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## MALTE – model to predict new aerosol formation in the lower troposphere

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**Abstract.** The manuscript presents a detailed description of the meteorological and chemical code of Malte – a model to predict new aerosol formation in the lower troposphere. The aerosol dynamics are achieved by the new developed UHMA (University of Helsinki Multicomponent Aerosol Model) code with kinetic limited nucleation as responsible mechanism to form new clusters. First results indicate that the model is able to predict the on- and offset of new particle formation as well as the total aerosol number concentrations that were in good agreement with the observations. Further, comparison of predicted and measured H<sub>2</sub>SO<sub>4</sub> concentrations showed a satisfactory agreement. The simulation results indicated that at a certain transitional particle diameter (2–7 nm), organic molecules can begin to contribute significantly to the growth rate compared to sulphuric acid. At even larger particle sizes, organic molecules can dominate the growth rate on days with significant monoterpene concentrations. The intraday vertical evolution of newly formed clusters and particles in two different size ranges resulted in two maxima at the ground. These particles grow around noon to the detectable size range and agree well with measured vertical profiles.

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