MEDALPEX IN THE NORTH ADRIATIC - PRELIMINARY REPORT

Mira ZORE-ARMANDA, Vlado DADIĆ, Miroslav GAČIĆ, Mira MOROVIĆ and Tanja VUČIČIĆ

Institute of oceanography and fisheries, Split, Yugoslavia

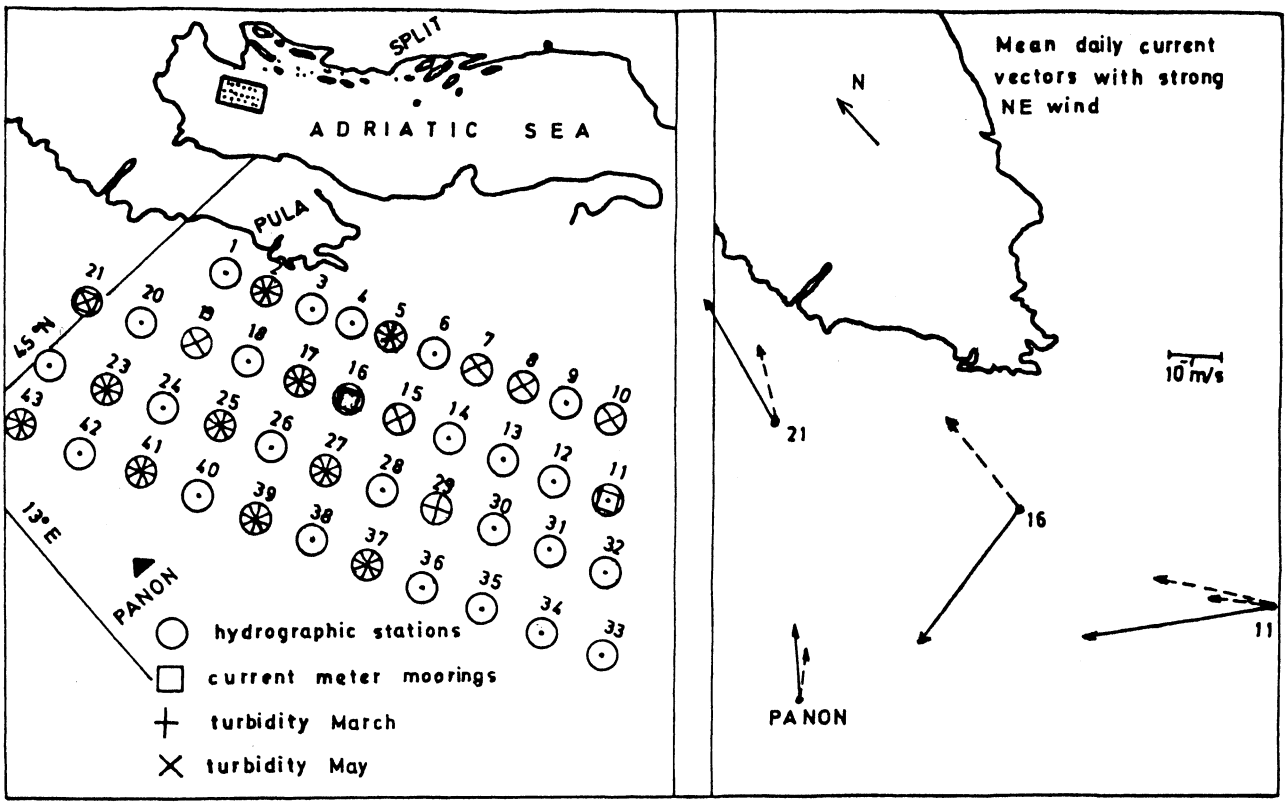
Preliminary analysis of the MEDALPEX data collected in the North Adriatic showed clearly the presence of the frontal zone. It appeared between the water of the northernomost part of the Adriatic (under the impact of river runoff) and the water of the open North Adriatic influenced by advection from the south. Frontal zone was also seen from the distribution of current vectors and turbidity data.

L'analyse préliminaire des données de MEDALPEX dans l'Adriatique du Nord a montré la présence de la zone frontale s'étendant entre l'eau de l'extrême Nord de l'Adriatique (sous l'influence des eaux douces) et celle du large de l'Adriatique du Nord, influencée par l'advection du sud. La distribution horizontale des courants et des données sur la turbidité a également révélé l'existence de cette zone.

Temperature-salinity data were collected at an experimental polygon of 43 stations. The whole experiment was undertaken twice: in March and May 1982. In addition to temperature-salinity data, turbidity, suspended matter, species composition and density of phytoplancton were determined at some stations only. Current data from three moorings with two or three "Aanderaa" RCM4 current meters were collected throughout the entire period. Measurements with three "Aanderaa" RCM4 current meters were also performed at the oil-drilling platform "Panon" from February 22 through April 12 1982.

Data collected during both cruises showed clearly the existence of the frontal zone between the colder and lower salinity water on the north and warmer and saltier water on the south (open North Adriatic). In the surface layer in May horizontal salinity gradient due to maximum river runoff was very large and frontal zone was not visible; in deeper layers however the front was still very pronounced.

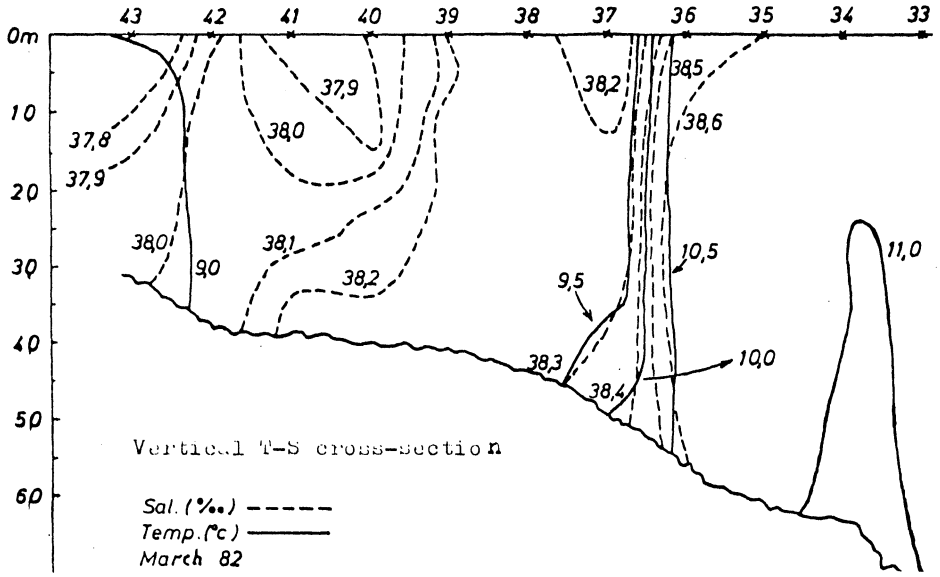
The position of this front could be connected to the fresh-water runoff of North Italian rivers. The spreading of this fresh-water in the northernmost part of the Adriatic prevented the formation of the coastal front in this region which appears elsewhere in the Adriatic at the distance of several kilometers from the coast.

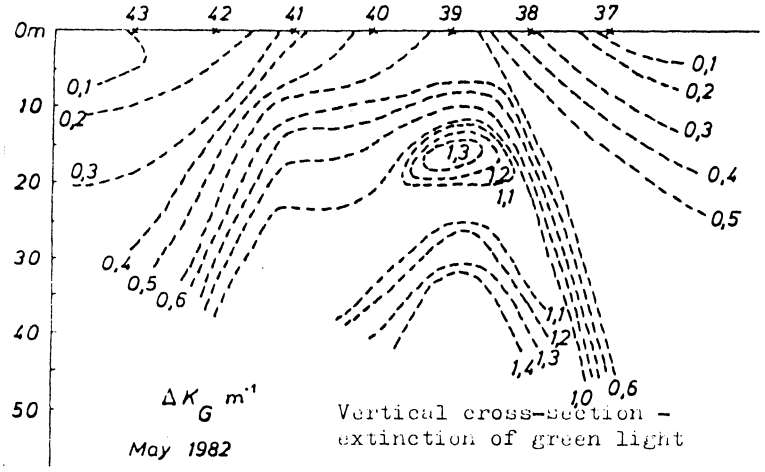


Mean current vectors showed that the frontal zone (stations 16) was characterized by the west current. At station 11, at the most southern point of the region examined, the NW direction prevailed, bringing water from the south. Such current directions may only produce convergence in the frontal zone. Downwelling which takes place in this zone forms the heavy deep Adriatic water by mixing of the northern colder and southern saltier water. Current direction at the northernmost station (21) and Panon was opposite to direction in the central part (16).

The horizontal distribution of the mean daily current vectors in the meteorological situation with the strong NE wind showed on the southern side of the front current directed northwestward (i.e. parallel to the coast) probably as a consequence of the Ekman transport.

In the region where the front was situated, according to the temperature data, current was directed northwestward (i.e. parallel to the front). North of the current had the northeeastward direction. On the other hand, in the northernmost part of the Adriatic (Gulf of Trieste) the transport under the influence of the NE-wind (bora-wind) is mostly in the windward direction.





This is the evidence that the circulation north of the front is characterized by the cyclonic gyre which is strengthened by the influence of the bora-wind.

Distribution of suspended matter as obtained from the extinction in the red part of the spectrum showed similar shape during both cruises. Concentration of suspended matter decreased towards the south and extinction isolines followed frontal lines. The river Po inflow has maximum in May and consequently the turbidity in May was greater than in March in the entire area. Polarisation of optical properties in relation to the frontal zone was also evident from Secchi disk readings. Transpareney was smaller north than south of the front. The extinction in the green part of the spectrum was greater at stations near the frontal zone.