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Atmospheric Chemistry and Physics Discussions

Interactive comment on "The influence of chemical composition and mixing state of Los Angeles urban aerosol on CCN number and cloud properties" *by* M. J. Cubison et al.

Anonymous Referee #1

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The manuscript presents the effects of the chemical composition and mixing state of aerosol on CCN number concentration, cloud droplet number, dispersion of droplet spectra and cloud susceptibility. The study uses field data (measured number size distribution and chemical composition of aerosol, measured CCN concentrations) and published CCN and cloud models. The first part of the work shows that the agreement between measured and simulated CCN improves considering the size-resolved chemical composition of aerosol and the organic part (EC and SMO) of aerosol externally mixed and inactive. The second part is a sensitivity study, which shows the variations of cloud droplet number, dispersion of droplet spectra and cloud susceptibility to the same assumptions on aerosol state and composition as for CCN study. The

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results of this part are relevant for climate modelling. Moreover, the study is based on field measurements in urban environments, which have important influence on climate. Therefore, I recommend this paper to be published in ACP.

Specific comments

-pg. 5643: the authors exclude from discussions the results at S=0.1 only for technical reasons. Can the authors prove that the disagreement between modelled and measured CCN at this saturation is not due to chemical or surface tension effects? I suggest them to add a brief comment on that.

-I think that 'scenarios' is a term more appropriate than 'model schemes'. Actually, the model is the same, only the assumptions on chemical composition and state of mixing change. I also suggest to use only one mark for different scenarios; 'M'; or 'C';.

-pg. 5666: Table 1 has a question mark after 'size-resolved composition';

-Fig. 4 will be more comprehensible if the legends will contain the same information as the legend of Fig. 10

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 5629, 2008.