



Human - driven atmospheric deposition of N & P controls on the East Mediterranean marine ecosystem

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The historical and future impacts of atmospheric deposition of inorganic nitrogen (N) and phosphorus (P) on the marine ecosystem in the East Mediterranean Sea are investigated by using a 1-D coupled physical- biogeochemical model, set-up for the Cretan Sea as a representative area of the basin. For the present-day simulation (2010), the model is forced by observations of atmospheric deposition fluxes at Crete, while for the hindcast (1860) and forecast (2030) simulations, the changes in atmospheric deposition calculated by global chemistry- transport models are applied to the present-day observed fluxes. The impact of the atmospheric deposition on the fluxes of carbon in the food chain is calculated together with the contribution of human activities to these impacts. The results show that total phytoplanktonic biomass increased by 16% over the past 1.5 century. Small fractional changes in carbon fluxes and planktonic biomasses are predicted for the near future. Simulations show that atmospheric deposition of N and P may be the main mechanism responsible for the anomalous N to P ratio observed in the Mediterranean Sea.