

European Perspective

Copernicus Marine Service and coastal zone monitoring



Marine Monitoring

P.Y. Le Traon

Mercator Ocean International

ITALY

Copernicus

SPAIN

FIRST on line JOINT USER FORUM ITALY-SPAIN

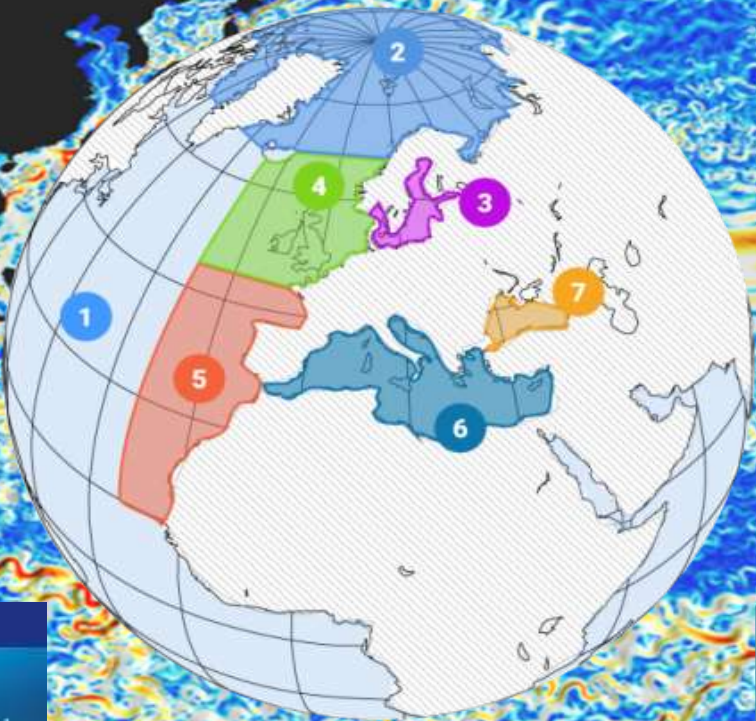
10TH JULY 2020 10:00 - 13:45

The EU Copernicus Marine Service Monitoring and forecasting the ocean

MULTI-YEAR
10 to 45 years

REAL-TIME
Daily, hourly

FORECAST
2 to 10 days



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

ESSENTIAL MARINE VARIABLES

- Blue (Physics)
- White (Sea Ice)
- Green (Biogeochemistry)

OBSERVATIONS
In-situ & Satellites

NUMERICAL MODELS & data assimilation

Open and Free access





Marine Monitoring

From producers to users

Hundreds of producers co-operating in Europe



to feed thousands of users on all continents



More than 23 000 subscribers (+ 30% per year)

ENVIRONMENT



POLAR ENVIRONMENT MONITORING



OCEAN HEALTH



CLIMATE & ADAPTATION



MARINE CONSERVATION & BIODIVERSITY

SOCIETY



POLICIES & OCEAN GOVERNANCE & MITIGATION



EDUCATION, PUBLIC HEALTH & RECREATION



SCIENCE & INNOVATION



EXTREMES, HAZARDS & SAFETY

ECONOMY



COASTAL SERVICES



MARINE FOOD



NATURAL RESOURCES & ENERGY



TRADE & MARINE NAVIGATION

for a wide range of applications and to support environmental and climate policies





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Coastal Zone Monitoring: DRIVERS

Coastal zones:

- Tremendous social, economic & biological value but high level of pressure
- User needs for a wide range of applications
- Needs of European Policies (WFD, MSFD, MSP, Green Deal)

ENVIRONMENT



POLAR
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EXTREMES,
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& SAFETY

ECONOMY



COASTAL
SERVICES



MARINE
FOOD



NATURAL
RESOURCES
& ENERGY



TRADE
& MARINE
NAVIGATION





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The Copernicus Marine Service and the coastal zone

CMEMS a core European service that serves many downstream coastal zone applications and European policies (WFD, MSFD, MSP, Green Deal)

Available now

Waves, sea level, sea surface temperature, winds, ocean colour, sea-ice
Continuous improvements including for the coastal zone



IN SITU OBS.

Coastal buoys, tide gauges, HFR, biogeochemical data

MODEL

3D models with tides, waves, biogeochemistry, currents... provide boundary conditions for coastal models ; past-present-forecast



Copernicus Coastal Roadmap (Land & Marine)

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Copernicus Services: Longer term perspective on Coastal Zones



Land
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A coordinated approach for service implementation. MOI and EEA could take actions to this end in the following fields:

- ✓ the monitoring of user requirements and feedbacks;
- ✓ the organization of Copernicus events, workshops and training;
- ✓ the assessment of marine & land services requirements for observations and for research priorities in the coastal area;
- ✓ the assessment of the services impact in the environmental policies and business areas;
- ✓ the planning and reporting to the Copernicus program governance on marine and land services.

A coordinated approach for improving the service offer to users:

- Characterization of coastal zones;
- Modelling and forecasting of the coastal zone;
- River monitoring and forecasting;
- Climate change and coastal vulnerability.



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Copernicus Services: Longer term perspective on Coastal Zones



Land
Monitoring

Coupling with coastal models. Strengthen the interfaces between Copernicus Marine and Land Services and downstream coastal systems through **interaction and coproduction with Member States.**

Hydrology/Rivers. Monitoring/forecasting of major EU rivers and production of validated river discharges for freshwater input, nutrient loading, particulate and dissolved matter. (cooperation between marine, land, emergency and climate services).

Long term evolution of the Land cover / Land use monitoring system towards the EAGLE data model and enrichment with key ecosystem attribute information.

Long term evolution of the coastal zones: seasonal to long-term projections of the state of the coastal ocean (e.g. sea level) (marine in interaction with the climate service).

DIAS: Harmonized access to Sentinel and Copernicus service data and on line processing capabilities for coastal applications.

Expert workshop organized by MOI and EEA in 2016.
Open workshop organized by DG GROW in 2017.
MOI and EEA asked to elaborate a roadmap for the evolution of their services wrt to the coastal zone.

Roadmap delivered in December 2018. It guides coordinated actions by the two services in Copernicus 1 and (mainly) Copernicus 2.



Roadmap for the evolution of Copernicus marine and land services to better serve coastal users

December 5th, 2018

	2018-2021	2021-2028
Implementation of coastal zones	<ul style="list-style-type: none"> Develop and implement a coastal zones monitoring system Develop and implement a coastal zones monitoring system 	<ul style="list-style-type: none"> Develop and implement a coastal zones monitoring system Develop and implement a coastal zones monitoring system
Modelling and forecasting of coastal zones	<ul style="list-style-type: none"> Develop and implement a coastal zones monitoring system Develop and implement a coastal zones monitoring system 	<ul style="list-style-type: none"> Develop and implement a coastal zones monitoring system Develop and implement a coastal zones monitoring system
River monitoring and forecasting	<ul style="list-style-type: none"> Develop and implement a coastal zones monitoring system Develop and implement a coastal zones monitoring system 	<ul style="list-style-type: none"> Develop and implement a coastal zones monitoring system Develop and implement a coastal zones monitoring system
Climate change and coastal vulnerability	<ul style="list-style-type: none"> Develop and implement a coastal zones monitoring system Develop and implement a coastal zones monitoring system 	<ul style="list-style-type: none"> Develop and implement a coastal zones monitoring system Develop and implement a coastal zones monitoring system

+ MED7 White Paper



CMEMS evolutions in Copernicus 2

New service line for Coastal zone monitoring, modelling & forecasting (co-production with Member States)

Subject to approval



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Copernicus Environment Monitoring Service

MERCATOR OCEAN Copernicus European Environment Agency

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December 5th, 2018

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Coastal Zone Satellite-Based Monitoring: OFFER

New core, pan-European satellite products in coastal regions will be developed based on Sentinel and other contributing missions:

- Nearshore bathymetry and its evolution (link to EMODnet)
- Shoreline position and its evolution
- Turbidity/water quality (starting in Copernicus 1)
- High-resolution winds
- Spectral wave information in EU coastal zone
- Detection of plastic debris and monitoring of marine litter (depending on R&D advances)





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Coastal Zone Modelling & Forecasting: OFFER

Co-design and Co-production of model-derived information between CMEMS & Member States services:

- **Full coupling** between **CMEMS** & a series of **coastal models** operated by MS:
 - **Co-designed cloud environment & tools for co-production** (Copernicus Marine Data Store/WEkEO)
 - **Forcing conditions / Enhanced consistency** between the regional and coastal models:
 - operational and flexible interfaces, consistent datasets and forcing fields, common standards, ...
 - standardized methods to couple hydrological models with global, regional and coastal ocean models
- Provision of past-present-forecasted time-series of **standardized modelled river discharges** (freshwater, nutrients, particulate and dissolved matter)
- **Integration** in CMEMS portfolio of **coastal model derived info**





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Copernicus Coastal Knowledge Hub – Copernicus 2

Interfaces and synergies between the **different Copernicus services** will be **strengthened in Copernicus 2**.

Copernicus Knowledge Hubs (CKH) are proposed, in particular, to regroup under one single entry point the information generated by several Copernicus services for a given high level topic.

- ⇒ Collect and maintain in a single catalogue the relevant products and information.
- ⇒ Harmonize these inputs and provide to users guidance and support with the help of the contributing Copernicus services.

MOi identified to lead a **Copernicus Coastal Knowledge Hub** together with EEA, JRC and ECMWF (marine, land, emergency and climate change services). Use of WEkEO/DIAS infrastructure for the Coastal CKH proposed.





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THANK YOU



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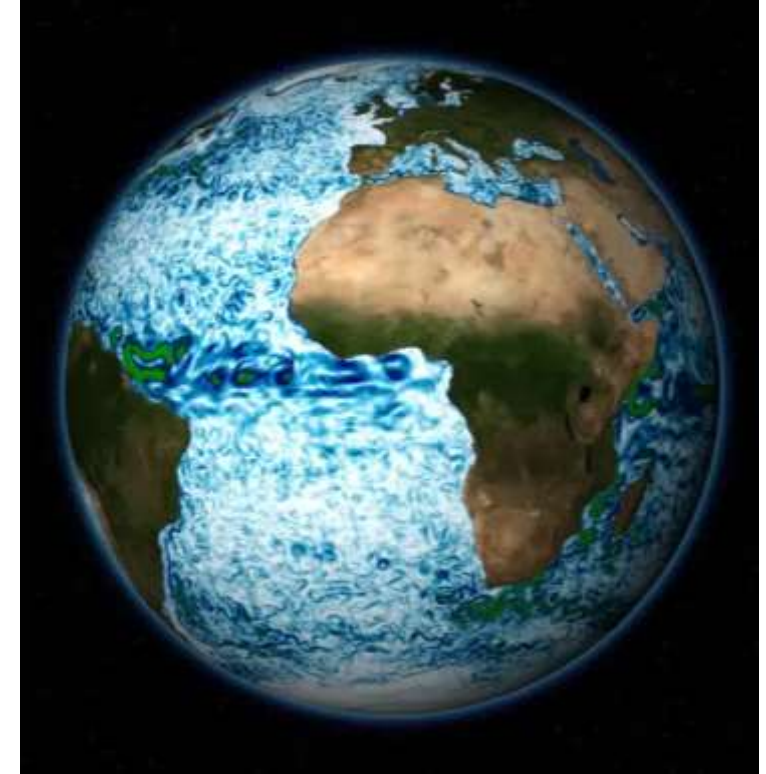
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Knowing more about :

*the program
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