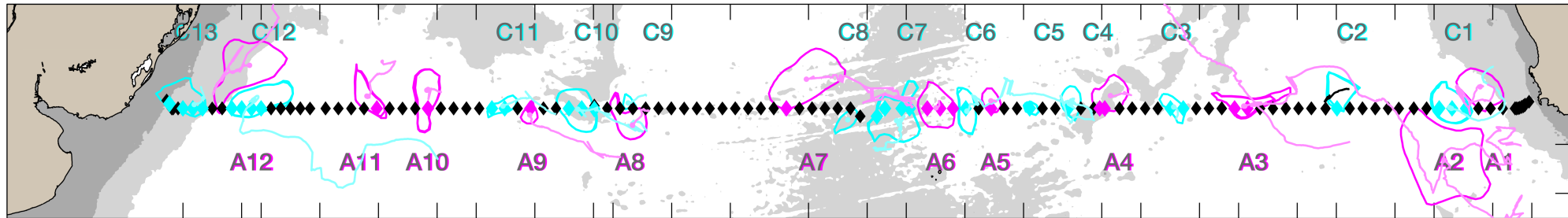


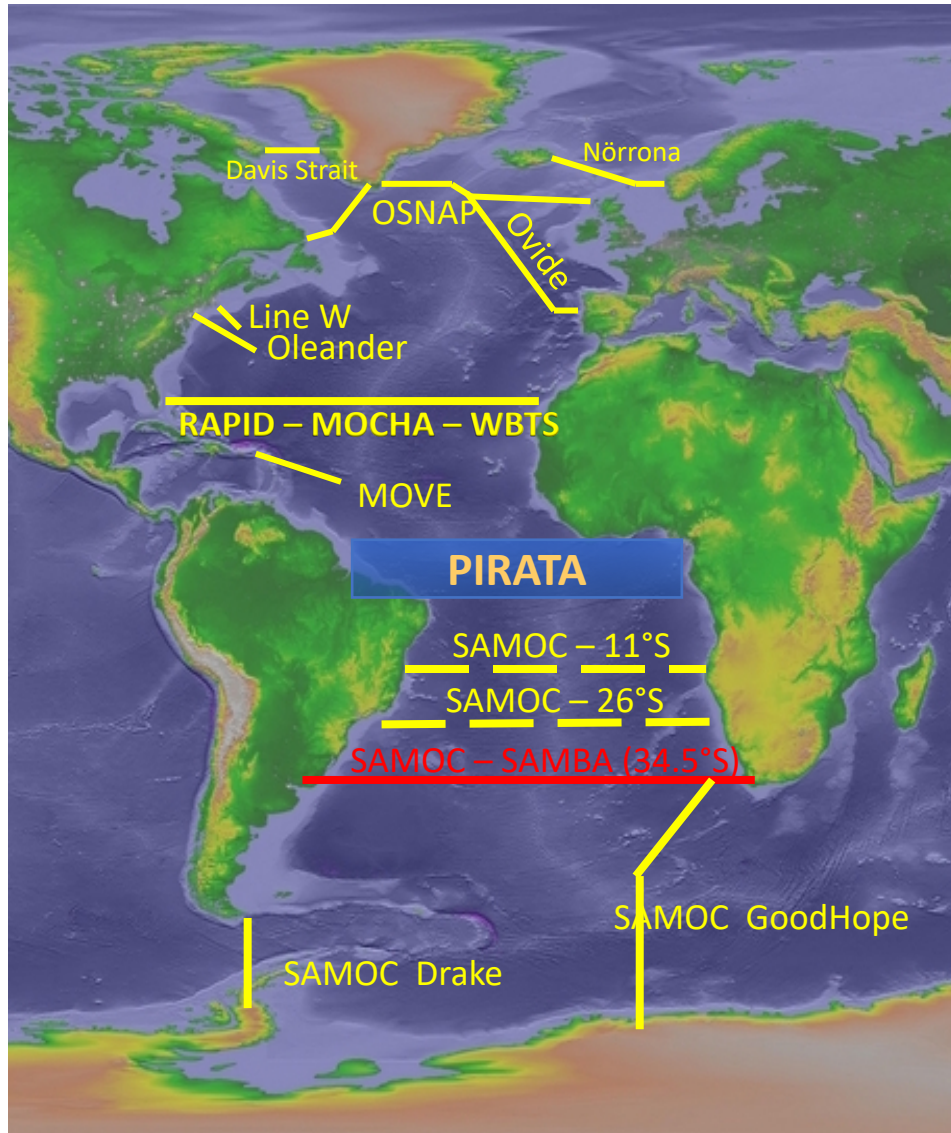
# Overturning Circulation and Mesoscale Eddies in the First GO-SHIP Section at 34.5°S in the South Atlantic

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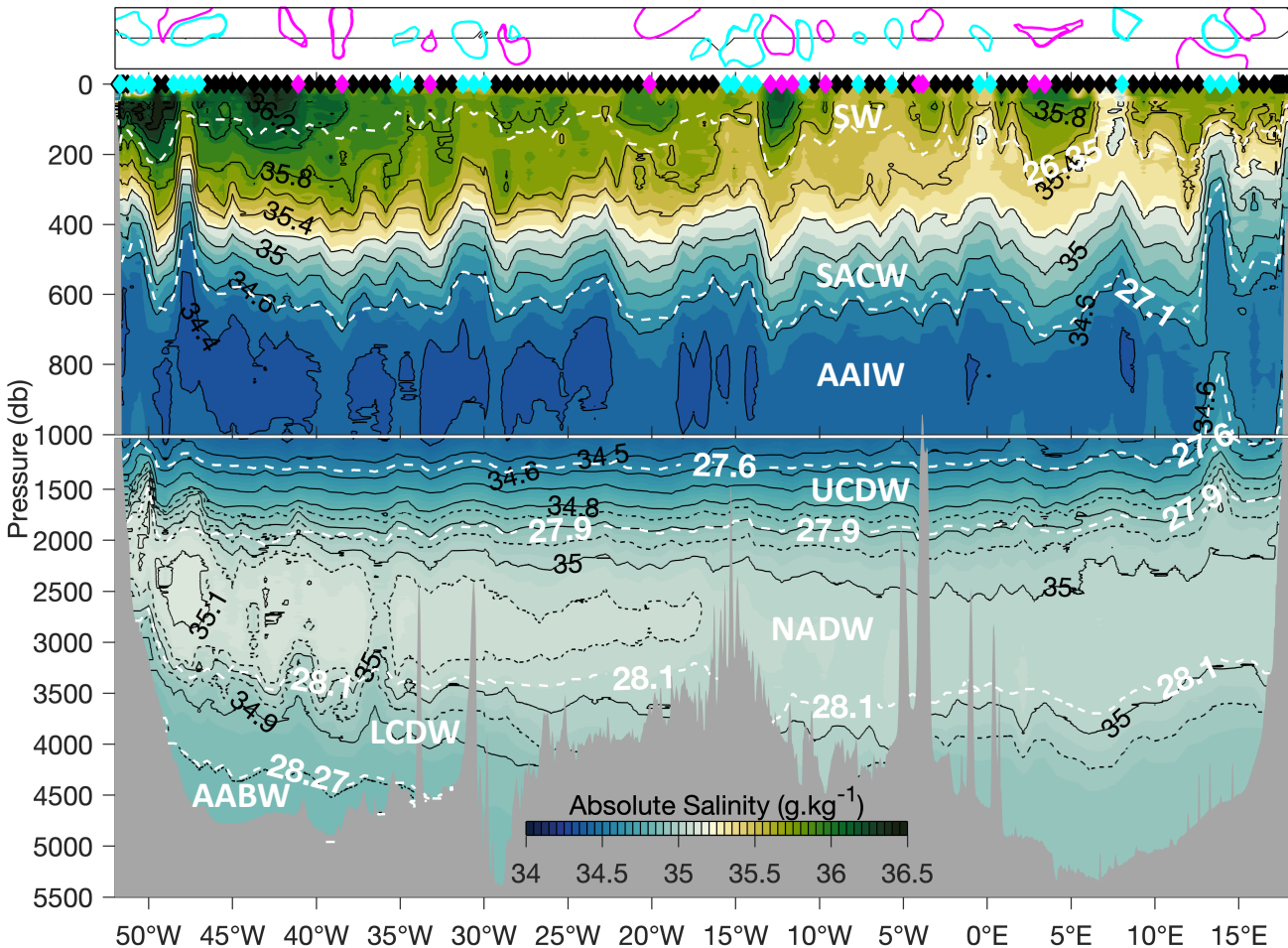


- AMOC strength: 13.3 Sv at 1250 dbar
- Intense Brazil Current (-44 Sv)
- Northward heat transport (0.1 PW)
- Large mesoscale dynamics



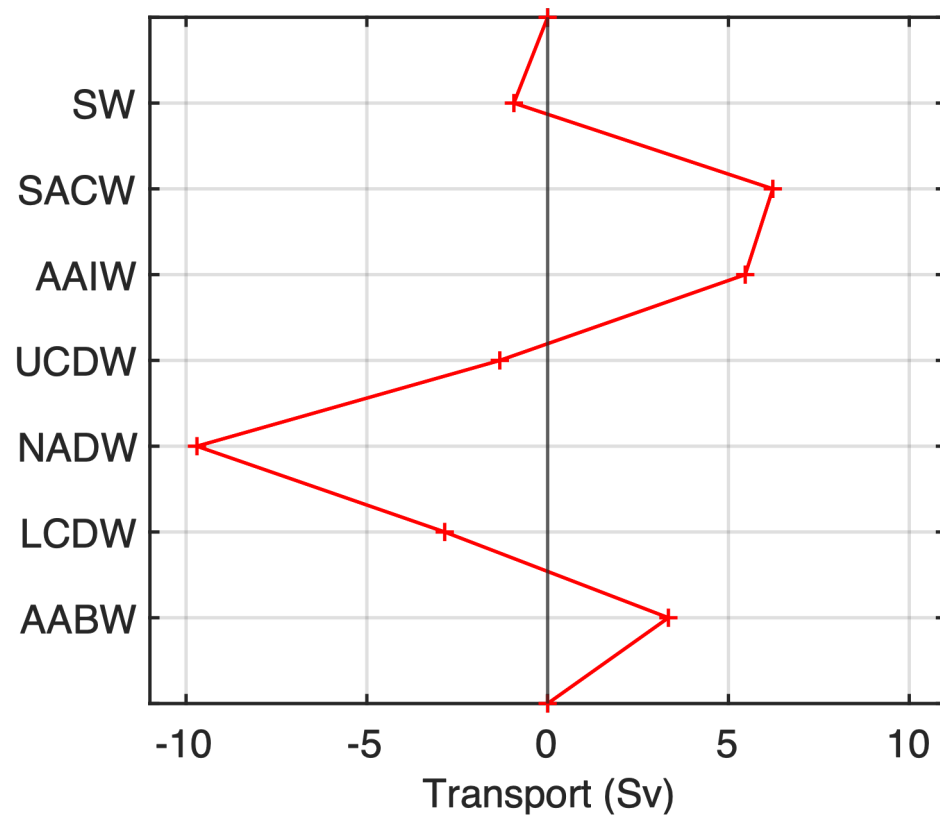
- The Atlantic Meridional Overturning Circulation (AMOC) have considerable impacts on the global climate system distributing heat
- A classic method to measure the AMOC is through GO-SHIP sections; that is high resolution full-depth CTD profiles every 50 km in between continents
- No GO-SHIP section had been done in the southern limit of an enclosed section in the Atlantic
- Until January 2017, where the SAMOC-SAMBA line was done on board RV Maria S. Merian

# Data Gridding and Methods



- 128 CTD profiles gridded into a  $0.05^\circ \times 1$  dbar grid with measured bathymetry
- Geostrophic velocity with  $\gamma = 28.1 \text{ kg.m}^{-3}$  as reference level
- Ekman transport from satellite wind measurements
- Initial mass imbalance equally distributed: assumed as the barotropic flow
- Volume, heat and freshwater transport calculation
- Eddy tracking with TOEddies and climatology from Argo floats outside eddies (Laxenaire et al., 2018)

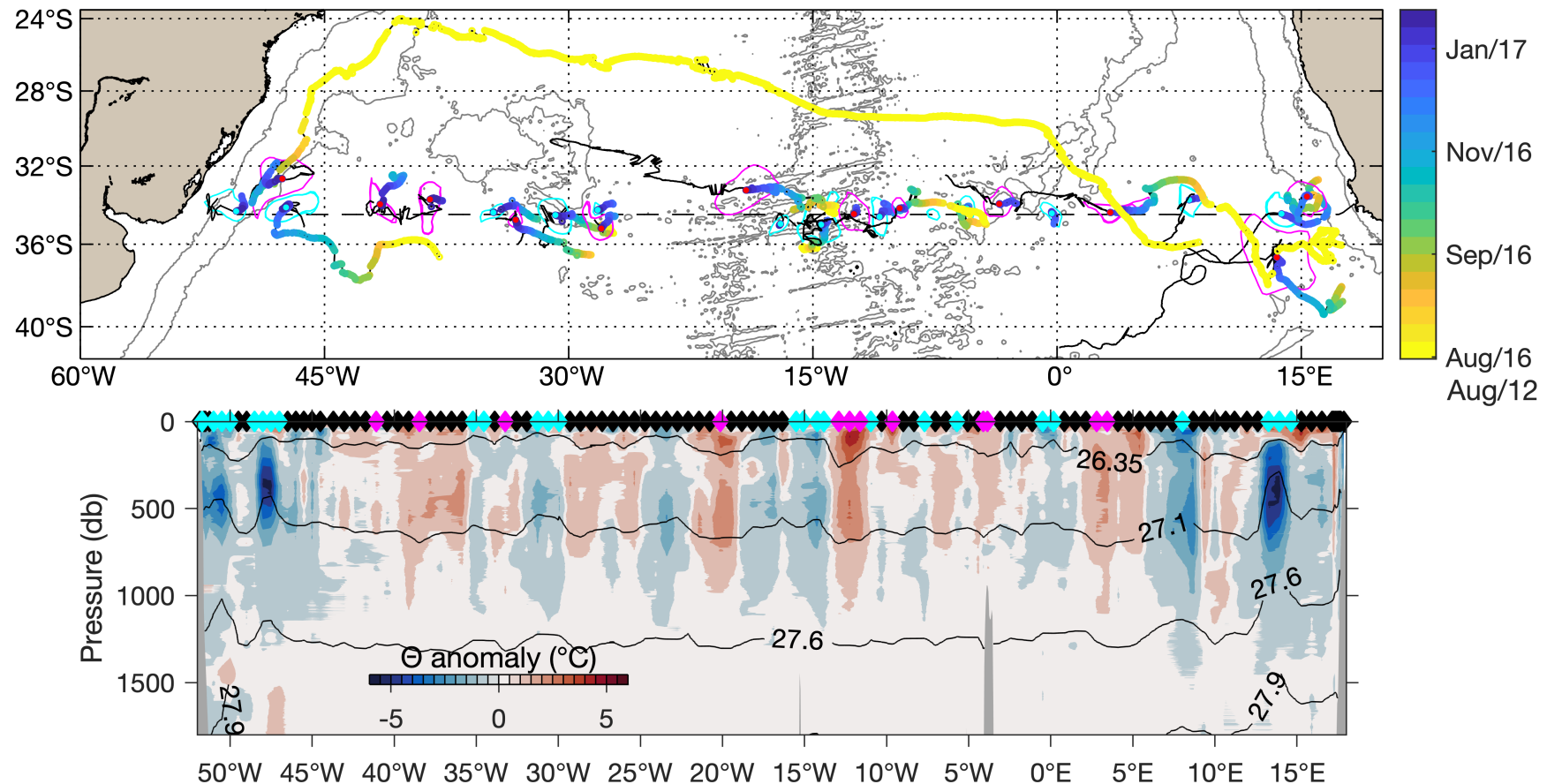
Surface Water (SW), South Atlantic Central Water (SACW), Antarctic Intermediate Water (AAIW), Upper Circumpolar Deep Water (UCDW), North Atlantic Deep Water (NADW), Lower Circumpolar Deep Water (LCDW) and Antarctic Bottom Water (AABW)



- Upper and abyssal overturning cell are observed
- AMOC maximum is 13.3 Sv located at 1250 dbar
- Net Northward heat transport (0.1 PW) coherent with the singularity of northward heat export in the South Atlantic
- Intense Brazil Current (-44 Sv) due to its deep extension until 2000 dbar
- In agreement with close studies in the region (eg. Garzoli et al., 2013; Meinen et al., 2018; Hernández-Guerra et al., 2019; Kersalé et al., 2019; Valla et al., 2019)



# Preliminary Results: Mesoscale Eddies



- 25 mesoscale eddies were crossed, 3 Agulhas rings, 1 in front of Brazilian coast was more than 4 years old
- The upper 1000 dbar circulation is dominated by mesoscale eddies, with up to 5.5°C anomalies near 400 dbar
- Nevertheless, there is no significant contribution to the AMOC from these eddies in this eulerian approach