



Atmospheric deposition of dissolved nitrogen and phosphorus in the North Western, East Mediterranean and Black Sea

Kalliopi Violaki (1), Snejana Moncheva (2), Marie-Dominique Loÿe-Pilot (3), François Bourrin (4), Panayiota Nikolaou (1), Nicole Delsaut (4), Maria Kanakidou (1), and Nikos Mihalopoulos (1)

(1) University of Crete, Chemistry, Heraklion, Greece (kviolaki@chemistry.uoc.gr), (2) Institute of Oceanology-BAS, Varna, Bulgaria, (3) CERES-ERTI, Ecole Normale Supérieure, Paris, France, (4) CEFREM, University of Perpignan, France

With humans having an increasing impact on Earth, the perturbation of biogeochemical cycles of nutrients (phosphorus, nitrogen and carbon) was inevitable. The interactions between nutrients and climate are expected to become an important determinant of the Earth biogeochemical cycles, while atmosphere is considered as an important nutrient path, especially for Mediterranean Sea. Since P & N is the limiting factor for many oligotrophic marine environments, valuable information could be arisen by studying the role of organic and inorganic forms in atmospheric deposition samples

This study aims to investigate the sources, forms and the biogeochemical significance of soluble atmospheric P & N over the North Western and East Mediterranean & Black Sea. Bulk deposition samples have been collected at Cape Bear (Perpignan, France), Crete (Finokalia station) and Black Sea (Varna) and analyzed for P and N speciation. In NW Mediterranean important contribution of Dissolved Inorganic Nitrogen (DIN: NO_3^- , NH_4^+) to Total Dissolved N was observed during the seven year period, while the average percentage contribution of NO_3^- , NH_4^+ and DON to TDN was estimated 53%, 28% and 19%, respectively. Accordingly, was observed important contribution of Dissolved organically bound phosphorus (DOP) to Total Dissolved Phosphorus. Inorganic Nutrients are much higher in NW Mediterranean comparing with the East part, especially in NH_4^+ deposition, mainly due to local sources. Additionally preliminary results show that the atmospheric deposition of inorganic nutrients is much higher over Black Sea, comparing with Mediterranean Sea, suggesting that atmospheric deposition is an important nutrients path for that marine ecosystem.