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Mesoscale structures in the Algerian Basin

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In order to investigate characteristics of the mesoscale eddies and associated phenomena known to occur in the Algerian Basin (1,2,3,4,7), we combine the use of current meter data and satellite infrared imagery.

It has recently been shown (6), using the June 86 Médiprod 5 campaign data (5), that the movements suggested by the thermal images are coherent with the current in situ observations, consisting of drifting buoys trajectories, current meter records at 100m, hydrological transects, and ship drifts.

During the Médiprod 5 Experiment, 24 current meters were set in place on 8 moorings (6 along the Algerian coast and 2 offshore) at 100m, 300m, 1000m, and some at 2000m; recording lasted 9 months, from June 86 to March 87.

Up to December approximately, temperature stratification allows mesoscale structures to be significantly signed on the thermal imagery. This data set provides us with valuable information about the location of the structures with respect to the moorings points.

The propagation as well as the vertical extent of these structures are analysed with both data sets.

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O-IV3

A review of the distribution and persistence of Northern Levantine eddies : experiments of 1985-1987

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The circulation features are estimated from a number of recent experiments in the Northern Levantine Sea. Data obtained in a total of five seasonal surveys during 1985-1987 are reviewed and analysed to identify the areas of existence of major vortices, and their distribution and persistence.

Various eddies with different sizes and structures were identified, ranging from sub-basin scale gyres to sub-mesoscale vortices. The major cyclonic gyre to the southeast of Rhodes (the Rhodes gyre) is persistent in all surveys, although its horizontal extent and structure are modified by interactions with surrounding eddies and meandering jets. Persistent anticyclonic eddies of vaying size appear in the periphery of the Rhodes gyre and between this gyre and the coast. Occasionally, these eddies are of sub-mesoscale sizes. In all cases, the anticyclonic eddies are more coherent in the vertical and deeper in structure as compared to the cyclonic eddies. Due to the baroclinic nature of the circulation, the structures display slanted configuration with horizontal shifts in the eddy centers with increasing depth.

A persistent anticyclonic eddy appears between the Rhodes gyre and Antalya Bay, while the eddy variability to the south of Antalya Bay is significant. The eddies in the Cilician Basin are generally shallower and less organized.

The anticyclonic vortices trap the Levantine Intermediate Water (LIW) and occasionally both LIW and the Atlantic Water (AW), and high oxygen saturation values are demonstrated at intermediate depths within such vortices. Evidence for small scale features not sufficiently resolved by the station network are also found and often captued by coincidence.

The eddies are, in general, not isolated and are often in contact with each other near the surface. However, at the deeper levels anticyclonic eddies are persistent and have isolated centers.