



# Coastal ocean circulation and its variability on the southern coast of Senegal

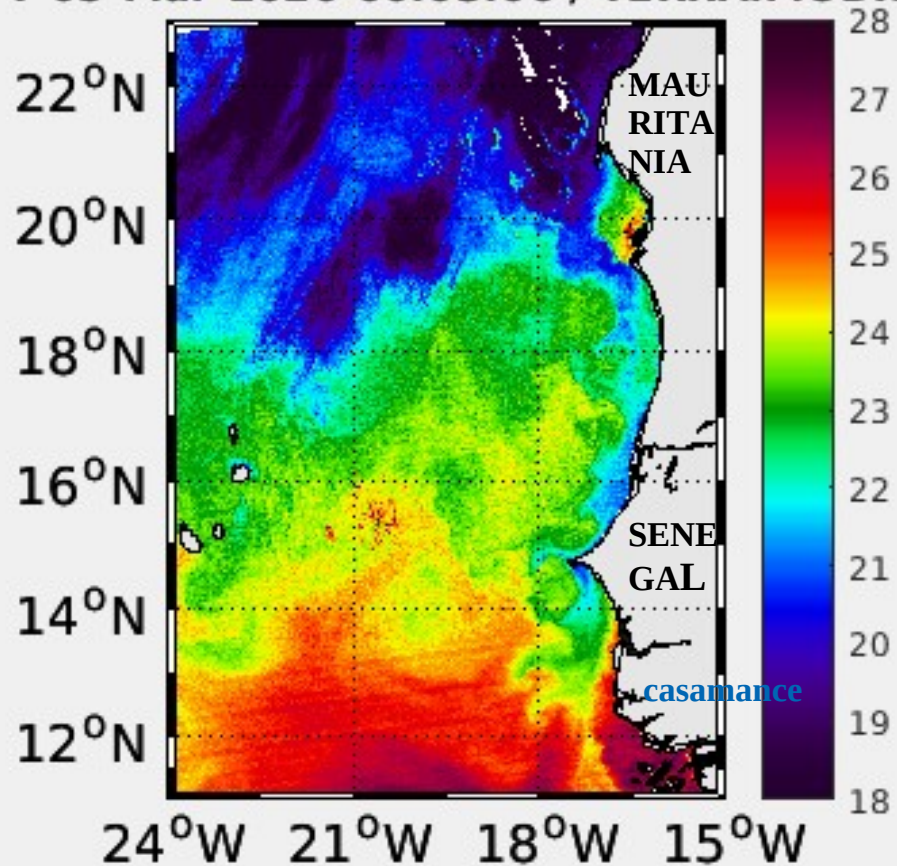
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Workshop on “The Canary Current Eastern Boundary Upwelling System”, Mindelo (Cabo Verde), 10-12 March 2020

# CONTEXT

SAT T 05-Mar-2020 00:03:00 / TERRA.MODIS.20



- Several research activities in Senegalese upwelling system (SUS)
- Lack of studies on the southern zone of Senegal

# METHODOLOGY

## ROMS

Regional hydrodynamic model with primitive Navier-Stokes equations

Open-source reference tool for representing ocean dynamics

Nested grids thanks to the AGRIF "two ways" library

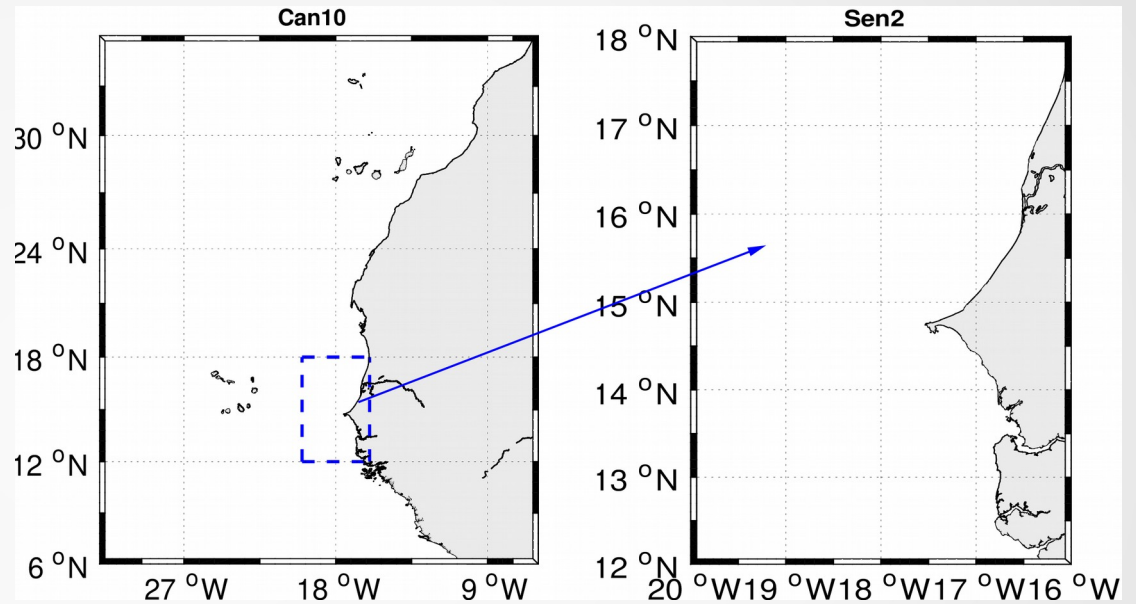
## Resolution

Horizontal: Can 10km, Sen 2km

Vertical: 50 levels

## Bathymetry: GEBCO

Adjusted by digitizing CRODT cards



# KEYS MESSAGES

- The model reproduces fairly well the spatio-temporal structure of sea surface temperature and current with a structure typical of an upwelling system:
  - ✓ Coastal jet on the continental shelf
  - ✓ Undercurrent whose core is located between 50-100 m deep
  - ✓ The seasonal cycle of this current system is well reproduced with 2 peaks at the beginning of the season (OND) and in the middle of the upwelling season (FMA).
  - ✓ There is strong interannual variability in the meridional and zonal currents off the Casamance coast with alternating currents.

## NEXT STEPS

- ✓ Compare the recent simulation (forced by GLORYS) with the AWA campaign data.
- ✓ Carry out a Lagrangian study to quantitatively evaluate coast-wide transport using the ARIANE model.
- ✓ Use the non-hydrostatic version of the model (CROCO) more suitable for shoreline studies.