

Validation of Numerical Model (ROMS) in Equatorial Region between Ecuadorian Coast and Galapagos Islands

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The Regional Ocean Modeling System (ROMS) model has been implemented in the Equatorial Oriental Pacific Ocean (EOPC) to produce a hindcast of its thermohaline structure, with the purpose of investigating the accuracy of its prediction on temperature and salinity variables in the EOPC region for three periods (Sept/2002, Oct/2005, Oct/2009) corresponding to oceanographic cruises made by the Navy Oceanographic Institute of Ecuador, with the support of the South Pacific Permanent Commission.

This region is very important because of its fisheries activity and to understand climate variability and change in the tropical Pacific, because of the interaction of the equatorial front, water masses, the Equatorial and Peru Currents; thus the validation of the forecast is necessary to determine the areas with the better and worse bias. This analysis was done from the continental coast of Ecuador to the Galapagos Islands, and from the surface to 75m in the water column.

Data from In Situ measurements was revised with a quality control for the ranges and thermal inversions accepted in the Equatorial Pacific. Also, data was homogenized with objective analysis (Cressman-Poisson Technique). It was necessary to get the observed data at the same resolution and point of forecasts values from ROMS. The model has the capability to predict salinity with better accuracy than water temperature, and the bias increased as we leave the surface towards deeper waters, it's due to the time of spin up. And the least bias was for the cruise that made more oceanographic stations, It means that the number of measurements of temperature and salinity influence the hindcast analysis.

The preliminary results show the potential of using the ROMS model in this area of the Tropical Pacific for a series of applications at the seasonal time scales.

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