

The Cryosphere Discuss., community comment CC1
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Comment on tc-2022-116

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Community comment on "Wind redistribution of snow impacts the Ka- and Ku-band radar signatures of Arctic sea ice" by Vishnu Nandan et al., The Cryosphere Discuss., <https://doi.org/10.5194/tc-2022-116-CC1>, 2022

- (1) Title. I find the title to be quite confusing and uninformative; of course wind transport of snow affects radar (and indeed all) signals (sic) over sea ice as it alters the surface height if nothing else ! I recommend formulating a title that informs the reader as to what has been found, and not something generic like this.
- (2). Novelty. It seem from that the data that the authors have observed that increases in snow density (asscoiated with wind transport) lead to reduced volume scattering. This in of itself is not an especially novel conclusion, and so I am wondering whether it is reasonable to claim that this topic is poorly undestood as the authors state in the abstract.
- (3) Terminology. I am confused by the use of the term "signatures"; what does this mean? It is implicit, not explicit. Do you mean the radar echoes, or some property of them (e.g. backscattered power., range, etc), or something else?
- (4) Qualitative. As presently written the abstract is almost entirely qualitative, despite there being quite signfiicatn numerical analysis within the paper itself. I recommend using the abstract to summarise the main quantitative conclusions, which should also support the qualitative conclusions drawn.
- (5) Rigour. Despite collecting a robust and valubale dataset, the authors have stopped short and only report the signal they record rather than complete the analysis to assess the significance of their findings. This leaves the reader to specualte as to whether the findings are in any way important. How much wind is needed to impact on radar data? How are the radar data affected? Is the effect more or less important at Ka or Ku? How does this impact on the scattering horizon, range measurement? How might the effect scale to airborne and satellite measumrents? How typical are the required conditions across the Arctic? There is useful data here, but more work is required to make this a useful contribution to the literature. I recommend that the authors explore the extent to which the changes impact on derived range measurements, for example.