

## ***Interactive comment on “Identifying the connective strength between model parameters and performance criteria” by Björn Guse et al.***

### **Anonymous Referee #2**

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In this manuscript, parameter uncertainty (incorporated with the SWAT model) was explored by using Latin Hypercube sampling. In general, the manuscript is overall well-written and I personally really like Figure 4 and 5 (the way of presentation). However, I cannot recommend for publication in HESS for mostly the reason of novelty and also the following concerns: 1. Parameter uncertainty along with complex watershed models (in this case, SWAT, or other cases such as HSPF, MIKE SHE, and others) has been extensively explored for decades. It does not mean there's no value (in terms of academic novelty) in investigating parameter uncertainty anymore, however, similar approaches (parameter uncertainty, sensitivity, model calibration for flow related variables) have been conducted previously. The proposed work may not meet the scientific standards of HESS. The value of this work may be enhanced by highlighting some local issues such as (i) what's the current concern(s) (Agricultural? Domestic? Industrial?

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Environmental?) in the Treene and Upper Saale catchments; and (ii) what would be the benefit(s) to use the propose approach in the study area. 2. Details of both catchments were not provided. I would say most people know the location of Germany but maybe not the given two catchments. Parameter uncertainty and the associated comparisons may not be very much meaningful if the information of the targeted regions was not clear. 3. It seems that previous work from H. V. Gupta (famous scholar we know that), B. Guse, and M. Pfannerstill was cited a lot in the manuscript. However, as I mentioned previously, there are many other similar research available (at least in the past 10~15 years) but not being discussed or compared. It also may be a considerable issue of the proposed work for the general evaluation against others was not provided.

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