

## ***Interactive comment on “The SSP greenhouse gas concentrations and their extensions to 2500” by Malte Meinshausen et al.***

**Ron Stouffer**

ronstouffer@gmail.com

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A Review of “The SSP greenhouse gas concentrations and their extension to 2500” by Meinshausen et al.

General Comments

This paper is documenting the GHG concentration used in CMIP6 and therefore in AR6. It is important to publish such papers. I found the paper to be well written and informative, although the text does need cleaned up in spots as I point out below. I am not an atmospheric chemist so much of the discussion is outside my area of expertise. Given my lack of expertise, I do not think this review is very helpful to the authors.

Detailed Comments

1. Lines 70 -77 – In CMIP (and the IPCC), AOGCMs are physical climate models. They may have some chemistry/vegetation/etc. incorporated into them BUT they do not close the carbon cycle and therefore need some concentration inputs. ESMs close the carbon cycle and therefore can be run with concentrations or emissions. The paper discussion confuses these things. All AOGCMs need concentrations of CO<sub>2</sub> and potentially other GHG. Furthermore, there are concentration driven scenarios in the CMIP6 design (as noted in paper) which require concentrations. The discussion needs cleaned up.
2. Line 326 – Figure reference messed up.
3. Line 446, Figure 4 – In my version, the figure is hard to see. There is black text over top of other text and the figure itself, obscuring the information in the figure.
4. Line 731 – Text says “Check”. It is important to check the data and the figure. It is something that most readers (non-atmospheric chemists like me) would understand.
5. Line 735 – Text says “To Do - show this in figure. . .”.
6. Line 749 – five high priority – I thought there are 4 tier 1 scenarios. Type-o? If not, explain.
7. Line 924 – concentrations already rose to – Awkward in sentence. Change to – concentrations are 411 ppm.

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Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2019-222>, 2019.

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Discussion paper

