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GRAVEST EMPIRICAL MODE IN THE SOUTH ATLANTIC SUBTROPICAL GYRE AT 9W TO BE USED BY THE INVERTED ECHO SOUNDERS (IES)

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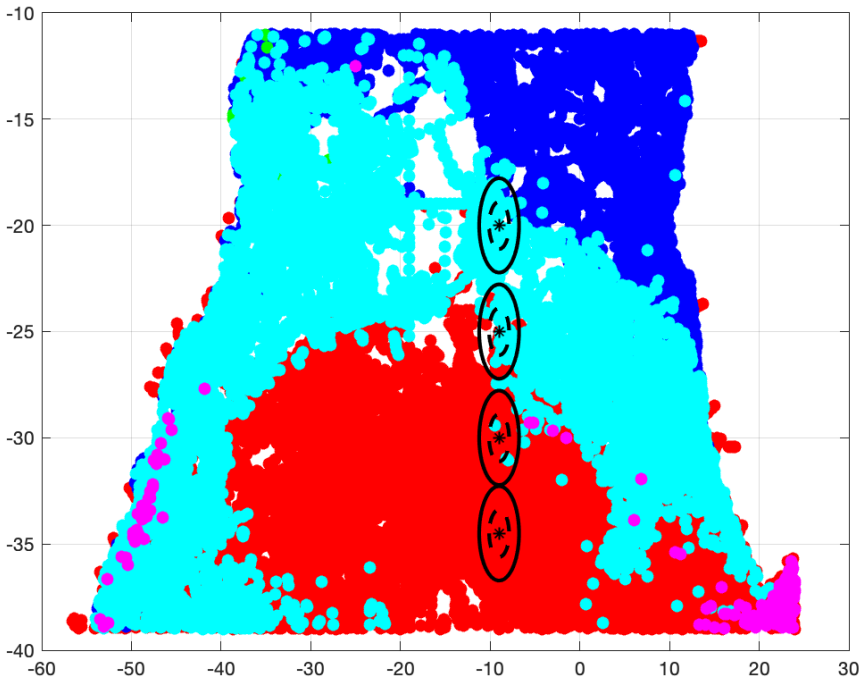
Abstract:

Pressure-equipped Inverted Echo Sounders (PIES) are oceanographic instrument that, together with historical hydrographic data, permits to estimate full water column profiles of temperature, salinity, and, therefore, density. From the thermal-wind equation, an array of PIES can provide full water column estimates of geostrophic velocity. We are interested in determining the zonal flows in the South Atlantic using PIES. For that purpose, we plan to deploy four PIES at 9°W, between 20°S and 34.5°S the South Atlantic Gateway (SAGA), that will allows us to observe the circulation of two water masses, the South Atlantic Central Water (SACW) and the North Atlantic Deep Water (NADW). Both waters mases flow, in opposite directions, across the South Atlantic, between Cape town and Brazil, through the SAGA. To be able to use PIES to determine temperature and salinity it is necessary to determine the Gravest Empirical Mode (GEM), i.e, the relationship between the acoustic travel time observed by the PIES and the historical observations of salinity and temperature. Here we present, using all the historical CTD and Argo hydrographic data available in the South Atlantic ocean, the GEM estimated for the SAGA, including estimations of the error in the geostrophic transport.

Key words: South Atlantic, Hydrography, Circulation, Argo



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