SOIL Discuss.,
https://doi.org/10.5194/soil-2020-73-RC1, 2020

Interactive comment on "Particulate macronutrient exports from tropical African montane catchments point to the impoverishment of agricultural soils" *by* Jaqueline Stenfert Kroese et al.

Anonymous Referee #1

Received and published: 16 December 2020

This study investigates suspended sediment and particle-bound nutrient fluxes from three catchments (with surfaces of $\sim$30 km^2) covered with different land uses in Kenya, East Africa. Hydro-sedimentary monitoring was conducted at the outlet during 2 years. This manuscript is very well written, documented and illustrated (figures and tables are very well done), and the research topic fits with the scope of SOIL journal. In my opinion, minor to moderate revisions should be required before the final acceptance of the manuscript. Detailed comments are provided below.

Abstract The quality of the abstract writing could be improved in my opinion (the quality of this section is not as good as the rest of the manuscript). L. 14 "catchments gen-

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erate high concentrations of suspended sediment" » should be rephrased L.17 "tightly connected to processes" » unclear, please rephrase L.19 "with widespread land conversion" » maybe specify the type of conversion of interest here L.21 unclear what you mean with the "knowledge base" here LL.23-24 maybe add the corresponding catchment surface areas here L.27 not sure "tighter" is the right term to use here?

Introduction L.34 could you specify what you refer to as "high" here? L.63 "sediment-associated nutrients" » which exact parameter are you referring to here? LL.65-67 were these different interpretations obtained in different contexts/environments?

Materials and Methods L.89 converted into. . .? L.95 I guess that based on this statement and the characteristics shown in Table 1, these 3 catchments are hypothesized to be similar in terms of slope, surface, soil type,. . . characteristics? Maybe state this explicitly? L.106 what do you consider to be "moderate to high amounts of organic matter"? Table 1: maybe add a category of characteristics to compare "signs/types of erosion" observed in the three catchments? For instance, on L. 134 in the text, you mention the occurrence of gullies. Are there other signs/types of erosion in the study areas? L.179 "long rainy season"» could you contextualize this better? Is it normal or not in this part of Kenya? What is "long"?

Results The text is really straight-to-the point and easy to read and to follow. It is clear that sediment fluxes are the highest from the agricultural catchment, although when I read the abstract, I had an opposite impression. Could you double-check that the text is not misleading on this point? Then, your results show that particle-bound nutrient concentrations are depleted in the agricultural catchment compared to the other catchments (in particular the forest catchment). Still, the nutrient fluxes from the agricultural catchment remain high (even higher than those from the other catchments, at least during the wet year, i.e. 2018; Table 5). Maybe it would be helpful to mention in the text (in % or in number of times) how higher/lower are the fluxes (either of sediment or of nutrients) when you compare the sites/years to contextualise this better. Regarding this topic, you focus in the text on the surface erosion processes, but what about

the occurrence of subsurface erosion processes in the investigated catchments? You mention the occurrence of gullies in the text, what about the potential contribution of landslide or channel bank erosion to sediment transiting these rivers? This subsoil material should be depleted in C/N/P, which may impact the fluxes exported from the catchments and your conclusions regarding management options.

Discussion L.339: “land use is a key control” » is it land use or land cover/management? Or both? LL.369-372: about the discrimination between mineral and organic origins: is there really such a dichotomy or can it be nuanced through the mobilization/transport/deposition of organo-mineral complexes? LL.395-400: nice to have compiled all the data shown in Table 6; of course, it is really valuable to compare your results with those found in similar/tropical environments. Just a random question: is it meaningful to compare these results with those found in Spain, for instance? Are these environments /land management modes comparable? L.424 : again, you refer explicitly to “surface erosion processes”, but how can you convince the readers that subsurface erosion is negligible in these steep catchments?

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