

WATER TYPE FORMATION AND SPREADING IN PAGASSITIKOS GULF (NW AEGEAN)

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ABSTRACT.—In winter 1976, a complete turnover of the water column (95m) was observed in the eastern basin of Pagassitikos Gulf, resulting in a water type formation. Later in spring, the water type was restricted to mid-layers and was found spreading out of the Gulf and into the Aegean. Traces of this water were still found in the basin in August suggesting a spreading phase of approximately six months.

RESUMÉ.—En hiver 1976, une forte homogénéisation a été observée sur toute la colonne d'eau (95m) du bassin Est du Golfe Pagassitikos, résultant ainsi à la formation d'une eau-type. En printemps l'eau type de l'hiver se limite aux couches intermédiaires. Cette eau s'est trouvée dispersée dans tout le golfe ainsi que dans le canal de Trikeri indiquant une sortie vers la mer Égée. En Août de traces de l'eau type subsistaient encore dans le bassin Est du golfe, indiquant que la phase de dispersion a duré environ six mois.

Pagassitikos gulf (fig.1), with maximum depth 102m in the center of the eastern basin, is connected ultimately to the Aegean through a passage 5.5km wide and about 80m deep. The data used are obtained from four cruises during 1976.

In February, a thermohaline front is formed in the upper layers (0-20m) under the impact of the Almyros stream. No significant horizontal movements could be concluded concerning the eastern basin, which is considered almost isolated. The communication of the gulf with the open sea occurs through the western section (2). The temperature varies in a narrow range from surface to bottom (12.82-13.20°C).

The major characteristic of the water mass of the eastern basin is the higher salinity during most months and especially in winter(1). The water column, tends to be homohaline(37.86-37.97‰)(1). A surface cyclonic circulation in combination with high σ_t values, facilitates the convective movements. Thus a chimney is formed($\sigma_t=28.67$) in the vicinity of the station JA (95m)(fig.2), resulting in a water type formation.

Temperature minima in the T-S diagram of May (fig.3) show that the core of the water formed in winter is restricted in intermediate depths (30-50m) in the eastern basin. This water has been mixed and dispersed in the whole gulf in the same intermediate layer. It is also found spreading out of the gulf, showing an outlet of this Pagassitikos Intermediate Water, towards the Aegean. Its temperature now is 12.64°C and salinity 38.04‰. The differences in the characteristics observed between winter and spring, show that the process of formation continued after the sampling period of February. During August traces of this water still found in deeper layer (50-75m) in the basin, suggest a spreading and mixing phase of approximately six months.-

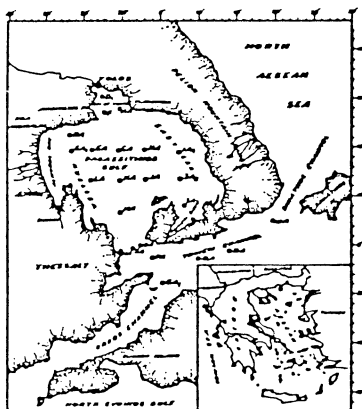


Fig.1 Pagassitikos gulf.

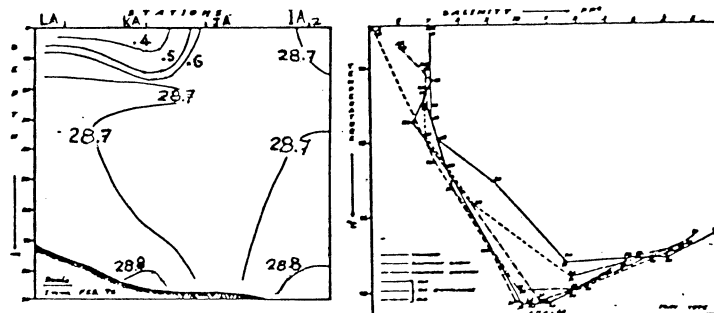


Fig.2 Vertical distribution of density (February 1976). Fig.3 T-S diagram of selected stations (May 1976).

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