



The biogenic aerosols -effects on clouds and climate (BAECC) experiment

T. Petäjä (1), D. Moisseev (1), E. O'Connor (2), H. Lappalainen (1), and the BAECC Team

(1) University of Helsinki, Department of Physics, University of Helsinki, Finland (tuukka.petaja@helsinki.fi), (2) Finnish Meteorological Institute, Helsinki, Finland

The Biogenic Aerosols -Effects on Clouds and Climate (BAECC) experiment will connect a 19-year long observation record to the impact of biogenic aerosol on clouds, precipitation and climate. This will be achieved by simultaneous observations of precursor vapor emission, aerosol, cloud and precipitation microstructure. This dataset will be used to: (1) link precursor emissions and aerosol, (2) link aerosol at the surface to aerosol in the mixing layer and free troposphere, (3) investigate the aerosol indirect effect on clouds and precipitation. To achieve these goals we deploy the Atmospheric Radiation Measurement Mobile Facility (AMF2) in Hyytiälä, Finland, for a period of 8 months starting in February 2014, to capture the seasonal variability of biogenic aerosol at this boreal environment site. The experiment will take place at the University of Helsinki SMEAR II research station, which has been monitoring biosphere-atmosphere interactions continuously since 1996. The ARM AMF observations will be supplemented by tower and surface-based measurements of aerosol and precursor gases. The experiment will also benefit from existing measurements of precipitation provided by the Finnish Meteorological Institute observational network. The dataset will be placed in perspective with the long time series available from Hyytiälä, and utilized in modeling efforts ranging from process models to global climate models, capitalizing on the ability to perform radiative transfer calculations with a full closure. This work introduces the BAECC project and its scientific goals to the research community in order to incorporate additional contributions from the modeling and measurement community from Europe.