

# THE IMPACT OF THE EASTERN MEDITERRANEAN TRANSIENT ON THE VERTICAL DISTRIBUTION OF DISSOLVED OXYGEN AND NUTRIENTS OFF THE ISRAELI MEDITERRANEAN COAST

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## Abstract

Changes in vertical distribution of dissolved oxygen and nutrients due to the Eastern Mediterranean Transient (EMT) evolution were detected close to the Israeli coast since 2002 during ongoing seasonal cruises. Although the EMT has now relaxed, this is not yet reflected in the vertical distribution of the chemical parameters in the area, and it remains in 2006 as in 2002, much different than prior to the EMT.  
*Keywords : Circulation, Oxygen.*

Changes in the vertical distribution of the physical and chemical parameters in the Eastern Mediterranean basin following the EMT evolution [1] were documented in the eastern Levantine Basin only since 1999 [2] while the easternmost part of the basin close to the Israeli coast was not surveyed. From 2002, seasonal oceanographic surveys are performed along a 50 mile transect from Haifa, Israel, westwards (up to 1700 m water depth), representing the easternmost part of the basin. While in 1991 there was no evidence of the EMT in the area, from 2002 there is an extreme manifestation that is reflected in the physical parameters (Fig.1) and on the vertical distribution of dissolved oxygen and nutrients (Fig. 2).

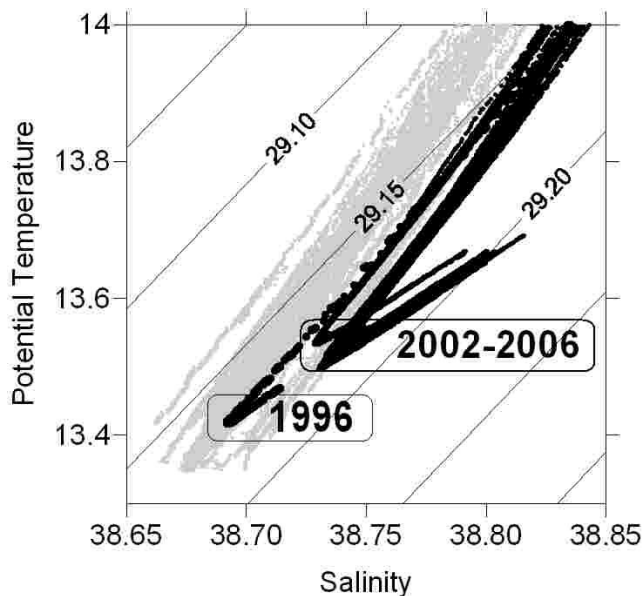


Fig. 1. Long term changes in temperature and salinity properties of the deep water mass near the Israeli coast, Levantine Basin.

If before the EMT there was no minimum-oxygen/maximum-nutrient layer at mid depths, since 2002 it exists even at the station located only 16 miles from shore. Dissolved oxygen increased by ca.  $5 \mu\text{mol/kg}$  at the deep layers  $\mu\text{mol/kg}$  (Fig. 2), while silicic acid decreased by ca. 2.

The concentrations of nitrate and phosphate decreased as well (not shown) creating a maximum layer at ca. 500 m depth. The changes influenced primarily, but not only, the deep layers. While in the central Levantine the influence of the EMT seems to be veering off, there are essentially no changes in the vertical distribution at the stations occupied during this study between 2002 and 2006. Continuing survey of the area will make it possible to follow the influence of the relaxation on the chemical properties of the water masses as well as possible influence on the upper layers.

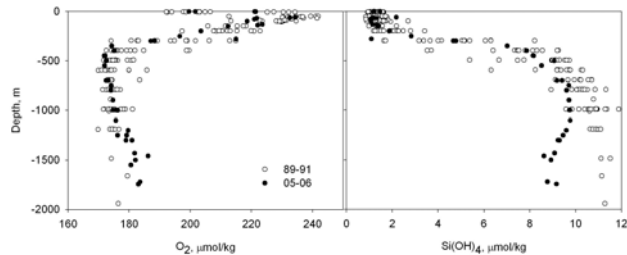


Fig. 2. Vertical profiles of dissolved oxygen and silicic acid concentrations before and after the EMT at stations close to the Israeli coast, Levantine basin.

## References

- 1 - Roether W., Manca B.B., Klein B., Bregant D., Georgopoulos D., Beitzel V., Kovacecic V. and Luchetta A., 1996. Recent changes in Eastern Mediterranean Deep Water. *Science*, 271: 333.
- 2 - Kress N., Manca B.B., Klein B. and Deponte D., 2003. Continuing influence of the changed thermohaline circulation in the eastern Mediterranean on the distribution of dissolved oxygen and nutrients. Physical and chemical characterization of the water masses. *J. Geophys. Res.*, 108 (C9): 8109, doi:10.1029/2002JC001397.