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## EFFICIENT FORMATION OF STRATOSPHERIC AEROSOL FOR CLIMATE ENGINEERING BY EMISSION OF CONDENSIBLE VAPOR FROM AIRCRAFT

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Recent analysis suggests that the effectiveness of stratospheric aerosol climate engineering through emission of non-condensable vapors such as SO<sub>2</sub> is limited because the slow conversion to H<sub>2</sub>SO<sub>4</sub> tends to produce aerosol particles that are too large; SO<sub>2</sub> injection may be so inefficient that it is difficult to counteract the radiative forcing due to a CO<sub>2</sub> doubling.

Here we describe an alternate method in which aerosol is formed rapidly in the plume following injection of H<sub>2</sub>SO<sub>4</sub>, a condensable vapor, from an aircraft. This method gives better control of particle size and can produce larger radiative forcing with lower sulfur loadings than SO<sub>2</sub> injection. **Relative to SO<sub>2</sub> injection, it may reduce some of the adverse effects of geoengineering such as radiative heating of the lower stratosphere.**

**This method does not, however, alter the fact that such a geoengineered radiative forcing can, at best, only partially compensate for the climate changes produced by CO<sub>2</sub>.**

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