Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2020-187-RC2, 2020

Hydrology and Earth System Sciences
Discussions

Interactive comment on "Estimation of rainfall erosivity based on WRF-derived raindrop size distributions" *by* Qiang Dai et al.

Anonymous Referee #2

Received and published: 20 July 2020

This paper proposes a new approach to estimating rainfall erosivity based on Weather Research and Forecasting model. This study offers new insights on determining the rainfall-driven erosion in regional scale (which is the UK scale in the study) using a combination of different datasets and techniques. To this end, different products (real-time of continuing rainfall measurements from 304 gauge stations), technology (raindrop size distrometer) and methodology (WRF model) were implemented. However, the study can be further improved if the following points can be considered by the authors: - You have used two distrometers in the same locations (considering the whole UK study area) and in the same elevation ranges (low elevation), but they differ considerably. What about the high elevation then? And how much they are representative of the whole UK?

- Could you use the recently published and open access Distrometer Verification Network of UK (Disdrometer Verification Network (DiVeN): a UK network of laser precipitation instruments, https://amt.copernicus.org/articles/12/5845/2019/) to support the finding of your study and refine better the findings? - The performance (R2) of equations of the relationship between Ke-I presented in Table 1 are low and very similar (except ID-III). The exponential (ID-I) and power-law (ID-V) are exactly the same, and did not support the statement given in Line 73 where the exponential relationship is used in preference. Would you discuss this in detailed and how much these values are in line with former investigations? - The Discussion section is missing. The Discussion section is one of the most exciting parts of any study and preferably to be presented separately from the Results section. Add the Discussion section and compared the study finding with previous studies. - What about ground truthing validation of your results in the whole UK or using previous studies with experimental and in-situ data? - How much your study can be compared or can support the very recently published research entitled "National-scale geodata describe widespread accelerated soil erosion" https://doi.org/10.1016/j.geoderma.2020.114378. The latter publication can enrich the discussion part of the study. Specific comments: - Avoid using the abbreviation in the abstract and key points. - Enrich the Figures and Tables captions, ensuring self-explaining to the readers without referring to the main text and avoiding abbreviations.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2020-187, 2020.