

Interactive comment on “A parameterisation of the soot aging for global climate models” by N. Riemer et al.

Anonymous Referee #3

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This paper parameterizes the conversion of hydrophobic to hydrophilic soot based on a regional model with a sectional aerosol representation. The study itself is very interesting as it analyses the different time scales involved in the conversion of soot from hydrophobic to hydrophilic during day versus night and during summer versus winter.

In order to derive a parameterization suitable for a climate model, more situations need to be tested with the regional model, especially conditions under cloudy-skies need to be developed. Also, as a climate model encompasses clean and polluted situations, simulations in cleaner areas and preferably also in different climatic regimes would need to be tested. Hence, I suggest to take the focus of the paper away from a parameterization for a climate model, but rather change the title to something like: "Different soot aging time scales in polluted regions during day and night" which agrees better with the content of this paper.

Also the limitation to cloudy-sky conditions should be more explicitly mentioned in this paper, or preferable, simulations under cloudy-skies should be added.

If the title and the abstract better reflect the limitations of the aging time scales to the conditions that were studied, I recommend this paper for publication.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 4, 2089, 2004.

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