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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Parameterization of ion-induced nucleation rates based on ambient observations" *by* T. Nieminen et al.

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We thank the referee for the comments and suggestions on our manuscript. In the following we list each of the specific referee comments and corrections (shown in italics), and provide our answers to them.

Specific comments:

Page 21698, line 16: In principle, these new parameterizations are applicable to all large-scale atmospheric models containing size-resolved aerosol microphysics ... The readership will wonder what possible restrictions "in principle" implies.

The only restrictions are that the model should have global radiation and some scheme to calculate the concentrations of sulphuric acid, condensing organic vapors and clus-

ter ions. As the cluster ion concentrations are not typically modelled in atmospheric models, we provide in Section 3.3 formulas for estimating these based on pre-existing aerosol population and ion production rate. To avoid possible ambiguities, we removed the words “in principle” from the abstract.

Page 21702, line 13: Some of the symbols in Equation 1 do not match the symbols in the following text (e.g. N±2). It would also be very helpful to explain the individual terms of Equation 1, e.g. by explaining the underlying process for each of them. The term CoagS2×N±2−3 e.g. may not be readily available to the readership, especially since CoagS2 is not explained.

We corrected the symbols in Equation 1. The meaning of the terms in Eq. 1 is already explained in the text before the equation.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 21697, 2010.