



A climatology for SMILES L2r data products

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The Japanese space-borne Superconducting sub-Millimeter-wave Limb Emission Sounder (SMILES) provides Stratospheric and Mesospheric limb measurements on various chemical species. These include short-lived species, such as ClO, BrO and HOCl and long-lived species, such as ozone and HCl. The sophisticated SMILES radiometer produces highly accurate measurements with very low observation noise, in comparison to the conventional. This poster presents the results of the SMILES trace gas climatology of the six months measurement period, starting in October 2009 to April 2010. Depending on the available amount of data, monthly or multi-monthly data periods are used for averaging.

In comparison to several other limb sounding instruments with sun synchronous orbit, the SMILES orbit allows measurements at all local solar times (LST) in a rather short time period. In context of short-lived species the diurnal variations can be depicted by generating solar zenith angle (SZA) averages of measurements taken from a specific latitudinal region. Therefore the trace gas climatology contains SZA-averaged data as well as zonally-averaged data. The data of the zonal averages are thereby restricted to certain LST intervals, of approximately 2 hours. These time intervals correspond to the local times of AURA MLS, MIPAS and ODIN SMR, in order to provide comparability.

Species dependent quality filtering together with robust statistics are applied to the climatology data, to ensure the most probable representation of the atmosphere. Zonal-, and SZA-averages are going to be stored in HDF-file format and will be accessible via the SMILES data distribution website (<http://smiles.nict.go.jp/pub/data/index.html>).