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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Influencing factors and their interactions of water erosion based on yearly and monthly scale analysis: A case study in the Yellow River basin of China" *by* T. Hua et al.

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Soil erosion in the Yellow River Basin is a serious natural disaster. The authors used the RUSLE model to assess the risk of soil erosion and quantitatively identified the impact factors of soil erosion. Compared to previous studies, the authors attempted to quantify the multifactorial interactions with soil erosion based on geographical detector method. The logic consistency and method selection are ok, while, it lack the explanation and comparisons with other studies in Discussion Section. If the author can modify it according to the following comments, the content and structure of the article may be more abundant and complete. Therefore, I suggest this paper to be accepted

after revisions.

1. Introduction Lines 38-54 There is a problem with the connection between the sentences, and further revisions are needed. In particularly, it is necessary to further supplement the work of scholars in studying the impact factors of soil erosion.

2. Lines 94,99 Reference should be supplemented.

3. Table S2: Need to be explain the meaning of some parameters in the table such as BS, BW.

4. 2.2 Data and processing The geographical detector method was introduced, but there is a lack of expression on how to apply the geographical detector method specifically to this study. Please provide additional explanation.

5. Lines 198-207: Need to supplement the unit for the result.

6. Result: For some of the results, consider whether to use the moving average method to reprocess results to reduce some change factors and the uncertainty of the results.

7. Discussion: Soil erosion in the Yellow River Basin (Loess Plateau) is a hot topic of research. Authors need to compare their soil erosion assessment results with previous results.

8. Discussion: The author seems to be comparing the effects of two single factors and the effects of interactions, and whether the interaction between the two factors is enhanced or weakened compared to the original two separate effects.

9. Discussion 4.2 The direction of model improvement: The author needs to summarize what improvements have been made to the RUSLE model by scholars in the past literature, and then combine authors' research results to point out the potential model improvement direction.

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