

***Interactive comment on “Comment on  
“Tropospheric temperature response to  
stratospheric ozone recovery in the 21st century”  
by Hu et al. (2011)” by M. Previdi and L. M. Polvani***

**Anonymous Referee #2**

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Reviews on the commentary paper by M. Previdi and L. M. Polvani

General comments

This manuscript comments on the paper of “Tropospheric temperature response to stratospheric ozone recovery in the 21st century” by Hu et al. (2011), which argued that tropospheric and surface temperature trend differences between two AR4 model groups in A1B simulations are likely due to ozone recovery. This manuscript argues that trend differences in Hu et al. (2011) are due to model climate sensitivity to increasing greenhouse gases between the two model groups. The authors compare surface temperature trend differences between A1B simulations and transient simulations with

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1% increasing of CO<sub>2</sub> per year and found both types of simulations yield similar spatial patterns and magnitudes. The results here suggest that model sensitivity could be the major reason in causing trend difference in Hu et al. (2011). The paper is well written. Thus, I recommend the manuscript publication with the following minor comments.

Specific comments: 1. It would be good to plot vertical profiles of global mean trends between the two model groups of transient simulations, especially tropospheric trend differences.

2. The paper mentioned that “ozone recovery can make circulation changes in the southern hemisphere”. It would be better to give slightly more detailed discussion on how ozone recovery causes atmospheric circulation changes, which would benefit the arguments in the present paper.

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Interactive comment on Atmos. Chem. Phys. Discuss., 12, 2853, 2012.