Atmos. Chem. Phys. Discuss., 9, C7039–C7040, 2009
www.atmos-chem-phys-discuss.net/9/C7039/2009/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Sensitivity studies of different aerosol indirect effects in mixed-phase clouds" *by* U. Lohmann and C. Hoose

U. Lohmann and C. Hoose

ulrike.lohmann@env.ethz.ch

Received and published: 11 November 2009

We thank the referee for his/her valuable comments and suggestions. The responses to the comments are marked in italics.

This manuscript investigates the relative importance of glaciation versus de-activation effects in mixed phase clouds due to anthropogenic activity. Several different simulations schemes are tested and results are compared to available field data. The results suggest that the studied phenomena might potentially have a large effect on the aerosol indirect effect and radiative forcing. The topic is important and well within the scope of ACP. I recommend publications after the authors have addressed the following minor issues:

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

1) I would like to see some additional discussion on how well do the authors think their results are constrained - i.e. how well, for instance, the microphysics of the BF processes are known. This would be particularly important since the maximum radiative forcing effect that the authors come up with is so large. It would be helpful for the reader to know how "certain" do the authors think the results are.

The new approach of the BF process is based on theoretical calculations, i.e. the concept is solid. The question or the uncertainty that remains is if the updraft velocity even though it takes subgrid-scale velocity fluctuations into account is appropriate for cloud formation in a GCM. We added that

2) The authors discuss a little the need for additional field measurements, but it would be very interesting to read a little bit of what authors think about potential lab measurements that would help narrowing down the uncertainties related to the studied issues.

We expanded the last paragraph and discussed this more

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 15045, 2009.