Hydrology and Earth System Sciences Discussions

Interactive comment on "Classification and flow prediction in a data-scarce watershed of the Equatorial Nile region" *by* J.-M. Kileshye Onema et al.

Anonymous Referee #1

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General comments

The paper presented shows an interesting approach to predict mean monthly flows in data scarce areas. However, the author does not clearly indicate what data was used for the analyses (ie how data scarce is the area and against what data is the model evaluated). The two approaches as mentioned several times should be explained better or referenced to (ie the objective of using each approach and how they complement each other). It is also unclear how the approach can be utilized in different ungauged regions, as in the Semliki it seems that all information is present.

The paper has potential but requires substantial revision, in particular the structure of the paper is lacking. 1) explain how this study is different from previous studies, 2) clear presentation of the methodology, 3) clear presentation of the results (including discussion), 4) conclusion

Specific comments

Introduction

-it is unclear what data set the authors used for the analyses, in the Semliki, where all the 21 sub-catchments gauged? Page 3603 line 2-4 is not sufficient

-how is this approach different/ better than the ones referred to on page 3601?

Materials and methods

-section is too general, I would have expected a more elaborate explanation about the PCA and IGA or a reference to the methodology and equations used.

-" the PCA as Indirect Gradient Analysis in association with clustering analysis was used. . . Both approaches " What approaches are referred to? Line 8-10 and 11-15 are unclear

Results and discussion

Section 4.1

-Page 3603, line 18-21 is not clear

-Page 3603, line 22-26 is not clear, should this be part of the methodology?

-Page 3604, line 1, what is phi and how is it calculated? Same for Bartlett's sphericity test, should this be part of methodology?

-Page 3604, line 8 What is Kaiser criterion, how are the "principal" components identified?

-It is unclear, what are the factors, factor loadings, eigenvectors and eigenvalues.

-Can the tables 5, 6 & 7 be combined?

Section 4.2

-Page 3606 line 5 " several normality test were performed..." should be explained in the methodology section

-Page 3606 line 8-9 should be part of the methodology section There is a section on discussion of results missing, the authors only show the results for February and they do not discuss any further possible application of the approach.

Conclusions

The conclusions are very general, and should be more specific. Showing the results of the model, the possible application in other areas (how will the approach work when there is no data available and the area is dissimilar to the Semliki catchment) and the relevance of the output of the model (mean monthly runoff) for management purposes.