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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Senstitivity of water balance components to environmental changes in a mountainous watershed: uncertainty assessment based on models comparison" *by* E. Morán-Tejeda et al.

Anonymous Referee #1

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I thank the authors for their response to my evaluation. I would like to shortly comment on two points:

- Bias correction. It seems that this will be better explained in the revised version. However, I would like to make the authors aware that the bias correction is not the only procedure possible and the discussion about bias correction in climate-hydrological models is quite lively. There are different methods for bias correction and they yield different results, see for instance Watanabe, S., Kanae, S., Seto, S., Yeh, P. J. F.,

Hirabayashi, Y., & Oki, T. (2012). Intercomparison of biasâĂŘcorrection methods for monthly temperature and precipitation simulated by multiple climate models. Journal of Geophysical Research: Atmospheres (1984–2012), 117(D23) or White, R. H., and R. Toumi (2013), The limitations of bias correcting regional climate model inputs, Geophys. Res. Lett., 40, 2907–2912, doi:10.1002/grl.50612 ; Rasmussen, J., Sonnenborg, T. O., Stisen, S., Seaby, L. P., Christensen, B. S. B., & Hinsby, K. (2012). Climate change effects on irrigation demands and minimum stream discharge: impact of bias-correction method. Hydrology and Earth System Sciences Discussions, 9(4), 4989-5037.

- The description of Figure 3 is still not completely clear to me. The RCM simulation has been driven by global model simulations starting in 1950. Since these simulations do not include assimilation of observations, the modeled interannual variability is disconnected from the observed variability. In other words, if we would correlate the annual means of modeled and observed variables this correlation would be close to zero. The only connection between observations and model results is caused by the annual cycle and by the possible externally forced long-term trends. What does Figure 3 exactly show ? Does it show the correlation between modeled and observed variables over the mean annual cycle, i.e. a sample size of 365 ? It would not make much sense to calculate the correlations of the daily (or monthly) values over the whole observational period 1950-2010. The correlation of the de-seasonalized variables should be close to zero. This figure is poorly described in the text and in the caption - and also unfortunately in the author's response.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 11983, 2013.