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Retrieval of vertical distributions of stratospheric ozone from OMPS measurements in limb viewing geometry

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Due to its crucial role in the radiative budget of the stratosphere as well as its importance for the mankind as an absorber of biological-damaging UV radiation, a continuous monitoring of the vertical and spatial distribution of stratospheric ozone is of high priority. In early 2012 the European ENVISAT satellite, carrying, among others, ozone science relevant instruments as GOMOS, MIPAS and SCIAMACHY, ceased its operations. A few aging satellite missions, such as OSIRIS, MLS, ACE-FTS, and SMR are still operating, contributing to the task of continuous monitoring stratospheric ozone. At the end of 2011, just some months before the end of ENVISAT lifetime, SUOMI-NPP mission carrying OMPS instrument was launched. The OMPS suite allows the study of the vertical distribution of stratospheric ozone by analyzing the intensity of the scattered solar light at UV-VIS wavelengths in limb viewing geometry. The final goal of the different data sets is to provide a long-term data collection at a Climate Data Record accuracy level, so that trends and sudden variations of the ozone layer can be detected and studied.
The focus of our study is to adapt the algorithm developed at the University of Bremen for the retrieval of vertical distributions of stratospheric ozone from SCIAMACHY limb measurements to OMPS limb observations, with a final aim to obtain a continuous data set from both instruments. The retrieval configuration accounts for the instrumental design by optimally exploiting different spectral ranges at UV wavelengths and in the Chappuis absorption band to retrieve ozone concentrations at different tangent heights. The effect of instrument pointing errors on the performed retrieval quality is investigated. The first retrieval results as well as comparisons with independent data from other satellite instruments and ozone sondes are presented.