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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Technical Note: simulation of detailed aerosol chemistry on the global scale using MECCA-AERO" *by* A. Kerkweg et al.

Anonymous Referee #2

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General comments

This paper presents the MESSY submodel MECCA-ARO, which simulates both aerosol and gas phase chemistry on the global scale. This submodel is introduced in order to deal with the stiffness of chemical equations when aerosol chemistry has to be included, for example, for halogen chemistry. Some preliminary results are shown. I suggest this paper to be published after some minor revisions. My questions are mainly related to equation 10. It seems the model is sensitive to the ratio between the 'freshly emitted particles' and the 'sum of all particles after emission' in equation 10. What aging value is used to define a particle is 'fresh' or 'old'? Why do you choose this

value? It is better to show some results about the model sensitivities to change of the ratio, as the ratio may change greatly at different wind speed.

Specific comments

Page 3313: Does 'the sum of all particles after emission' mean the total particles that are still 'staying' in the air but not the total particles emitted into the air?

Page 3319, line 1-2: 'the correction term ....becomes most important' in regions with highest wind speed. Could you explain this phenomenon to the reader? In equation 10, the change of ratio with wind speed is not clearly seen.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 3301, 2007.