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Hydrology and Earth System Sciences Discussions



# *Interactive comment on* "A framework to assess the realism of model structures using hydrological signatures" *by* T. Euser et al.

**T. Euser et al.**

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Dear referee,

Thank you for your useful and constructive review.

We acknowledge your remark that we are presenting a qualitative and, therefore, a somewhat subjective framework. We are currently working on methods to assess the framework quantitatively. However, even in the present form our approach can help a modeller to obtain more insights into the performance and consistency of different

model structures in different catchments. The new methods (work in progress) would completely overload this paper and will (hopefully) be the subject of a future publication.

Regarding a detailed explanation of the Principal Component Analysis, we agree that it may be difficult to follow the remainder of the paper if PCA is not explained upfront. We will add a section on the basic principles of a PCA in the revised manuscript.

Regarding the minor comments:

1. *Page 12996, line 15: the assumption of normality of the inputs for PCA is discussed, but this is meaningless if PCA is not explained before.*
   The PCA will be explained in further details as mentioned above.

2. *Page 13006, line 18: if I remember well, Schaefli and Gupta (2007) suggest not to use Nash-Sutcliffe as is, when comparing different catchments.*
   This reference was put in because the authors argue that Nash-Sutcliffe is often used, but that it is not very good to do so. To prevent confusion, we will leave this reference out.

3. *Page 13008, line 19: because the catchment is small, homogeneous and the climate is very humid/wet.*
   This sentence will be changed, according to the suggestion.

4. *Page 13012, line 6: please define "validity".*
   The validity of the framework is defined as a combination of the limitations of the framework and the applicability of the framework in different catchments. We shall make this clear in the revision of the paper.



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5. *Page 13035, fig. 11: Which catchment is it?*
These are results for the Maimai catchment, this will be added to the caption.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 12989, 2012.