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Detection of variabilities and trends in the tropical and south Atlantic ocean using reanalysis data and hydrodynamical numerical modeling

Joseph Harari[1], Nair Emmanuela da Silveira Pereira[1] and Ricardo de Camargo[2]

[1]Oceanographic Institute, University of Sao Paulo, Brazil

[2]Institute of Astronomy, Geophysics and Atmospheric Sciences University of Sao Paulo, Brazil

Email: sophizz@gmail.com

Abstract

This project aims at detecting variabilities and trends in outputs of a three dimensional hydro dynamical numerical model based on a version of the Princeton Ocean Model (POM), covering the region between 85°S-30°N and 70°W-25°E, with 0.5° x 0.5° resolution. Surface data of temperature and salinity, from Climate Forecast System Reanalysis (CFSR), together with meteorological data of winds and surface fluxes, generated by reanalyzes of NCEP / NCAR global model, were analyzed and used as model forcing. The temperature - salinity data, meteorological data and the model results cover the period from 1980 to 2009 (30 years). The model was validated through comparisons of outputs with oceanic buoy data from the project PIRATA. Model results and sea surface temperature data from PIRATA display strong correlations, both in the annual and higher frequencies signals. Harmonic and statistical analyses of selected points, applied to meteorological parameters, sea surface elevation, temperature, salinity and currents provide information on the variabilities and trends in the Tropical and South Atlantic Ocean, in the period 1980-2009.

Biography

Joseph Harari has completed his M.Sc. in Physical Oceanography in 1978, Ph.D. in Meteorology in 1985 and postdoctoral studies in Physical Oceanography in 1991, from the University of Sao Paulo (SP, Brazil). His research is on Numerical Modeling applied to the ocean dynamics and he is an Associate Professor in the Postgraduate Programs in Oceanography and in the Post Graduate Program in Environmental Sciences, at the University of Sao Paulo (SP, Brazil).