

Author Response

Paper # <https://doi.org/10.5194/egusphere-2022-501>

Impact of the sampling procedure on the specific surface area of snow measurements with the IceCube

Martin and Schneebeli

Editor comments

1. Section 2.1. Please specify where these samples were taken from. If all alpine please state this. The new figure 2 and associated density information allow the readers to identify samples where this might be a problem, and figure 1 demonstrates this is indeed happening outside alpine regions.

Done. We included the word “alpine”.

2. Line 52: Chapter -> section, also figure 2 caption

Done. Both were changed to “section”.

3. Figure 2: are these the discarded fragments as indicated in line 52? If so, please state in the caption and discuss that these may not be representative of the crystals being observed.

The pictures show the original snow grain and the artificial particles. We adapted the figure caption accordingly.

4. Figure 6. Please remove 'nature identical snow' from the legend. Please also indicate in the caption whether the box plots represent median and interquartile range or mean and standard deviation, as per reviewer 1 comment.

Done. We changed “nature identical snow” to “artificial snow”. We added “median and interquartile” in the figure caption. Additionally, we included more information in the caption.

5. Line 37. Please provide a few more details on the production of artificial snow rather than just including the reference. For example, it would be useful for the reader to know that 'this was sprayed snow (so more like technical snow, consisting of small spheres)'. Please clarify 'We did not use the artificial snow type in our experiment to directly compare the IC and micro-CT SSA measurements.' The comparison in Fig 6a is between two completely separate samples of artificial snow prepared in the same way?

Done. We included more information about the production process and clarified the sentence. The artificial snow was not used for our multi-step sampling strategy but was only measured with the IC and micro-CT. We included a technical report as a detailed reference.

6. Line 113. Consider an alternative to 'point out' e.g. protrude, jut out, stick out
Done. Changed to “protrude”.

7. Line 142. Please define 'MBE' acronym, and potentially include an equation if non-standard term.

Done. We defined Mean Bias Error (MBE)

Additionally, we corrected the Journal abbreviations in the bibliography and corrected minor wording issues.