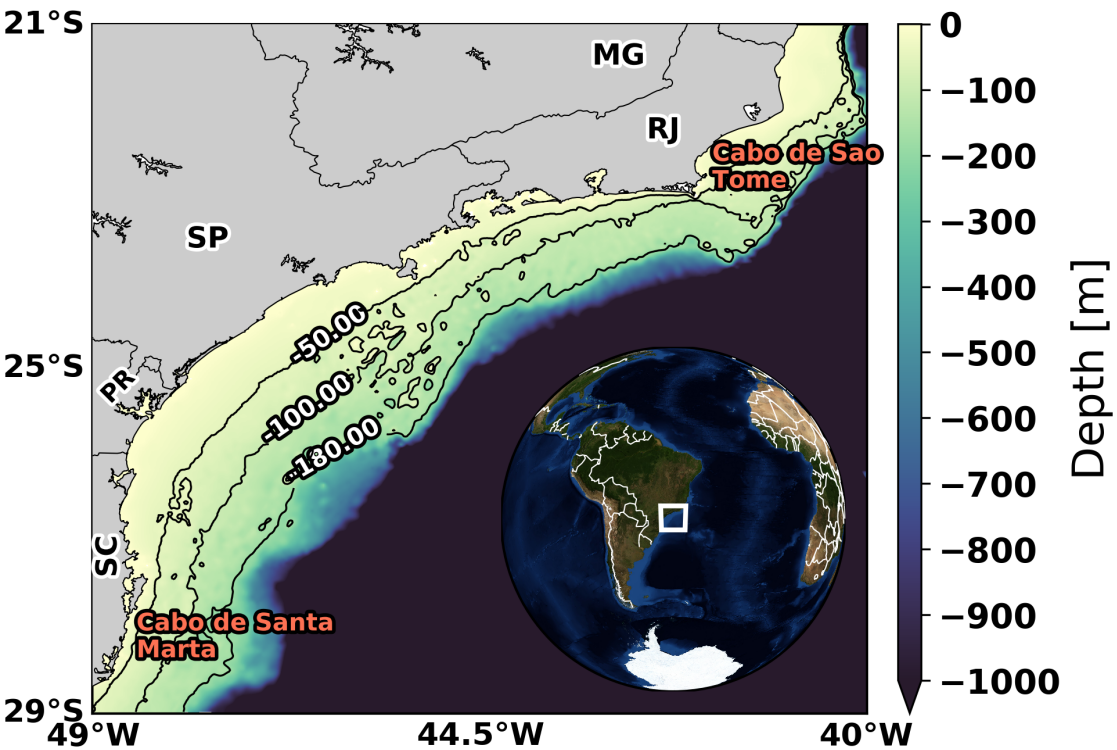
Oceanographic Institute, USP

Anomalous wind-driven circulation during the 2014 summer on the South Brazil Bight

Danilo A. Silva and
Marcelo Dottori
nilodna@gmail.com

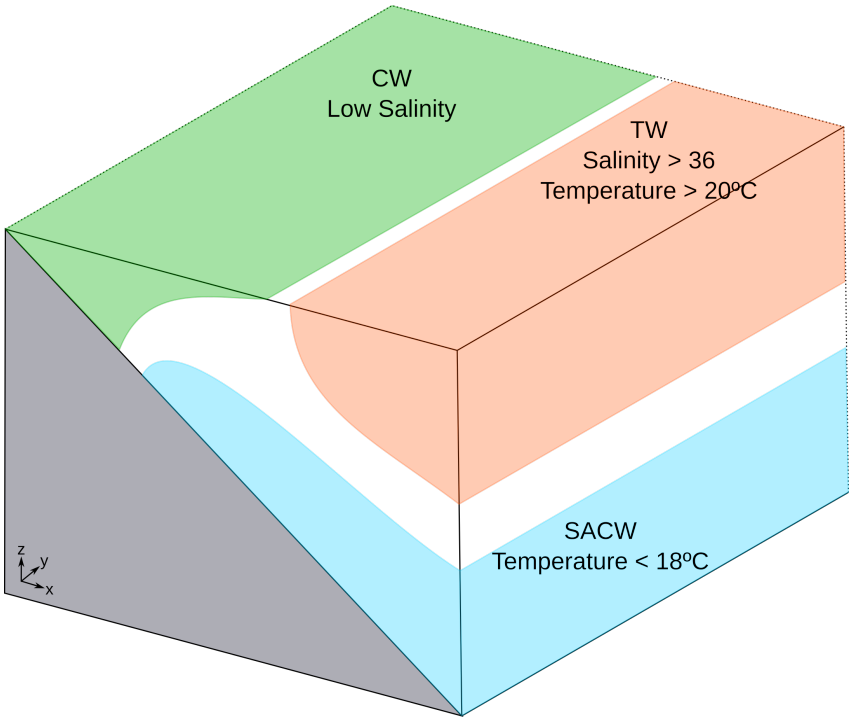
November 2019

Outline



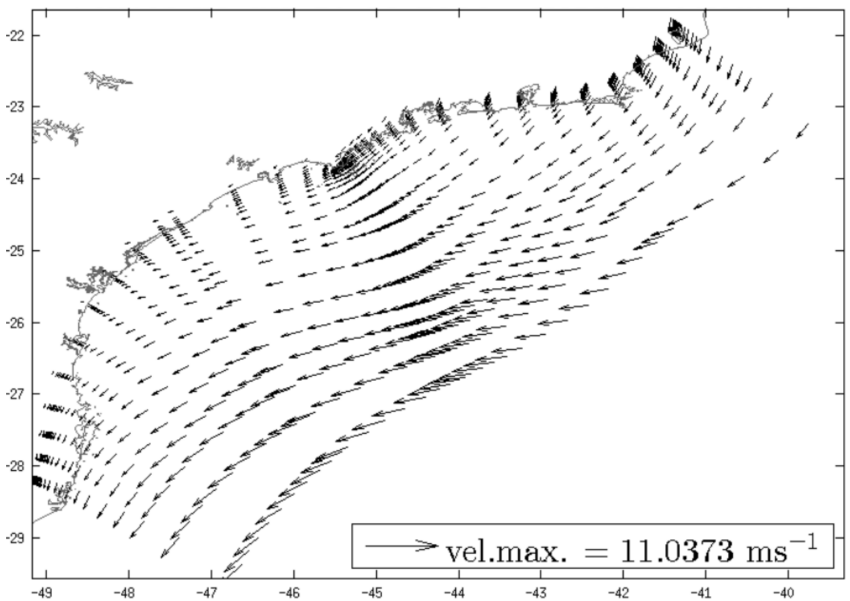
Edited from Aguiar (2018)

- Southeastern region of South America;
- Wide shelf with shelf-edge WBC (Loder et al. 1998);
- Brazil Current;



- Tropical Waters (TW);
- South Atlantic Central Waters (SACW);
- Coastal Waters (CW);

Atmospheric circulation patterns:

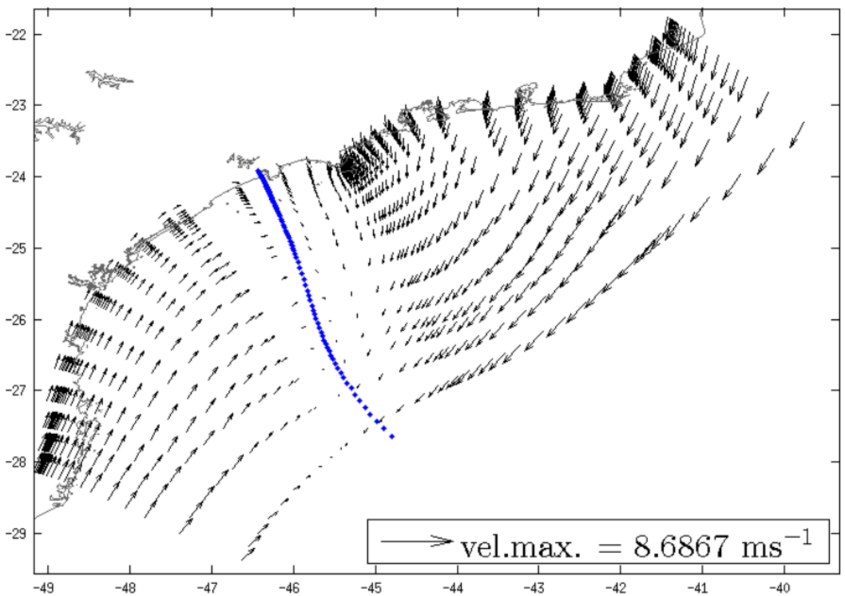


(Nascimento, 2018)

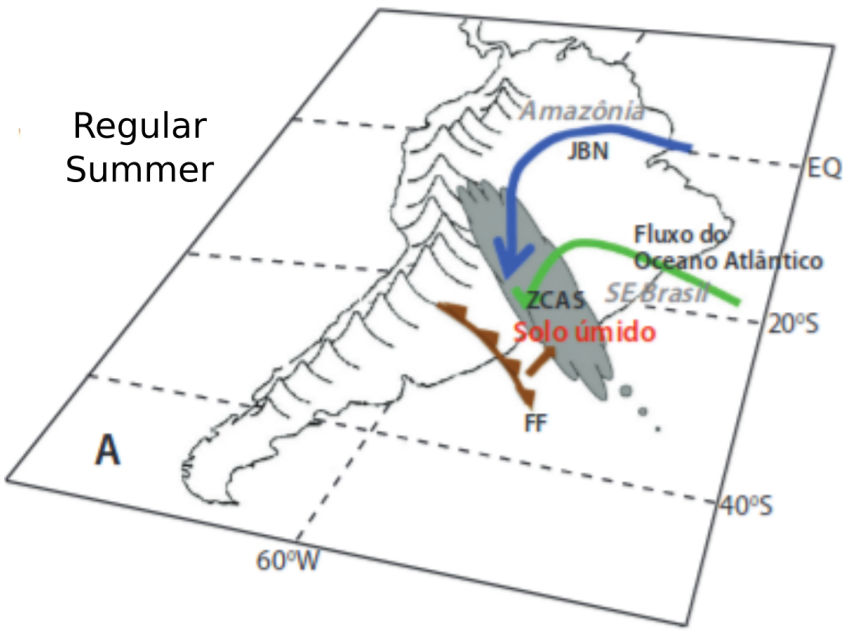
- Northeasterly winds;
- South Atlantic Subtropical High (SASH).

Atmospheric circulation patterns:

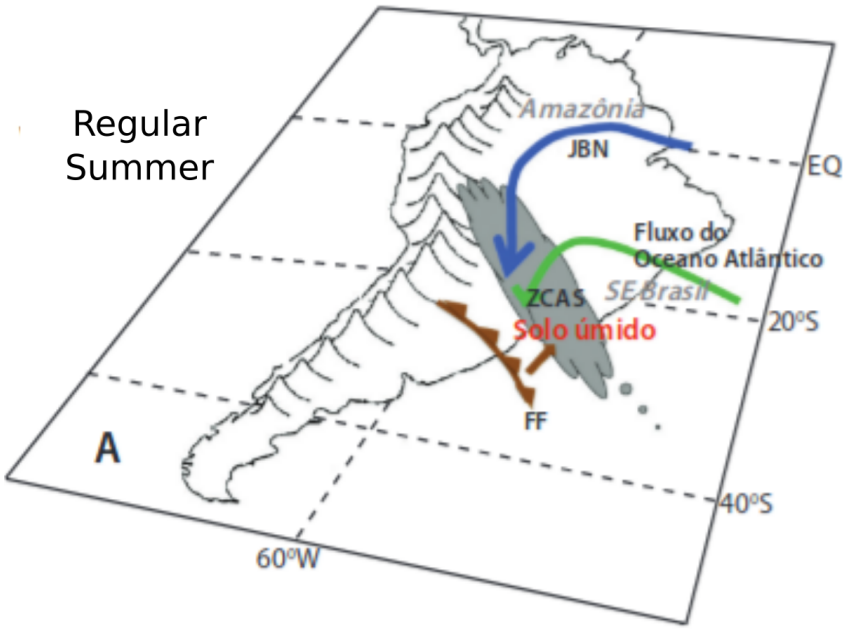
- Southwesterly winds;
- Cold Fronts.

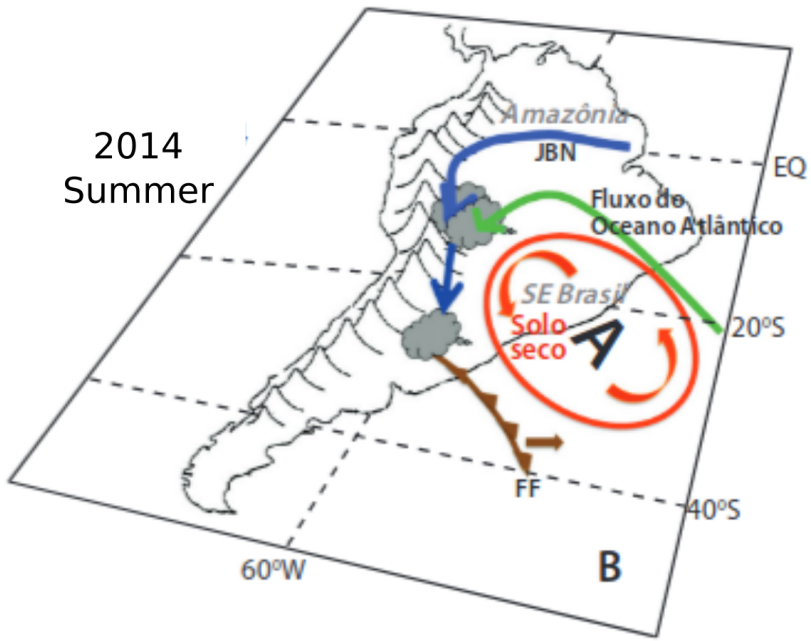


(Nascimento, 2018)



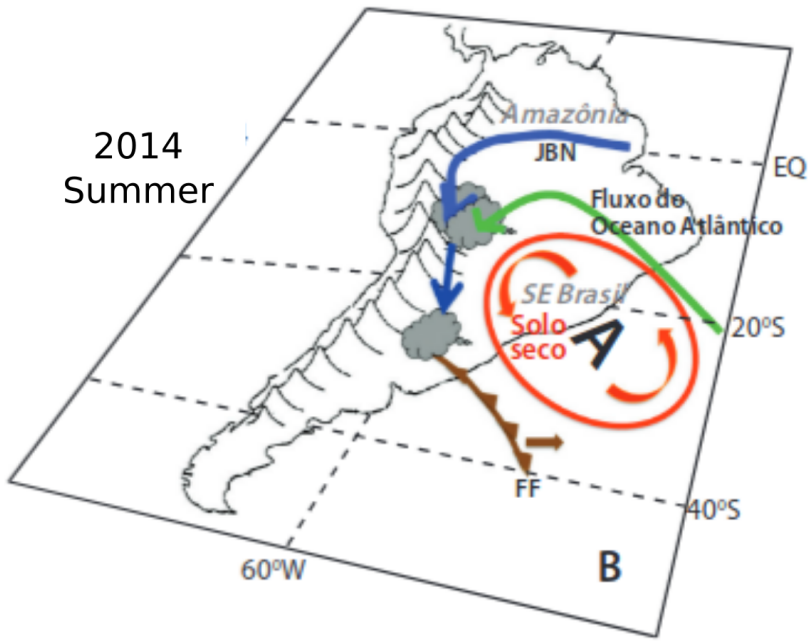
Marengo et al. (2015)





Marengo et al. (2015)

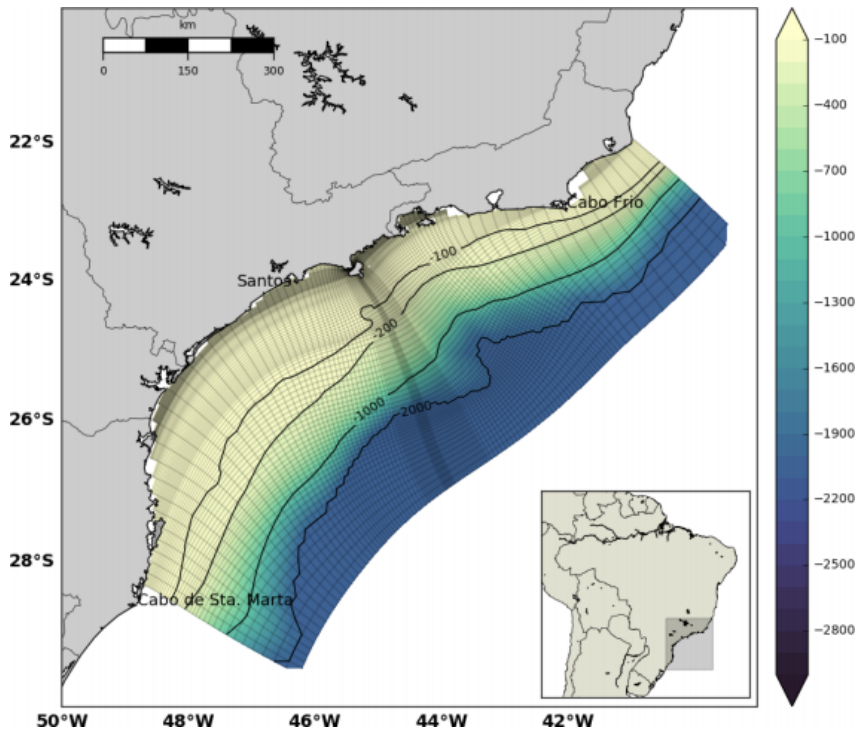
- Maximum anomalies of air temperature (Nobre et al. 2015) ;
- Negative precipitation anomalies (Coelho et al. 2016);
- Higher SST closest to the coast (Dottori et al. 2015);
- Northeasterly winds for almost 30 days consecutively;



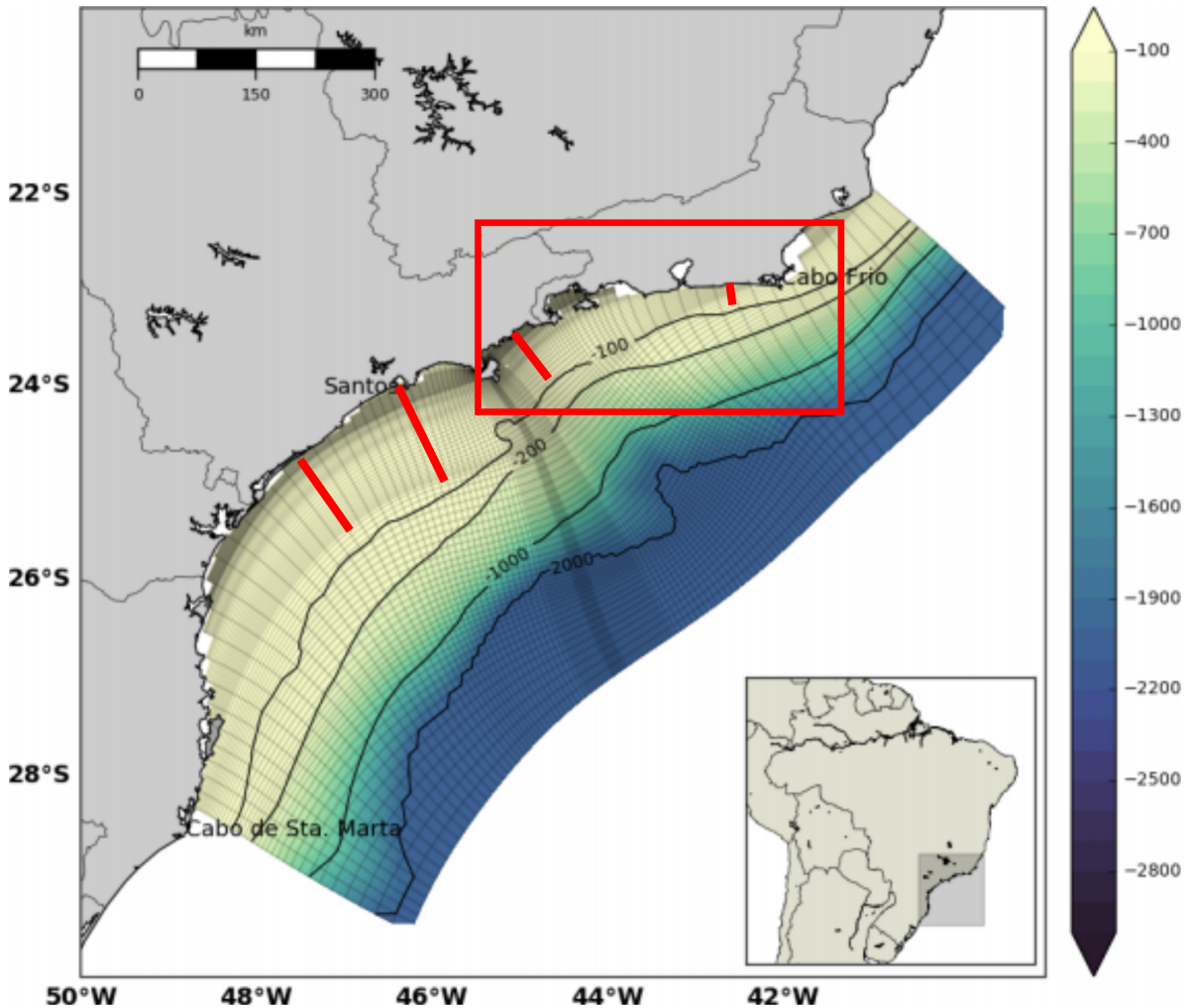
Marengo et al. (2015)

- Estuarine and Coastal Ocean Model (ECOM);
- Forced with:
  - Climatological fields;
  - Wind and Heat flux: NCEP-NCAR;
  - River discharge;
- Experiments: Control x Anomalous

$$\frac{Pclim}{Vclim} = \frac{Panom}{Vanom} \qquad (1)$$

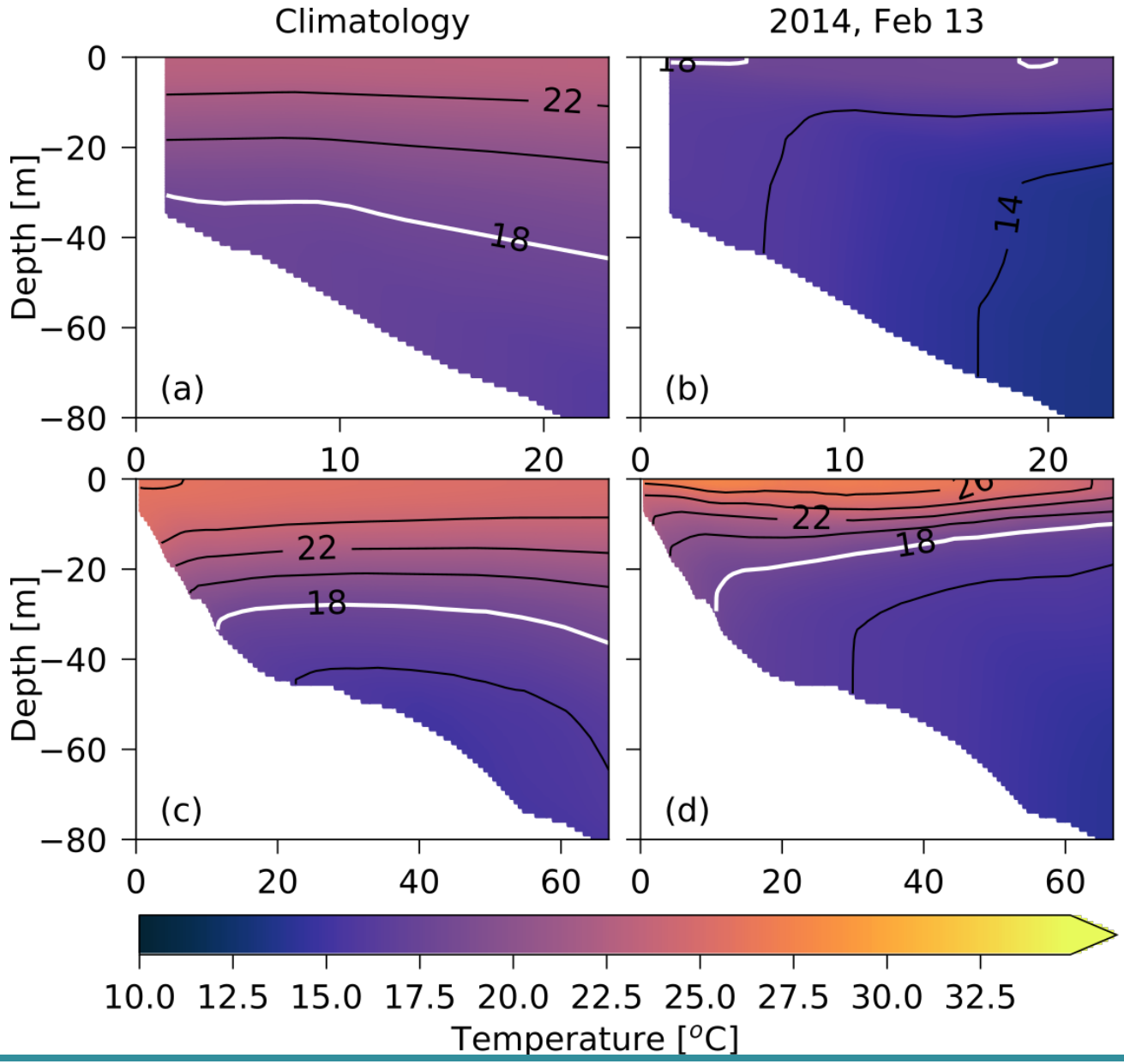


Results and Discussion

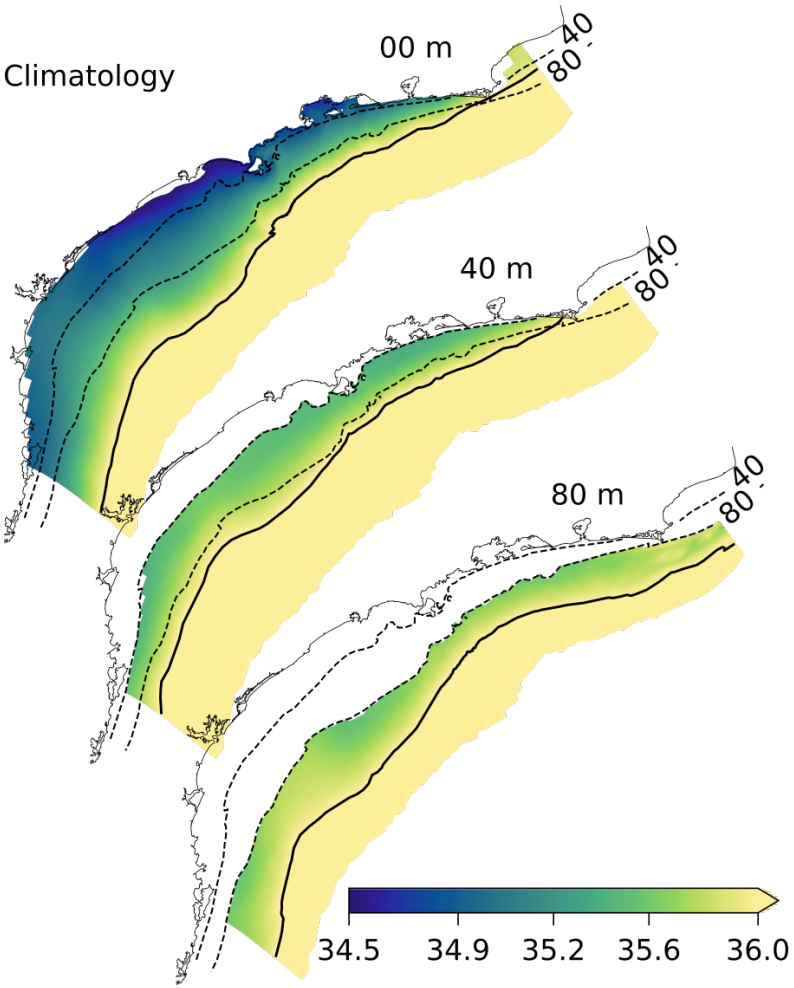


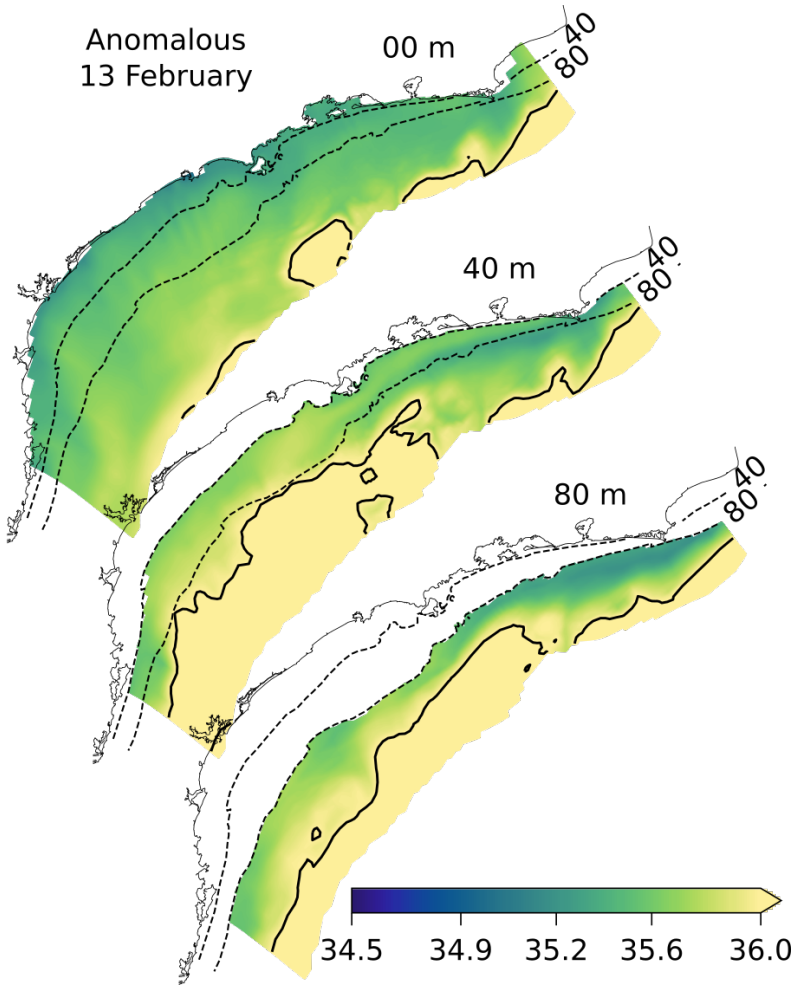
Cabo Frio

Ubatuba

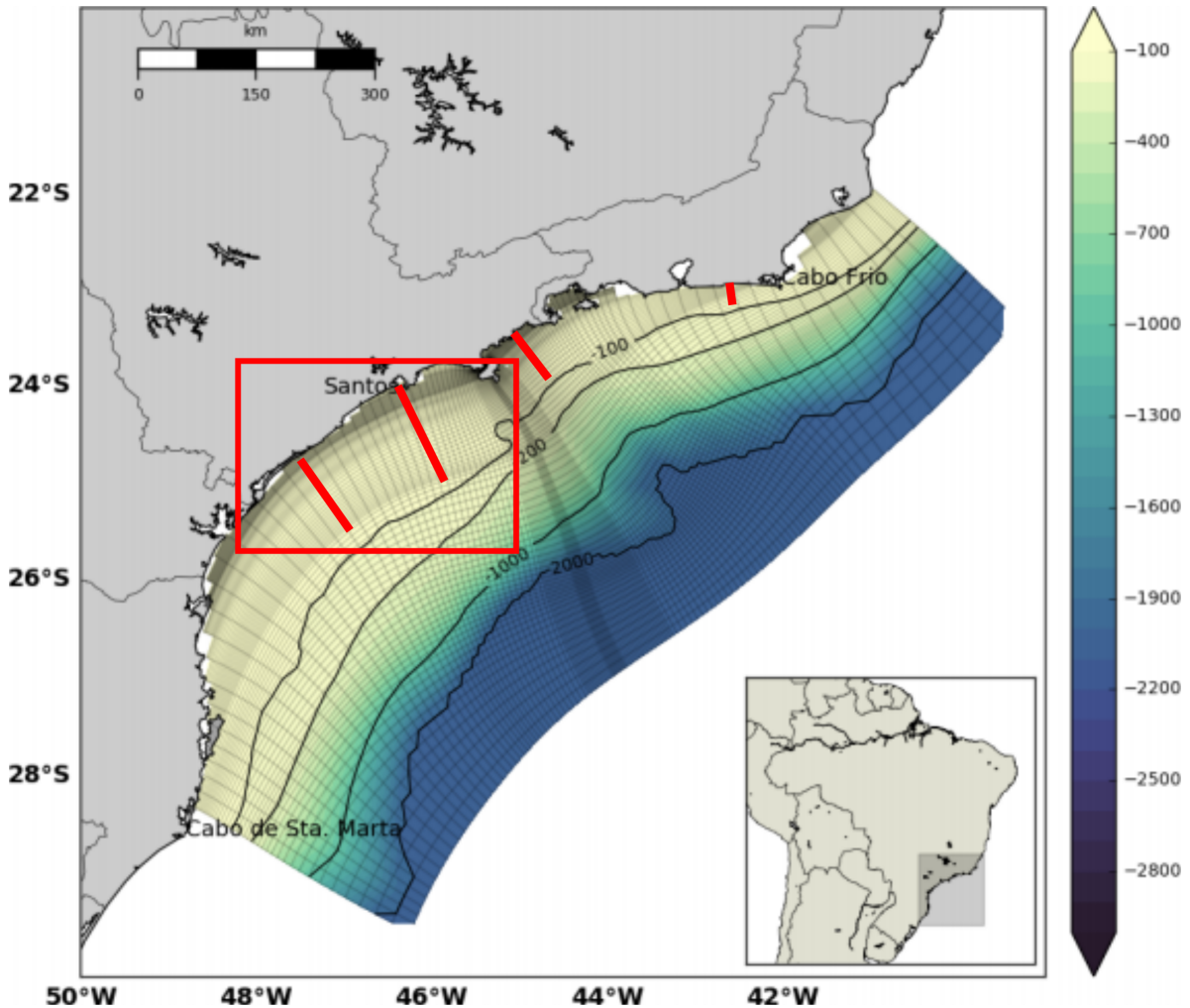


Results and Discussion
Thermal blocking



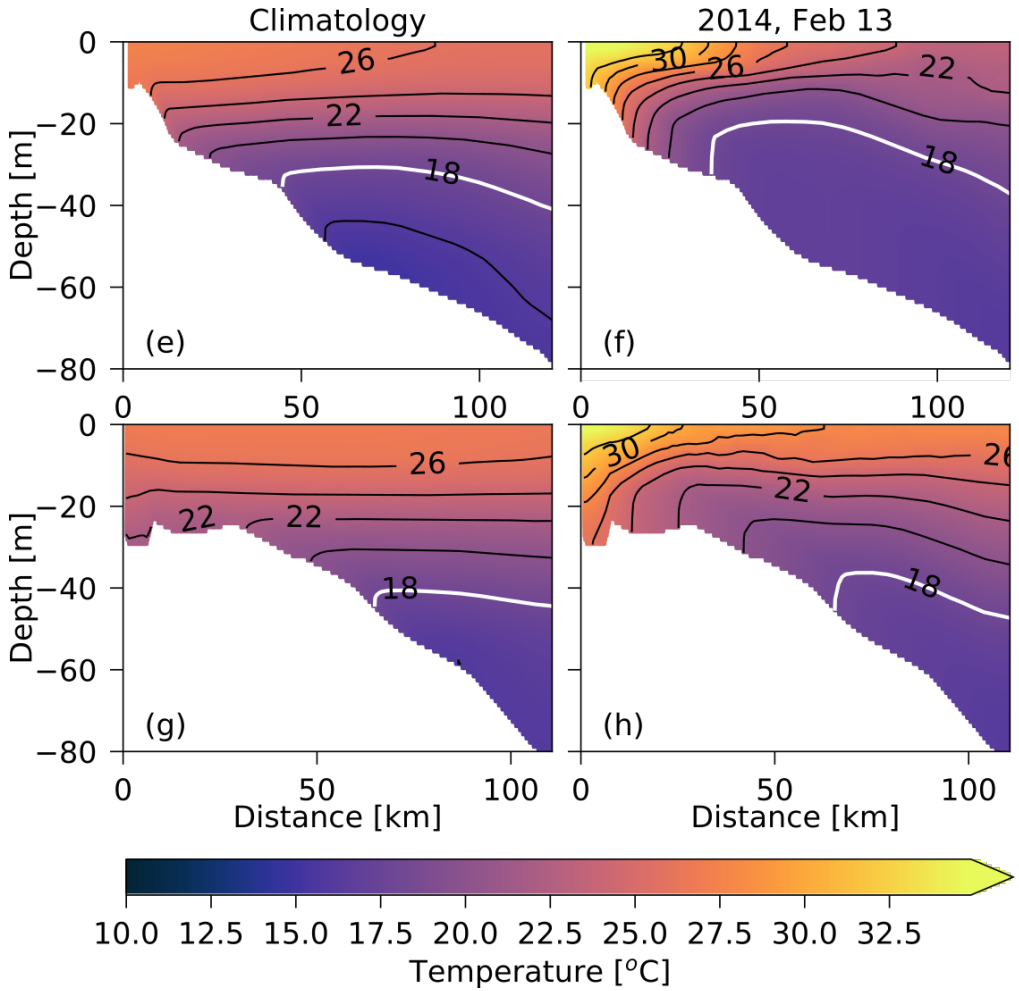


Results and Discussion

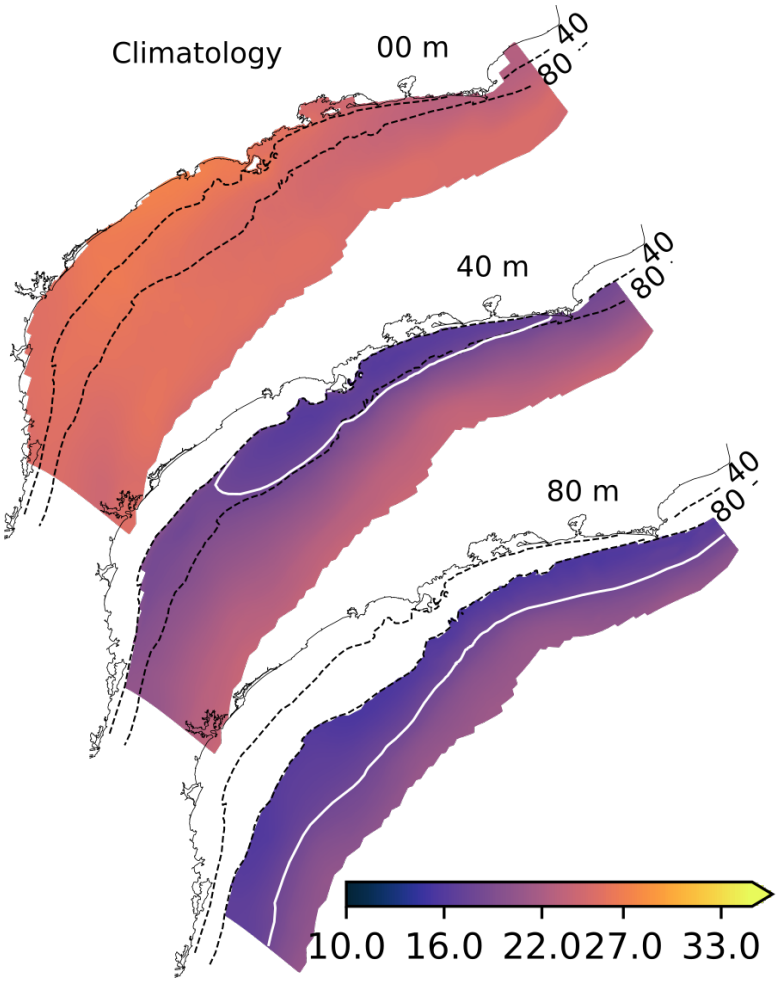


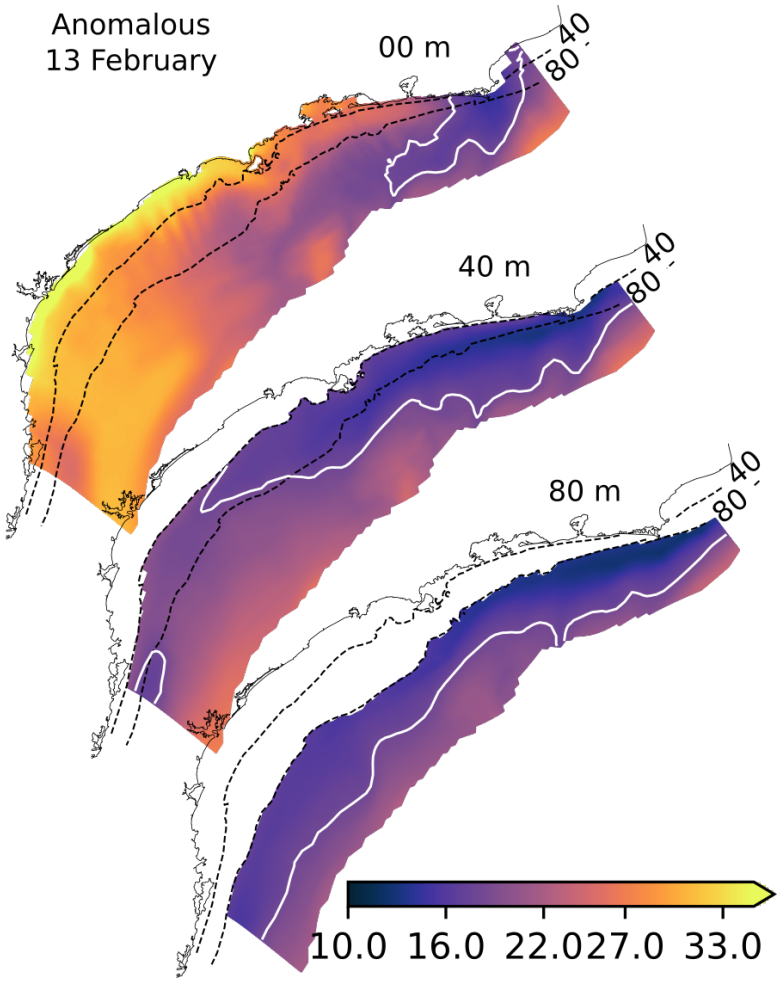
Santos

Cananéia

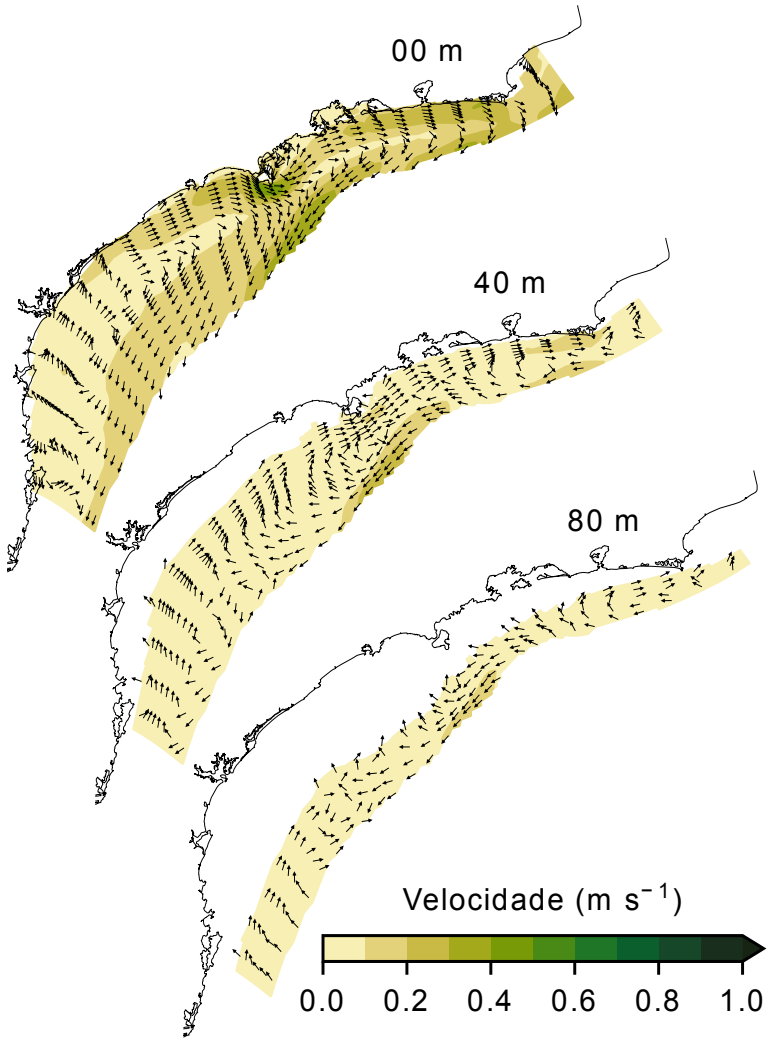


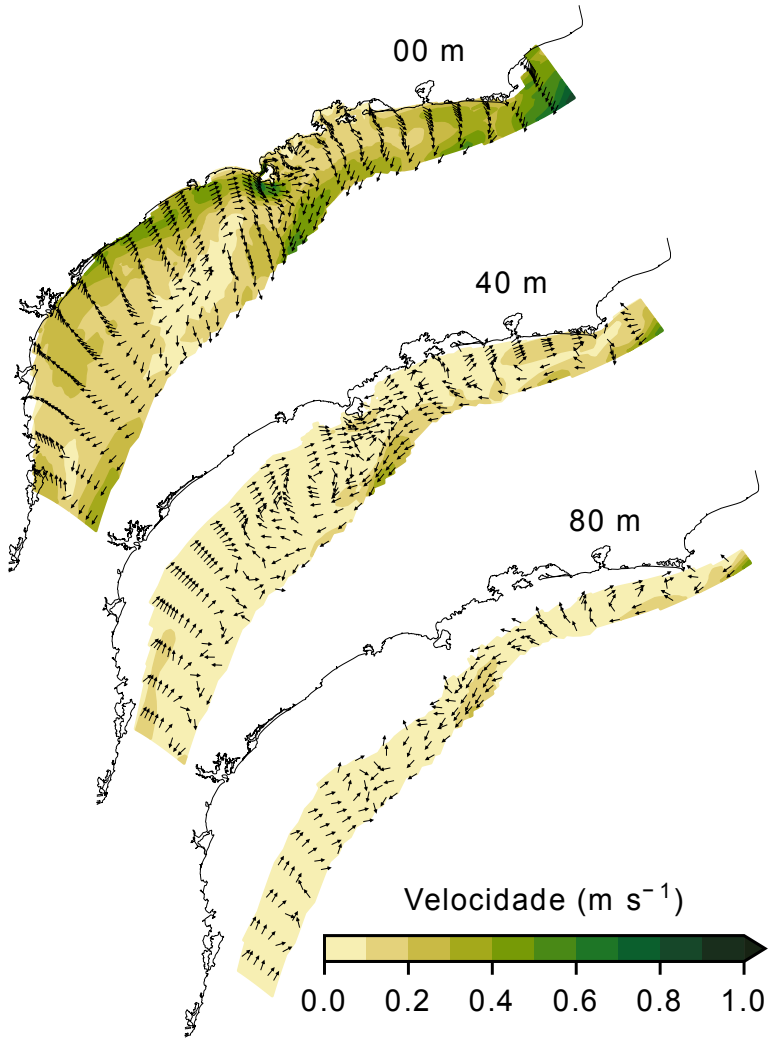
Results and Discussion
Warmed pool waters



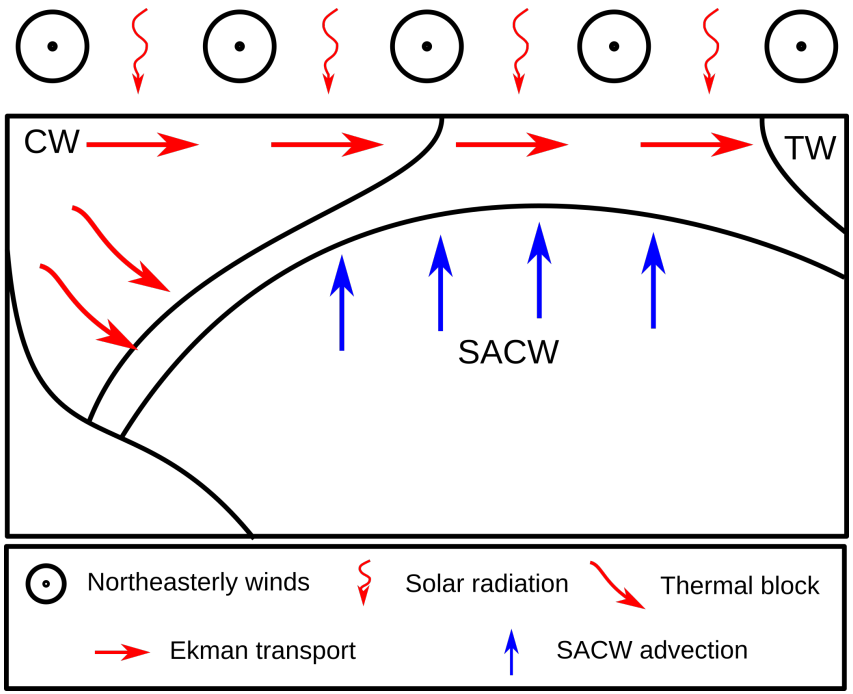


Results and Discussion
NE current intensification

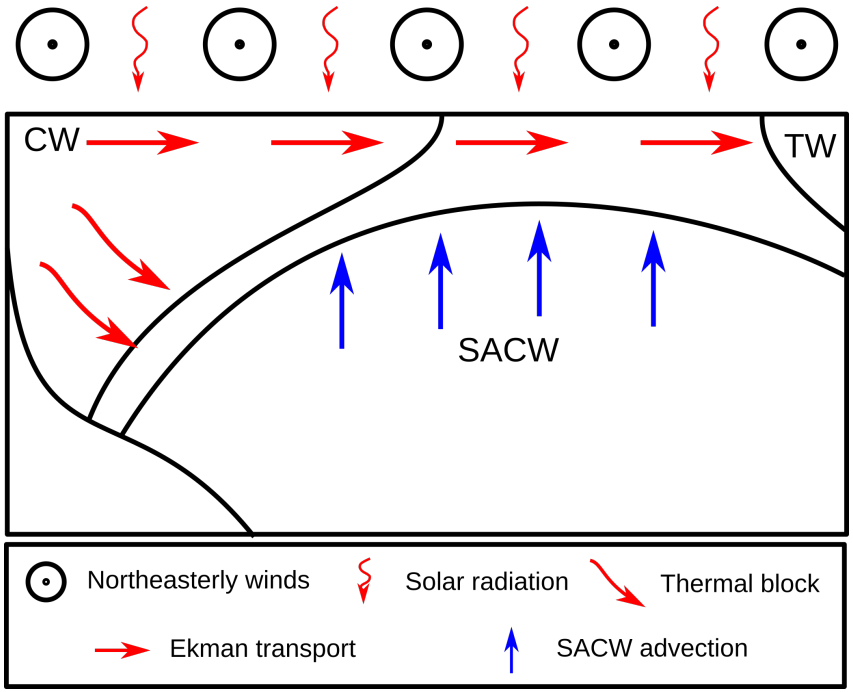




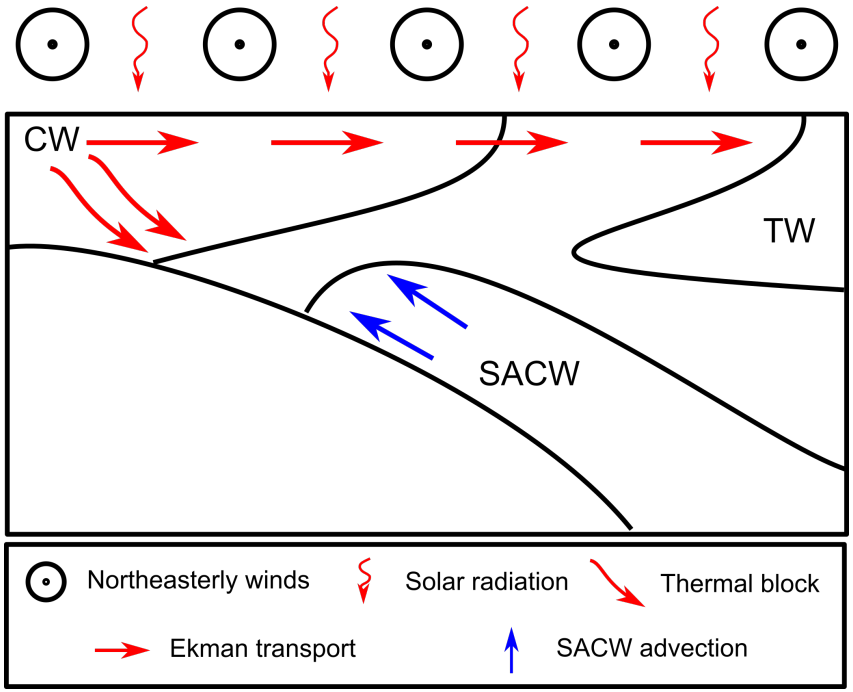
At the north
(Ubatuba):



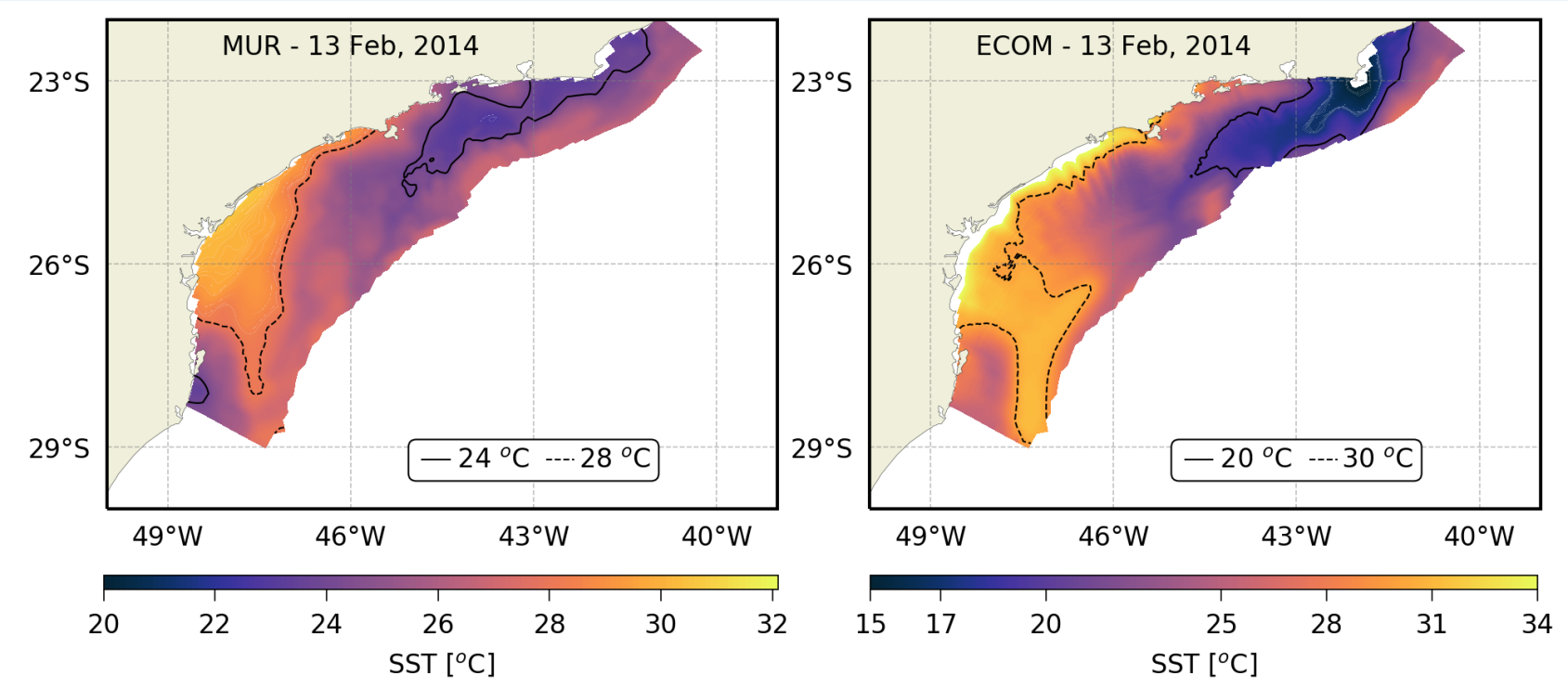
At the north
(Ubatuba):



At the south
(Santos and Cananéia)



Comparison between MUR (left) and ECOM (right)



Thank you!


LAPECO.2019
Conference on
Latin American Physics of Estuaries and Coastal Oceans
Florianópolis, Brazil
18-22 Nov 2019
http://lapeco2019.blogspot.com/
CAPES
Van Oord
JFE
NORTEK
SonTek
ROCKLAND SCIENTIFIC
ACQUAPLAN
Art by Michael Tompsett