

Response to Anonymous Referee #1

We gratefully thank the referee for his/her constructive comments and have revised the manuscript accordingly. In our response below, referee comments are shown in black, our response in blue.

General Comments:

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 soil". 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:

Reply: We gratefully thank the reviewer for this positive evaluation and constructive comments, which have been very helpful to improve the quality of the manuscript.

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."

Reply: Thanks for the comment. We will revise the sentences accordingly.

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"

Reply: Thank you for the specificity, this will be changed in the manuscript.

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"

Reply: We will revise the text accordingly.

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

Reply: Agreed, this will be revised in the manuscript.

Lines 360 have a significant lower should be “have a significantly lower.”

Reply: This will be changed in the manuscript.

Lines 370 non-terraced should be corrected “non-terraced.”

Reply: Thanks for the comment. We will correct the sentence.

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

Reply: We agree and will correct this sentence.

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

Reply: We agree and will revise this.

Lines 400 relative should be changed to “relatively.”

Reply: Thanks for the comment. We will correct this throughout the manuscript.