

Interactive comment on “Spectral absorption properties of atmospheric aerosols” by R. W. Bergstrom et al.

Anonymous Referee #3

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This paper highlights the importance of measuring the solar spectral absorption of aerosols, specifically LAC (light absorbing carbon) and weakly absorbing brown carbon. The authors show that the absorption coefficient may be fitted to a wavelength dependent “power log expression”, yielding values for the AAE (absorption angstrom exponent) of different aerosols. Low AAE values (close to 1) indicate that the absorbing aerosol comes from urban centers (fossil fuels), higher values in the visible region of the spectrum, 1.45, are indicative of biomass burning or meat cooking, and the highest values, around 2, are found when dust content is significant. Although this is not a detailed analysis of the absorbing properties of carbonaceous aerosol, this paper presents valuable information regarding optical properties of absorbing aerosol. Furthermore, the authors illustrate that the different optical properties of absorbing aerosol

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should be examined closely before incorporating the spectral differences into radiative transfer models.

Question: Page 10670, line 25) The authors state: "In fact, many of the predictions of aerosol effects from different models can be explained by simply accounting for the differences in the aerosol radiative properties." Please clarify if this statement is referring to model discrepancies due to different treatment of aerosol properties, or if this refers to different aerosol radiative properties producing varying effects regionally within a model.

Minor comments

Page 10670 line 21) need a period after POLARCAT), although reference to a specific future study seems a little out of place.

Page 10673 line 19 "Ěa large AAE than LAC" should read "Ěa larger AAE than LAC"

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 10669, 2007.

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