

Interactive comment on “A simple weather generator for applications with limited data availability: TEmpotRain 1.0 for temperatures, extraterrestrial radiation, and potential evapotranspiration” by Gerrit Huibert de Rooij

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Initial reply to Referee # 2

I thank referee 2 for the insightful review. The references in my reply below can all be found in the discussion paper.

Like Prof. Kilsby, this referee is satisfied with the style and structure of the paper. The referee also lists and weighs the contributions in the paper and concludes that sufficient material is there to warrant publication. To the contributions listed by the referee I would

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like to add that the paper provides the first systematic comparison of the original and the modified Hargreaves equation (Hargreaves, 1994; Droogers and Allen, 2002), and provides a procedure to determine suitable parameter values in case data sets suitable for calibration are not available. The referee notes that more guidance for determining the parameters of the rainfall generator would be desirable. I have prepared a more comprehensive protocol for these parameters to comply with this recommendation. This includes for the first time a theoretical approach for estimating the cutoff parameter epsilon, which determines the minimum permitted value of parameter eta. In Pham et al. (2013), this parameter varies over 15 orders of magnitude throughout the year for a single location. In addition, the physical meaning of epsilon is less clear than that of the other parameters. Therefore, a theoretical basis for establishing the need to set the value of epsilon larger than zero and estimate its value is expected to be valuable for users.

Referee 2 discussed some points raised by Prof. Kilsby. According to referee 2 it is not necessary to review the various algorithms proposed in the literature to generate rainfall to support my choice for the Bartlett-Lewis model. I agree with this assessment, but nevertheless intend to at least discuss a review paper comparing the Bartlett-Lewis and Neyman-Scott algorithms. The referee provides an insightful overview of these and other algorithms, including useful references. In fact, I am uncertain how much a review by myself could add to what I consider to be an excellent discussion of the subject in the referee report. After all, this referee report is now part of the public record of this paper and readers can easily refer to the material therein (unfortunately without the possibility to cite the referee by name).

Referee 2 agrees with Prof. Kilsby that a reference to the UKCP09 weather generator is necessary. I agree with both reviewers and will take care of this if granted the opportunity to revise the paper.

Referee 2 adds a number of detailed comments. I checked them carefully. Several of them require minor modifications of the text to improve clarity. Others are related

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to the protocol that I recommend to estimate the model parameters if insufficient data for calibration are available. As indicated above I expanded this protocol to address the concerns of the referee. The final remark asks about the validation of the model. A formal validation has not been performed. I believe all these comments can be addressed in a revision. If permitted to do so, I will provide a detailed reply explaining how I modified the text in response to these comments.

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