

Interactive comment on “Errors in climate model daily precipitation and temperature output: time invariance and implications for bias correction” by E. P. Maurer et al.

Anonymous Referee #2

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Maurer et al. presented thorough analysis on the subject of the time-invariance of daily precipitation and temperature at mean and 95 percentile for four CMIP3 models. They showed that the biases in the analyzed GCMs on average statistically the same between two different set of years for most locations, suggesting a simple quantile-mapping method for bias correction can be effective in removing some of the GCM bias. They also demonstrated that as few as 4 randomly selected years, as a baseline set, are often adequate to characterize the biases in daily GCM precipitation and temperature for the analyzed percentiles. There is a considerable degree of spatial patterns for the biases that is inherent to a given GCMs. The manuscript is well written. The findings are particularly important and provide necessary support for future

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climate impact studies/research where statistical downscaling is a major tool. However, the major concern I have is on the results and conclusions from the different base set lengths. As the base set pool is only 25 years, the longer the base set, the more likely the randomly selected base set tends to have indistinguishable PDFs. If so, the conclusions that a base set beyond 12 years offer no improvements may be just an artifact due to the limited sample size for the base set pool. As the authors point out in the manuscript, longer data sets do exist, probably it is a good idea to test this to prove the results are robust regardless of the length of the base set pool. It would be interesting to see how the results/conclusions will change or whether they remain the same when using the CMIP5 results at higher spatial resolution where local complications start to play important role especially over regions with complex topography.

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