



**MERCATOR  
OCEAN**  
INTERNATIONAL

## CMEMS / EMODnet coordination meeting

February 9, 2021

## **Part 1: Status and ongoing activities (2 h)**

- **CMEMS status and catalogue evolution (December 2020 and April 2021 releases)**
- **EMODNet status and portfolio evolution**
- **Status of MoU Physics (CMEMS in situ TAC, EMODnet)**
- **Status of MoU Chemistry (CMEMS in situ TAC, EMODnet)**
- **MSFD and MSP common catalogue**
- **Marine Data for Aquaculture collaboration**
- **Other joint activities e.g. use cases**
- **Conferences and workshops in 2021 e.g. EMODnet Open Conference**
- **Atlas of the Sea: Status on the integration of CMEMS ocean monitoring indicators**
- **Future common actions for the coastal zone**
- **EOOS**
- **Review of on going actions**

## **Part 2 : Next MFF activities (1 h)**

**Update of EMODnet plans**

**Update of CMEMS plans for Copernicus 2**



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***CMEMS Status***

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## Ocean Information

### OCEAN PRODUCTS

Ocean product catalogue, to download or visualize data across more than 10 variables, including historic, current and forecasted data.

DATA →

### OCEAN MONITORING INDICATORS

Essential variables monitoring the health of the ocean

TRENDS →

### OCEAN STATE REPORT

Extensive annual analysis on the state of the ocean over nearly 20 years and severe/notable annual events

EXPERTISE →

## User & Policy driven



## User Support



#CMEMSTraining

WORKSHOPS

OUTREACH

SERVICE DESK

## Applications

### 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

- December 2020 release. <https://marine.copernicus.eu/news/december-2020-catalogue-release-upgrades-across-green-blue-ocean>
- New visualization tool, new WWW site
- CMEMS General Assembly January 26-28 2021
- New and final release of product in April 2021 (see <https://marine.copernicus.eu/user-corner/product-roadmap>).
- End of Copernicus 1 - June 30, 2021

<https://marine.copernicus.eu/news/december-2020-catalogue-release-upgrades-across-green-blue-ocean>

Addition of a new wave reanalysis of the Arctic Ocean providing wave data over the 1993–2019 time period. The Wave model portfolio is now complete. For each global and regional basin, a wave model product is proposed in real time and delayed mode.

More models now distribute high frequency output (every 15 minutes) including the tidal component.



All biogeochemical models (except in the Arctic Ocean) now provide the acidity parameter (pH) in real time and reanalysis/delayed time mode.

Most Copernicus Marine biogeochemical models now provide forecasts and reanalyses that ingest satellite observations of surface Chlorophyll-a

## New visualisation tool: [https://cmems.lobelia.earth](https://cmems.lobelia earth)

Easy to use

available on all computers and mobile devices through any internet browser.

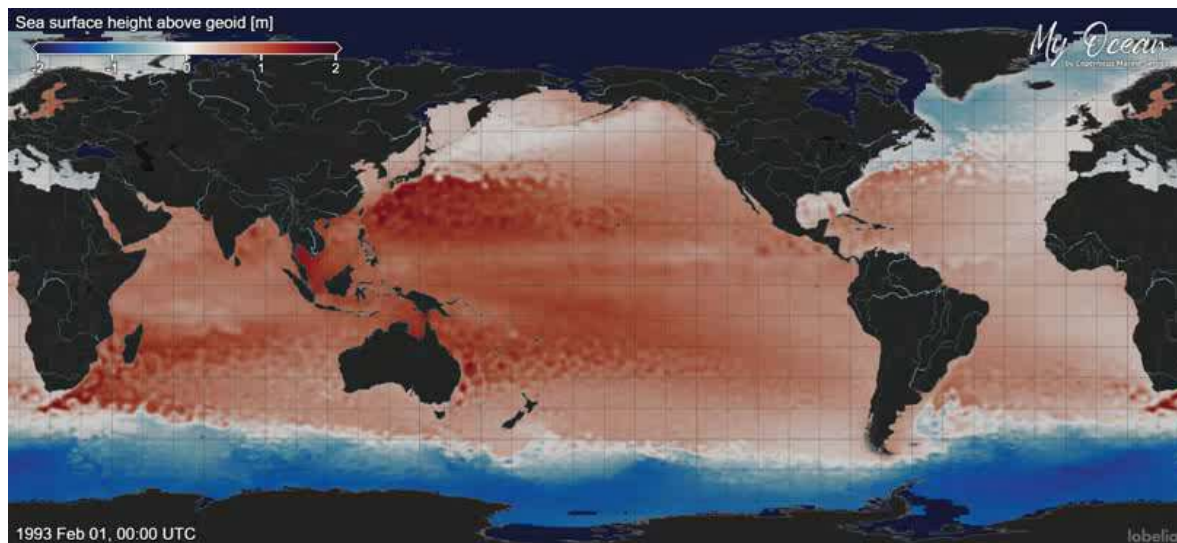
brings you high-quality information free of charge and is ad-free as well.

You do not need to be a registered user to access it.

Download images

Export videos

And much more....



## Copernicus Marine Service

Providing free and open marine data and services to enable marine policy implementation, support Blue growth and scientific innovation.

[Access Data >](#)

DATA

### OCEAN PRODUCTS

A robust ocean data catalogue, to download or visualise data including hindcasts, nowcasts and forecasts.

EXPERTISE

### OCEAN STATE REPORT

Extensive annual analysis on the state of the ocean over nearly 20 years and severe/notable annual events.

TRENDS

### OCEAN MONITORING INDICATORS

Essential variables monitoring the health of the ocean over the past quarter of a century.

EXPLORATION

### OCEAN VISUALISATION

Dive into our 4D digital oceans through our visualisation tool in the past, present and future.

## Quick Links



### User corner

All the info you need as a new or experienced user. Get trained, connect with the forum, get support and more.



### Policy tools

Learn about EU and international maritime policies and how the Copernicus Marine Service supports them.



### Services

See Copernicus Marine Use Cases, the blue markets we support, and the wide range of free and open support and services we provide.



### User learning services

Find all the information you need to harness our service through workshops, trainings and online resources.





## Copernicus Marine Service General Assembly 2021



<https://cmemsga2021.com>

**More than 600  
different  
participants**

**2 round tables  
interaction CMEMS/  
EMDonet**

**3 Interactive halls  
with many stands**

**Replay available**

**Will remain open  
for the next 6  
months**

## WHITE OCEAN

- Improved statistics for iceberg number density
- New products Arctic Ocean “Near Real Time L4 automatic High Resolution Sea Ice Concentration and Sea Ice” and “Reprocessed L4 Sea and Ice Surface Temperature”



## BLUE OCEAN

- Monthly climatology for the Global Physics Reanalysis
- Improvement of the freshwater forcing for the IBI model
- Inclusion of tides in the Mediterranean Sea model
- New products Near Real Time L4 SST Black Sea/Mediterranean Sea



## GREEN OCEAN

- Inclusion of Sentinel 3A & 3B OLCI Full Resolution (300m)
- New coastal Ocean Colour Sentinel 2 High Resolution products
- Higher resolution of the Arctic BGC model
- Higher resolution of the Mediterranean Sea BGC models
- Addition of transparency and turbidity variables in the Black Sea BGC model.
- Inclusion of biogeochemistry data from EMODnet in in-situ TAC





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Copernicus 2 plans**

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# An ambitious plan for 2021 - 2027

An ambitious 7-year plan that allows a staged implementation depending on budget implementation, user needs and priorities and feasibility/maturity

3 levels of implementation : baseline, enhanced continuity, new services

Products  
versus Users  
and Policy  
Needs

OFFER (vertical vs APPLICATIONS (horizontal))		ENVIRONMENT				SOCIETY				ECONOMY				
		Health	Energy	Environment	Climate	Health	Energy	Environment	Climate	Health	Energy	Environment	Climate	
SUPPORT TO POLICIES		Health, Energy, Environment, Climate				Health, Energy, Environment, Climate				Health, Energy, Environment, Climate				
BLUE OCEAN	Blue Ocean	*	*	*	*	*	*	*	*	*	*	*	*	*
	Blue Ocean	*	*	*	*	*	*	*	*	*	*	*	*	*
GREEN OCEAN	Green Ocean	*	*	*	*	*	*	*	*	*	*	*	*	*
	Green Ocean	*	*	*	*	*	*	*	*	*	*	*	*	*
WHITE OCEAN	White Ocean	*	*	*	*	*	*	*	*	*	*	*	*	*
	White Ocean	*	*	*	*	*	*	*	*	*	*	*	*	*

Baseline, enhanced continuity

OFFER (vertical vs APPLICATIONS (horizontal))		ENVIRONMENT				SOCIETY				ECONOMY				
		Health	Energy	Environment	Climate	Health	Energy	Environment	Climate	Health	Energy	Environment	Climate	
SUPPORT TO POLICIES		Health, Energy, Environment, Climate				Health, Energy, Environment, Climate				Health, Energy, Environment, Climate				
COASTAL OCEAN	Coastal Ocean	*	*	*	*	*	*	*	*	*	*	*	*	*
	Coastal Ocean	*	*	*	*	*	*	*	*	*	*	*	*	*
BLUE OCEAN	Blue Ocean	*	*	*	*	*	*	*	*	*	*	*	*	*
	Blue Ocean	*	*	*	*	*	*	*	*	*	*	*	*	*
GREEN OCEAN	Green Ocean	*	*	*	*	*	*	*	*	*	*	*	*	*
	Green Ocean	*	*	*	*	*	*	*	*	*	*	*	*	*
WHITE OCEAN	White Ocean	*	*	*	*	*	*	*	*	*	*	*	*	*
	White Ocean	*	*	*	*	*	*	*	*	*	*	*	*	*

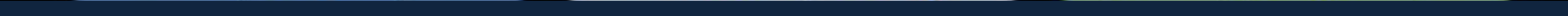
New services



**Blue Ocean**  
 Currents, temperature,  
 waves, sea level, ...

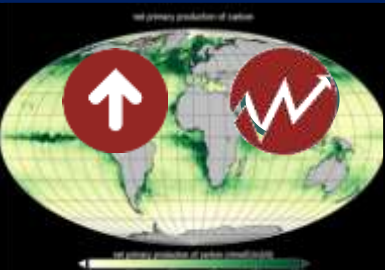
**White Ocean**  
 Ice coverage, velocity,  
 concentration, Icebergs ...

**Green Ocean**  
 CO2, nutrients, oxygen,  
 primary production, ...



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

<b><u>Coastal</u></b>	<b><u>Arctic</u></b>	<b>Marine biology</b>	<b>Ocean climate</b>	<b><u>Digital services</u></b>
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# Evolution of CMEMS for Coastal Users



## Coastal zone hazards and monitoring

CMEMS provides monitoring of key variables for various marine coastal hazards

Synergy with other Copernicus Services and EMODnet



## Evolution of CMEMS for coastal zones

Copernicus Environment Monitoring Service



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

December 5<sup>th</sup>, 2018

+ Discussion engaged with  



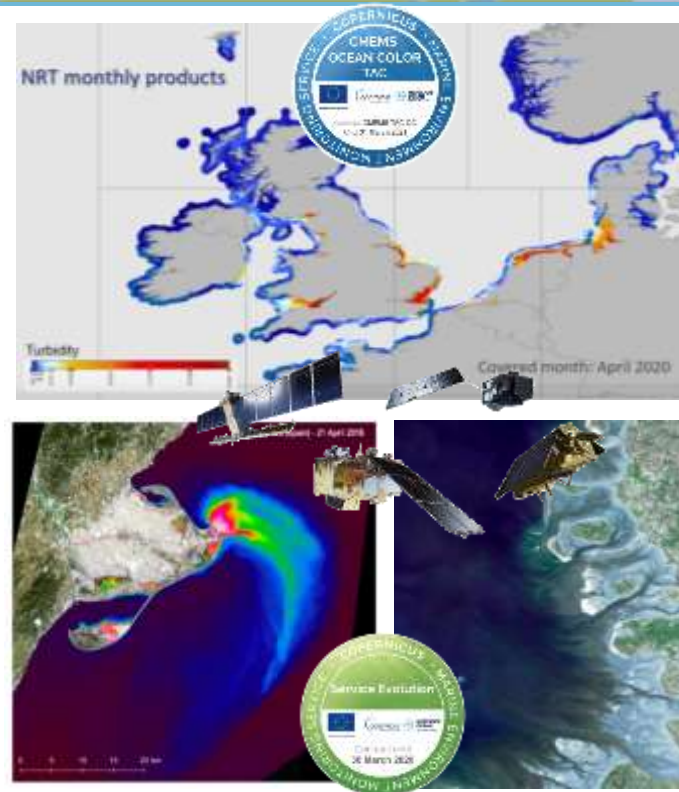
## Pan-European monitoring of coastal zones : improved and new satellite derived products

### New products in Copernicus 1:

- High-resolution (5Hz) along-track altimetry (SLA)
- S2 Turbidity, Chl, SPM, RRS in coastal areas from (May2021)
- S3 OLCI at full resolution (300m) in coastal zones (May2021)
- ... (+ *in situ* data)

### Potential new products (concertation with MS):

- Dynamic, time-evolving nearshore bathymetry (link EMODnet)
- High-resolution winds
- Spectral wave information in EU coastal zone
- Detection of plastic debris and monitoring of marine litter (depending on R&D advances)



To be developed depending on priorities, precursor projects (H2020, Horizon Europe) and budget constraints.



# Evolution of CMEMS for Coastal Users

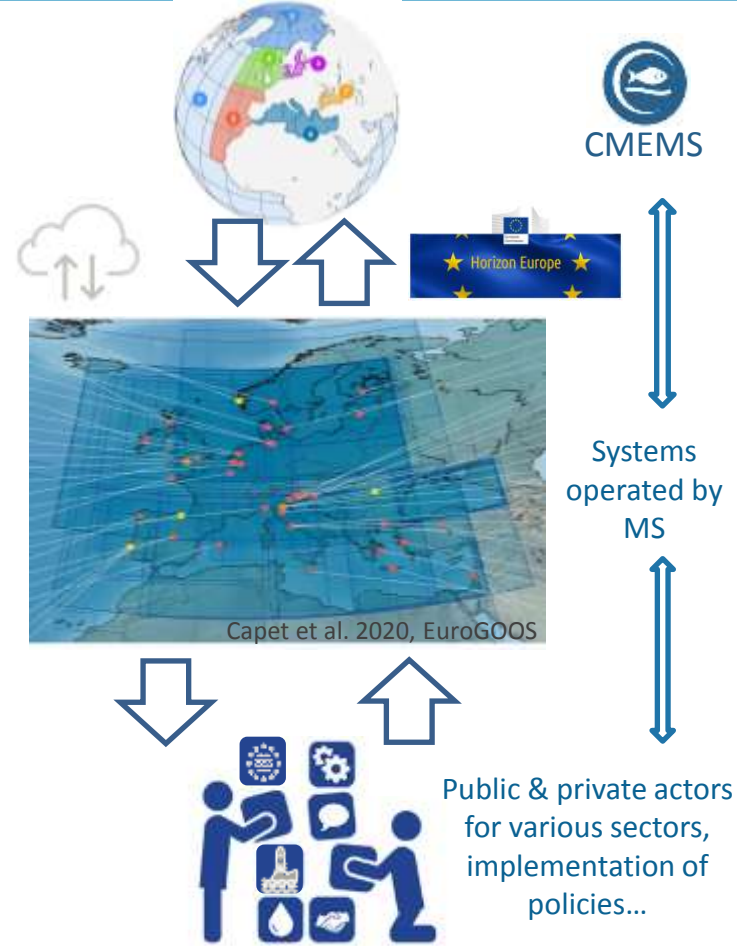
## Co-production of model-derived info between CMEMS & Member States services:

**(1) Full coupling** between **CMEMS** & a series of **coastal models** operated by MS:

- **Co-designed cloud environment & tools for co-production** (Copernicus Marine Data Store)
- **Forcing conditions / Enhanced consistency in represented processes** (physics + bio) between the regional and coastal models:
  - Tides, HF processes, coupling effects, smaller scales...
  - Consistent datasets and forcing fields, operational and flexible interfaces, common standards, ...
  - Standardized methods to couple hydrological models with global, regional and coastal ocean models



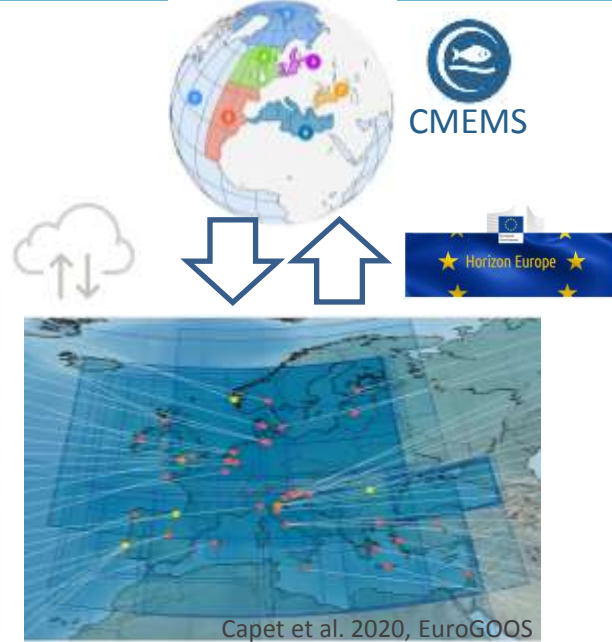
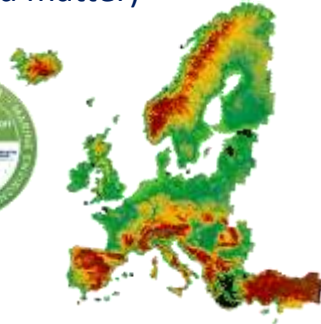
H2020





## Co-production of model-derived info between CMEMS & Member States services:

(2) Provision of past-present-forecasted time-series of **standardized modelled river discharges** (freshwater, nutrients, particulate and dissolved matter)



(3) Integration in CMEMS portfolio of **coastal model derived info**



To be developed depending on priorities, precursor projects (H2020, Horizon Europe) and budget constraints.

