

Interactive comment on “Optical properties of a heated aerosol in an urban atmosphere: a case study” by J. Backman et al.

Anonymous Referee #2

Received and published: 16 June 2010

General comments

Filter based absorption measurements are disturbed by light scattering constituents (page 1584, lines 5,6). Volatilization of scattering constituents reduces this cross sensitivity to scattering but also changes the mixing state of aerosols. Since absorption by internally and externally mixed particle constituents is different, volatilization can lead to a bias when measuring absorption coefficients of ambient air (page 1585 line 5). The authors described the method and effects on optical properties, but it is somewhat not clear if this method improves a) measuring absorption coefficients of ambient air or b) estimation of EC concentrations using appropriate mass absorption cross sections (page 1599, line 15 to 23). This issue should be clarified.

Specific comments

page 1584, abstract: First two sentences were repeated.

page 1585, line 6. Are BC emissions highest in the tropics? Or does the author mean, that the radiative forcing is highest in the tropics?

page 1589, line 4: Year in reference Heintzenberg et al. should be 2006

page 1589, line 7: plural “number size distributions”

page 1592, line 14: what was the reason for choosing the algorithm published in Arnott et al.2005 ?

page 1593, line 16: Does the temperature at which 50% is evaporated depend on particles size. If there is a size dependence, does it have an effect on measurements at ambient conditions?

page 1595, line 14: Colon after omega – typing error? The single scattering albedo is defined as ratio of two extensive properties, the extinction and scattering coefficients. What is the physical meaning of the difference between two single scattering albedos?

Figure 4: Which errors are indicated by the dotted lines, and why are the dotted lines crossing at about $0.6 \mu\text{gm}^{-3}$ (left plot) and $0.5 \mu\text{gm}^{-3}$ (right plot).

Interactive comment on Atmos. Meas. Tech. Discuss., 3, 1583, 2010.

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