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# Impacts of Stratospheric Particles Injection on Stratospheric Ozone: Laboratory Studies

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The stratospheric injection of aerosols is a geoengineering scheme designed to reduce the impacts of climate change. The injected particles scatter solar radiation back to space and hence reduce the radiative forcing of the Earth. The scattering ability of a particle depends on both its size and composition. Particles composed of titania ($TiO_2$) have recently been highlighted as a possible candidate aerosol because of their impressive light scattering ability by virtue of a high refractive index (Pope et al. 2012).
The impact of particles injection on stratospheric ozone needs to be systematically assessed via laboratory and modelling studies. In this work, the heterogeneous reactions of airborne $TiO_2$ particles with N2O5 and HCl are investigated by using an atmospheric pressure aerosol flow tube. A Chemical Ionization Mass Spectrometer is used to detect trace gases, and a Scanning Mobility Particle Sizer is used to measure aerosol number concentration and size distribution. The kinetics of the uptake of N2O5 onto $TiO_2$ particles and the influence of HCl will be presented, and the result will be compared to the uptake onto natural sulphate stratospheric particles.