

Interactive comment on “The importance of parameterization when simulating the hydrologic response of vegetative land-use change” by Jeremy White et al.

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This paper focuses on the very important, and somewhat underappreciated topic of model parameterization and its influence on the uncertainty of predictions. The scale of the watershed studied is appropriate. The authors use a very thoughtful approach to explore the implications of parameterization and the advantages and problems associated with using few (12) versus many (1000+) adjustable parameters. Statistical and analytical techniques are all appropriate and the figures are effective. The authors provide helpful and concise explanations of why brush management is important and why the implications of their study are of broad interest to the hydrologic modeling community, even if the results themselves are not directly portable. I note that there

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is another closely related paper currently in review as a discussion paper with HESS: <http://www.hydrol-earth-syst-sci-discuss.net/hess-2017-121/>

Below are some line-specific comments: P3 Line 14: I'm okay with the authors mostly referring readers to the 2011 paper for information about the study area. However, it would be helpful to include at least mean annual precipitation and temperature. A brief explanation of the seasonal pattern of rainfall would also be helpful. Readers should not have to look up another paper for this basic information.

P4 Line 12: The technique used to spatially average the precipitation data should be specified.

P4 Line 18: Did you evaluate how well the NCEP data correspond to your instrumental measurements for time periods during which your instruments were functioning properly? Documenting the error for days on which rainfall occurred would be useful.

P6 Line 30: The authors could provide more explanation of the advantages and disadvantages of these two types of parameterization.

P 8 Line 30: Are these midpoint values the same as the default values for SWAT2012? If so, that's fine. . . it's what most modelers would do, but the authors may want to clarify this point. If not, some justification is needed for using these values rather than the default values.

P 9 Line 9: Each of these measures quantify slightly different components of model performance. The authors might want to include 1-2 sentences to explain the differences between the three and advantages of using all three.

P 10 Line 6: This is still a very large number of realizations. It would be useful to know how many of them are effectively duplicates of one another. Also, it could be helpful to modify the conditioning measures to select for a narrower range of runs.

P 11 Line 14: I agree with the authors that the possibility of a net increase is not entirely unexpected. Recognizing that the cutoff thresholds for the evaluation measures were

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somewhat arbitrary (if in line with most other literature) it would be interesting to know if the realizations that indicate an increase in ET are eliminated if stricter evaluation measures are applied.

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