

***Interactive comment on “Sensitivity of aerosol concentrations and cloud properties to nucleation and secondary organic distribution in ECHAM5-HAM global circulation model” by R. Makkonen et al.***

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In your simulations, you use cluster activation theory (Kulmala et al., 2006), parameterized based on measurements over a forested continental site (Hyytiälä) to describe aerosol nucleation. Cluster activation theory postulates that clusters containing one sulfuric acid molecule and some other compound(s), possibly an organic molecule from BVOC oxidation, initiate nucleation. What justifies the assumption that cluster activation works the same way over remote oceans as over the boreal forest?

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## References

Kulmala, M., K. E. J. Lehtinen, and A. Laaksonen (2006). Cluster activation theory as an explanation of the linear dependence between formation rate of 3nm particles and sulphuric acid concentration. *Atm. Chem. Phys.* 6(3), 787–793.

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