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# ISOL-ICE: Effects of volcanic sulphate and chlorine injections on Antarctic ozone

Alison Ming, Holly Winton, Markus Frey, and Xin Yang
British Antarctic Survey, Cambridge, UK (aling@bas.ac.uk)

Major tropical volcanic eruptions over the past millennium have emitted large quantities of sulphate into the stratosphere. These volcanoes are also potential sources of stratospheric chlorine although the amount emitted is highly uncertain. In this study, we focus on the transient response of Antarctic ozone following a major volcanic eruption with different emission scenarios of both sulphate and chlorine. We first update the chemistry scheme of the UM-UKCA model by improving the reaction on surfaces of polar stratospheric clouds and sulphate aerosol. Gas phase and heterogeneous reactions involving both bromine and chlorine are also added since these are important contributors to polar ozone loss. Using the model in a pre-industrial CMIP6 AMIP style set up, we will show results from the model ensemble forced with high and low emissions of both sulphate and chlorine. We find that the sign Antarctic ozone change following a major eruption is highly sensitive to the chlorine loading. This work is part of the modelling component of the ISOL-ICE project that is looking at the variability of surface UV over Antarctica over the past millennium. We will also present a comparison of the model results to the UV proxy derived from the ice core recovered from Dronning Maud Land in the 2016-17 austral summer.