

Interactive comment on “Hygroscopicity and composition of Alaskan Arctic CCN during April 2008” by R. H. Moore et al.

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Reviewer #1

We thank the reviewer for the helpful comments toward improving the manuscript. Italicized responses are shown below.

The authors present a comprehensive data set of the properties of cloud condensation nuclei in the Alaska Arctic in the spring of 2008. The paper is well written and the data are clearly presented. (One caveat on the clearness of the presentation: The percentage of men who are red-green color blind is on the order of 10. Those folks will find, for example, Figure 2 difficult to interpret.) The paper could be published as-is, but I have a few suggestions and comments that the authors may wish to consider.

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We thank the reviewer for bringing the figure clarity to our attention and have added symbols to the traces in Figures 2 and 10.

Pg. 9, line 250: The average geometric mean of the accumulation mode for the biomass burning plumes is reported as 189 ± 1.19 nm. Perhaps, this is pedantic, but I doubt that you really know the uncertainty to a tenth of an Angstrom. I would advocate simply quoting the uncertainty as "1".

The correct symbol should have been \pm , to denote 1.19 as the geometric standard deviation. This has been fixed.

Figure 3: There's a curious vertical striping on the left side of the figure. It appears that the lowest concentration of CCN was just over 10 cm^{-3} , regardless of altitude. There's a gap, and the next highest concentration seems to be about 11 . The vertical stripes persist up to a concentration of about 50 cm^{-3} . My first guess would be that this is an artifact of reporting all concentrations at standard temperature and pressure, but the fine particle concentrations (Figure 4) don't show it. A short statement explaining the origin of this effect would help.

The reviewer is correct. The striping is due to low concentration measurements being corrected to STP (by multiplying by approximately twofold) and the logarithmic nature of the plot, which makes the lowest concentration measurements appear discretized.

Line 452 (Equation 9): A reminder of what R_a is would help here. It is defined back on page 10 (line 285), but re-stating it here would improve the readability of the paper

Done.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 21789, 2011.