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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Extinction coefficients retrieved in deep tropical ice clouds from lidar observations using a CALIPSO-like algorithm compared to in-situ measurements from the Cloud Integrated Nephelometer during CRYSTAL-FACE" *by* V. Noel et al.

Anonymous Referee #2

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General Comments: This paper is essentially an intercomparison of CPL-derived extinction coefficient with CIN in-situ measurements. The CPL data are obtained using the deep convection CALIPSO algorithm. A comparison of lidar ratios using the standard CPL algorithm and the CALIPSO deep convection algorithm is also presented. The comparisons are made on two days during the CRYSTAL-FACE mission. These comparisons show reasonable agreement.

The significance of this work lies in the fact that CALIPSO is currently producing ice cloud optical and microphysical properties using this deep convection algorithm.

The paper is concise and well written. My only issue with the paper is that the authors do not adequately address the relevance of these comparisons to the observations that will be obtained from CALIPSO. This is not intended to be a validation of the CALIPSO observations, but a case study intercomparison of the CALIPSO deep convection algorithm. Even so I think that more discussion of the difference between the CPL observations and potential CALIPSO observations is necessary. In particular, how does the CPL footprint differ from the CALIPSO footprint and what effect will this have on the results? This is especially important in light of two comments in the paper. First, multiple scattering was neglected in the retrieval due to the small footprint of the CPL. I assume that CALIPSO will not be able to make this assumption. How will this affect the CALIPSO retrieval? Second, the CPL showed higher small-scale variability than the in-situ CIN measurements. I find this very unusual since the CPL footprint was larger than that of the CIN and because retrievals typically wash out small scale variability. Is the CPL variability to be believed? I think this deserves more of a comment from the authors.

Specific Comments: Pg.10658 line 15: Are there any evidence from other WB-57 data that the aircraft had flown into a cloud-free region?

I found no typo or spelling errors.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 10649, 2006.

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Interactive Comment