

Interactive comment on “Uncertainties in climate change projections and regional downscaling: implications for water resources management” by W. Buytaert et al.

Anonymous Referee #3

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This is a well written and well structured paper which deal with an important topic, how to assess effects of a climate change in a region where both data sparcity and climate model output are of poor quality. I recommend that this paper is published with minor review.

The language is generally excellent and easy to read, and the study out in its context through the introduction.

Comments:

I agree with the previous referees that the downscaling could have been done more carefully. It would be interesting to see the added value, if there would be one, of a

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statistical downscaling procedure. Or perhaps the authors could elaborate a little on this.

There are good references to earlier studies, but in the outlook I miss a reference to the ongoing CORDEX initiative, which would be very helpful for more in depth studies of regional climate modelling over South America. This seems to me to be more of a preliminary study to build furhter research on, and then a reference to ongoing research efforts would be welcome.

I miss a description of the hydrological model. The references to Beven are to a text book with no page references. Either explain the model in equations or a descriptive figure or refer to a study where it has been applied. As it is now it is very difficult to follow the description of the model.

In figure 1 it would be useful if you plooted the PRECISE grid points to get and idea of the spatial resolution before the rescaling.

Regarding evapotranspiration, you use Penman-Monteith for ET? Why was this choice made? Other studies, such as "Oudin et al, Which potential evapotranspiration input for a lumped rainfall-runoff model? Part 1â€”Can rainfall-runoff models effectively handle detailed potential evapotranspiration inputs? Journal of Hydrology 303 (2005) 275–289" suggested that a simple ET model for lumped models was the best. Perhaps you can elaborate on this?

The Conclusions part is too long. I would suggest to move most of the text to the discussion part and keep the conclusions very short and to the point.

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