Review of the paper "A globally calibrated scheme for generating daily meteorology from monthly statistics: Global-WGEN (GWGEN)"

The paper presents a method to generate climate variables (rain, min and max temperatures, could cover and wind speed) from monthly to daily resolution. The scheme relies on the WGEN generator, and includes adaptations proposed by other authors (second-order Markov chain and hybrid Gamma-GP distribution for the precipitation, quantile-based bias correction for wind and min temperature). The objective of the paper is interesting and the method is useful, however the presentation has to be improved. It is hard for the reader to follow the multiple steps of the scheme. Moreover, some mistakes or bad choices for notations make the paper difficult to read, and some justifications/explanations are laking. Finally, I am not convinced that the extension to spatial autocorrelation would be so easy as described by the authors.

Some questions and remarks :

- Section 2.2.1 : Why are you not interested in p_{011} and p_{111}?
- Figure 2 : There is no histogram.
- Table 1 and Figure 11 : you should mention the fact that R^2 are artificially high for models without constant because the R^2 formulae is modified for such models.
- In equation (5), can ξ be equal to 0?
- Line 19 : you should explain how you estimate the parameters.
- Lines 20 to 25 : it is not clear, you should explain quickly what is done in Geng et al. (1986).
- Equation (10) : x_{wet} and x_{dry} have to be replaced by $\bar{x}_{wet}$ and $\bar{x}_{dry}$? Same remark for equation (11).

- Figure 5 and 7 : As you write, the adjustement is very bad. I think you should propose another way of fixing the standard deviations. You write "we believe that the error introduced by the poor linear fit is negligible", but this is not convincing.

- Equation (12) : please explain how this formulae has been chosen.

- Page 13 line 5 : $c_{sd,dry}$ has to be replaced by $\sigma_{c,dry}$, same for "wet".

- Equation (12) : c has to be replaced by c_{wet} or c_{dry}. Moreover, bars have to be added, since you describe mean cloud cover.

- Equation (13) : same remark, bars have to be added.

- Section 2.2.6 : Please describe how you add the residual noise in practice. It is described at the end of Algorithm 1 but it is not clear : residuals for one day are really computed from the residuals of the previous day as written line 18? If so, you should explain why.

- Section 2.5 : Can you present/discuss some references about the estimation problem of GP parameters?

- Section 3 : I think such a global presentation of the model should be given at the beginning of the paper in order to help the reader following al steps. Maybe with a schematic description?

- I think Sections 4 et 5 could be merged.

- Section 5 : I am not convinced that the introduction of a spatial autocorrelation field on the sequence of random numbers would solve the problem so easily. The spatial correlation will not be the same for the whole globe and for all variables, and may be hard to fix.