

Supplementary material

Evaluating the performance of climate models in reproducing the hydrological characteristics of rainfall events

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For the purpose of demonstration, this study quantified the impacts of uncertainty in the rainfall projections of the GCMs on hydrological projections. A daily watershed model, the Soil and Water Assessment Tool (SWAT) was calibrated to the runoff observations made at the outlet of a study watershed, the Hatchet Creek watershed, located in Alachua County, FL, and all 29 GCM rainfall projections were incorporated into the calibration model. The modeling results showed that runoff projections could be largely different depending on the selection of rainfall projections. The average size (0.57 mm) of the runoff uncertainty (the grey band in Fig. S1) was greater than that (0.43 mm) of the watershed runoff, indicating the significance of the impacts of the discrepancies between observed and projected rainfall characteristics in the hydrological analysis of climate change.

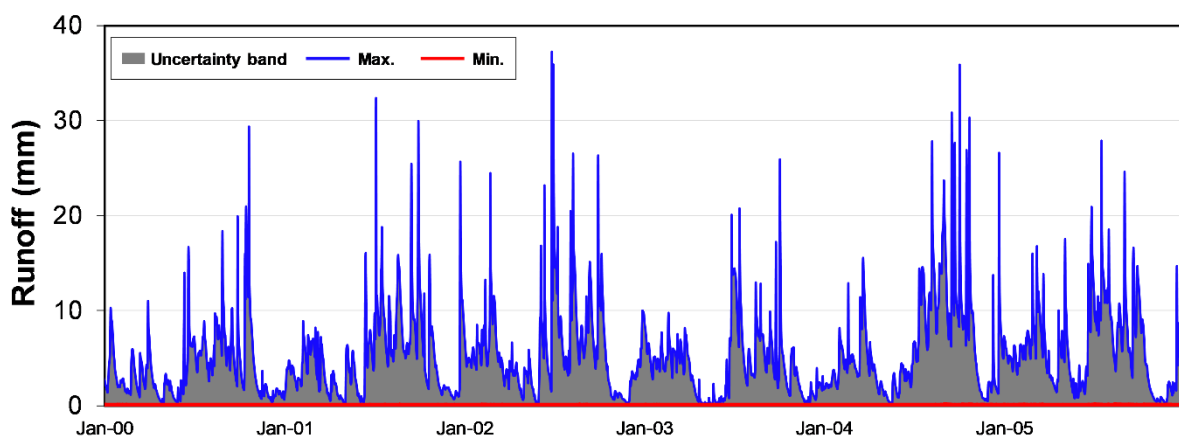


Figure S1. Variation of runoff projection uncertainty due to the selection of GCMs. The blue and red lines represent the maximum and minimum runoff projections, and the gray areas signify the uncertainty band of runoff projections that were made using the 29 GCM projections and the SWAT model calibrated for the study watershed.