Geophysical Research Abstracts
Vol. 18, EGU2016-13107, 2016
EGU General Assembly 2016

The impact of organic vapours on warm cloud formation; characterisation of chamber setup and first experimental results

Wiebke Frey, Paul Connolly, James Dorsey, Dawei Hu, Rami Alfarra, and Gordon McFiggans

University of Manchester, School of Earth, Atmospheric and Environmental Sciences, Manchester, United Kingdom (wiebke.frey@manchester.ac.uk)

The Manchester Ice Cloud Chamber (MICC), consisting of a 10m high stainless steel tube and 1m in diameter, can be used to study cloud processes. MICC is housed in three separate cold rooms stacked on top of each other and warm pseudo-adiabatic expansion from controlled initial temperature and pressure is possible through chamber evacuation. Further details about the facility can be found at http://www.cas.manchester.ac.uk/restools/cloudchamber/index.html. MICC can be connected to the Manchester Aerosol Chamber (MAC, http://www.cas.manchester.ac.uk/restools/aerosolchamber/), which allows to inject specified aerosol particles into the cloud chamber for nucleation studies.
The combination of MAC and MICC will be used in the CCN-Vol project, which seeks to bring the experimental evidence for co-condensation of organic and water vapour in cloud formation which leads to an increase in cloud particle numbers (see Topping et al., 2013, Nature Geoscience Letters, for details).

Here, we will show a characterisation of the cloud and aerosol chamber coupling in regard to background aerosol particles and nucleation. Furthermore, we will show preliminary results from the warm CCN-Vol experiment, investigating the impact of co-condensation of organic vapours and water vapour on warm cloud droplet formation.