

## ***Interactive comment on “An “island” in the stratosphere – On the enhanced annual variation of water vapour in the middle and upper stratosphere in the southern tropics and subtropics” by Stefan Lossow et al.***

**Anonymous Referee #1**

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This paper presents some heretofore-underappreciated morphology of stratospheric tracer variability. The results are clearly explained and in agreement with the authors, may provide useful diagnostics for upper stratospheric dynamical simulations. I recommend publication subject to some minor revisions.

One general comment- the authors might consider adding some thoughts on the inter-annual variability. Looking at Figure 6, the AO seems to illustrate considerable variation from year to year and seems to be largest in early 2008; this appears to be captured in Figure 12. Also there is a suggestion of this in early 2011. I'm assuming some of this

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would have to do with boreal winter planetary waves. Although its not straightforward since there was an SSW in January 2008, but the NH vortex was stable in 2011. Could the phase of the QBO matter? If nothing else, some discussion about this variation would provide some motivation for future work, which is always helpful.

1. Figure 12 says it's the same as Figure 8. In which case, the white contours should be dashed, not solid.

2. I found the captions for Figure 8 and 12 a bit confusing. Perhaps its only minor semantics, but I think of "time series" as single lines, as in Figure 6. The contour plots shown in Figure 8 and 12 are to me, more properly called "altitude variation as a function of time" (fig 8) and "latitudinal variation as a function of time" (fig 12). Alternatively, in Figure 4, an identical plot to figure 12 was called a "latitude cross section" which is OK. But not "time series".

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