



GESAMP Working Group 38, The Atmospheric Input of Chemicals to the Ocean

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There is growing recognition of the impact of the atmospheric input of both natural and anthropogenic substances on ocean chemistry, biology, and biogeochemistry as well as climate. These inputs are closely related to a number of important global change issues. For example, the increasing input of anthropogenic nitrogen species from the atmosphere to much of the ocean may cause a low level fertilization that could result in an increase in marine 'new' productivity of up to ~3% and thus impact carbon drawdown from the atmosphere. Similarly, much of the oceanic iron, which is a limiting nutrient in significant areas of the ocean, originates from the atmospheric input of minerals as a result of the long-range transport of mineral dust from continental regions. The increased supply of soluble phosphorus from atmospheric anthropogenic sources (through large-scale use of fertilizers) may also have a significant impact on surface-ocean biogeochemistry, but estimates of any effects are highly uncertain. There have been few assessments of the atmospheric inputs of sulfur and nitrogen oxides to the ocean and their impact on the rates of ocean acidification. These inputs may be particularly critical in heavily trafficked shipping lanes and in ocean regions proximate to highly industrialized land areas. Other atmospheric substances may also have an impact on the ocean, in particular lead, cadmium, and POPs.

To address these and related issues the United Nations Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) initiated Working Group 38, The Atmospheric Input of Chemicals to the Ocean, in 2008. This Working Group has had four meetings. To date four peer reviewed papers have been produced from this effort, with a least eight others in the process of being written or published. This paper will discuss some of the results of the Working Group's deliberations and its plans for possible future work.