

Interactive comment on “The potential of polarization measurements from space at mm and sub-mm wavelengths for determining cirrus cloud parameters” by J. Miao et al.

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The authors thank the three referees for their valuable comments. The revised version of the manuscript has included all the comments, especially in the following points:

- (1) All the spelling errors pointed out by referee #1 have been corrected.
- (2) In the second paragraph of Section 1, the sentence discussing the relation between scattering effect and particle volume is modified, i.e., "... proportional to the volume (or mass) of the ice particles." is changed to "... directly related to the volume (or mass) of the ice particles."
- (3) In the last paragraph of Section 1, two sentences are added, in order to clearly state that the polarization signature of the ground surface is omitted in this study.

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(4) The last paragraph of Section 2 has been re-organized in order to clarify the benefit of multi-frequency measurements.

(5) In the first paragraph of Section 3.2, we add one sentence to explain how the particle size distribution is discretely evaluated.

(6) In the first paragraph of Section 3.3.1, we add two sentences to explain why Q is non-zero for non-nadir looking geometry even when ice clouds are composed of ice spheres or randomly oriented non-spherical ice particles.

(7) The last sentence of paragraph 1 in Section 4 on Conclusions is newly added to emphasize that the polarization signature of the ground surface was not considered in this study.

(8) The 3rd paragraph in Section 4 on Conclusions is newly added to discuss the relation of Q with the satellite looking angle.

(9) In the 4th paragraph of Section 4 on Conclusions a short discussion is given in a qualitative way on the effect of multiple scattering.

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