



Product portfolio and data access

Copernicus Marine Environment Monitoring
Service



OVERVIEW OF THIS CMEMS SUBMODULE

- **Information about Copernicus Marine Environment Monitoring Service (CMEMS) products:**
 - Presentation of the Copernicus Marine Environment Monitoring Service website.
 - Presentation of the different types of data you can find on CMEMS website.
 - Browsing CMEMS online catalogue and access to specific types of products
 - How to access and download data from the CMEMS service through the online portal
 - How to visualize a product
- **Use case:**
 - **We want to download temperature data around Iceland to detect fronts**
 - We will show you how to access and download this data from **CMEMS: The Copernicus Marine Environmental Monitoring Service**



Marine
Monitoring

CMEMS Website

- **Website Copernicus Marine Service:** <http://marine.copernicus.eu/>
- **Implemented by Mercator Océan**
- **Data Policy: full, free and open access**

Search & Browse



- 160 products
- Global ocean and 6 regional seas

Discover & Visualise



- Visualise/analyse data
- Access info

Register



Download



- Download
- One-off or by scripts

Compute



- Use data
- Integrate
- Merge

Join Up



- Get trained
- Get inspired
- Meet partners



- Both **Public and Private users** need response to today's climate and marine challenges.
- The Copernicus Marine Environment Monitoring Service provides **regular and systematic** core reference information on the **state of the oceans and regional seas**. The observations and forecasts produced by the service support all marine applications:
 - **Marine safety**
 - **Marine resources**
 - **Coastal and marine environment**
 - **Weather, seasonal forecasting and climate.**



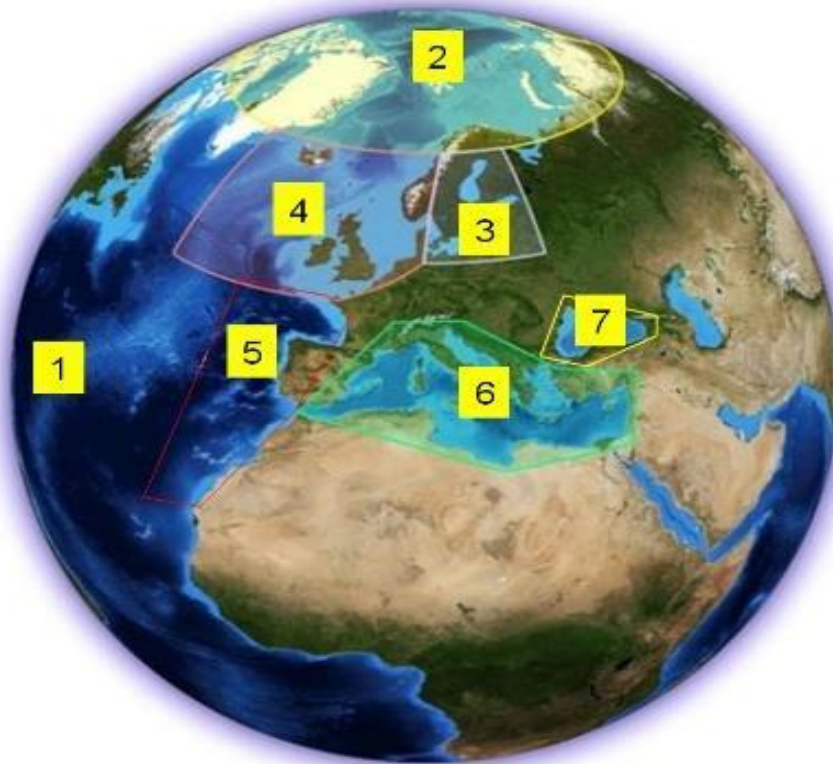
- CMEMS is the **one stop shop** for all the Copernicus marine data.
- On CMEMS website, you can find all the **160 products** gathered in a **unique catalogue**
 - online catalogue <http://marine.copernicus.eu>
 - common format (Netcdf)
 - INSPIRE compliant





Marine
Monitoring

Global Ocean and 6 European Regional Seas



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



15 marine parameters:

- **Sea Temperature**
 - Different area (Global, Black sea, Mediterranean Sea...)
 - Different resolution (more or less precise)
 - Different sources: satellite, model, in-situ...
- **Sea Salinity**
- **Sea Surface Height**
- **Velocity**
- **Sea Ice**
- **Mixed layer thickness**
- **Turbidity**
- **Transparency**
- **Reflectance**
- **Nutrients**
- **Primary production**
- **Wind**
- **Wave**
- **Plankton**
- **Oxygen**



Marine
Monitoring

Time period covered by products

REPROCESSING (20years in the past)

Real Time

Real time products: A new product update every day, a few hours after sensing

Reprocessed products: Long term reanalysis (20 years) - A new product every 1 to 2 years with optimal accuracy and homogeneous time series



Marine
Monitoring

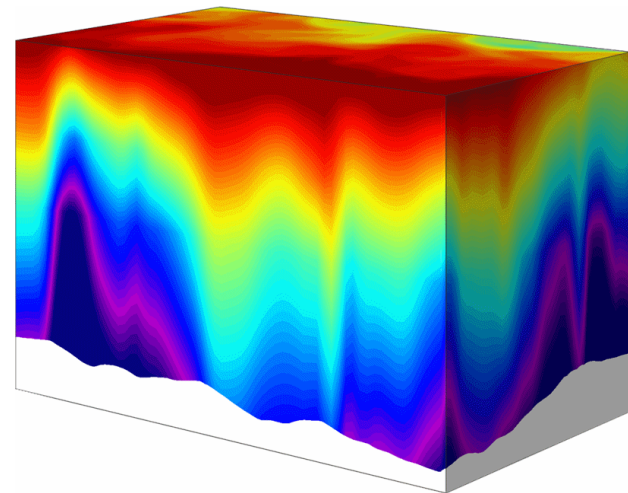
Portfolio gathers Data from 3 sources



**SATELLITE
OBSERVATION**



**IN SITU
OBSERVATION**



**OCEAN MODEL
COMPUTATION**



- **In-situ Observations**

- From surface to 2000 meters depth
- Covers **long time series** (20 years in the past), **real time products** (today)
- **3D** non gridded products (available where the measure is done)

- **Satellite Observations**

- At the **surface only**
- Covers **long time series** (20 years in the past), **real time products** (today)
- **2D** surface gridded products

- **Ocean Models**

- From surface to bottom
- Covers **long time series** (20 years in the past), **real time products** (today) & **10-day forecast**
- **3D** gridded products



Marine
Monitoring

Discover and search for CMEMS products

ONLINE CATALOGUE

CATALOGUE PDF

MY CART

YOUR SEARCH

Found 135 products matching your criteria.

KEYWORD SEARCH

SEARCH

NEW SEARCH

AREA

GLOBAL OCEAN 1/12° PHYSICS ANALYSIS AND FORECAST UPDATED DAILY

ONLINE CATALOGUE

Cart is full: remove products to add new ones. Empty cart

MY CART 10 products

GLOBAL_ANALYSIS_FORECAST_PHYS_001_003	VIEW	DOWNLOAD	REMOVE
GLOBAL_ANALYSIS_BIO_001_006_4	VIEW	DOWNLOAD	REMOVE
GLOBAL_REP_PHYS_001_013	VIEW	DOWNLOAD	REMOVE
GLOBAL_REANALYSIS_PHYS_001_009	VIEW	DOWNLOAD	REMOVE
NORTHWESTSHELF_ANALYSIS_FORECAST_PHYS_004_001_3	VIEW	DOWNLOAD	REMOVE
BALTICSEA_REANALYSIS_PHYS_003_004	VIEW	DOWNLOAD	REMOVE
BALTICSEA_ANALYSIS_FORECAST_BIO_003_007	VIEW	DOWNLOAD	REMOVE
BALTICSEA_REANALYSIS_PHYS_003_005	VIEW	DOWNLOAD	REMOVE
ARCTIC_REANALYSIS_BIO_002_008	VIEW	DOWNLOAD	REMOVE
NORTHWESTSHELF_REANALYSIS_PHYS_004_005	VIEW	DOWNLOAD	REMOVE

More INFO

ADD TO CART

Close

and its daily 25-hour dressed averages; the reanalysis was conducted in three sections: January 1984 → March 1990; April 1989 → December 2000; January 2004 → June 2012. Each of these sections was initialized separately, and users should be aware of possible discontinuities between them.

An older non-assimilation hindcast for the European North-west continental Shelf (NWS) can be found in product NORTHWESTSHELF_REANALYSIS_PHYS_004_005 which covers a longer period albeit without SST assimilation.

ATLANTIC- EUROPEAN NORTH WEST SHELF- OCEAN PHYSICS NON ASSIMILATIVE HINDCAST FROM NERCPOL (1960-2004)

Search is performed for several products.

Add up to 10 products in your cart in order to :

- Read more information
- View product
- Download product

No need to be registered to ADD TO CART



In our Use case, that means:

- Select the area and the parameter of interest : “Global” and “Temperature”
- Select your product: « Global Physics Analysis and Forecast »
- Various criteria:
 - Overview, Variables, Characteristics (geographical coverage, spatial resolution, vertical coverage, temporal resolution ...) → Opportunity to download them in .pdf or .xml formats
- Documentation:
 - Product user manual
 - Quality information document



CMEMS product: How to view it?

[OCEAN PRODUCTS](#) → [OCEAN MONITORING INDICATORS](#) → [OCEAN STATE REPORT](#) → [GETTING STARTED](#) → [MY CART](#) 0 [My Account](#)

YOUR SEARCH

Search by keyword

REGIONAL DOMAIN ▶
All areas

PARAMETERS ▶
TEMPORAL COVERAGE
From 1992-01-01 To 2018-09-24
☐ If checked, the search results will only show products containing the whole selected time range

PRODUCT WITH DEPTH LEVEL ☐

Found **160 ocean products** matching your criteria. [Export results](#)

GLOBAL_ANALYSIS_FORECAST_PHY_001_024

GLOBAL OCEAN 1/12° PHYSICS ANALYSIS AND FORECAST UPDATED DAILY

MODEL	● ● ● ● ●	GLO
T bottomT S SSH UV MLD SIC SIT SIUV ⓘ		
0.083 degree x 0.083 degree (50 depth levels)		
From 2016-01-01 to Present		
monthly-mean, daily-mean, hourly-mean		
MORE INFO	ADD TO CART	WMS Sub-setting

GLOBAL_ANALYSIS_FORECAST_BIO_001_014

GLOBAL OCEAN BIOGEOCHEMISTRY ANALYSIS AND WEEKLY FORECAST

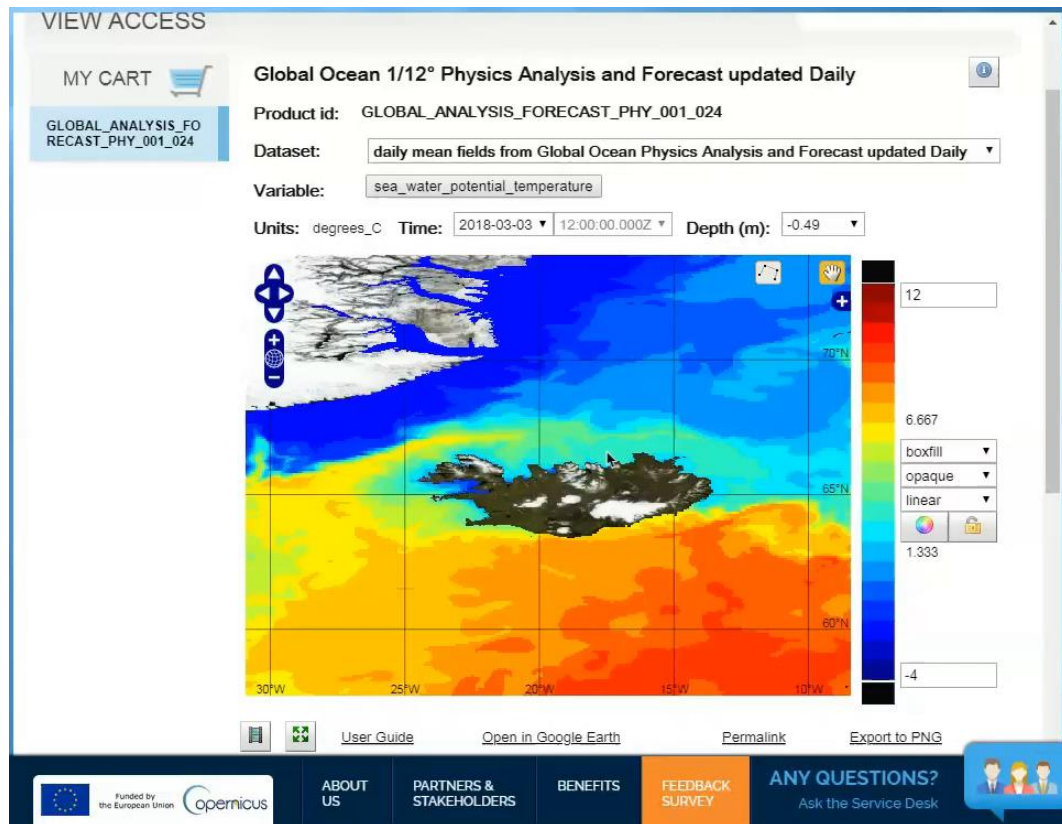
MODEL	● ● ● ● ● ✕ ✕	GLO
CHL PHYC O2 NO3 PO4 SI FE PP ⓘ		
0.5 degree x 0.5 degree (50 depth levels)		
From 2012-01-01 to Present		
weekly-mean		
MORE INFO	ADD TO CART	WMS Sub-setting

Funded by the European Union

[ABOUT US](#) [PARTNERS & STAKEHOLDERS](#) [BENEFITS](#) [FEEDBACK SURVEY](#) [ANY QUESTIONS?](#)
Ask the Service Desk



CMEMS product: How to view it?





Marine
Monitoring

CMEMS product: Download the product

OCEAN PRODUCTS → OCEAN MONITORING INDICATORS → OCEAN STATE REPORT → GETTING STARTED → MY CART 1 My Account

GLOBAL OCEAN 1/12° PHYSICS ANALYSIS AND FORECAST UPDATED DAILY

Metadata provided by CMEMS
Credits: E.U. Copernicus Marine Service Information

BACK TO SEARCH

ADD TO CART

VIEW PRODUCT

DOWNLOAD PRODUCT

INFORMATION DOCUMENTATION SERVICES NEWS FLASH

PRODUCT IDENTIFIER GLOBAL_ANALYSIS_FORECAST_PHY_001_024

OVERVIEW

Short description
The Operational Mercator global ocean analysis and forecast system at 1/12 degree is providing 10 days of 3D global ocean forecasts updated daily. The time series start on December 27, 2006 and is aggregated in time in order to reach a two full year's time series sliding window. This product includes daily and monthly mean files of temperature, salinity, currents, sea level, mixed layer depth and ice parameters from the top to the bottom over the global ocean. It also includes hourly mean surface fields for sea level height, temperature and currents. The global ocean output files are displayed with a 1/12 degree horizontal resolution with regular longitude/latitude equirectangular projection. 50 vertical levels are ranging from 0 to 5500 meters.

Detailed description
The high resolution global analysis and forecasting system PSY4V3R1 uses version 3.1 of NEMO ocean model (Madec et al., 2008). The physical configuration is based on the tripolar ORCA grid type (Madec and Imbard, 1996) with a horizontal resolution of 9 km at the equator, 7 km at Cape Hatteras (mid-latitudes) and 2 km toward the Ross and Weddell seas. The 50-level vertical discretization retained for this system has 1 m resolution at the surface decreasing to 450 m at the bottom, and 22 levels within the upper 100 m. The bathymetry used in the system is a combination of interpolated ETOPO1 (Amante and Eakins, 2009) and GEBCO3 (Becker et al., 2009) databases. ETOPO1 datasets are used in regions deeper than 300 m and GEBCO3 is used in regions shallower than 200 m with a linear interpolation in the 200 m – 300 m layer. The atmospheric fields forcing the ocean model are taken from the ECMWF (European Centre for Medium-Range Weather Forecasts) Integrated Forecast System. A 3 h sampling is used to reproduce the diurnal cycle. The system does not include tides. "Partial cells" parameterization (Adcroft et al., 1997) is chosen for a better representation of the topographic floor (Barriat et al., 2006) and the momentum advection term is computed with the energy and enstrophy conserving scheme proposed by Arakawa and Lamb (1981). The advection of the tracers (temperature and salinity) is computed with a total variance diminishing (TVD) advection scheme (Lévy et al., 2001; Cravatte et al., 2007). The high frequency gravity waves are filtered out by a free surface (Roulet and Madec, 2000). Anisotropic lateral isopycnal diffusion on tracers and a horizontal biharmonic viscosity for momentum are used. In addition, the vertical mixing is parameterized according to a turbulent closure model (order 1.5) adapted by Blanke and Delecluse (1993), the lateral friction condition is a partial-slip condition with a regionalisation of no-slip condition (over the Mediterranean Sea) and the Elastic-Viscous-Plastic rheology formulation for the LIM2 ice model (hereafter called LIM2_EVP; Fichefet and Maqueda, 1997) has been deactivated (Hunke and Dukowicz, 1997). Instead of being constant, the depth of light extinction is separated in Red-Green-Blue bands depending on the chlorophyll data distribution from mean monthly SeaWiFS climatology. Altimeter data, in situ temperature and salinity vertical profiles and satellite sea surface temperature are jointly assimilated to estimate the initial conditions for numerical ocean forecasts.

Funded by the European Union Copernicus

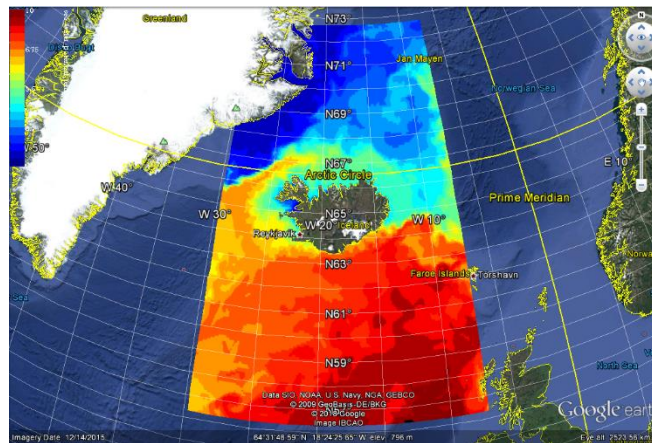
ABOUT US PARTNERS & STAKEHOLDERS BENEFITS FEEDBACK SURVEY ANY QUESTIONS? Ask the Service Desk

- ... To perform this step, the registration to CMEMS is needed !



CMEMS product: Show the product

- With Google Earth
- With a picture (PNG)



daily mean fields from Global Ocean Physics Analysis and Forecast updated Daily
sea water potential temperature
Date: 2018-03-10 12:00 UTC
Depth: 0-99m

