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ABSTRACT

Atmospheric deposition of inorganic nitrogen to East Asian marginal seas

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The atmospheric deposition of anthropogenic nitrogen is an increasingly important new source of nitrogen to the ocean. This presentation shows the concentrations and depositional fluxes of nitrate and ammonium in airborne total suspended particles and precipitation, and factors affecting them based on three-year observation data collected in an eastern coastal site (Uljin) of South Korea, adjacent to the East Sea. Potential sources for these reactive nitrogen species could be identified based on air mass backward trajectories and stable isotope ratio in atmospheric nitrate. Atmospheric nitrogen deposition could contribute to approximately two percent of phytoplankton production in the southwestern East Sea. The nitrogen and oxygen isotopic ratios in atmospheric and seawater samples also could evidence a significant contribution of atmospheric nitrogen deposition to the nitrogen pool in the East Sea. It was also shown that atmospheric deposition could directly reduce ocean alkalinity. In addition, similar investigations being conducted in a western coastal site (Songdo) of South Korea and an ocean site located in the Yellow Sea will also be introduced.