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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Cloud condensation nuclei in polluted air and biomass burning smoke near the mega-city Guangzhou, China – Part 1: Size-resolved measurements and implications for the modeling of aerosol particle hygroscopicity and CCN activity" *by* D. Rose et al.

D. Rose et al.

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Following up on the referees' comments and based on additional insights gained in the course of ongoing investigations we intend to revise the manuscript as follows.

Correction of measured CCN efficiency spectra:

The sequence of corrections of the CCN efficiency spectra was changed so that the counting efficiency correction was performed after the charge correction and before the transfer function correction. On average this change had little effect on the results (deviations <1% for D and MAF, ~4% for sigma), but the data analysis was more robust (fewer cases where CDF fits did not converge). Tables, figures, and text will be adjusted accordingly.

2-parameter fit of CCN efficiency spectra:

We disagree with the referees' opinion that the quantities from the 2-parameter fitting of CCN efficiency spectra (D_t, sigma_t and kappa_t) would be meaningless and misleading. Following up on the response to the individual referee comments, we will add comprehensive explanations in the revised manuscript (see Sect. 2.2.4).

Another hygroscopicity parameter derived from the CCN efficiency spectra:

Following up on the suggestion of Martin Gysel, we will add another parameter, kappa_cut, to the revised version of this manuscript. This parameter corresponds to an apparent cut-off diameter of CCN activation D_cut, which is the diameter above which the integral CN number concentration equals the observed CCN concentration (N_CCN,S). Unlike D_a and D_t, the determination of D_cut requires knowledge of the CN size distribution and the assumption of a sharp cut-off (corresponding to sigma_t=0). The parameter kappa_cut calculated from the data pairs of S and D_cut characterizes the effective average hygroscopicity of CCN-active particles in the size range above D_cut.

Supersaturation levels:

We will exchange the value of the supersaturation level S=0.07% with S=0.068%. In the calculations, 0.068% had already been used in the discussion paper but in the text, figures and tables 0.07% was written (cf. p. 17349, l. 27ff).

Figures and supplement:

Following up on the comments of Martin Gysel, Figs. 6, 9, and 13 will be removed and the supplement will be omitted.

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Interactive Comment

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 17343, 2008.

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