



## **The dependence of aerosol formation in a plant chamber on temperature, UV radiation and relative humidity**

M. Dal Maso (1), T. Hohaus (), A. Kiendler-Scharr (), E. Kleist (), Th. F. Mentel (), R. Tillmann (), and J. Wildt ()

(1) Forschungszentrum Jülich, Institut für Chemie und Dynamik der Geosphäre, Jülich, Germany, (2) University of Helsinki, Division of Atmospheric Sciences, Dept. of Physical Sciences, University of Helsinki, Finland

The ongoing climate change is expected to raise air temperatures; this will have an effect on the vegetation and its emission pattern. Biogenic VOC emissions are temperature dependent, with increasing temperatures causing increasing emissions. Increased temperatures could also lead to increased occurrences of heat stress in plants, inducing changes in plant emission patterns. This has given rise to propositions for a feedback between vegetation and climate, with increasing temperatures causing increased aerosol loading, which in turn has a cooling effect. We have investigated the dependence on the aerosol production from plant emissions on various environmental factors, such as temperature, RH or UV intensity in the Jülich Aerosol Atmosphere Plant Chamber setup (JPAC). Higher temperatures in the plant chamber lead to higher emissions; this also lead to higher particle number production as well as increased growth rates. Relative humidity and UV irradiation were also shown to influence particle formation; the possible chemical and physical pathways causing this will be discussed. We will also discuss the relative roles of formation rate and growth rate enhancements in producing cloud condensation nuclei utilising a simple aerosol dynamics modelling approach.