Geophysical Research Abstracts
Vol. 21, EGU2019-5272, 2019
EGU General Assembly 2019

Interactions of Near-Shore Eddies with River Plumes and their Impact on Coastal Dynamics of the Black Sea

Konstantin Korotenko

Shirshov Institute of Oceanology, Physical Oceanography, Moscow, Russian Federation (kkorotenko@gmail.com)

Near-shore mesoscale eddies (NAEs) play important roles in exchange of water mass between the near-shore zone and the open basin of the Black Sea. NAEs, periodically occurring in a result of shading processes and baroclinic instability, are involved in meandering cyclonic movement along the shelfbreak the Black Sea due to the Rim Current. Approaching the coast, such eddies can interact with buoyant waters supplied by a large number of rivers. Such interaction can be manifested in capturing of the river plumes and, often, their tremendous distortion. As satellite imagery indicate, sometimes river plumes, being captured by NAEs, do spread against cyclonic circulation, i.e. against their typical direction. The work focuses on study eddy-river interaction processes along the Caucasian coast. The eddy-resolving (1/30)° version of the low-dissipative DieCAST ocean circulation model is used for predicting the circulation of the Black Sea. Under mean climatic forcing, the model realistically reproduces processes of generation and evolution of the Caucasian NAEs, as well as their interactions with river runoffs. Effects of Caucasian NAEs shedding, detachment and their influence on the behavior of river plumes are considered. Results are compared with observation.