

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

Anonymous Referee #1

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This paper summarizes the results of five major campaigns with respect to the spectral absorption closure of aerosols in a way directly applicable in atmospheric/climate models. It is in fact a kind of combined research-review paper (though not explicitly stated in its title), referencing as many as 32 papers. It is concise and well-written. There are, however, a few issues that need to be addressed.

1) In their paper the authors do not differentiate between emission measurements and those made on ambient (aged) aerosol. It may be expected that the Absorption Angstrom Exponent (AAE) changes upon ageing of pollution plume because of changes in the state of mixing, hydration, and/or selective removal of certain particle types (e.g. dust, organic aerosol). It would be useful if the authors elaborated on that issue by presenting relevant data from their database, perhaps a figure which shows

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how this parameter evolves during transport in the atmosphere.

2)The authors state that the AAE is unity for (black carbon or light-absorbing carbon, LAC) and imply through theoretical considerations (band gap theory) that it cannot be lower than that in any case. Nevertheless, in Figure 2 they present a very high frequency of cases when AAE is significantly lower than unity (down to 0.3-0.5). This fact would deserve a detailed explanation since it seemingly contradicts the theoretical arguments previously given by the authors.

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

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