

Review for “Retrieval of Terahertz Ice Cloud Properties from airborne measurements based on the irregularly shaped Voronoi ice scattering models”

Authors: Li et al.

General comments

This study compares the capability of the Voronoi and sphere models in the retrieval of IWP and r_e using aircraft-based terahertz measurements. The study shows that the Voronoi model can provide promising results as compared to Evan’s Bayesian retrievals using data from the CoSSI instrument. The inversion algorithm among the Voronoi and Sphere models suggests that the Voronoi model is better than the Sphere model. The paper seems clear and well-written. From the single-scattering properties of ice particles to the ice cloud retrievals, the structure is complete, and the analysis is quantitative. In my opinion, this paper could be a good supplement to the development of ice cloud terahertz remote sensing. The topic presented in this study is suitable for Atmospheric Measurement Techniques. I recommend Minor Revisions for publication.

Specific comments

1. Are those comparisons between the single-scattering properties of the Voronoi and Sphere models under the same complex refractive index of ice particles? Please add the real and imaginary parts of the refractive index at 325 and 874 GHz in Figures 2 and 4.
2. In the paper, the BTD_{1-3} may be confused with the BTD_{1-2} - BTD_{2-3} . Please confirm the Acronyms throughout the manuscript.
3. In Figure 6, the brightness temperature differences at 640GHz are shown, albeit not used in the following retrieval. Please give explanations or redraw Figure 6.
4. I recommend the authors give more possible explanations about why large difference exists for large ice particles in the result section.