Atmospheric Measurement Techniques Discussions

Atmos. Meas. Tech. Discuss., author comment AC1
https://doi.org/10.5194/amt-2022-62-AC1, 2022

Reply on RC1

Massimo Del Guasta

Author comment on "ICE-CAMERA: a flatbed scanner to study inland Antarctic polar precipitation" by Massimo Del Guasta, Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2022-62-AC1, 2022

Thanks for your useful suggestions

About your major remarks:

1) I will easily add a picture about the number of particles collected vs wind speed. More tricky is the use of humidity , especially at temperatures much below -40°C. Unfortunately, the most reliable , standard meteo station collecting 'menaingful' humidity values is located 500 m away from the ICE-CAMERA site, and is 2 meters lower than ICEcamera. Moreover ice-camera is placed on the top of a heated shelter, and temperatures/humidities are sligthly different from free air . The reliability of any humidity sensor in DomeC during winter is also disputable. For these reasons I prefer to use not measured humidity data in this type of work. But I will try to manage something about this topic

The use of a PSD as suggested by the referee was welcome! I already made the simulation of PSD evolution with sublimation, starting from a 'flat' PSD in the range 50-1000 um.

2)The focus of the paper is the instrument considered as a 'whole'. That is, both hardware and software. So, the image processing and the CNN are as important as the scanning system itself in order to provide automatically , as an output, pre-processed segmented ice grain images and useful data

3) I am rewriting the introduction in order to cite the papers (available to me) related with crystal habits vs temperature. Any suggestion from the referee will be welcome

4) The paper focuses on the instrument and its capabilities, not on data analysis. As stated in the text, data analysis and statistics is a topic for a second paper, with different co-authors ,and where the combined use of ICEcamera and other instruments is adopted . For this reason the ICE-CAMERA data set will not be published together with the present paper, just devoted to the instrument description. I can publish the CNN , instead , as it is actually part of this work, together with a (limited) database of samples of ice-camera images for the 14 classes. Detailed technical data about the instrument can also be released on the suggested platform

About the minor remark, I will ll try to follow all the precious referee suggestions

Best regards