

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 paper revealed an important fact that the microwave radiative effect by non-spherical particles is distinguishable from that from spherical particles. The study may lead a new discussion on whether the microwave polarization signature at high frequencies is measurable, significant, and useful because there is a concern on the uncertainty from ice water content and particle size.

The shape of cloudy particles is crucial. Liou and Ou (1989) have shown the the regardless of the shape of the ice cloud it may result in the different statement on the climate change. Using one-dimensional cloud and climate model, Liou and Ou (1989) found that the surface temperature would increase 0.4 K if one applies the spherical

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rather than the column/plate particles for the ice cloud. The uncertainty of 0.4 K for the surface temperature is comparable to the effect of greenhouse gases on the climate change.

The single scattering approximation is only valid for the thin optical depth. Authors need to point out the optical depth they used.

Interactive comment on Atmos. Chem. Phys. Discuss., 2, 1403, 2002.

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