

Interactive comment on “**Comparison of ice particle characteristics simulated by the Community Atmosphere Model (CAM5) with in-situ observations**” by T. Eidhammer et al.

Anonymous Referee #1

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General comments:

We thank the reviewer for the constructive comments and suggestions for improving this paper. Our responses to this review are in italics below.

In this study, the authors evaluated ice microphysics in CAM5 using aircraft observations. Several parameters about ice size distribution were compared with two different field campaigns. The sensitivity of the ice-snow autoconversion was also evaluated. These detail evaluations are useful for improving cloud microphysics scheme in CAM5.

Specific comments:

Page 7647, the method for calculating the slope parameter from observations has been introduced. Please also introduce how to calculate the intercept parameter from observations.

The fitting method described in the manuscript returns both the slope and intercept parameters simultaneously, since these are the two parameters required to describe the best-fit exponential function. Some text has been added for clarification.

Page 7648, the authors only consider ice sizes larger than 75 micron, both in the observations and in the model, to be consistent. As far as I know, CAM5 model results show that cirrus clouds at low temperature are dominant by ice particles with size less than 75 micron. Please discuss this issue in detail. It is better to show the fraction of ice particles with size greater than 75 micron based on model output mass concentration and number density.

We have overlaid the modeled moments when integrating from $D_{min} = 0 \mu m$ in figures 4 and 5 for comparison and included a short discussion in the paper.