

Interactive comment on “Quantification of mesoscale transport across the boundaries of the free troposphere: a new method and applications to ozone” by F. Gheusi et al.

A. Stohl (Referee)

astohl@al.noaa.gov

Received and published: 29 December 2004

The other reviewer is concerned that the method is flawed in the presence of mixing. This is a very good point and I share these concerns. Mixing will have a very similar effect to what I have described in my own review as being due to advection alone if it cascades tracer structures down to small scales (when there is also mixing due to the finite resolution of the model). The other reviewer is right that the physical parameterizations for mixing (turbulence, convection) will worsen this problem, probably to the point where the method gives entirely wrong results.

Full Screen / Esc

Print Version

Interactive Discussion

Discussion Paper

Interactive
Comment

I still think that the approach is quite interesting and perhaps deserves publication in ACP, but I must also emphasize again that the authors need to perform thorough tests of the numerics (e.g., for some analytical problems with known solutions, and/or by comparing with trajectory calculations) and demonstrate that the technique is accurate enough to be applied for real-world problems before the paper can be accepted for publication in ACP.

If it turns out that the method suffers severely from the effects described by the other reviewer and in my own review, I encourage the authors to publish these results also in some form, in order to "take back" the claims made in this and in the Quarterly Journal paper. This will help fellow scientists to correctly judge the potential of the method. The idea remains a good one even if the results may be unreliable.

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 8103, 2004.

[Full Screen / Esc](#)[Print Version](#)[Interactive Discussion](#)[Discussion Paper](#)