Responses to Reviewer 4

Please note that your comments are provided in green text and our responses are marked in blue text. Our major modifications in the revised manuscript are marked as red text.

The authors proposed an interesting topic that addresses the need for the availability of reliable data on soil properties that are crucial for many assessments of soil quality indicators. The authors, in addition to evaluating the performance in terms of accuracy of traditional PTFs and of four proposed machine learning (ML) based PTFs, assessed the impact of their accuracy on that of the estimated SOC stock. This is a very qualifying point of the manuscript in which a problem rarely considered is addressed. Indeed, neglecting the accuracy of input data in estimating soil carbon stock is a major problem that can lead to under- or over-estimation.

Response: We highly appreciate your positive feedbacks on our work. We fully agree with your point of view that the assessing the impact of BD accuracy from PTFs on the estimated SOC stock. This kind of assessment can provide a reference for evaluating the uncertainty propagation of PTFs on other derived soil properties, enabling a more reasonable use of PTFs outputs. Thanks again for your nice summary on our work.

The manuscript is well organised and clear with a sound application of the methods used and it is not easy to find flaws beyond the few minor ones that have been pointed out by other reviewers.

Response: Thanks for your kind comments. We have carefully revised all the issues suggested by other three reviewers, and we hope the quality of the revised manuscript has been greatly improved.