# Contribution to IQuOD report, T. Carval, 05/10/2016

T. Carval presented the CMEMS in situ TAC - Copernicus Marine Environment Monitoring Service in situ Thematic Assembly Centre .

Copernicus is a European system for monitoring the Earth. COPERNICUS-CMEMS products and services are meant to serve all marine applications: Marine resources, Maritime safety, Coastal and Marine Environment, Seasonal Forecast & Climate.

The service is ambitious as the ocean is complex and many processes are involved, from physical oceanography, biology, geology, ocean-atmosphere fluxes, solar radiations, moon induced tides, anthropic activity. A multi-platform approach is essential, taking into account sea-level stations, coastal buoys, HF radars, river flows, drifting buoys, sea-mammal or fishes fitted with sensors, vessels, gliders, floats.
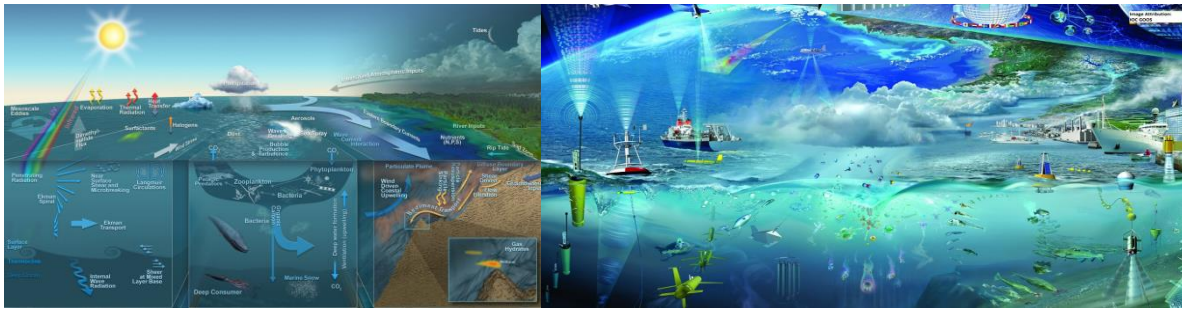

Complex processes addressed with a multiplatform approach

To address that challenge, Copernicus in situ TAC shares the work within 7 regions: Arctic area, Baltic sea, North Sea, Ireland-Biscay-Iberia area, Mediterranean Sea, Black sea and the global ocean.

Within regions, a total of 20 Production Units (PU) are in charge of:

- Data collect with observation systems
- NetCDF data and metadata formatting
- Quality control and duplicate check
- Synchronization between regions

The Production Units work with data providers from EuroGoos Rooses, EU SeaDataNet network of data centres, US NCEI World Ocean Database, the JCOMM operational networks (Argo and bio-Argo floats, GTSPP profiles, OceanSITES moorings, Gosud underway data, DBCP drifting buoys, EGO gliders, CCHDO – GO-SHIP, SOCAT BGC data).
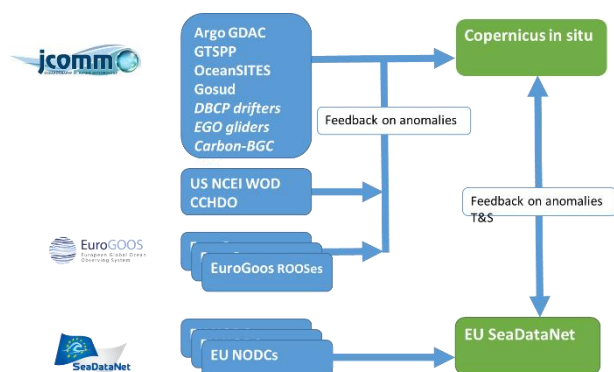
The Production Units data providers
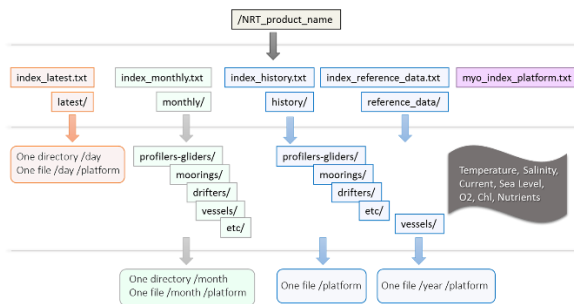
The Distribution Units FTP server structure

The Marine in situ TAC data are distributed by 7 Distribution Units (DU, one per region), they are listed and described in Copernicus catalogue http://marine.copernicus.eu/ .

Each Distribution Unit continuously manages an FTP server providing NetCDF CF1.6 data and metadata files.

- The performance of the DUs are tracked by a series of KPIs (Key Performance Indicators): http://www.ifremer.fr/co/co05010507/KPI/
- Data downloads are logged and visible on User maps : http://www.ifremer.fr/co/co05010507/user_map.html
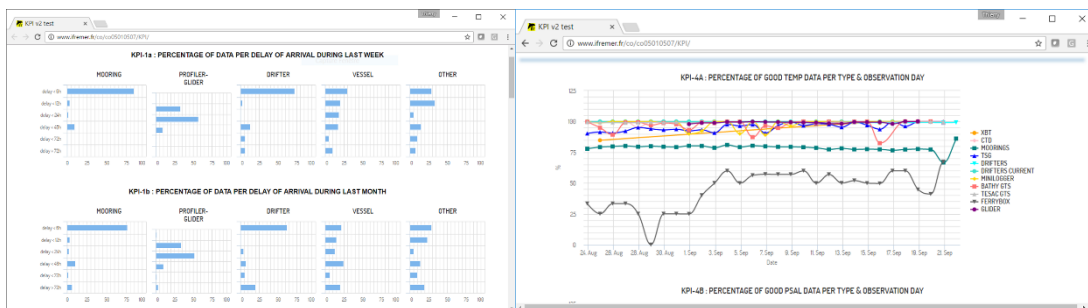
Copernicus in situ KPIs: delays on data availability, percentage of data flagged "good"

The main ongoing activities in 2016

- Setup a dashboard, improve and homogenize KPIs
- Reorganize providers to avoid duplicates in overlapping areas
- Development of Biogeochemical REP products
- Development of Waves products
  - NRT: under development, to be launched April 2017
  - REP: planned for 2018
- Improvement of interfaces
  - Copernicus modelling centres and scientific users
  - European and International partners -> AtlantOS, IQuOD

- Big data service: a cloud of observations, 12 columns, 5 billion lines, instant access time
  - Communication and training sessions: presentation at EGU General Assembly in Vienna, IQuOD workshop in Tokyo.
  - Improve citeability and traceability of data: promote DOI et ORCID for efficient bibliographic surveys and to provide feedback to data providers.

Status of Copernicus in situ, October2016

- Fully operational service since April 2015
- 7 Components: Global + 6 regions (Arctic, Baltic, NWS, IBI, MED and Black Sea)
- Same data format and parameters: NetCDF CF-1.6 - OceanSites 1.3 – CF standard names
- Same FTP structure
- Same RTQC and duplicate checks
- Real-time (NRT) and reprocessed (REP) products
- Increasing number of users, 313 registered users in 2015 against 105 in 2013.

Status of observations available in 2016 on Copernicus in situ global region

Real-time: observations of year 2015

- 1 million de vertical profiles (2 million if the vertical profiles of coastal buoys are included)
- 89 millions of time-series/trajectory observations (TSG, Ferrybox, buoys, moorings, floats)

Historical data, status for the end of 2015

- 16 million vertical profiles, 110 million trajectory points, 45 millions of time-series
- 5 billion of observations from 80 parameters (temperature, salinity, current, oxygen, chlorophyll, nitrates, turbidity, etc…)
- 31 000 platforms
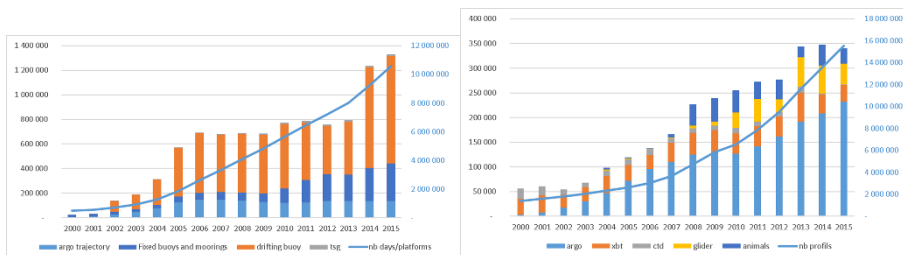
Vertical profiles and timeseries yearly distribution
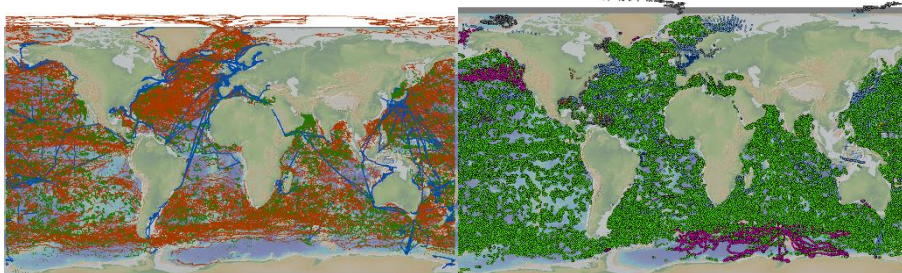
Trajectories and profiles with observation dates in 2015

A list of usefull links for documentation, data access, service desk

- The global region web page
  http://www.coriolis.eu.org/Data-Products/Data-Delivery/Copernicus-In-Situ-TAC/Organization
- User's manual, Copernicus implementation of OceanSITES NetCDF V1.3
  http://dx.doi.org/10.13155/40846
- The quality control manuals
  - o http://eurogoos.eu/download/Recommendations-for-RTQC-procedures_V1_2.pdf
  - o http://eurogoos.eu/download/RTQC_BGC_recommendations_v2.5.pdf
- The global region REP product : CORA version 4.2
  http://dx.doi.org/10.17882/46219
- FTP access with your Copernicus account
  ftp://MyAccount@vftp1.ifremer.fr/Core/INSITU_GLO_NRT_OBSERVATIONS_013_030

The service desk will answer your questions   servicedesk.cmems@mercator-ocean.eu