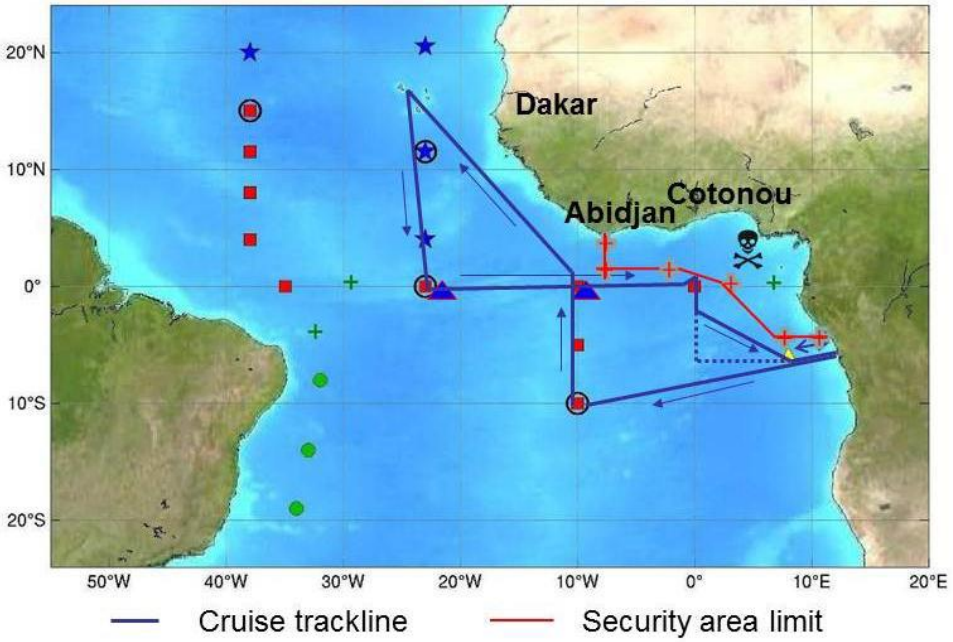
OCEANOGRAPHIC CAMPAIGN OF PIRATA-FR25

Campaign chart



Schedule (to +/- 1 day)

7th March – 12th April 2015 (Mindelo-Mindelo)

Day	Date	Transit Station Profile	Latitude Longitude	Speed	Work
D1	07/03	Stopover	16°5N/24°55W	0	Preparation in Cabo-Verde (1 day)
D2	08/03	Departure	16°5N/24°55W	11	Depart towards 23°W-0°N
D2-D6	08-12/03	Transit		11	Transit: XBT and surface samples (1 CTD test)
D6	12/03	Station	0°N/23°W	0	ATLAS buoy replacement; CTD profile
D7-D9	13-15/03	Transit		11	Transit: XBT and surface samples
D9-D11	15-17/03	Station	0°N/10°W	0	ATLAS buoy replacement; CTD profile; replacement ADCP mooring
D11-D14	17-20/03	Transit		11	Transit: XBT and surface samples
D14	20/03	Section profiles	1°N-0°E	10,5	Radial 0°E
D14-D15	20-21/03	Station	0°N/0°E	0	ATLAS buoy replacement; CTD profile; deployment ADCP mooring
D15-D16	21-22/03	Section profiles	2°S-0°E	10,5	Radial 0°E to 2°S **(OR 6°S… ?)**

D16-D18	22-24/03	Transit		11	Transit: XBT and surface samples
D18-D19	24-25/03	Station	6°S/8°E	0	ATLAS buoy replacement; CTD profile
D19-D20	25-26/03	Section profiles	10°S à 6°S	10.5	Radial SE-Pointe-Noire: CTD profiles every ½º longitude
D20-J25	26-31/03	Transit		11	Transit: XBT and surface samples
D25-D26	31/03-01/04	Station	10°S/10°W	0	ATLAS buoy replacement; CTD profile
D26-D27	01-02/04	Section profiles	10°S-6°S/10W	10.5	Radial 10°W : CTD profiles every ½º longitude
D27-D28	02-03/04	Station	6°S/10W	0	ATLAS buoy replacement; CTD profile
D28-D31	03-06/04	Transit/profiles	6°S-1°30N	10.5	Radial 10°W to 1°30'N: CTD profiles every ½º longitude
D31-D36	06-11/04	Transit	Retour	11	Transit: XBT and surface samples
D37	11-12/04	Stopover and end	16°5N/24°55W	0	Arrive and end in Cabo Verde

Expected Results

- On-site maintenance of 6 PIRATA ATLAS moorings (recovery-deployment at 23ºW-0ºN, 0ºE-0ºN, 10ºW-10ºS, 10ºW-6ºS, 10ºW-0ºN, 8ºE-6ºS).
- On-site maintenance of an ADCP current-meter mooring at 10ºW-0ºN.
- On-sire deployment of an ADCP current-meter mooring at 0ºE-0ºN.
- Deployment of 2 SVP-BS drifters (temperature, salinity and pressure measurements) (1 INSU and 1 Météo-France).
- Deployment of 3 bathythermic string drifters (0-80m).
- Deployment of 8 ARGO profiling floats (temperature and salinity measurements from 0-2000m every 10 days).
- Temperature profiles obtained by XBT releases (~100).
- Current measurements obtained by hull-mounted ADCP.
- Temperature profiles obtained through CTD-O2 profiles at the mooring sites, between moorings along 10ºW (at every ½ degree) and along 3 or 4 sections: one trans-equatorial at 0ºE or 3ºW, one South-East of the Gulf of Guinea along 6ºS, one off the coast of Congo,…
- Sea surface temperature and salinity measurements obtained through the hull-mounted thermosalinograph.
- Seawater sampling (at surface during transit and in depth during profiles) for on-board analyses of salinity and dissolved oxygen, and later laboratory analyses for nutrients, pigments and CO2 (DIC and TA) and C13 (C13 and O18) parameters.
- *Eventual acoustic measurements using ship probes (to be confirmed).*

(Detailed work plan in French version of document)

General program to which this survey belongs

PIRATA («Prediction and Research Moored Array in the Tropical Atlantic») is an operational oceanography program established in 1997 under the auspices of the international program CLIVAR («Climate and Ocean – Variability, Predictability and Change») and carried out by a multinational cooperation (France, Brazil, USA, countries engaged through Memoranda of Understanding). PIRATA provides the primary network of observations in the Tropical Atlantic (CLIVAR, OOPC, GOOS, GCOS) for climatic predictions and research, and contributes to OceanSITES.

Since 2001, the French part of PIRATA received the ORE ("Observatory of Research on the Environment") label and is funded by Météo-France, IRD, l'Observatoire Midi-Pyrénées and punctually by INSU. Evaluated in 2009 for the establishment of new SOEREs ("System of Observation and Experimentation, on the long term, for Environmental Research"), PIRATA was labelled as a SOERE in February 2010. In January 2011, PIRATA was labelled "Ocean-Atmosphere Observation Service" by the CSOA of INSU and is an integrated part of the SOERE "CTDO2" (Coriolis-Time Deferred Oceanic Observations).

PIRATA is a tool for the study of ocean-atmosphere interactions in the Tropical Atlantic and their role in the regional climate variability at seasonal, interannual or longer time-scales. PIRATA maintained 10 ATLAS buoys from 1997 to 2005, and since the summer of 2013, maintains a network of 18 buoys (subsequent extensions of 3 buoys off the coast of Brazil, 2 along 23ºW, 2 along 20ºN and one off the coast of Congo at 6ºS-8ºE). The ATLAS meteo-oceanic buoys enable scientists to describe and understand how the sea-surface thermal structure evolves, the ocean-atmosphere heat and freshwater exchanges, the spatial and temporal variations of quantity of movement. The oceanic observations (temperature and salinity from surface to 500 m depth), complemented by the meteorological ones at the ocean surface (wind, relative humidity, air temperature, precipitation, short wave incoming radiation), are transmitted daily via ARGOS and are available in near real-time on Internet.

France is responsible for 6 ATLAS-type moorings and 2 current-meter moorings located at 10ºW-0ºN (deployed in 2006 under EGEE/AMMA and under PIRATA since 2008) and 23ºW-0ºN (from the international PIRATA network), as well as a tide gauge located in São Tomé (0ºN-6ºE).

Specifically

The PIRATA-FR25 campaign is to enable the maintenance of the 6 ATLAS sites, at 23ºW-0ºN, 0ºE-0ºN, along 10ºW (10ºW-10ºS, 10ºW-6ºS, and 10ºW-0ºN) and at 8ºE-6ºS. The pCO2 sensor installed on the 10ºW-6ºS buoy is also to be replaced (PI: N. Lefevre). The current-meter mooring at 10ºW-0ºN is to be replaced and the one at 23ºW-0ºN will be replaced by GEOMAR in 2016 (previously replaced in 2014). A new ADCP mooring at 0ºE-0ºN is also to be deployed, as a commitment of PIRATA-FR with the EU FP7 PREFACE project and partners from TAV/CLIVAR (formerly TACE), thus enabling current measurements in 3 longitudes along the equator. Turbulence and OTN sensors are to be installed on the 6 ATLAS buoys.

The PIRATA-FR25 campaign will allow, as in previous years, to validate the transits for performing measurements (CTDO2-LADCP profiles) along sections at 10ºW (repeated early), 3ºW or 0ºE, 6ºS and off the coast of Congo. One drifter is to be deployed (SVP-BS for INSU/SOERE CTDO2, PI: G. Reverdin) as well as ARGO profilers for CORIOLIS. Seawater samples (surface and at the CTD stations) are to be taken for analysis of salinity, nutrients,

carbon parameters (DIC, C13) and primary production (pigments). The deployment of bathythermic string drifters is also planned (as a contribution to AtlantOS).

Participants (list to be finalised)

Surname	**Name**	**Expertise** (geology, physics, chemistry, biology, mechanics, electronics, informatics, etc.)	**Responsibility and role on-board** (data, analyses, etc.)	**Employer**
GRELET	Jacques	Electronics	ATLAS, CTD/LADCP	IRD
ROUBAUD	Fabrice	Electronics	ATLAS, CTD/LADCP	IRD
BAURAND	François	Chemistry	Acquisition and chemical analyses	IRD
BOURLES	Bernard	Physics	Chief Scientist	IRD
GAULTIER	Lucille	Physics	Acquisition CTD/LADCP	Post Doc USA
LOPES	Dominique	Physics	Acquisition CTD/LADCP	IRD
HERBERT	Gaëlle	Physics	Acquisition CTD/LADCP	IRD
SERAZIN	Guillaume	Physics	Acquisition CTD/LADCP	Université Grenoble
FERRANT	Anthony	Physics	Acquisition CTD/LADCP	IFREMER
YOUENOU	Agnès	Chemistry	Acquisition and chemical analyses	IFREMER
MARTIN GOMEZ	Mercedes	Physics	Acquisition CTD/LADCP	UCM
HABASQUE	Jérémy	Physics	Acoustic acquisition	IRD