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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Hydration and dehydration at the tropical tropopause" *by* C. Schiller et al.

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We thank the referee for helpful comments and propose to submit a revised manuscript addressing the suggestions in the following way.

Sampling frequency of the trajectories along the flight path is 1 Hz. They are purely deterministic (can be included in the revised manuscript).

The trajectory fractions are calculated binning the same 2K altitude intervals as chosen for the data (can be included in the revised manuscript).

The referee correctly points out that according to Konopka et al. 2007 there is a barrier at 340-360 K to be overcome by mixing. Our study, however, uses trajectory calculations above this altitude, therefore are indeed not affected by this phenomenon (a short

note will be made in the revised manuscript).

The zonal asymmetry in Figure 7 (HALOE climatology) in fact becomes less pronounced if the boundary is extended toward the extratropics, contrary to the referee's and also our first expectations (see figure). There might be two reasons: The limited vertical extension of the influence of the Asian monsoon in the extratropics, and the fact, that its Southern flank is likely the most prominent part to impact the stratosphere at and above 380K.

We agree that the maximum altitude of convection and the range of local circulation, but also still possible local condensation processes up to an altitude of 420 K may be coincidental. We can rephrase the sentence (p.17514, l.16-17) therefore to 'It coincides with the highest altitude . . .'. We do not think that this statement contradicts the rest of the discussion: The signatures of overshoots are clearly visible in many observations, however their impact on the global budget was found to be low.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 17495, 2009.

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Interactive Comment

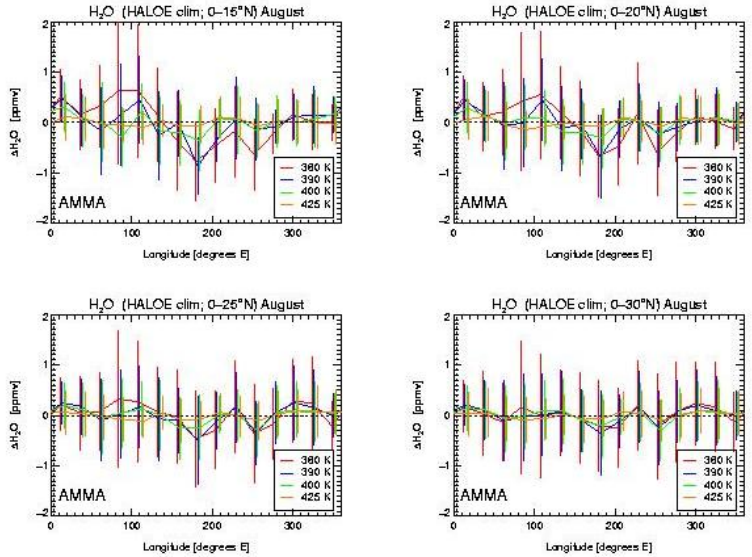

Fig. 1. HALO climatology of H2O for different width of the integrated latitude band

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