

Interactive comment on “A space-time generator for rainfall nowcasting: the PRAISEST model” by P. Versace et al.

Anonymous Referee #1

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The paper describes an interesting approach for rainfall forecasting ad hourly scale with a stochastic approach that considers also the spatial rainfall information.

I have some minor and major comment that I am going to describe following the structure of the manuscript.

1. Introduction. I would suggest to not describe the evolution of models but to synthesize the obtained results highlighting the differences among the approaches. It is not clear why it is useful to introduce a new approach without understanding the limits of the previous ones. Line 11. "describe..rainfall" . I disagree with this point also because the same happen with the Multivariate models. Line 26. I would remove "new", it is redundant with "introduce".

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In the Introduction section there are 8 references not present in the reference list.

2.1 Identification of random variable.

Line 5 to 10 . These coefficients are similar to the autoregressive coefficient for which it is used the maximum likelihood approach and a more robust procedure to define the temporal memory "v". In my experience the ARMA model is much more useful. I do not know if it is possible to integrate an ARMA model in this procedure, but reading from formula (1) to formula (2) the procedure to estimate the autoregressive behavior is poor.

2.2 Structure of joined probability density.

In these section there are many important hypotheses not justified at all. Authors adopted: Al Saadi ad Youngs trivariate exponential distribution with exponential marginals;why? Is there any evidence from data about that? The same for Weibull Bessel laws and for Moran-Downton bivariate exponential. An option could be interested to try is to use a copula function that is easy to apply and flexible respect to the marginals.

3. Model Calibration.

The description of lines 13-17 seems in contradiction with the section 5 (lines 11-15) and in any case not clear. Line 16-18 it seems that there is contradiction with the line 13-15 of section 5.2. It is not clear.

5.2 Model validation.

from line 17-19. This sentence seems more appropriate for the conclusion section. Why 6 hours is a limit? Following the memory of system 8 should the limit. In any case it is not clear. Figure 7-12 are not clear.

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