



Particle size distribution of the stratospheric aerosol from SCIAMACHY limb measurements

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A crucial role of the stratospheric aerosols for the radiative budget of the Earth's atmosphere and the consequences for the climate change are widely recognized. A reliable knowledge on physical and optical properties of the stratospheric aerosols as well as on their vertical and spatial distributing is a key issue to assure a proper initialization and running conditions for climate models. On a global scale this information can only be gained from space borne measurements. While a series of past, present and future instruments provide extensive data sets of such aerosol characteristics as extinction coefficient or backscattering ratio, information on a size distribution of the stratospheric aerosols is sparse.

One of the important sources on vertically and spatially resolved information on the particle size distribution of stratospheric aerosols is provided by space borne measurements of the scattered solar light in limb viewing geometry performed in visible, near-infrared and short-wave infrared spectral ranges. SCIAMACHY (SCanning Imaging Absorption spectroMeter for Atmospheric CHartographY) instrument operated on the European satellite Envisat from 2002 to 2102 was capable of providing spectral information needed to retrieve parameters of aerosol particle size distributions. In this presentation we discuss the retrieval method, present first validation results with SAGE II data and analyze first data sets of stratospheric aerosol particle size distribution parameters obtained from SCIAMACHY limb measurements. The research work was performed in the framework of ROMIC (Role of the middle atmosphere in climate) project.