Hydrology and
Earth System
Sciences

Discussions

EGU

Interactive comment on "Flood-Related Extreme Precipitation in Southwestern Germany: Development of a Two-Dimensional Stochastic Precipitation Model" *by* Florian Ehmele and Michael Kunz

Anonymous Referee #3

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The authors have taken a physically-based, simplified model of orographic precipitation and added mitigations in their approach. The approach has been tested with good results.

It is an interesting and valuable contribution to the literature on this subject. It is thoroughly done and, given the complexity of the approach, it is easy to follow. I would say the results are convincing and robust. Below is a few comments/questions.

Main question: It seems to me that the input parameters are treated independently,

section 5.1, in this approach. We know that input parameters such as wind speed and direction are not independent, and thus should not be threated as such. Categorization helps, but still leaves us with the problem mentioned above. If I have understood this correctly, how do you justify independence (picking from pdf's in a random fashion)?

Minor comments/questions:

P7, L12, " linear model assumes penetration through the whole atmosphere...": Does it? it is contrary to what you write below Eq. 6, L24 which I thought was the idea of wave dynamics; reduced penetration with height. Perhaps the over-estimation has something to do with the saturation assumption you mentioned?

P9: If c_oro is constant in the whole domain, it could be enter in wave space. Can it be collapsed with f_Cw into a common factor, reducing the number of free parameters?

Fig 15: I believe that the confidence interval should be wider on the upper side than the lower side (due to fewer data points).