

Interactive comment on “Aerosol optical properties in the southeastern United States in summer – Part 2: Sensitivity of aerosol optical depth to relative humidity and aerosol parameters” by C. A. Brock et al.

Anonymous Referee #1

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The manuscript presents aircraft observations of aerosols and calculated aerosol optical depth. The focus is on the sensitivity of the AOD to relative humidity and aerosol properties. While the research subject and the conclusions are not particularly original, this paper will be a nice addition to the existing literature thanks to the careful analysis (e.g. on the UHSAS response, the kappa/gamma parameterizations) and discussion (e.g. on the transition layer, the need for more systematic investigation, the co-variance of parameters, the mixed-layer height). The manuscript refers to Brock et al. (2015) in an important manner. Provided that that discussion paper is accepted, I recommend

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publication of the present manuscript. My suggestions are as follows.

Page 31480, line 16, “were calculated” should be either replaced with “we calculated” or moved to the end of the sentence. Also, a brief explanation would be nice for the choice of 10th and 90th percentile values instead of, say, a one standard deviation range (68%).

Page 31481, line 10, state how the surface ambient extinction was determined. One way to do so is to move here the two full sentences in line 16-19 of page 31482.

Page 31493, bring Rissler et al. above Saide et al.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 15, 31471, 2015.