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Focus on time series from in-situ observations



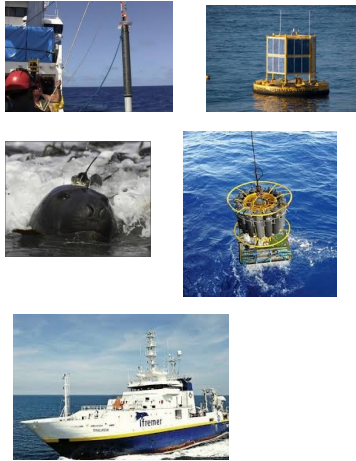
# In-situ Observations



Profilers  
CTD/XBT  
Moorings  
Drifters  
buoys  
Sea gliders  
TSGs

...





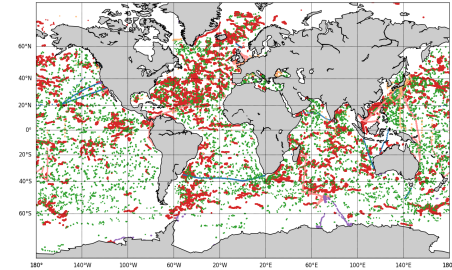
In-situ Measurements

- Regional TAC
- ARGO
- Oceansites
- GTSP
- Scientific campaigns
- GOSUD/EOG/..

Formating + RT validation



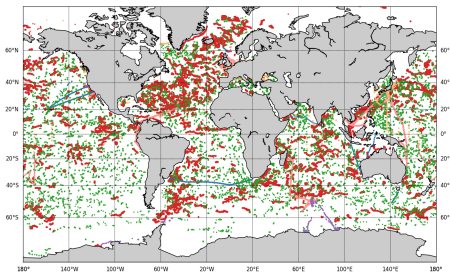
## Real Time Dataset



Validation



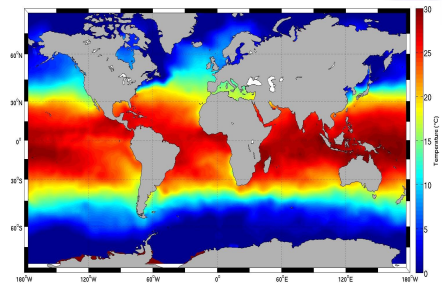
## CORA Dataset



Objective Analysis

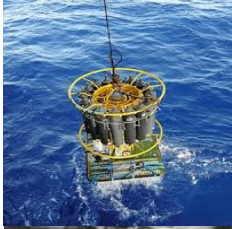


## CORA OA



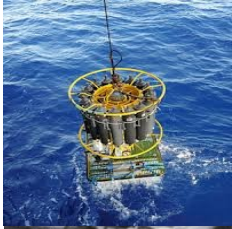
## 1st step : Data collection

- Real-time : observations of year 2015
  - 2 millions de vertical profiles
  - 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

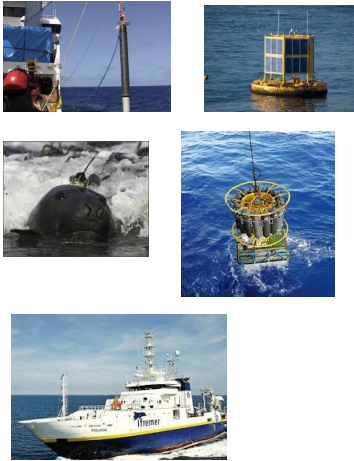


## 2nd step : Data formating/Real time validation

- Formating
  - NetCDF format
  - Uniform metadata
- Quality control and duplicate check
  - Delete the duplicated profiles
  - Run automatic real time quality control checks
- Synchronization between regions







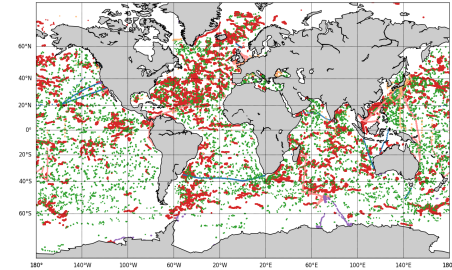
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Formating + RT validation



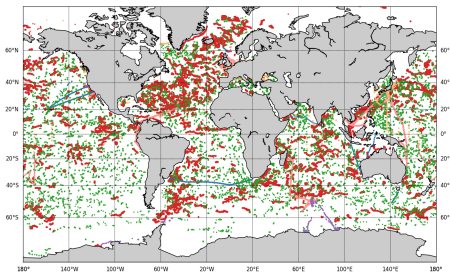
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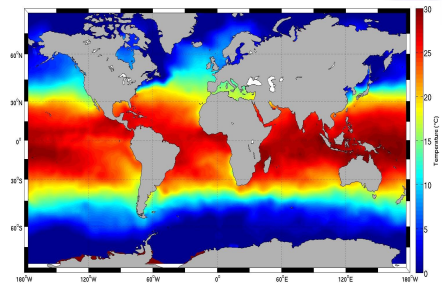
## CORA Dataset



Objective Analysis

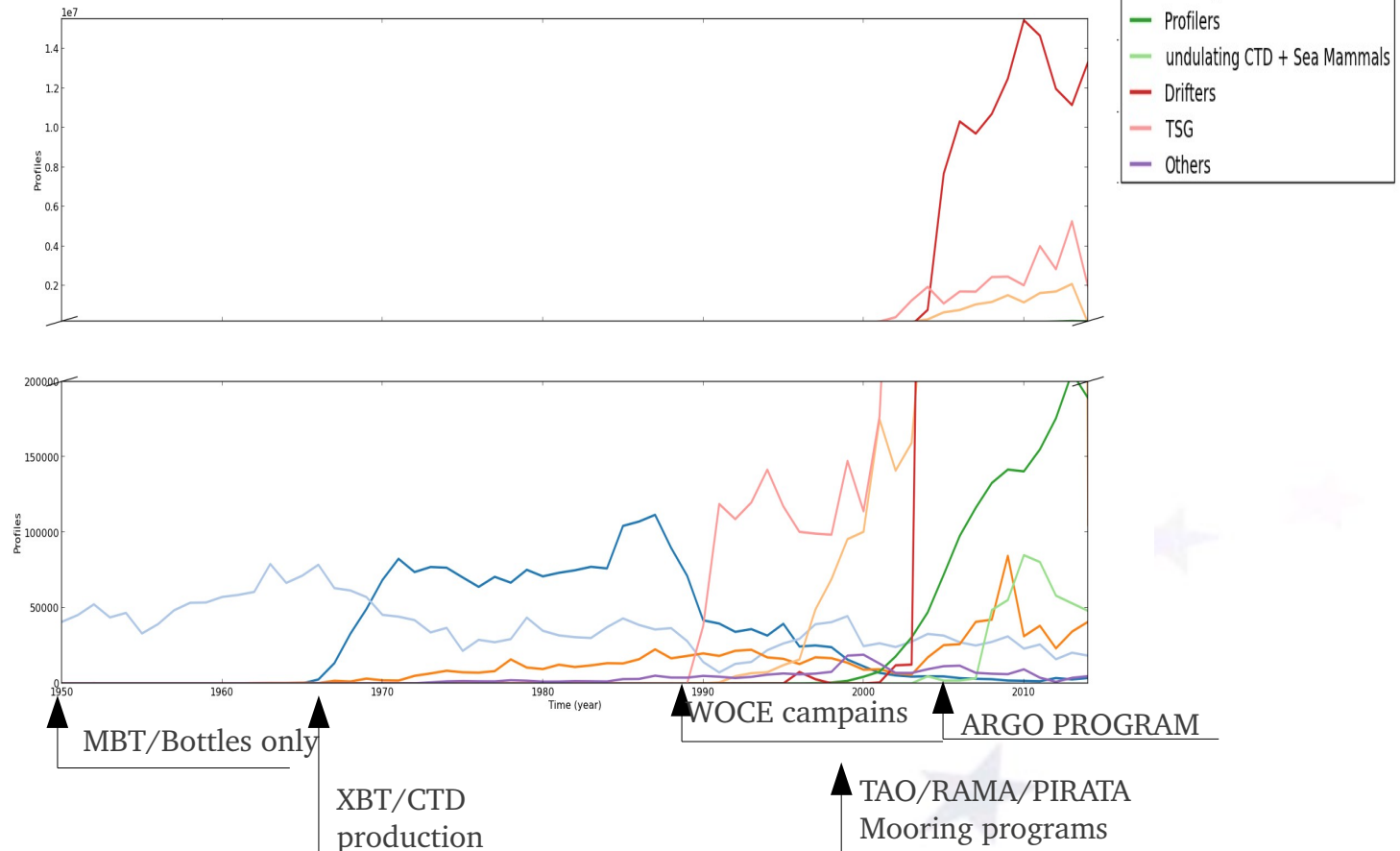


## CORA OA



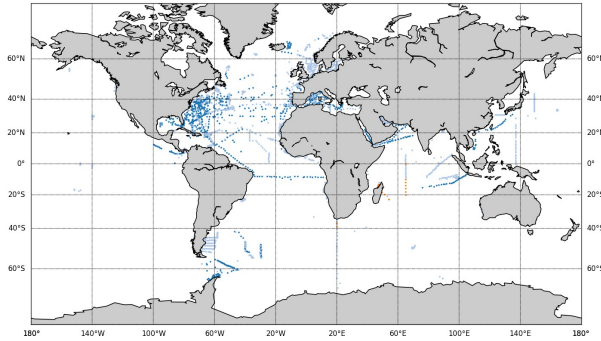
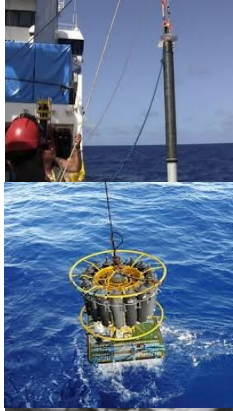


## Available data

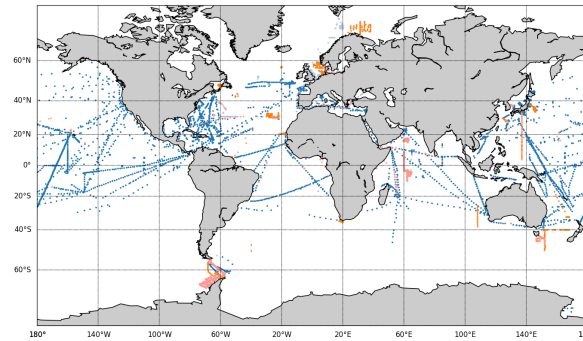




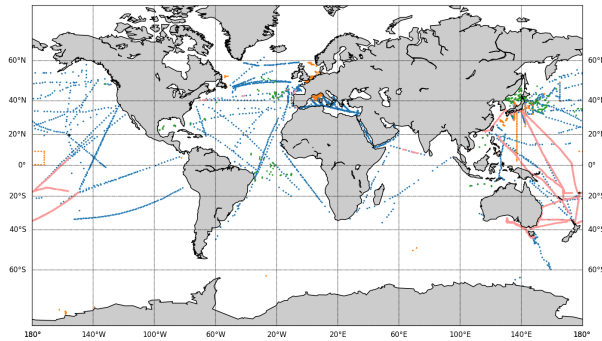
## Available data



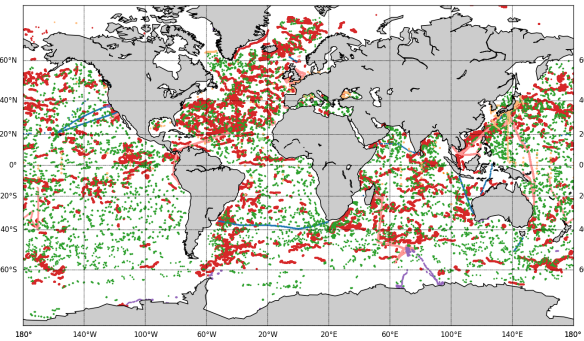
January 1970



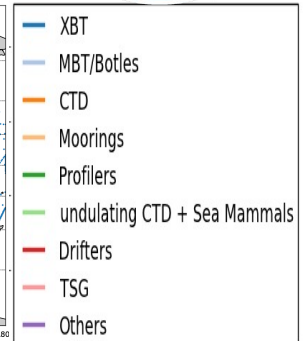
January 1990



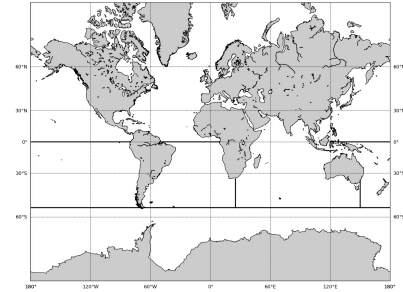
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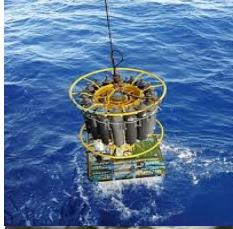
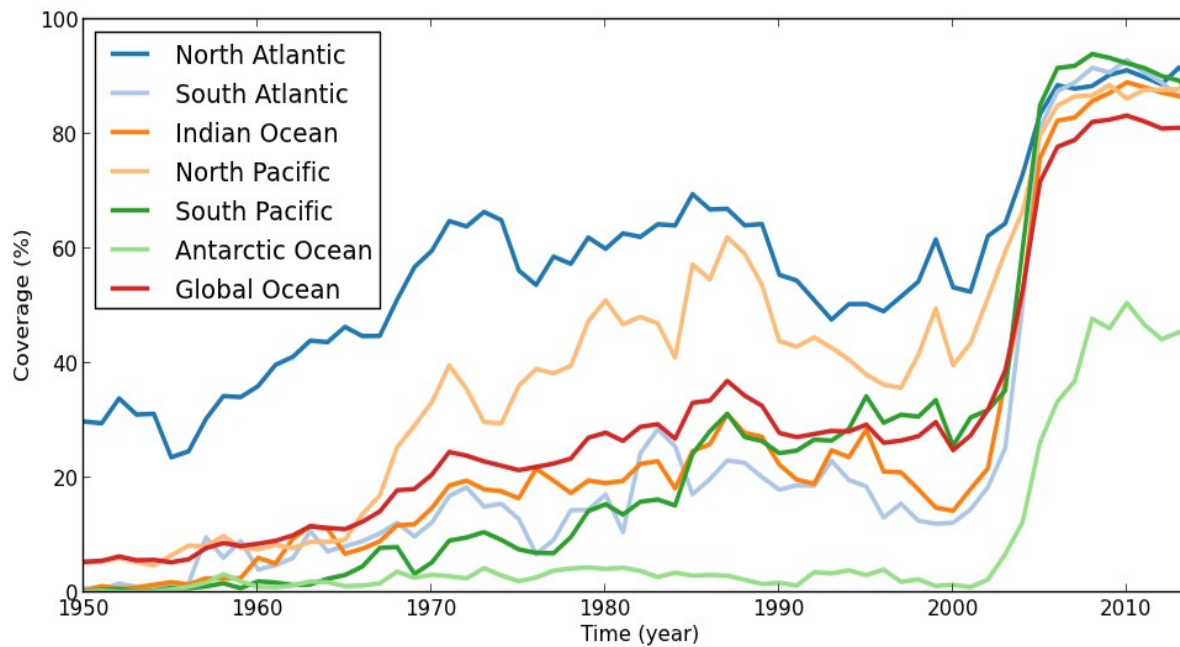
January 2015







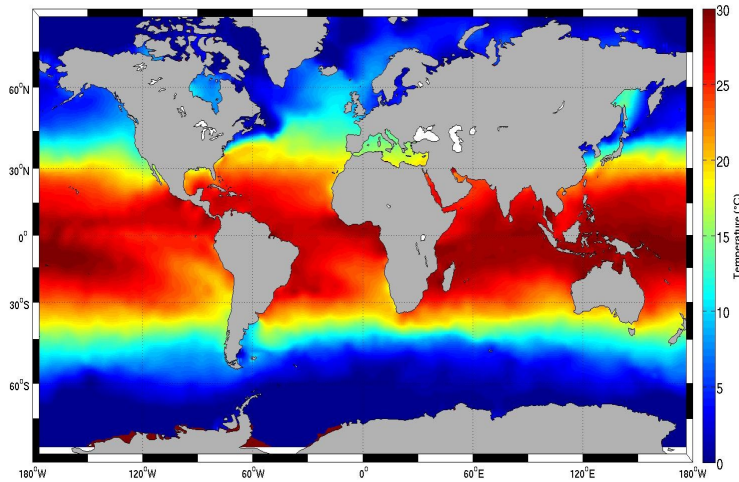
## Ocean basin sampling rates



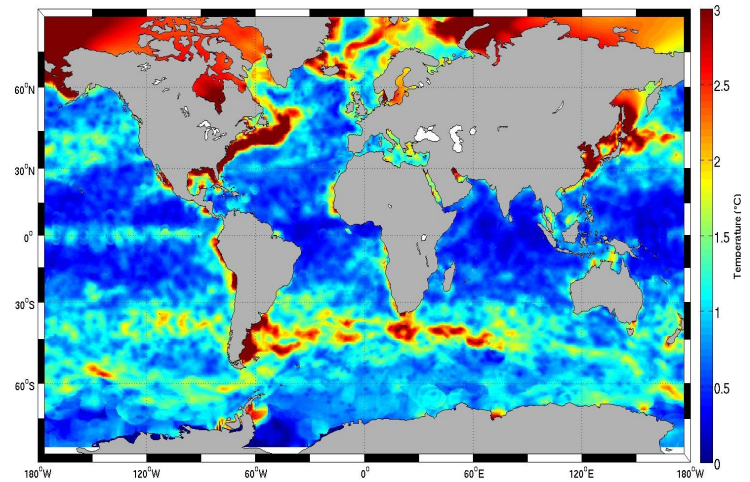


## Objective analysis

TEMP, Jan 2013






TEMP Errorbar, Jan 2013



- Objective analysis on a standard 3d grid
- Global coverage, 1990-2015
- 152 vertical levels
- Easy to handle




## Global Temperature and salinity datasets

	Provider	Coverage	Validation	Data types	Distributed data
<b>CORA 5.0</b>  	Copernicus CMEMS	1950-2015	Semi – Automatic, all levels, Visual control of suspicious data	Profiles + timeseries	All profiles and timeseries + associated flags
<b>EN.4</b>  	Mettooffice.org	1900-2015	Automatic, all levels	Profiles only	Best profiles + meta profiles + flags
<b>WOD13</b>  	Nodc.noaa.gov	1772-2012	Automatic – standard levels validation only	Profiles + timeseries	All profiles + standard level flags



## Global temperature and salinity datasets

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CORA 5.0  	Copernicus CMEMS	1950-2015	Semi – Automatic, all levels, Visual control of suspicious data	Profiles + timeseries	All profiles and timeseries + associated flags

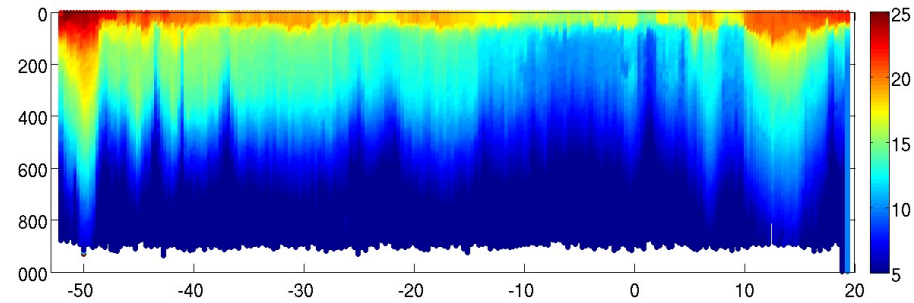
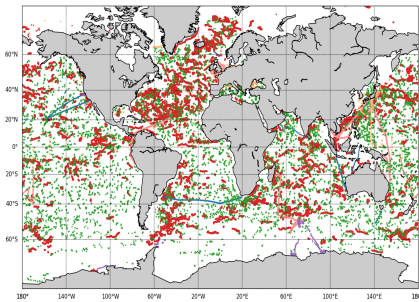
- Designed for **reanalysis** purposes and **climate change studies**
- All profiles are **validated** and **distributed** : good for scientific studies
- Timeseries available (TSG, drifters, etc...): **surface/subsurface** studies
- **Objective analysis** available



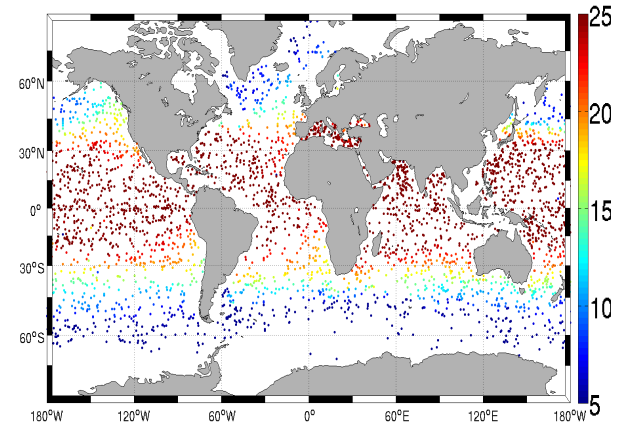
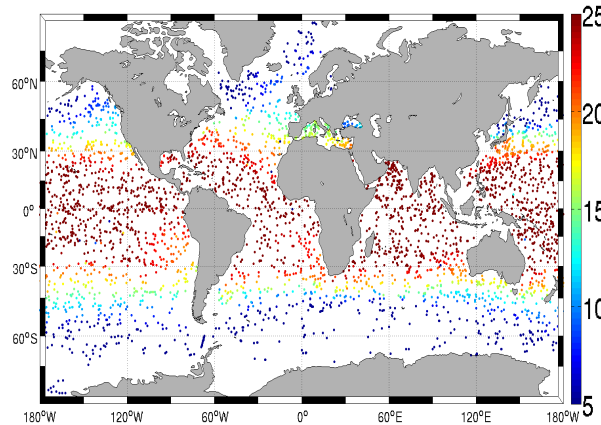
- Displaying measured temperature at global/regional scale



## XBT transect studies



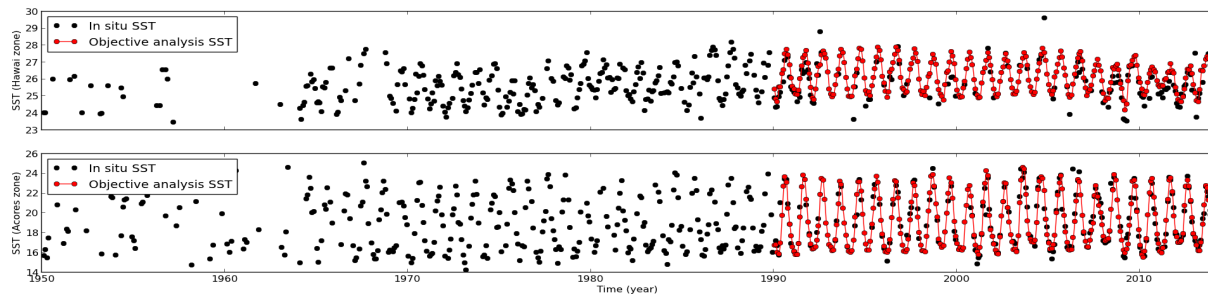
## Global ocean studies Jan 2015/July 2015 ARGO floats



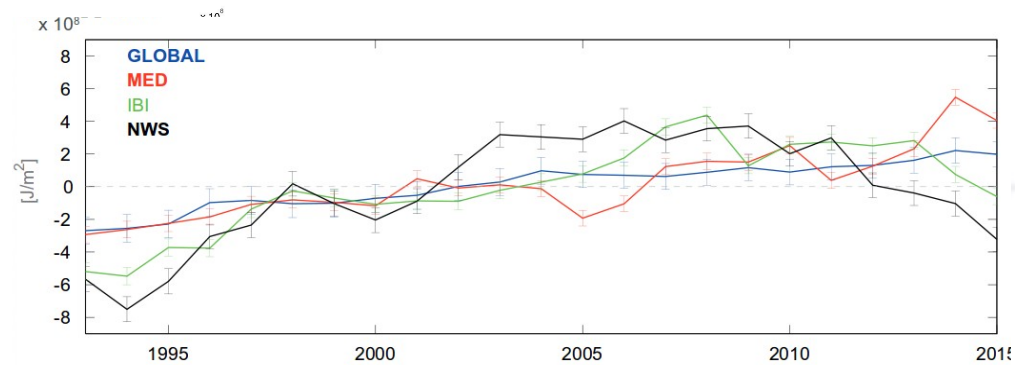
- Study on 2nd order products, global/regional scale



Mean surface temperature in  $3^{\circ} \times 5^{\circ}$  cells around Hawaii and Azores islands



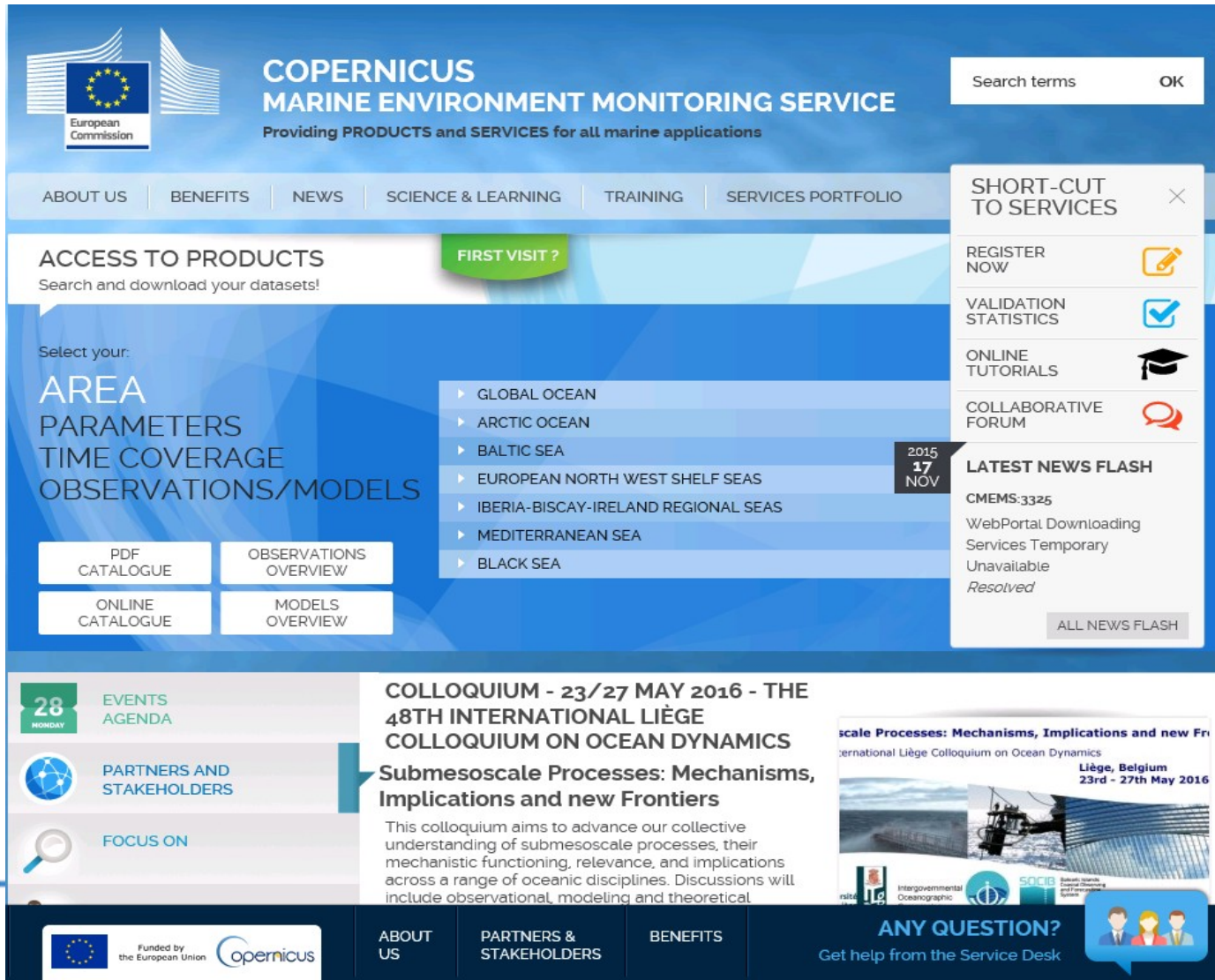
Global heat content estimation (K.VonSchuckmann)





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**AREA**  
PARAMETERS  
TIME COVERAGE  
OBSERVATIONS/MODELS

- ▶ GLOBAL OCEAN
- ▶ ARCTIC OCEAN
- ▶ BALTIC SEA
- ▶ EUROPEAN NORTH WEST SHELF SEAS
- ▶ IBERIA-BISCAY-IRELAND REGIONAL SEAS
- ▶ MEDITERRANEAN SEA
- ▶ BLACK SEA

2015  
17  
NOV

PDF CATALOGUE | OBSERVATIONS OVERVIEW  
ONLINE CATALOGUE | MODELS OVERVIEW

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WebPortal Downloading Services Temporary Unavailable  
*Resolved*  
ALL NEWS FLASH

**28 MONDAY** EVENTS AGENDA

**PARTNERS AND STAKEHOLDERS**

**FOCUS ON**

**COLLOQUIUM - 23/27 MAY 2016 - THE 48TH INTERNATIONAL LIÈGE COLLOQUIUM ON OCEAN DYNAMICS**  
**Submesoscale Processes: Mechanisms, Implications and new Frontiers**  
This colloquium aims to advance our collective understanding of submesoscale processes, their mechanistic functioning, relevance, and implications across a range of oceanic disciplines. Discussions will include observational modeling and theoretical

**scale Processes: Mechanisms, Implications and new Frontiers**  
International Liège Colloquium on Ocean Dynamics  
Liège, Belgium  
23rd - 27th May 2016

Intergovernmental Oceanographic Commission (IOOC) | Scientific Committee on Oceanic Research (SCOR) | International Oceanographic Commission (IOC)

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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**

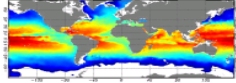
- All observations/models
- Models (0)
- Satellite Observations (2)
- In Situ Observations (18)



**GRID TYPE**

**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

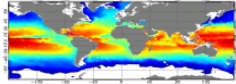




MORE INFO 
ADD TO CART 

**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

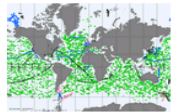




MORE INFO 
ADD TO CART 

**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




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BENEFITS

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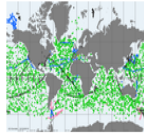
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### GLOBAL OCEAN- IN-SITU NEAR-REAL-TIME OBSERVATIONS

**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

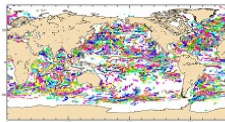
ADD TO CART

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 OCEAN- DELAYED MODE IN-SITU OBSERVATIONS OF OCEAN SURFACE CURRENTS

**In-situ-observation, Currents, Multi-year, Global-ocean**

INSITU\_GLO\_UV\_L2\_REP\_OBSERVATIONS\_013\_044



MORE INFO

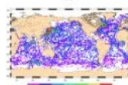
ADD TO CART

For the Global Ocean - In-situ observation yearly delivery in delayed mode of Ocean surface currents.

### GLOBAL OCEAN- CORA- IN-SITU OBSERVATIONS YEARLY DELIVERY IN DELAYED MODE (1950-2014)

**In-situ-observation, Salinity, Temperature, Multi-year, Global-ocean**

INSITU\_GLO\_TS\_REP\_OBSERVATIONS\_013\_01\_b



MORE INFO

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For the Global Ocean- In-situ observation yearly delivery in delayed mode. The In Situ delayed mode product designed for reanalysis purposes integrates the best available version of in situ data for temperature and salinity measurements. These data are collected from main global networks (Argo, GOSUD, OceanSITES, World Ocean Database) completed by European data provided by EUROGOOS regional systems and national system by the regional INS TAC components. It is updated on a yearly basis. The time coverage has been extended in the past by integration of EN4 data for the period 1950-1990.

- Available In-Situ products
  - **Global ocean NRT observation**
    - Many parameters
  - Delayed time mode **in-situ currents** from drifters
    - Meridional and zonal velocities
  - *CORA datasets*
    - <http://doi.org/10.17882/46219>
- **Soon :**
  - Updates of the products
  - New in-situ product : **wave measurements**
- **Any question, any time :**