Interactive comment on "Temporal parameter sensitivity guided verification of process dynamics" *by* M. Pfannerstill et al.

S. Gharari (Referee)

shervangharari@yahoo.com

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The paper is about establishing a framework which assists understanding of how newly introduced parameters affect a model and model result. I was very excited to review the paper however after reading it several times I am a bit disappointed. I know writing a paper is very challenging; specially communicating newly developed frameworks. I try to help the authors by asking few general questions and suggestions which might help them to improve their paper by putting it into the context.

1-In the entire paper I didn't see any explanation on how the authors calculated sensitivity. Please elaborate on that.

2-What hypothesis do the authors try to verify with the SWAT model? To me it looks

as if they are trying to verify the assumptions which the model is actually based on. The model does essentially what we ask the model to do and nothing more. I suggest the authors to distinguish between model assumptions and the constraints on model behavior which might come from other sources of information [such as groundwater dynamic as the authors mentioned]. Testing the assumptions that the models are based on is not model diagnostics in my point of view. To better understand what I mean please read my recent work (Gharari et al., 2014a,b in HESS).

3-I always had some problem with sensitivity analysis of model parameters! What can you say if the sensitivity of one model parameter is higher than the other; can you state that parameter is more important? You should elaborate on that. Why are you measuring the sensitivity? And how can it help? It should be justified.

4-You are suggesting TEDPAS as a model versification tool; I would like to ask how different it is from other tools such as DYNIA? Or even GLUE? Or other MCMC frameworks? [although I know they don't look at the same things]. You should be able to justify "model verification" also. What do you mean by that? If your models, hypothesis or assumptions are verified what does that mean?

I give major revision and ask the authors to clarify step by step the message they want to convey. I hope my points help the authors for their upcoming presentation at EGU on the same topic.

Looking forward to your response.

With kind regards

Shervan Gharari

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