

Just a quick comment. The authors might want to be aware that the CALIPSO algorithm can sometimes misclassify the diamond dust (small ice crystals in clear sky conditions) as mineral dust. This leads to an overestimation of CALIPSO "dust" in the Arctic when $RH_i > 100\%$ (e.g., see <https://acp.copernicus.org/articles/22/12269/2022/> and <https://agupubs.onlinelibrary.wiley.com/doi/10.1002/2017JD027530>).

Best regards,

-Lauren Zamora

We thank Dr. Zamora for her helpful comment on our manuscript and the two references, which we have added to our discussion of the CALIPSO data in Section 3.3. While we were in general aware of dust/ice misclassification issues for 'diamond dust' (and blowing snow), we were reluctant to enter this discussion because it is complex, and our CALIPSO data spans JJA only, when we presumed that issues of dust/ice misclassification were at a minimum. With the information in these references, we have more confidence that some of our CALIPSO aerosol *type* 'dust' data is indeed likely to be dust, and we have added a brief discussion in Section 3.3 to explain when/where this is likely, and where it is not, based on an analysis of mean atmospheric temperature fields and ice nucleation mechanisms.

This point was also raised by RC 2 and was addressed there, too, with additional details.