**Atmospheric
Chemistry
and Physics
Discussions**

Interactive comment on "Reformulating atmospheric aerosol thermodynamics and hygroscopic growth into haze and clouds" *by* S. Metzger and J. Lelieveld

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I question the applicability of this model to droplet formation. We know from parcel modeling that the droplet formation process is a highly dynamic process, in which supersaturation initially grows in updrafts until condensation on droplets is strong enough to overcome supersaturation production by adiabatic expansion. Droplets forming on larger particles (diameter>0.1 micron) are not in equilibrium with the supersaturation, as growth lags behind the equilibrium size. Moreover, droplets form in updrafts that are explicitly resolved only in models with grid sizes less than 1 km. Thus, parameterizations are required to determine the maximum supersaturation, from which equilibrium

theory can be used to determine which particles are activated. Parameterizations must consider the dynamic nature of the process. This model does not.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 849, 2007.

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