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Atmospheric Chemistry and Physics Discussions

Interactive comment on "The January 2006 low ozone event over the UK" *by* M. Keil et al.

Anonymous Referee #2

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Summary

This paper investigates the dynamical background of an extreme ozone mini-hole event over the UK on 19 January 2006. The paper is an excellent overview of this event, because it shows clearly how tropospheric ridging coincided below a strongly shifted stratospheric vortex to produce exceptionally low total column ozone levels. Vertical ozone profiles were shown during and before the event to demonstrate clearly that the depletion had both a troposheric and stratospheric component. The synoptic meteorology at different levels was shown to explain what was happening dynamically, while a trajectory model was helpfully used to demonstrate the different source regions of the air mass in the mini-hole at different altitudes.

While the dynamical understanding of such events has been described before, this paper serves to illustrate such dynamics very well - almost in a text-book sense. It could

be pointed out that more detail about the possible pre-event stratospheric chemistry could be included (e.g. the trajectory analyses require the readers to make inferences about the respective natures of the airmasses arriving in the mini-hole), but I think that this is not really necessary. Indeed, it is good to see a paper focussing on the significant dynamics of such an event.

This paper should definitely be published. I would not require revision, although I appreciate that at least some of the many issues raised by the other reviewers may need addressing. The only point I would raise is that the final plot in Fig. 6 (Geopot. Ht. 100 hPa for 20 January) appears to be incorrect - it does not follow logically in sequence with the previous dates.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 8457, 2006.