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Modelling of Black Sea basic dynamics during 2002-2006

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A high resolution set up of Black Sea ocean circulation model based on NEMO (Nucleus for European Modelling of the Ocean) framework is described. The model forcing is derived from hydro-/meteorological data. River runoffs have been statistically estimated from atmospheric analysis data. Transport through the Bosporus Straits is estimated from water conservation equation constrained by altimeter data. This is the main novelty in the set up compared to previous studies.
The main attention has been paid to seasonal characteristics and variations of SSH and thermohaline fields in the period 2002 to 2006. Characteristics of sea level anomaly (SLA) have been validated against observations using EOF analysis. Results show that seasonal variability of SLA during the examined period are mainly controlled by the distribution of water fluxes, in particular from rivers and transport through the Bosporus Strait. Higher degree EOF from simulations demonstrate a good agreement with the ones derived from observations and help identify the major patterns of circulation and relevance to specific physical processes.