

Circulation in the Sporades Basin and Thermaikos Shelf (NW Aegean Sea) during the ECOAEGAIO-I Experiment

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Recent quasi-synoptic hydrographic data collection, carried out during the ECOAEGAIO-I cruise (June 1987), allowed the study of the spring circulation in the Sporades Basin and on the Thermaikos Shelf (Fig. 1).



Fig. 1 The investigation area (shaded)

Shallow dynamic topography (Fig. 2a) shows the renewing of surface water. The surface circulation is globally anticlockwise throughout the study area. Intrusion of Aegean Sea water, from offshore, appears along the northern coastline of the basin. Part of this water penetrates the shelf, while the rest flows southwestward along the slope. The current on the shelf is dominantly northeastward, and appears as a meandering flow directed by small eddies. Outflow of lower salinity waters, originating from large river inputs, takes place along the western coastline.

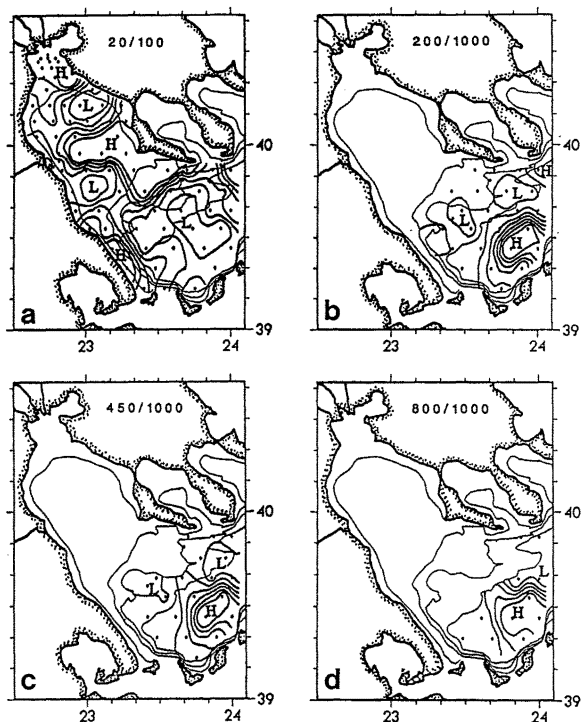


Fig. 2 Dynamic topographies of a) 20 dbar relative to 100 dbar b) 200 dbar relative to 1000 dbar c) 450 dbar relative to 1000 dbar d) 800 dbar relative to 1000 dbar

Deeper dynamic topographies show the circulation patterns in the basin. The shelfbreak depth map (Fig. 2b) depicts a sharply defined clockwise eddy in the southwestern part of the basin. This gyre is roughly delineated by the 800 m isobath and remains clearly identifiable down to deeper levels (Fig. 2c and d). Two anticlockwise cells appear between the slope and the main eddy (Fig. 2c and d). These secondary cells are nestled in the canyon valleys, formed by the broad open slope that practically separates the basin in two parts. The circulation features in the basin are found to be composed of different water masses and are persistent with increasing depth. Furthermore, they are believed to be constrained and generated by the bottom topography.