# OCEANIC DATA ASSIMILATION IN THE MEDITERRANEAN SEA

P.G. DRAKOPOULOS[1], M. COOPER[1], K. HAINES[1], A. LASCARATOS[2], P. WU[1]

[1] Department of Meteorology, University of Edinburgh, King's Buildings Edinburgh, EH9 3JZ U.K.
[2] Department of Applied Physics, University of Athens, 33 Ippocratus Str., Athens, 10680 Greece

At University of Edinburgh a new technique has been developed for projecting altimetric data to produce deep ocean currents. The method is based on physical and dynamical conservation laws which ensure that water mass properties such as temperature, salinity and potential vorticity are preserved on isopycnal surfaces which remain below the mixed layer. These methods have been successfully tested on a simplified version of an eddy resolving Cox model for the Atlantic Ocean (HAINES, 1994). In this work we present results of applying this technique in a more realistic Cox model for the Mediterranean, using a twin experiment approach. The model which is eddy producing, has 0.25° x 0.25° horizontal resolution and 19 vertical layers and is forced seasonally (ROUSSENOV *et al.*, 1994). The assimilation run started 20 years after the spinup began and was integrated forward in time for one year. During assimilation time (every 10 days), the model density profiles were displaced vertically in response to observed surface pressure anomalies, in such way to allow geostrophic currents to decay with depth, thus avoiding unrealistic barotropic changes. Errors introduced in the density, temperature, salinity and velocity fields, mainly due to mesoscale eddy activity in the Levantine basin, the Alboran Sea and along the north coast of Africa have been successfully reduced at the end of the run (e.g. Fig. 1). Salinity and temperature errors were reduced by 50% and velocity by 40%. In addition, and despite the ventilation of certain isopycnals during water formation periods, potential vorticity error on these layers was also found to be improved.

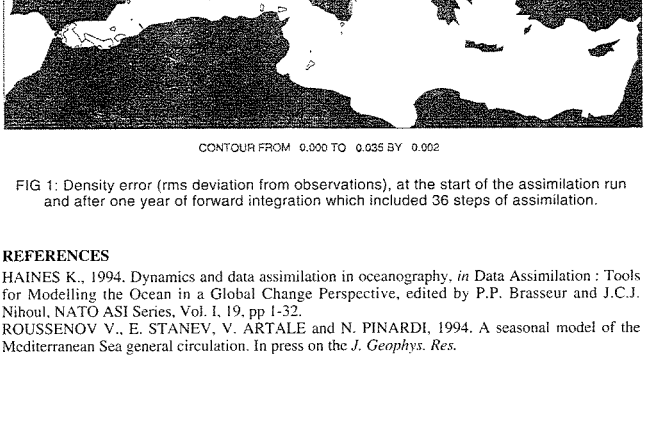


FIG 1: Density error (rms deviation from observations), at the start of the assimilation run and after one year of forward integration which included 36 steps of assimilation.

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**REFERENCES**

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