

Interactive comment on “Modelling atmospheric structure, cloud and their response to CCN in the Central Arctic: ASCOS case studies” by C. E. Birch et al.

Anonymous Referee #1

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The paper addresses relevant scientific issues associated with Arctic Climate. The study is competent and well presented. Although there are no novel concepts or ideas due to the limitations of the aerosol scheme with the chosen model the conclusions are sound and highlight issues with use of this type of model in the Arctic environment. Methods and assumptions are clearly described as are the interpretations. Clarity of figures is adequate. The lack of sensitivity to CCN, except at exceptionally low concentrations, is interesting. It is hardly surprising that use of a fixed CCN concentration cannot reproduce cloud observations. Can the authors provide a better discussion of the sensitivity of their model with respect to the auto-conversion parameters used and whether these were tuned in any way for this study? How sensitive are these compared

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to the CCN changes?

The final paragraph of the conclusions section seems to be more of an advert highlighting ongoing work and the ability of a model not yet available, rather than focusing on current work and limitations.

I have no qualms about recommending this study for publication.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 2559, 2012.