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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Aerosol hygroscopicity and CCN activation kinetics in a boreal forest environment during the 2007 EUCAARI campaign" *by* K. M. Cerully et al.

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We thank Dr. Su for the positive and constructive feedback.

1) So far, very few studies have used and presented a hygroscopicity distribution concept for CCN data analysis. Within the EUCAARI project and special issue, . . . comparison, I would be happy to share data from Su et al. (2010).

This is an excellent point. We have now added a comparison for the most similar sizes between datasets. Using the Table 2 of Su et al. (2010), activation dry sizes were calculated from the given s and κ values, and the log-normal distribution parameters were expressed in terms of a Gaussian κ and $\sigma(\kappa)$. Su et al. (2010) exhibit systemat-*

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ically larger $\sigma(\kappa)$, but this may be caused by higher average κ; the relative dispersion $\sigma(\kappa)/\kappa$ is very similar for both studies at the smaller particle size. A number of issues regarding the interpretation of $\sigma(\kappa)$ have to be addressed however in depth (e.g., DMA transfer function effects, etc. as described in Appendix A and Lance et al., 2007) before a robust conclusion can be reached. We feel that including such an analysis here would disproportionately expand the paper, and would like to defer it to a future study

2) In Eq (6) of Cerully et al. (2011), 0 and 1 were taken as limits for the integration of κ. In practice, an upper limit of κ = 1 may be sufficient for the investigated aerosols. In principle, however, κ can also exceed unity (e.g., κ = 1.3 for NaCl). For general applicability, I would thus suggest to leave interval of integration unlimited as was done in the paper of Su et al. (2010) as well as in the thesis of Lance (2007).

Appendix A presents the justification for the integration limits chosen; we have followed the suggestion and changed the integration limits of Eq. 6.

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