

# Copernicus Marine Environment Monitoring Service In Situ TAC: an In situ operational data provision system for operational oceanography

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## The CMEMS (Copernicus Marine Environment Monitoring Service) context

Copernicus, previously known as GMES (Global Monitoring for Environment and Security), is the European Programme for the establishment of a European capacity for Earth Observation and Monitoring. Copernicus includes 3 components: space, in-situ and services.

The services component encompasses a Marine Monitoring service among others (Emergency Management, Atmosphere Monitoring, Security and Climate Change). The focal point of the presentation will be laid on the InSitu Thematic Assembly Centre (InSituTAC) as part of the Services component only.

## The In Situ component of the Copernicus marine service

The In Situ TAC - Thematic Assembling Centre- is a consistent and distributed provision system of ocean In Situ observations for MFCs –Marine Forecasting Centres. It manages real-time and delayed mode data.

The In Situ TAC is a distributed system organized in 7 region Distribution Units (DUs) see Fig.1.

The operation of the regional DUs is based on the regional EuroGOOS ROOS (Regional Oceanographic Operational System, more on <http://eurogoos.eu>). The Global component is an integrated service on JCOMM networks (Argo, Drifters, OceanSites, Gliders...) that complement the European observing systems in the global Ocean.

The focused ocean variables are (a): temperature, salinity (CMEMS V1), surface currents (CMEMS V2), (b): wave data (CMEMS V3) and (c): biogeochemical data (CMEMS V4). Focal point on the evolvement of the InSituTAC data provision lays on (a) for the first two versions (2015/2016), on (b) for the third version (2017) and c. for the fourth version (2018). Ancillary data are also distributed when available (such as sea level, met-ocean parameters), with no additional quality control made and in Situ TAC level.

### Key features

The commitments for Copernicus In Situ TAC are to:

- Provide real time In Situ data in an operational mode within a few hours from acquisition by the observing system operators;
- Provide regularly delayed mode datasets (REP Products –Reprocessed products-) that have been passed through high level assessment procedures to detect data that are not coherent with the others);
- Provide all the above datasets in a fully consistent manner (NetCDF OceanSITES version 1.2, format with homogeneous and documented quality control.). from central and regional portals;
- Monitor the operational service by providing Key Performance Indicators(KPI° including continuously monitoring of the availability of distribution services to users
- Monitor the quality of the products distributed and identify when needed cross cutting activities to improve the products;
- Properly document the products made available in Product Users manuals (PUMS) and Quality Information Documents ( QUIDs );
- Report on operations status on a regular basis (monthly operation reports, quarterly and yearly reports);
- Contribute to cross-cutting activities led by Mercator-Ocean on communication and training, Ocean State reporting , harmonization across the CMEMS services.

The presentation will detail the In Situ TAC organization and the data integration system that has been developed to provide efficient data delivery services and the In Situ TAC data schema between the different in situ TAC actors as well as the collaborations with EMODNet-Physics, SeaDataNet network and EuroGOOS ROOS.

The presentation will also detail the technical solutions that have been used to address the key features described above.