

## **Assessment of simulated climatology of surface atmospheric variables over Black Sea using regional climate model RegCM4**

L. Velea (1), R Bojariu (1), and T Chronis (2)

(1) National Meteorological Administration, Bucharest, Romania (liliana.velea@meteoromania.ro), (2) Hellenic Centre for Marine Research, Institute for Inland Waters, Anavyssos, Greece

Dynamical downscaling using regional coupled atmospheric-ocean models represents the main tool for investigating the impact of climate changes at regional and local scales, especially for European Seas with limited spatial extent. In this context, the ability of each component of the coupled modeling system to realistically simulate the observed climate characteristics is of major importance.

Studies on the quality of the atmospheric input forcing fields in oceanic models and are currently available for Black Sea area, showed that local observational datasets are too sparse in time and space to form any realistic climatologies. One viable alternative may be provided by numerical simulations embedded in regional climate models. These have the advantage to provide a higher spatial resolution and the capability to reproduce realistic local features. Nevertheless, the performance of the model employed over the selected area, with respect to variables used as input for ocean circulation models, has to be evaluated first.

In this study we aim to assess the performance of atmospheric regional climate model RegCM4 in reproducing the monthly climatology of three surface atmospheric variables used as forcing for ocean circulation models (e.g. HYCOM (Kara et al, 2005)) over the Black Sea. To this end, we performed a climate simulation experiment at a horizontal resolution of 10km using ERA-INTERIM fields as the initial and lateral boundaries conditions encompassing the period 2000-2010. The monthly means of surface wind speed, air temperature and precipitation were compared against independent satellite retrievals (CMAP dataset for precipitation; QuickScat observations for surface wind speed; air temperature derived from ATOVS observations). The results show generally a good agreement with the datasets used as reference.

### References:

Kara, A.B., Wallcraft, A.J. and Hurlburt, H. E., 2005: A new solar radiation penetration scheme for use in ocean mixed layer studies: An application to the Black Sea using a fine resolution Hybrid Coordinate Ocean Model (HYCOM). *J. Phys. Oceanogr.*, 35, 13–32.