DECREASE OF SALINITY VALUES IN SARONIKOS GULF (AEGEAN SEA) DURING THE PERIOD 1976-1982

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ABSTRACT.- From the data obtained in 1980-82, unusual lower salinity values were observed, compared with those of the period 1972-76. The difference between the corresponding mean integrated values is going up to 0.8ppt. Higher precipitation along the North and East coasts of Greece can be considered, at maximum, responsible for 30% of the decrease, which might be attributed to larger scale phenomenon related to salt content changes in advection.

RESUMÉ.- Des faibles valeurs de salinité ont été observées durant la periode 1980-82, comparées à celles de la periode 1972-76. La difference, en moyenne integrée sur la colonne de 0 a 60m, est de 0.8‰. Les données pluviometriques pendant la periode 1978-82 le long de côtes Est et Nord de la Grèce indiquent une augmentation des précipitations. Ce facteur se trouve être responsable du 30% au maximum de la diminution observée. Il faut en consequence attribuer la diminution de la salinité à l'effet de l'advection. Seule source possible d'eaux de salinité inferieure sont les eaux de la Mer Noire. Il est suggeré donc que des changements importants en contenu en sel des ces eaux ont eu lieu durant la periode examinée.

Saronikos gulf communicates with the W.Aegean with a 30nm opening in its southeast boundary (fig.1). The source water is characterized by the existence of a lower salinity surface layer. This water is of Black Sea origin. The gulf was visited 46 times between 1970-82. Data were collected by the IOFR and the nuclear center "DEMOCRITOS".

Calculations and results presented here after concern a representative station, 90m deep (fig.1). The mean integrated salinity values calculated for the water column 0-60m and for the period 1970-76 reached 38.6‰, while for the second period 1980-82 this value decreased to 37.8‰ (fig.2) (1). This decrease by 0.8‰ ,can be schematically attained by the replacement of the upper 1240mm of the water column by fresh water, which means that either evaporation diminished and/or precipitation and runoff increased.

No rivers or important streams flow into the gulf. Changes in the rate of discharge of the sewage outfall of the metropolitan Athens area considered to be insignificant. Precipitation in the area of Saronikos during 1976-82 was found to exceed the mean value of the last 30 years by approximately 200mm (Athens,airport Met.st.). Higher precipitation (excess up to 200mm) was also observed along the North and East coasts of the Greek mainland. Thus precipitation can be considered responsible,at maximum for 30% of the overall salinity decrease. If no major changes in evaporation occured, the significant salinity decrease could not be considered as a local phenomenon or even of the scale of the western Aegean.It could be suggested,although we dispose of no such information, that the phenomenon might be attributed to a larger scale one related to salinity changes in the Black Sea source water, advected to the western Aegean.-

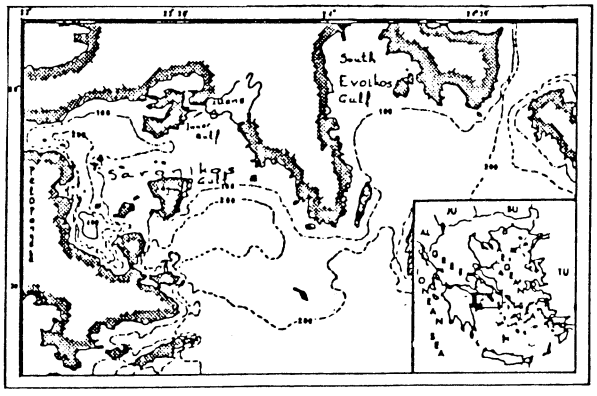

Fig.1 Saronikos gulf.

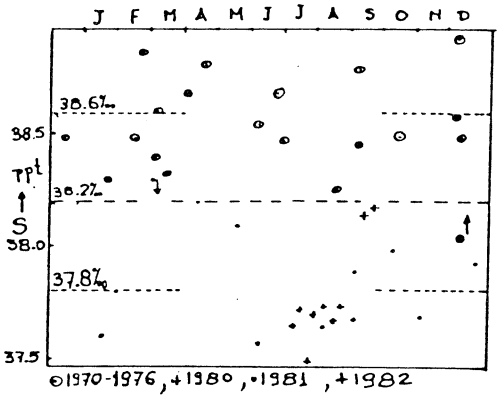

Fig.2 Annual distribution of mean integrated salinity.

REFERENCE: 1.GEORGOPOULOS D.and A. THECHARIS:"Long term variation of salinity in the Saronikos gulf" . A' Panhellenic Symposium in Oceanography and Fisheries, 1984.