

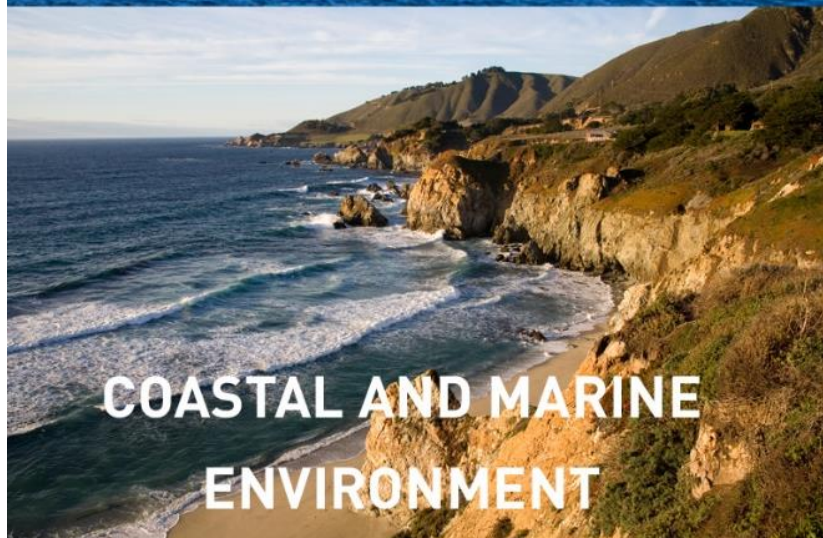
Copernicus Marine Environment Monitoring Service (CMEMS)

Baltic Sea

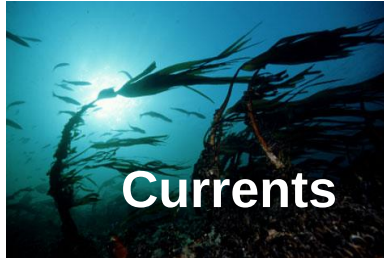
Laura Tuomi
Finnish Meteorological Institute

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4 Areas of benefits



Essential Ocean Information / Variables



CMEMS production centers



1. Thematic Data Assembly Centers (TAC) process data acquired from satellite ground segments and insitu platforms, Satellite and InSitu Observations into real-time (today) and reprocessed (20 years historic) products. There are 4 TACs:

1. [Sea Level TAC](#) (Sea Level Satellite Data)
2. [Ocean Colour TAC](#) (Ocean Colour Satellite Data)
3. [OSI TAC](#) (Sea Surface Temperature, Sea Ice and Wind Satellite Data)
4. [INS TAC](#) (In situ temperature, salinity, currents and other variables)

2. Monitoring and Forecasting Centers (MFC) run ocean numerical models assimilating the above TAC data to generate reanalyse (20 years in the past), analyse (today) and 10-day forecasts of the ocean. There are 7 MFCs:

1. [Arctic Ocean MFC](#)
2. [Baltic Sea MFC](#)
3. [Atlantic European North West shelves \(NWS MFC\)](#)
4. [Atlantic Iberian Biscay Irish Seas \(IBI MFC\)](#)
5. [Mediterranean Sea MFC](#)
6. [Black Sea MFC](#)
7. [Global Ocean MFC](#)

Products for the Baltic Sea

Observed data:

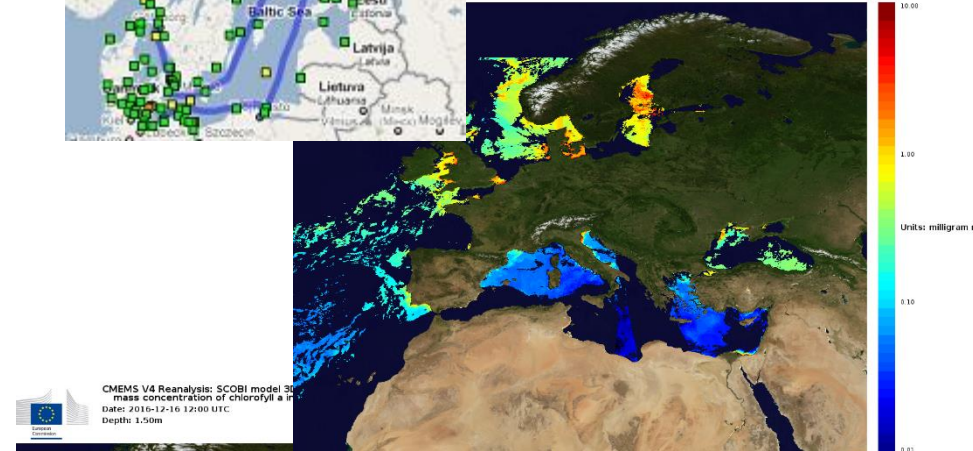
- In-situ data e.g. from buoys/moorings, tide gauges, Argo floats, ship ctd, Ferryboxes.
- Satellite data for SSH, SST, sea ice, ocean colour

Modelled data:

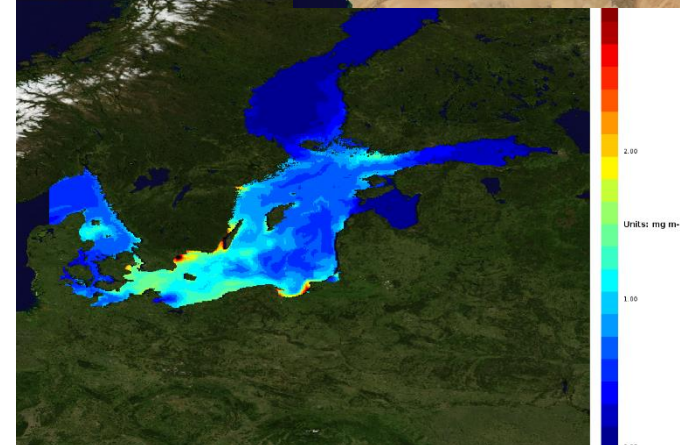
- Five day forecasts for physical and biogeochemical parameters (Horizontal resolution 1 nmi)
- Best-estimate time-series for past two years (Horizontal resolution 1 nmi)
- Reanalysis 1993-2016 (Horizontal resolution 2 nmi)



Multi-B-CHI 1km daily-rt-v02
of chlorophyll a in sea water
6:00 UTC



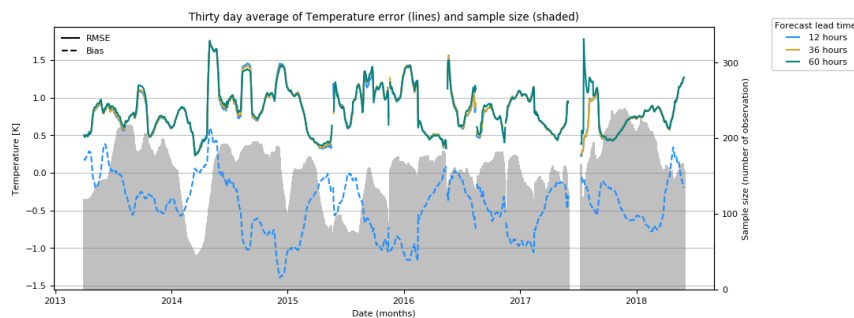
CMEMS V4 Reanalysis: SCOBI model 3
mass concentration of chlorophyll a in
Date: 2016-12-16 12:00 UTC
Depth: 1,50m



Product information and quality



RMS error	Full domain	0-5 m depth	5-30 m depth	30-80 m depth
Forecast day 1	7 (Standard deviation of the error)			
Sea surface height (cm)				
Temperature (K) (Offshore profiles)		0.7	1.5	1.4
Temperature (K) (tide gauges)	1.1			
Temperature (K) (satellite)	0.8			
Sea bottom temperature (K)	1.4			
Salinity (10^{-3})		1.4	1.3	1.2
Ice extent (10^3 km^2)	40			
Currents (m/s)		0.14	0.13	0.19



region: Full domain
parameter: Temperature
depth range: 0-5m
reference: Profile observations from in-situ TAC

All products go through pre-operational qualification before entering the service

Estimated accuracy of the different parameters is presented in the Quality Information Documents (QUIDs) available for all the products in the catalogue.

All products include the Product User Manual (PUM) to give guidance to users.

On-line validation is also used to inform users about the quality of the operational products.

Service evolution

Five overarching R&D themes:

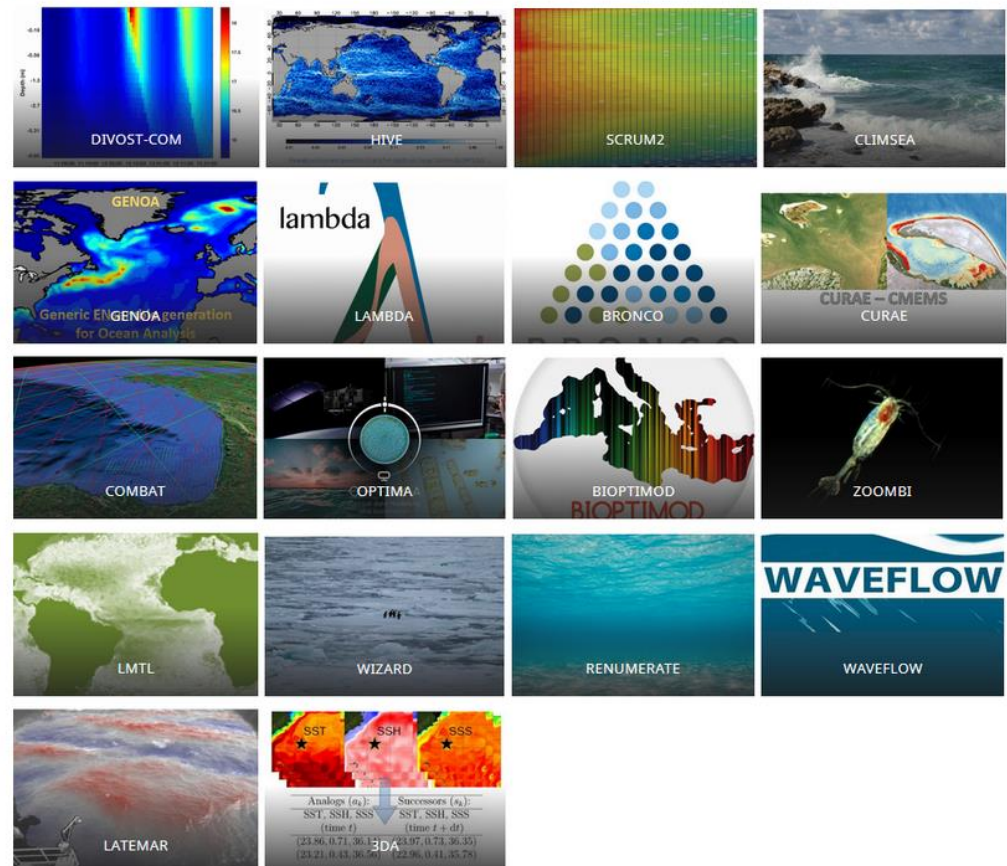
- Ocean circulation, ocean-wave and ocean-ice coupling.
- Biogeochemistry and ecosystems.
- Seamless interactions with coastal systems.
- Ocean-Atmosphere coupling and climate.
- Cross-cutting developments on observation, assimilation and product quality improvements.

2nd Service Evolution Call for Tenders (2018-2020)

A second call for tenders was issued in August 2017.

[Eighteen 2-yr projects](#) were selected for the period April 2018-March 2020.

Please click below for further details on each project (you will be redirected to the Mercator Ocean's webpage):

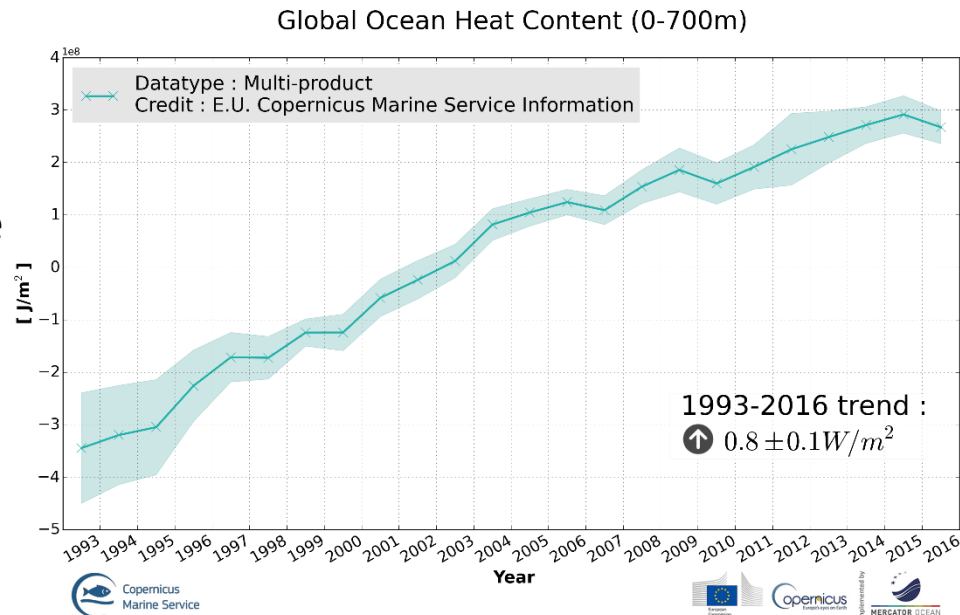


OSR and OMI



[Ocean State Report](#) (OSR) is a step forward into the development of regular annual reporting on the state and health of the Global Ocean and European Seas based on marine environment monitoring capabilities of the Copernicus Marine Environment Monitoring Service. – First issue has been published in 2017 in Journal of Operational Oceanography (<https://doi.org/10.1080/1755876X.2016.1273446>)

[Ocean Monitoring Indicators](#) (OMIs) are free downloadable data sets covering the past 25 years of the key variables used to monitor the oceanic trends in line with climate change, including ocean warming, sea level rise and melting of sea ice. This free and open ocean information allows users to track the vital health signs of the ocean over the past quarter of a century.



More info about CMEMS can be found at



- <http://marine.copernicus.eu/>
- Contact servicedesk.cmems@mercator-ocean.eu
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