



## **Stratospheric aerosol characteristics retrieved from SCIAMACHY and OMPS limb scatter measurements**

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Variations in stratospheric aerosols characteristics caused by volcanic eruptions alter the radiative budget of the Earth's atmosphere and thereby influence the climate. A commonly accepted quantitative measure of this influence is provided by the radiative forcing. In a simple approximation, the latter can be calculated based on the aerosol extinction coefficient (or optical depth). However, a more sophisticated and accurate approach requires the knowledge about the aerosol particle size distribution (PSD).

In this study, we present the stratospheric aerosol datasets, retrieved from spaceborne instruments measuring the scattered light in the limb viewing geometry. Aerosol extinction coefficient profiles were obtained from SCIAMACHY, which operated from 2002 till 2012, and OMPS, which was launched in late 2011. Additionally, two out of three aerosol PSD parameters (mode radius and absolute distribution width) were retrieved from SCIAMACHY data. As no other spaceborne instrument provides two or more parameters of aerosols PSD over that period, the latter dataset is really unique. Both aerosol extinction and PSD datasets were used to analyze the volcanic eruptions over the last 16 years, in particular, the eruptions of Manam, Tavurvur, Sarychev Peak and Kelut. It was shown, that aerosol extinction coefficient and mode radius increase after the volcanic eruptions, while the absolute distribution width can increase, decrease or remain unchanged. The radiative forcing from those volcanoes was assessed using the radiative transfer model SCIATRAN.