

# Copernicus Marine Status and plans for Copernicus 2

# The EU Copernicus Marine Service Global & Regional Ocean Monitoring and Forecasting

**MULTI-YEAR**  
10 to 45 years

**REAL-TIME**  
Daily, hourly

**FORECAST**  
2 to 10 days

## ESSENTIAL OCEAN VARIABLES

Blue  
(Physics)

White  
(Sea Ice)

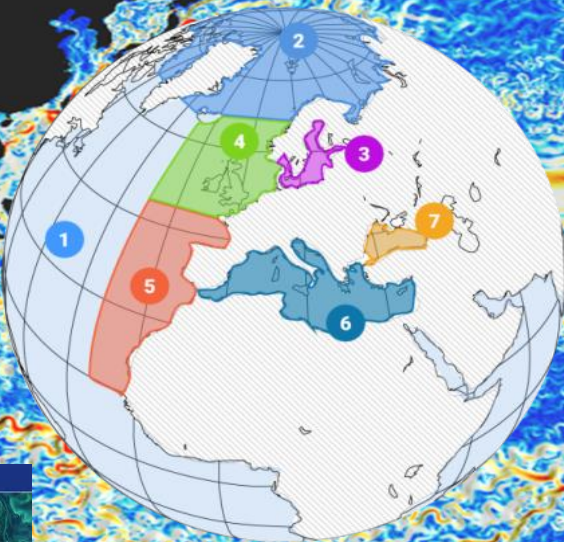
Green  
(Biogeochemistry)

OBSERVATIONS  
In-situ & Satellites

NUMERICAL MODELS & data  
assimilation

[marine.copernicus.eu](http://marine.copernicus.eu)

Free and Open



- 1 Global
- 2 Arctic
- 3 Baltic
- 4 NWS
- 5 IBI
- 6 Med Sea
- 7 Black Sea





# Users, applications and user uptake

**39 000 subscribers (+ 30% per year)**

**450 000 single visitors/year on the web portal.**

*A wide range of applications (environment, society, economy)*

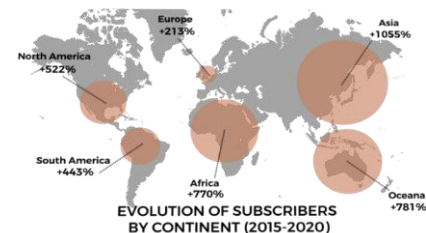
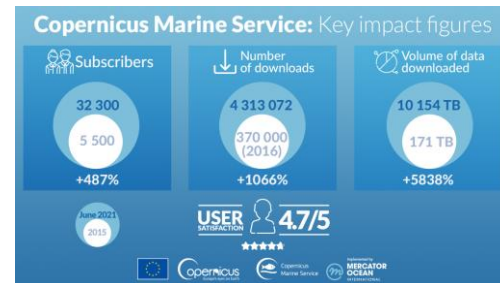
*Support to EU policies (Green Deal)*

ENVIRONMENT				SOCIETY				ECONOMY			
POLAR ENVIRONMENT MONITORING	MARINE CONSERVATION & BIODIVERSITY	OCEAN HEALTH	CLIMATE & CLIMATE ADAPTATION	POLICIES & OCEAN GOVERNANCE & MITIGATION	EDUCATION, PUBLIC HEALTH & RECREATION	SCIENCE & INNOVATION	EXTREMES, HAZARDS & SAFETY	COASTAL SERVICES	MARINE FOOD	NATURAL RESOURCES & ENERGY	TRADE & MARINE NAVIGATION
Arctic policy, MSFD, MSP, WFD, Habitat Directive, Bird Directive, Natura 2000, the Convention on Biological Diversity, WMO/UNFCCC, IPCC, the Paris agreement / global stocktake, SDG 13, 14, 15				Arctic Policy, MSFD, MSP, WFD, IOG, The Sendai Framework for Disaster Risk Reduction, SDG 1, 2, 3, 4, 5, 6, 7, 9, 11 and 16, 17				Space policy, Flood Directive, Green Deal, Energy Policy, Air Quality Directives, SDG 8, 9, 10, and 12, 17			

<b>1</b> POLAR ENVIRONMENT MONITORING	<b>5</b> SCIENCE & INNOVATION	<b>9</b> MARINE FOOD
<b>2</b> CLIMATE & ADAPTATION	<b>6</b> POLICIES & OCEAN GOVERNANCE & MITIGATION	<b>10</b> COASTAL SERVICES
<b>3</b> OCEAN HEALTH	<b>7</b> EDUCATION, PUBLIC HEALTH & RECREATION	<b>11</b> TRADE & MARINE NAVIGATION
<b>4</b> MARINE CONSERVATION & BIODIVERSITY	<b>8</b> EXTREMES, HAZARDS & SAFETY	<b>12</b> NATURAL RESOURCES & ENERGY

Environment  
Society  
Economy





Copernicus Marine Service

# USER UPTAKE: UPWARD TREND

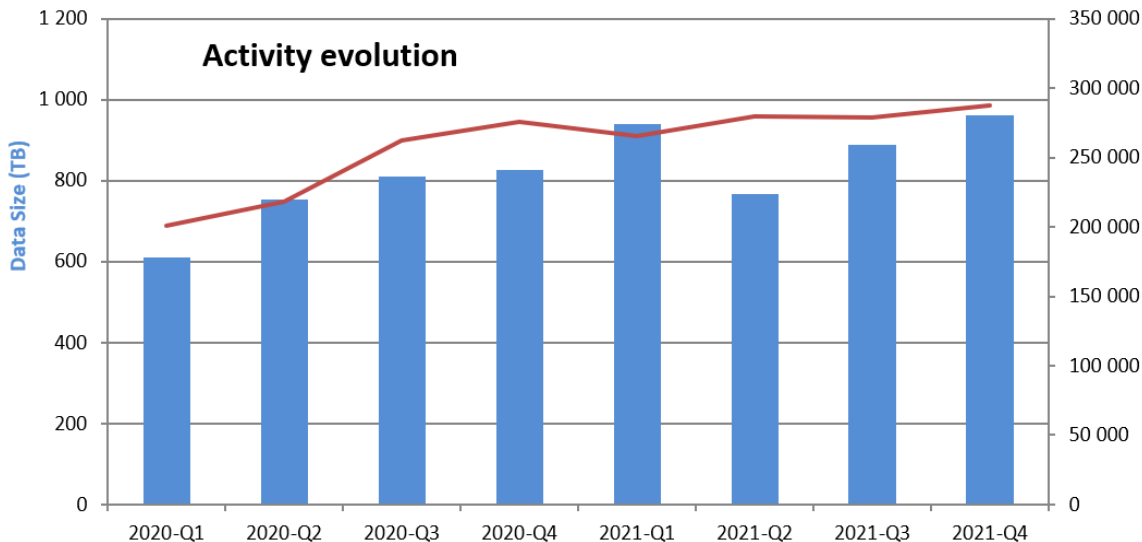
## 39 000 Subscribers

2 200 new subscribers over the last 2 months

16 350 new subscribers over the last 2 years

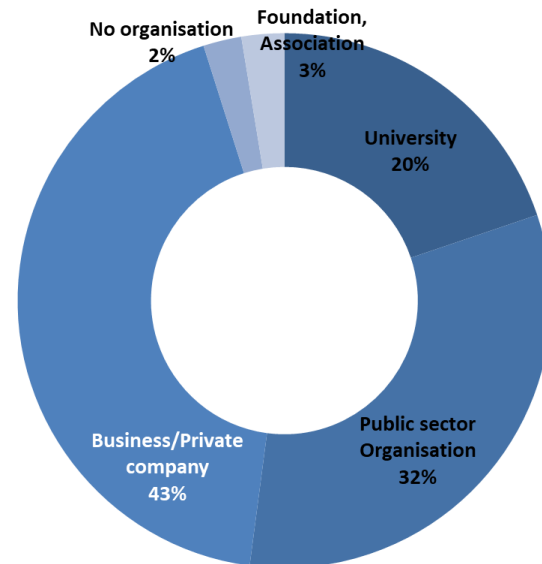


### Activity evolution



## 43% Downloads by Business 52% Downloads by Public sector

Number of downloads\* (last 12 months)



\* Download = pair user/dataset per day



PROGRAMME OF THE EUROPEAN UNION



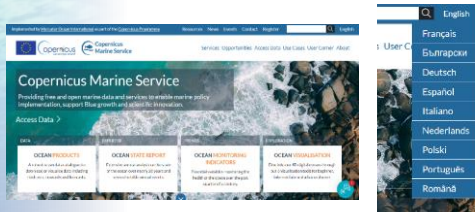
implemented by MERCATOR OCEAN INTERNATIONAL



Marine  
Monitoring

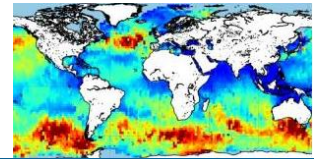
# C O P E R N I C U S M A R I N E H I G H L I G H T S

The Copernicus Marine 2021-2028 Kick-Off event was organized online on **FEB 17-18** and involved all its partners and contractors. More than 700 participants.



Copernicus Marine Website is **now translated into 9 EU languages**. More languages to come in 2022!

Our **DEC 2021 Product Release** gives additional **WAVE** and **SEA ICE** Satellite data to better monitor the BLUE and WHITE Ocean.



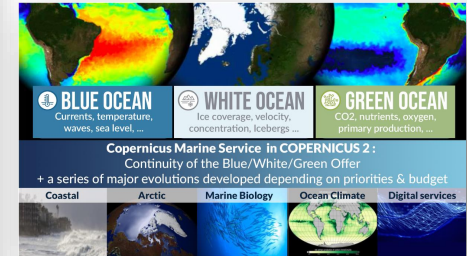
UNEP now adopts Copernicus Marine data and visualisation tool for its « **Ocean, Seas and Coasts** » **WESR** webportal.

The Ocean and Copernicus honored at the **One Ocean Summit and Copernicus 2035 forum**. Decision to strengthen the Mercator Ocean organization and invest further in the Digital Ocean.



# From Copernicus 1 to Copernicus 2 (2021 – 2028)

- ❑ End of Copernicus 1 service in July 2021.
- ❑ Continuity of service between Copernicus 1 and Copernicus 2.
- ❑ Technical annex of Copernicus 2: continuity, improved continuity, new services.
- ❑ Signature of the contribution agreement mid-July 2021.
- ❑ Selection of new consortia (2022-2024) for production centers (TACs, MFCs) and Marine Data Store (December 2021)
- ❑ Official launch at the Commission (October 2021) and general kick off in February 2022.



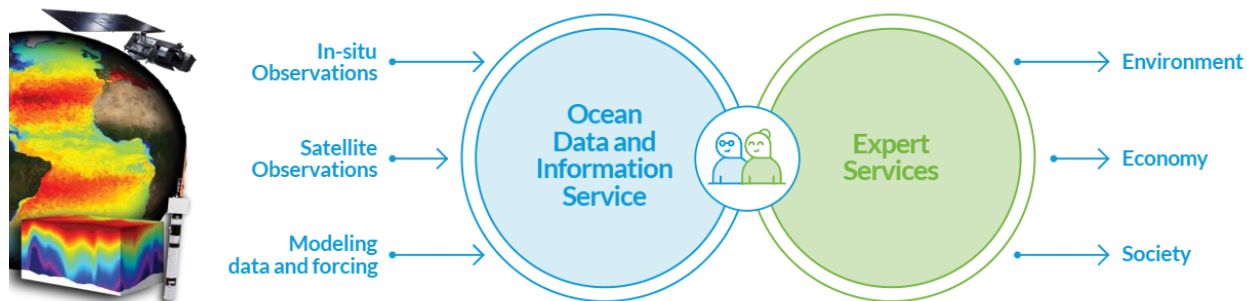


## Copernicus Marine 2 – 2021-2028

**Building on  
Copernicus  
Marine 1  
successes for a  
new ambition**

**We plan a competitive Copernicus Marine based on (1) continuity, (2) enhanced information & service (3) digital integration, (4) re-enforced links with the other Copernicus services and EMODnet (5) stronger governance.**

**User/policy needs, observation/science/technology advances**






**BLUE OCEAN**  
 Currents, temperature,  
 waves, sea level, ...



**WHITE OCEAN**  
 Ice coverage, velocity,  
 concentration, Icebergs ...



**GREEN OCEAN**  
 CO2, nutrients, oxygen,  
 primary production, ...

**Copernicus Marine Service in COPERNICUS 2 :**  
 Continuity of the Blue/White/Green Offer  
 + a series of major evolutions developed depending on priorities & budget

**Coastal**



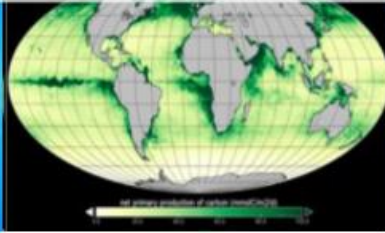
**Arctic**



**Marine Biology**



**Ocean Climate**



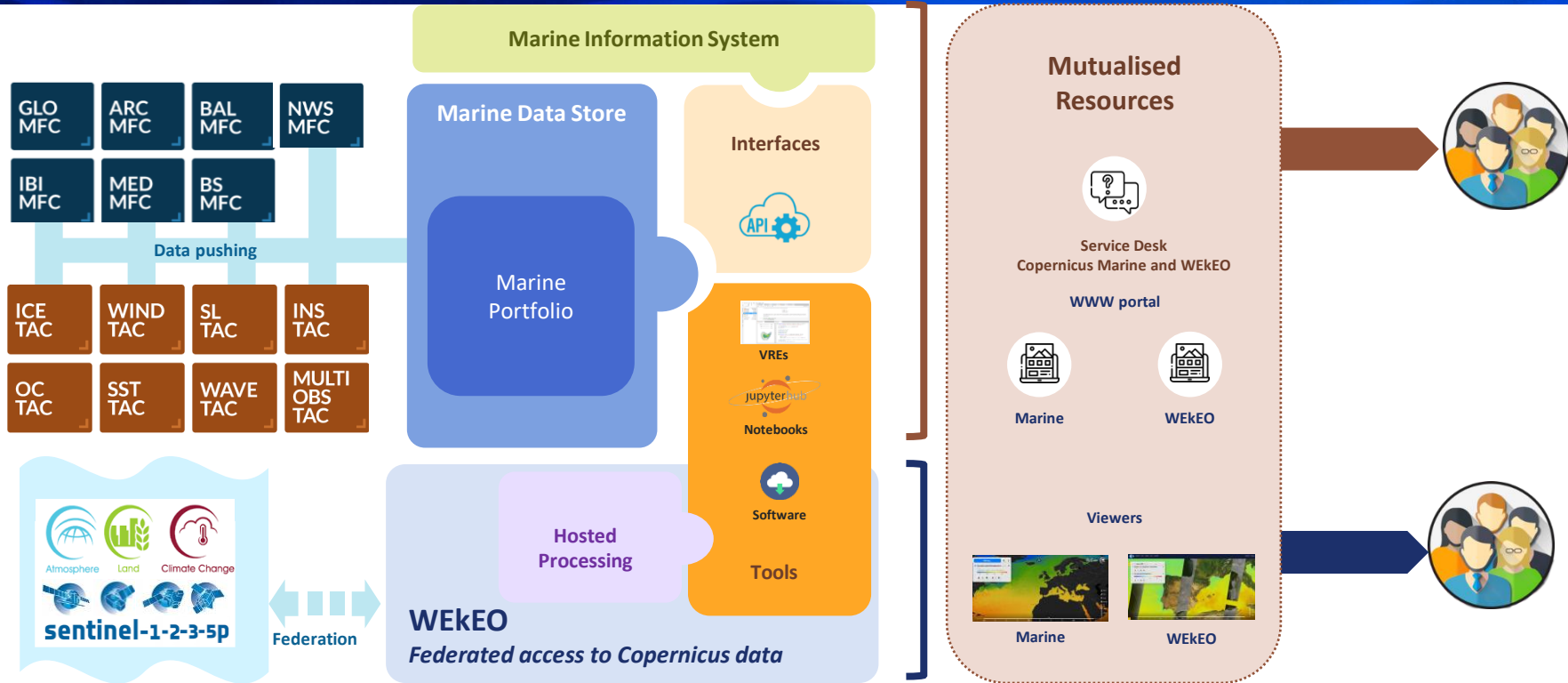
**Digital services**





# An integrated Copernicus Marine / WEkEO platform and service

## *Embrace new capabilities of digital services*

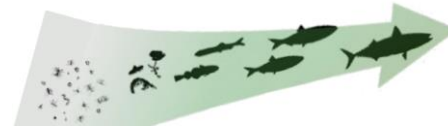
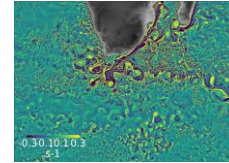


Copernicus Marine and WEkEO in Copernicus 2: **Integration of WEkEO services in the Marine services** (VREs, Notebooks), mutualization of development (WEB, Viewers) and of the User Support

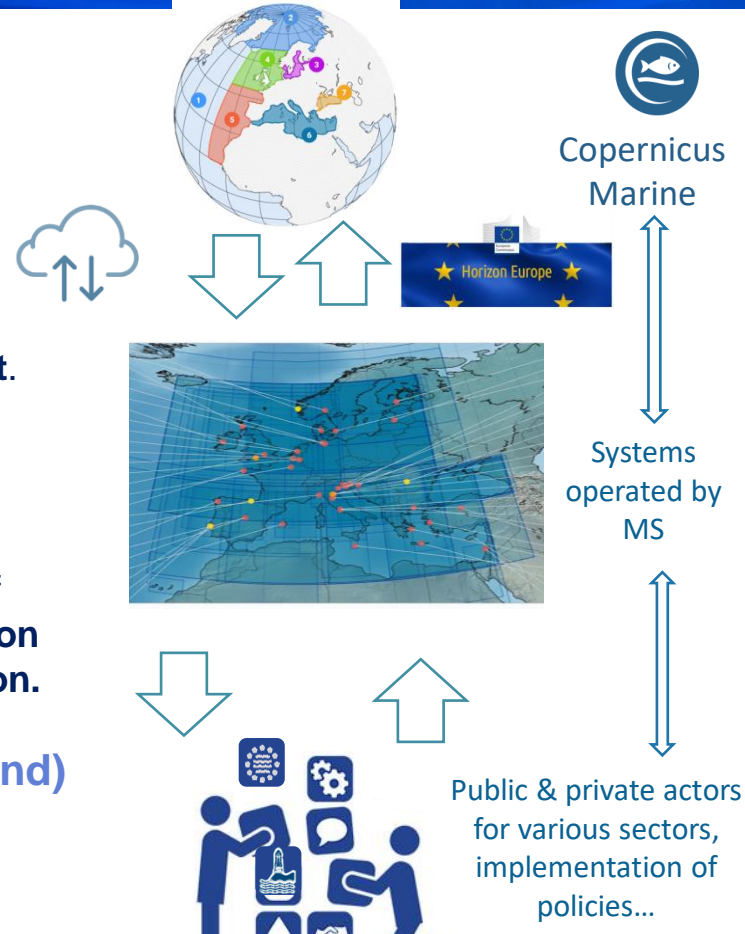
# Major evolutions : enhanced continuity and new services

To better answer user needs, keep the service at the state-of-the-art and to meet the new ocean monitoring & forecasting challenges required by European policies and users

- **Higher resolution and ensemble forecasts (enhanced continuity)**
- **Arctic (enhanced continuity)**
- **Coastal (new service)**
- **Marine biology (new service)**



***These evolutions will be developed through precursor projects (H2020, Horizon Europe) and depending on priority and budget constraints.***



## Improved coastal zone monitoring:

- New satellite products** (e.g. time evolving bathymetry, waves, winds, marine debris). Synergies with **EMODnet**.
- Provision of **standardized modelled river discharges** (freshwater, nutrients, particulate and dissolved matter).

## Co-design/co-production with Member States :

- Coupling** between **Copernicus Marine** and a series of **coastal models** operated by Member States. **Integration** in Marine portfolio of **coastal model derived information**.

## Copernicus Coastal Thematic Hub (marine & land)



## Continuity of service with incremental evolutions

Organized with the new consortia set up for the different service elements with the support of our advisory bodies: STAC (Science&Technology) and CUAG (Users)

## Reinforced governance (Member States): marine stakeholder committee

Working with EEA (marine policies), Regional Sea conventions, JRC KCEO (fitness for purpose) and EUSPA (User Uptake)

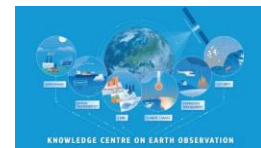
## Interfaces/synergies with other Copernicus services and EMODnet

Prepare post 2024 evolutions through our service evolution innovation activities and H2020 and Horizon Europe programmes (mission Ocean)

## Integration in the UN Decade of Ocean Science

COPIERNICUS MARINE REGIONAL OCEAN PRODUCT DIVISIONS

- 1 Central Ocean
- 2 Arctic Ocean
- 3 Baltic Sea
- 4 European North West Shelf Seas
- 5 Iberian-Biscay-Ireland Seas
- 6 Mediterranean Sea
- 7 Black Sea



2021 United Nations Decade of Ocean Science for Sustainable Development 2030

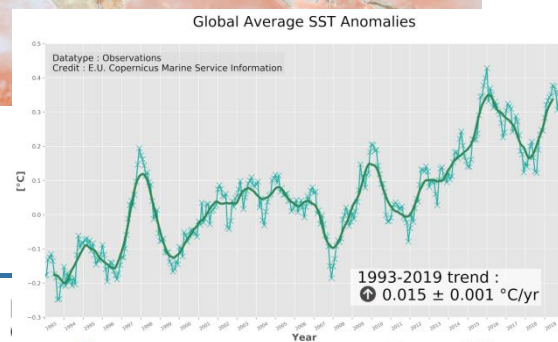
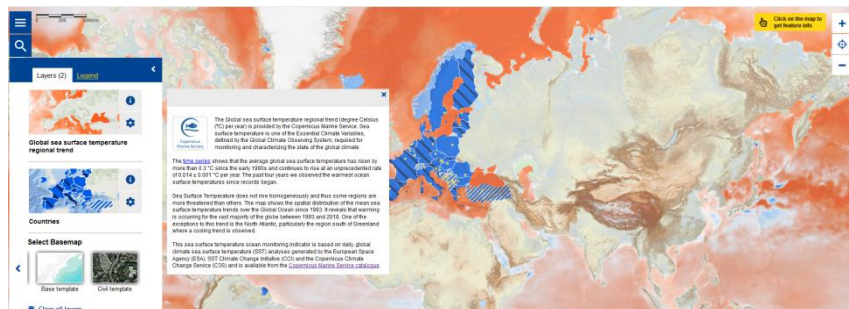
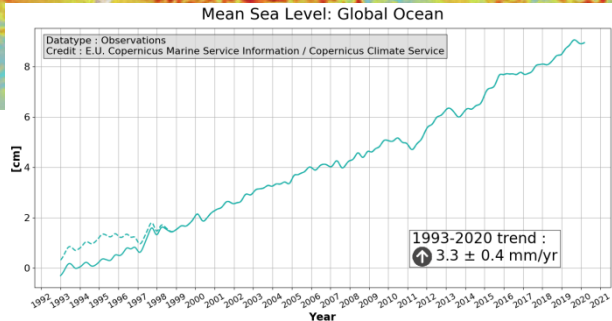
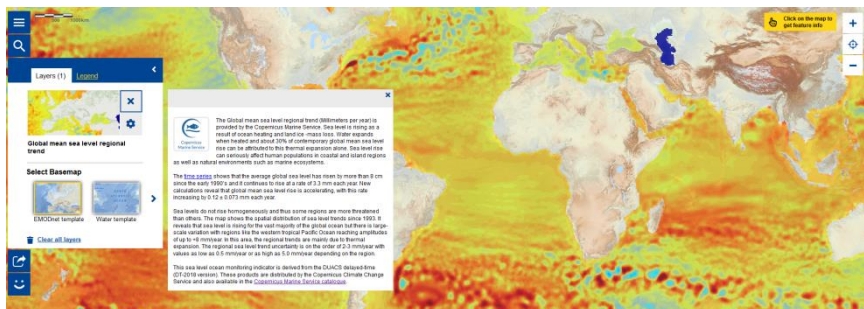


# Joint Copernicus Marine / EMODnet actions

## 2 Copernicus Marine Indicators displayed in the European Atlas of the Seas

### Global mean sea level trend

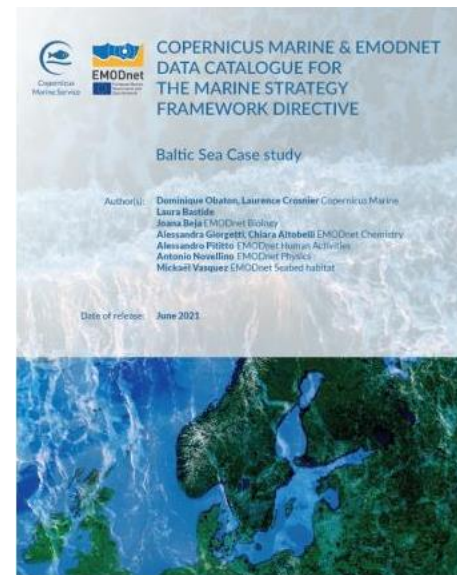
### Global SST trend





## Joint Copernicus Marine and EMODnet catalogue

- To support European Member States with the implementation of the Marine Strategy Framework Directive (MSFD)
- Released in June 2021
- Baltic Sea only



MSFD D1, D2, D3, D5, D6, D7, D8, D9, D10, D11

Emodnet is a data partner for our next hackaton [#OceanChallenge4Africa](#)



**#OceanChallenge4Africa**  
8 - 10 APRIL 2022  
ONLINE EVENT

Powered By **The Copernicus Marine Service**

**Organizers:**      

**Main partners:**       

**Sustainable ocean** **Engagement** **Teamwork**

SAVE  
THE  
DATE

## The Atlantic Data Space 2030

Services and benefits offered by EU Marine Data Services COPERNICUS Marine and EMODnet

12 May 2022 --:-- (CET) – Online

*Joint EMODnet / Copernicus Marine event, with the support of the European Commission, in the framework of the Joint Action of the All Atlantic Ocean Research Alliance (AANCHOR).*

- Submitted to UN Decade Call for Online Sessions for Satellite Activities 2022
- Broadcasted as an AIR Center Networking Friday



BUILDING AN ALL ATLANTIC  
OCEAN COMMUNITY  
Implementing the Belém Statement



Copernicus  
Marine Service

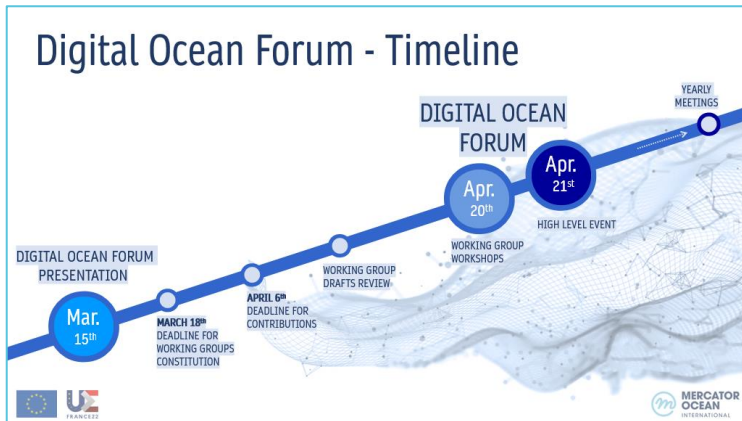


EMODnet  
European Marine  
Observation and  
Data Network



# Joint Use cases (ongoing)

- Brazil
  - <https://marine.copernicus.eu/services/use-cases/brazilian-coastal-service>
- South Africa
  - <https://marine.copernicus.eu/services/use-cases/marcosouth-western-indian-ocean-coral-bleaching-monitoring-service>
- USA
  - <https://marine.copernicus.eu/services/use-cases/ceos-ocean-variables-enabling-research-and-applications-geo-coverage-0>
  - <https://marine.copernicus.eu/services/use-cases/supporting-noaa-oceanwatch-monitor>
  - <https://marine.copernicus.eu/services/use-cases/oceana-marine-expeditions-fill-key-gaps-biodiversity-data>
  - <https://marine.copernicus.eu/services/use-cases/met-ocean-conditions-support-german-rwe-offshore-wind-farm-operator>
  - <https://marine.copernicus.eu/services/use-cases/datahub-multi-sector-environmental-data-distribution>



- Encourage discussions and future cooperation about the European Digital Twin Ocean.
- Five Working Groups (WG) have been created.
- Each WG is led by a chairperson together with a European Commission representative and a Mercator Ocean International (MOi) coordinator and gather the point of view and related experts.
- EMODnet and Copernicus Marine are represented in several WG.



(Merged) workshop at EMD  
Blue skills, jobs and financial instruments

- Croatian Chamber of Economy
- Mercator Ocean
- European Investment Bank
- DG MARE (L. Pautet)



# In Situ Thematic center –EMODnet Cooperation

Contribution from In-Situ TAC



PROGRAMME OF  
THE EUROPEAN UNION



implemented by



# Copernicus Marine Service INSTAC Governance

**In Situ TAC  
coordinating  
with other  
complementary  
services in  
Europe and at  
International  
scale**

- **A Steering committee :**
  - Overall coordination of operation and service at regional level, technical coordination, Product Quality, Ocean State Report and Service evolution
  - Meets quarterly

- **A General Assembly**
  - All partners
  - Meets twice a year

- **A Stakeholder engagement board**
  - Foster collaboration with outside Copernicus Marine Service INSTAC partnership
  - EuroGOOS Office, **EMODnet Physics**, **EMODnet Chemistry**, **EMODnet Ingestion** coordinators as well as Jerico-RI
  - The board will be extended to USA/NCEI, SeaDataNet and other key data aggregators INSTAC is or will be working with.
  - Dedicated time slot at GA to interact with the board
  - Invited to the Copernicus Marine Service INSTAC General Assembly



# Copernicus INSTAC and EMODNET 2022-2024

## Interaction with EMODnet Physics, Chemistry and Ingestion (1/2)

- Copernicus Marine Service in situ TAC is the major data provider to EMODnet Physics
  - Presently connected to the NRT Real Time products but not to the REP products that are from higher quality
- Copernicus Marine Service INSTAC integrates data from EMODnet-Ingestion
  - to feed REP products
  - To establish new Real-Time data streams
- Copernicus Marine Service INSTAC coordinates with EMODnet-Chemistry for BGC products (O<sub>2</sub>, Chl-a, nutrient) (started in 2021 for O<sub>2</sub>)
- Study how to better interface with EMODnet-Chemistry on inorganic carbon starting from EMODnet-Chemistry Ocean Acidification products from 2021.



# Copernicus INSTAC and EMODNET 2022-2024

## Interaction With EMODnet Physics, Chemistry and Ingestion (2/2)

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- Joint efforts planned towards European providers should be better coordinated
  - To organise joint actions
  - To better communicate jointly on new data stream integration
- Planning training activities within Copernicus Marine Service training workshop.
  - Planning joined actions with EMODnet
  - Developing together webinar/training workshops to support FAIR data and metadata implementation at provider level

# First Stakeholder meeting

- A first Stakeholder engagement Board was organised side to the Copernicus Marine INSTAC General Assembly to which P.Gorringe and A.Novellino participated for EMODnet as well as EuroGOOS office
- Actions decided at this meeting
  - A WG with participants from INSTAC and EMODnet and EuroGOOS has been set up to streamline coordinated action towards potential providers
  - Copernicus INSTAC and EMODnet-Physics will work together to connect to PANGEA German service
  - Common proposal on provider Citation management in the products
  - Copernicus INSTAC and EMODNET plan to organise jointly with EUROGOOS training workshops to support providers in setting up FAIR services for sharing their data
  - EuroGOOS will better coordinate action between the Copernicus In Situ project COINS and both EMODnet and Copernicus INSTAC.
  - EuroGOOS will work with its members to agree on open data policy on selected EOVS to be endorsed by EUROGOOS & ROOS members

**Thanks for your Attention**