



A combined use of altimeter and Argo data to study the mesoscale variability of the Black Sea circulation

Milena Milanova, Elisaveta Peneva, and Emil Stanev

Sofia University, Meteorology and Geophysics, Sofia, Bulgaria (mimilanova@phys.uni-sofia.bg)

Two types of independent data are combined in this study to reveal the main characteristics of the Black Sea mesoscale circulation. The first source is the near-real time altimeter data from AVISO regional product for the Black Sea SSALTO/DUAC, which is a compilation of several altimeter missions (Topex/Poseidon, ERS 1 and 2, Jason-1 and 2, Envisat, Cryosat-2). This product gives the sea level anomalies and calculated geostrophic currents anomalies for the 20 year period October 1993 to 2012 with spatial resolution of $1/8^{\circ} \times 1/8^{\circ}$ degrees and temporal resolution of 1 week. The other source of data are the Argo autonomous profiling floats which measure the temperature and salinity in the 2000 m of water column covering the 2010-2012 period. Using the data for thermohaline structure the dynamic height is calculated for this 3-year period. Based on the Argo floats trajectories during the drift in depth mesoscale eddies are identified and then the dynamic height is compared to the altimeter data. The temporal and spatial variability of Black Sea circulation is quantified using the altimeter data with a focus on the seasonal variability and more specifically on the evolution of gyre circulation (Rim current). The regions of eddy generation and major pathways of their spreading as well as the eddies' transformation are shown.