

Biogeosciences Discuss., referee comment RC2
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Comment on bg-2021-136

Anonymous Referee #2

Referee comment on "Estimated effect of the permafrost carbon feedback on the zero emissions commitment to climate change" by Andrew H. MacDougall, Biogeosciences Discuss., <https://doi.org/10.5194/bg-2021-136-RC2>, 2021

This paper examines the effect of the permafrost carbon feedback as included in the UVic ESM on the zero emissions commitment (ZEC). The author concludes that this does not change the assessment that the ZEC is close to zero on decadal timescales but likely to become more important at longer timescales.

Scientifically I don't have a lot of comments. However, whilst I don't want to suggest making the paper much longer I do feel that the results section is rather sparse and some of the figures are not really discussed- these either should be discussed or removed. In addition, there is a lot of description about the perturbed parameters but no real analysis of them in the results or discussion. Again - is there some insight to be found from the perturbations? If not, maybe these could go in an appendix/supplementary?

Minor comments:

- How does the UVic ESM ZEC relate to the other models involved in ZECMIP? I think this should be reflected in the paper. This gives us a further idea of the structural uncertainty.
- I think the numerous emissions/temperatures in the results section could be more easily read by being included within a table.
- I wonder whether it is possible to make the simulations used clearer in section 2.3 maybe through the use of a table?
- line 68 - "full representation" not precisely true