General

The study by Pidoto et al. provided valuable insight into the potential use of rainfall generators and disaggregation models to estimate rainfall erosivity. The paper is clearly written and well structured. As I mentioned in the specific comments below, I do, however, miss a brief discussion about the implications of the results. Methods are scientifically sound, and results are presented in appropriate figures and tables. It would be good to see the results of the stochastic models (rainfall properties) before the results of the rainfall erosivity and describe how the results of the first affect the results of the second in the discussion section. The majority of my comments below require text edits (no further model runs required), and I think the authors will have no problem revising the paper accordingly, should they decide to do so.

Sincerely,
Nadav Peleg

Specific comments

Line 46. You might want to add another reference from our recent work (https://doi.org/10.1016/j.geomorph.2021.107863). We also tailor there between the spatial structure of rainfall and rainfall erosivity skill (see Fig. 9, for example), which you may find interesting.

Line 55. This introduction emphasizes the importance of high temporal resolution data/simulations (e.g. 5 min). But what about spatial resolution? It might be worth adding a sentence about this aspect as well (e.g. do you need gridded, 2-D, stochastic models, or 1-D is sufficient?). It might be worth adding a sentence about this aspect as well (e.g. do you need gridded, 2-D, stochastic models, or 1-D is sufficient?).

Lines 99-100. There is no definition for M.

Equation 3. Replace the commas with points.

Equation 7. Since Pearson's correlation is well-known, this equation does not need to be presented.

Results section. You begin by presenting the results of the mean annual erosivity. The erosivity, however, is calculated using rainfall intensity at intervals of 30 minutes (i.e. equation 1). Perhaps it would be better to start by presenting the results of the simulation (the disaggregation and the ARM) in reproducing the 30-minute maximum rainfall? For example, I wonder if the same bias in erosivity (10% and 20%, line 226) will also be visible in the rainfall simulations.

Lines 270-272. Could you show this in a figure? Perhaps as supplementary material?

Lines 274-275. This comment is related to the one I made above. Before discussing erosivity, it would be useful to discuss the results of ARM and Disagg. Underestimate by how much? What about the intense short-duration rainfall (30 min) - are they also underestimated?

Discussion. There does not seem to be any discussion about the fact that only two stochastic rainfall models (a rainfall generator model and a rainfall disaggregation model) were tested. I am not suggesting the authors run additional models, but to point out that other stochastic models/methods can result in a different rainfall time series, which, for example, can better simulate the I30 and thus better reproduce rainfall erosivity. Moreover, I suggest the authors add a paragraph discussing the potential implications of these methods in ungauged areas. Despite the fact that it is mentioned at the beginning of the manuscript, I am missing some discussion points and conclusions.

Figure 1. Could the resolution be improved? How important is the information on the summer/winter precipitation? It would be nice to see the RUSLE information on the map as well (maybe by using different colors for each point?) so the readers can see how rainfall erosivity is distributed within the domain.

Figure 3-6. Here too, the figure resolution needs to be improved.

Figure 5-6. I have seen these figures several times... Maybe they can be presented as supplementary material instead of being included in the text?

Line 419. The reference's year is incorrect - it should be 2017.