

Interactive comment on “Mixing processes and exchanges in the tropical and the subtropical UT/LS” by R. James and B. Legras

Anonymous Referee #2

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General Comments

This paper describes an analysis of mixing in the region of the tropical-subtropical tropopause using trajectory calculations together with in-situ tracer observations from two aircraft campaigns. This topic is of interest to a lot of readers of ACP, and this paper contains some interesting new results that advance our knowledge of the mixing in this region. I think the paper is suitable for publication with only a few very minor changes (described below).

Minor Comments

pg 10630, line 5: I think the statement "in mixing of tropospheric air within the stratosphere is not limited to a shallow layer" is incorrect. Yes tape recorder signal goes

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well into the stratosphere but this is not because of advection and not direct mixing of tropospheric air deep into the stratosphere.

pg 10631, Section 2.1: Is there a reference for the AVE campaigns?

pg 10634, line 14: "poaches"?

pg 10635. M=?

pg 10637, line 2: "upper subtropics and tropics" is a bit vague. Do you mean subtropical and tropical upper troposphere?

pg 10641, line 4: Scherwood should be Sherwood.

pg 10646, line 16: "tropical air across the tropopause" is ambiguous. I think you mean quasi-horizontal transport across the subtropical tropopause, but vertical transport across tropical tropopause followed by mixing and descent also counts as transport of tropical air across the tropopause.

pg 10646, line 19: "relatively shorter but agrees with". How can it be shorter but also agree with?

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 10627, 2008.

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