

Interactive comment on “Ultrathin Tropical Tropopause Clouds (UTTCs): I. Cloud morphology and occurrence” by Th. Peter et al.

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General Comments:

This paper describes nearly simultaneous airborne lidar observations and in situ measurements of a new class of clouds the authors call ultrathin tropical cirrus clouds (UTTCs). An accompanying paper by the same group presents a mechanism for the formation and maintenance of these clouds, and should be read along with this manuscript to get the full picture. The paper is well written and makes an important contribution toward a better understanding of dehydration of air in the upper troposphere.

Specific Comments:

1. On page 1563, the paper mentions that UTTCs are probably not detectable in

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the LITE 532 nm aerosol backscatter data. Are UTTCs are also below the detection threshold at 1020 nm of SAGE II as implied on page 1559 with the citation of the SVC study by Wang et al., 1998? One would think that a vertical resolution of 0.5-1 km and a 200-km line of sight through the atmospheric limb, SAGE II would be able to detect them.

2. Depolarization data at 532 nm from the FALCON are discussed on lines 22-25 of page 1564, but are not presented in any figures, particularly figures 2-4, whose results are being summarized in this paragraph and surrounding paragraphs. Is the 30% number total depolarization or aerosol depolarization? Have depolarization data not been presented to save space or because the quality of the data is suspect due to the low scattering ratios at 532 nm? It seems to me that the depolarization data should also be brought into the discussion of particle sphericity/non-sphericity at the top of page 1567.

3. Page 1565, lines 13-14: Where did the particle number densities of 5-10 per liter, come from? Is this an integral over all FSSP bins with radius greater than 3 microns?

Technical Corrections:

1. Page 1559, line 21 - use "small" or "low" to describe optical thickness, not "thin"
2. Page 1564, lines 9-10 - grammatical mistakes, mixing singular and plural. Use ". . .backscattering ratio . . . is" or "backscattering ratios . . . are"
3. Page 1565, line 4 - delete the word "of" so that the phrase reads "on board the Geophysica" Also make this correction in the legend of Figs. 5 and 6.
4. Page 1566, line 7 - the date should be 24 February 1999.
5. Page 1566, line 24 - change wording to "aerosol backscatter ratio of unity"

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