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Interactive comment on "Kinetic model framework for aerosol and cloud surface chemistry and gas-particle interactions: Part 1 – general equations, parameters, and terminology" *by* U. Pöschl et al.

U. Pöschl

poeschl@mpch-mainz.mpg.de

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My co-authors and I highly appreciate the referee's readiness to review our two companion papers presenting a kinetic model framework for aerosol and cloud surface chemistry and gas particle interactions (ACPD, 5, 2111 and ACPD, 5, 2193), because we are aware that the papers are rather long and comprehensive, which implies a lot of work for referees.

In this short comment I only respond to the referee's concern about the length and style of presentation of our manuscripts (in particular Part 1). A detailed response on the referee's scientific comments will follow.

Already during the access review we had responded to the referee's comments and concerns about the manuscript length, which included the suggestion to reduce the length of the manuscript(s) by 50 % and had by no means been neglected by the editor. Based on our response, however, the editor was ready to let our manuscript enter the stage of public review and discussion in ACPD. Thus I would like to repeat our key arguments here:

We see no way to reduce the content of our manuscripts without missing their aim or at least massively reducing their usefulness in presenting (quote from manuscript abstract) "a comprehensive kinetic model framework with consistent and unambiguous terminology and universally applicable rate equations and parameters. It allows to describe mass transport and chemical reactions at the gas-particle interface and to link aerosol and cloud surface processes with gas phase and particle bulk processes in systems with multiple chemical components and competing physicochemical processes."

In fact, we know from experience in experimental and theoretical atmospheric aerosol chemistry and physics, that one of the major reasons for the "Babylonian" confusion of inconsistent and incompatible terminologies and formalisms applied in different studies for the description of surface and gas-particle interactions (chemistry/physics, lab/field/model, aerosol/cloud, alphas and gammas, etc.) is the lack of a coherent, comprehensive, and universally applicable model framework. For efficient distribution and application, this framework should obviously not be dispersed into many different publications, which the interested reader would have to re-assemble in bits and pieces.

For the rather wide and diverse range of applications outlined above, the presentation of a coherent and comprehensive model formalism and terminology simply does re-

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quire a substantial number of definitions and equations. Moreover, we would consider it a lack of good scientific practice to omit the derivation of the presented equations and parameters or their relations to pre-exiting formalisms and terminologies.

Some authors would maybe split our two papers into more. We think, however, that for efficient scientific exchange, scientific papers should be as short and concise as possible, but not at the expense of completeness and details important for the derivation and application of the presented concepts and results. In our opinion scientific conciseness corresponds to the ratio of scientific content and total length of the manuscript(s) in which it is published (information density), and not just to the inverse length of the manuscript. If we were to split our two papers into more, the concepts and results would stay exactly the same, but they would be spread out over multiple papers for which we would have to duplicate abstracts, introductions, reference lists, etc. Thus the scientific conciseness and information density would rather decrease.

Nevertheless, we will be happy to implement practicable suggestions for improvement of the manuscripts and their style of presentation upon revision.

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 2111, 2005.