

Interactive comment on “The influence of C₃ and C₄ vegetation on soil organic matter dynamics in contrasting semi-natural tropical ecosystems” by G. Saiz et al.

Anonymous Referee #2

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General comments: The manuscript presents a study in which natural abundance carbon isotopes are analyzed from SOM across a precipitation transect and from depth profiles. Isotopic signal is used as an indicator of occurrence of vegetation thickening on a spatial scale and to study the effect vegetation thickening on SOM dynamics in the soil profile. The study utilizes the difference in isotope composition of woody species with C3 photosynthetic pathway and grasses with C4 photosynthetic pathway.

The manuscript is well written and the methods and results are clearly presented. I think that the only problem in the manuscript is that sometimes the conclusions remain rather weak. There are multiple possible factors that can cause isotopes to fractionate during decomposition processes, which makes the interpretation of such data chal-

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lenging. However, the authors are well aware of the difficulties in interpreting the data and explain that well and in detail in the Introduction and Discussion sections. The relevant literature is also extensively referred. More detailed knowledge on the land use changes and their timing from other sources, if available, could have helped to interpret the observations and improve the manuscript.

The manuscript fit well within the scope of the journal and will be of interest to the soil science community and also to the stable isotope user community.

Specific comments: Please, determine “radiocarbon age” in the Methods section. How is the mean residence time calculated? The description of methods in the Table 1a should be moved to Methods section.

In the Conclusions section you could more clearly explain what the new findings of this study were. Especially the last two sentences are very general and should be explained in the context of this study.

Technical comments: Figure captions are rather long and include information that has been or should have been presented in Methods section.

Page 8104 lines 17-22 could be moved to Methods.

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