

Interactive comment on “Aerosol optical hygroscopicity measurements during the 2010 CARES Campaign” by D. B. Atkinson et al.

Anonymous Referee #3

Received and published: 13 January 2015

The paper presents an analysis of the effect of water uptake on particulate light extinction and scattering during the CARES 2010 study. The analysis includes a comparison of measured and calculated gamma values as well as a determination of kappa values for different aerosol chemical species and for supermicron particles. Very little attention has been paid to the hygroscopic growth of supermicron particles making this is a novel aspect of this study. The paper is well written and the data are presented very clearly. The paper is publishable in ACP after the minor comments below have been addressed.

p. 31206, lines 23 – 25: Particle hygroscopicity is also characterized by comparison of low and high RH size distributions. It would be more accurate to state here that comparison of low and high RH extinction and scattering coefficients is one method
C11128

commonly used to characterize particle hygroscopicity.

p. 31212, Line 27: Chemically, what is the difference between POA and HC?

p. 31214, Line 11: The APS actually quantified particle number concentrations up to 20 μm ?

Figure 1c: Based on this figure, the SMPS and APS data do not appear to line up very well. Explanation?

Figure 3 caption: The four panels should be described in order, i.e., 3a, 3b, 3c, and 3d. Or at least 3a and 3c, then 3b and 3d.

p. 31221, Lines 21 – 23: The statement that gamma at T0 and T1 are similar during the latter part of the study is not apparent from the figure. Observed values are higher during this period at T1 compared to T0.

Figure 5: It would be helpful to have a color scale to refer to.

p. 31227, Lines 13 – 15: It would be more appropriate to cite references that measured ocean-derived sea spray aerosol rather than tank/laboratory derived. I suggest Keene et al., JGR, 2007, Facchini et al., GRL, 2008 or Quinn et al., Nat. Geoscience, 2014.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 31203, 2014.