Geophysical Research Abstracts, Vol. 8, 06106, 2006
SRef-ID: 1607-7962/gra/EGU06-A-06106

Validation and intercomparison of Vertical-Mixing Schemes in Mediterranean Sea scenarios

V. Fernandez(1), S. Dobricic(1), L. Umlauf(2), H. Burchard(2,3), N. Pinardi(1)

(1) Instituto Nazionale Geofisica Vulcanologia, Italy, (2) Baltic Sea Research Institute, Germany, (3) Bolding & Burchard Hydrodynamics, Denmark (fernande@bo.ingv.it Phone: +34-0514151467)

The one-dimensional water column model GOTM (General Ocean Turbulence Model) is applied to different stations in the Mediterranean Sea. For these stations, the year 2004 is simulated and the results are compared to in-situ observations taken from XBT and ARGO floats. For the GOTM simulations, initial temperature and salinity profiles come from the observations. The surface forcing is calculated from bulk formulae using 6-hourly atmospheric data from the European Center for Medium Range Weather Forecast (ECMWF). The vertical mixing schemes used in this study are a second-order turbulence clousure scheme (k-e) and the non-local K-profile parameterization (KPP). The latter scheme is for the first time applied to the Mediterranean and has been tuned here. Both schemes give similar results in terms of reproducing the seasonal cycle of SST and the depth of the mixed layer. Moreover, we found that a major source of discrepancy between model and observations comes from the uncertainties in the atmospheric radiative forcing. At this point, net shortwave radiation data from NCEP/NCAR reanalysis has been used obtaining a more realistic SST compared with satellite observations in the summer months. At the same time, the GOTM has been coupled to the three-dimensional OPA model in the framework of MFSTEP (Mediterranen Forecasting System Project). Here we show some preliminary results from our simulation of the Mediterranean Sea using the GOTM-OPA system. The sensitivity of the simulations to the vertical mixing scheme is studied.