

Curl of the Bora-Wind and Ekman Pumping in the Southern Adriatic

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Analyzing the vertical distribution of salinity data collected in the southern Adriatic during the October 1985 (POEM 01) cruise, the occurrence of a subsurface salinity minimum at the level of the seasonal thermocline was documented. The layer of the subsurface salinity minimum coincided with the maximum of the dissolved oxygen suggesting that ventilation processes have had probably taken place. A possible explanation was that the ventilation was due to the Ekman pumping produced by the curl in the bora-wind field. From the wind measurement data at one location in the Adriatic it was evidenced that the bora-wind was blowing for about ten days prior to the sampling interval. The bora-wind field reconstructed on the basis of the climatological data, suggested the occurrence of areas of alternating positive or negative Ekman pumping velocities which could generate the subsurface salinity minimum if the area with the downward pumping velocity coincided with the fresh water coastal layer. The nested multilevel model with 25 levels was applied in order to obtain open boundary conditions in Otranto Strait for a 1/24 degree resolution model. The forcing function was a steady bora-wind field having a curl of the order of magnitude as obtained from climatological data. Horizontal and vertical distributions of salinity were presented for selected numerical experiments.