Egusphere-2024-3316 Authors' Responses to the Editor

The authors would like to thank the editor for their thoughtful review and suggestions for the manuscript. The suggestions increase help emphasize the importance of the contents and will. The comment that was provided by the editor is included first, followed by the authors' response in *italic font* and the respective changes to the manuscript.

Editor comment:

Thank you for your thorough response to the two thorough reviews of your excellent manuscript. Most of the modifications were technical.

I have a couple of things to request, so that the significance of the article can be more widely appreciated. Both in the abstract and conclusions, I would like to see a numerical contrast of the observational results to those more widely assumed. Also, because the asymmetry parameter is not as widely appreciated in its significance relative to other single scattering parameters, I would like to see some statement of the impact of this contrast on the scaled optical depth. It is not so much g that is relevant but rather (1 - g). It appears to me that the results you propose imply possible modeling errors for the shortwave reflection by thin cirrus of order 50%, which is an important point to make, again in the abstract and conclusions.

With these minor adjustments, I will accept the paper.

Best regards,

Tim Garrett

***Response**: Adding information on the effect of reduced g values regarding the scaled optical depth (τ_*) helps further emphasize the importance of this work. In calculating $\tau_* = (1-g)\tau$, there is an average 53 % increase when applying the g values determined in this study (ranging from 0.700 – 0.751) as opposed to the g values presented in the discussed previous publications (ranging from 0.750 – 0.876). To incorporate this face, lines 12 – 13 of the abstract have been updated to include " Measured g values herein have a direct impact on modeling the shortwave reflection of cirrus clouds, resulting in an increase in scaled optical depth by an average 53 % in comparison to previously calculated g values." Furthermore, the conclusions have been updated at lines 429 – 432 have been updated to include "When considering scaled optical depth as $\tau* = (1 - g)\tau$ (Liou, 2016; Xu et al., 2022a), the mean percent difference of 11.5 % in the herein measured g values compared to those of previous studies equates to an average 53 % increase in $\tau*$. In other words, failing to account for the lower g values associated with the complex bullet rosettes would lead to an underestimation in cirrus cloud shortwave reflection by as much as 53 %."*