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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Observational constraints on ozone radiative forcing from the Atmospheric Chemistry Climate Model Intercomparison Project (ACCMIP)" *by* K. Bowman et al.

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Overview

We thank the reviewers for their thoughtful comments and criticisms. The paper has been substantially revised in light of those critiques.

The ACPD manuscript had two objectives: 1. Evaluate present-day ACCMIP model ozone distributions with respect to TES ozone and quantify those differences in terms of OLR 2. Explore how those differences in OLR could inform ozone radiative forcing

from preindustrial to present day. From the comments, the reviewers largely agreed with the conclusions from Objective 1 but had a number of concerns about the methodology to achieve Objective 2. As acknowledged in the manuscript, Obj. 2 requires a number of assumptions. Obj. 2 furthermore required the introduction of a number of terms to keep track of these assumptions. Unfortunately, these terms created more confusion and increased the complexity of the paper.

As a consequence, we have changed the approach to achieve Obj. 2 in the manuscript. Consequently, Sections 4.2, 5.2, and 5.4 have been removed. In its place we have shown that there is a correlation (R2 =0.59) between model OLR bias with respect to TES and model ozone RF. We use this correlation as a justification to compute an ensemble mean based upon models that reasonably represent global OLR with respect to TES. These are discussed in a new section 5.3.

Reviewer comments are repeated below with responses in blue. Many of the comments were focused around sections 4.2,5.2, and 5.4. As a consequence, these comments are not relevant to the new manuscript. Those responses are in red. While not necessary for the current manuscript, we have attempted to clarify our reasoning used in the original manuscript.

Please also note the supplement to this comment:
http://www.atmos-chem-phys-discuss.net/12/C12237/2013/acpd-12-C12237-2013-supplement.pdf

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Interactive comment on Atmos. Chem. Phys. Discuss., 12, 23603, 2012.