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Validation of MAX-DOAS aerosol and trace gas measurements under various cloud conditions — •X. Li[1], T. Brauers[1], B. Bohn[1], U. Löhnert[2], J. Schween[2], S. Crewell[1], and A. Wahner[1] — [1]Institut f. Energie u. Klima, IEK-8, Forschungszentrum Jülich — [2]Institut f. Meteorologie u. Geophysik, Universität Köln

Multi-Axis Differential Optical Absorption Spectroscopy (MAX-DOAS) is a remote sensing technique for the measurements of aerosol and trace gases such as formaldehyde (HCHO), glyoxal (CHOCHO), and nitrogen dioxide (NO_2) in the atmosphere. Despite the simplicity of the experimental setup of MAX-DOAS, the accurate retrieval of aerosol and trace gas profiles from the MAX-DOAS scattered sunlight measurements requires radiative transfer models to simulate the photon paths in the atmosphere. Generally good agreement was found between MAX-DOAS and in-situ techniques measuring aerosol extinction and trace gas concentrations during field experiments. However, most of the intercomparisons were performed under clear sky conditions in which the influence of clouds is marginal. Within the framework of JOYCE (Joint ObservatorY of Cloud Evolution), a MAX-DOAS instrument is setup side by side with instruments measuring cloud properties, aerosol profiles, trace gases, and meteorology parameters on the roof of a building in Jülich. With this setup quantitative evaluation of the influence of clouds on the accuracy of MAX-DOAS aerosol and trace gas measurements is intended. Moreover, it is also foreseen to investigate which cloud information can be derived from the MAX-DOAS observations.

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