

Replay to Anonymous Referee #2 (a few minor corrections for final publication)

We thank the reviewer for the suggestions for improving this manuscript. The reviewer's comments are in italics and our responses in standard font below.

Line 19-20. It is not clear what the unphysical limits are. I recommend removing this line from the abstract.

Done.

Line 34. There is nothing obvious about this. Please remove.

Done.

Line 69. Just say "prevents homogeneous nucleation".

Done.

Line 71. Remove "totally from occurring", it is redundant.

Done.

Line 76. It must be "attention".

Done.

Line 87. It must be "there has been significant progress".

Done.

Line 177. Remove "The".

Done.

Line 214. This is still not clear. I think the authors mean $P(S_i > S_{hom})$? Please clarify.

This sentence was changed to "we can easily calculate the f_{hom} , which is the probability of $S_i > S_{hom}$."

Line 281. Mention that the presence of PREICE with concentration of 27 L⁻¹ reduces the peak supersaturation and inhibits homogeneous freezing.

Done. We mentioned that the presence of PREICE with concentration of 27 L⁻¹ reduces the vertical velocity ($W-W_{i,pre}$) used for calculating homogeneous freezing ice crystals number concentration.

Line 317. Change “we keep using” to “we use”.

Done.

Line 347. It must be “usage” instead of uses.

Done.

Line 366. This is redundant with the next line. It is also not very meaningful since the interval is quite wide. Please remove.

Done.

Line 444. Talking about liquid clouds here is out of context. It is also not true that cloud droplets do ton have a long wave effect. Please remove.

Done.

Line 507. Change “from” to “in”.

Done.

Line 520. What is PRECC? Is it necessary to use another abbreviation? Just say precipitation.

Done.

Line 535. It must be “in GEOS-5”.

Done.

Line 597. It must be “zonal mean LWCF, SWCF ...”

Done.

Line 599. Use “is” instead of “are”.

Done.

Line 617. Also mention that changes in circulation would affect convection and the detrainment of ice crystals.

Done.

Line 643. It must be “20%, consistent with...”

Done.

Line 677. Say “may be driven”.

Done.