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Biogeosciences Discussions

Interactive comment on "Greenhouse gas emissions from boreal inland waters unchanged after forest harvesting" *by* Marcus Klaus et al.

Anonymous Referee #2

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Klaus et al. studied greenhouse gas emissions (CO2, CH4, and N2O) from lakes and streams in catchments that underwent forest harvesting. Using a BACI design in four boreal catchments, they found very little change in greenhouse gas emissions after harvesting. The study was well designed and well executed. The manuscript is well written. I have some minor comments and suggestions for improvements.

The only major comment I have is that as far as I can tell the authors don't report the differences in CO2, CH4, and N2O concentrations in surface water in lakes and streams, they just report the fluxes. The only significant difference they found is in concentrations of the greenhouse gases in ground water, but what about concentrations in surface water? If there is a lack of difference in concentrations, that might help reduce the number of potential explanations for the lack of responses in fluxes. If there were

no differences in concentrations, the authors should state that.

Below I provide specific comments.

Page 1, lines 11-14- I would separate into two sentences after the word Catchments. It is a very long sentence!

Page 5, line 4- seems like low agreement between k600 measurements and estimates. Is this common in the literature?

Page 5, line 25- add : after modifications

Page 7 line 35- why are concentrations of CO2, CH4, and N2O in lake and stream water not reported?

Page 8, line 41- N2O does not result from bacterial decomposition of inorganic N. It results from incomplete denitrification and nitrification. I would reword this sentence.

Page 9 lines 9-12- I don't follow the percent increase in CO2 and CH4 calculations. Is the 8.45 fold increase, the equivalent of an 845% increase? Also, I am a little confused because these are calculations for changes of concentrations, but you never provide the concentrations changes for lake and stream water, just the fluxes.

Page 9 line 20- I think the word "remain" should be changed to "retain"

Table 2- why do the Control and Impacts have such different discharges (27-40 L/s versus 3-4 L/s).

Figure 3- why 37.5-42.5 and then 5-105cm depth? It seems strange to have a shallow and then the whole soil column together? Why not separate shallow vs deep?

Figure 5- it would make easier to compare across sites if all panels had the same scale on the y-axes.

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