

## The MULTI OBSERVATIONS Thematic Assembly Centre of the Copernicus Marine Environment Monitoring Service

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Complementary to ocean state estimate provided by modelling/assimilation systems, a multi observations-based approach is available through the MULTI OSERVATIONS (MULTIOBS) Thematic Assembly Center (TAC) of the European Copernicus Marine Environment Monitoring Service (CMEMS).

CMEMS MULTIOBS TAC proposes products based on satellite & in situ observations and state-of-the-art data fusion techniques. These products are fully qualified and documented and, are distributed through the CMEMS catalogue (<http://marine.copernicus.eu/services-portfolio>). They cover the global ocean for physical and biogeochemical (BGC) variables. They are available in Near-Real-Time (NRT) or as Multi-Year Products (MYP) for the past 28 to 36 years.

Satellite input observations include altimetry, sea surface temperature, sea surface salinity as well as ocean color. In situ observations of physical and BGC variables are from autonomous platform such as Argo, moorings and ship-based measurements. Data fusion techniques are based on multiple linear regression method, multidimensional optimal interpolation method or neural networks.

MULTIOBS TAC provides the following products at global scale:

- 3D temperature, salinity and geostrophic current fields, both in NRT and as MYP;
- 2D sea surface salinity and sea surface density fields, both in NRT and as MYP;
- 2D total surface and near-surface currents, both in NRT and as MYP;
- 3D vertical current as MYP;
- 2D surface carbon fields of CO<sub>2</sub> flux (fgCO<sub>2</sub>), pCO<sub>2</sub> and pH as MYP;
- Nutrient vertical distribution (including nitrate, phosphate and silicate) profiles as MYP;
- 3D Particulate Organic Carbon (POC) and Chlorophyll-a (Chl-a) fields as MYP.

Furthermore, MULTIOBS TAC provides specific Ocean Monitoring Indicators (OMIs), based on the above products, to monitor the global ocean 3D hydrographic variability patterns (water masses) and the global ocean carbon sink.