SOIL
Discussions

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Interactive comment on "Variation of soil organic carbon, stable isotopes and soil quality indicators across an eroding-deposition catena in an historical Spanish olive orchard" *by* José A. Gómez et al.

Anonymous Referee #3

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soil-2019-59 this study examines changes in selected soil properties (SOC and SOC fractions, P available P and organic N) related to soil quality and explores the application of stable isotopes as indicators of soil degradation (13C and 15N) in an Calcic Cambisol under different land uses (open Mediterranean forest and orchard) in the southwestern region of Spain. Further, authors evaluated changes in the mentioned soil properties and water stable aggregates due to soil redistribution processes comparing eroded vs depositional sites within the olive orchard (areas previously identified by 137Cs technique). Please see below some comments: Line 23 deposition is non-

degraded? Clarify Lines 22-25 I miss results concerning 13C Line 31 Although is a text extract with meaningful information. I suggest "which seeks to increase global soil organic matter stocks by 0.4 percent per year as a compensation for the global anthropogenic C emissions" Lines 33-34 split the paragraph into two sentences Line 41 This part seems disconnected from the previous one (soil degradation & soil quality). I suggest move this part to line 41 "Olive cultivation has been linked to severe environmental issues including the acceleration of erosion and soil degradation (e.g. Beaufoy, 2001, Scheidel and Krausmann, 2011). In fact, soil degradation is . . . (Gómez, 2014)" Line 51 what is the reason for? Lines 58-59? Please rewrite to improve the readability of the text Line 85 It would be very illustrative to include the 137Cs reference value and sd Line 109 State exactly the plant species (shrubs and annual grasses) Line 120 Specify number of soil profiles deeper than 20 cm; excavation method is diddretn than mechanical method for soil sampling? Please include type of core sampler (automatic or manual soil core sampler) Line 125 A similar table for the two reference transects could be included (137Cs inventories since SRR are not applicable in ref site) Line 139 with sodium polytungstate Line 145 Explain in detail acid hydrolysis procedure: acid attack (acid concentration, time, temperature) and preparation for carbon analysis. Include a reference of the method. Line 163 Clarify the number of soil samples at similar soil depth and considered for statistical analysis Line 174 fractions Line 206 topsoil is 0-10 cm? Lines 212-216 This part should be extended and explained in depth Line 294 I consider there is no evidences from results for this statement (indicate selective deposition of soil aggregates). Please revise