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Possibilities for Remote Sensing of Aerosol Vertical Structure using the O_2A Band: A Sensitivity Study concerning polarization, spectral resolution, instrument level, and various scenes over land

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We present results of our synthetic aerosol vertical structure retrieval using simulations of high spectral resolved top of atmosphere radiances in the O_2A band. The vertical structure is assumed to be lognormal. The retrieval is based on the direct inversion of the radiative transfer model MOMO. We test the retrieval for various spectral resolutions and instrument noise levels and present probability density functions of the retrieval for various scenes. Results are presented for different aerosol models, optical thicknesses, and surface reflectance spectra. We present the impact of neglecting polarization and analyze the possible aid of additional polarization information for the retrieval of the aerosol vertical profile.