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Atmospheric Chemistry and Physics Discussions

Interactive comment on "CCN predictions using simplified assumptions of organic aerosol composition and mixing state: a synthesis from six different locations" *by* B. Ervens et al.

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Ervens et al. (2009) present a synthesis of data sets and model calculations on the composition and concentration of cloud condensation nuclei (CCN) at several locations.

I would like to compliment the authors on the interesting study. At the same time I would like to suggest that the manuscript could be improved by comparison and discussion of the presented results in relation to other recent studies that reported similar or contrasting results and conclusions.

In particular, it may be worthwhile and appropriate to refer to studies that report comparable values for the effective hygroscopicity parameter of organic particulate matter

and for the deviations between calculated and measured CCN concentrations using various (simplified) model approaches.

The studies listed below are not the only ones that could/should be taken into account - I just cite the ones that I am most familiar with:

Bougiatioti, A., Fountoukis, C., Kalivitis, N., Pandis, S. N., Nenes, A., and Mihalopoulos, N.: Cloud condensation nuclei measurements in the marine boundary layer of the Eastern Mediterranean: CCN closure and droplet growth kinetics, Atmos. Chem. Phys., 9, 7053-7066, 2009.

Broekhuizen, K., Chang, R.Y.-W., Leaitch, W. R., Li, S.-M., and Abbatt, J. P. D.: Closure between measured and modeled cloud condensation nuclei (CCN) using size-resolved aerosol compositions in downtown Toronto, Atmos. Chem. Phys., 6, 2513-2524, 2006.

Chang, R. Y.-W., Slowik, J. G., Shantz, N. C., Vlasenko, A., Liggio, J., Sjostedt, S. J., Leaitch, W. R., and Abbatt, J. P. D.: The hygroscopicity parameter (κ) of ambient organic aerosol at a field site subject to biogenic and anthropogenic influences: Relationship to degree of aerosol oxidation, Atmos. Chem. Phys. Discuss., 9, 25323-25360, 2009.

Gunthe, S. S., King, S. M., Rose, D., Chen, Q., Roldin, P., Farmer, D. K., Jimenez, J. L., Artaxo, P., Andreae, M. O., Martin, S. T., and Pöschl, U.: Cloud condensation nuclei in pristine tropical rainforest air of Amazonia: size-resolved measurements and modeling of atmospheric aerosol composition and CCN activity, Atmos. Chem. Phys., 9, 7551-7575, 2009.

Kuwata, M., Kondo, Y., Miyazaki, Y., Komazaki, Y., Kim, J. H., Yum, S. S., Tanimoto, H., and Matsueda, H.: Cloud condensation nuclei activity at Jeju Island, Korea in spring 2005, Atmos. Chem. Phys., 8, 2933-2948, 2008

Lance, S., et al. (2009), Cloud condensation nuclei activity, closure, and droplet growth kinetics of Houston aerosol during the Gulf of Mexico Atmospheric Com-

position and Climate Study (GoMACCS), J. Geophys. Res., 114, D00F15, doi:10.1029/2008JD011699.

Rose, D., Nowak, A., Achtert, P., Wiedensohler, A., Hu, M., Shao, M., Zhang, Y., Andreae, M. O., and Pöschl, U.: 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, Atmospheric Chemistry and Physics Discussions, 8, 17343-17392, 2008

Shantz, N. C., Chang, R. Y.-W., Slowik, J. G., Abbatt, J. P. D., and Leaitch, W. R.: Slower CCN growth kinetics of anthropogenic aerosol compared to biogenic aerosol observed at a rural site, Atmos. Chem. Phys. Discuss., 9, 13775-13799, 2009.

Shinozuka, Y., Clarke, A. D., DeCarlo, P. F., Jimenez, J. L., Dunlea, E. J., Roberts, G. C., Tomlinson, J. M., Collins, D. R., Howell, S. G., Kapustin, V. N., McNaughton, C. S., and Zhou, J.: Aerosol optical properties relevant to regional remote sensing of CCN activity and links to their organic mass fraction: airborne observations over Central Mexico and the US West Coast during MILAGRO/INTEX-B, Atmos. Chem. Phys., 9, 6727-6742, 2009.

Wang, J., Lee, Y.-N., Daum, P. H., Jayne, J., and Alexander, M. L.: Effects of aerosol organics on cloud condensation nucleus (CCN) concentration and first indirect aerosol effect, Atmos. Chem. Phys., 8, 6325-6339, 2008

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 21237, 2009.