

**We would like to thank Prof. Heymsfield for his comments and suggestions, which helped us to considerably improve the manuscript. Specific answers and manuscript modifications related to his comments are given below in bold.**

This is a timely and rigorous examination of contact versus immersion freezing modes of ice nucleation as found from laboratory experiments. I completely agree with its publication in ACP. The article gave me a lot to think about. My main comment is that it should repeatedly emphasize that the work reported in the article is based on laboratory experiments (and this should be indicated in the title). My general and specific comments are given below. **The title was changed as suggested by all reviewers (“Contact freezing: a review of experimental studies”). It is now clearly stated that the focus of this review is entirely experimental.**

#### General Comments

It is essential that you indicate in the title and in the body of the text that this article represents laboratory observations (e. g., 7816 lines 10 and 12, “experimental” to “laboratory”). **In the revised manuscript the title and the entire document indicates that this review is only for laboratory studies.**

There are a lot of imprecise statements made. For example, Pg. 7816, 16, “understand the role of contact freezing in cloud formation and climate”. Its unclear how contact nucleation has a role in cloud formation.

**The sentence was changed to “Answering the following key questions will help us to understand the impact of contact freezing on cloud glaciation and hence on the hydrological cycle and on the radiative properties of clouds.”**

Pg. 7212, Abstract, last line and Conclusions. What is clearly needed is to conduct laboratory and field studies to identify the conditions where contact nucleation does occur in real, natural-cloud conditions.

**This statement was added to both the abstract and conclusions.**

Pg. 7812, last sentence. I want to see a reference here otherwise modify the statement.

**There are three references on this sentence.**

7813, 19. Some mention of secondary ice should be at least stated.

**This was added to the paragraph.**

Section 2.3.1 on IN solubility could be more likely with immersion than contact freezing, wouldn't it be?

**Yes, this is clearly mentioned in this section.**

7185, 17. But at least in most convective clouds, this is at temperatures much warmer than 0C so contact nucleation would be secondary to immersion freezing.

**Yes, this was clarified.**

7815, 21-22. How and what did they find?

**The IN number concentrations and a brief method description was added.**

Conclusions: What is clearly needed are field observations in natural clouds to identify candidate contact freezing events or situations. What I think should be done is to look at dust-laden clouds as was done in the NAMMA field experiment and is proposed for the ICE-D

experiment. The idea would be to fly just below cloud base, then just above, then step up from that height to 0C and to measure and quantify the size distribution of the interstitial aerosols to indeed see what is actually there to assess whether and where contact nucleation is a possible process.

**We thank you for this suggestion. This is now mentioned in the conclusions section.**

Specific Comments

7812, Line 5, 7815, 14 and 7840, 4. "highest" to "warmest".

**All three were changed**

7812, 22. "catalyze" to "initiate"

**It was replaced**

7816, 6. "cloud formation" to "ice in clouds".

**This sentence was corrected**

7824, 18. "primarily focuses" to "primarily focusing".

**It was replaced**

7833, 6. "calculated/reported" to "calculate/report".

**This was fixed**