

Interactive comment on “Gross changes in forest area shape the future carbon balance of tropical forests” by Wei Li et al.

Anonymous Referee #2

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I read this manuscript with much interest, and found it to have novel elements which provide new and useful information. However, it could benefit from some revisions.

General comments

The first part of the paper is about land use changes, from forest to agriculture. However changes from primary and secondary forest to plantations are also discussed (and the abbreviation LUC is used). Harvesting in rotation is not generally considered land use change (but a land cover change), so this abbreviation might be better changed to Land cover change (LCC) which would encompass both the forest gain scenario and land use change (loss of forest to agriculture). The paper uses land cover data (Hansen), which further confuses the reader, when land use is mainly used. The authors could check the consistency of these terms (land use and land cover) in the

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paper.

One of the concerns in the paper is the methods, which could be expanded to clarify some points. The analysis of the Hansen data, for example is not included. For example, what forest cover threshold did you use in the analysis? Did you for example mask out those pixels with loss or gain but with <10%, or another appropriate canopy cover threshold for the region? Or is it exactly following the Poorters map? How was the change of grid cell to 0.5o done? For example, pixels only partially within the area of interest are included or not? I wonder if the choice of grid cell size would impact the results? Was 0.5o chosen for a specific reason?

Figure 5 is also not clear to me, for example (if I understand correctly), those pixels in blue reached the threshold for the secondary forest clearing (and also the primary forest clearing) and those in green reached the threshold for the primary forest clearing only? This would be useful information to include in the caption.

The results for the soil carbon change are also interesting and useful to include, but I find the discussion about this lacking. Indeed, there is a huge amount of uncertainty related to changes in soil carbon (see for example Don et al. 2011 Impact of tropical land-use change on soil organic carbon stocks – a meta-analysis). Incorporating some aspect of uncertainties related to this could have been helpful, and indeed, uncertainties are missing in all findings of the paper.

Specific / technical corrections

Page 7, line 14-16. There are a number of datasets which you could use, and the data also do not limit the work to small scale analysis, so this sentence seems not to be useful.

Page 3 line 29/30. I would include here or somewhere appropriate, some numbers related to the total biomass used in the paper from Poorter.

Page 9 line 9 – the “new planted forest in rotation practice”- it is not clear what you

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mean, and do you have a reference for this?

You refer to “idealized scenarios”. I am not sure about the choice of term here. Ideal for what?

Page 1 line 28. “compared against” could be changed to “compared to”. Landsat is more commonly referred to as medium resolution (rather than high resolution), although the global maps are termed high resolution global maps. I would remove the term or would specify the resolution in m.

Page 2 line 7. Why “so-called”?

Page 8 line 5. could be rephrased: “are lower 20 years after the initial LUC” or in another way.

Page 7 Line 24. Is it necessary to describe a map as ‘spatial’?

Page 7 line 14. Instead of “real world”, “in a case study” or similar?

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