Arctic Haze Encyclopedia Article

Arctic Haze

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Arctic Haze

The dry **aerosol** present in arctic regions during much of the year and responsible for substantial loss of **visibility** through the **atmosphere**. The arctic regions are, for the most part, very low in precipitation, qualifying on that basis as deserts. Ice accumulates because even less water evaporates than is deposited. Hence, particles that enter the arctic atmosphere are only very slowly removed by precipitation, a process that removes a significant fraction of particles from the tropical and temperate atmospheres. Thus, relatively small sources can lead to appreciable final atmospheric concentrations.

A **succession** of studies has been conducted on the chemistry of the particles in that **haze**, and those trapped in the snow and ice. Much of the time the mix of trace elements in the particles is very close to that found in the industrial emissions from northern Europe and Siberia and quite different from that in such emissions from northern North America. Concentrations decrease rapidly with depth in the ice layers, indicating that these trace elements began to enter the atmosphere within the past few centuries. It is now generally conceded that most of the haze particles are derived from human activities, primarily—though not exclusively—in northern Eurasia.

Since the haze scatters light, including sunlight, it decreases the **solar energy** received at the ground level in polar regions and may, therefore, have the potential to decrease arctic temperatures. Arctic haze also constitutes a nuisance because it decreases visibility. The trace elements found in arctic haze apparently are not yet sufficiently concentrated in either atmosphere or precipitation to constitute a significant toxic hazard.

Resources

Periodicals

Nriagu, J. O., et al. "Origin of Sulfur in Canadian Arctic Haze From Isotope Measurements." *Nature* 349 (10 January 1991): 142–5.

Soroos, M. S. "The Odyssey of Arctic Haze: Toward a Global Atmospheric Regime." *Environment* 36 (December 1992): 6–-11+.