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Discussions

Interactive comment on "Something fishy going on? Evaluating the Poisson hypothesis for rainfall estimation using intervalometers: results from an experiment in Tanzania" *by* Didier de Villiers et al.

Anonymous Referee #1

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This is an important contribution to the literature: a thorough and comprehensive observation study of the Poisson hypothesis for rainfall homogeneity and stationarity. It is carefully documented and diligently executed. It is, in my opinion, acceptable for publication in AMT as is.

To the extent that the study centers on testing the Poisson hypothesis via equations 18 and 19, I wish to stress the difference between the Poisson distribution and the homogeneous (stationary) Poisson process (Poisson distribution at ALL scales). The authors clearly understand that and test it on rain rates. However, testing on the basis of drop counts may also be interesting. They may want to look into the notion of

the pair-correlation function (introduced in Atmospheric Science in Kostinski, A.B. and Jameson, A.R., 2000. On the spatial distribution of cloud particles. Journal of the atmospheric sciences, 57(7), pp.901-915. See equation 5, in particular. Poisson process requires that the function (v.s. spatial or time scale) be identically zero. More importantly, it shows that Poisson distribution at a given time scale can result if there are opposing tendencies of clustering and exclusion at sub-scales.

In the context of rain, see Kostinski, Larsen, and Jameson. "The texture of rain: Exploring stochastic micro-structure at small scales." Journal of Hydrology 328.1-2 (2006): 38-45.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2020-174, 2020.