

Biogeosciences Discuss., referee comment RC1
<https://doi.org/10.5194/bg-2021-80-RC1>, 2021
© Author(s) 2021. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on bg-2021-80

Anonymous Referee #1

Referee comment on "Committed and projected future changes in global peatlands – continued transient model simulations since the Last Glacial Maximum" by Jurek Müller and Fortunat Joos, Biogeosciences Discuss., <https://doi.org/10.5194/bg-2021-80-RC1>, 2021

This study continues to extend a previous study by the same authors of simulating past global peatland dynamics into the future. Novel aspects of the study include the transient nature of the simulations from the previous LGM simulations, the long-term projections of the next few millennia, and the considerations of committed change from legacy changes. This is an important study that contributes to our understanding of long-term trajectories of large peatland carbon stocks.

The manuscript is well written and clearly organized. I have only some editorial suggestions that the authors could consider to improve the presentation.

Specific comments:

Line 1: A possible different title could be:

"Committed and projected future changes in global peatlands—seamless transient model simulations since the Last Glacial Maximum"

These suggested changes because of the following considerations:

-“since” is more clear than “from”, as “from” may need “to”

-“seamless projections from the LGM”: not accurate, as it was not projections per se during most times of the last 21,000 years

-replace “seamless” with more conventional “transient” or “seamless transient”?

-“committed change” is a novel aspect of this study

-“future climate” is only parts of the drivers for change, so “future changes” is broader and more inclusive.

L5: change to “long-term projections”. It is a good style to use hyphen between two nouns when they are used as adjective. For example, “long-term projections”, “land-use conversion/change”, “large-scale restoration”, etc.

L7: change to "three standard future scenarios", to distinct from "additional" scenarios later on?

L9-10: "Conditions for peatlands improve": the sentence is unclear. What and how?

L10: change to "North America"

L12: these two additional CMIP6 scenarios are part of ten CMIP6 models? Perhaps better to distinct models, simulations and scenarios in the description. There may be the need for explanations of "three scenarios" (are they "standard scenarios"? in what way?) and "additional" "two CMIP6 scenarios", what the difference? Time durations? If so, spell out in the abstract as well.

L15: change "peatland variables" to some other wordings, such as "peatland changes" or "peatland area and carbon stock"?

L20: change "accumulated organic carbon" to "accumulated organic matter". Using "matter" (materials) is better here.

L17: change "however" to ", however,". "however" often needs two commas when in the middle of a sentence, and when connecting two phrases, need ";" before it.

L29: change to "southeast Asia"?

Page 3:

L29 and L34: ", however,"

Page 4:

L2: change "over" to "during"?

L4: "total land area and land-use area"?

L9: use 21,000 years or 22,000 years for LGM, but to be consistent.

L13: Maybe at the end of the Introduction, also describe the general approach of using different scenarios (standard vs. additional).

L17-18: after Joos (2020), change to “, which is described below briefly”

L20: change to “long-term carbon store”

Page 5:

L5: “due to fluctuations/changes in peatland area”?

L15: change “like e.g.” to “such as”

L20: change “like” to “such as”

Page 6:

L1: ", however,"

L9-10: "of actively growing peatlands"

L10-11: change to "... all carbon that have accumulated, including by former peatlands and peatlands transformed to land-use area"

L22: be consistent with the age of the LGM: 22,000 or 21,000 years. See comment above.

L30: change to "a transient land-use history", otherwise "land use" (no -) if not used to modify another noun

L34: change to "each model of a ten member climate model ensemble"? "member" is unclear here. There are other cases later on.

Figure 1 caption: change "full arrows" to "solid arrow"? Perhaps better to describe as light color rather than "transparent" (as no overlay, transparent is not apparent)

Page 8:

L17: change "sub-sample" to "sub-set". Throughout the manuscript, perhaps you need to be clear about how to describe the ensemble (22 models in CMIP6), 10 models from this ensemble, and individual model (maybe just call it model, rather than "sample").

L20: delete "searched and"

L22 and L24: "included in a sample": ensemble? Group?

Page 9:

Table 1: "Date DOI": should provide doi instead references?

L16: change "mayor" to "major"

Page 11:

L4: change "land-use and land-use change" to "land use and land-use change"

Page 12:

Headings 3.1 and 3.1.1: change "Historic" to "Historical"

Page 13:

L11-12: Northeastern Canada, East Asia, northwestern Canada, northeastern Asia, Southeast Asia??

L25: change "historical" to "historic"