

Interactive comment on “The Quasi-biennial Oscillation and annual variations in tropical ozone from SHADOZ and HALOE” by J. C. Witte et al.

Anonymous Referee #2

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General comments

This paper makes use of the ozonesondes in the SHADOZ network as well as HALOE satellite measurements to investigate the QBO and annual variations in tropical ozone. The QBO has been studied extensively using HALOE and other satellite measurements, sondes and models over the last 20+ years and the investigation of the QBO here does not add significantly to previous work. The SHADOZ comparison to HALOE is interesting in that it shows the effects of lower vertical resolution in the HALOE measurements near the tropopause where the annual cycle is apparent in the SHADOZ data and not in HALOE. The lower vertical resolution also causes HALOE to have lower ozone mixing ratios in the lower stratosphere and apparently a different phase relationship between ozone and zonal mean wind shear. The new features seen in

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the SHADOZ data should be emphasized more since the HALOE analysis has already been done, most recently by one of the coauthors in Schoeberl et al 2008. Overall the paper has some interesting results but they are not apparent enough compared to results that have been seen previously.

Specific comments

Section 3.3, first paragraph: In the discussion of the SHADOZ ozone power spectrum it is mentioned that there is a "modest" ozone annual cycle with a "small" peak from 17-21 km. In my opinion the annual cycle in SHADOZ ozone is one of the main findings of the paper and should be emphasized more here. The annual cycle power would be much more noticeable if the ozone data were normalized by the background profile before doing the time series analysis. The annual cycle power is only small relative to the QBO signal in the mid strat because the background ozone is so much larger at those levels. The QBO analysis has been done many times previously. Most recently, Fig. 6 of Schoeberl et al. 2008 has the same time series of analysis of HALOE ozone.

Summary, first paragraph: Since I don't have access to the Randel et al. 2008 paper, can you briefly explain how your results are unique from that work.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 6355, 2008.

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