

***Interactive comment on* “Evaluation of a bias correction method applied to downscaled precipitation and temperature reanalysis data for the Rhine basin” by W. Terink et al.**

Anonymous Referee #4

Received and published: 10 March 2010

Summary

Terink et al. (2010) performed an application of a bias correction method for temperature and precipitation suggested by Leander and Buishand (2007) in their study as a part of a larger research project in which the bias-corrected downscaled reanalysis data will be used to calibrate a hydrological model for a climate impact study. They evaluated the results by the comparison of some statistics against the observations (MBE, RMSE, coefficients, return periods of a selected kind of event, etc.). The sensitivity of the correction parameters to one aspect of the sampling, the sampling of the years was investigated. The correction performance or the validity of the derived correc-

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tion parameters within the sampling years or not, that is, the cross-validation result was evaluated. They found that the bias correction performs well within the sampling years, especially for MBE, but not as well outside the sampling years.

General comments

The research light of this study is the intensive cross-validation, which is necessary but rarely done before for the climate projection study. It is a good example to show the non-constant climate model bias, especially for precipitation, which has more complicated variability than temperature. So, from this particular aspect, this study is worth to be published with some minor revisions.

Detailed comments

1. Abstract, P.222, L.11-13: This sentence is a little confusing.
2. Section 3.3, P. 230: It is not clear how the temperature is corrected to every grid every 3h, what kind of time interpolation is used here? And further, when perform cross-validation, it is clear in equation 1 that the parameters a and b will be delivered from the calibration period to the validation period, however, it is not clear which parameter will be delivered in equation 4. So, in Line 22, "the considered period" should be clarified.
3. One suggestion in the future work: To evaluate the bias correction method and the sensitivity to the correction parameters by analysing the output of the hydrological models driven by the different corrected meteorological forcing scenarios against the hydrological observations of the present (cross or not cross) climate, then consider the validation for the future climate.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 221, 2010.

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