

Interactive comment on “The trajectory of landcover change in peatland complexes with discontinuous permafrost, northwestern Canada” **by Olivia Carpino et al.**

Anonymous Referee #1

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This study needs more effort on the concept, the analysis, and the writing. My major critique on the **concept** is that the large scale analysis is not linked well with the conceptual model. What does the conceptual model mean at a larger scale? What is the timeframe when we would expect such changes? How big of an area is likely to change when? I am missing the space-for-time substitution that is mentioned in the abstract. This would improve the scientific significance. At the current stage, it is not clear what the new contribution of the study is.

Parts of the **analysis** itself are questionable, sometimes because they are just not well enough described. The statistical analysis with ANOVA cannot be used for autocorre-

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lated data (such as the monthly values in this case); also comparisons should always be limited to the common period as with climate change most variables are certainly not stationary. Changes in permafrost area are mentioned in several places, but it is not clear how the permafrost area was estimated.

The **writing** needs to be more specific on what the authors did for the current study. In multiple places of the paper it is hard to distinguish between their work and other peoples work. The paper would be much easier to read if they used the active voice for everything they did and found out. It is also important that they separate the results from the discussion. That would help a lot to distinguish what the new contribution in this study is as compared to previous understanding and the literature cited. This is something that needs to be highlighted. In the current version, the joined section reads like a literature review in lots of paragraphs. Even the methods section includes parts that should be moved to the discussion or introduction. The description of the methods is, in many places, not clear and for some of the described methods it is not clear to me which results they generated. The complete methods section should be restructured (suggestion below) and the remote sensing methods should be illustrated with a figure. In several parts I am also missing information on why a specific method/dataset was used. The English is fine but the quality of the figures could be improved. The complete paper is much longer than it would need to be to address the objectives; it would be better is it was more concise.

Please also note the supplement to this comment:

<https://hess.copernicus.org/preprints/hess-2020-411/hess-2020-411-RC1-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2020-411>, 2020.

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