



A new method for the absolute radiance calibration of zenith sky and MAX-DOAS observations

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Multi AXis (MAX-) DOAS and zenith-DOAS observations measure sun light scattered in the atmosphere. From the recorded spectra information on several trace gases and aerosol extinction can be retrieved. For the trace gas analyses no absolute radiometric calibration is needed, because differential absorption features are analysed. Thus MAX-DOAS and zenith-DOAS instruments are usually not radiometrically calibrated. Here we present a new and simple method for the absolute radiance calibration of MAX-DOAS and zenith-DOAS instruments. It is based on the comparison of the solar zenith angle dependence of the measured and simulated radiances for zenith observations. For this method, measurements with clear sky and rather constant aerosol load are needed. The result of the calibration procedure is a wavelength dependent calibration factor, which transfers the measured radiance units into absolute radiance values with an accuracy of <10%. As a side product, also the spectrally varying aerosol optical depth is determined.