Atmos. Chem. Phys. Discuss., 10, C1313–C1314, 2010
www.atmos-chem-phys-discuss.net/10/C1313/2010/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "A new ENSO index derived from satellite measurements of column ozone" *by* J. R. Ziemke et al.

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Received and published: 6 April 2010

Referee #2 Comments on Title: A new ENSO index derived from satellite measurements of column ozone Author(s): J. R. Ziemke et al. MS No.: acp-2009-852

This paper presents a straight-forward analysis of ENSO-related variability in satellite column ozone measurements, demonstrating a coherent east-west see-saw in tropical tropospheric ozone associated with ENSO. ENSO-related variability in tropical tropospheric ozone has been well-documented in the past (by this group, and others). A key aspect of quantifying this variability is demonstrating that there is little zonal variability in tropical stratospheric ozone associated with ENSO, so that column ozone variations primarily originate in the troposphere. This paper quantifies small zonal variability (1-2 DU rms) in ENSO-related stratospheric ozone from Aura MLS measurements, and con-

sistent results are shown for a global model simulation. A tropospheric ozone ENSO index is then defined by differencing column ozone observations over Indonesia and the central-eastern Pacific ocean, and the authors note this differencing provides a robust diagnostic for the merged satellite data product (covering 30 years, constructed from many separate satellite measurements). This 30-year ozone ENSO index is shown to be highly correlated to standard SST or surface pressure ENSO indices. Overall this study is interesting, and I can see where the simple diagnostic proposed here might be useful as a standard for comparing ENSO signals between observations and models (I suppose that the CCM analyzed in Fig. 5 did not contain realistic ENSO variability in tropospheric ozone, as that would have been a natural comparison to include in this paper). Overall the paper is reasonably well written (although it is easy to get confused with the large number of acronyms), and the methodology is clearly explained, and I think the paper will make a useful contribution for ACP.

Thanks for the comments. You are correct that the current CCM is not yet running with a full troposphere, although it is currently being coded to do so in the near future. Evaluation of the CCM using the tropospheric ozone products and the OEI will be an important contribution in aiding development of this model, but this represents future work beyond the present study. The number of acronyms in the paper has been reduced in the revision. (Reviewer #1 had a similar comment with the paper regarding the use of many acronyms.)

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 2859, 2010.