

INTERDISCIPLINARY STUDIES ON THE BLACK SEA WATER INFLUENCE IN THE NORTH AEGEAN SEA

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Substantial extension of our knowledge on the Black Sea Water influence in the Aegean sea has been achieved through the successful approach of multiple objectives : a) the hydrology of the BSW origin, b) the diagnostic analysis of the frontal zones, c) the simulation of the BSW mixing processes, d) the barotropic response of the circulation and e) the reconstruction of the current vectors on the base of NOAA-AVHRR thermal data.

The *in-situ* data shows a significant seasonal fluctuation of the position of the BSW lens, northern or southern from the Limnos island. The use of diagnostic criteria such as the Kibel-Rossby number documented the existence of several types of frontal zones and intensity. Moreover, a double system frontogenesis was found to reverse seasonally (ZODIATIS, BALOPOULOS, 1993).

The circulation is prevailed by the BSW current with various scale cyclonic and anticyclonic flow regions. Numerical experiments on the circulation give evidence

that a fairly strong modification of the barotropic flow response exist, due to the BSW flux through the Hellespont strait (ZODIATIS *et al.*, 1994).

The low salinity of the BSW provides the necessary high stability buoyancy condition that restrict the homogenisation of the surface layer, despite the intense cooling and evaporation. This assumption is demonstrated through the application of 1D mixed layer model. Finally, the employment of the Maximum Cross Correlation method on satellite thermal data made possible to extract the currents in the prestrait region of Hellespont (ALEXANDRI *et al.*, 1994). These currents are comparable with the results obtained from the wind forcing flow pattern in the same period with NOAA images.

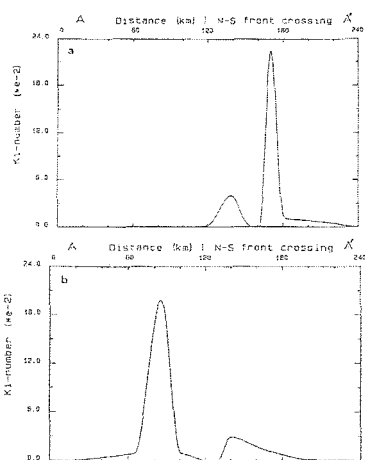


Fig.1. Meridional section of Ki number indicating the intensity of the N Aegean frontogenesis due to BSW. a) winter, b) summer seasons.

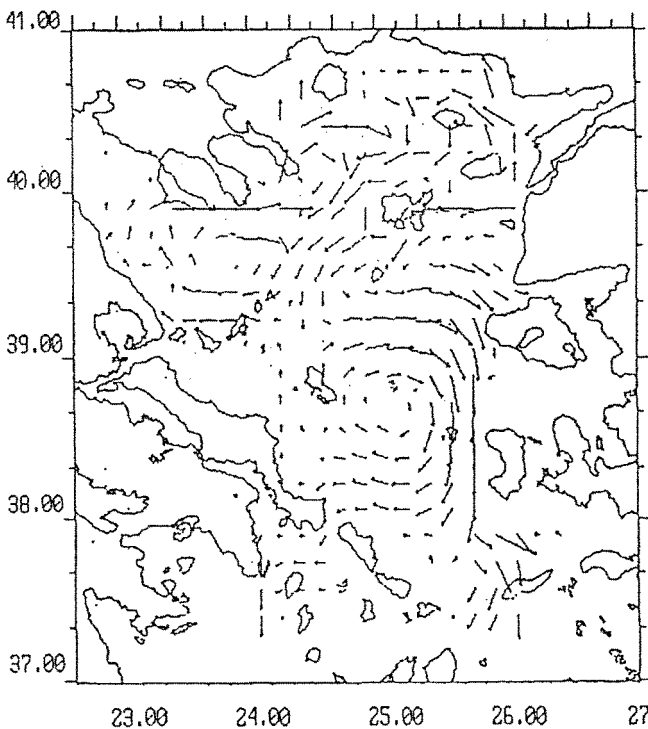


Fig.2. A case of barotropic flow response of the N Aegean with the Hellespont Strait open.

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Rapp. Comm. int. Mer Médit., 34, (1995).