

The manuscript “Dynamic Rainfall Erosivity Estimates Derived from GPM IMERG data” evaluated the performance of IMERG-Final rainfall product in estimating global rainfall erosivity estimates. Three methods were tested in this manuscript.

The main drawback of the manuscript is that it lacks high quality Introduction, and explanations that describe the reasons for getting those results. The author also uses many subjective words, which is not recommended for scientific writing. Specific values are encouraged.

Specific comments:

1. Lines 16-18: I think the differences between the IMERG-derived and gauge-derived estimates cannot suggest that the IMERG data may allow for improved erosivity estimates in ungauged areas unless the author can provide corresponding evidence. The findings should be supported by study results. I noted that the IMERG-derived erosivity estimates are more similar to ground-based estimates in areas with a high spatial density of gauges, such as Europe. This means that the quality of erosivity estimates based on IMERG depends on the spatial density of gauges if the ground-based estimates are regarded as “true”. So, the erosivity estimates based on IMERG might have large errors and uncertainties in ungauged areas due to error propagation.
2. Line 33: please give specific factors, and add citations.
3. I believe that the Introduction section needs to be rewritten because of the lack of many previous studies, although the author introduced two papers that focused on

estimating soil erosivity using CMORPH and TMPA, respectively. In fact, there are many papers investigating soil erosivity using multiple gridded precipitation datasets. Given that this study aims to evaluate the potentials of the IMERG data and different methods in estimating erosivity, by analyzing the advantages and limitations of using different rainfall datasets and different approaches in estimating erosivity, it can draw out the reason why you did this study and what scientific questions this study will solve. So, please review related papers and improve the Introduction section.

4. Lines 49-50: please give the specific methods directly, rather than vague descriptions.
5. Lines 65-66: IMERG-Final is derived from the error correction of IMERG-Late by using GPCC as a reference.
6. Lines 70-74: how to separate or remove solid precipitation from precipitation? I suggest the author describe this point as much as possible because errors may be introduced in erosivity estimates when the solid precipitation cannot be removed accurately.
7. Lines 120: please provide citations for this sentence.
8. Eq.7: what is $I30_k$ and k, please provide specific meaning.
9. Figure 1 A: no colour bar to represent the 0 value.
10. Line 179: Figure 1C?
11. Lines 182-183: which papers supported this point?
12. Lines 188-190: why do the differences increase with increasing erosivity, and why

does the 30-minute model generally produce higher values? I think the readers will be interested in the reasons. In addition, underlying reasons might be helpful for us to find a more reliable method to accurately estimate erosivity.

13. Lines 200-207: lack of explanations for the results.
14. Lines 229-230: how did you judge the absolute estimates from the 30-minute model are closer to those of GloREDa? Based on the results in Table 2?
15. Captions of Figures 5 and 6: 2020 or 2021?
16. It is an interesting phenomenon that the IMERG estimates are much larger than those of GloREDa in several coastal areas, why does this phenomenon appear? Is it caused by large errors in IMERG precipitation estimates or other reasons?
17. I suggest the author discuss potential reasons for large differences between IMERG-derived estimates and GloREDa estimates.
18. Line 334: delete “is”.
19. The author claimed that “These estimates provide informative comparisons to the study of Bezak and coauthors [2022]” (in line 49). However, I did not see the relevant comparison test in this study. In addition, the comparison is possible to demonstrate that IMERG performed better than CMORPH in estimating erosivity. So, a comparison may be added to demonstrate that IMERG is more suitable for use in estimating erosivity compared to CMORPH. More importantly, I think the erosivity obtained from this work is not limited to comparison with Bezak and coauthors [2022], please use more appropriate sentences to sublimate your work.