



New particle formation events as a source for cloud condensation nuclei in an urban environment

Anna Wonaschütz (1), Julia Burkart (1,2), Robert Wagner (1,3), Georg Reischl (1), Gerhard Steiner (3,1,4), and Regina Hitznerberger (1)

(1) University of Vienna, Faculty of Physics, Wien, Austria (anna.wonaschuetz@univie.ac.at), (2) Department of Chemistry, University of Toronto, Canada, (3) Division of Atmospheric Sciences, Department of Physics, University of Helsinki, Finland, (4) Institute of Ion Physics and Applied Physics, University of Innsbruck, Austria

Nucleation and growth events have been observed in many remote, urban and rural environments. The new particles can contribute significantly to cloud condensation nuclei concentrations, after growing into the appropriate size range (Kerminen et al., 2012). Several studies have attempted to quantify this contribution (e.g. Asmi et al., 2011, Matsui et al., 2013), but only a limited number of them to date have used simultaneous measurements of CCN concentrations and particle size distributions for this purpose (e.g. Levin et al., 2012). In this study, a data set from an urban background station, consisting of 22 months of size distribution and 12 months of CCN concentration measurements (Burkart et al., 2011, Burkart et al., 2012) with 10 months of overlapping measurements is combined to explore the variability of CCN concentrations, their possible causes, and the contribution of nucleation and growth events to CCN concentrations. Consistent with observations in many other locations, nucleation and growth events occur on 30% of all days in spring and summer, on 11% of days in fall and on 4% of days in winter. This suggests a potentially large source of CCN from nucleation and growth events, particularly in the warm season.

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