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## ***Interactive comment on “Transport of Antarctic stratospheric strongly dehydrated air into the troposphere observed during the HALO-ESMVal campaign 2012” by C. Rolf et al.***

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Below the 'vortopause' at  $\theta = 400$  K and above the tropopause at about 300 K, the interchange with the extra-vortex air is freer than above, although nowhere is it zero (which would be the so-called containment vessel approximation). See my later comment on this issue about multifractals and scale invariance. In JGR, 94, 11687–11737 [1989] there is a strong argument that the dry air on the ER-2 profiles at Puerto Montt (41 S latitude) had been dehydrated over Antarctica, because the whole air F-11 mixing ratio was characteristic of polar latitudes rather than tropical ones, that is to say it was low. There is no doubt that dry air seen over Punta Arenas (53 S) came from the

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vortex. Generally, air between the statistical latitude of the vortex edge (65 S) and about 50 S showed evidence of polar dehydration on both AAOE in 1987 and ASHOE/MAESA in 1994, see J Geophys Res, 102, 13213-13234 [1997] and 102, 28215-28218 [1997].

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