

# Dissolved oxygen : seafloor and water column data, from sensor to users

Data management : Dissolved oxygen data in the Coriolis Data center

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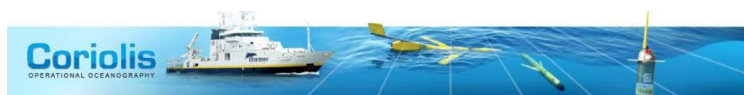
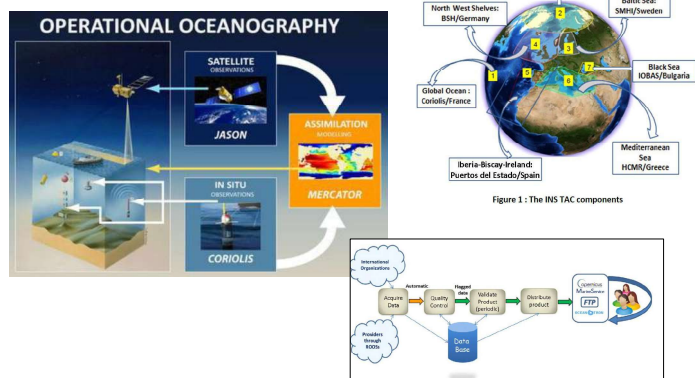
## What is Coriolis ?

7 French institutes contributing to the French operational oceanography program for the in-situ observations.

- Organize and maintain data acquisition in real-time and delayed mode of in-situ measurements necessary for operational oceanography.
- Manage and distribute data from the main global ocean observing networks as well as from agencies operating observing systems in Europe  
→ <http://marine.copernicus.eu/> ([www.marineinsitu.eu](http://www.marineinsitu.eu))
- Contribute to develop and improve the quality of the NRT and Delayed mode QC procedure



## Coriolis Data Center



## In situ Coriolis data is essential for reducing error in data assimilation

Turpin et al., *Ocean Sci.* 2016

Table 1. List of OSEs carried out as part of this study.

	SST	Altimeter SLA	Argo	Other in situ
Run-Ref	yes	yes	100% of the array	yes
Run-Argo2	yes	yes	50% of the array	yes
Run-NoArgo	yes	yes	no	yes
Free Run	no	no	no	no

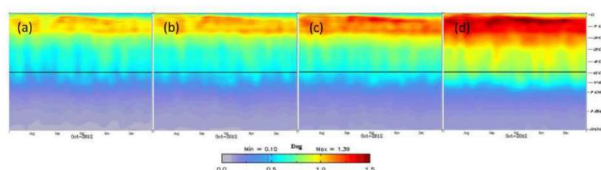
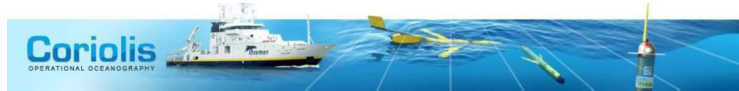
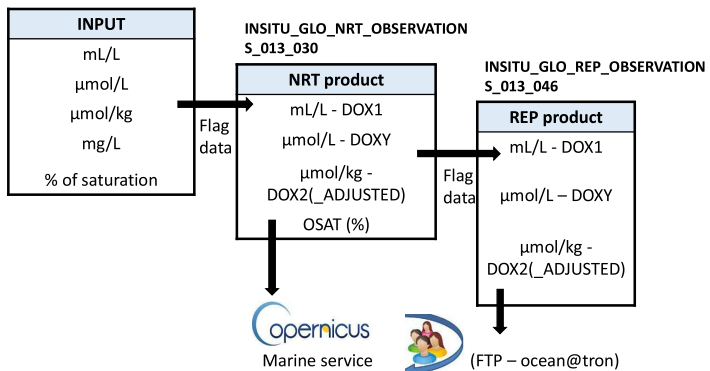


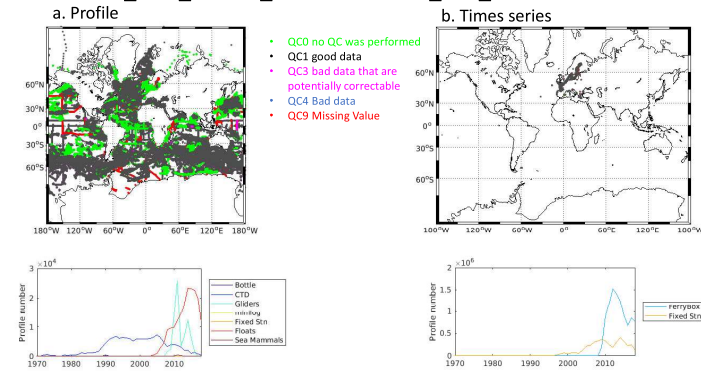
Figure 13. RMS time series of the temperature innovations for Run-Ref (a), Run-Argo2 (b), Run-NoArgo (c) and Free Run (d) in the last 6 months of the experiments.



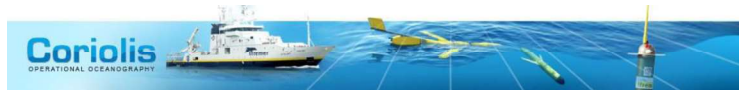
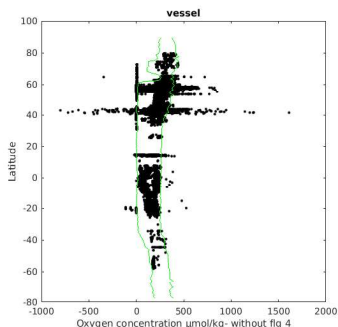
### Dissolved oxygen data in the Coriolis Data center



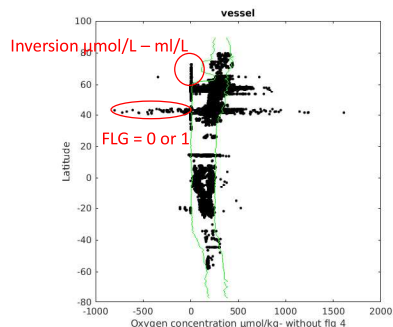
### Dissolved oxygen data in the Coriolis Data Center NRT\_GLO\_INSITU\_OBSERVATIONS\_013\_030



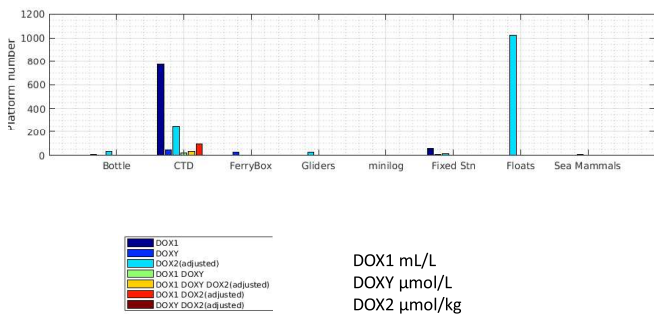
### Dissolved oxygen data in the Coriolis Data Center NRT\_GLO\_INSITU\_OBSERVATIONS\_013\_030



### Dissolved oxygen data in the Coriolis Data Center NRT\_GLO\_INSITU\_OBSERVATIONS\_013\_030

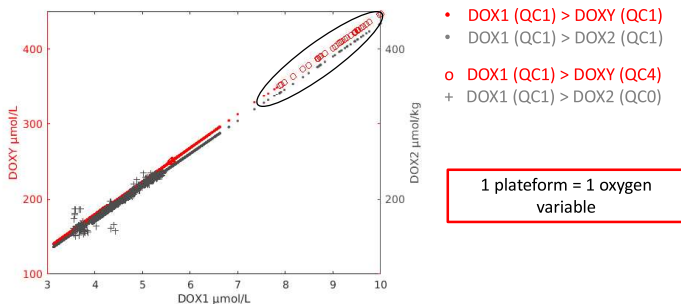


### Dissolved oxygen data in the Coriolis Data Center NRT\_GLO\_INSITU\_OBSERVATIONS\_013\_030



### Dissolved oxygen data in the Coriolis Data Center

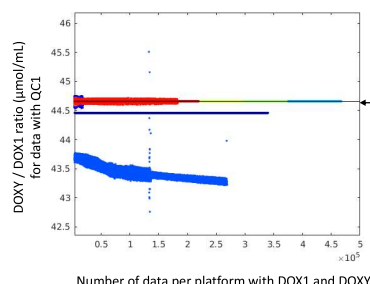
Example for the GL\_PR\_CT\_FGTO\_2012.nc : DOX1 + DOXY + DOX2  
 QC0 = No QC was performed QC1 = good data QC4 = bad data





## Dissolved oxygen data in the Coriolis Data Center

"DOXY, DOX1 and DOX2 are all oxygen concentrations in different units. DOX1 can be converted to DOXY knowing that 1  $\mu\text{mol}$  of oxygen is equal to 0.022391 mg. DOX2 can also be converted using knowledge of density."



Example for CTD platform with more than one oxygen variable

### SCOR WG 142 :

DOXY ( $\mu\text{mol/L}$ ) =  $44.6596 \times \text{DOX1 (mL/L)}$   
 $M_{\text{O}} = 22.3915 \text{ L}_{\text{STP}}/\text{mol}$

DOX2 ( $\mu\text{mol/kg}$ ) = DOXY ( $\mu\text{mol/L}$ ) / rho (ref. 0 dbar) (Kg/L)

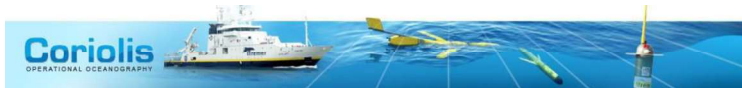


## Recommendation – Best practice

- Apply good QC
- Provide oxygen with one units
- Use SCOR (142) recommendation for conversion
- Provide informations used for oxygen conversion (T,S,P)
- Provide informations from sensor – calibration ...

## On going WORK

- Work to improve NRT-REP procedure (spike test, Global – Regional – Local range test, objective analysis)
- A delayed mode (REP) oxygen product will be released in April 2019 with only 1 units ( $\mu\text{mol/L}$  or  $\mu\text{mol/kg}$ )  
**INSITU\_GLO\_REP\_OBSERVATIONS\_013\_046\_v2**



### CMEMS INSTACT meeting 9-11 October 2018

From P. Bahrel – Mercator Ocean

« Need more biogeochemistry »

« Need better integration with models...and better quality for real time and reanalyses »