

Interactive comment on “Rainfall nowcasting by at site stochastic model P.R.A.I.S.E.” by B. Sirangelo et al.

Anonymous Referee #2

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The authors propose an approach for short-term forecasting of rainfall height, thus contributing to the solution of an important problem of predicting catastrophic events, such as floods, landslides, etc. In particular, the results of modeling based on the suggested approach are proposed to use as input data for rainfall-runoff models facilitating such prediction. The approach used by the authors is of theoretical interest since it is based on thorough analysis of the autocorrelation structure of specific observational series of precipitation collected within a long period. The authors take into account both the singular component of the probability density, which accounts for zero precipitation, and its continuous component, describing the distribution of nonzero values. However, the practical value of the model in its current state seems to be limited. The representation of model results in the form of percentiles allows one to derive only upper estimates

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which are difficult to use in spatially distributed runoff models and make such models too crude. Expectations would be more convenient in this case, but the authors do not show them for some reason. The model in itself appears to be not too sensitive, as can be seen from Fig. 5, where the percentile curves show almost no changes from one time moment to another, while the changes in the measured values are appreciable. It is not impossible that prediction models based on the purely formal analysis of observational series including only the characteristic to be predicted can be improved by taking into account some additional characteristics (such as wind speed and direction in this case) that are physically related to the process. Some questions arise in connection with the procedure of analysis. The authors postulate that the values of alpha are nonnegative but provide neither proof of this fact nor references to such proof. The hypothesis that the process is weakly stationary appears to have not been tested, though the authors have a vast body of data for such test. The application of Monte Carlo simulation, mentioned in the last section, needs more detailed description. What are the distributions used in this case? Finally, it can be concluded that the authors used an interesting approach but failed to solve the problem of providing input data for rainfall-runoff models. The work in this direction should be continued.

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