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Volcanic influence on STRATOCLIM aircraft observations 2017 in the Asian Monsoon, studies with the transient CCM EMAC

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Results from a transient 28 year simulation with the chemistry climate model EMAC with interactive modal aerosol scheme nudged to observed tropospheric meteorology (ERA-Interim) which includes about 500 volcanic SO₂ injections are compared with in situ aircraft observations in the UT/LS in the Asian Monsoon anticyclone. Enhanced SO₂ observed by STRATOMAS and enhanced sulfate aerosol observed by ERICA in the LS point to impact of several explosive eruptions of the Indonesian volcano Sinabung during summer 2017 seen by the OSIRIS satellite instrument. This is supported by freshly nucleated particles observed by COPAS in the UTLS. We present several sensitivity studies with EMAC with different assumptions on the injection patterns in comparison to the observations in July/August 2017.

The monsoon dynamics distributes the volcanic material together with Asian pollution into the global lower stratosphere.