

Interactive comment on “Thermodynamic phase retrieval of convective clouds: impact of sensor viewing geometry and vertical distribution of cloud properties” by E. Jäkel et al.

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This study quantifies the dependence of the "ice index", using the 1.55–1.7 micron waveband, on the illumination and viewing geometries and on the particle effective radius and ice or water content. This is an important contribution to our arsenal of tools for remote sensing of cloud properties. There are a couple of issues that need to be addressed for enhancing the value of this study:

1. It is shown that the ice index in the simulations is decreased and the sensitivity to effective radius fades away for small water or ice water content. Please explain the

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causes for that.

2. A major point of this study is the validation of the inferred phase by the retrieved ice index by the lidar depolarization ratio, δ . However, only three hand picked selected points are given in Table 2. The study will be much more informative if additional figure similar to Figure 7 will be added, but where time intervals during which the observations were made out of cloud or in shadowed clouds will be masked, and the time series of the δ parameter will be added. Without this, the demonstration of the validity of the method remains rather weak.

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