



Effect of volcanic aerosol on stratospheric NO₂: Odin-OSIRIS measurements

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Heterogeneous chemistry on the surface of volcanic stratospheric aerosols from large eruptions such as Mt. Pinatubo in 1991 has been shown to cause substantial decreases of stratospheric NO₂. Here we present measurements from the Optical Spectrograph and InfraRed Imaging Spectrometer (OSIRIS), which simultaneously observed wide-spread enhancements of stratospheric aerosol following several relatively minor volcanic eruptions between 2002 and 2014, along with coincident depletion of stratospheric NO₂. OSIRIS stratospheric NO₂ partial columns for ~3-7 km above the tropopause were found to be smaller than baseline levels during these aerosol enhancements by up to ~60%. Correlations with measurements from MIPAS are also used to show that this is consistent with heterogeneous chemistry on the surface of volcanic aerosols.