



Model-based evaluation of SCIAMACHY limb observations of aerosol extinction coefficients in the lower stratosphere within ROMIC/ROSA

Rene Hommel (1), John Burrows (1), Alexei Rozanov (1), Christian von Savigny (2), and Jakob Zalach (2)

(1) University of Bremen, Institute of Environmental Physics and Remote Sensing IUP/IFE, Bremen, Germany
(burrows@iup.physik.uni-bremen.de), (2) Ernst-Moritz-Arndt University Greifswald, Greifswald, Germany

The collaborative research project ROSA (Role Of Stratospheric Aerosol in climate and atmospheric Science) within the BMBF funded ROMIC research cluster aims to further evaluate Envisat/SCIAMACHY limb observations of aerosol extinction coefficients in the lower stratosphere and to establish new data products from Envisat/SCIAMACHY solar occultation measurements. Major efforts will be directed towards improving the understanding of the dynamical nature of the stratospheric aerosol system, which is strongly influenced by the release of volcanic material into the stratosphere. Within ROSA, a global stratospheric chemistry transport model coupled to an interactive aerosol microphysics scheme is utilized to investigate the formation and global dispersion of aerosols in the stratosphere.

In this paper, we introduce the modelling framework and highlight differences to earlier implementations of the aerosol microphysical scheme. We present results from various aspects of the modelling activities within ROSA. We present first insights into the transduction mechanisms causing the 27 day solar rotational signature as inferred from Envisat/SCIAMACHY aerosol extinction coefficient measurements. We also present first results from model scenarios studying the stratospheric aerosol load during the Envisat/SCIAMACHY lifetime between August 2002 and April 2012.