

Review comments to “**Glaciogenic seeding-induced hole-punch clouds and their sensitivity to the clouds’ background state**” by Omanovic et al.

General Comments

The authors have worked on clarifying the setup and modelling strategy. After some final minor comments I would suggest publication.

Specific Comments to Author’s Response

Comment to GC1 I look forward to see future work! Perhaps the CCN concentration used for the simulation could be mentioned in the setup for reproducibility?

Comment to GC2: The added description of the Smagorinsky constant is now more clear as well as the choice of perturbations. Line 130 could still use a statement on the choice of 0.3 (as in 0.23 +0.7) to better clarify the selection. Is there a reason for the chosen default value in the model?

L53 “How is the ‘void of ice crystals’ requirement upstream from the field site ascertained in the experiments?”

The given explanation does not quite answer my question.

Likely the main reason why these clouds are cloud ice free is the temperature, INPs would be present in any case but most likely the INPs present, due to the warm temperatures, do not activate. So the newly added sentences are a bit misleading as the authors haven’t shown any INP measurements. Furthermore, the original question was rather in regard to the prerequisite that the clouds should be cloud ice free before seeding, how is this investigated or do the authors rather assume that the cloud state is constant as mentioned in L70? Perhaps a sentence on this would be useful.

Minor comments on new manuscript

L80 “Furthermore, ice crystals were measured only during the seeding signal,…” Makes it sound like they were only measured during seeding, I think what the author’s are trying to convey is that ice crystals were only **present** in the measurements during the seeding.

L131 “**The possible impact of subgrid-scale mixing on clouds was examined for variety of cloud types.**” “has been” instead of “was” and “a variety”

L135 A bit too colloquial language; “we want to investigate if we see”. Perhaps rather; “By varying Cs across a widely accepted range of values, the impacts on the WBF efficiency are explored”

L144 I should have commented on this in the previous draft, but how do the authors ensure that the reduction in LWC is not due to other microphysical processes such as riming, aggregation, and rain formation?

L202 “**both found a strong dependence of simulating glaciogenic cloud seeding on horizontal resolution.**” swap the order; “both found a strong dependence on horizontal resolution when simulating glaciogenic cloud seeding.”

Technical Corrections

L123 “3D turbulence parameterization (**Samgorisnky**, 1963”