

Interactive comment on “Critical review of the application of SWAT in the upper Nile Basin countries” by A. van Griensven et al.

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The manuscript presents a very useful and complete overview of applications of the SWAT model for Nile Basin sub-catchments. One of the strongest points of the paper is that authors did not limit the evaluation of the performance of the SWAT applications to the classical research conclusion “model is able to mimic observed flows”. This classical approach is still preached in the vast majority of hydrological literature. Although this is needed to improve our models and data, we have to realize that models are also having other objectives than to mimic observations.

The authors realized this and evaluated the performance of the models by: (i) fit-to-observations, (ii) fit-to-reality, (iii) fit-to-purpose. It would be interesting to explore further (probably not in this paper) the required model accuracy for “fit-to-purpose”. In

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other words, what should be the accuracy of the model to be useful for scenario analysis? Or: relative model accuracy (difference between current situation and scenario) is always much higher than absolute model accuracy (difference between model output and observations). Unfortunately, relatively little research is devoted to this aspect of “fit-to-purpose” (e.g. Bormann, 2005; Droogers et al., 2008). It is hoped that this paper will contribute to the discussion on the required model accuracy.

Bormann, H. 2005. Evaluation of hydrological models for scenario analyses: signal-to-noise-ratio between scenario effects and model uncertainty. *Advances in Geosciences*, 5, 43–48.

Droogers, P., A. Van Loon, W. Immerzeel. 2008. Quantifying the impact of model inaccuracy in climate change impact assessment studies using an agro-hydrological model. *Hydrology and Earth System Sciences* 12: 1-10.

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