

NUTRIENT DYNAMICS IN EAST MEDITERRANEAN SEA UNDER DIFFERENT WATER MASSES

A. PAVLIDOU¹, E. ROUSSELAKE², D. VELAORAS³,
AND V. PAPADOPOULOS⁴

¹HCMR, aleka@hcmr.gr

²HCMR, erousel@hcmr.gr

³HCMR, dvelaoras@hcmr.gr

⁴HCMR, vassilis@hcmr.gr

In this work we study the nutrient dynamics in three sub-basins of the East Mediterranean Sea namely North Aegean Sea, Cretan Sea and Cretan Straits and South Ionian Sea, in relation to the different water mass properties. This study gives recent information for the physical and nutrient dynamics in this area during periods of stratification and homogenization. The main water masses namely the Levantine Intermediate Water (LIW), the Mediterranean Deep Water (EMDW), the Transition Mediterranean Water (TMW), the Cretan Deep Water (CDW) and the Black Sea water (BSW) were recognized in the study area and their physicochemical characteristics were recorded. Data in this work were obtained during three sampling cruises in October 2014, May 2015 and December 2015 with R/V “Aegeo”. Six stations were sampled which are located at the three sub-basins of the East Mediterranean.

The waters of the East Mediterranean are characterized by unique physical and chemical properties within the separate water masses occupying different depths, and show a high spatio-temporal variability with respect to physical properties, and nutrients. Indeed, the distribution of inorganic and organic nutrients for the three sampling cruises show the spatial differences in relation to the different hydrology of the three sub-basins studied, as well as the temporal differences related to the seasonal variations of the various parameters.

The surface layer is generally almost fully nutrient depleted so that the East Mediterranean is an oligotrophic, or even ultra-oligotrophic area. Oligotrophic features increase according to a north–south gradient, with higher inorganic and organic nutrient concentrations to be recorded in the north Aegean Sea. Higher nutrient concentrations were recorded during late spring (May 2015), post productive period. The temporal variability of nutrients in north Aegean is mainly related to the outflow of the BSW into north Aegean Sea. Indeed high water fluxes are, in general, recorded during spring period.