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- REPORT

The Sensitivity of Polar Ozone Depletion to Proposed Geoengineering Schemes

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ABSTRACT

The large burden of sulfate aerosols injected into the stratosphere by the eruption of Mount Pinatubo in 1991 cooled Earth and enhanced the destruction of polar ozone in the subsequent few years. The continuous injection of sulfur into the stratosphere has been suggested as a "geoengineering" scheme to counteract global warming. We use an empirical relationship between ozone depletion and chlorine activation to estimate how this approach might influence polar ozone. An injection of sulfur large enough to compensate for surface warming caused by the doubling of atmospheric CO_2 would strongly increase the extent of Arctic ozone depletion during the present century for cold winters and would cause a considerable delay, between 30 and 70 years, in the expected recovery of the Antarctic ozone hole.

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