



marine.copernicus.eu



CMEMS in situ TAC

Copernicus Marine Environment Monitoring Service in situ Thematic Assembly Centre A service for Operational Oceanography

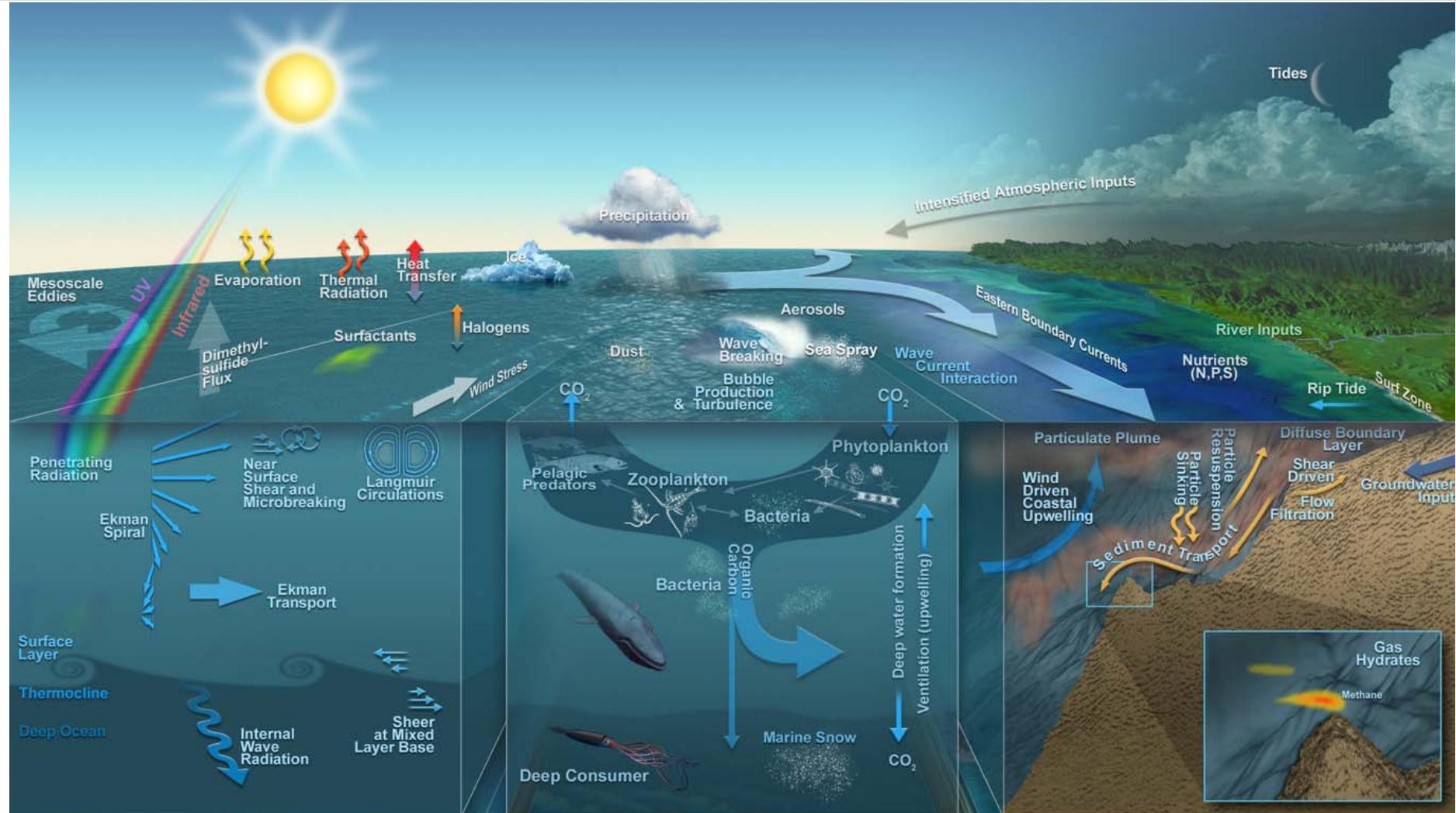
Thierry Carval, Fernando Manzano Muñoz, Sylvie Pouliquen, Loic Petit de la Villeon, Thomas Loubrieu, Henning Wedhe, Lid Sjur Ringheim, Thomas Hammarklint, Susanne Tamm, Marta De Alfonso, Leonidas Perivoliotis, Antonis Chalkiopoulos, Veselka Marinova, Joaquin Tintore, and Charles Troupin

COPERNICUS MARINE ENVIRONMENT MONITORING SERVICE

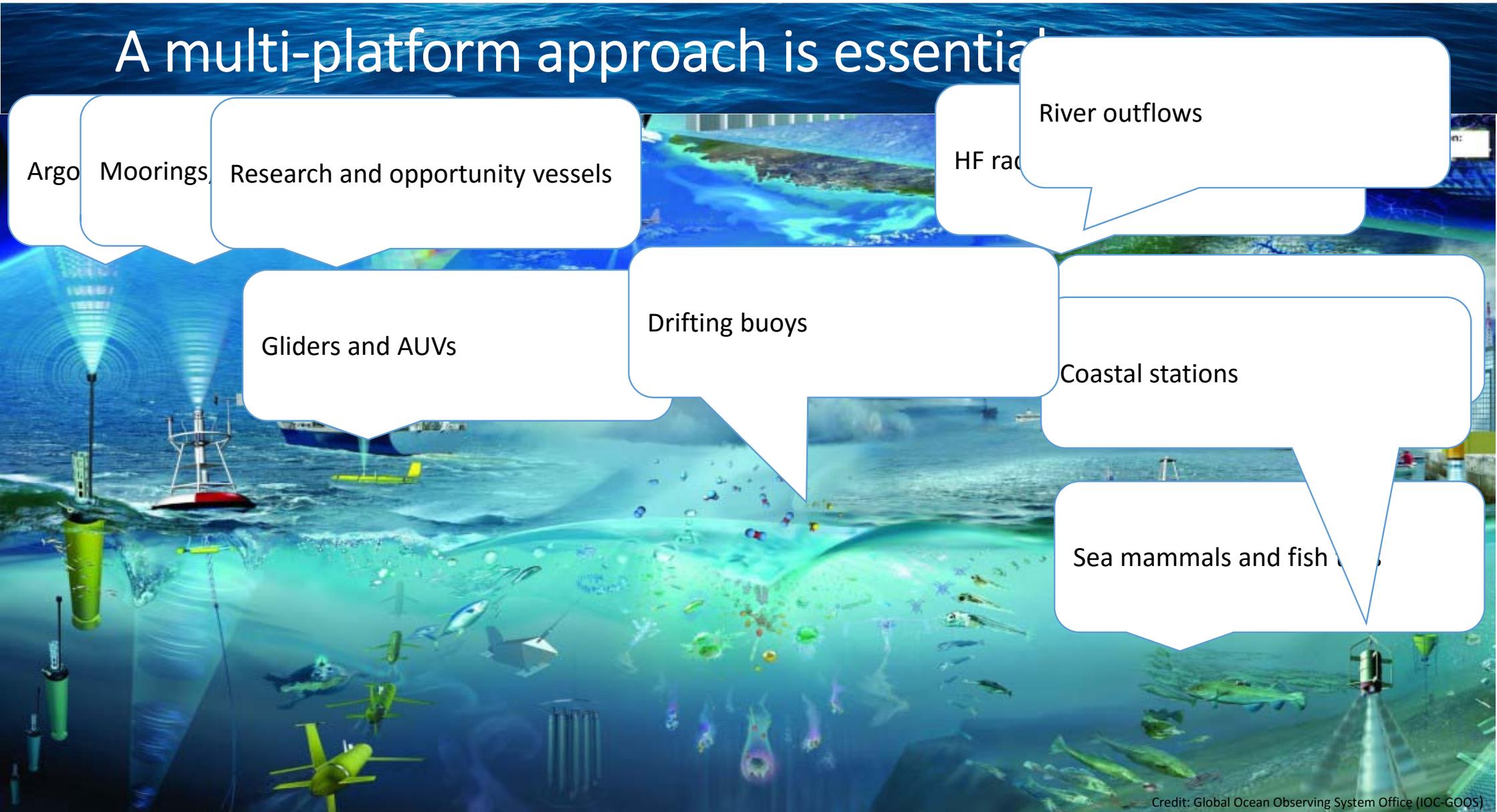


- Copernicus is a European system for monitoring the Earth.
- COPERNICUS-CMEMS products and services are meant to serve all marine applications: Marine resources, Maritime safety, Coastal and Marine Environment, Seasonal Forecast & Climate.

The ocean is complex... many processes are involved.

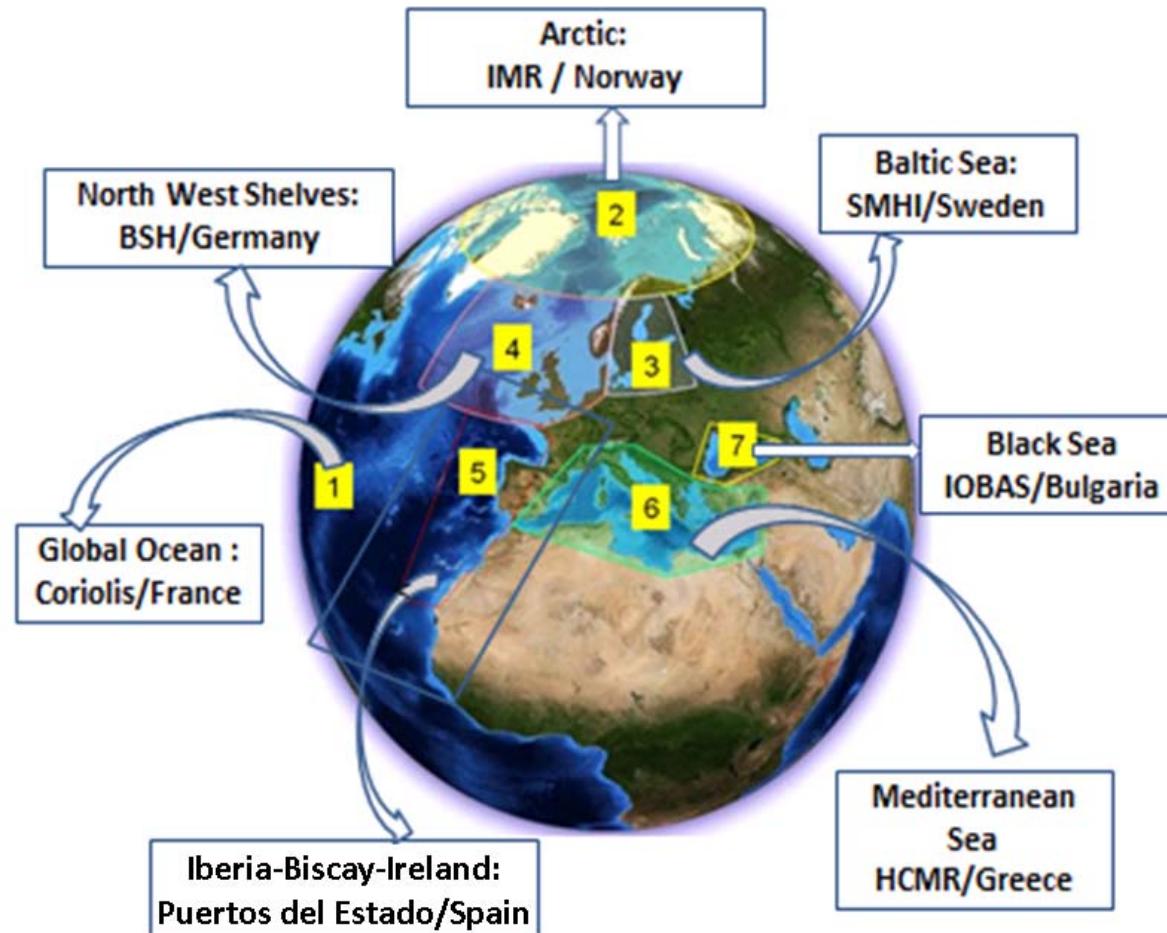


A multi-platform approach is essential



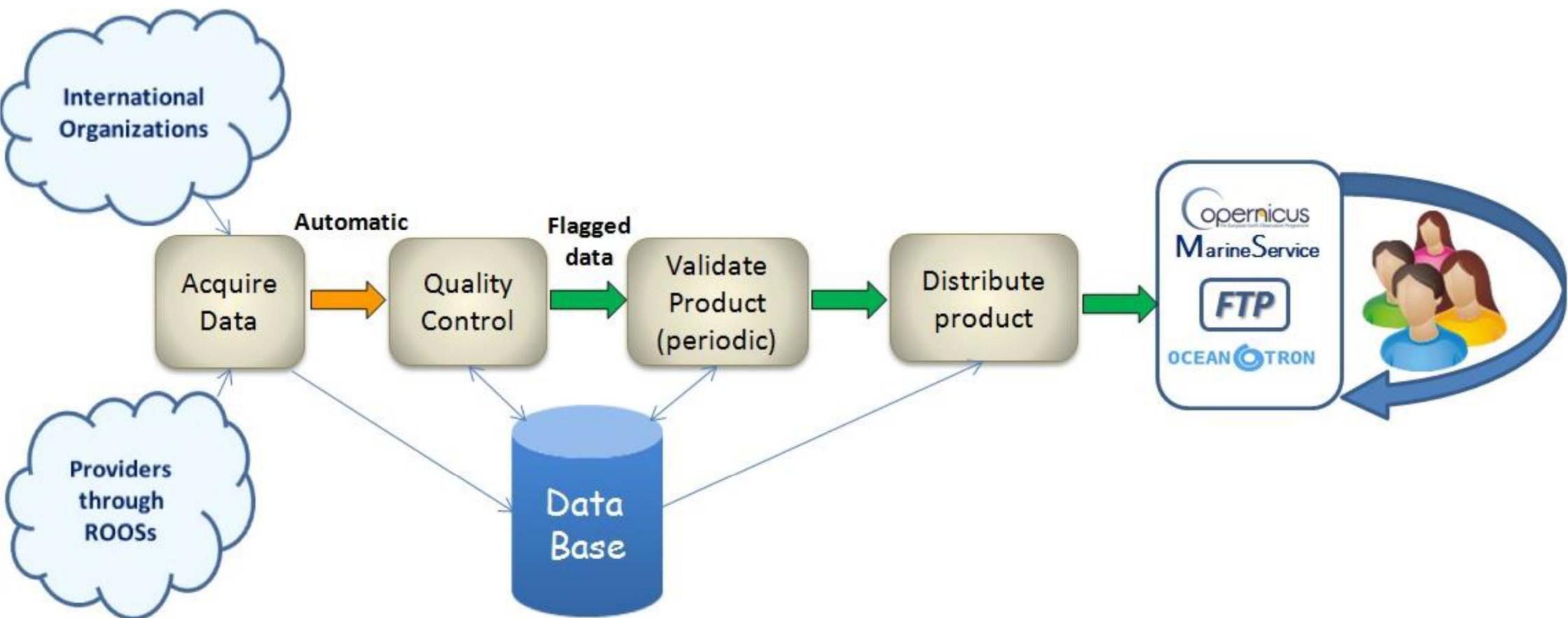
Credit: Global Ocean Observing System Office (IOC-GOOS)

Copernicus marine in situ organization

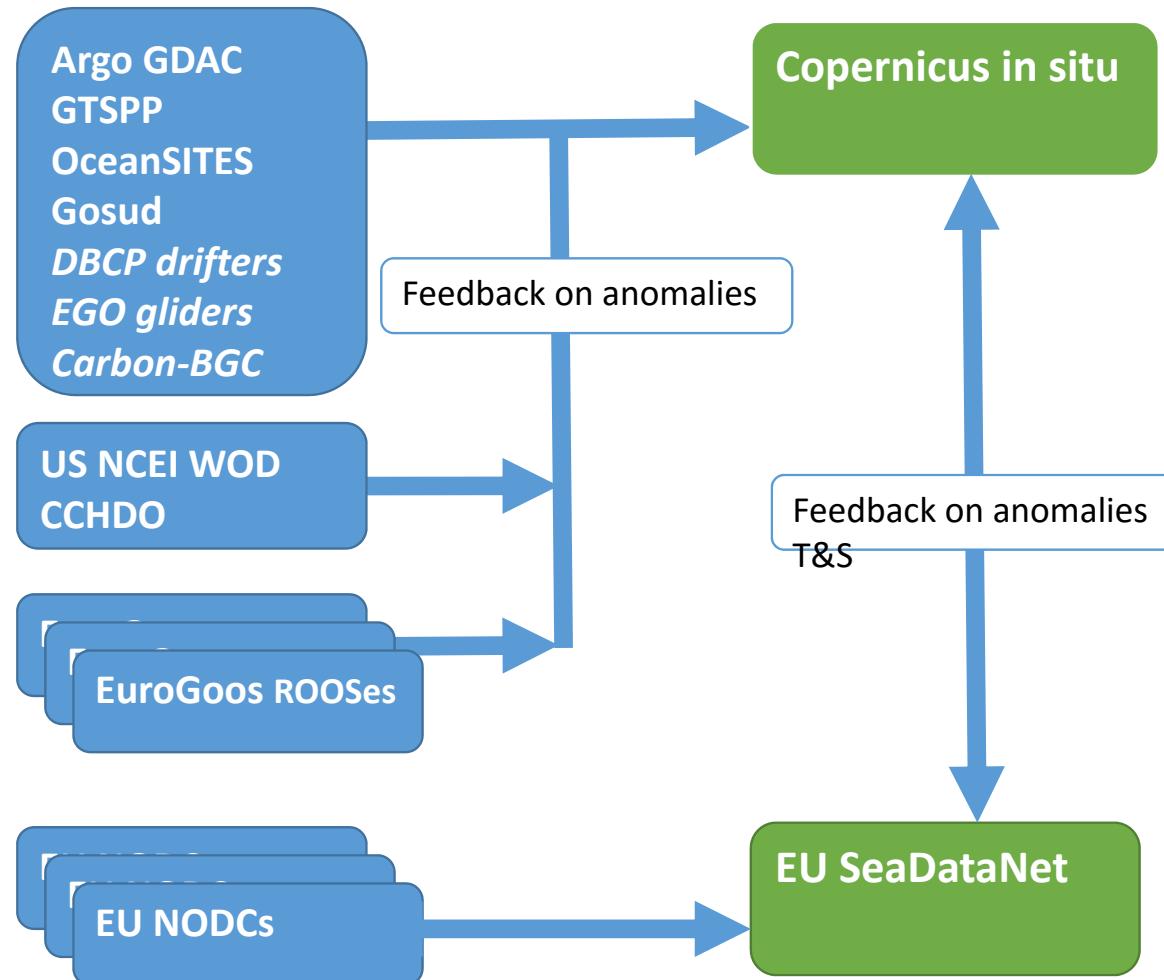


- Share the work within 7 regions
- Production Units (PU)
 - Data collect with observation systems
 - NetCDF data and metadata formatting
 - Quality control and duplicate check
 - Synchronization between regions
- Distribution Units (DU)
 - Uniform global data set continuously managed

Data flow



Data flow



Data access

Copernicus catalogue

<http://marine.copernicus.eu/>

ONLINE CATALOGUE

CATALOGUE PDF **FIRST VISIT ?** **MY CART** **0**

AREA

All areas
 Global Ocean (6)
 Arctic Ocean (2)
 Baltic Sea (2)
 European North-West Shelf Seas (2)
 Iberia-Biscay-Ireland Regional Seas (2)
 Mediterranean Sea (2)
 Black Sea (2)

PARAMETER

All parameters
 Ocean Temperature (18)
 Ocean Salinity (18)
 Ocean Currents (9)
 Sea Ice (0)
 Sea Level (9)
 Winds (0)
 Ocean Optics (0)
 Ocean Chemistry (7)
 Ocean Biology (0)
 Ocean Chlorophyll (7)

TIME COVERAGE

All time coverages
 Forecast Products (0)
 Near Real Time Products (9)
 Multi Year Products (9)
 Time Invariant Products (0)

OBSERVATIONS/MODELS

All observations/models
 Models (0)
 Satellite Observations (2)
 In Situ Observations (18)

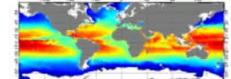
GRID TYPE

For the Global Ocean- The In Situ Thematic Assembly Centre (INS TAC) integrates near real-time in situ in situ observation data. These data are collected from main global networks (Argo, GOSUD, OceanSITES, GTS) completed by European data provided by EUROGOOS regional systems and national data providers assembled by the In Situ TAC regional components. The data are quality controlled using automated procedures and assessed using statistical analysis residuals. It is updated continuously and provides observations with 24-48 hours from acquisition in average.

GLOBAL OBSERVED OCEAN PHYSICS TEMPERATURE SALINITY HEIGHTS AND CURRENTS PROCESSING

In-Situ-Observation, Satellite-Observation, Salinity, Temperature, Currents, Sea-Level, Near-Real-Time, Global-Ocean

GLOBAL_ANALYSIS_PHYS_001_016

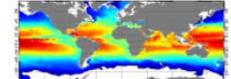


MORE INFO **ADD TO CART**

GLOBAL OBSERVED OCEAN PHYSICS TEMPERATURE SALINITY AND CURRENTS REPROCESSING (1993-2012)

In-Situ-Observation, Satellite-Observation, Salinity, Temperature, Currents, Sea-Level, Multi-Year, Global-Ocean

GLOBAL_REP_PHYS_001_013

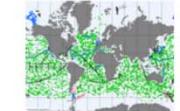


MORE INFO **ADD TO CART**

GLOBAL OCEAN- IN-SITU NEAR-REAL-TIME OBSERVATIONS

In-Situ-Observation, Ocean-Chlorophyll, Ocean-Chemistry, Sea-Level, Salinity, Temperature, Currents, Near-Real-Time, Global-Ocean

INSITU_GLO_NRT_OBSERVATIONS_013_030



MORE INFO **ADD TO CART**

GLOBAL OCEAN- REAL TIME IN-SITU OBSERVATIONS OBJECTIVE ANALYSIS

In-Situ-Observation, Salinity, Temperature, Near-Real-Time, Global-Ocean

INSITU_GLO_TS_OA_NRT_OBSERVATIONS_013_002_a

For the Global Ocean- Gridded objective analysis fields of

Coriolis

ABOUT US **PARTNERS & STAKEHOLDERS** **BENEFITS** **ANY QUESTION?**
Get help from the Service Desk

Real-time data, monthly data, history data, REP product, updated once a year
30 days of observations, The last 5 years, 100 years of observations

index_latest.txt

latest/

One directory /day
One file /day /platform

index_monthly.txt

monthly/

profilers-gliders/
moorings/
drifters/
vessels/
etc/

One directory /month
One file /month /platform

History data, more than 100 years of observations

index_history.txt

history/

profilers-gliders/
moorings/
drifters/
etc/

One file /platform

REP product, updated once a year
100 years of observations

index_reference_data.txt

reference_data/

vessels/

One file /year /platform

myo_index_platform.txt

with
ernicus user &
password

Temperature, Salinity,
Current, Sea Level,
O2, Chl, Nutrients

File naming convention

File naming convention in the latest directory

RR_LATEST_XX YY CODE YYYYMMDD.nc

Example: GL_LATEST_PR_GL_58970_20151112.nc

File naming convention in the monthly directory:

RR_YYYYMM_XX YY CODE.nc

Example: IR_201510_TS_MO_62024.nc

File naming convention in the history directory:

RR_XX YY CODE.nc

Example: IR_TS_MO_MotrilTG.nc

- **RR**: region bigram
- **LATEST**: fixed name
- **YYYYMMDD**: year month day of observations
- **XX**: TS (timeserie) or PR (profile)
- **YY**: data type
- **CODE**: platform code
- **.nc**: NetCDF file extension

Data types

- **BA** Data from Bathy messages on GTS
- **CT** CTD profiles
- **DB** Drifting buoys
- **FB** Ferrybox
- **GL** Gliders
- **MO** Fixed buoys or mooring time series
- **PF** Profiling floats vertical profiles
- **RE** Recopesca , fishing boats
- **RF** River flows
- **TE** Data from TESAC messages on GTS
- **TS** Thermosalinographs
- **XB** XBT or XCTD profiles

Region bigram

- **GL** Global
- **AR** Arctic
- **BO** Baltic
- **NO** North West Shelf
- **IR** IBI (Iberia-Biscay-Ireland)
- **MO** Mediterranean
- **BS** Black Sea

Index files

■ index_latest.txt

```
# Title : in-situ observations catalog
# Description : catalog of available IBI in-situ observations per platform.
# Project : MyOcean (generated by Puertos del Estado-SPAIN).
# Format version : 1.1.
# Date of update : 20151120072253
# product_id,file_name,geospatial_lat_min,geospatial_lat_max,geospatial_lon_min,geospatial_lon_max,time_coverage_start,time_coverage_end,
provider,date_update,data_mode,parameters
MYO_IBIROOS_01,ftp://arcas.puertos.es/Core/INSITU_IBI_NRT_OBSERVATIONS_013_033/latest/20151109/GL_LATEST_PR_GL_58970_20151109.nc,43.3013,43.38,7.91735,8.03727,2015-11-09T01:19:34Z,2015-11-09T22:43:07Z,INSU Institut National des Sciences de l'Univers,2015-11-17T08:12:15Z,R,DC_REFERENCE PRES CNDC TEMP_DDOXY CDOM TEMP PSAL
MYO_IBIROOS_01,ftp://arcas.puertos.es/Core/INSITU_IBI_NRT_OBSERVATIONS_013_033/latest/20151110/GL_LATEST_PR_GL_58970_20151110.nc,43.2865,43.3531,7.91254,8.0125,2015-11-10T01:02:48Z,2015-11-10T23:49:14Z,INSU Institut National des Sciences de l'Univers,2015-11-17T08:13:24Z,R,DC_REFERENCE PRES CNDC TEMP_DDOXY CDOM TEMP PSAL
MYO_IBIROOS_01,ftp://arcas.puertos.es/Core/INSITU_IBI_NRT_OBSERVATIONS_013_033/latest/20151022/IR_LATEST_TS_MO_13130_20151022.nc,28.19336,28.19824,-15.79834,-15.79102,2015-10-22T00:00:00Z,2015-10-22T23:00:00Z,Puertos del Estado (Spain), 2015-10-24T18:10:03Z,R,DEPH VTDH VTZA VDIR ATMS DRYT WSPD WDIR HCSP HCDT TEMP PSAL
MYO_IBIROOS_01,ftp://arcas.puertos.es/Core/INSITU_IBI_NRT_OBSERVATIONS_013_033/latest/20151023/IR_LATEST_TS_MO_13130_20151023.nc,28.18848,28.19824,-15.80078,-15.79102,2015-10-23T00:00:00Z,2015-10-23T23:00:00Z,Puertos del Estado (Spain),2015-10-25T18:10:02Z,R,DEPH VTDH VTZA VDIR ATMS DRYT WSPD WDIR HCSP HCDT TEMP PSAL
```

index of the data files

■ myo_index_platform.txt

```
# Title : in-situ platforms catalog
# Description : catalog of available IBI in-situ platforms.
# Project : MyOcean (generated by Puertos del Estado-SPAIN).
# Format version : 1.0.
# Date of update : 20151120074057
# platform_code,creation_date,update_date,wmo_platform_code,data_source,institution,institution_edmo_code,parameter,last_latitude_observation,
last_longitude_observation,last_date_observation
1900602,2010-01-01T00:00:00Z,2014-12-13T20:56:01Z,1900602,GL_LATEST_TS_PF_1900602 GL_XXXXXX_TS_PF_1900602,IFREMER,1054,DC_REFERENCE POSITIONING_SYSTEM PRES TEMP PSAL,9.96921E36,9.96921E36,2013-04-23T21:36:58Z
1900616,2010-01-01T00:00:00Z,2013-04-06T11:39:35Z,1900616,GL_LATEST_TS_PF_1900616 GL_XXXXXX_TS_PF_1900616,SHOM,540,DC_REFERENCE POSITIONING_SYSTEM PRES PRES_ADJUSTED TEMP PSAL,48.857,-10.431,2010-09-07T12:35:27Z
62024,2010-01-01T00:00:00Z,2015-11-20T06:10:03Z,62024,IR_LATEST_TS_MO_62024 IR_XXXXXX_TS_MO_62024,Puertos del Estado (Spain),2751,DEPH VTDH VTZA VDIR ATMS DRYT WSPD WDIR HCSP HCDT TEMP PSAL,43.645,-3.04443,2015-11-20T05:00:00Z
62092,2010-01-01T00:00:00Z,2015-11-20T06:10:03Z,62092,IR_LATEST_TS_MO_62092 IR_XXXXXX_TS_MO_62092,Marine Institute (Ireland),396,DEPH VTDH VTZA WSPD WDIR,51.2162,-10.5506,2015-11-20T04:00:00Z
```

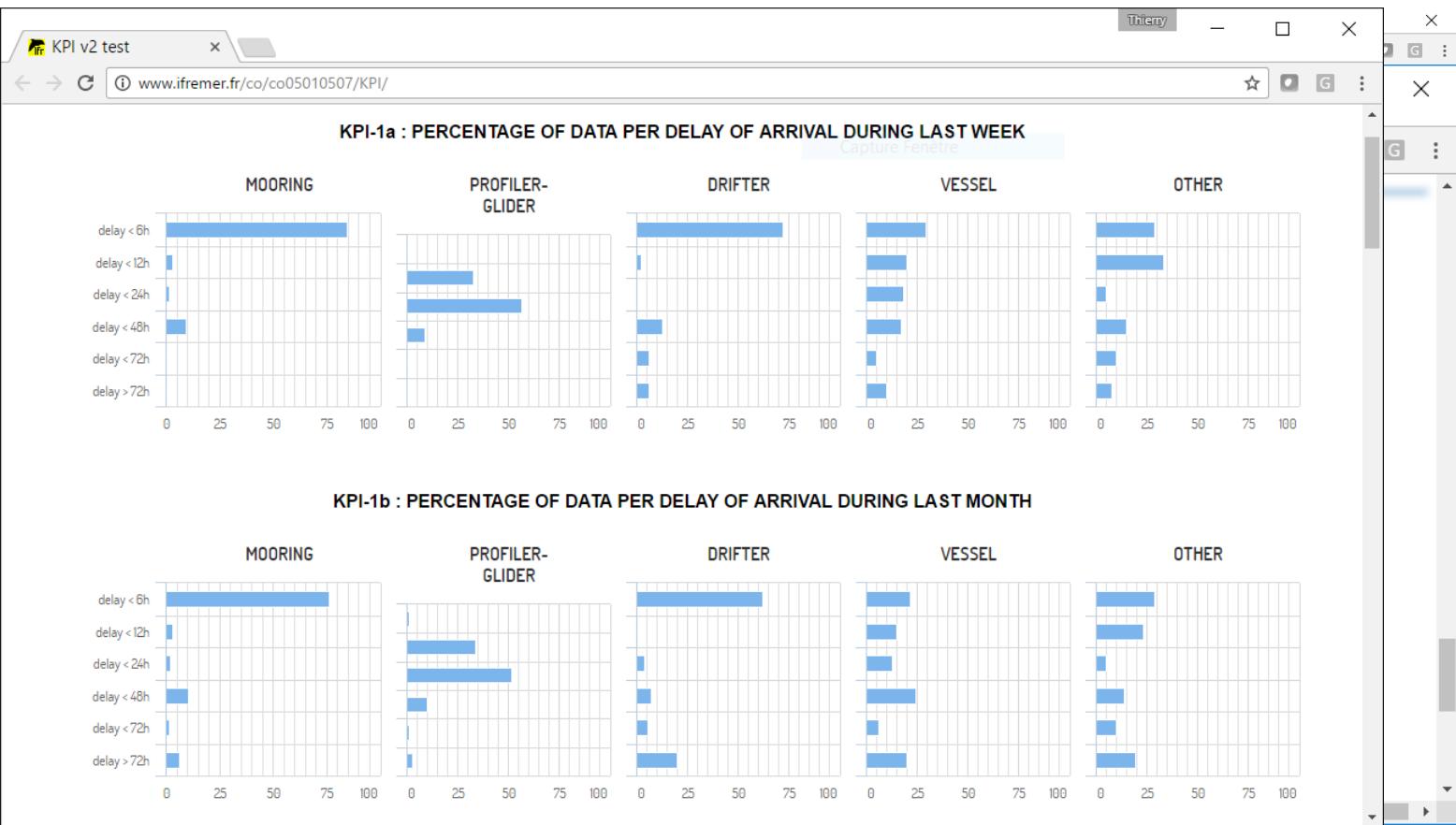
index of the platforms

Indicators

- KPI (key performance indicators)
- User map

<http://www.ifremer.fr/co/co05010507/KPI/>

http://www.ifremer.fr/co/co05010507/user_map.html



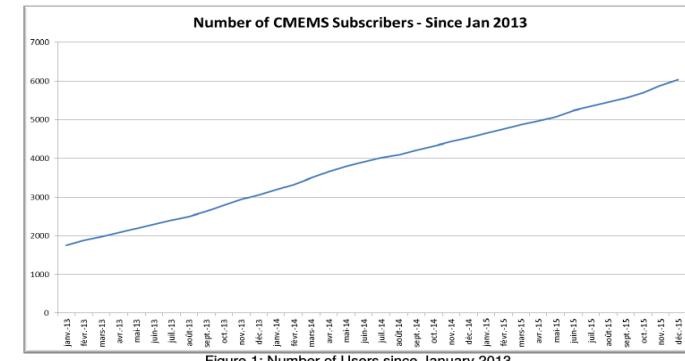
Activity in 2016

- **Technical group**
 - 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**
 - *ESSI1.1: Informatics in Oceanography and Ocean Science EGU General Assembly | Vienna | Austria | 17-22 April 2016*
- **Improve citeability and traceability of data**

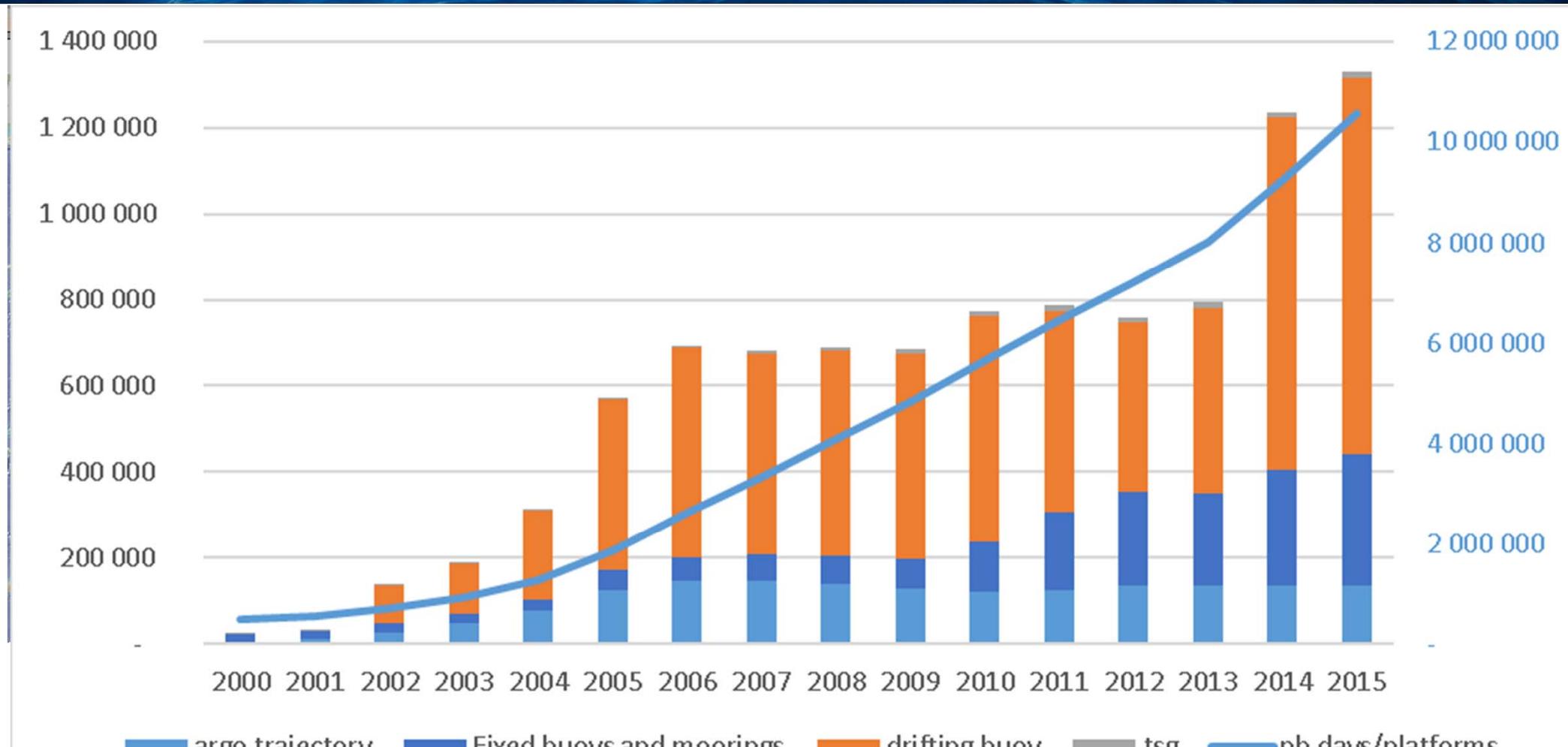
Promote DOI et ORCID for efficient bibliographic surveys and to provide feedback to data providers.

Copernicus marine in situ TAC

- **Fully operational service** since April 2015 CMEMS
Copernicus Marine Environment Monitoring Service
- **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**
In Situ TAC: 105 (2013) -> 313 (2015)



Copernicus in situ TAC, global region, 2015 status



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
 - [http://eurogoos.eu/download/Recommendations-for-RTQC-procedures V1 2.pdf](http://eurogoos.eu/download/Recommendations-for-RTQC-procedures_V1_2.pdf)
 - [http://eurogoos.eu/download/RTQC BGC recommendations v2.5.pdf](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 servicedesk.cmems@mercator-ocean.eu