

Prediction and Research mooring Array in the Tropical Atlantic

PIRATA

Dr. Domingos Urbano
National Institute for Space Research - INPE

OceanSITES meeting – La Jolla, CA

Nov/Dec 2011



National Institute For Space Research

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ok

Talk to us



:: Thursday, December 01, 2011

English | Português **AAA**

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INPE preparing to host GLP
11/30/2011

Organized and hosted by the future IPO of GLP at INPE in Brazil, the Land Use Transitions in South America workshop linked scientists from social and natural sciences to exchange their views ...

[full story >>](#)



DETER records 386 km² of deforestation alerts in October
11/29/2011

DETER, Real Time Deforestation Detection System of Brazil's National Institute for Space Research (Instituto Nacional de Pesquisas Espaciais - INPE), has warned 385,56 km² of Amazon rainforest defores...

[full story >>](#)



INPE hosting international event on Systems Engineering in December. Registration are opened
11/28/2011

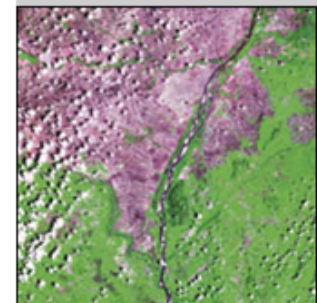
The Integration and Testing Laboratory (Laboratório de Integração e Testes - LIT), of the Brazil's National Institute for Space Research (Instituto Nacional de Pesquisas Espaciais - INPE), the INCOSE ...

[full story >>](#)

:: More News

- ◆ **11/30/2011** - [INPE preparing to host GLP](#)
- ◆ **11/29/2011** - [DETER records 386 km² of deforestation alerts in October](#)
- ◆ **11/28/2011** - [INPE hosting international event on Systems Engineering in December. Registration are opened](#)
- ◆ **11/25/2011** - [Director of INPE will be honored in Brazil's Congress](#)
- ◆ **11/18/2011** - [Images provided by INPE are used to assess oil spill](#)

CBERS IMAGE CATALOG



Boa Vista (RR)
Imagens CBERS-2 - Câmera CCD

WEATHER FORECAST

City	min.	máx.	cond.
Salvador	25°C	31°C	
Recife	23°C	31°C	
Brasília	18°C	24°C	

02/12/2011 [Other Cities +](#)

HIGHLIGHTS

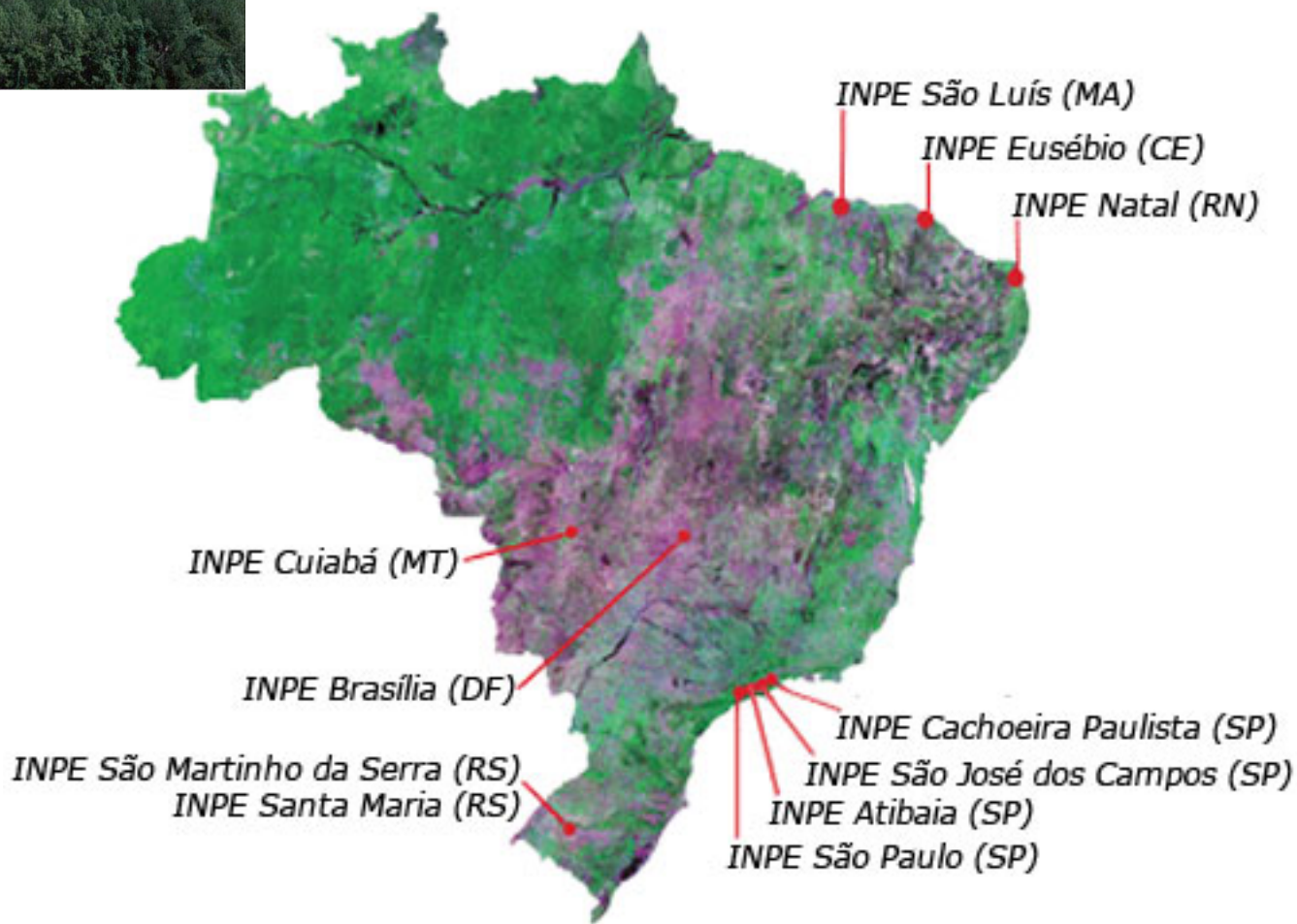
:: LIT - Integration and Testing Laboratory



It develops highly specialized activities on component qualification and space systems ...

:: On line INPE's Library





Sistema de Coleta de Dados

Sistema Brasileiro de Coleta de Dados via Satélite SCD



Sistema Brasileiro de Coleta de Dados, mostrando os círculos de visibilidade das estações de Culabá e de Alcântara.

O Sistema de Coleta de Dados é constituído pela constelação de satélites SCD1, SCD2 e CBERS2 (Segmento Espacial), pelas diversas redes de plataformas de coleta de dados espalhadas pelo território nacional, pelas Estações de Recepção de Culabá e de Alcântara, e pelo Centro de Missão Coleta de Dados. A figura acima ilustra o Sistema Brasileiro de Coleta de Dados.

Neste sistema, os satélites funcionam como retransmissores de mensagens. Assim, a comunicação entre uma plataforma e as estações de recepção é estabelecida através dos satélites. As plataformas são geralmente configuradas para transmitir, a cada 200 segundos, cerca de 32 bytes de dados úteis.

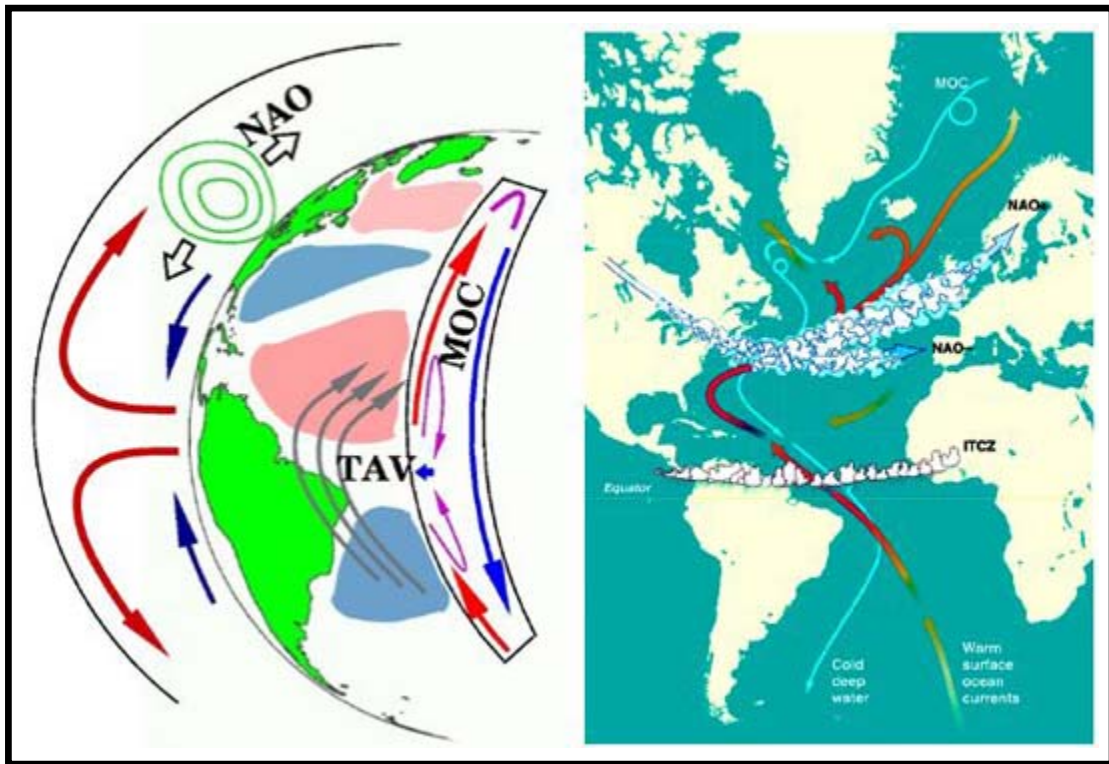
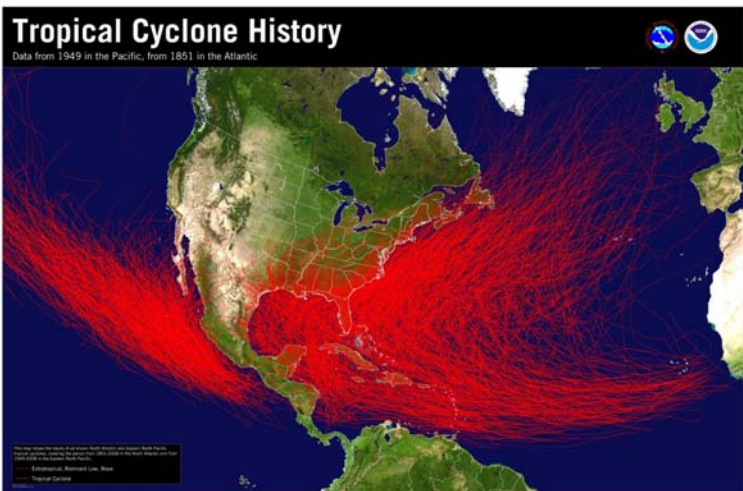
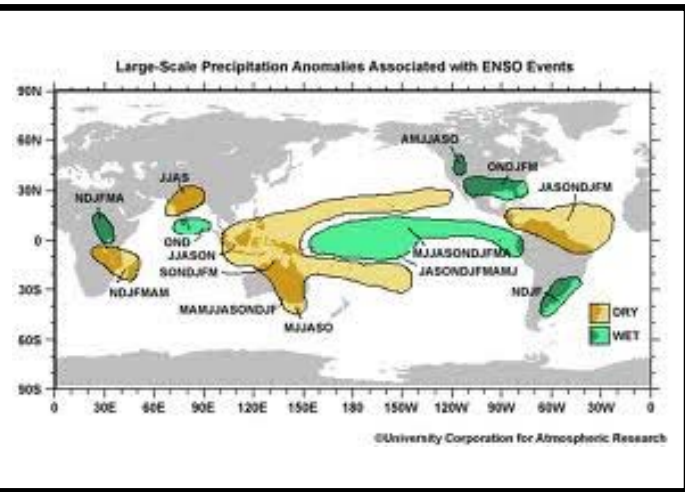
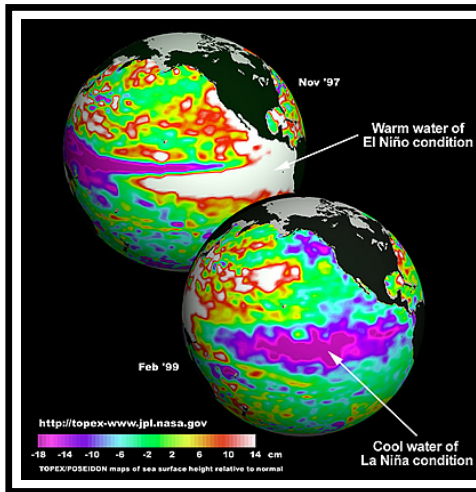
Os satélites SCD1, SCD2 e CBERS2 operam em duas faixas de frequência UHF para recepção das mensagens transmitidas pelas plataformas de Coleta de Dados: em torno de 401,62 MHz e de 401,65 MHz. Os sinais recebidos a bordo dos satélites são retransmitidos para o solo na Banda S (2.267,52 MHz) e, no caso do CBERS2 também em UHF (462,5 MHz).

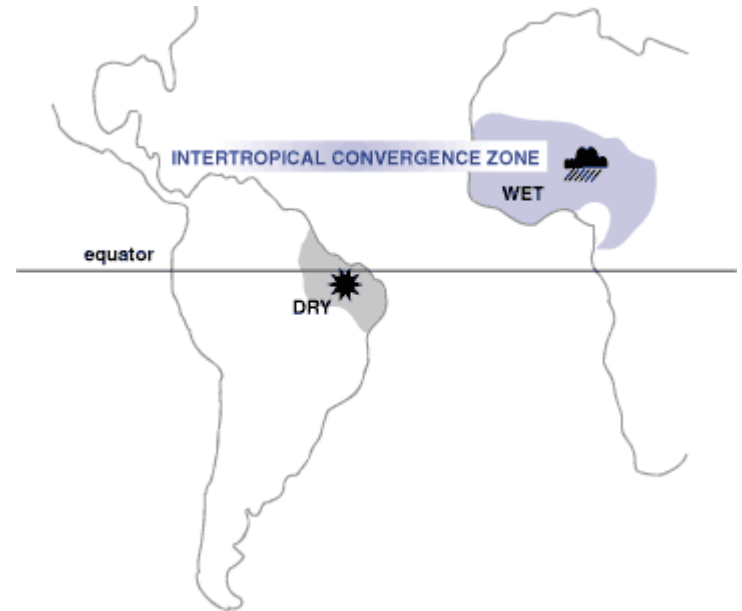
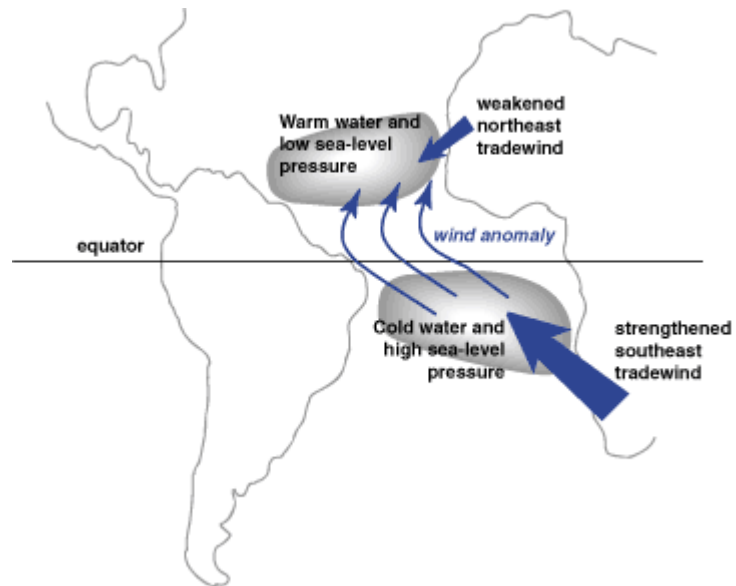
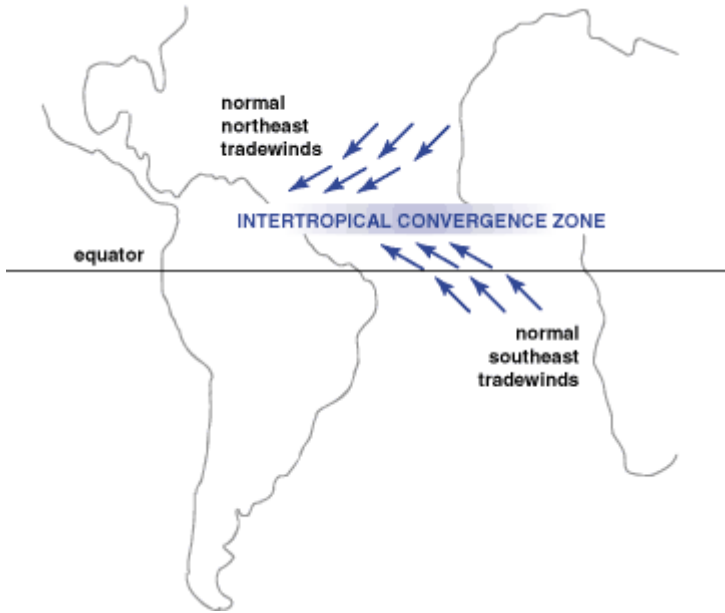
Os satélites SCD1 e SCD2 foram colocados em órbitas com aproximadamente 750 km de altitude e 25 graus de inclinação em relação ao plano do Equador, o que permite uma cobertura adequada de todo o território nacional. Cada satélite completa 14 órbitas por dia, das quais 8 são visíveis à estação receptora principal (Culabá). O plano orbital do SCD2 foi defasado em ascensão reta em relação ao do SCD1 por um ângulo de 180 graus, de modo a garantir que passagens do SCD2 irão preencher cada período diário em que ocorrem passagens não visíveis do SCD1 e vice-versa. Já o satélite CBERS2, de órbita polar, apresenta 3 ou 4 passagens/dia sobre a estação principal.

Os dados das plataformas retransmitidos pelos satélites e recebidos nas estações de Culabá ou de Alcântara são enviados para o Centro de Missão de Coleta de Dados em Cachoeira Paulista para processamento, armazenamento e disseminação para os usuários. O envio desses dados ao usuário é feito através da Internet, em no máximo 30 minutos após a recepção.

- PIRATA is a multinational program established to improve our knowledge and understanding of ocean-atmosphere variability in the tropical Atlantic.
- The tropical Atlantic strongly influences the **regional climate** and, consequently, the **economies** of the adjacent land masses.
- PIRATA is **motivated** by fundamental scientific issues but also by societal needs for improved prediction of climatic variability and its impacts on countries surrounding the basin.
- Along with TAO/TRITON in the Pacific and RAMA in the Indian Ocean, PIRATA is part of the **Global Tropical Moored Buoy Array**, as part of the Global Ocean Observing System (**GOOS**) and Global Climate Observing System (**GCOS**)

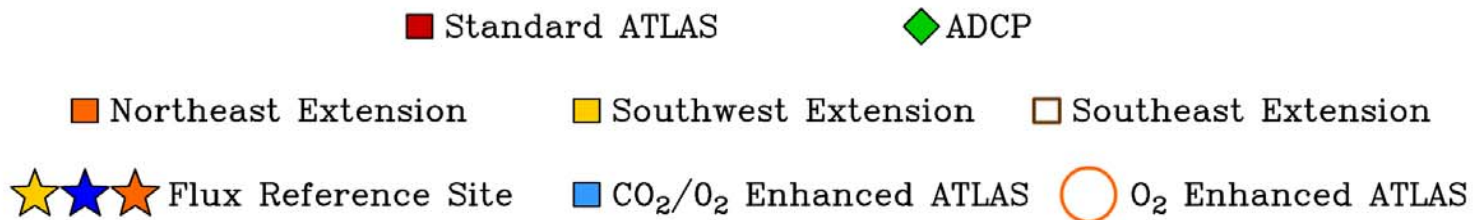
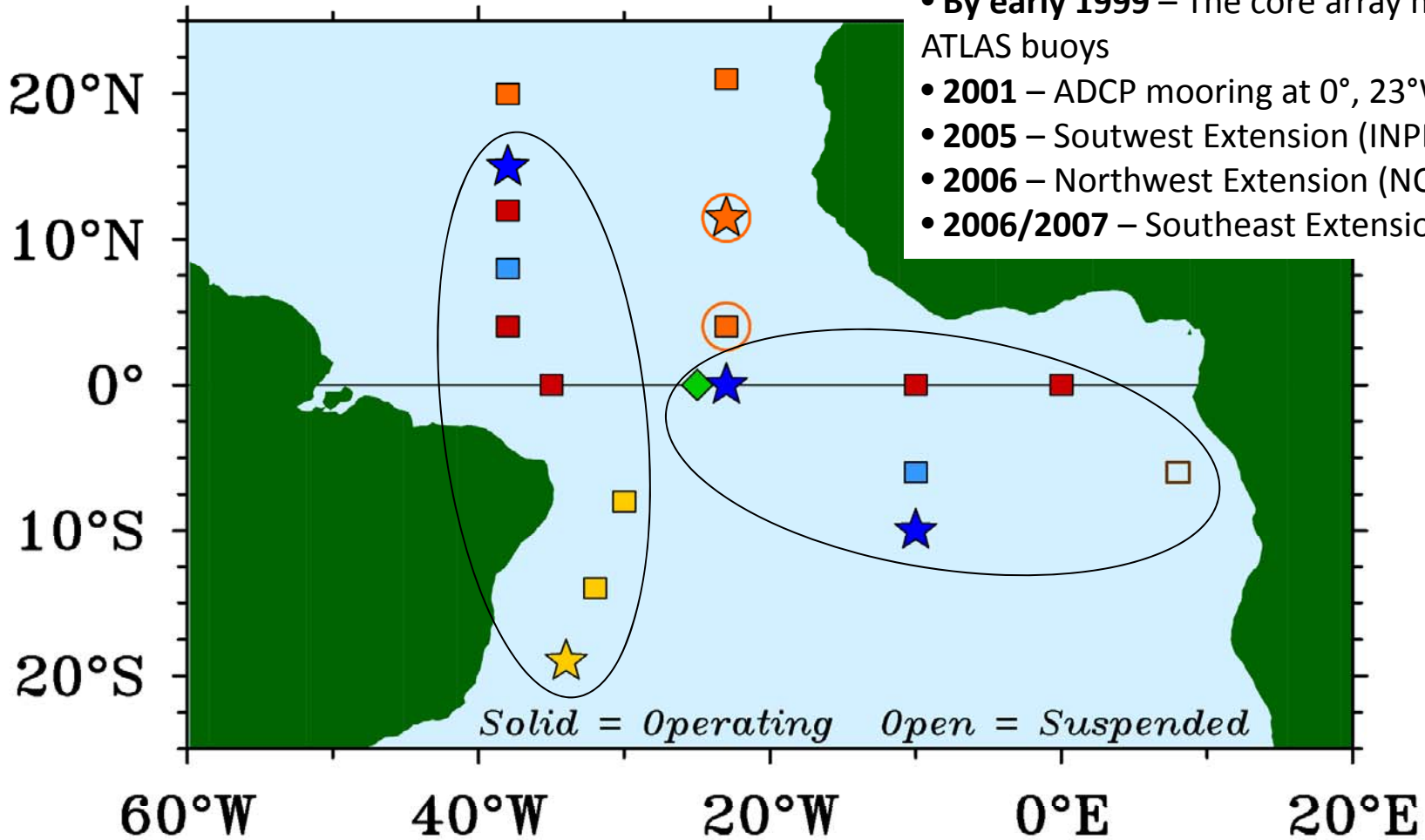
Relevance of monitoring Tropical Atlantic



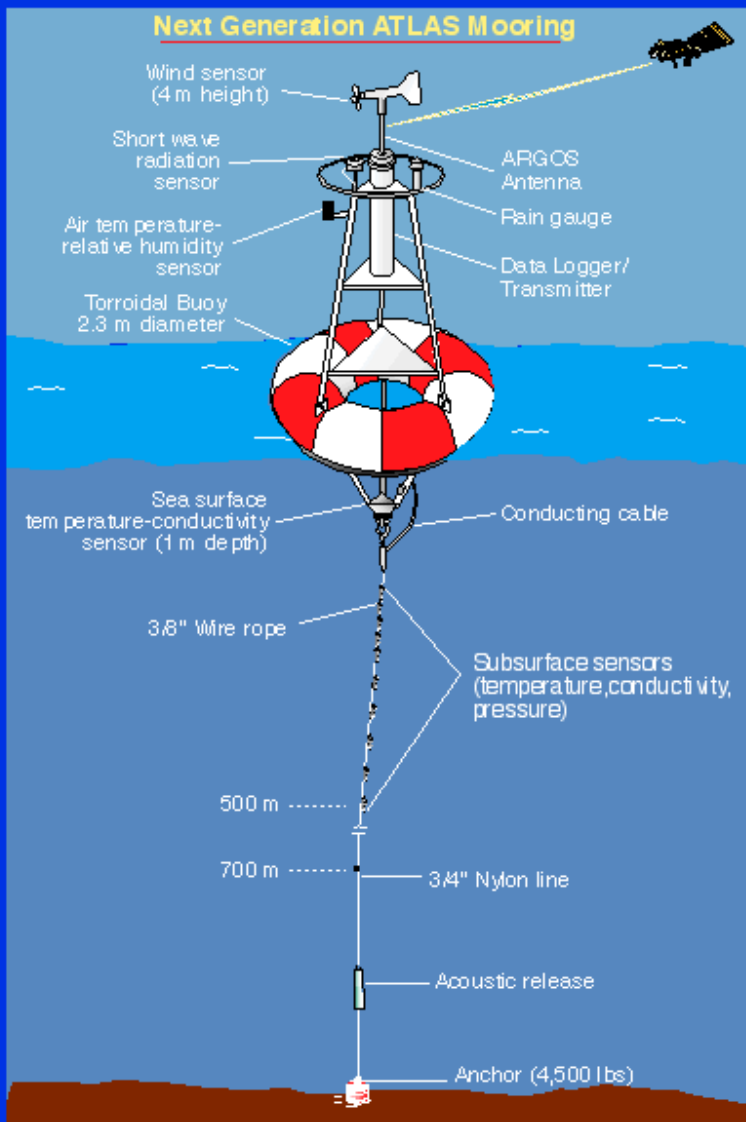


PIRATA evolution:

- **Sep 1997** – Launched as a PILOT program
- **By early 1999** – The core array had 10 ATLAS buoys
- **2001** – ADCP mooring at 0°, 23°W
- **2005** – Southwest Extension (INPE)
- **2006** – Northwest Extension (NOAA)
- **2006/2007** – Southeast Extension (S. Africa)



Next Generation ATLAS Mooring



Sens. Metro.	Wind	LWR	SWR	Rain	ATRH	BP
Height (m)	4	3.5	3.5	3.5	3	3

Sens. Ocean.	Depths (m)
SST/C	1
TC1	20
TC2	40
T3	60
T4	80
T5	100
TC6	120
T7	140
T8	180
TP9	300
TP10	500

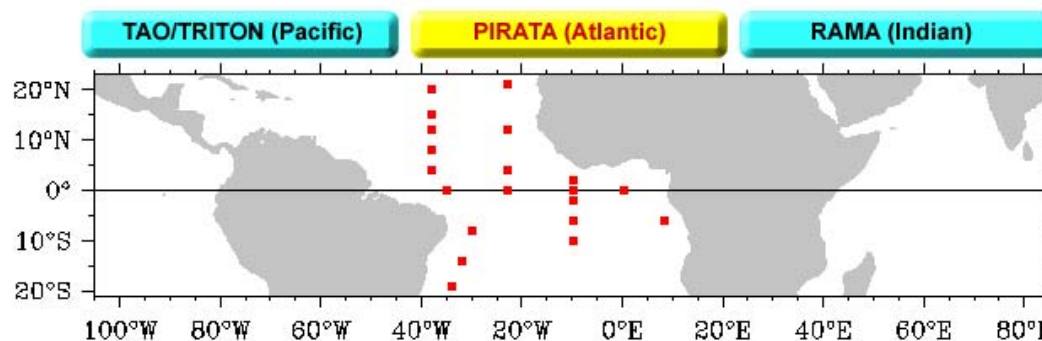
FULL-FLUX

10-13m TV (currentmeter)



Data delivery

Learn about PIRATA



To select mooring sites, you may click individual sites on the map above, draw a rectangle around a group of sites, or use the blue buttons below. Solid squares show where there are data

Data: Sea Surface Temp
Averaging: Daily

[High Res Window](#)

Start date: 1997 SEP 11
End date: 2010 JUL 28

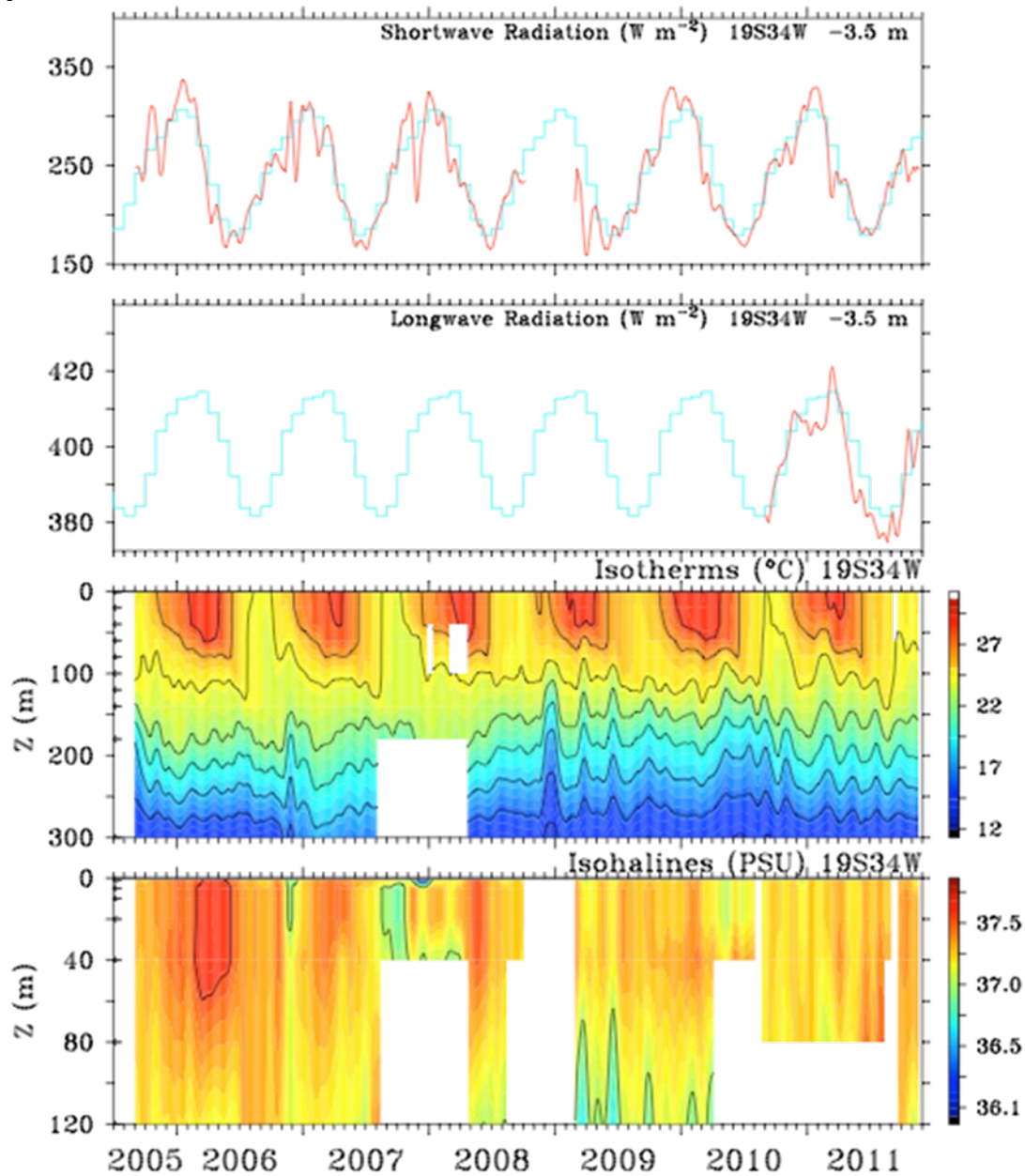
Structure: files by site
Format: ASCII
Compression: None

Try our combined [Display and Delivery Page](#) which includes more comprehensive data and features, like the ability to download what you view

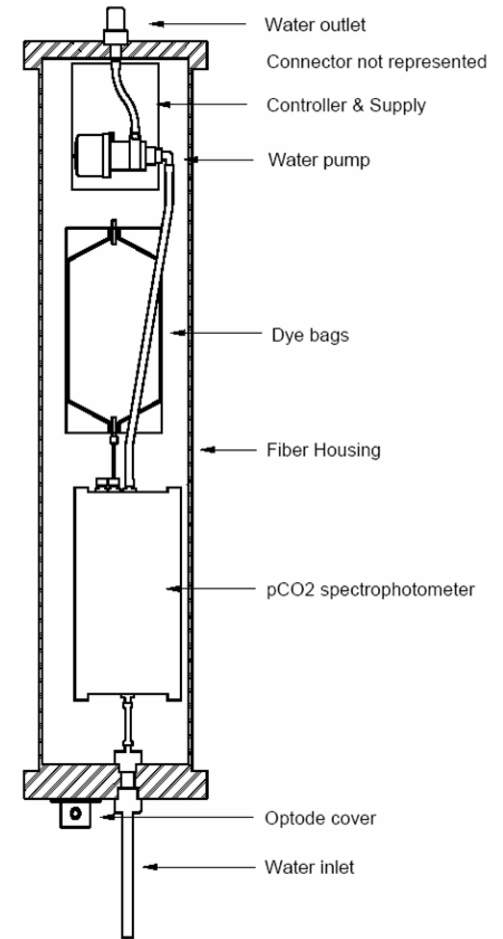
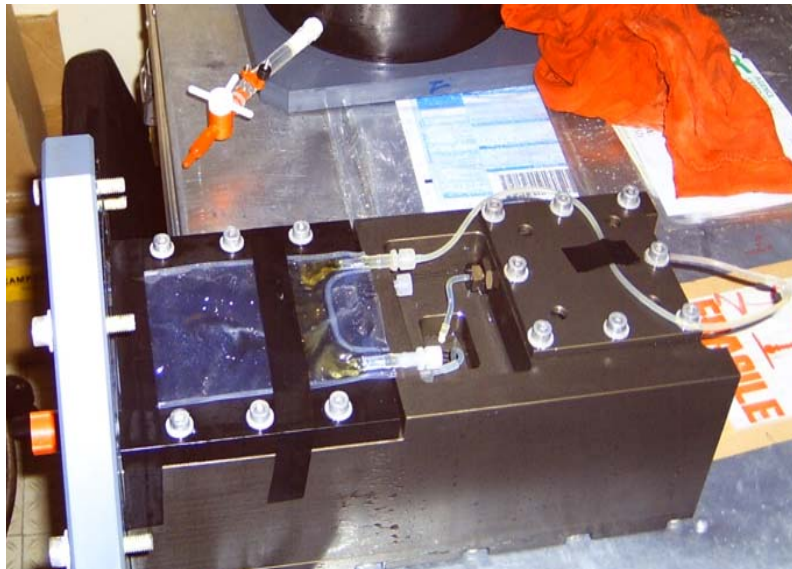
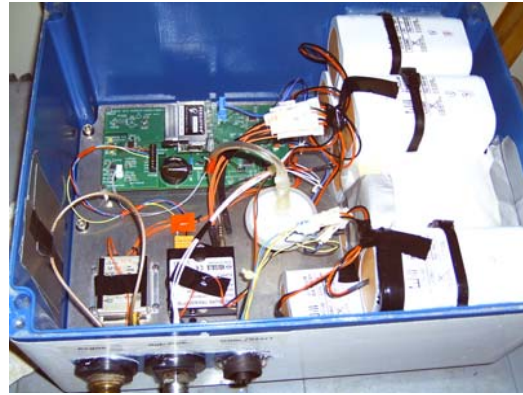
[Problems?](#) **Mac OS X Users:** [Safari is the recommended browser](#) [Non-JAVA Version](#) [HTML Version](#)
[Acknowledgment for use of TAO/TRITON, PIRATA, and RAMA data](#)

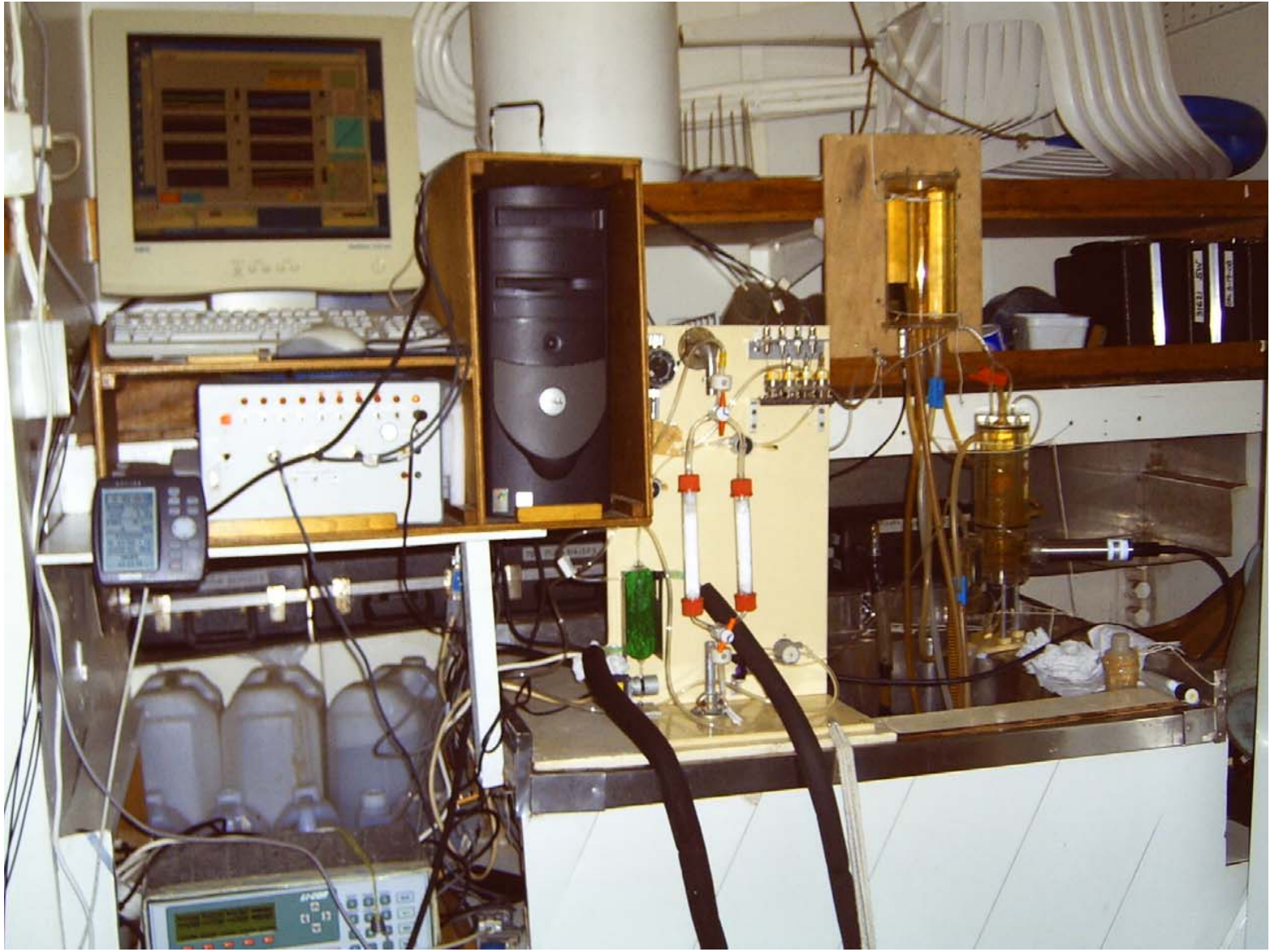
New site: 19s 34W

Monthly Data

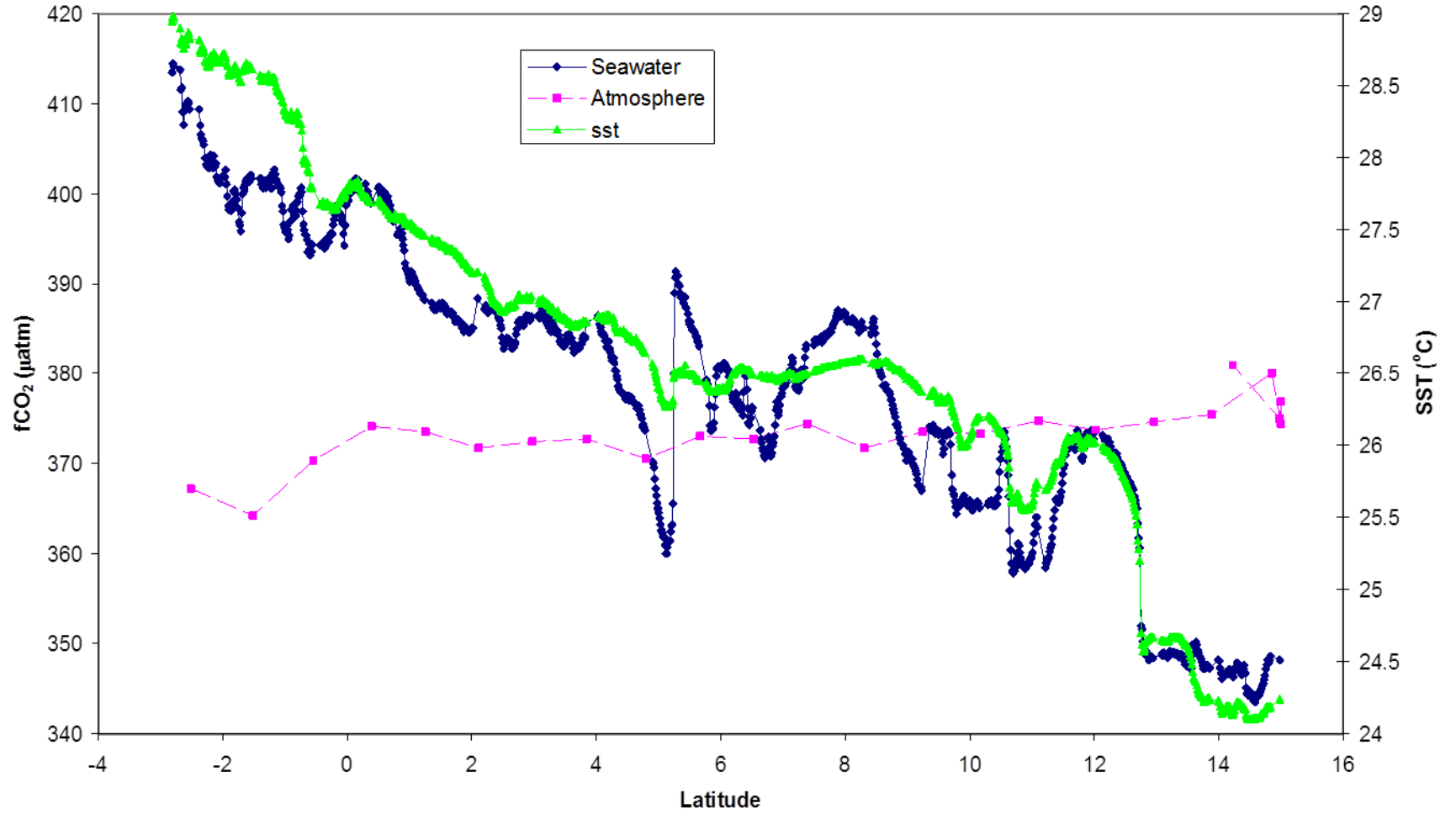


8N38W ATLAS+CARIOCA

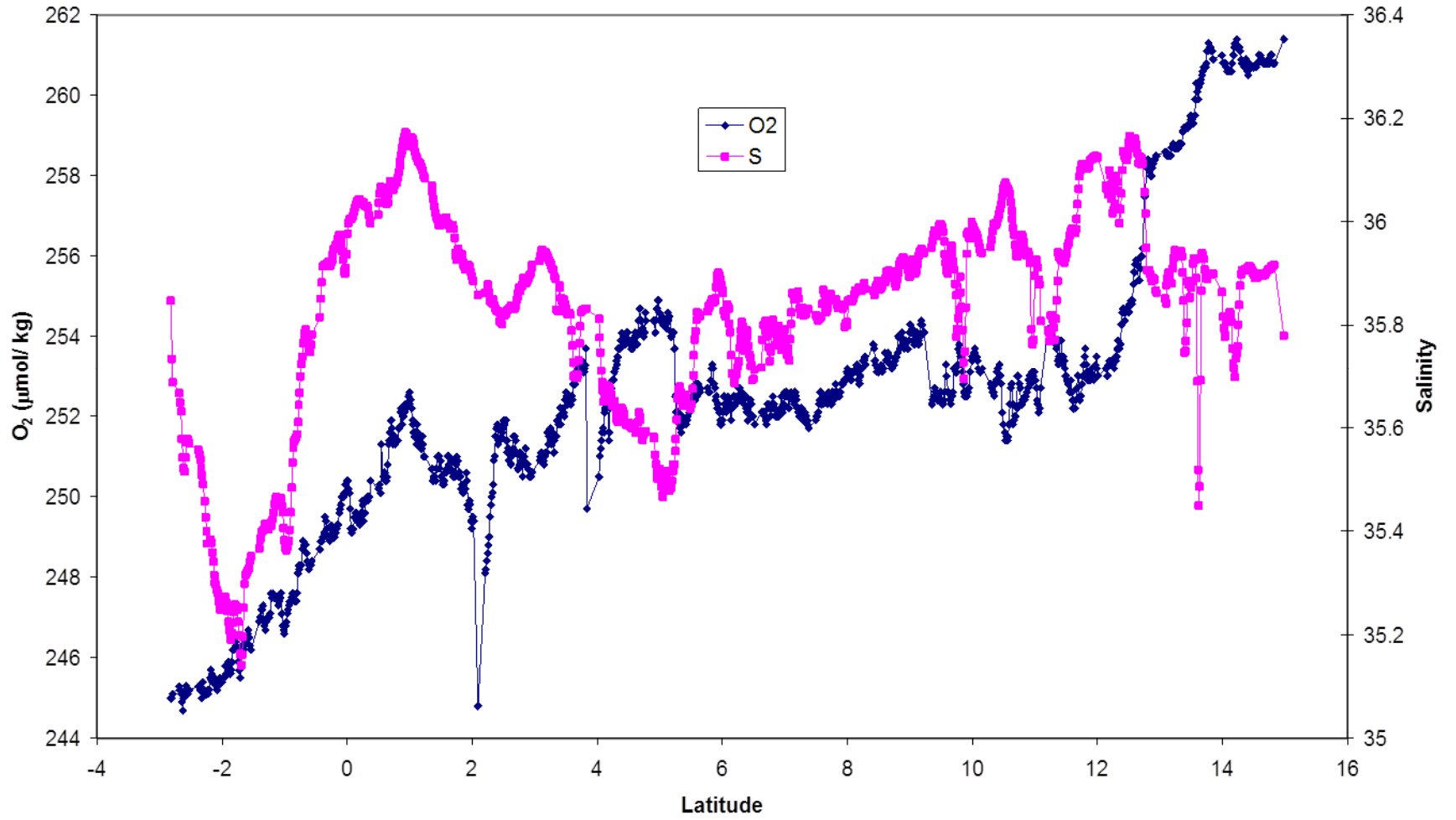




Fortaleza to 15N



Fortaleza to 15N



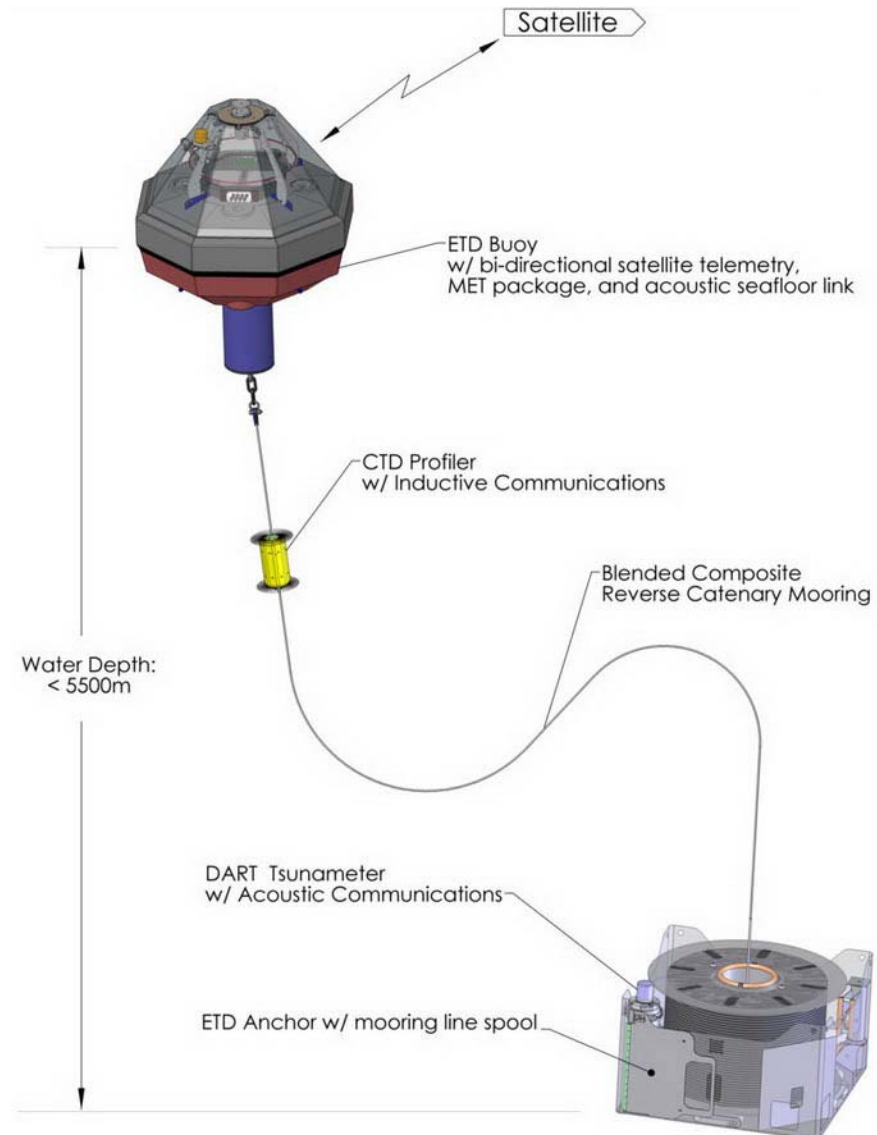
PICO: Easy to Deploy TAO

Design:

- reduce costs
- ~3yr endurance
- small
- micro power

Sampling:

- flexible, realtime
- on-demand or scheduled
- 5-8 CTD profiles/day
- other sensors as needed



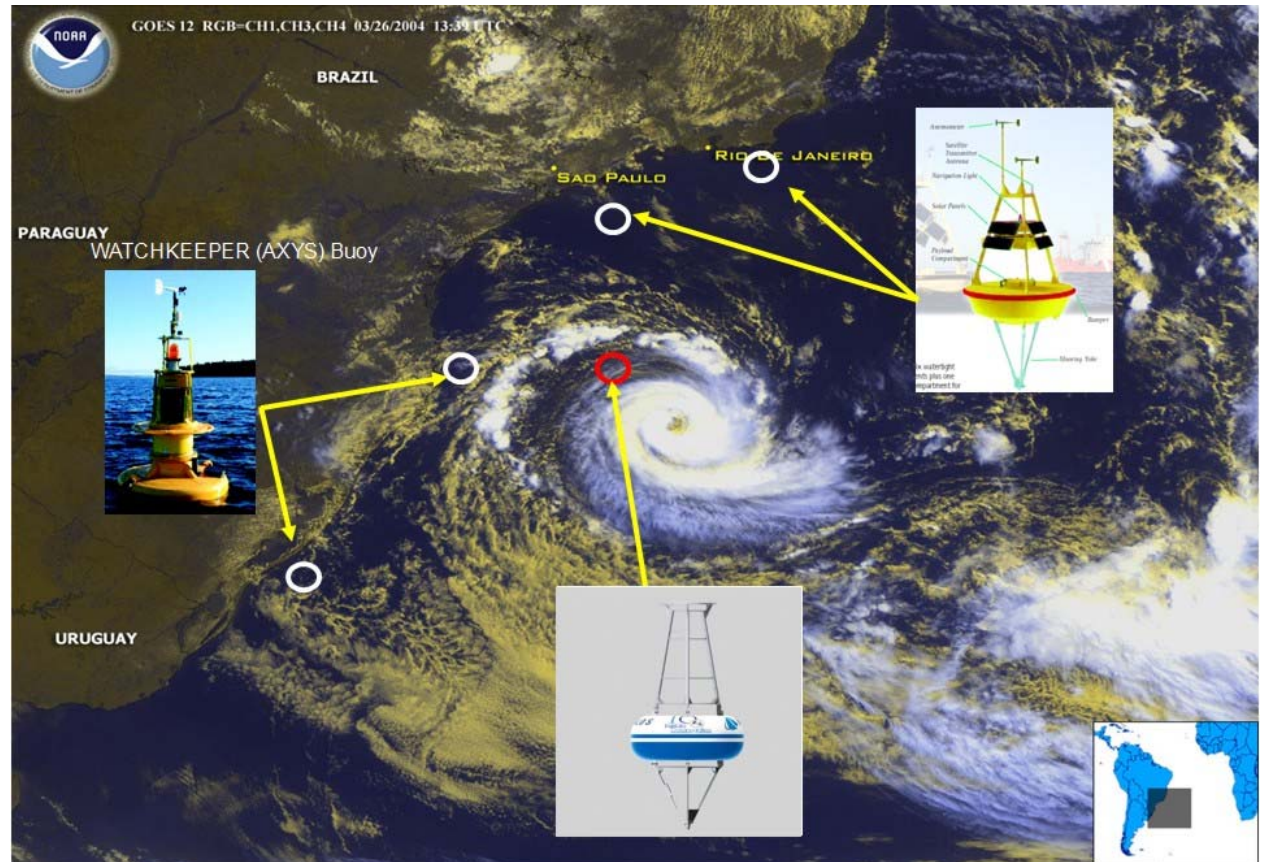
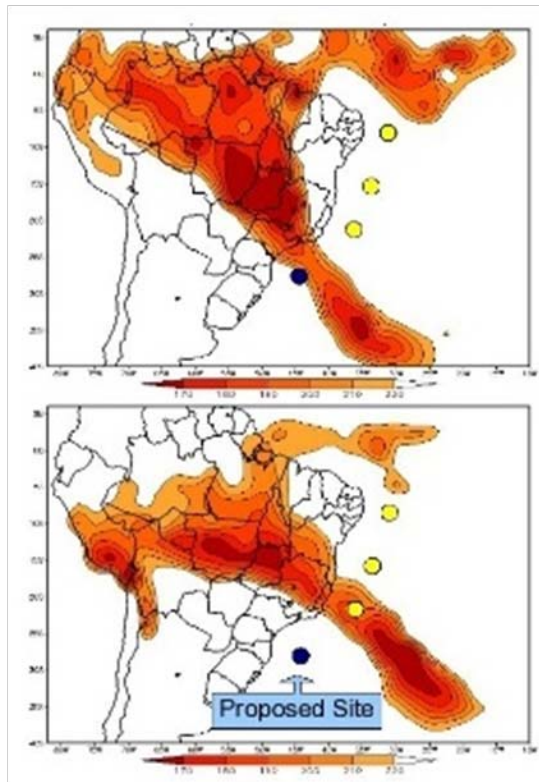
ATLAS-B Project

Edmo Campos
University of São Paulo
Oceanographic Institute (IO/USP)
São Paulo, Brazil

Site: 28S 42W

-For better understand the SACZ

-Monitoring Tropical Storm formation
(Catarina – March 2004)



SPSP



Foto: Secretaria da Comissão Interministerial para os Recursos do Mar



As regiões em vermelho indicam existência de ilhas



Fernando de Noronha



Trindade Island

INPE-DHN SCD/ARGOS

San Peter and San Paul Rocks

