



The Feldberg Aerosol Characterization Experiment (FACE) 2004 - Overview

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In July and August 2004 an aerosol characterization field experiment was conducted on the Taunus Observatory on the Kleiner Feldberg, at an elevation of 826 m a.m.s.l., approximately 30 km north of the industrialized and heavily populated Frankfurt/Rhein-Main region - the Feldberg Aerosol Characterization Experiment (FACE) 2004. This field campaign was organized by the Biogeochemistry and Cloud Physics and Chemistry departments of Max Planck Institute for Chemistry in Mainz, Germany and the Institute for Atmospheric Physics of Johannes Gutenberg University in Mainz, Germany in collaboration with the Institute for Meteorology and Geophysics of Johann Wolfgang Goethe University in Frankfurt, Germany, who operate the Taunus Observatory. The measurements were performed between July 16 and August 18, 2004, with a 2-week intensive period from July 20 until August 3, 2004.

Besides the physical and chemical characterization of the aerosol in central Europe using state-of-the-art aerosol instrumentation, the main objectives of this field experiment were the investigation of size-resolved cloud nucleation capabilities of aerosol

particles and test and evaluation of recently developed and established aerosol measurement instruments. For this purpose a large variety of aerosol instrumentation was deployed on the Taunus Observatory, mainly during the intensive period of two weeks. These instruments include instrumentation for the measurement of aerosol chemistry (Q-AMS, TOF-AMS, MOUDI, filter samples), PM₁ aerosol mass (TEOM), particle number concentrations (TSI CPC 3010, 3022, 3025, GRIMM CPC 5400, Snapper CPC, COPAS), particle size distributions (TSI SMPS 3080, GRIMM SMPS 5500, Dekati ELPI, Tartu University EAS, GRIMM OPC, PALAS OPC, FSSP-100, FSSP-300), aerosol optical properties (TSI Nephelometer, Radiance Research Nephelometer, PAS), and a 3-D CCN counter for size-resolved CCN concentration measurements. These measurements were supported by gas-phase measurements of CO, CO₂, O₃, NO_x and SO₂ (Hessisches Landesamt für Umwelt und Geologie), local meteorological measurements, back trajectory calculations (German Weather Service), and aerosol microphysics and thermodynamics modelling.

Here we give an overview over the FACE-2004 campaign and the instrumentation/modelling that was involved in this experiment. In addition we present first results of several of the aerosol instruments and point to other presentations that show these results in more detail. Presented results include intercomparison studies between different instruments measuring the same aerosol properties, size-resolved cloud nucleation capabilities of aerosol particles, and the investigation of a nucleation event observed during the intensive period.