

PIRATA FR25 SURVEY

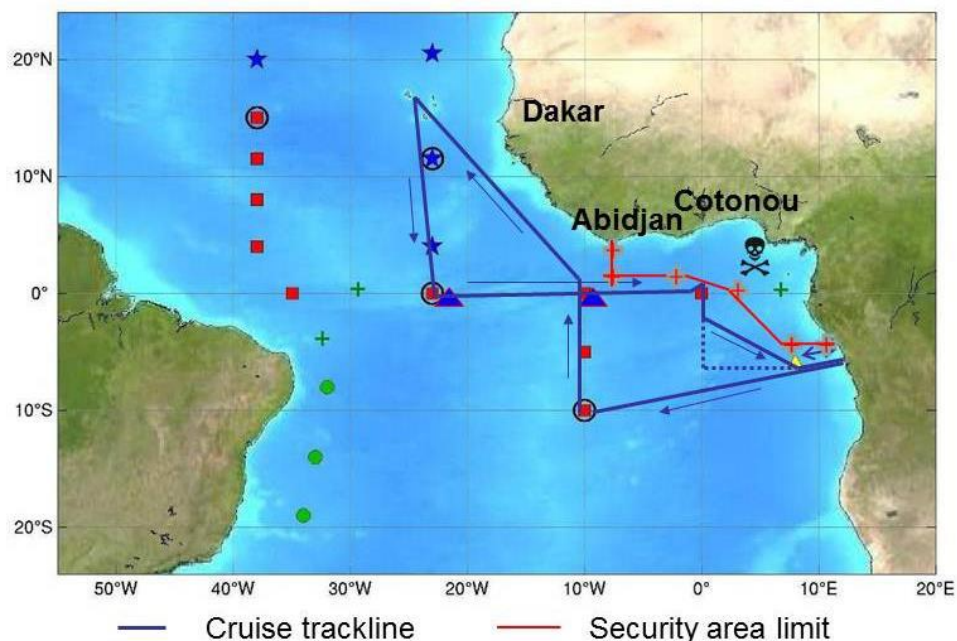
The PIRATA FR25 survey from Mindelo, Cape Verde, terminated on 26th April 2015. Due to logistical issues leading to the late arrival of PIRATA material from USA, the survey had to be modified and its objectives reduced. The initial work plan and the one effectively accomplished are described here under.

PIRATA FR25 survey objectives and accomplished work

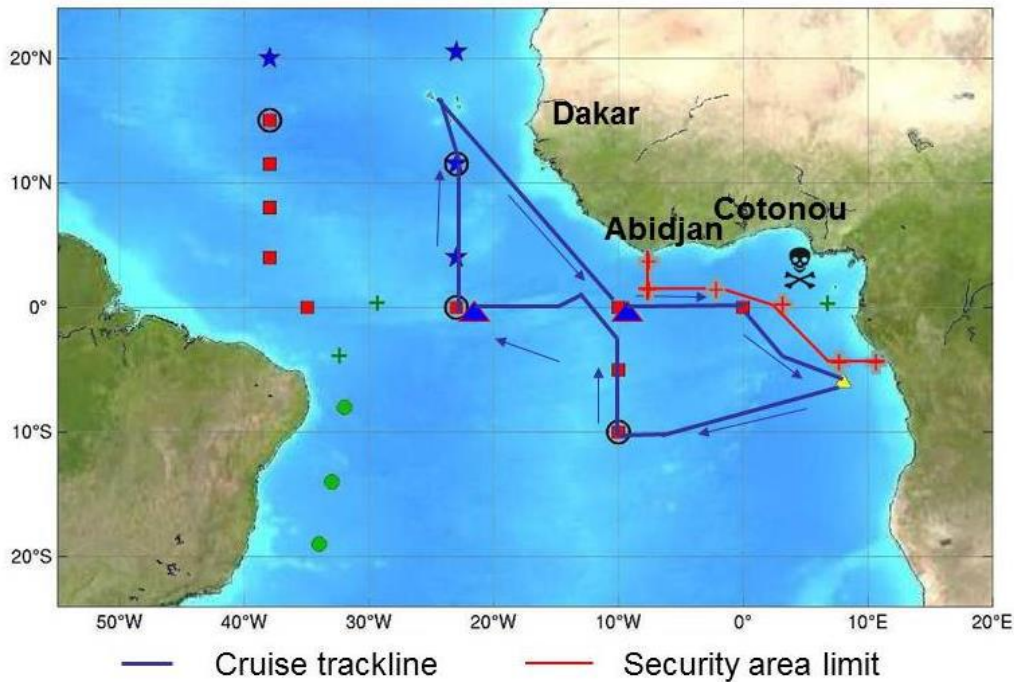
The PIRATA FR25 survey should have enabled the maintenance of 6 ATLAS sites, at 23°W-0°N, 0°E-0°N, along 10°W (10°W-10°S, 10°W-6°S, et 10°W-0°E) and at 6°S-8°E, in addition to the current meter mooring at 10°W-0°N. A new ADCP mooring at 0°E-0°N should also have been deployed, as a commitment by PIRATA-FR to the project EU FP7 PREFACE (GA n. 603521) and to TAV/CLIVAR (*e.g.* TACE) partners, thus enabling current measurements along 3 longitudes on the equator (23°W, 10°W et 0°E). Additionally, turbulence sensors (xpods) and OTN receptors should have been installed.

The PIRATA surveys likewise carry out surface and 2000m depth CTDO2-LADCP profiles along sections at 10°W (repeated annually), 3°W or 0°E, 6°S and off the coast of Congo. They also contribute to the deployment of ARGO profilers and SVP-BS drifters, to carry out thermal profiles (XBT) and to collect numerous sea water samples (at sea and during CTD stations) for the analysis of salinity, nutrients, carbon parameters (DIC, C13) and primary production (pigments).

The survey's initial plan was the following:



Logistical issues (transport and delivery delays of the container from USA with material necessary for replacement of the ATLAS buoys) constrained us to reduce the survey by 10 days and to limit ourselves to the essential PIRATA tasks. Indeed, instead of taking 38 days, the PIRATA FR25 survey lasted 29 days, from 18th March to 15th April 2015, and the sections with CTDO2-LASDCP had to be cancelled. Nonetheless, numerous other operations were achieved during transit. The plan followed was the following:



Work achieved successfully:

- Replacement of 6 ATLAS PIRATA moorings at 23°W-0°N, 10°W-10°S, 10°W-6°S, 10°W-0°N, 0°E-0°N, and at 8°E-6°S (PIRATA/PREFACE « Kizomba » buoy). Almost 100% of the deployed sensors are working perfectly and transmitting their data: see <http://www.pmel.noaa.gov/pirata/>.
- Addition of 5 turbulence sensors (Xpods) between 20 and 80m depth on the ATLAS buoys at 23°W-0°N and 10°W-0°N, in contribution to a University of Oregon (USA) programme (PI : J.Moum : see <http://mixing.coas.oregonstate.edu>).
- Replacement of 6 acoustic receptors for the OTN programme, which notably enable to follow previously tagged marine mammals (see <http://oceantrackingnetwork.org>).
- Replacement of the ADCP current meter mooring at 10°W-0°N; the current measurements of May 2014 to April 2015 were obtained.
- Deployment of 2 SVP-BS drifters (temperature, salinity and atmospheric pressure measurements) (1 INSU and 1 Météo-France).
- Deployment of 3 SVP-BS drifters equipped with bathythermic chains, from surface to 80m depth (Météo-France, as contribution to the EU H2020 project AtlantOS).
- Deployment of 8 ARGO profiling drifters (temperature and salinity measurements from 0-2000m every 10 days).
- Obtainment of 108 thermal profiles from surface to 900m depth (XBT probes).
- Obtainment of 8 thermal and current meter profiles from CTDO2-LADCP profiles at mooring sites and from the ARGO profilers.
- Obtainment of continuous current measurements (via the 2 ADCP on the vessel hull).

- Obtainment of continuous surface temperature and salinity measurements (via the thermosalinograph on the vessel hull).
- Collection of more than 80 surface sea water samples for on-board analysis of salinity and dissolved oxygen, pending laboratory analysis of nutrients, pigments and CO₂ -DIC&TA- and C13 (C13 and O18).
- Finally, **for the first time during a PIRATA survey and in the Gulf of Guinea region**, and owing to the R/V THALASSA on-board equipment, surface fluorometry measurements and acoustic measurements (from surface to 1000m) were acquired continuously. These acoustic measurements enable the simultaneous acquisition of quantitative and qualitative data at different spatial-temporal scales and across numerous biotic and abiotic ecosystem compartments, and **could thus prove valuable for PREFACE (namely, CT5)**.

Work not achieved:

The deployment of an ADCP current meter at 0°E-0°N intended in PREFACE failed. The end of a cable broke and material was lost to the sea floor, notably 2 acoustic releases, Benthos floaters and 2000 meters of cable. This deployment will be reattempted during the next PIRATA survey in 2016 and, to the extent possible, could be maintained for a minimal duration of 4 years, as initially intended in PREFACE.

Participants:

Instead of 13 participants, 10 scientists contributed to the survey:

Nom	Prénom	Spécialité (géologie, physique, chimie, biologie, mécanique, électronique, informatique, etc.)	Responsabilité et rôle à bord	Organisme employeur
BOURLES	Bernard	Physique	Chef de mission.	IRD
BAURAND	François	Chimie	Acquisition et analyse chimie	IRD
GOURIOU	Yves	Physique	Acquisition CTD/LADCP	IRD
GRELET	Jacques	Electronique	ATLAS, CTD/LADCP	IRD
HABASQUE	Jérémy	Physique	Acquisition acoustique	IRD
HERBERT	Gaëlle	Physique	Acquisition CTD/LADCP	IRD
ROUBAUD	Fabrice	Electronique	ATLAS, CTD/LADCP	IRD
GAULTIER	Lucille	Physique	Acquisition CTD/LADCP	Post Doc USA
SERAZIN	Guillaume	Physique	Acquisition CTD/LADCP	Université Grenoble
FERRANT	Anthony	Physique	Acquisition CTD/LADCP	IFREMER

