

Interactive comment on “Modelling the optical and radiative properties of freshly emitted light absorbing carbon within an atmospheric chemical transport model” by M. Kahnert

Anonymous Referee #3

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The paper shows improved results of the optical properties of soot aggregates and their consequences with respect to radiative forcing in a coupled optics/chemical transport model. This topic is of interest for ACP and the results show clear improvements using the new aggregate description against the classical method to describe the optical aerosol properties on the basis of volume equivalent spheres. The paper is clearly written and well illustrated. Thus the manuscript can be published in ACP with only minor improvements.

Some discussion is necessary with respect to the number of monomers that form an aggregate and the consequences for the AOPs. P. 25451, line 4 to 18: This paragraph

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could be shortened, since the effect of oscillation of Mie results with size parameter for non absorbing particles is well known by the readers of such an article. I think that the high absorption of LAC is not “The other reason. (for simpler averaging over particle size)” (line 28), but the main reason. This is clearly to be seen in Fig. 5, which therefore should not be omitted, even though it is not necessary for the paper. P. 25455, line 3: Add the information “..at $\lambda = 440$ nm”

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 25443, 2009.

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