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Tropical upper tropospheric ozone from GOME1 and SCIAMACHY satellite data (1995-2008)

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There have been several studies concerning tropospheric ozone derived from satellite data. These analyses were mainly based on total ozone columns, sometimes in combination with limb/occultation sounder, and are limited to the tropics. The only method so far introduced to derive upper tropospheric ozone from column measurements is the cloud-slicing technique (Ziemke et al., 2001). This method is now for the first time applied to GOME1 and SCIAMACHY.

The Global Ozone Monitoring Experiment (GOME) measures the sunlight scattered back from the surface in nadir viewing mode in the spectral range of 240-790 nm. The GOME instrument mainly detects ozone and other trace gases and was launched in 1995. The SCIAMACHY (Scanning Imaging Absorption Spectrometer for Atmospheric Chartography) instrument was launched in 2002 and measures ozone in the same spectral range. The upper tropospheric ozone is derived using a statistical relationship between above cloud ozone columns and cloud-top-height derived from simultaneous O2 A-band measurements. We present first results of the application of the cloud-slicing technique to SCIAMACHY and GOME data in the tropical region. Comparisons between the two data sets will be shown as well as comparisons with ozone sonde profiles from the SHADOZ network (Thompson et al., 2003) will be presented.