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Comment on bg-2021-303

Anonymous Referee #1

Referee comment on "Effects of tropical rainforest conversion to rubber plantation on soil quality in Hainan Island, China" by Rui Sun et al., Biogeosciences Discuss.,
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The manuscript "Effects of tropical rainforest conversion to rubber plantation on soil quality in Hainan Island, China" aims at assessing the impact of rainforest conversion to rubber plantations on soil quality by comparing changes in a soil quality index (SQI) based on 21 soil chemical and biological parameters.

The comparison would require either i) a diachronic approach in which the same sites would be investigated before and after conversion or ii) a synchronic (space-for-time) approach by comparing forest and rubber sites for which differences in pedo-climatic conditions and land-use history have been controlled for to avoid any confounding variables. This study chose the second approach but the design does not control for confounding variables. This can be read in Table 1 (as well as seen in Figure 1). Plots are not paired by land-use and the selection is not made random, stratified or any selection other approach. Forest plots are at much higher altitude and on different soil type than rubber plantations.

Consequently, differences in SQI cannot be assigned solely to land-use changes and might arise from other differences in pedoclimatic conditions, for instance. Since the design is not appropriate for the aim of the manuscript, I do not advise for its publication.