

Comment on hess-2020-673

Anonymous Referee #2

Referee comment on "Bridging the scale gap: obtaining high-resolution stochastic simulations of gridded daily precipitation in a future climate" by Qifen Yuan et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2020-673-RC2>, 2021

This manuscript is very interesting for the topic of rainfall fields at hydrological scales.

My comments only regard suggestions of minor revisions, in order to slightly improve the quality of this interesting manuscript.

- In the introduction, Authors should enrich the state-of-the-art of stochastic models, by mentioning Neymann-Scott and Bartlett-Lewis families, also available for transient versions (Burton et al., 2008, 2010; Cowpertwait et al., 2002; De Luca et al., 2020)
- In Section 3, I suggest to insert a flow chart in order to make clearer for a reader the several steps of the proposed procedure.

References:

Burton, C.G. Kilsby, H.J. Fowler, P.S.P. Cowpertwait, P.E. O'Connell, RainSim: A spatial-temporal stochastic rainfall modelling system, Environmental Modelling & Software, Volume 23, Issue 12, 2008
<https://www.sciencedirect.com/science/article/abs/pii/S1364815208000613>

Burton, A., H. J. Fowler, C. G. Kilsby, and P. E. O'Connell (2010), A stochastic model for the spatial-temporal simulation of nonhomogeneous rainfall occurrence and amounts, Water Resour. Res., 46, W11501, doi:10.1029/2009WR008884

Cowpertwait, P. S. P., Kilsby, C. G., and O'Connell, P. E., A space-time Neyman-Scott model of rainfall: Empirical analysis of extremes, *Water Resour. Res.*, 38(8), doi:10.1029/2001WR000709, 2002.

De Luca, D.L.; Petroselli, A.; Galasso, L. (2020). A Transient Stochastic Rainfall Generator for Climate Changes Analysis at Hydrological Scales in Central Italy. *Atmosphere*, 11(12), 1292. <https://doi.org/10.3390/atmos11121292>
(<https://www.mdpi.com/2073-4433/11/12/1292>)