

TAOS Review 2nd meeting

PIRATA current governance structure





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PIRATA mooring timeline

CLIVAR-WCRP (1st PIRATA Review)

TAOS Review underway (2nd PIRATA Review)

10 ATLAS buoys



11 T + 4 C
2 press.
1 ADCP (2001 ...)

17 ATLAS buoys



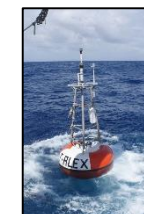
+NEE: 4 buoys
+SWE: 3 buoys
(6 flux ref. sites)
+ 2 ADCPs and CMs (Eq.)

18 ATLAS buoys

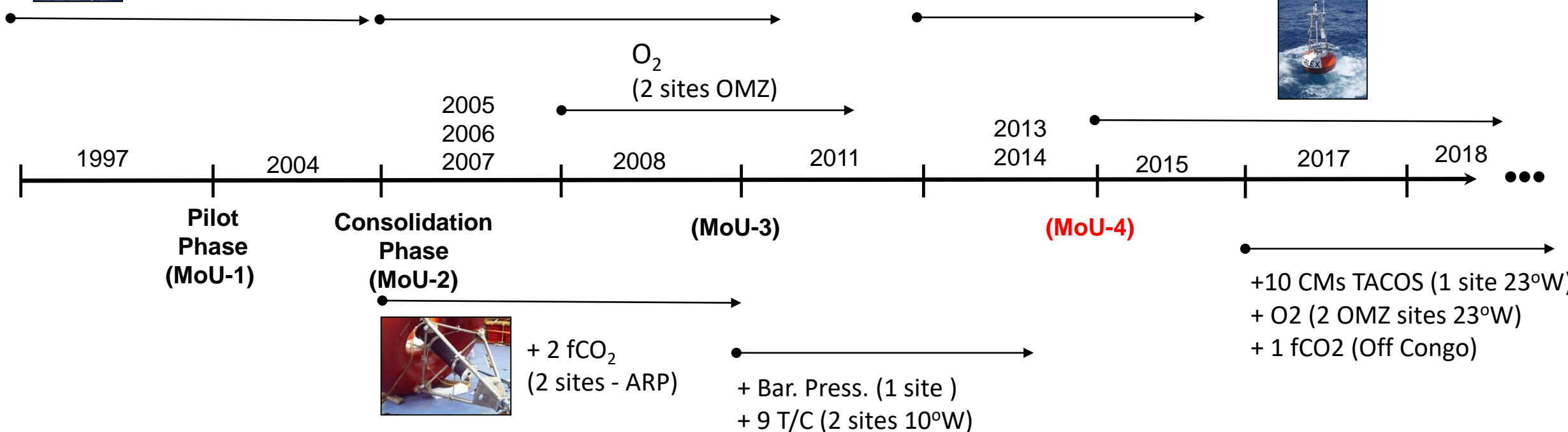


+1 buoy (Off Congo)
+ 18 OTNs (All sites)
+ 10 χ pods (2 sites Eq.)

10 T-FLEX + 8 ATLAS



+10 CMs TACOS (1 site 23°W)
+ O2 (2 OMZ sites 23°W)
+ 1 fCO2 (Off Congo)



How works PIRATA ?

PIRATA structure & responsibilities sharing:

1) PIRATA Resources Board:

=> committee with one representative of each supporting organism

⇒ 1 from NOAA/USA ; 1 from INPE ; 1 from IRD/France & 1 from Meteo-France/France

=> Major tasks:

To coordinate resources that may be applied to the Program;

*To encourage scientific and technological initiatives in the participating countries
to meet the objectives of PIRATA;*

To report on its activities to the Heads of the institutions providing resources.

2) PIRATA Steering Scientific Group:

=> 3 members of each initial country (Br, Fr, USA)

+ 1 of Germany (GEOMAR, from 2008).

(present chairmen: B.Bourlès, from 2004 & M.Araujo, from 2014)

=> *Major tasks :*

To ensure accomplishment of the scientific and technical objectives ;

To coordinate the technical and logistic support necessary to maintain the array;

To invite collaborations with other nations and institutions...;

To cooperate with international organizations ;

Good & efficient collaborations & cooperation => possible enhancements/extension through additionnal commitments!

International PIRATA organization/governance:

⇒ **PIRATA 'Pilot Resource Board' (PRB):** 1 member of each institution committed through the **Memorandum of Understanding (MoU) since 2001** (regularly renews/extended...)

USA, NOAA (PMEL/Seattle et AOML/Miami) : 1 member (David Legler)

Brésil, INPE : 1 member (Janice Trotte-Duha)

France, IRD & Météo-France : 2 members (Alexandre Ganachaud, Philippe Dandin)

⇒ **PIRATA- 'Scientific Steering Group' (SSG):** *(from 9 – 1997-> 2017- to 13 members; geochemistry extension)*

France: 4 members

- Bernard BOURLES (IRD-LEGOS, resp. PIRATA in France; since 2001; chair/co-chair since 2004)
- Fabrice HERNANDEZ (IRD-LEGOS, Toulouse)
- Hervé GIORDANI (Météo-France, CNRM, Toulouse)
- Nathalie LEFEVRE (IRD-LOCEAN, Paris)

USA: 4 members

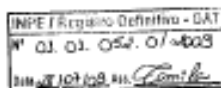
- Mike Mc PHADEN (NOAA/PMEL, since 1997)
- Gregory FOLTZ (NOAA/AOML)
- Christina PATRICOLA (Texas A&M University)
- Adrienne SUTTON (NOAA/PMEL)

Brésil: 4 members

- Moacyr ARAUJO (UFPE, Recife; co-chair since 2014)
- Paulo NOBRE (INPE, since 2003)
- Leticia COTRIM (Univ. Rio)
- Regina RODRIGUES (Univ. Santa Catarina)

+ Allemagne: 1 member, invited since 2008 (TACE/CLIVAR)

- Peter BRANDT (IFM-GEOMAR)



MEMORANDUM OF UNDERSTANDING (MOU)

between

Instituto Nacional de Pesquisas Espaciais
and
Institut de Recherche pour le Développement and Météo-France
and
National Oceanic and Atmospheric Administration

for

**Implementation and Maintenance of the
Prediction and Research moored Array in the Tropical Atlantic – PIRATA**

A Partnership in Climate Research and Ocean Observation

The Instituto Nacional de Pesquisas Espaciais (INPE) of Brazil, the Institut de Recherche pour le Développement (IRD) and Météo-France of France, and the National Oceanic and Atmospheric Administration (NOAA) of the United States of America, hereinafter referred to as the "Parties", are interested in increasing the effectiveness of their activities in climate research and ocean observation through sustaining the Prediction and Research moored Array in the Tropical Atlantic (PIRATA);

The parties recognize that collaboration in sustaining PIRATA can be to their mutual benefit, the mutual benefit of their countries, and the benefit of many countries in Africa, the Americas, and Europe;

The parties believe that efforts such as sharing of tasks, cooperation on facilities utilization, exchange of scientific and technical information, and sharing of costs and human resources can result in the effective and efficient accomplishment of mutually beneficial objectives;

Therefore, the Parties have reached the following understanding:

**SECTION I
SCIENTIFIC OBJECTIVES OF THE PIRATA PROGRAM**

The purpose of the PIRATA program is to study the ocean-atmosphere interactions in the tropical Atlantic that are relevant to regional climate variability on intra-seasonal, seasonal, interannual, and longer time scales.

Specifically, the scientific goals of PIRATA are:

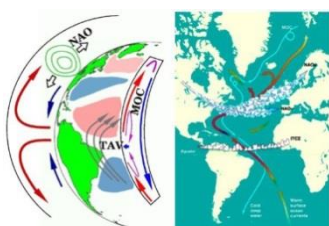
Extended for 5 years in 2014 => July 2019

Will be extended for 2 years in 2019 => July 2021

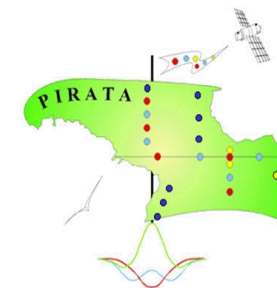
*=> TAOS & OO19 finding/suggestions to be considered
then in a new MOU*



J.L. P.S. M.S.



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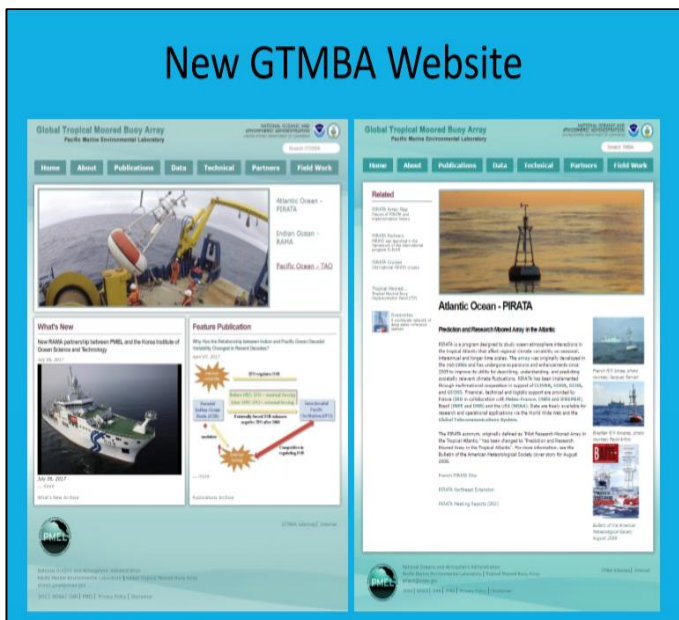


Open Data Delivering

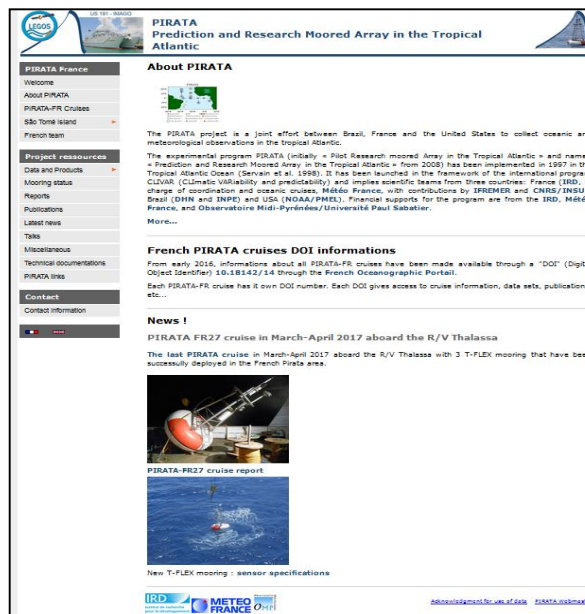
- BUOYS DATA:

- FR (+ 3 ADCP moorings data), BR & US CRUISES DATA:

New GTMBA Website



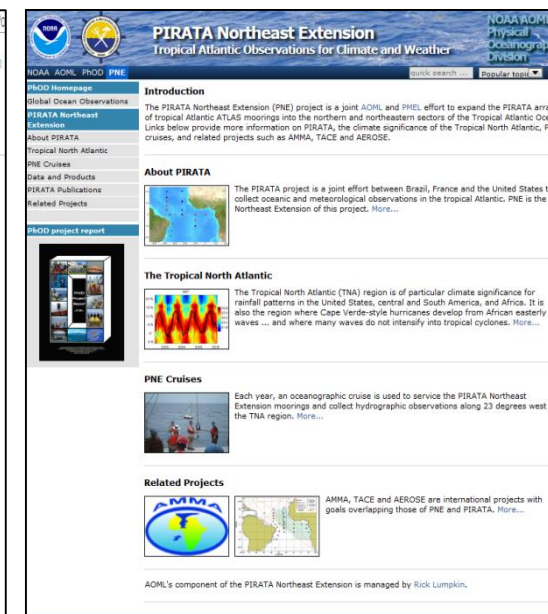
www.pmel.noaa.gov/gtmba/



www.brest.ird.fr/pirata/



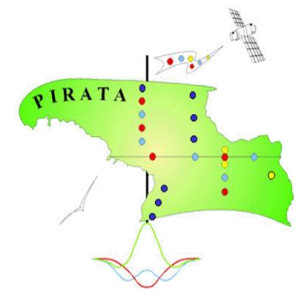
pirata.ccst.inpe.br/



www.aoml.noaa.gov/



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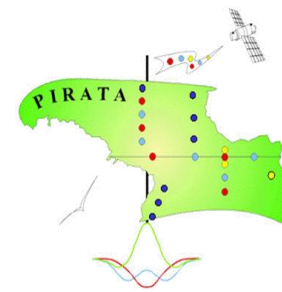


**PIRATA costs (effort carried out in 2017 for AtlantOS:
see AtlantOS Deliverable 4.1 by Kieran Reilly et al... March 2018)**

	USA (NOAA/PMEL)	USA (NOAA/AOML)	Brazil (INPE, DHN)	France (IRD, MF, National Fleet)	Total
		(30 days/cruise 2017)	(60 days / cruise 2017)	(60 days / cruise 2017)	
Equipment	375,000	27,500	0	30,000	432,500
Logistics	110,000	22,500	75,000	55,000	262,500
Functioning	62,500	2,100	12,500	15,000	92,100
Ship Time	0	1,020,000	2,100,000	1,200,000	4,320,000
Total per organization	547,500	1,072,100	2,187,500	1,300,000	
Total per country	1,919,600		2,187,500	1,300,000	
GRAND TOTAL					5,107,100



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LAST remarks....

VESSEL TIME IS THE MOST EXPENSIVE

**PIRATA CRUISES CONTRIBUTE TO OTHER OBS. SYSTEMS (ARGO, DBCP, O₂/CO₂, bio samplings, nutrients, acoustic....)
& this vessel time is not (& should be also) considered by these other systems...**

**PIRATA CRUISES in situ measurements (CTD, XBT ...) contribute to operational systems (transmitted in real time)
& (along with water samplings analysis: O₂, nutrients...) are needed for the calibration of ARGO profilers data**

PIRATA VESSEL TIME IS (AND HAS TO BE) USED FOR ADDITIONNAL OPERATIONS/MEASUREMENTS

PIRATA is OPEN for:

ADDITIONNAL SENSORS ON BUOYS BUT this only depends upon

- i) Scientific evaluation (through the PIRATA SSG)**
- ii) technological considerations (ATLAS-TFLEX systems compatibility)**
- iii) human power and fundings (new sensors taken in charge by other Pis/pgrs than PIRATA
+ eventual additionnal works at sea...)**