

A Synthesis of the Levantine Basin Circulation and Satellite Observations

Emin Özsoy, Halil I. Sur and Ümit Ünlüata

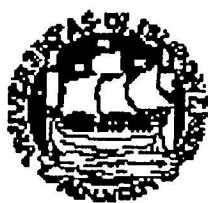
**Institute of Marine Sciences, Middle East Technical University (METU)
P.O. Box 28, 33731 Erdemli-lçel, Turkey**

The Levantine Basin circulation is characterized by a complex pattern of sub-basin scale gyres and eddies, and a mid-basin jet flow which bifurcates and interacts with the eddies. The most prominent features are the Central Levantine Basin Current, the Asia Minor Current, and the Rhodes, the Mersa Matruh and the Shikmona gyre complexes with embedded centers of coherent eddies.

Seasonal surveys conducted during a five year period indicate a slow evolution of the coherent and persistent features and recurrences of some other features. Radical changes occurred in 1987 when, accompanied by an invasion of Atlantic Water in the northern Levantine region, the circulation changed from a bifurcation pattern to a zonal and organized flow around Cyprus and along the Asia Minor coast. In the following period, the circulation pattern persisted until 1991, when a return to the conditions prior to 1987 was detected. The recurrence of some anticyclonic eddies is coincident with these changes.

Satellite data confirm the presence of some recurrent features such as the Southwest Cretan and the Antalya eddies and persistent features such as the Rhodes gyre, the Asia Minor current, and the various centers of the Mersa Matruh and the Shikmona gyre complexes. Coherent eddies are perfectly shaped with sharp circular boundaries, while oscillatory features and filaments are detected in some areas (*e. g.*, Rhodes gyre) and around some of the eddies. Mushroom-type instabilities are observed along the jet flows.

Applications of a quasigeostrophic model developed for multiple connected closed or semi-enclosed domains to the Eastern Mediterranean dynamics confirm a number of the above results.



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Rua da Escola Politécnica, 58
1200 Lisboa - PORTUGAL

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