



Coastal upwelling in Gelendzhik area of the Black sea: wind and dynamics influence.

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This work presents the results of upwelling observations at the coastal zone of the Black Sea near Gelendzhik city. The long series of water temperature (thermochain from 6 to 18 m) were analyzed. The events of full and incomplete upwelling were selected. 5 events from 45 referred to the full upwelling. Under thermocline water with a temperature of less than 10° C was observed near the surface. In order to analyze upwelling causes the wind speed from NCEP/CFSR reanalysis and data of the Acoustic Doppler Current Profiler (ADCP) over the period 2013-2015 (mostly warm season) were used. Special upwelling criteria that considers wind stress, local baroclinic Rossby radius and thickness of upper mixed layer was calculated. This criteria allow to estimate role of the wind forcing. Conditions precedent change of the thermal structure are analyzed for each of the upwelling events. It is found that full upwelling preceded by a steady long (more than 2 days) northwest wind. Most of all fixed upwelling events (40%) happened with the synergetic effect of wind and currents. There is also a possibility of local rise of cold waters in submesoscale eddies and advection of these waters with current - such event of full upwelling was recorded in June 2015.

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