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Discussions

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Interactive comment on "Changes in Particulate and Mineral Associated Organic Carbon with Land Use in Contrasting Soils" *by* Sabina Yeasmin et al.

Anonymous Referee #1

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This manuscript reports changes in the organic matter in different soil types due to land use change, a relevant topic considering the potential of soil C storage in the face of mitigating greenhouse gas emissions. Therefore, undisturbed soil samples were collected at different sites in New South Wales (superficial and subsurface layers), which were determined organic-C and N through the densimetric fractionation (particles size), x-ray diffraction (mineralogy) and isotopic analysis (stable – 13C and 15N; and radioisotope – 14C) sought to point out the associations between organic matter and minerals of different soils. However, there are serious flaws that should be considered. My main concerns are: In a general analysis of the manuscript, the reading is tiring, sometimes excessive in speculations not based on results; and more: what's the question to be answered? - Introduction and objective need to be rewritten

more clearly and cohesively; less descriptive of the methods and paragraphs that best demonstrate the problem studied at work (e.g., LUC impacts on SOM; LUC impacts on different soil types; importance of soil mineralogy on SOM stabilization). - Methods: Site description is poor, but I believe that the most worrying point of this study was the soil sampling strategy. I searched several times for the number of points to form the composite samples, the area coverage or pseudo-repetitions. Thus, results have no statistical validity, especially the absence of error; which culminates in the difficulty of the discussion and conclusions; making the whole work only qualitative and speculative. - I have difficulty understanding the presentation of results. Both soils and land-uses are different between sites; just as the depths have different mineralogical compositions and C-input sources. Sometimes these variables are presented as complementary; others are used comparatively. - Finally, the discussion and conclusion is quite obvious. In this section you could further explore the results, with management suggestions to increase soil carbon stocks and infer about to reaching C-storage limits in each soil type, contributing to greenhouse gas mitigation.

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