

## ***Interactive comment on “Observed and simulated hydroclimatology using distributed hydrologic model from in-situ and multi-satellite remote sensing datasets in Lake Victoria region in East Africa” by S. I. Khan et al.***

**Anonymous Referee #4**

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### General comments

- Title too long, and confusing.
- Abstract, is disjoint, and lack (specific) quantitative results, e.g., accuracy of calibration and validation, effect of land use change.
- The paper does not have a clear story line. The link is not clear between hydrological modeling, statistical analysis, effect of land use change, and climatology.

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- The paper includes statistical analysis, hydrological (Rainfall Runoff model), and simple water balance model. gauged and satellite data of rainfall have been used. The paper doesn't include climatology work. Would have been much better if structure and emphasis concentrates on (i) validation of TRMM data, (ii) RR modeling, without unnecessarily injecting climatology discussion. It just adds more confusion.

-The conclusion is not strong enough, and contains a lot of descriptive text

### Specific comments

- p. 4788, L 26: "Hydro-climatology deals with the interactions of climate with surface water", with "hydrology" or with "surface water"?
- p. 4789, L 21-23: The question remains whether with the existing spatial and temporal coverage of satellite precipitation and other estimates, how can we achieve their optimal use to compute a less uncertain water budget? Better if the discussion in the introduction concentrates around this question, rather than on hydroclimatology supported by no review of literature.
- p. 4789, L 25: hydroclimatology doesn't appear in the three specific objectives of the study.
- p. 4790, L 1: Add one sentence how FEWS computed PET. How actual ET derived from potential PET?
- p. 4807 to 4812: too many plots fig. 2 to 7, for little information on statistics. Most of the information can be provided in the text or at least in summary tables.
- p. 4793, L1 - L12: the given discussion of mean annual discharge doesn't need a full hydrograph. Time domain is too short to make sensible trend analysis. However, with a sufficiently long series, it is possible to make a credible statistical analysis of discharge trend, and the associated degree of significance.
- p. 4795, L 10 "climate state", or "hydrological state"?

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- p. 4795, L 23: include RMSE in the results. Add NSE, Bias, RMSE to abstract.
- p. 4796, L 5: could be more insightful to validate TRMM data with ground stations data, and next to do the modeling to single out error sources.
- p. 4797, L3: "The results from the climatological water balance"  $P+E+R=ds/dt$ ; is a hydrological or surface water balance, it is not "climatological"
- p. 4797, L24: would make sense to validate model ET with observed ET

Typing errors

- p. 4787, L 2: "is important in understanding ...." remove "an"
- p. 4796, L 18: "all in per time"? do you mean m, mm, m3, ...?

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