

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

Th. Peter et al.

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We thank Lamont Poole very much for his review. The following are our answers to the specific points he raised:

1. Can UTTCS be detected by LITE or SAGE-II? Probably not by LITE, as Winker and Trepte (GRL, 17, 3351, 1998) specify the single-shot detectability limit as 0.001 in optical depth, which is up to a factor of 10 larger than the UTTCS observed by us. But possibly by SAGE-II, as 0.5-1 km vertical resolution and 200 km line of sight should enable SAGE-II to detect them. However, the UTTCS with optical depth $< 10^{-3}$ and vertical thickness < 0.5 km seem not to be included in the SAGE statistics (Figures 1-3, Wang et al., Atmos. Res., 47-48, 606, 1998), where only a small fraction of the clouds are thinner than 1 km. This is in contradiction not only to the statistics of our own lidar measurements, but also to the statistics of the LITE measurements, where the mean vertical thickness is specified as 470 m. We do not know the reason for this

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discrepancy.

2. Improved information on depolarization of UTTCs: In the final manuscript we will clarify the text indicating that the 10-30 % is aerosol depolarization. A figure showing backscatter ratio and volume depolarization (2-4 %) at 532 nm measured on 27 Feb. 1999 will be included in the final manuscript (Fig.5).

3. Origin of ice crystal number in UTTCs: This is indeed the integral over all FSSP-300 size bins between 3 and 10 μm .

We will take the technical corrections points into account. Thank you.

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