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## **PIRATA - FR29**

FILTERING: POC, SPM, CDOM & pH

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## MANUAL PURPOSE:

This manual is intended to provide instructions for filtering for Particulate Organic Carbon (POC), Suspended Particulate Matter (SPM), Colored Dissolved Organic Matter (CDOM) and pH during the PIRATA FR29 Cruise Survey at the Thalassa Research Vessel (Ifremer/Genavir). These data are often used to provide ground truth from comparison with other data (e.g. satellite-derived remote sensing, numerical ocean modeling, etc.).

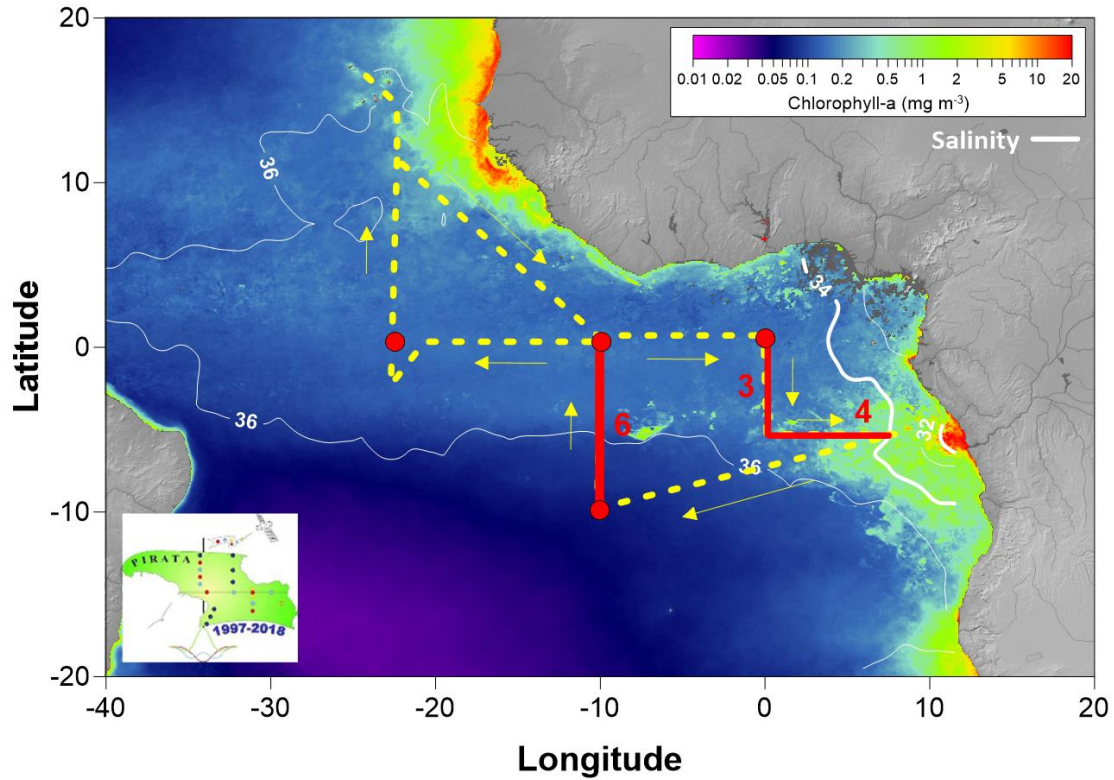
## BACKGROUND:

During the research cruise, four products are filtered for. These include:

- (i) **POC:**
  - used to determinate material derived from decaying vegetation, bacterial growth, and metabolic activities of living organisms or chemicals;
  - can affect light penetration in aquatic ecosystems, which is important for the ecosystem's phototrophs that need light to subsist;
  - sample is filtered on an 0.7  $\mu\text{m}$  fiberglass filter with 47 mm diameter.
- (ii) **SPM**
  - composed of mineral and organic fractions;
  - predominantly composed of detritus, except during phytoplankton blooms when living organic matter predominates;
  - also sampled with 0.7  $\mu\text{m}$  fiberglass filter with 47 mm diameter.
- (iii) **CDOM**
  - aka colored dissolved organic matter, chromophoric dissolved organic matter, yellow substance or *gelbstoff*;
  - collected from the filtrate of the POC or SPM then filtered on 0.2  $\mu\text{m}$  acetate filter and the sample and stored in 100 ml amber bottles;
  - the absorbance properties of the sample are immediately obtained through spectrophotometry onboard.
- (iv) **pH**
  - caused by the uptake of carbon dioxide ( $\text{CO}_2$ ) from the atmosphere;
  - potentially harmful consequences for marine organisms, such as depressing metabolic rates and immune responses in some organisms, and causing coral bleaching;
  - collected from the filtrate of the POC or SPM then filtered on 0.2  $\mu\text{m}$  acetate filters, the absorbance properties of the sample are immediately obtained through spectrophotometry onboard.

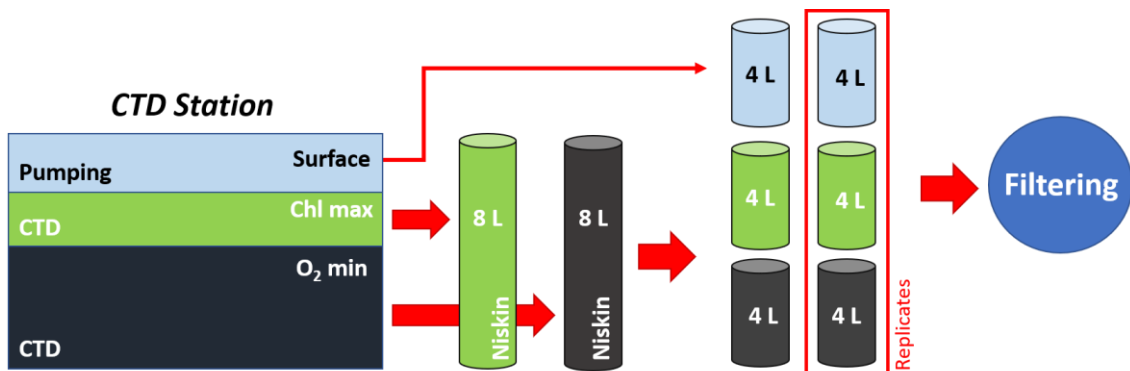
## SAMPLING STRATEGY:

During the research cruise, three Conductivity Temperature Density (CTD) sessions (3, 4 and 6) determined on the *Resume\_campagne\_FR29* report will provide collected water from Niskin bottles at each  $0.5^\circ$  of latitude and longitude as showed in the Figure 1.











**Figure 1.** PIRATA FR29 route. Composite of chlorophyll-a from MODIS/Aqua and salinity from Aquarius for march climatology is provided for sampling strategy during the cruise.






At each CTD session, three samples: surface, maximum of chlorophyll-a (Chl-a max) and minimum of oxygen ( $O_2$  min) will be collected for products filtering (see background).



**Figure 2.** Water obtention for filtering

## EQUIPMENT

Name	Quantity	Size/Volume	Picture
Filtrating Flask	1 (Filtrate) 1 (Waste)	1 L 1 L	
Funnel	1	-	
Filter base	1	-	
Beaker	1	500 mL	
Graduated cylinder	1	1 L	
Clamps	1	-	
Tubing	2	-	-
Vacuum pumps	1	-	
Waste bucket	1	-	
Tweezers	1	-	

DI water	1	18.9 L	
Whatman GF/F filter paper: 0.7 $\mu$ m for POC and SPM	1 per sample	-	
Pall Corporation filter paper: 0.2 $\mu$ m for CDOM	1 per sample	-	
Amber bottles	1 per sample	100 mL	
Envelopes and Plastic bags	1 per sample		

## GENERALIZED FILTERING WORKFLOW

