

Interactive comment on “Climate and atmospheric drivers of historical terrestrial carbon uptake in the province of British Columbia, Canada” by Y. Peng et al.

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We thank both reviewers for their positive comments. Suggestions made by both reviewers will help improve the paper.

We agree with reviewer #1 that the reorganized layout of the paper together with new section headings will help improve the readability of the paper. We will add another table to our manuscript that will summarize the comparison of model simulated quantities with observation-based quantities for different time periods in a more consistent and clear manner. We will also highlight in the revised manuscript how the model results obtained for the province of British Columbia (BC) relate to larger scale picture for mid-

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to high-latitude regions.

Reviewer #2 basically asked for clarification regarding the land use change issues. The land cover used in our study is based on the year 2000 land cover product from Wulder et al. (2003) and it stays the same during the duration of the simulation. Hence land use change is not modelled. We will make this clear in the revised version of the manuscript and discuss its implications. However, crop area in the province of BC is small (1.5 million acres = 6070 km square or about 0.64% of the province's area based on <http://www.statcan.gc.ca/pub/95-640-x/2012002/prov/59-eng.htm>). The primary goal of the manuscript is to quantify the effect of increasing atmospheric CO_2 concentration and changing climate on the simulated atmosphere-land CO_2 exchange and inclusion of land use change is unlikely to change the conclusions drawn. We will also clarify how fire is modelled and discuss the effect of ignoring harvesting.

References

Wulder, M. A., Dechka, J. A., Gillis, M. A., Luther, J. E., Hall, R. J., Beaudoin, A., and Franklin, S. E.: Operational mapping of the land cover of the forested area of Canada with Landsat data: EOSD land cover program, *The Forestry Chronicle*, 79, 1075–1083, 2003.

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