

Interactive comment on “Brown carbon and water-soluble organic aerosols over the southeastern United States” by A. Hecobian et al.

Anonymous Referee #1

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General comments

This manuscript describes results of a very impressive study of optical absorption properties of water-soluble aerosol compounds from a large number of filter samples, and also from particles analyzed in real time by a particle-into-liquid collector coupled to a UV/vis spectrometer. This manuscript provides several useful insights into the nature of light-absorbing organic compounds. The most interesting observation in my opinion is the evidence that water-soluble compounds of secondary organic aerosol can make a measurable contribution to the aerosol absorption. Equally interesting is the evidence that light-absorbing compounds can appear in organic aerosol by aging occurring on time scale of hours. The manuscript is well written, and requires no significant revisions. It was a pleasure to review it.

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Specific comments / technical corrections

Equation 1: subscript by C should be i, not 1.

Page 76 11 and elsewhere: The term "absorbance spectrum" should be avoided; "absorption spectrum" is more appropriate. Absorbance has a very narrow meaning of a qualitative measure of optical absorption by a sample of given concentration within a cell of a given length. Absorption has a broader meaning.

Page 7606: aerosol in (Bones et al., 2010) was made without ammonia. I was aged in the presence of ammonia and humidity. This study also falls in the category of "a variety of aqueous phase reactions" cited in the next sentence.

Figure 2 (and some other figures as well): some of the labels may be invisible after sizing to the half-column width. I would probably increase the font size for some of the labels.

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