Response to Reviewer 2 Comments

1. Summary

Thank you very much for taking the time to review this manuscript. Please find the detailed responses below.

2. Point-by-point response to Comments and Suggestions for Authors

Comments 1: Title; China should be mentioned in the title.

Response 1: Thank you for pointing this out. We agree with this comment. Therefore, we have added China to the title.

Comments 2: Abstract; Please remove all abbreviations from the abstract and define them when they appear for the first time in the text. Additionally, the abstract section should be improved. Please use more words to illustrate the main findings of the current study rather than the background information and the methods.

Response 2: Thank you for pointing this out. We agree with this comment. Abbreviations have been removed from the abstract, and the main findings and results of the current study have been expanded in the abstract to enrich the abstract.

Comments 3: Line 16; “significant geographical significance” rephrase.

Response 3: Thank you for pointing this out. We agree with this comment. We have changed it to "Mingguang City has high research value because of its unique topography and natural landscape".

Comments 4: Keywords; Please reconsider the used keywords.

Response 4: Thank you for pointing this out. We agree with this comment. We have revised it to "Organic matter prediction mapping;Complex area; Soil-landscape model;Feature variable screening; Machine learning; Spatial variation of soil organic matter.".

Comments 5: Line 46; Please provide examples of previous studies that used machine learning model. Please briefly describe the different used models.

Response 5: Thank you for pointing this out. We agree with this comment. We have added the relevant content as you suggested. The added content is "The SoilGrids system only uses 150000 sample data to obtain the global spatial distribu-tion map of soil organic matter with the support of the organic matter prediction model constructed by XGBoost, Nnet and RF algorithms, and its efficiency and accuracy are in-comparable to those of previous geostatistical models.".

Comments 6: Line 53; Please briefly provide examples of these studies.

Response 6: Thank you for pointing this out. We agree with this comment. We have added the relevant content as you suggested, adding "For example, using 1014 surface soil sample data, we use Boruta method to filter the characteristics of a huge set of environmental variables, and predict the spatial distribution of soil organic matter in Florida based on 8 machine learning models".

Comments 7: Section 2.1; Please support the presented information with literature

Response 7: Thank you for pointing this out. We agree with this comment. . We have added

literature support to the articles.

Comments 8: Figure 1; Please improve the quality of this figure.

Response 8: Thank you for pointing this out. We agree with this comment. We have improved the quality of the pictures, which are clearer than before.

Comments 9: Section 3; All the present information in this section should be moved to Section 2 (Materials and Methods).

Response 9: Thank you for pointing this out. We agree with this comment. We have moved the original Section III, Model building, to the original Section II, Materials and Methods.

Comments 10: Sections 2 and 3; Please provide literature that supports the presented equations.

Response 10: Thank you for pointing this out. We agree with this comment. We have made a reference to each formula supporting literature, in which the VSI index is self-set, so no reference is added.

Comments 11: Line 415; Are there any previous studies supporting this selection (0.1 as the variable screening condition).

Response 11: Thank you for pointing this out. We agree with this comment. We cite the relevant literature in the article 0.1 as a variable screening condition to support the definition of the standard.

Comments 12: Section 5; Please extend this section a little bit to include limitation, and application of the proposed model in different geographic locations.

Response 12: Thank you for pointing this out. We agree with this comment. We extend the limitations of this section by adding "The optimal model is obtained under the geographical spatial pattern of hills, hillocks and plains concentrated at the same time in the study area. The regional terrain is com-plex, but its prediction effect is unknown in other areas with larger terrain drop, such as the crisscross of mountains and plains. Further research is needed to fill this part of the missing." in the text.

Dear reviewer, please refer to the revised manuscript for the specific revision.