

## ***Interactive comment on “Ozone database in support of CMIP5 simulations: results and corresponding radiative forcing” by I. Cionni et al.***

**Anonymous Referee #1**

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Ozone database in support of CMIP5 simulations

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I. Cionni et al. 2011

The paper describes at length the construction and evaluation of a new ozone dataset to be used in support of GCMs, which do not incorporate interactive ozone, taking part in CMIP5. The paper represents an important citable document for modelling groups. With due consideration to my points below, I recommend publication.

Comments:

(137-140) I am confused by the latter part of this sentence, "...while the NASA-GISS model performed snapshots every 20 years from 1850-1930 and every 10 years there-

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after, with data taken from the last 6 years of an 8 year simulation". Can you please clarify?

(151) Remove definition: EESC was defined earlier in the text.

(151-152) The historical ozone data does not include a solar cycle poleward of about 50S/N. As the ozone is largely built from a regression model, couldn't one put a representative solar cycle at high latitudes? This has been noticed by a number of modelling groups using the new dataset and has prompted updates to the dataset, from these groups.

(174) What is meant by CCSM3 commitment here?

(176) Replace "nitrogen oxide" with "nitrous oxide".

(179) The CO levels vary by 100%, with sizeable differences in NO<sub>x</sub> and VOC during 2000-2100. So perhaps the sentence including the words, "somewhat similar" should be reworded.

(190-191) N<sub>2</sub>O range appears to be around 345-435 ppm.

(196) Suggest replacing "computational" with "height/pressure". And perhaps "cited literature" -> "references cited"

(202-204) It seems odd not to prescribe a representative solar cycle for the future ozone. At a stroke this sets apart the historical database from the future one; precluding a number of D&A studies which could be done. It is known to this reviewer that a number of groups have included a solar modification to the new SPARC ozone data, and in fact an update is referred to on the CMIP5 webpages describing the SPARC ozone. Although having now read your conclusion, you do comment on this.

(209, 211) Suggest writing "linear re-gridding" on line 209 and removing the sentence starting "The interpolation to a common..." on line 211.

(222-225) How much does the vertical interpolation affect total column ozone values?

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Does the residual vary much with latitude? SH high latitudes?

(233-236) Is there a known reason (cited reference) why the CCMVal-2 multi-model mean historical trend is so much less than those observed for 35N-60N, 50hPa?

(304) "...an historical..."

(333) Trend similar to 500hPa (figure 3), with the exception of Antarctic trends.

(333-336) Figure 7 includes 10 panels and is described in two sentences. Should this figure really be included here, or should it be included as supplementary material?

(342) I would state the relative maximum between South America and Africa is seen, but I would refrain from saying it is well reproduced.

(346) Please define "STE".

(348-365) I would move this paragraph to where figure 6 is described; it is out of place as it currently reads.

(368-369) Panel dates are inconsistent compared to figure caption. Possibly caption is correct.

(Figure 10) Perhaps label "a" and "b" to be consistent with main text. Also, how reliable are the data >42km, especially in panel a. Presumably, these are insitu measurements taken from balloons, so it is not evident how these measurements could have been made (especially during the SH winter). Please explain.

(408) remove "upwards".

(Figure 11) Blue dots are difficult to make out.

(437) typo: "Edwards and Slingo"

(501) typo: "ozone"

(figure 1 caption) a number of errors appear in the caption with regards labelling and

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text. Suggest letter labels on panels, correcting letter ordering and removing "in addition" from text. "Additionally, the GHG scenarios are shown for the...". Note that (d-f) does not include SRES A1B and (c) does not include RCP4.5 N2O.

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Interactive comment on Atmos. Chem. Phys. Discuss., 11, 10875, 2011.

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