

Interactive comment on “Assessing the impact of late Pleistocene megafaunal extinctions on global vegetation and climate” by M.-O. Brault et al.

M. Claussen (Editor)

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The referees suggest acceptance of the manuscript with minor revisions. Perhaps their comments are a bit heavier than calling just for minor revisions. Nonetheless, I am glad to agree with the referees in principle and to encourage the authors to submit a carefully revised manuscript.

When submitting the revised manuscript, the authors should reply to the referees' comment and the comments by Abigail Swann point by point. Specifically, I suggest considering the point raised by referee 1 and 2 regarding the robustness of their model results. What is the quasi-equilibrium state of the model? Has vegetation dynamics and carbon cycle dynamics reached a final equilibrium? What about the Wedell sea anomaly? How robust is the carbon stock in TRIFFID? What about the (neglected)

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effect of nutrients? Perhaps, it is just a rumour, but does UVIC consider changes in cloud cover?

Furthermore I agree with referee 1 to consider earlier studies on biogeochemical and biogeophysical effect of land cover change in modern climate. In addition to the papers mentioned by referee 1, I suggest reading the papers listed below.

Whether it is possible to isolate the effect of albedo changes and water vapour changes on climate differences, or the effect of dry versus wet greenhouse gas changes, as suggest by Abigail Swann, is hard to say. Such an analysis would require a complete factor analysis using 2 to the power of n separate simulations in the case of n feedbacks. The authors might wish to comment on this point as well.

Finally, I would like mention that Otterman was one of the first who considered the effects on non-tropical forest on climate.

Suggested references:

Bathiany, S., Claussen, M., Brovkin, V., Raddatz, T., Gayler, V., 2009: Combined biogeophysical and biogeochemical effects of large-scale land-cover change in the MPI Earth system model. *Biogeosciences*, 7, 1383–1399.

Claussen, M., Brovkin, Ganopolski, A., 2001: Biogeophysical versus biogeochemical feedbacks of large-scale land-cover change. *Geophys. Res. Letters*, 28(6), 1011-1014.

Pongratz, J., Reick, C.H., Raddatz, T., and Claussen, M., 2010: Biogeophysical versus biogeochemical climate response to historical anthropogenic land cover change. *Geophys. Res. Letters*, 37, L08702, doi: 10.1029/2010GL043010.

Otterman, J., Chou, M.-D., Arking, A., 1984: Effects of nontropical forest cover on climate. *J. Climate Appl. Met.*, 23, 762-767.

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