Atmospheric Chemistry and Physics Discussions
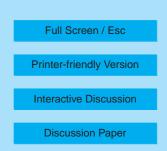
Interactive Comment

Interactive comment on "A numerical study of tropical cross-tropopause transport by convective overshoots during the TROCCINOX golden day" by J.-P. Chaboureau et al.

J.-P. Chaboureau et al.

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The authors thank the reviewer for the helpful remarks.

1. The choice of the simulation set-up was made in order to represent the convective event in the framework of real meteorological conditions and to compare the simulation with satellite observations. The computation allocation allows us to build up a quadruply nested model with a horizontal grid spacing of 625 m for the smallest scale. The grid spacing results in a good representation of convective cells of 2-km size (4 x 4 grid points). This 2-km size is comparable with the MSG observations. Below the 2-km horizontal size, the subgrid scale is indeed parameterized with a state-of-the-art

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scheme.

2. Presence of pileus clouds. The choice of a 400-m vertical grid spacing does not permit us to investigate such a phenomenon, for which the vertical scale is of order of a few 100 m.

3. The impact of saturation adjustment on water vapour transport is indeed an issue that will be investigated in a future work.

4-7. Discussion on Fig. 2. The focus of the paper is on the simulation of a deep convective overshoot over land as stated in the title. Fig. 2 is only used to show that particles were observed into the tropical stratosphere. Its interpretation is therefore limited. The current observations with the other measurements taken from Geophysica would merit a study in itself, which the TROCCINOX instrumentalists might conduct.

8. The English has been revised.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 13001, 2006.

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