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Hydrology and Earth System Sciences
Discussions

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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Thank you for your review. We will work to address each of your comments in the final draft. However, I would like repond to your comments regarding our process of parameterization before sensitivity analysis and the use of ET data for conditioning.

We approached this modeling analysis not knowing before hand which model inputs were important to the observed discharge, the QOIs for brush management, or both. From this point of ignorance, and because we didn't want to potentially bias our results, we proceeded to design an encompassing parameterization, which is somewhat contrary to "common" modeling practice. During the parameterization design, we also defined the (subjective) Prior uncertainty for each parameter. We selected the Mor-

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ris method for sensitivity analysis because samples parameters across their ranges (a global method), but is computationally tractable, which we needed given the large number of parameters. The results from a Morris analysis indicate which parameter influence important model outputs, such as conditioning measures and QOIs, but doesn't provide detailed information regarding parameter interactions like results from a Sobol analysis.

Regarding the use of the ET data for conditioning, we agree that these data would likely be valuable to reduce uncertainty in the at least some of the QOIs. However, given that these data is not typically available, we decided to use these data to verify the model's ability to serve its purpose: forecast long-term water budget components before and after brush management. We feel this is a better use of these data as this type of model-purpose verification is rarely available when the purpose of the model is something other than forecasting discharge. We will include some discussion of this point in the final manuscript.

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