**Hydrology and
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Interactive comment on "Hydrologic analysis for river Nyando using SWAT" *by* A. O. Opere and B. N. Okello

Anonymous Referee #2

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Many aspects of this paper are problematic. One of the first points is that the objectives, method and results are not presented. Neither the title, very general, nor the abstract (which doesn't present the characteristics of an abstract...), is able to indicate the main results of the study. The bibliography is very poor, the authors only refer to few technical reports and handbooks. International scientific literature is almost absent from this paper. Writing is unclear and imprecise, data are not clearly presented, maps are absent, figures are not cited in the text, and results are not fully displayed...

The model implementation is far from satisfying. The choice of calibration/validation periods should be justified. The choice of the gauging station used in the model should also be justified. Figures 1 to 5 present the impact of individual model parameters on streamflow ("sensitivity analysis"). This only seems to help describing the role of the

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parameters in the model, but how are these results (quantitatively) used in the study? Which criteria for choosing these 5 parameters among others?

Then, what is the method used for calibration? Manual? Which parameters have been calibrated and why? Why is the model performance so poor? Authors incriminate the data quality, but this should be explained in details: without precise data description, the reader is unable to make its own opinion. Authors should also explain the purpose and the method used for baseflow separation. Validation results are not displayed.

Finally, despite the poor model performance, authors present a sensitivity analysis to test the influence of forest cover on stream flow. The scenarios tested are not justified: why testing such variations (from 0 to 100% of forest cover) while the observed change keeps within 7.5%? In addition, one of the more striking results displayed in Table 10 is that both decrease and increase in forest cover lead to enhanced stream flow. Why? This result is not commented nor discussed in the text.

I do not find that the conclusion and recommendations proposed in this paper are supported by the results. More generally, as it is, this paper does not fit to the criteria of a valuable scientific contribution.

Miscellaneous

- section 1.2 should be title "model decription" instead of "application of GIS..."

- equations 3 and 4 are the same (?)

- data description (Tables 1, 2 and 3): add location, altitude, time step, catchment area for the gauging sations. Plot all the stations on a map.

- Table 4: table caption is wrong, this table present some of the model parameters, not "weather data"

- Table 7: please define the parameters (pass 1 2 3, alpha factor...), and the method.

- please be consistent between tables 9 and 10 while refering to the tested scenario

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 1765, 2011.

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