Biogeosciences Discuss., 11, C880–C883, 2014
www.biogeosciences-discuss.net/11/C880/2014/

Biogeosciences
Discussions
Open Access

Interactive comment on "The impact of climate variation and disturbances on the carbon balance of forests in Hokkaido, Japan" *by* R. Hirata et al.

Anonymous Referee #2

Received and published: 8 April 2014

Authors would do a good job on science, but many vague sentences make me difficult to understand what authors mentioned and whether conclusions are guaranteed by standard science. I suggest that improving writing is necessary. If all vague and subjective sentences are excluded, then I can re-review the revised manuscript in terms of science. My major concerns are follows:

Vague and subjective sentences are shown throughout the manuscript. Authors must use concrete representation. For example, when two results are compared, authors must specify not only which one was greater (or less), but also how much two results differed. If two results are regarded to be same, authors must show statistics. In terms of this point, authors must correct all vague and subjective sentences (e.g., p.2848 –l.14-15, p.2853, l.28 (gradually??), p.2856 –l.19-20, p.2858 –l.15-17, and p.2856 l.25

(how successfully?? use statistics!)). Add statistics (e.g., R2, p, and n) for concrete statements.

Authors used jargon without definition. Many statements are vague, resulting in that it is difficult to understand what authors mentioned. Authors need to use concrete and consistent terminology. E.g.; amplitude of NEP (p.2858 l.2; what timescale?), long-term trend (p. 2858 l.3; how defined long-term?), CO2 absorption (p2858 1.11; GPP or NEP?), growth rate (p2858 1.6; GPP or NEP?), several decade (p.2858 l.12; be concrete), interannual variation (p.2859 l.1; standard deviation of annual fluxes?), effect of CO2 (p.2859 l.2; to mean or variation?), productivity (p. 2859 l.2; GPP or NEP?), respiration (p. 2859 l.2; RE, RM, or RH??),. . .. . .; Do not use ambiguous jargons.

Specific comments: p. 2848, l. 2: Climate condition in these sites is not boreal.

p.2853, l.16-26. The spin-up must be done with historical climate and CO2 concentration instead of recent data. Using recent data should bias modeled state of biogeochemical cycles, such as response to climate and CO2.

Section 2.3: There is no description how authors treated disturbances in the model. Detailed descriptions about transferring carbon/nitrogen pools in each pool (overstory/understory leaf, wood, and root, litter, and soil pools) are necessary. How authors defined residue? If authors included coarse root as residue, then taking 100% is unrealistic (section 2.6). How clear cutting and conversion differed in the model application? Details in the disturbances treatments are necessary.

p.2854, l.20-23. I cannot understand what authors mentioned.

p.2855, l28. Sconst-precipitation would be better than Sconst-rain.

p.2855. add "respectively".

Section 2.6. Add details in transferring each pools as suggested in above comments.

Section 3.1. Add statistics for validating other timescale, such as annual and succes-

sional timescales, in addition to statistics from daily mean.

p. 2858, l.20. Why thinning decreased RH. Thinning seems to increase litter. Again, description in transferring each pool is necessary in the method section.

p. 2859, l.5-9. I cannot understand what authors mentioned.

Discussion section. Authors review previous studies showing similar conclusion. But, I cannot understand how current results are new after the previous studies, and why results are same or different. Further careful discussion is necessary.

p.2862. l.8.Use “suggested” rather than “supported”.

p.2862. l.10. The current analysis cannot discuss effect of global warming, because effect of global warming would differ in season. Please discard the sentences.

p.2862. l.22-23. Please specify what timescale they mentioned.

p.2863, l.8. Use “suggested” rather than “indicated”, because validation about drought effect was not conducted in this study.

p.2863, l.24. Show definition of photosynthetic capacity, and how much photosynthetic capacity is greater than other trees.

p.2863, l.24-25. Quantify the role of understory. Model would easily simulate the role of understory.

p.2864, l.16-24. some studies (e.g., Gough et al., 2007, Latty et al., 2004) suggested that repeated disturbance reduced carbon storage because disturbances reduced site quality. Please discuss this point in terms of modeled nitrogen cycle.

Conclusion section. Authors only mentioned the residue effect in conclusion, but other results, such as role of disturbance and climate, were excluded in conclusion. Restructuring is necessary throughout the manuscript.

p.2865, l.22. Use overstory instead of canopy.

p.2869. 2869. As suggested by other reviewer, details in each parameter (e.g., references or how parameters were optimized) are necessary. Add these information in Table A1.

References: Gough, C.M., Vogel, C.S., Harrold, K.H., George, K., Curtis, P.S. (2007) The legacy of harvest and fire on ecosystem carbon storage in a north temperate forest. Global Change Biol. 13, 1935-1949.

Latty, E.F., Canham, C.D., Marks, P.L. (2004) The effects of land-use history on soil properties and nutrient dynamics in northern hardwood forests of the Adirondack mountains. Ecosystems 7, 193- 207.

Interactive comment on Biogeosciences Discuss., 11, 2847, 2014.