

## **Stratospheric profiles of aerosol characteristics from SCIAMACHY limb observations**

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### **Abstract**

Stratospheric aerosols, mainly from volcanic eruptions and biomass burning, interact with stratospheric trace gases and change the Earth's radiation budget. The amplitude of change depends on the amount of aerosols. The exact determination of the vertical and spatial distribution of stratospheric aerosols is therefore essential for the consideration of trace gas trends and the climatic development of the Earth. We have improved the retrieval algorithm of the particle size distribution (PSD) from SCIAMACHY (Scanning Imaging Absorption spectroMeter for Atmospheric ChartographY) limb observations by including the actual effective Lambertian surface albedo derived from SCIAMACHY nadir observations. The retrieval algorithm is based on an optimal estimation method that assumes a fixed number density profile. From the retrieved PSDs, the extinction coefficients and effective radii are calculated and compared with other satellite observations (e.g., SAGE II and SAGE III/Meteor) and model simulations (e.g., ECHAM). By taking the actual effective Lambertian surface albedo into account, the SCIAMACHY retrieved extinction coefficient and effective radius are considerably improved.