



**BRAZILIAN NAVY
DIRECTORATE OF HYDROGRAPHY AND
NAVIGATION – NAVY HYDROGRAPHIC CENTER**

DPCP- XXVI



Oban, September, 27th 2010



THE NATIONAL BUOY PROGRAM (PNBOIA) ISABP / DBCP

The National Buoy Program has the goal of collecting oceanographic and meteorological data in the Atlantic Ocean, by a buoy network in support to meteorological and oceanographic activities in Brazil.

- a) Maintain and enlarge the moored and drifting buoys network; and
- b) Disseminate data on a real time base on GTS.



DBCPC
Data Buoy Cooperation Panel



ISABP
International South Atlantic Buoy Program



PNBOIA PARTICIPANTS

1. **SECIRM** - Secretary of the Interministry Commission for the Sea Resources;
2. **DHN** - Directorate of Hydrography and Navigation, represented by **CHM** - Navy Hydrographic Center;
3. **IEAPM** - Institute of Sea Studies Admiral Paulo Moreira;
4. **INMET** - National Institute of Meteorology;
5. **FURG** - Rio Grande Federal University;
6. **INPE** - National Institute of Space Research;
7. **IOUSP** - Oceanographic Institute of São Paulo University;
and
8. **PETROBRAS**.

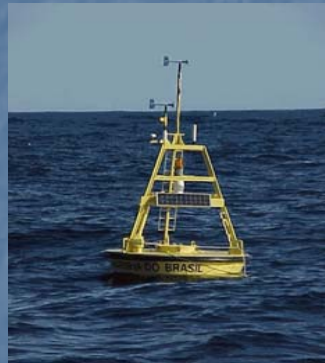


HISTORICAL REVIEW

The National Programme of Buoys – PNBOIA was approved, together with the GOOS / Brazil Pilot Program, at the 133rd Meeting of the Interministerial Commission for the Sea Resources (CIRM) held on April 30th, 1997.



Neuron-BR) Apr 1999 -2000



3M- June -2000 -2005



15 first drifting buoy : year 1997



SUPPORTING SHIPS AVAILABLE

NHo Amorim do Valle (H-35)



NF Alte Graça Aranha (H-34)



NOc Antares (H-40)



NB Comte. Varella (H-18)



LB Póllux





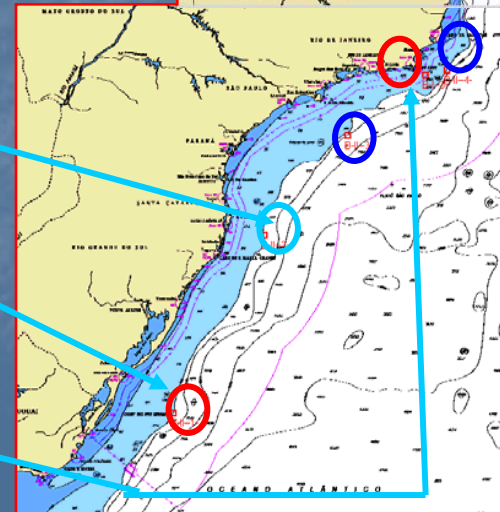
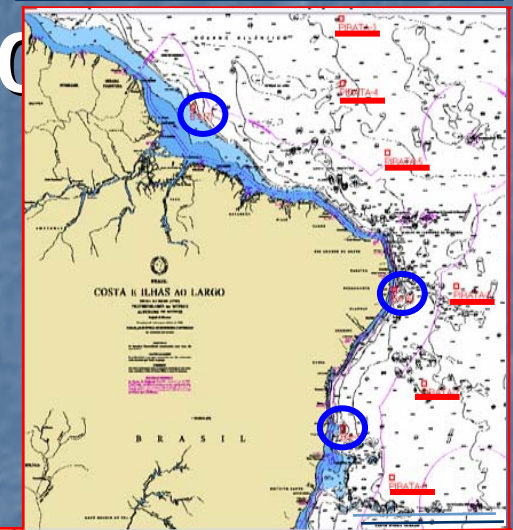
PLANED MOORED BUOYS NETWORK

- Continental Shelf Buoys (2000m)

- Barra Norte – AM
- Platô de Pernambuco – PE
- Porto Seguro – BA
- Cabo Frio – RJ
- Platô de Santos – SP
- Santa Catarina¹
- Rio Grande do Sul

- Coastal Buoys (70m)

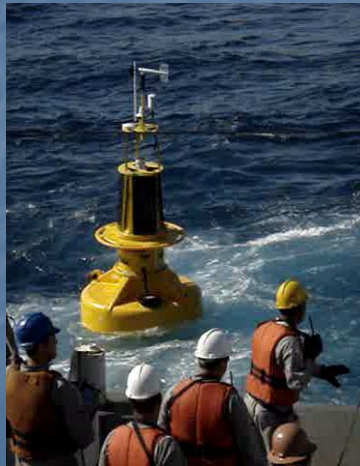
- Cabo Frio – RJ
- Oceanic Array (2000m)





MOORED BUOYS DEPLOYED

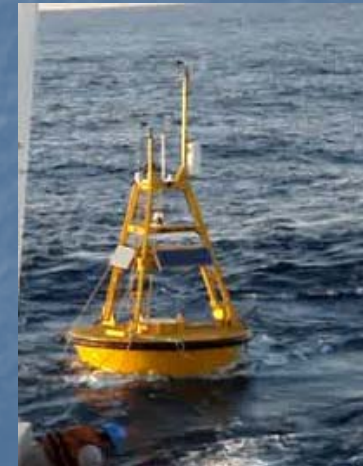
STATE	NAME	PLACE	deployed
RJ	ALNITAKA (whatchkeeper)	Cabo Frio : Local depth: 66 m	18 April -2009 – Jul 2009 14 Oct 2009 – last transmission: Apr 2009
SC	ALNILAN (tipo 3M)	Santa Catarina – Local Depth : 191m	01 May 2009 - 14 Nov 2009 (DHN)
RS	MINTAKA (tipo 3M)	Rio Grande – Local Depth : 191m	May-2009 – last transmission: 24Mar2010



ALNITAKA - RJ



ALNILAN - SC

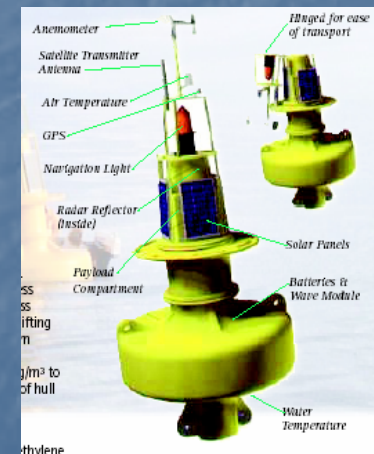
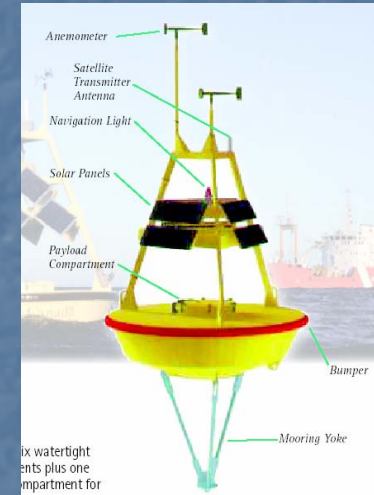


MINTAKA - RS



COLLECTED DATA

	3M BUOY (PLATAFORM)	WATCHKEEPER (COASTAL BUOY)
http://www.axystechnologies.com/products/index		
MANUFACTURER	AXYS TECHNOLOGIES, CANADÁ	
WEIGHT	1.500 KG	800 KG
SENSORS		
ATMOSPHERIC PRESSURE	1	1
WIND (DIRECTION AND SPEED)	2	1
RELATIVE HUMIDITY	1	1
AIR TEMPERATURE	1	1
SEAWATER TEMPERATURE	1	1
SOLAR RADIATION	1	--
WAVE HEIGHT, PERIO AND DIRECTION	1	1
CURRENT PROFILE, UP TO 90M (ADCP)	1	--
FLUOROMETER	--	1
THERMISTOR CHAIN (6 LEVELS)	--	1
DATA TELEMETRY AND SAFETY		
GPS + OUT-OF-SITE ALARM	1	1
DATA TRANSMISSION INMARSAT-C	1	1
DATA TRANSMISSION ARGOS-CLS	1	1
AIS (VIA VHF)	1	--



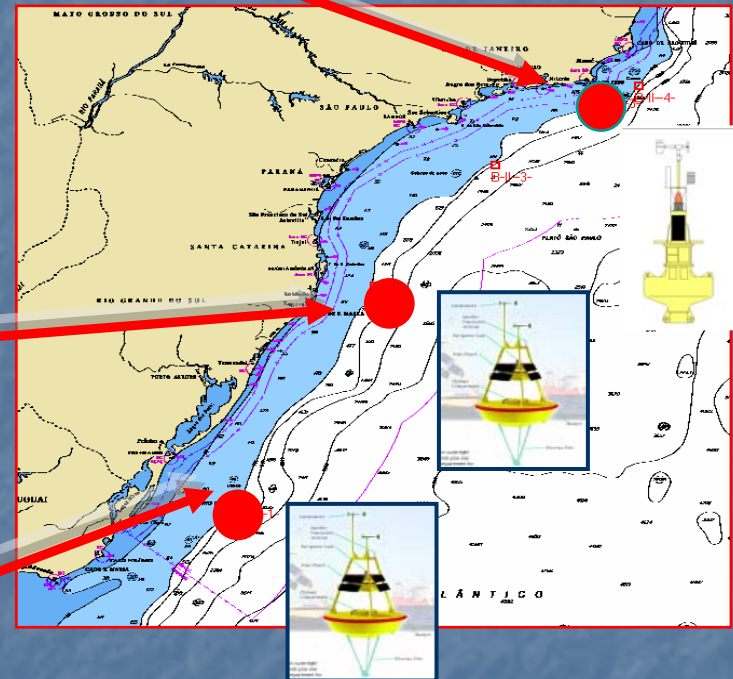


Current Situation

Cabo Frio – RJ (Without transmission and no reliable wave information - will be repaired/revised in November)

Santa Catarina – Suffered damages, was recovered in Dec 2009, fixed and waiting for deployment by November

Rio Grande do Sul – No transmission – waiting to be fixed by November.



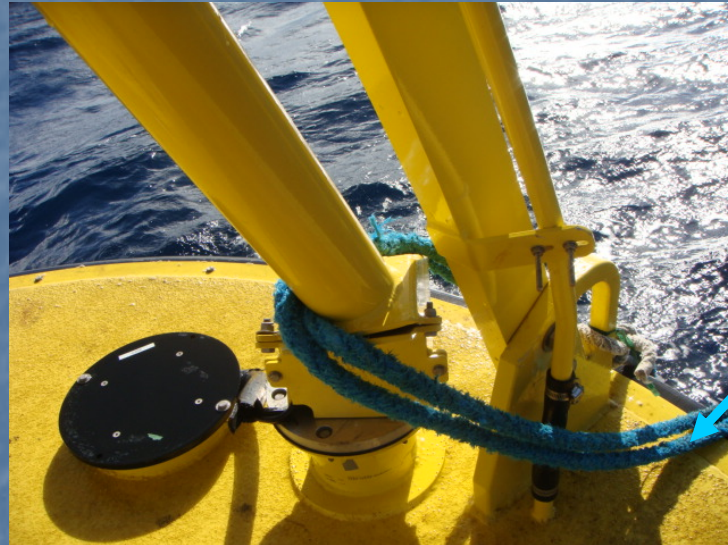


ALNILAN BUOY

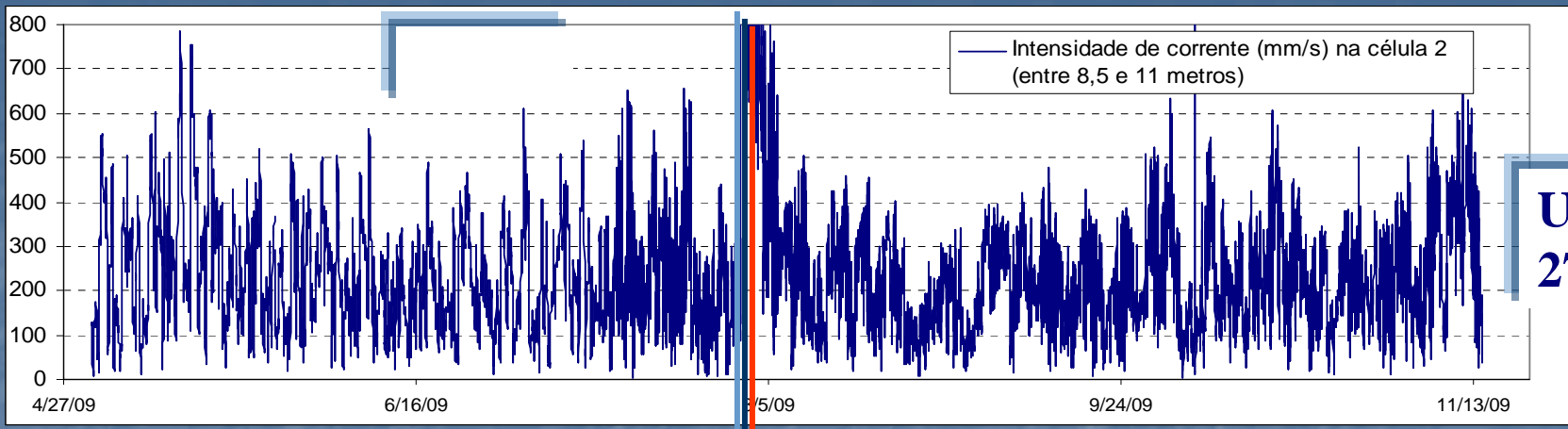
Buoy ALNILAN-SC suffered a navigation incident, was recovered on Dec 2009, repaired at DHN by OKEANUS and waiting to be deployed back.



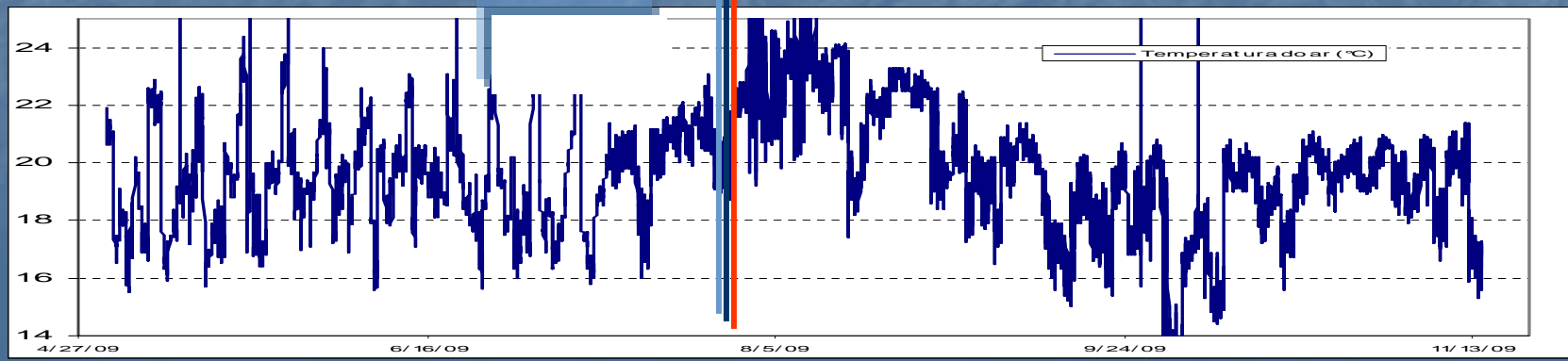
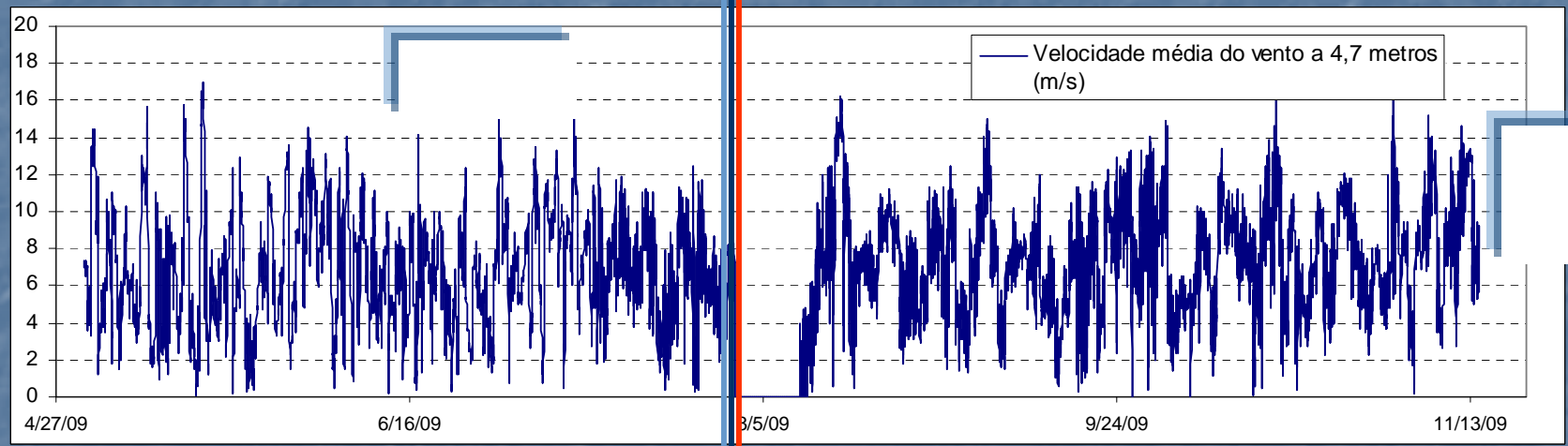
FISHING BOATS
IN THE AREA



CABLE
OF
FISHING



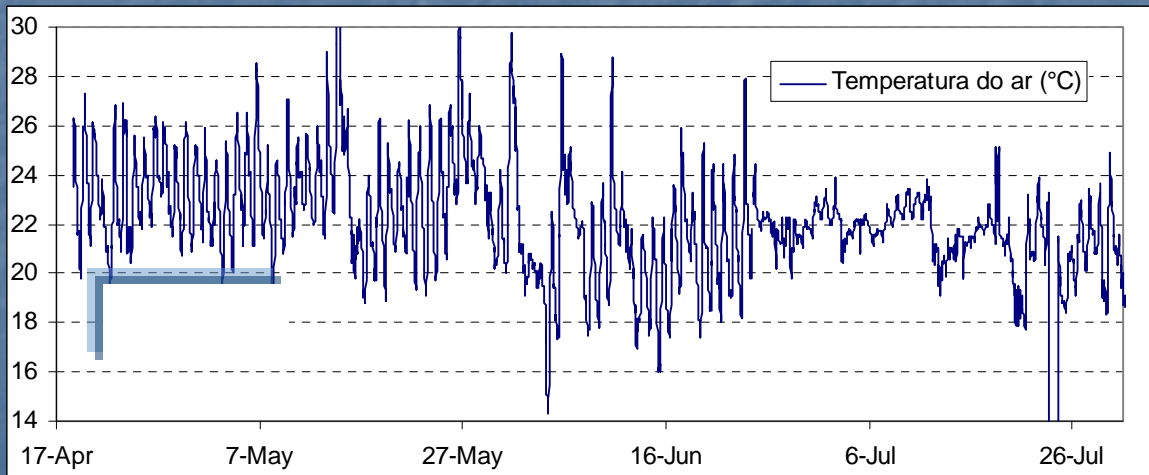
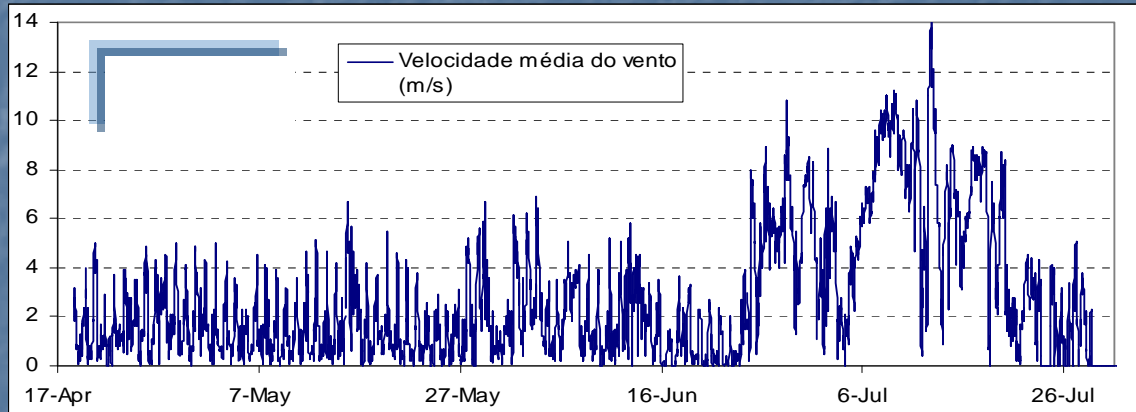
Up to
270 cm/s)





ALNITAKA – navigation incident

- Data before incident:



Back to sea 14Oct2009



Ongoing Activities

- Commissioning of three 3M moored meteo-oceanographic buoys and spare sensors – November by AXIS
- MINUANO buoy upgrade – Ready by OKEANUS
- Deploying buoy and fixing the two ones by November





Next Future

- Deployment of 3 new meteo oceanographic buoys (after DEC 2010)
- Acquisition of another Platform Buoy, probably will be deployed on the North and closes PNBOIA first set of moored buoys for covering all Brazilian coast on a interval of 500 km.

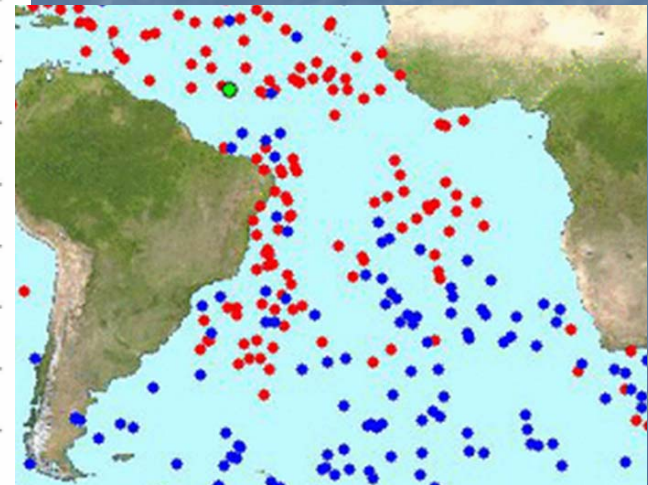
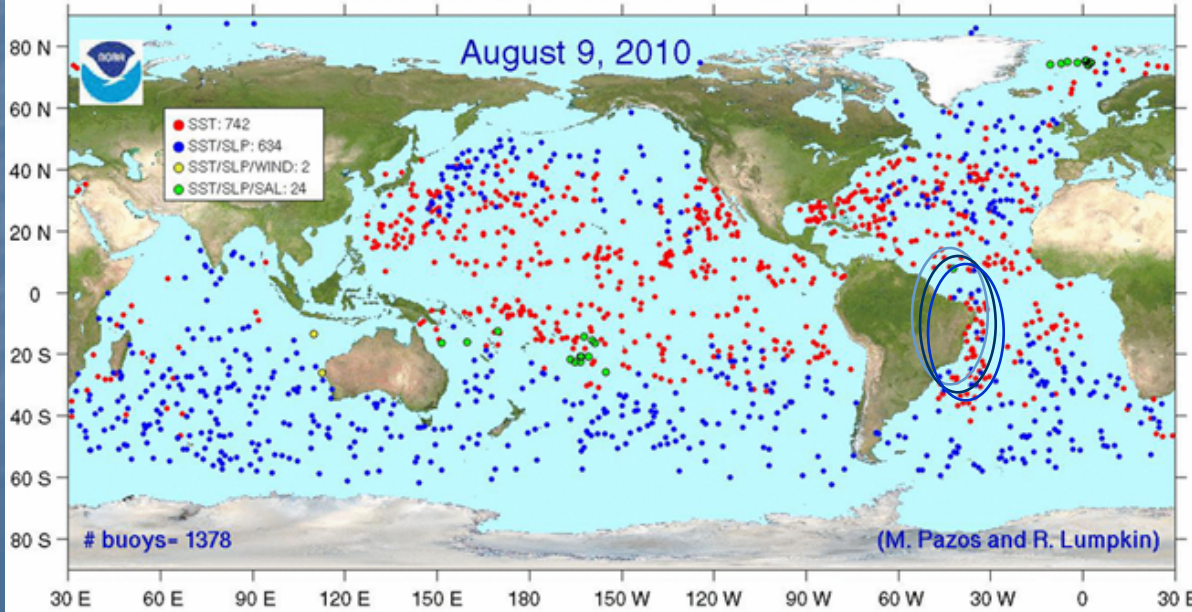


DRIFTING BUOYS

(THE GLOBAL DRIFTER PROGRAM)

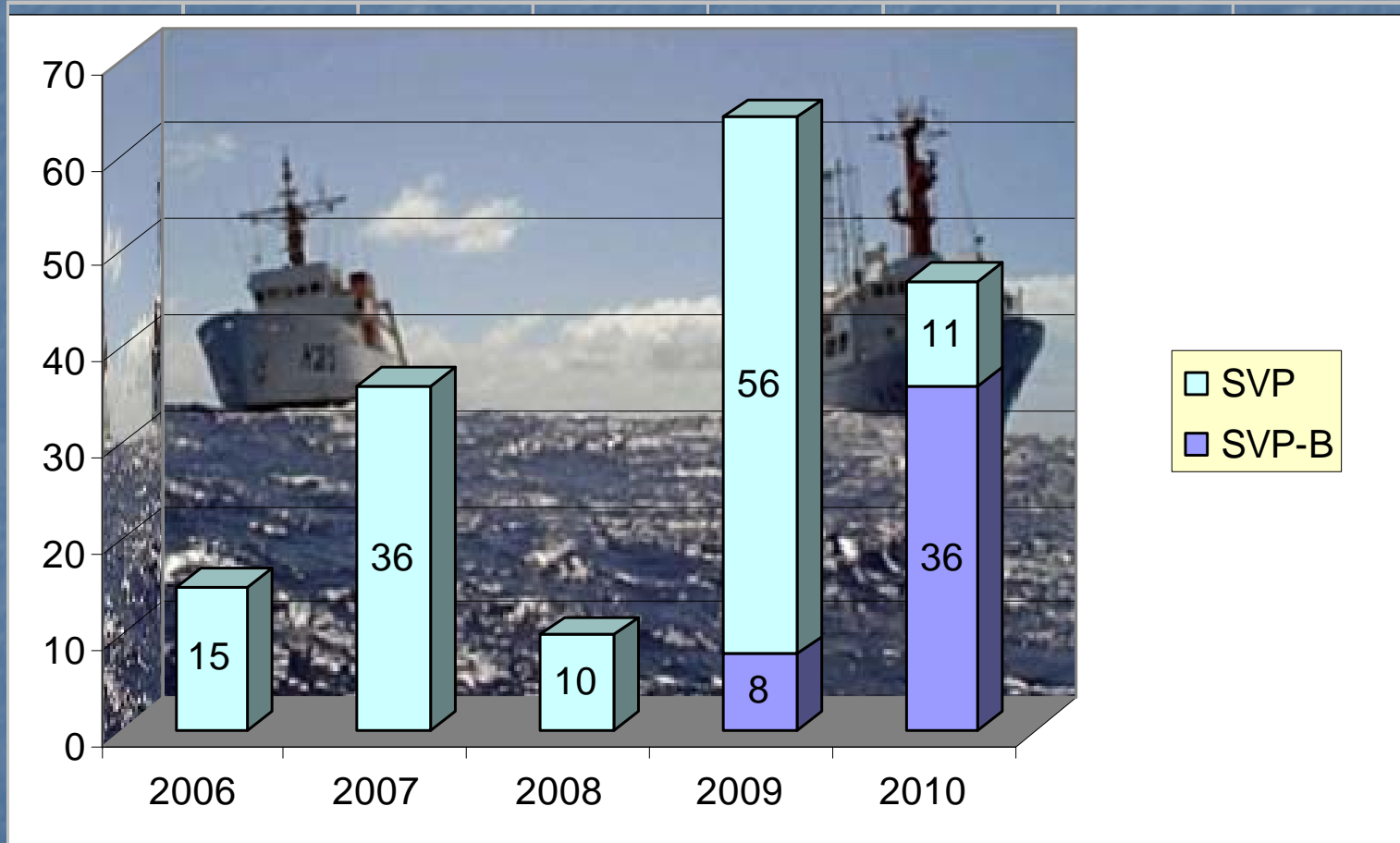


STATUS OF GLOBAL DRIFTER ARRAY





DRIFTING BUOYS DEPLOYMENTS



20 buoys from SHN

12 SVPB and 64 SVP to be deployed up to next year



COOPERATION WITH SHN

Deployment of 20 drifters ,
by Brazilian Navy Polar Ship
Admiral Maximiano (H-41),
during Antarctic Mission XXVIII
Summer 2010 in cooperation
with *Servicio de Hidrografia
Naval* (SHN – Argentina).





PNBOIA IN THE WEB

- <http://www.goosbrasil.org/>

- GTS (Global Telecommunication System) (via Argos)
(www.wmo.int/web/www/TEM/gts.html)

- Sítio do Argos-cls
(www.argos-system.org/)

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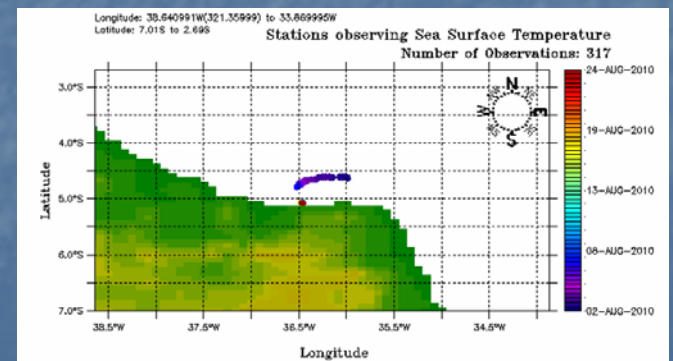
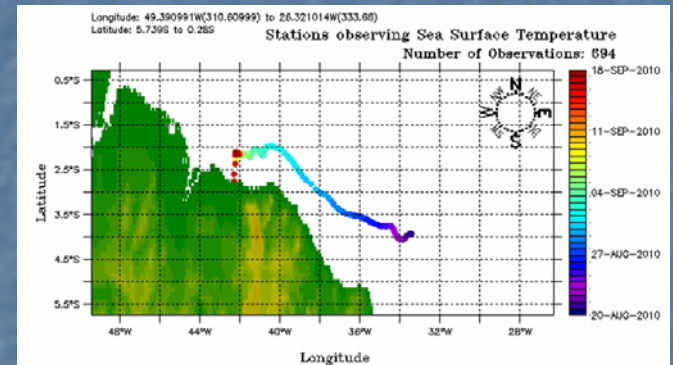
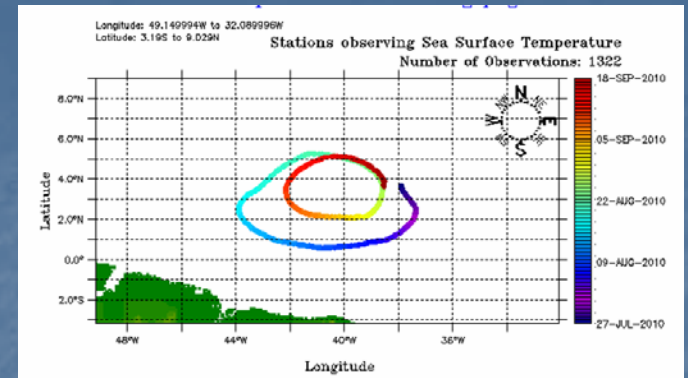
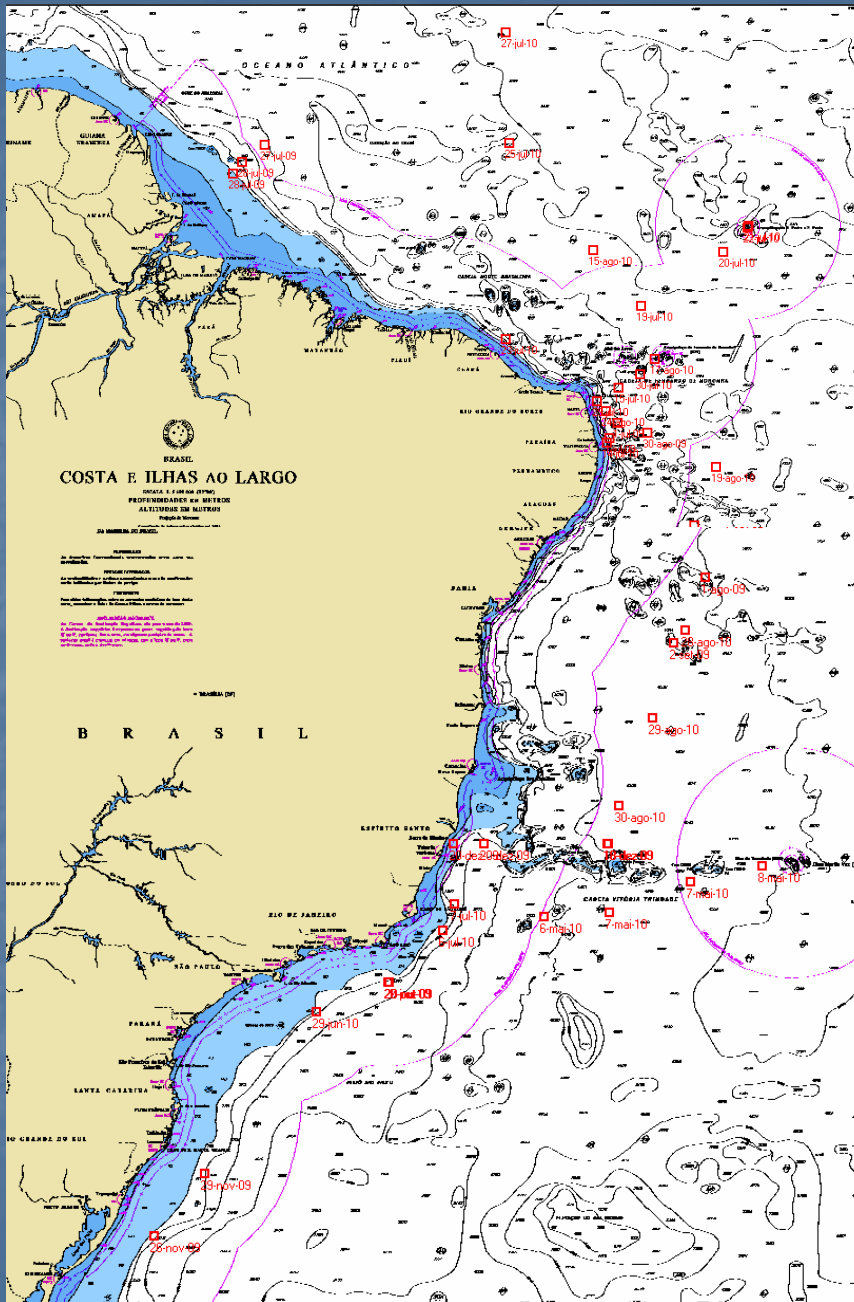
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GOOS-Brasil é a componente GOOS brasileira da Aliança Regional para a Oceanografia no Atlântico Sudoeste Superior e Tropical - [OCEATLAN](#).

O GOOS-BRASIL é um sistema nacional de observação dos oceanos visando a coleta, controle de qualidade, distribuição operacional de dados oceanográficos e monitoramento oceanográfico e climatológico no Atlântico Sul e tropical.

News

Data	Título	Descrição
22 a 26 Fevereiro 2010	Ocean Sciences Meeting	Portland, Oregon, EUA
08 a 12 Agosto 2010	The Meeting of the Americas	Foz do Iguaçu, Brasil
13 a 17 Setembro 2010	Storm Surges Congress 2010	Hamburgo, Alemanha





PNBOIA DATA ACCESS

http://www.goosbrasil.org/produtos/pnboia_data.html

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Acesse os dados do PNBOIA

Clique no nome do arquivo para acessar os dados.

ARGOS ID	#WMO	Lançamento	Dados
78859	31786	XX/10/2009	bd31786
71506	31785	XX/10/2009	bd31785
71502	31784	XX/10/2009	bd31784
78868	31779	01/09/2009	bd31779
71871	31778	02/09/2009	bd31778
71870	31921	01/08/2009	bd31921
78866	31745	XX/07/2009	bd31745
78865	31742	XX/07/2009	bd31742
78864	31741	XX/07/2009	bd31741
71859	31758	22/06/2009	bd31758
71858	31756	21/06/2009	bd31756
71857	31755	21/06/2009	bd31755
71856	31706	21/06/2009	bd31706
71882	31548	15/06/2009	bd31548
71883	31998	14/06/2009	bd31998

Conheça o PNBOIA

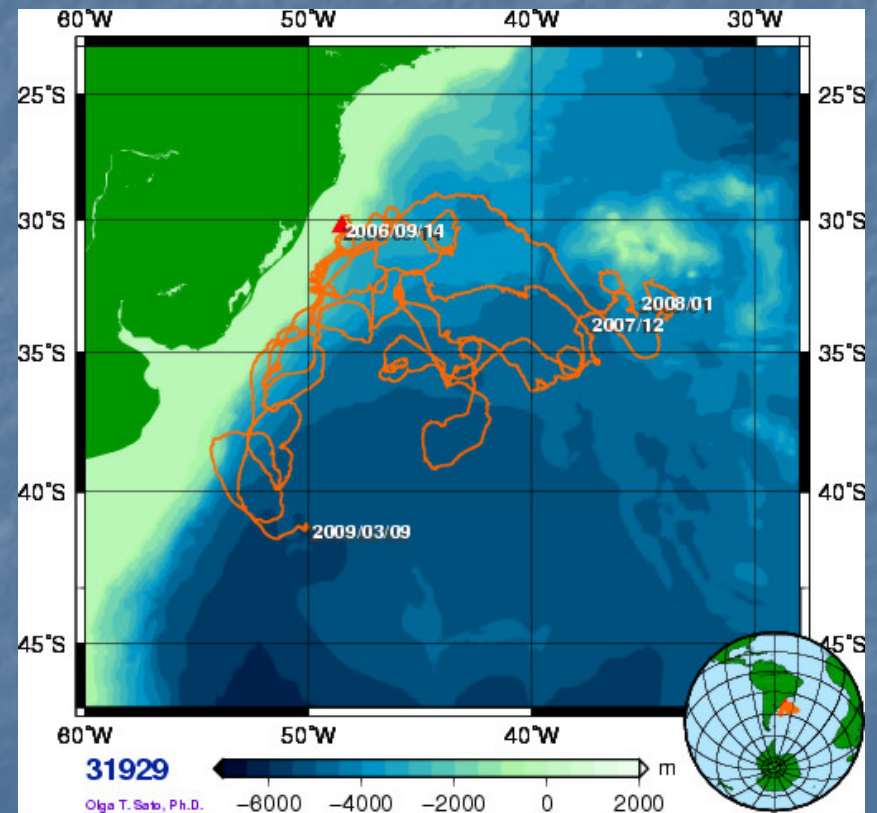
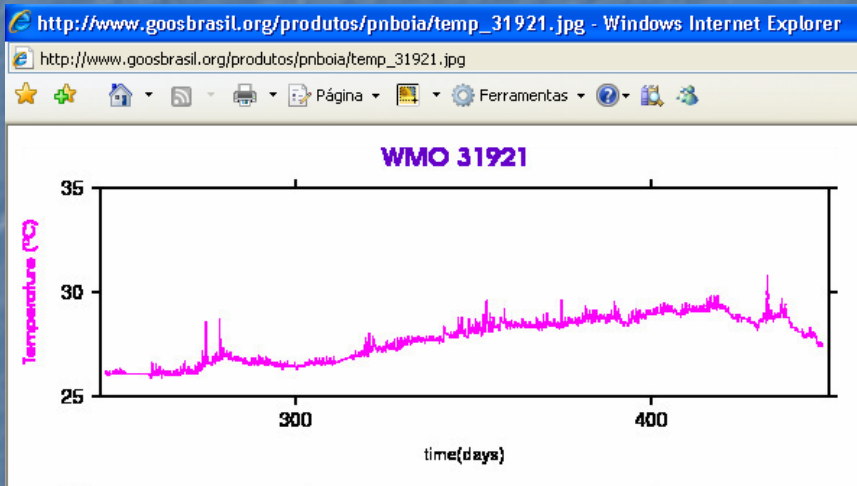
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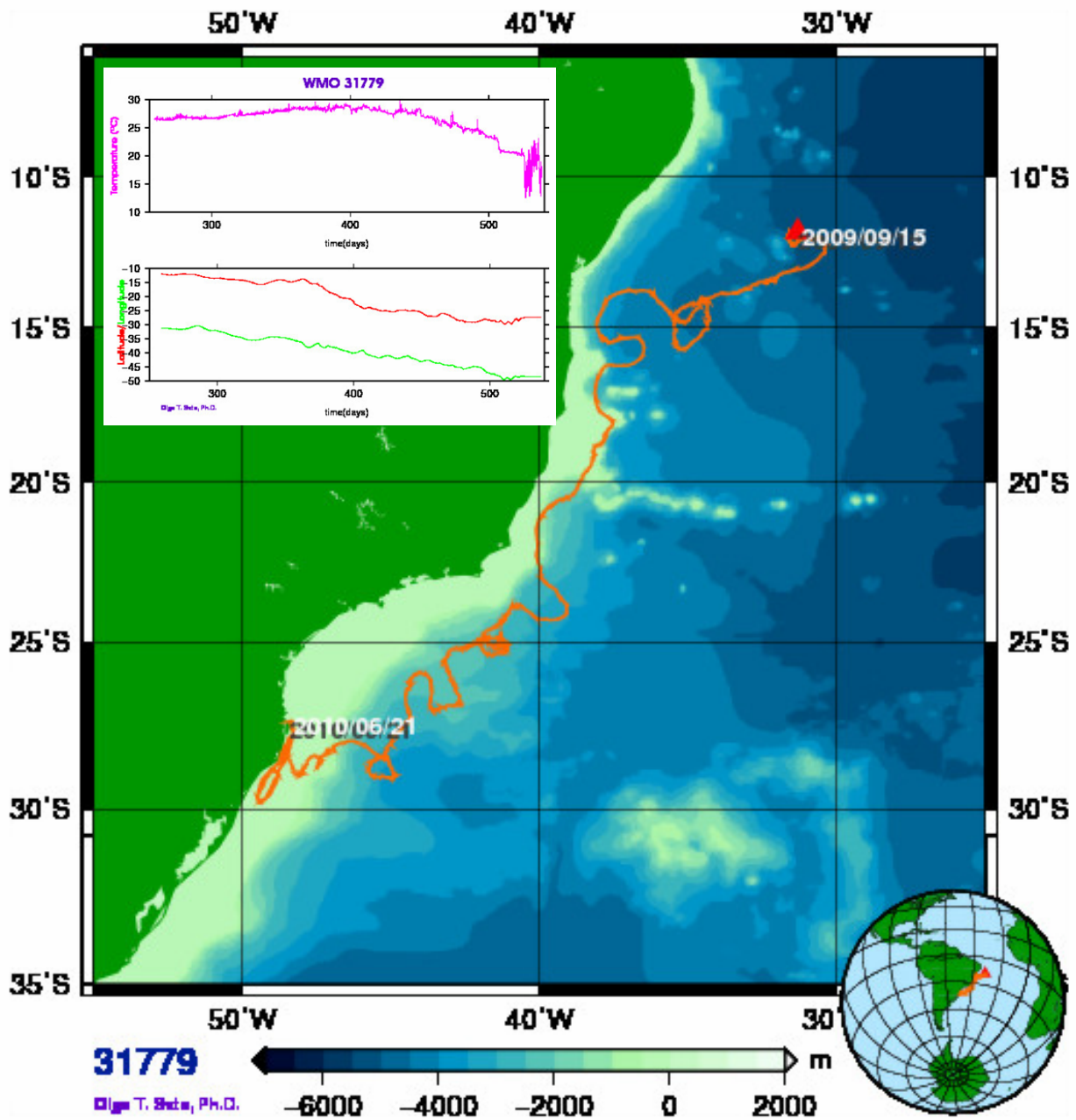
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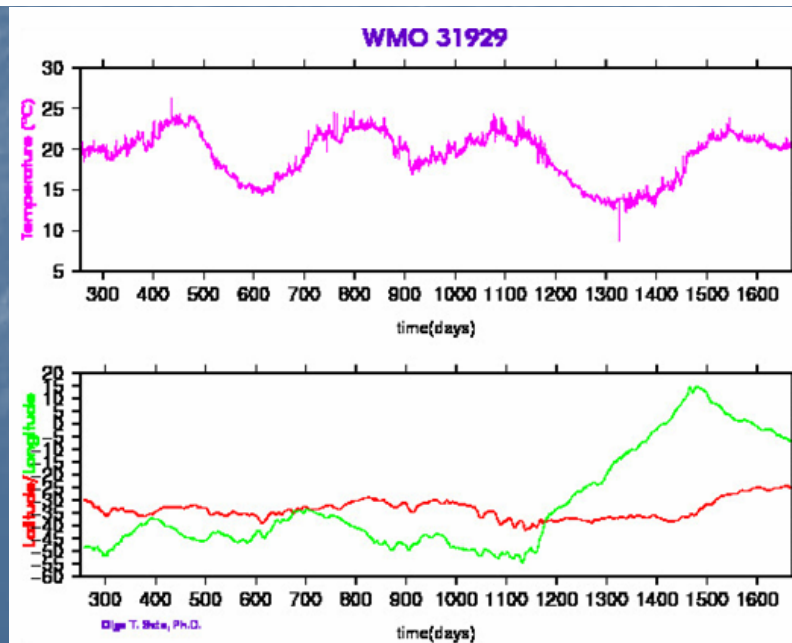
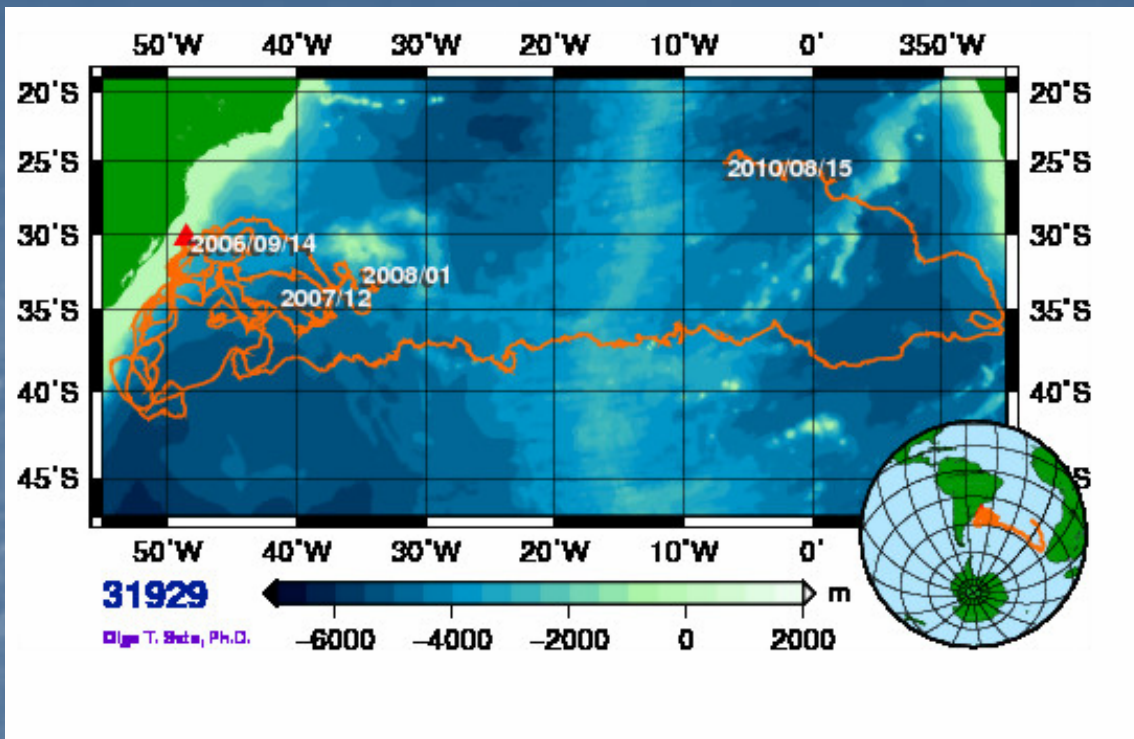
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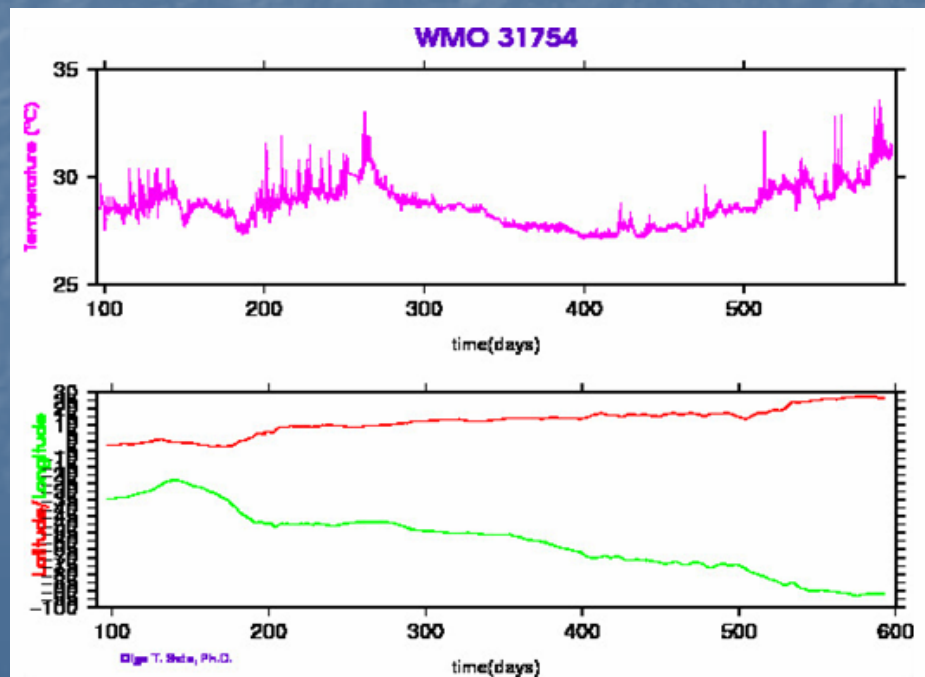
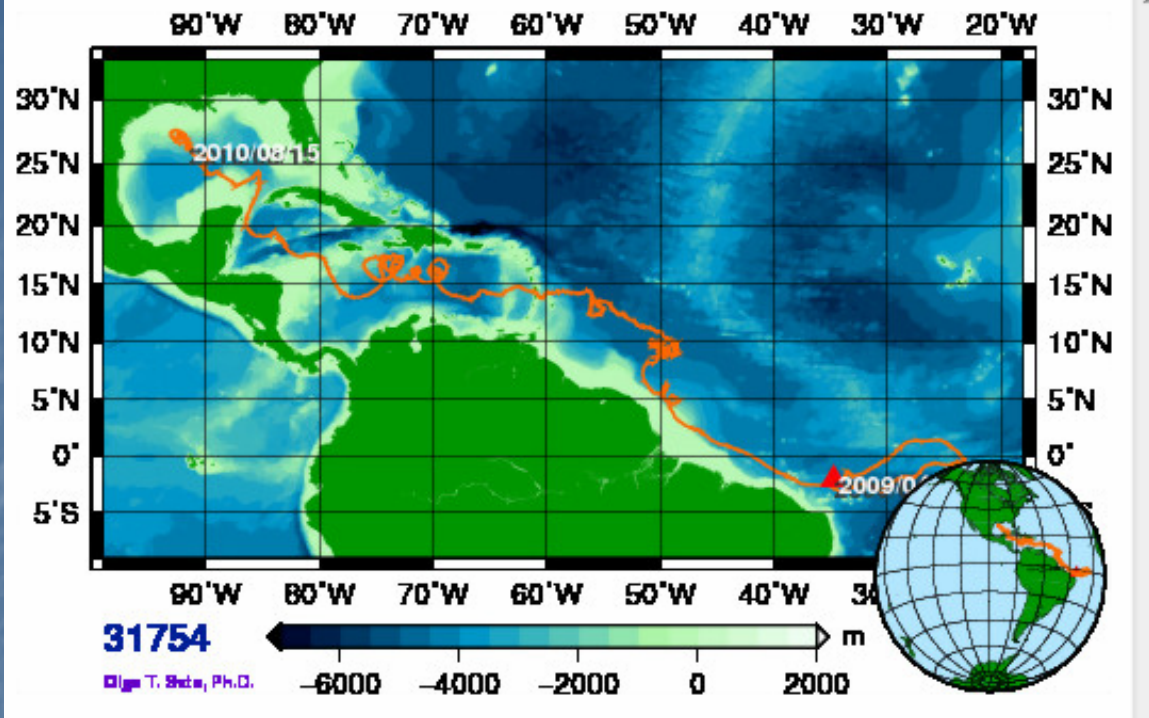


EXAMPLE OF COLECTED DATA





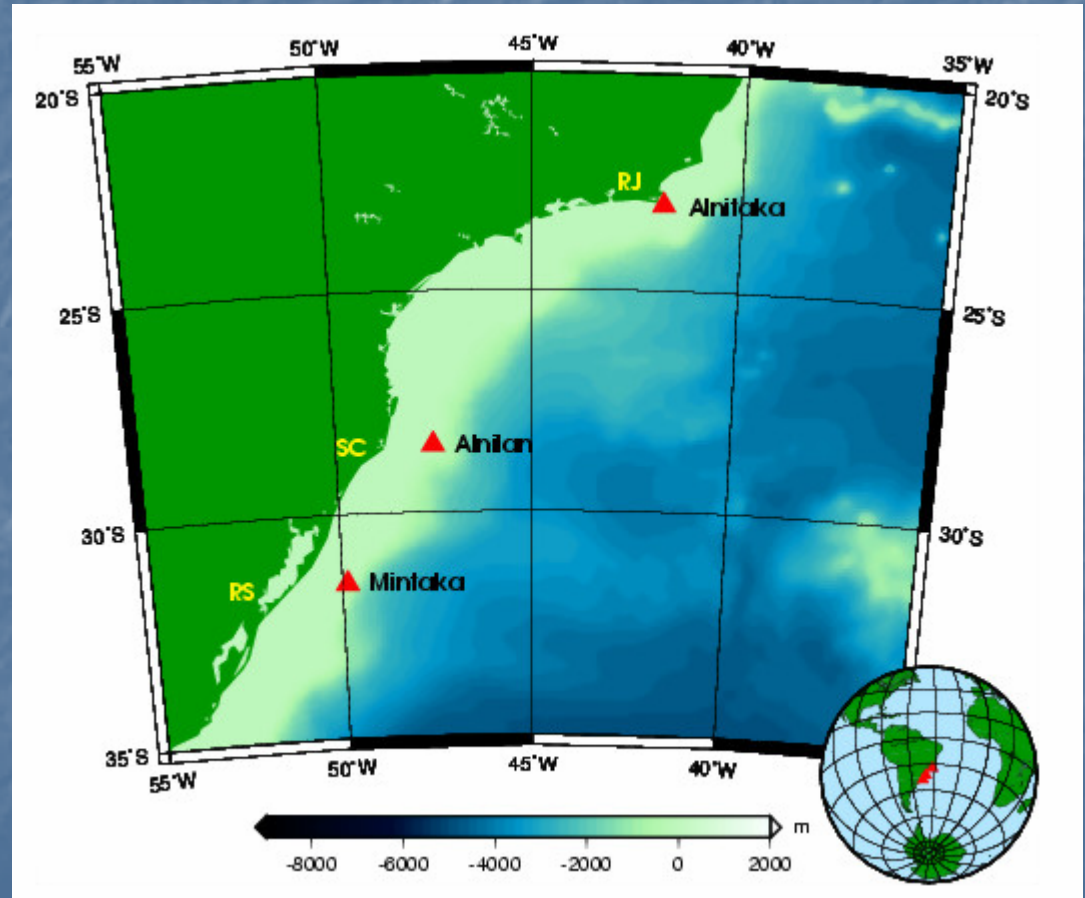
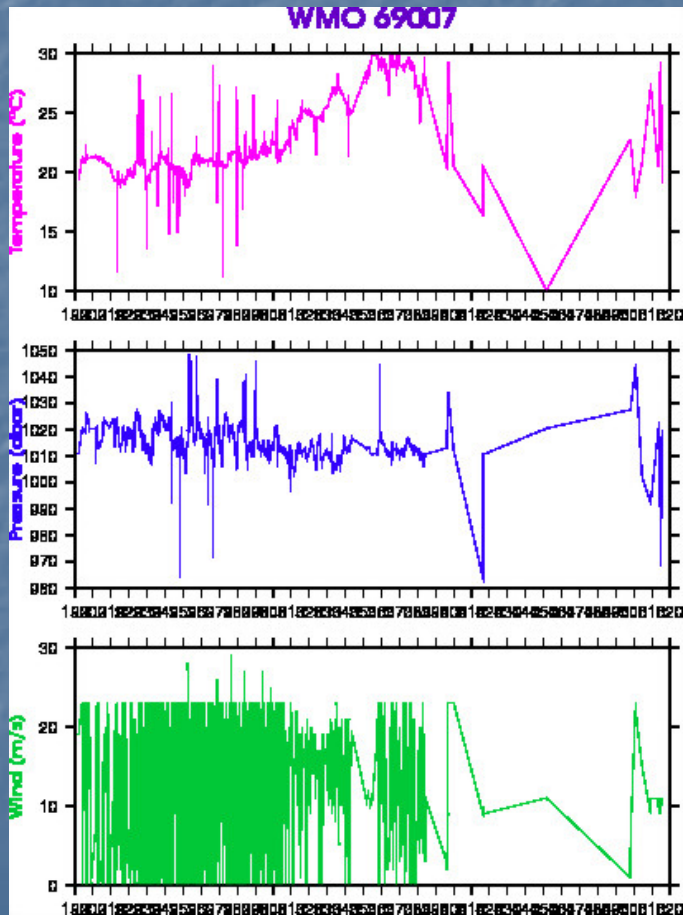






MOORED BUOYS

Bóia MINTAKA





PAST ACTIVITIES

- Support for the World Cup Yachting - Star Class - Rio de Janeiro - JAN2010
- Support Meeting Rio Tall Ships 2010 - Velas Sudamerica - Rio de Janeiro - JAN / FEB 2010





THANKS

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PLANNED MOORED BUOY NETWORK

- **COASTAL BUOYS**

- Cabo Frio – RJ

- **PLATFORM BUOYS:**

- Barra Norte – AM
- Pernambuco`s Plateau – PE
- Porto Seguro – BA
- Cabo Frio – RJ
- Santos`s Plateau – SP
- Santa Catarina
- Rio Grande do Sul

- **OCEANIC BUOYS**

(future extension)

