

LONG - TERM SEASONAL CHANGES OF SOME NUTRIENT SPECIES  
IN THE BLACK SEA SURFACE WATERS ENTERING THE  
SEA OF MARMARA

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Nutrient input with the Black Sea surface waters has known to have a major role controlling the Marmara Sea ecosystem and it is also important for the precise estimate of the exchange of nutrients through the Bosphorus. Therefore, the concentrations of nutrients have to be systematically and precisely measured. Long-term monitoring provides to understand the general trend of seasonal variations which is quite high, especially, for the dissolved inorganic and particulate species in the Black Sea surface water input to the Bosphorus. On the other hand, long-term studies in the region give us the frequency of some episodic events and daily changes in the concentrations in a year. These mentioned points brought us to combine two different data sets of different nutrient species between 1986 and 1988. The seasonal data of the first 10-year period obtained at the Black Sea entrance of the Bosphorus Strait (41°12'N, 29°07'E) were collected by ODTÜ-DBE and published in previous studies. The data of the last 3 year was obtained by İÜ-DBE and TUBITAK-MAM either monthly or bimonthly and it is the most frequent data set for the region. The nitrate and reactive phosphate data is systematically available for all the years whereas the particulate and total concentrations are only available at some occasions. The lowest dissolved inorganic nutrient concentrations were usually measured in autumn of all the years and a ten-fold increase from autumn to winter concentrations can be accepted as a typical feature. In these periods nitrate concentrations can increase to as high as 6-7µM, like in February and March 1996. January 1997 and previously in December 1991. Particulate nitrogen and phosphorus concentrations usually reached its peak values during the spring phytoplankton increase in parallel to particulate organic carbon.