

Fast, sensitive, *in situ* retrieval of aerosol extinction in the SAPHIR chamber

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We present results from the $\text{NO}_3/\text{N}_2\text{O}_5$ campaign at the SAPHIR chamber from June 2007 and a description of our broadband cavity-enhanced absorption spectrometer, which was placed across the full 20 m of the SAPHIR chamber. In addition to the excellent sensitivity that the spectrometer showed to NO_3 and NO_2 , the extinction-dependent pathlength of optical cavities allow the aerosol extinction to be retrieved based on observed changes to a known absorption band. Using the maximum of the O_2 B-band at 687 nm, we have retrieved the aerosol extinction with a precision of better than 10^{-8} cm^{-1} in a time-resolution of 5 s. The aerosol extinction from several experiments in the SAPHIR chamber are presented. The approach can be extended to other regions based on the absorption of H_2O , for instance, and allows direct, sensitive observations of changes in the optical properties of aerosol in a chamber.