Reply to comments on "Rainfall erosivity mapping over mainland China based on high density hourly rainfall records" (ESSD-2020-370)

Dear Editor,

　　Thank you for your email concerning our manuscript "Rainfall erosivity mapping over mainland China based on high density hourly rainfall records" (ESSD-2020-370). The comments from reviewers were valuable and helpful for revising and improving our paper. We have considered and addressed all the comments carefully.

　　Best regards,

Tianyu Yue

Topical Editor decision: Publish subject to minor revisions (review by editor)
by Min Feng Comments to the author

The referees agreed with the value of the presented rainfall erosivity dataset, and were generally satisfied with the revision of the manuscript. I also agree with the referee that the manuscript can still be improved to address the remaining ill expressions and grammar errors. A few of the noticed issues and suggestions are listed below. I would suggest the authors to consider helps from a professional language service to improve the writing.

1) I do not think that "old maps" to be a proper term referring the existing published datasets unless it referred to old ages.

Response: We have changed the term "old" to "existing" in the revised version.

2) In the Abstract, please clarify if western China was excluded due to data limitation in other datasets? because the presenting dataset did improve for the region.

Response: We have revised the sentence into "compared to 21% for the existing map (map accuracy was not evaluated for the western region where the 1-min data were limited)" to make it clearer.

3) Line 13, change "1-min intervals" to "a 1-min interval".

Response: We have revised it accordingly.

4) Line 25, considering that soil erosion is among the threats to soil health, I would recommend change "the major threat" to "a major threat".

Response: We have revised it accordingly.

5) Grammar errors, such as missing "the" in front of specific names, for example FAO at line 68.

Response: We have revised it accordingly.

6) Line 88, change "earth" to "Earth".

Response: We have revised it accordingly.

7) I would suggest being consistent with 1-min or one-minute through the manuscript.

Response: We checked the manuscript, and the term "one-minute" is only at the beginning of the sentence.

8) Line 82, does "together with the 62 stations" refer to including 62 stations or 62 additional stations?

Response: It refers to including 62 stations. We have changed the sentence to "Therefore hourly and daily data for more than 2,000 stations were collected, together with the 1-min data for 62 of them".

9) I would suggest replacing "world" with "global". The former is usually human collective existence.

Response: We have revised it accordingly.

10) Table 1, suggest removing "for the study area", and changing "event 1-in-10-year EI30" to "1-in-10-year EI30 events".

Response: We have revised it as "Map of 1-in-10-year EI_{30} in China was also generated".

11) Line 126, missing space after "2.1.2".

Response: We have added a space after "2.1.2".

12) Line 214. the title of the section is tediously long and suggest revising it.

Response: It has been revised as "Comparative evaluation of the existing and new erosivity maps".

13) Line 273, revise the sentence of the directional decrease.

Response: We have changed the sentence as "The R-factor in China generally decreased from the south-eastern to the north-western."

14) Line 356, not sure why emphasis on "international study"? did the authors refer to global mapping study or internationally collaborated study?

Response: We refer to the global mapping study. The sentence has been changed to "Comparison with a world map of rainfall erosivity was also undertaken for mainland China".

Report #1

General comments:

Soil erosion has been the major threat to soil health, soil and river ecosystem services in China. Maps of rainfall erosivity are needed for using empirical soil erosion models, such as the Universal Soil Loss Equation (USLE) and its successors, to assess the soil erosion. The manuscript generated, evaluated and shared state-of-the-art maps of rainfall erosivity for China based on more than 2000 stations of hourly precipitation data, which would be very valuable to readers in soil erosion and ecology fields. In addition, the evaluation on the effect of the increased station density on the accuracy of rainfall erosivity interpolation is also very interesting. I noticed that the revised version changed a lot, especially in the Data and Method section and Discussion section, which resulted in a more clear and concise manuscript. Therefore, I would suggest accepting it subject to technical corrections this time.

Response: Thank you for your comments concerning our manuscript "Rainfall erosivity mapping over mainland China based on high density hourly rainfall records" (ESSD-2020-370).

Report #2