

Interactive comment on “The C4MIP experimental protocol for CMIP6” by C. D. Jones et al.

Anonymous Referee #1

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This is a critical manuscript laying out the criteria for a broad community Earth system model inter-comparison project addressing carbon cycling in both land and ocean systems to inform the next IPCC report. The authors provide historical context for the proposed experiment design, modification based on previous efforts, and detailed practical instruction for carrying out the inter-comparison.

I have minor suggestions noted below but otherwise find the manuscript to be a carefully considered continuation of previous efforts. Historically C4MIP has had a high impact on the scientific community and I expect this to continue based on this manuscript.

Details: P1L27 “. . .the design and documentation of individual simulations has been devolved to individual climate science communities.” It’s not clear what you mean by this (‘devolved’ is the word that’s tripping me up), possibly reword?

Title & P1L29 While C4MIP is fairly widely known in the land carbon community it’s

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still not entirely self-explanatory and I, for one, frequently get it confused with the CMIP3/5/6 notation. I would like to see ‘land carbon’ somewhere in the title to make it a bit more explicit but would be open to other suggestions. The title is very acronym heavy.

P3L15 Nicely done recognizing that the number of experiments needs to be restricted due to computational challenges. I appreciate that the authors resisted the temptation to pile yet more runs into the design.

P3L29 Is there a citation for WCRP Grand Challenge?

P7L19, 21 TCR and TCRC are infrequently used in the manuscript. I suggest the authors consider writing the full names out to avoid cryptic acronyms as much as possible.

P7L28-31 I’m not entirely clear on the point of this paragraph. These two statements are relatively disjointed and need to be better integration into the section.

Figure2 I like this figure but if you need to cut figures I would cut this one. There seems to be a lot of careful treatment around concentration vs emissions forced which seems a tad unnecessary to me but I’m fine leaving it up to author’s discretion on this. More pointedly, why are some of the lines solid and others dashed?

P21L28 There is a long space in this line.

P22L11 I don’t believe that ‘anomaly’ is the word that you want in this line. Unless this is an American/British conflict, ‘opposed’ is more common here.

P25 I like how you address the soil carbon depth and fast/med/slow pool distinction here.

Figure 6: Please move the explanation of the colored arrows to the caption instead of stating in the main text.

P28 I appreciate the careful walk through discussing the connection between the tier 1 and 2 state and flux variables. Tedious as it is, it is necessary given my experience

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with CMIP5. I look forward to the improvements this bodes for this next C4MIP round.

Section 4.2 Please link the variable names with their full description more explicitly. Though this is done with some variables (ex intPb) it is not done with all (ex FICR)

P40L10 Please give a bit more detail on the isotope reporting. The normalization factor could use more explanation.

Interactive comment on Geosci. Model Dev. Discuss., doi:10.5194/gmd-2016-36, 2016.