



Radiative effects of stratospheric aerosol including volcanic SO₂ from MIPAS and other satellite instruments as simulated by the chemistry climate model EMAC

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The chemistry-climate model EMAC interactively simulates stratospheric and tropospheric chemistry, aerosols and dynamics, accounting for trace gas and particle emissions including volcanic SO₂ injections derived from MIPAS satellite data and other data sources. Aerosols are represented using a seven-mode submodel from which optical properties are calculated based on Mie theory, feeding back into radiative heating rates and atmospheric dynamics. We demonstrate that medium and even smaller volcanic eruptions contribute significantly to the radiative forcing of climate by perturbing the background stratospheric aerosol in the period 2003 to 2011.