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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Spectral dependence of aerosol light absorption over the Amazon Basin" *by* L. V. Rizzo et al.

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Comment 1: The authors go through an uncertainty analysis of the method of determining the absorption coefficient. However, given an uncertainty of the absorption coefficient the uncertainty of the Angstrom coefficient can be derived independent of the method of determining the absorption coefficient. Can they discuss the uncertainty of the Angstrom exponent by itself? This also relates to the comment by reviewer 2 about whether the low values of the Angstrom exponent may be simply within the uncertainty limits. Response 1: Please refer to Response #2 to Referee #2.

Comment 2: page 11551 line 9 I don't think the word "widespread" is justified there. Response 2: We removed the word "widespread", following the suggestion.

Comment 3: I assume that the authors can estimate the single scattering albedo as a function of wavelength. I would be interested in how much the estimated single scattering albedo varies. Response 3: We did not have simultaneous scattering measurements at multiple wavelengths; therefore we can only give an estimate of the spectral dependency of the single scattering albedo. For the SMOCC experiment, Chand et al. (2006) reported average albedo values of 0.92 $\pm$ 0.02 at 545 nm, and average scattering Ångstrom exponents of 2.0 $\pm$ 0.4 (airborne measurements). According to our results, the average absorption Ångstrom exponent was 1.7 $\pm$ 0.4, considering all SMOCC data (dry, transition and wet periods). Using these average values in equation 10, we obtain an estimate of the spectral dependency of the single scattering albedo. It ranges from 0.93 at 370 nm to 0.91 at 1000 nm, following approximately a power law relationship. The corresponding Ångstrom exponent for single scattering albedo would be 0.03 in this case, outlining a weak spectral dependency.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 11547, 2011.