

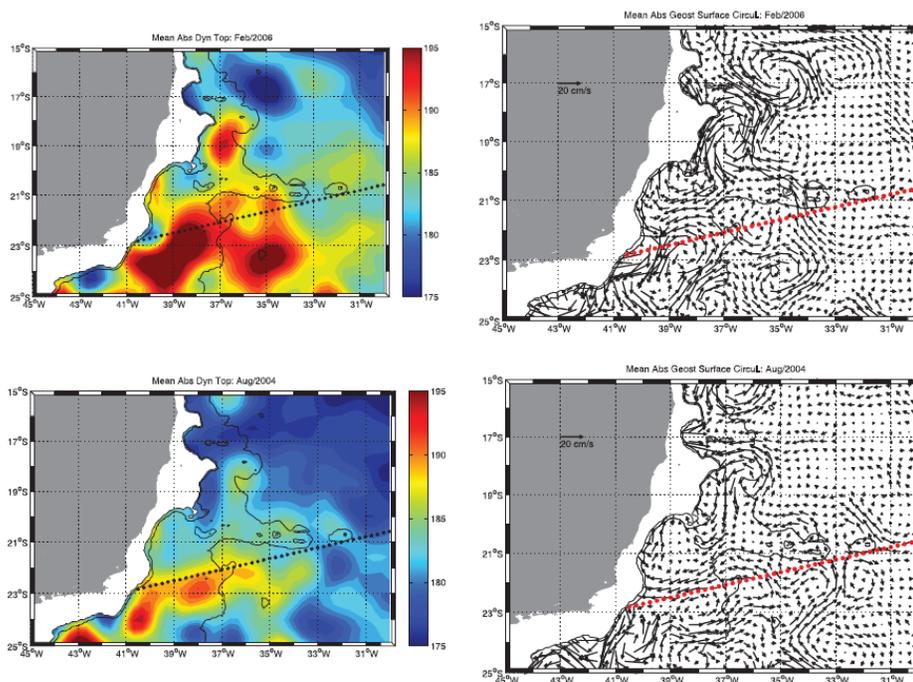
The Brazil Current variability and basin-scale interactions

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The Brazil Current (BC) closes the circulation of the South Atlantic subtropical gyre as a western boundary current. Although much weaker than the Gulf Stream, its North Atlantic counterpart, the BC is also subject to strong mesoscale variability. South of 30°S, the BC encounters the Malvinas Current, producing a highly energetic system, the Brazil-Malvinas Confluence. Recent studies show that the confluence region is highly variable, including a latitudinal migration of the Brazil Current front to the south. The association of these changes with the large scale features such as the South Atlantic subtropical gyre and the meridional overturning circulation is still an open question.

This work aims at assessing the link between the BC variability and large scale features in the South Atlantic. In order to accomplish this, we use a suite of hydrographic and satellite observations in the South Atlantic, which include three high-density XBT transects (namely AX08, AX18 and AX97), satellite altimetry, wind products, and Argo data, to bring a large scale view of the South Atlantic changes.

One key finding includes a southward shift of the BC front separation from the continental shelf break of approximately 1.5° during the last 20 years. Additional results, obtained in partnership with researchers from the Federal University of Rio Grande, Brazil, indicate that there is a strong relationship between the BC current and the extent and intensity of the subtropical gyre. A stronger BC has been linked to the northward migration of the subtropical gyre in seasonal scales.



Regional absolute dynamic height fields in dyn.cm (left) and the corresponding geostrophic circulation in cm/s (right) during the February 2006 and August 2004 AX97 XBT