

## ***Interactive comment on “Accounting for rain type non-stationarity in sub-daily stochastic weather generators” by Lionel Benoit et al.***

**Anonymous Referee #3**

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The manuscript suggests, through examples, that a division of rainfall time series into “rain types”, based on radar images, can lead to a better performance of weather generators.

The claim promoted is that each suggested rain type is easily modelled using standard weather generators and that the sequence of rain types can be modelled without modelling the actual weather.

The authors need to take the study to the end and show that the suggested rain types are indeed modelled easier separately than together, and that this approach is actually operationally feasible. From Figures 2 and 5 it shows that rain types can transition directly to one another, meaning that having individual models for each rain type could be very challenging.

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Also, the two stochastic rain types models compared both seem extremely cumbersome to work with, without showing really convincing results. Convincing results could only be to actually model not only the sequence of rain types, but go the step further and model the weather.

It is very unclear how the final results could actually look. Could this approach be used to make stochastic rainfall output resembling the radar data used for the rain type data? That would indeed be impressive. It would also be very interesting to compare such result to state-of-the-art 2D weather generators (like e.g. the AWE-GEN-2D).

As a standalone item, this manuscript is not very interesting. The fact that radar images can be used to make rain types has already been published elsewhere, and showing that you can get a 7-state Markov model to work is not very novel. You claim that it will improve stochastic modelling of rainfall, you need to also show it.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-562>, 2019.

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