Atmos. Chem. Phys. Discuss., 10, C12070–C12072, 2011
www.atmos-chem-phys-discuss.net/10/C12070/2011/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "The variability of tropical ice cloud properties as a function of the large-scale context from ground-based radar-lidar observations over Darwin, Australia" *by* A. Protat et al.

Anonymous Referee #1

Received and published: 6 January 2011

Review of "The variability of tropical ice cloud properties as a function of the large-scale context from ground-based radar-lidar observations over Darwin, Australia" by A. Protat et al.

Recommendation: Accept after major revision.

This paper seeks to characterize the macrophysical and microphysical properties of ice clouds as a function of the large-scale cloud regimes derived from ISCCP, the

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper

amplitude and phase of the Madden-Julian Oscillation (MJO) and the large-scale atmospheric regime derived from a long-term record of radiosonde observations over Darwin. The paper uses both state-of-the-art retrievals of the cloud microphysical and macrophysical properties, as well as robust descriptors of the large-scale atmospheric regime. The paper improves upon past efforts of this nature by using a longer time period of observations (4 years). Further, there is a need for studies such as this in order to develop databases for comparisons with model studies to determine under what conditions the models do a good job at simulating cloud propertiesâĂŤthis should aid in development of better process-oriented parameterizations for large-scale models. And, finally, the paper seems to be technically sound. Thus, I think the paper is appropriate for publication in ACP.

However, I believe that there are a couple of changes that must be made before the paper can be considered appropriate for publication in ACP as documented below.

1. The length of the paper should be shortened and the quality of the writing should be improved. There is copious discussion throughout the manuscript. Instead of explaining every feature that is seen in all of the plots in the paper, the authors should concentrate on highlighting the most important points in the comparison. Otherwise, their message gets lost in a barrage of details and readers might lose interest before they come to the most salient points in the manuscript. Further, excessive speculative comments should be avoided (e.g., this is probably caused by that, appear to be fairly representative, etc.). Say what is important and stick to that.

2. There are a number of times in the manuscript where it is stated that differences in cloud properties between regimes are significantly different. However, as far as I can tell, no tests of statistical significance have been applied to the results. This would be a good idea to incorporate into the manuscript. Results of statistical significance could be summarized in a table in order to avoid the need for excessive text.

3. There is little mention about what are the uncertainties in the retrieved cloud macro-

ACPD

10, C12070–C12072, 2011

physical and microphysical properties. I think this should be stated upfront (succinctly) when it is stated what cloud properties will be derived. This will aid in interpretation of whether differences between regimes are different in a statistically significant sense.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 20069, 2010.

ACPD

10, C12070–C12072, 2011