

Biogeosciences Discuss., referee comment RC1  
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## Comment on bg-2021-205

Anonymous Referee #1

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Referee comment on "Soil organic carbon stabilization mechanisms and temperature sensitivity in old terraced soils" by Pengzhi Zhao et al., Biogeosciences Discuss., <https://doi.org/10.5194/bg-2021-205-RC1>, 2021

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I have reviewed "SOC stabilization mechanisms and temperature sensitivity in old terraced soils." The study aimed to explore the stabilization mechanisms and temperature response of SOC in an old terraced soils. The topic is very interesting and within the scope of the journal. Generally, the manuscript is very well structured and presents the obtained results. The conclusion has highlighted the implication of terracing on soil carbon stabilization in the context of climate warming. However, below are some corrections:

Lines, 15-20. Our mechanistic understanding of soil organic carbon (SOC) (de-) stabilization mechanisms and of the persistence of SOC stored in terraced soils, however, is far from complete. Here we explored the factors controlling SOC stability and temperature sensitivity (Q10) of abandoned prehistoric agricultural terrace soils in NE England, using soil fractionation and temperature sensitive incubation in combination with measurements of terrace soil burial age. Should be replaced with "However, our mechanistic understanding of soil organic carbon (SOC) (de-) stabilization mechanisms and the persistence of SOC stored in terraced soils is far from complete. Here we explored the factors controlling SOC stability and temperature sensitivity (Q10) of abandoned prehistoric agricultural terrace soils in NE England, using soil fractionation and temperature sensitive incubation combined with terrace soil burial age measurements."

Line 20 suggest that burial should be "suggest that the burial" Line 55 function of molecular complexity should be "function of the molecular complexity, through cut should be " through the cut." Line 70 Both the current SOC status should be "The current SOC status"

Lines 159 that represent should be replaced with "representing" Lines 255 between the terrace soil layers and control soil layers should be " between the terrace and control soil layers"

Lines 320 relative should be changed to "relatively." Lines 335 In order to further should be "To further"

Lines 360 have a significant lower should be "have a significantly lower."

Lines 370 non-terraced should be corrected "non-terraced."

Lines 380 with the observation should be changed to "by observing."

Lines 390 require should be "requires" Lines 395 which can dampen, consider changed to "dampening."

Lines 400 relative should be changed to "relatively."