

Reply on RC3

Wenqian Mao et al.

Author comment on "Statistical characteristics of raindrop size distribution during rainy seasons in complicated mountain terrain" by Wenqian Mao et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2022-66-AC3>, 2022

Response to general comments:

- 1.Thanks for your comment and the opportunity. We have revised some long or confused sentences, which will be easier to understand. Besides, we checked all the subscripts, units and format in the manuscript and revised them. So, we sincerely hope that the manuscript can move forward in the journal.
- 2.Thanks for your advice. The DSG4 disdrometer is produced and sold by Huatron (China), including the sensor is mainly created from OTT Messtechnik (Germany). Essentially, there is not much difference between them.
- 3.Thanks for your affirmation and recognition. We will try our best to improve the expression of manuscript.

Response to specific comments:

- Line 126 units upper script.

We have revised as " $m\ s^{-1}$ " and checked the whole manuscript.

- Line 131 starting with (1) is inappropriate here.

We replaced the period before (1) with a colon, and then continued (2), (3), (4), (5) with a semicolon.

- Line 131 to 142 you could cite Jaffrain et al. (2011) and Guyot et al. (2019) here:

Jaffrain, J. and Berne, A.: Experimental quantification of the sampling uncertainty associated with measurements from PARSIVEL disdrometers, *J. Hydrometeorol.*, 12, 352–370, <https://doi.org/10.1175/2010JHM1244.1>, 2011.

Guyot, A., Pudashine, J., Protat, A., Uijlenhoet, R., Pauwels, V. R. N., Seed, A., and Walker, J. P.: Effect of disdrometer type on rain drop size distribution characterisation: a new dataset for south-eastern Australia, *Hydrol. Earth Syst. Sci.*, 23, 4737– 4761

Thanks for your advice. We have read the two articles and cited them in this part.

- Line 138 do no use "can't" in abbreviated form.

Thanks for your advice. We have revised the expression form

- Line 157 following equations.

Thanks for your comment. We have revised as "equations".

- Line 174 add references on the parameterisation of the DSD.

Thanks for your advice. We have added the reference from Zhang et al. (2019).

- Figure 1 is not up to the standards in terms of resolution.

Thanks for your advice. We have revised Figure 1 and chosen bigger the size of sites.

- Section 3.1 could you provide a summary of the data of each site in terms of the number of samples before and after quality control, and DSD stats (see for example in Angulo-Martinez et al. 2015 or Guyot et al. 2019).

Angulo-Martinez, M., and A. Barros, 2015: Measurement uncertainty in rainfall kinetic energy and intensity relationships for soil erosion studies: An evaluation using PARISVEL disdrometers in the Southern Appalachian Mountains. *Geomorphology*, 228, 28-40.

Thanks for your advice. We have added the number of samples before and after quality control in different sites.

- Line 127 spacing between value and units.

Thanks for your comment. We have added the space and checked the whole manuscript.

- Figure 3 space between Z and (dBZ); missing "." at the end of the figure caption.

Thanks for your advice. We have added the "." and corrected the wrong figure caption in the corresponding words.

- Figure 11: it would be good to add results from the literature as well on this graph so we can compare the value of the coefficients found in that paper with data from elsewhere (mountainous region, DSD from China in particular).

Thanks for your advice. We are preparing another manuscript chosen one site to indicate the differences with other areas. We think it will be more clearly reported with some key raindrop parameters' values, as well the Z-R relationships. So, in this article, we compared with some common relationships which are widely used in numerical model.

- Line 516 Bringi et al.: which year?

Thanks for your comments. We have added the year. It is Bringi et al. (2003).