**DETERMINATION OF DICARBOXYLIC ACIDS IN TROPOSPHERICAL PARTICLES AND CLOUDWATER**

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During two field campaigns of the AFO 2000 project FEBUKO (field investigations of budgets and conversions of particle phase organics in troposheric cloud processes) aerosol particle and cloudwater samples were taken in a forestal region in Germany (Thüringer Wald). Particle collection took place in fall 2001 and 2002 at two valley sites (luff and lee) of the mountain Schmücke. On top of this mountain cloudwater was sampled. The aim was to collect and physically and chemically characterize air masses before, while and after passing an orographic cloud in order to provide information about possible multiphase interactions and chemical processing of the aerosol.

As part of the chemical characterization of particles and cloudwater the determination of dicarboxylic acids took place. Because of their low vapor pressure these acids, like oxalic acid, malonic acid, succinic acid and even the higher homologues as well as some of their hydroxylated homologuos compounds are frequently found in tropospheric condensed phases like aerosol particles, rain, cloudwater or snow. They are formed partly from a variety of chemical conversion reactions in either the gas or condensed phase environment.

In this campaign capillary electrophoresis (CE) has been used to determine the dicarboxylic acids. CE has some important advantages for the analysis of ions in aerosol particles compared to the commonly used ion chromatography or gas chromatography. It is a simple and fast technique, which needs no sample purification or preparation. The absolute detection limits are very low (below 1 pmole) and it has a large range of signal-to-concentration linearity. Thus it suits to difficult matrices with strongly changing concentrations and compositions such as aerosol samples. The separation efficiency is usually much higher than in liquid chromatography and the required sample amount is low (down to <1 µL).

For sampling of the particles a five-stage low-pressure cascade impactor (Berner-type with 50% cutoffs: 0.05, 0.14, 0.42, 1.2, 3.5, and 10 µm) was used. A humidity-controlled tube bundle served as the inlet device. Tedlar foil was used as an impaction substrate then used for ion analysis.

For cloudwater sampling four cloudwater collectors from the California Institute of Technology (CASCC2) were used, which collect droplets with a 50% cut off diameter of 3,5 µm by inertial impaction on several rows of teflon strands.

Upcoming results of the measurements are presented.