

We would like to thank to the reviewers for the careful assessment of the final details of the manuscript and their helpful suggestions to improve it.

We detail below each of the reviewer's comments (in italics) how we have addressed those in the revised version of the manuscript (in red). These changes have been marked in red in the revised version of the manuscript accompanying this letter.

Reviewer 1:

A great effort has been made by authors and significantly improved the manuscript. The main revisions are: (1) clarified the methodology (2) figures are polished (3) extended data analysis and interpretation (4) reorganized the Results and Discussion section. I think the revised manuscript can be accepted for publication. Some minor comments:

We appreciate the attention paid to this manuscript in all the stages, also in helping us to polish the clarity of the manuscript with a through edition at this stage.

Comment 1 of reviewer 1: Discussion 4.5 partly is the repetition from above and could be merged into your prior discussion section.

This section has been merged with previous section in discussion (4.4) and material and methods (3.4)

Comment 2 of reviewer 1: I appreciate the authors try to dig into the dataset by applying various statistics, but Fig. 11 seems not to be useful.

We have eliminated Figure 11 and edited the revised text to indicate the parameter values for the most robust correlations.

Comment 3 of reviewer 1. Line 50: use Arabic numbers?

It has been revised using Arabic numbers.

Reviewer 2:

The authors have made revisions of the manuscript accordingly to the comments and suggestions in the previous review. However, please find below some remaining suggestions that I recommend the Authors to take into account:

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Comment 1 of reviewer 2: Line 24 Maintain the differentiation between non-degraded vs degraded, it is unclear for me in terms of soil processes. Please reconsider: eroded vs depositional sites (see line 246)

It has been revised eliminating the mention to degraded and non-degraded.

Comment 2 of reviewer 2: Line 29 Particularly, research on the sequestration of carbon in soils and the potential of agricultural soils to store carbon has increased

This sentence has been revised according to the reviewer suggestion

Comment 3 of reviewer 2: Line 83 the local reference ^{137}Cs inventory calculated was 1925 ... instead of the initial ^{137}Cs fallout

It has been revised according to the reviewer suggestion

Comment 4 of reviewer 2: Line 93 References of these previous studies or information

These references have been added.

Comment 5 of reviewer 2: Line 113 establishment of a reference site. 'values for undisturbed soil' could be deleted The meaning of this sentence is unclear. Consider rewriting 'the reference area (Figure 1) which had been established in 1856' or link with information in line 120

We have deleted the sentence and doing this, the paragraph is clear now.

Comment 6 of reviewer 2: Line 121 where neither erosion nor sedimentation occurs (remove excluded from any soil disturbance)

It has been revised according to the reviewer suggestion.

Comment 7 of reviewer 2: Line 122 criterion to exclude 9 sampling point or select only 4 sampling points

It has been explained in the revised text.

Comment 8 of reviewer 2: Line 124 (i.e. 0–5, 5–10, 10–15, 15–20 and when possible, 20–25, 25–30, 30–35, 35–40, 40–45, 45–50, 50–55 and 55–60 cm). delete and state clearly in line 124 that soil profiles were sectioned or divided at 5 cm depth intervals till bedrock as reached varying between 20 -60 cm?

This sentence has been revised as indicated by the reviewer.

Comment 9 of reviewer 2: Line 140 – 141 Please clarify in the present form this sentence is unclear

This sentence has been edited for clarity.

Comment 10 of reviewer 2: Line 177 BD is soil fraction <2 mm / Volume soil fraction <2 mm?

This sentence has been edited for clarity.

Comment 11 of reviewer 2: Line 198 include p value. Revise in the whole manuscript (e.g line 242)

These p values have been revised and included in the manuscript.

Comment 12 of reviewer 2: Line 226 changes in clay, silt and sand contents ...

These values have been included.

Comment 13 of reviewer 2: Line 253 revise $r=0.742$

It has been revised.

Comment 14 of reviewer 2: Lines 358-359 This sentence is unclear

This sentence has been edited for clarity.