



# **REMO SST GROUP: Status & Updates**

***Gutemberg B. França, Rosa Paes, Rodrigo Sousa and Gabriel de Souza***  
Federal University of Rio de Janeiro - Brazil



## **REMO Goals:**

- To develop and **maintain an operational ocean circulation forecast** system for the Brazilian continental shelf and slope regions; and
- **To help environmental authorities** in case of oil disasters.

## **Members:**



PETROBRAS - Research Center



Brazilian Navy – CHM/IEAPM



Federal University of Rio de Janeiro



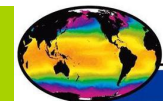
University of São Paulo



Federal University of Rio Grande

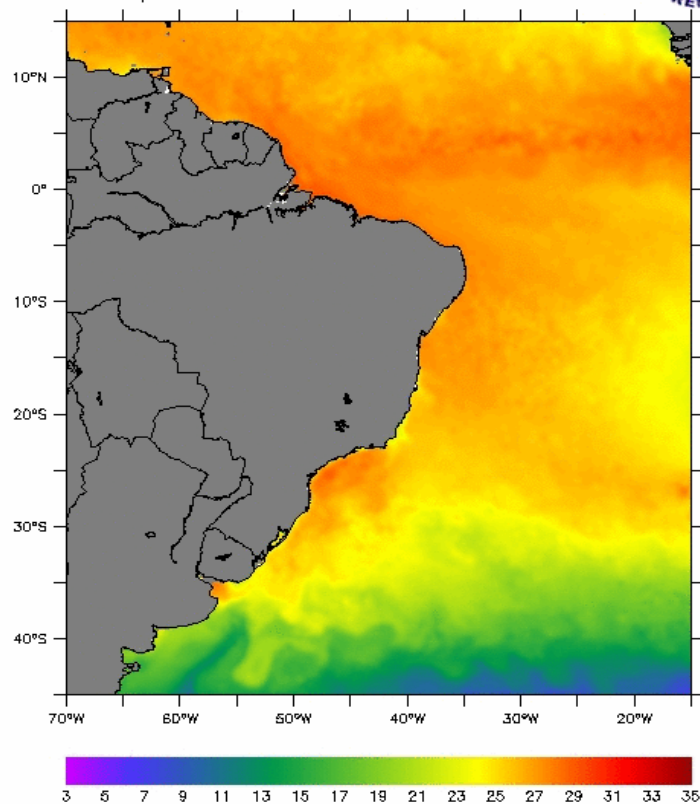


Federal University of Bahia



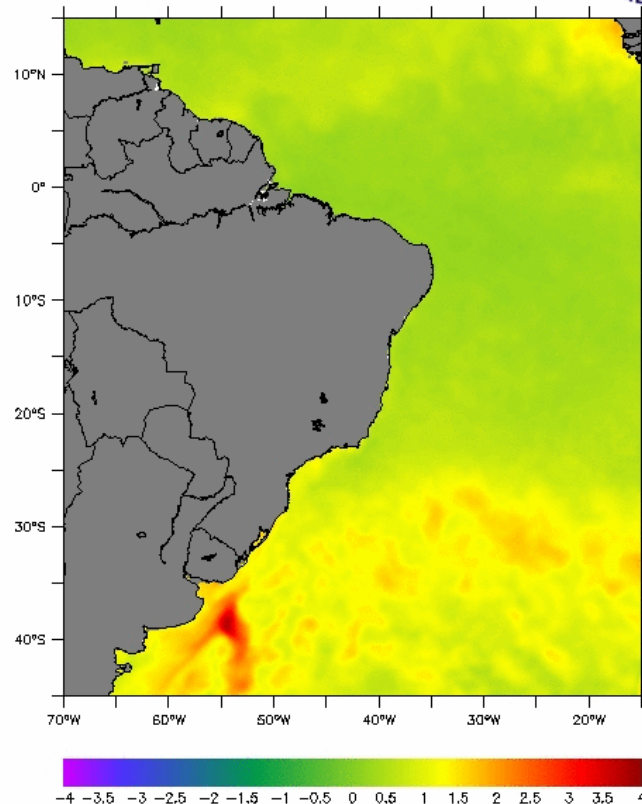
- Daily SST analysis ( NOAA18-19 & TRMM)
- Resolution: 0,05°
- Time series: 1st August 2002 up now

Rede de Modelagem e Observação Oceanográfica  
Temperatura da Superfície do Mar (Celsius)  
Valido para 01-JAN-2014



## • SST Uncertainty

Rede de Modelagem e Observação Oceanográfica  
Estimativa do Erro da TSM  
Valido para 01-01





## Oceanographic Modeling and Observation Network

A Brazilian initiative on operational oceanography



Home Team Publications News Documents Products Contacts



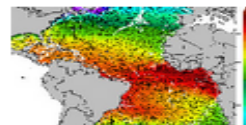
### REMO

REMO is a Brazilian effort in physical oceanography and operational oceanography conducted by a group of researchers, technicians and students associated with universities, research centers and the Brazilian Navy, funded by Petrobras and the National Agency of Petroleum, Natural Gas and Biofuels (ANP). Today, REMO's members are the Federal University of Rio Grande (FURG), the Federal University of Rio de Janeiro (UFRJ), the Federal University of Bahia (UFBA), the University of São Paulo (USP), the Navy Hydrographic Center (CHN), the Institute of Marine Studies Admiral Paulo Moreira (IEMM) and the Centre for Research and Development Leopoldo Miguez de Mello by Petrobras (CDPM2).

The general goal of REMO is the development of science and technology in physical oceanography, ocean modeling, observational oceanography and operational oceanography. The specific aims are: (i) to improve the understanding of the meso- and large-scale circulation and of the intraseasonal to interannual variability of the South Atlantic; (ii) to produce short-range ocean forecasts and to improve predictability; (iii) to develop ocean data assimilation methods; and (iv) to produce high-quality oceanographic information to support activities of the oil industry, of the Brazilian Navy, and of other sectors that demand oceanographic information.

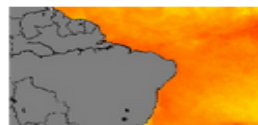
REMO's portal contain a number of short-term ocean forecasts - up to seven days - for the Atlantic Ocean produced daily by the ocean models MYCOM and ROMS and fields of sea surface temperature produced with remote sensing data. Several other products are under development and will gradually be made available, among them, long-term simulations, objective analysis produced by data assimilation methods and altimetry data.

### Highlights

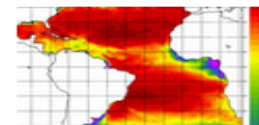


Operational Forecast Number Ocean

Forecasts based on MYCOM (1/4 and 1/1.2) and ROMS (high resolution over the shelf/slope region)



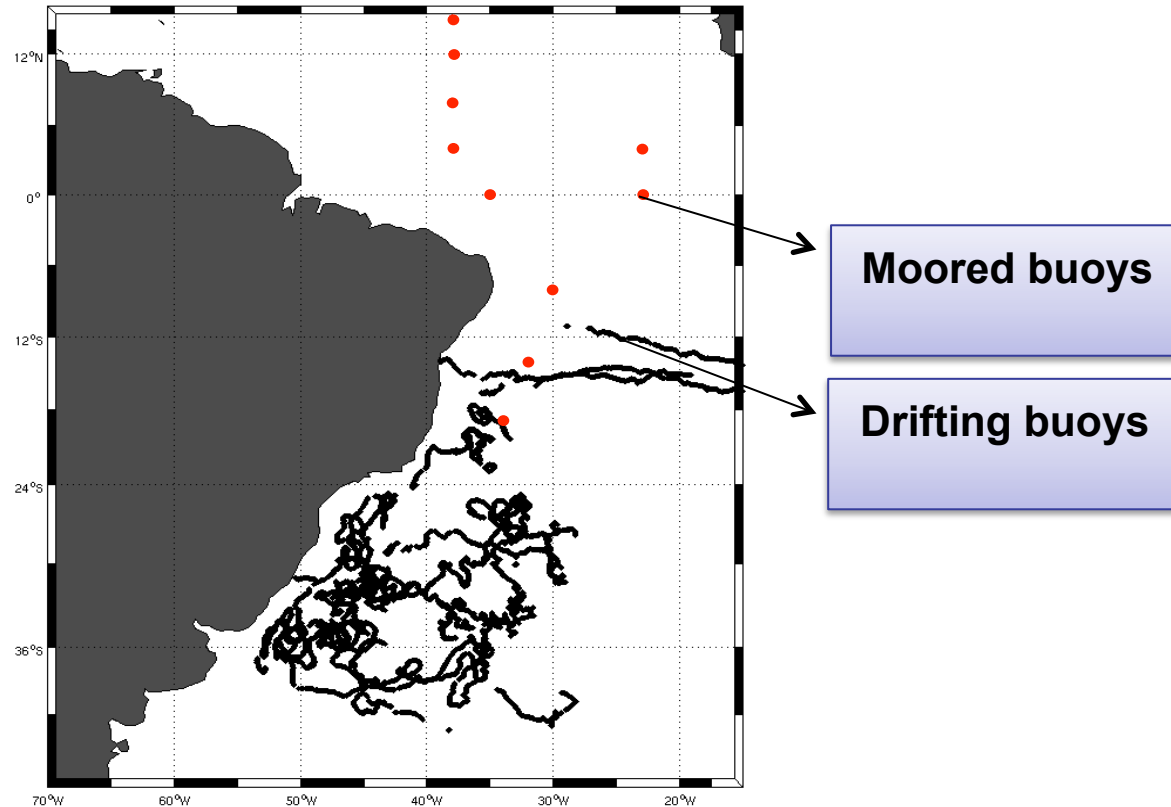
TSM  
24h composites of the Sea Surface Temperature with a resolution of 5 km



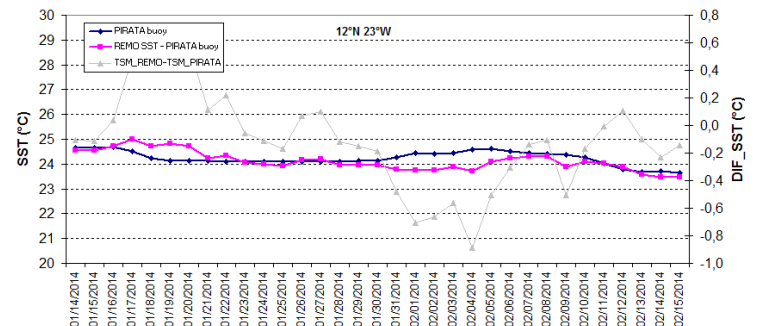
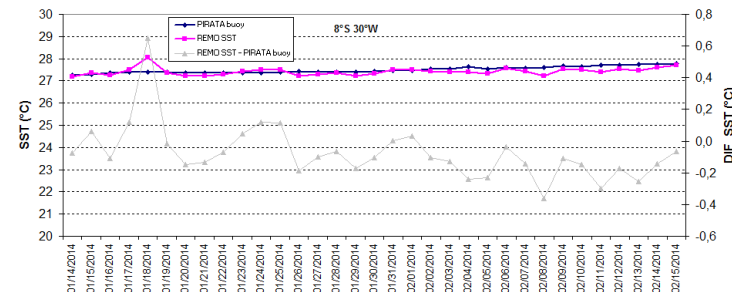
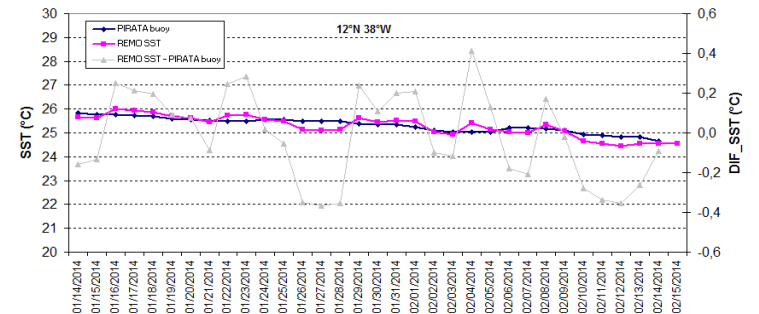
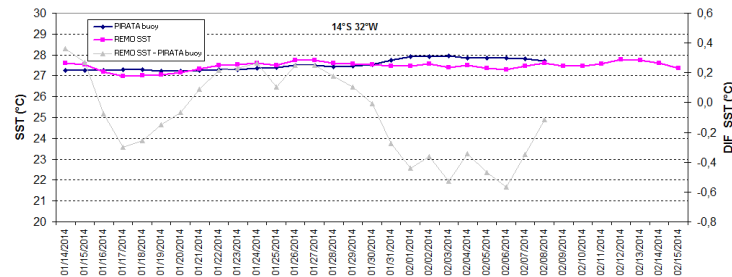
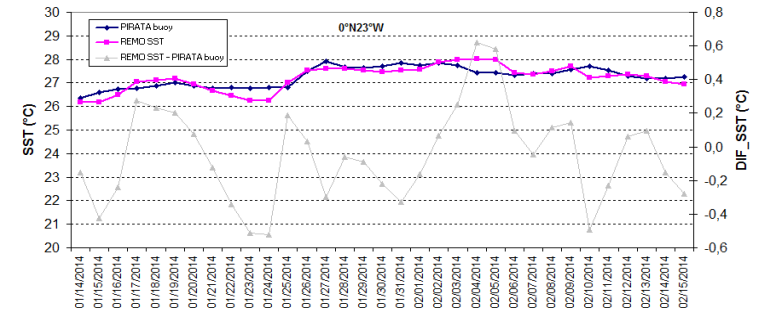
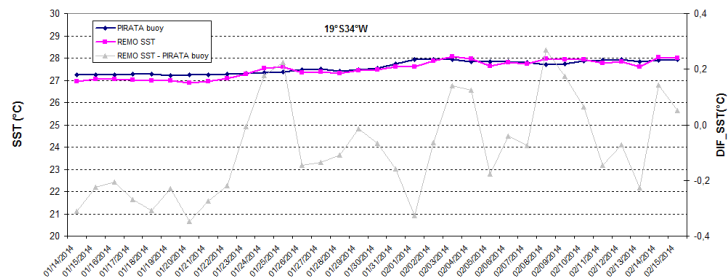
LAS  
TSM and hydrodynamical dataset analysis

- REMO SST data is available at [www.rederemo.org/html/](http://www.rederemo.org/html/)

Validation has been continually carried out with moored and drifting bouys and also against GHRST products



# Validation with some PIRATA buoys





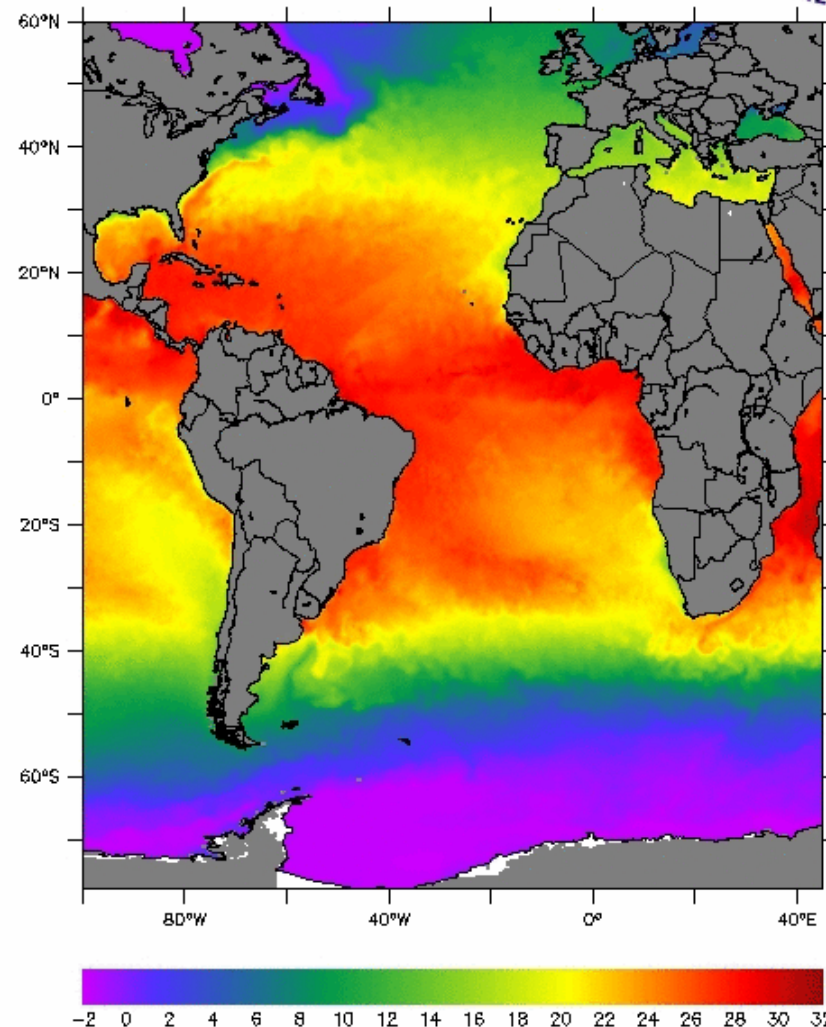
## Extended area

**Resolution: 0.05°**

**Data: NOAA18-19 & TRMM**

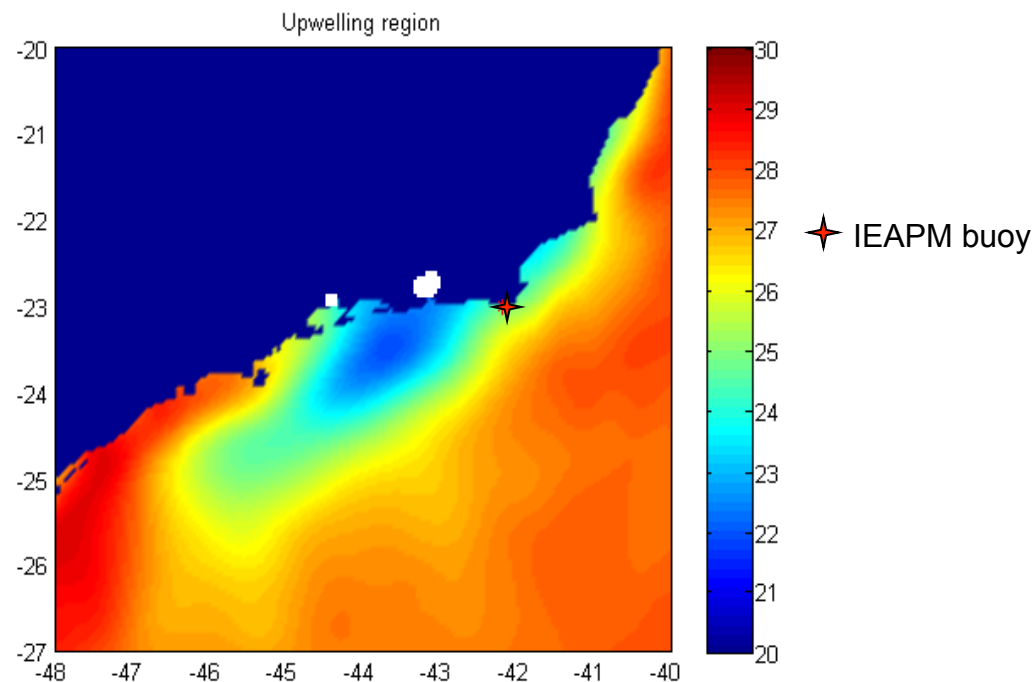
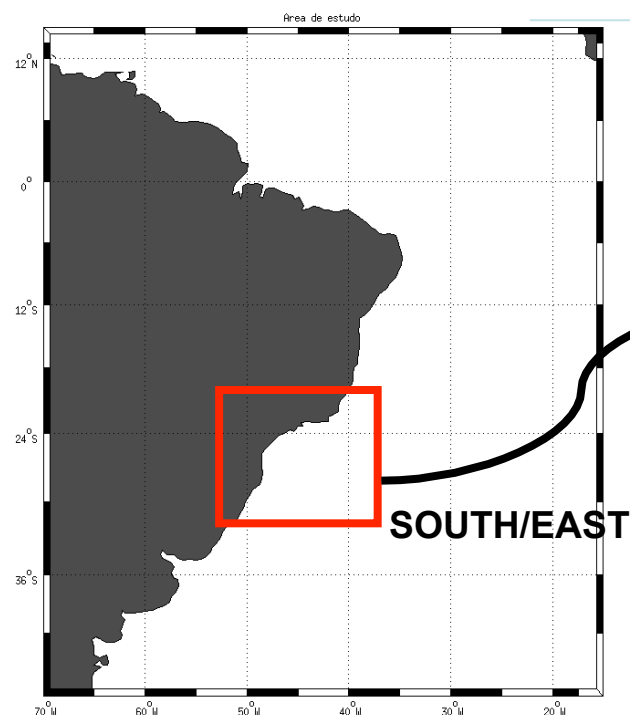
**Time series: in development**

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Temperatura da Superfície do Mar (Celsius)  
Valido para 01-JAN-2014



## Present Challenge:

To develop a better SST analysis during upwelling event in Campos and Santos basins

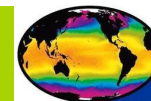






***LMA – Applied Meteorology Laboratory***

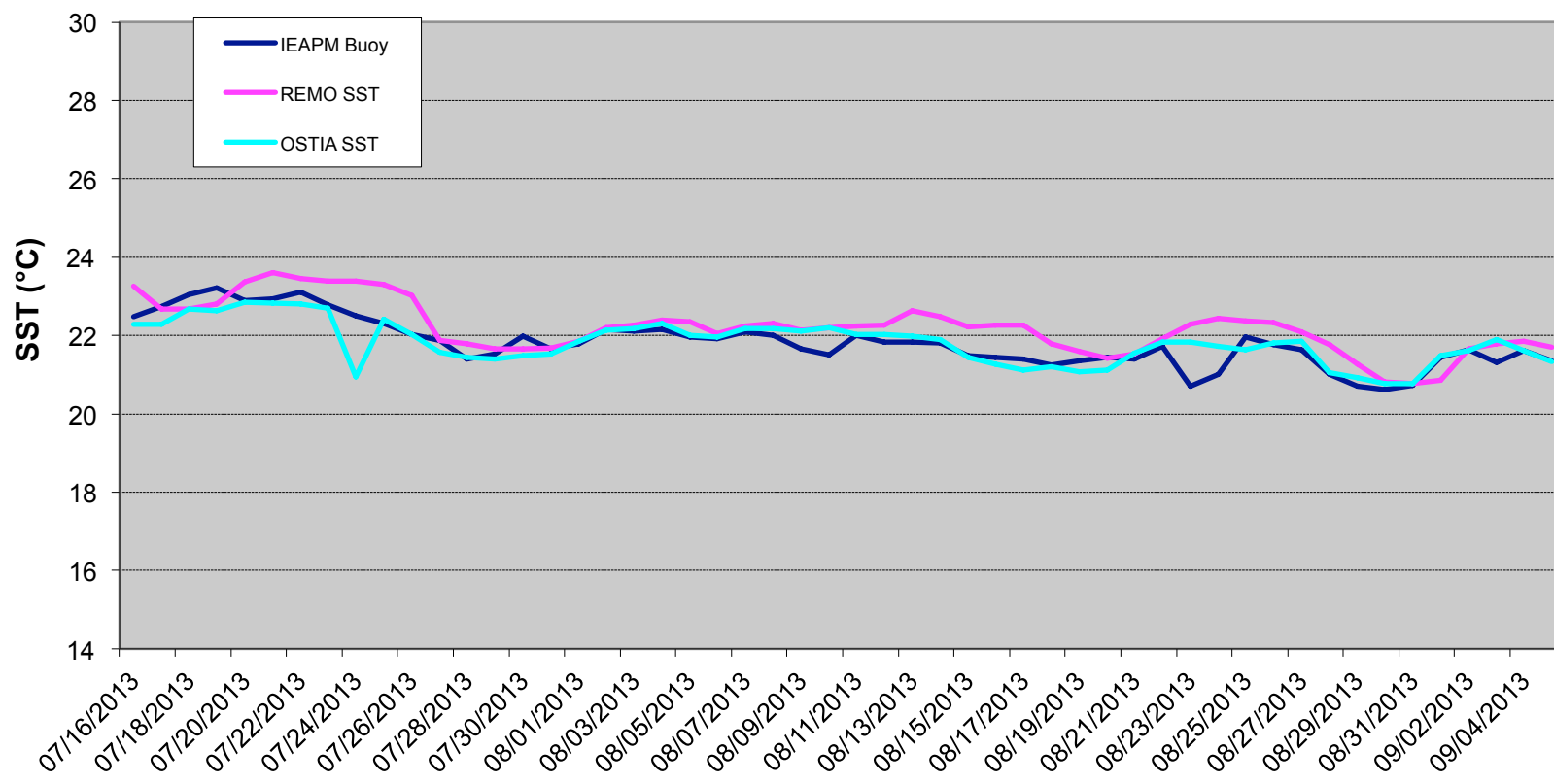
***GHR SST XV Science Team Meeting: 2<sup>nd</sup> - 6<sup>th</sup> June 2014 in Cape Town, South Africa***



**GHR SST**

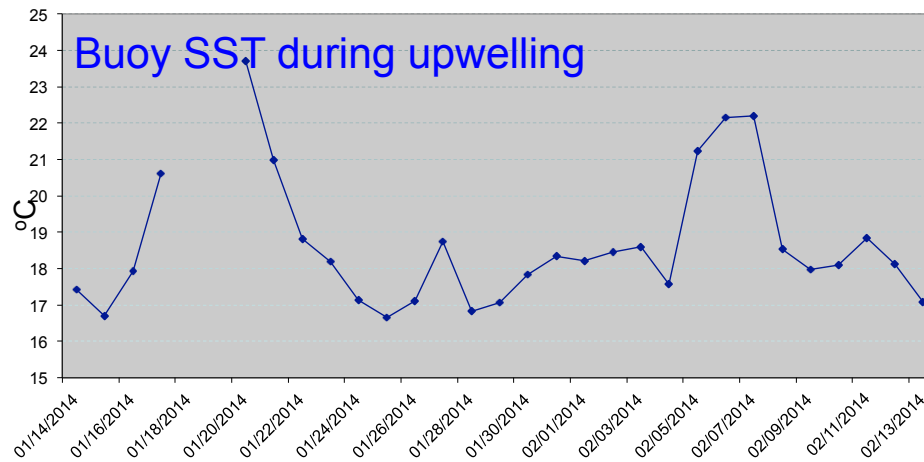
*Group for High Resolution  
Sea Surface Temperature*

## Comparison between buoy and SST products for no upwelling period

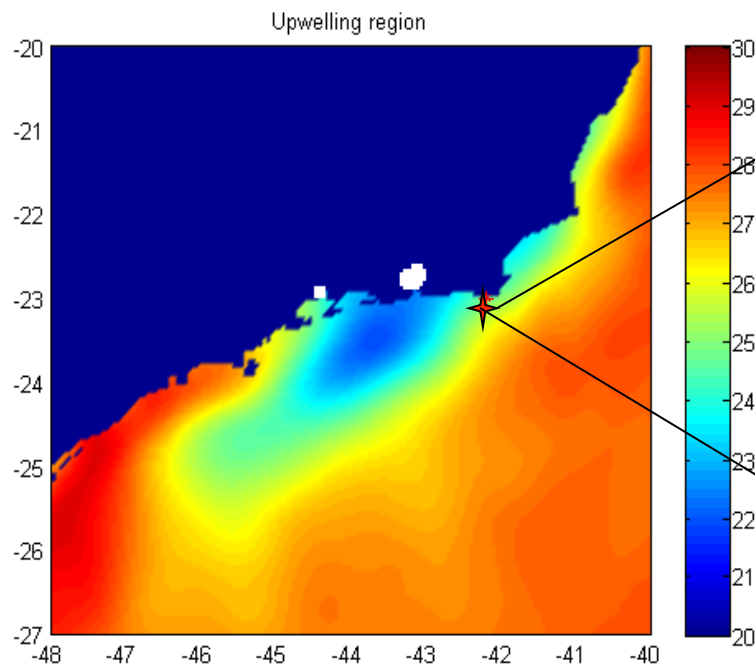
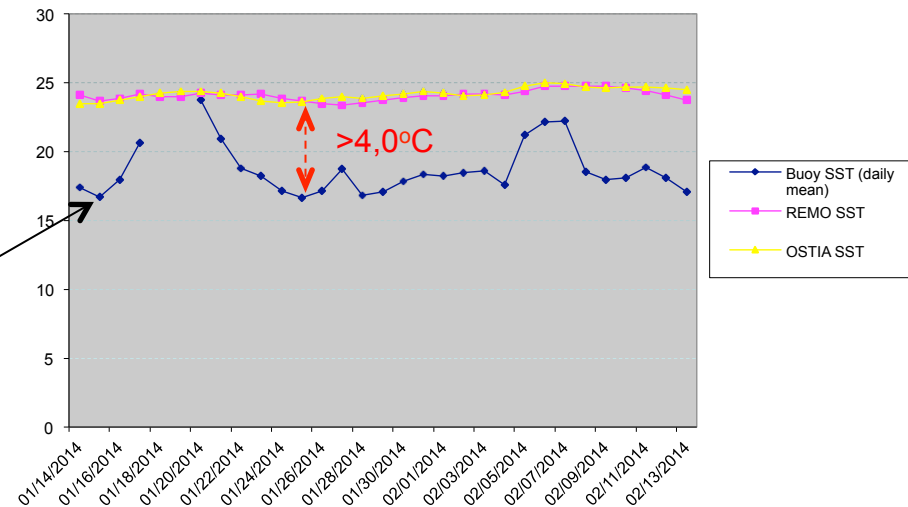


## STUDY CASE

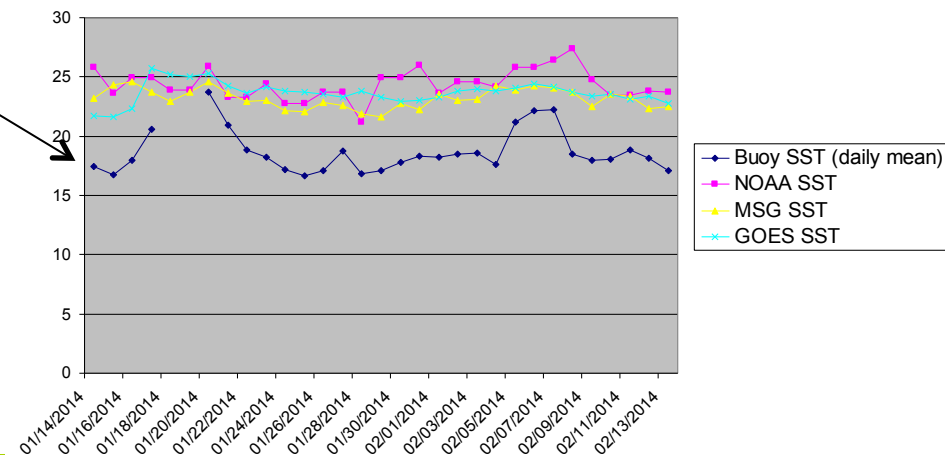
- Period: 14 Jan to 14 Feb 2014.
- Strong upwelling event recorded by buoy SST
- Local atmosphere with subsidence



## Comparison between SST analysis and in situ SST (buoy)

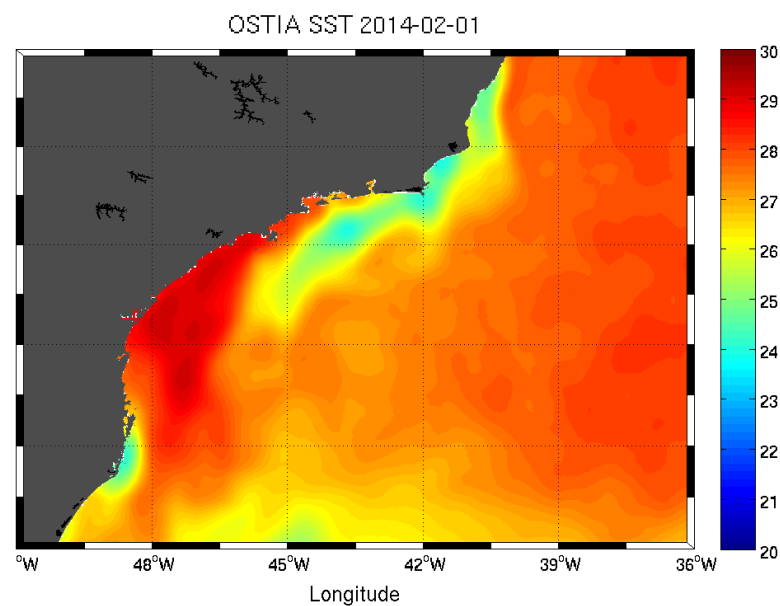
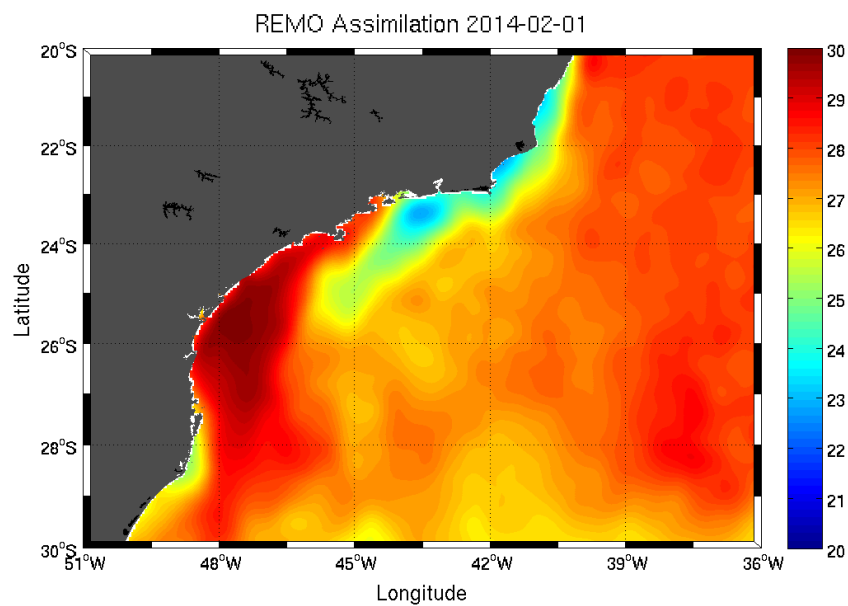


## Comparison between SST estimation and in situ SST (buoy)



MSG: <ftp://eftp.ifremer.fr/cersat-rt/project/osi-saf/data/sst/l3c/seviri>  
 GOES: <ftp://eftp.ifremer.fr/cersat-rt/project/osi-saf/data/sst/l3c/goes13>  
 NOAA-18: [ftp://podaac-ftp.jpl.nasa.gov/allData/avhrr/L2/navo\\_mcsst\\_9km\\_gac/noaa18/](ftp://podaac-ftp.jpl.nasa.gov/allData/avhrr/L2/navo_mcsst_9km_gac/noaa18/)  
 NOAA-19: [ftp://podaac-ftp.jpl.nasa.gov/allData/avhrr/L2/navo\\_mcsst\\_9km\\_gac/noaa19/](ftp://podaac-ftp.jpl.nasa.gov/allData/avhrr/L2/navo_mcsst_9km_gac/noaa19/)

## Temporal comparison between REMO and OSTIA



## Strategies:

1. ENOI: ingest METOP-A, VIIRS and *in situ* SST from the buoy;
2. Create **synthetic Ensembles** for upwelling region and use them since buoy gives the signal;
3. To develop **local atmosphere correction** algorithm using (matchup of TB and *in situ*) and radiosounding data.



## Plans for the coming year:

- To continue the **validation** of SST product;
- To develop a **high SST product** to Campus and Santos basins (including the identification of upwelling effect on SST);
- To performance **the inter-comparison** with GHRSSST product in order make available our SST time series.

***Think about next GHR SST Science Team Meeting could be in Rio de Janeiro...***



Thank you!