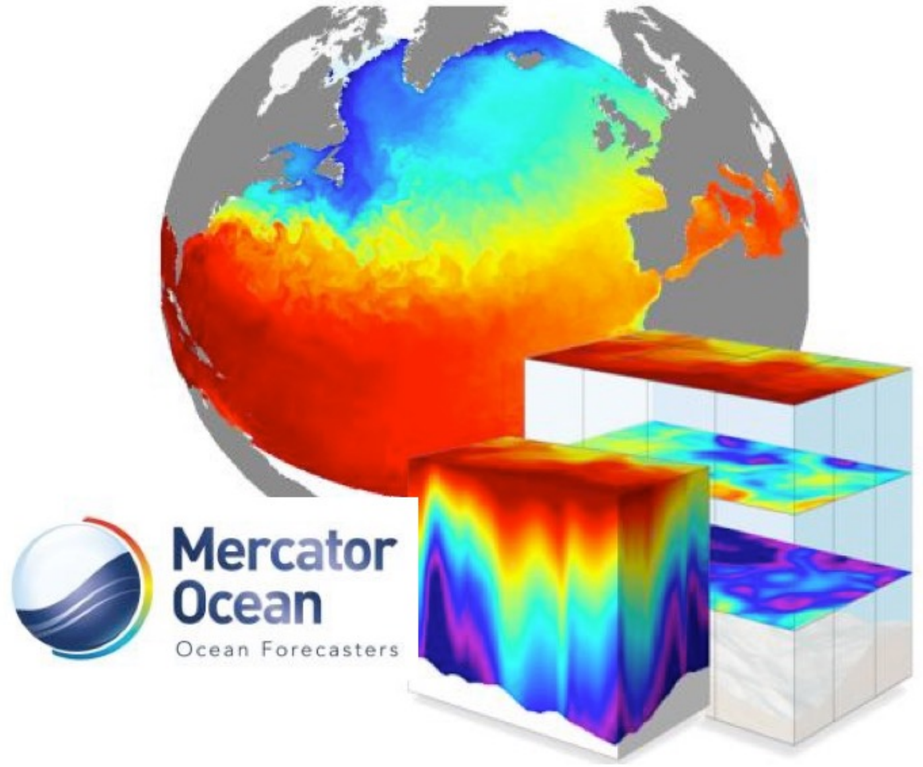

Mercator Ocean
Ocean Forecasters

cnes
CENTRE NATIONAL D'ÉTUDES SPATIALES

CLS
COLLECTE LOCALISATION SATELLITES


Questions or comments to:
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francisco.Campuzano@colabatlantic.com
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