

Dissolved Oxygen and Nutrients in the Northeastern Ionian Sea

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Nutrient and dissolved oxygen data collected at several stations in the northeastern Ionian Sea (Figure 1) during the September - October 1987 cruise of R/V AEGAIOS, were used to demonstrate the distribution of the chemical characteristics along a section parallel to the coastline. The oxygen and nutrient pattern was affected by the presence of mesoscale cyclonic and anticyclonic gyres in the area.

In the vicinity of the Otranto Strait (northernmost part of the oxygen and nitrate sections), the interface of interaction between well oxygenated and relatively poor in nutrient Adriatic Water (Ad) made a front with the richer in nutrient and poorer in oxygen water of Levantine origin (Figure 2 and 3). This front appeared also on the salinity and temperature profiles. Similar patterns have been found recently in winter (Georgopoulos et al. 1986, Theodorou et al. 1988).

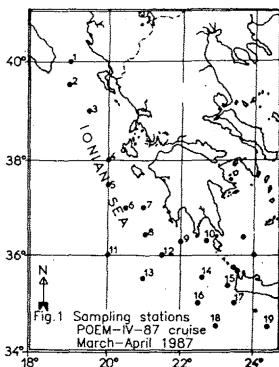


Fig.1 Sampling stations
POEM-IV-87 cruise
March-April 1987

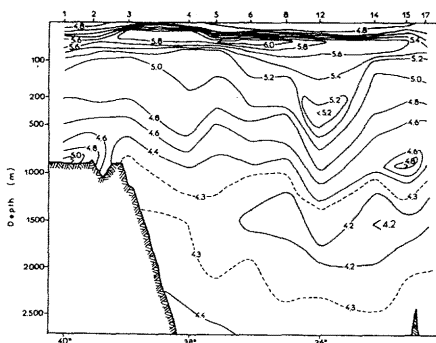


Fig.2 Distribution of oxygen (ml/l) along a transect in the Ionian Sea

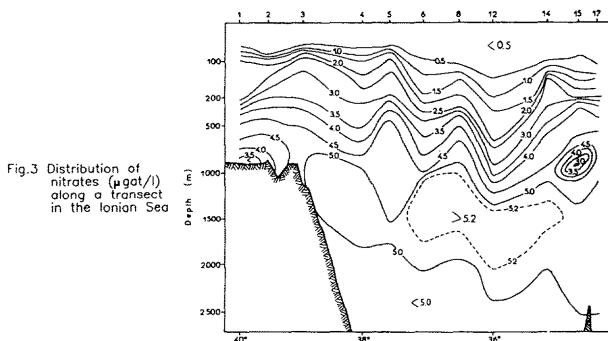


Fig.3 Distribution of nitrates ($\mu\text{gat/l}$) along a transect in the Ionian Sea

The nutrient poor surface layer extended down to 60 m in the north, while, in the south, it was brought down to 150 meters by a meandering anticyclone near $36^{\circ}00'$ N latitude. This layer presents high concentrations of oxygen and very strong gradients between 50 and 100m. Note that, between these depths there was less saline and warmer water of Atlantic origin (NAW).

In the intermediate layer, the depth of isoconcentrations of 4.8 ml/l O_2 and $3.5 \mu\text{gat/l NO}_3$ followed that of 38.80 psu isohaline, deemed to represent the boundary delineating the spatial extent of the Levantine Intermediate Water (LIW), (Artegiani et al. 1988, Theodorou et al. 1988).

The thermocline, isohaline, oxygen (Figure 2) and nutrient (Figure 3) isoconcentration lines at station 12 ($36^{\circ}00' \text{ N}$, $21^{\circ}30' \text{ E}$) were about 400 m below those in the adjacent areas.

The Deep Water (DW) had an oxygen content lower than 4.4 ml/l and nitrate greater than $5.0 \mu\text{gat/l}$. The concentration of oxygen diminished and that of nitrate augmented at the south of the section, where a core with oxygen less than 4.2 ml/l and nitrate greater than $5.2 \mu\text{gat/l}$ was found.

At station 15, to the west of Crete, there was a water mass with low nutrient also and high oxygen content at a depth of 900 m. This water mass also presented high salinity and temperature; it probably originated from the Cretan Sea.

REFERENCES

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