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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Vertical structure of Antarctic tropospheric ozone depletion events: characteristics and broader implications" *by* A. E. Jones et al.

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Response to Reviewer 1

We thank the reviewer for comments, which have been addressed as follows:

P8192L21: the Morin et al study has now been cited and included in the reference list;

P8195L10: the direction (south east) has now been added;

P8195L18: done

P8193L2: corrected

P8193L5: corrected

P8200L12: This has been addressed as follows:
Original: large Ri implies suppression or even absence of turbulence, and hence low or zero mixing. A critical value of Ri = 0.25 is often taken as a transition from one regime to the other (Stull, 1988).
Revised: large Ri implies suppression or even absence of turbulence, and hence low or zero mixing. Traditionally, a critical value of Ri = 0.25 is taken to be the transition from one regime to the other (Stull, 1988), although fluxes (and hence turbulence) are still observed in the environment at super-critical Ri (Galperin et al, 2007).
Galperin B., Sukoriansky, S., and Anderson, P.S.: On the critical Richardson number in stably stratified turbulence, Atmospheric Science Letters, 8, 65-69, doi: 10.1002/asl.153, 2007. (added to the reference list)

P8202L13: This has been addressed as follows:
Original: The sodar data (Fig. 5c) show a clear layer of increased turbulence within this region.
Revised: The sodar data (Fig. 5c) show a clear layer of increased backscatter, indicating enhanced turbulence within this region. This layer is either being generated in situ by wind shear, or is a remnant of past shear action (fossil turbulence, see Culf, 1989); for this event, the wind profile data are not of sufficient quality to address this uncertainty.
Culf, A.D.: Acoustic Sounding of the Atmospheric Boundary Layer at Halley, Antarctica, Ant. Sci., 1, 363-372, 1989. (included in the reference list)

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P8213L3: the sentence has been altered according to the reviewer's suggestion;

P8221L7: the DIAL technique is now mentioned – good point, thanks!

Figs 3-8: the Figures have been amended as suggested by the Reviewer

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Interactive comment on Atmos. Chem. Phys. Discuss., 10, 8189, 2010.