

## ***Interactive comment on “Temporal and spatial changes of rainfall and streamflow in the Upper Tekeze–Atbara River Basin, Ethiopia” by Tesfay Gebretsadkan Gebremicael et al.***

### **Anonymous Referee #1**

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The study assessed the changes in rainfall and stream flow records across the Upper Tekeze–Atbara River Basin, Ethiopia. Using the Mann-Kendall and Pettitt tests to determine for 21 rainfall stations and 9 streamflow stations whether changes in the historical records were evident. Changes were found in the streamflow, however no statistically significant changes were evident in the rainfall. The changes in streamflow were attributed to the building of hydropower dam and changes in land management strategies in the catchment.

The study is relevant to the broader community in terms of illustrating the need to consider global change (not only climate change), including land use and land management as well as changes thereof in water resources planning. The study should be

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able to provide needed information for the basin water managers as well. Although the methods used are not novel, a study of this nature in that area provides new results.

The paper claims to assess the changes temporally and spatially. Although a spatial description is given, there is no map or link to figures displaying the results spatially thus it is not possible to determine spatial patterns in the changes and the text was difficult to follow. The only map of the catchment provided does not illustrate the catchments referred to in the text. The spatial aspect of the analysis needs to be strengthened. Linked to this are the weak conclusions drawn. The paper states the relation of the trends observed in streamflow to the hydropower dam and the land management changes. Spatially these relationships are not illustrated and there is no quantitative assessment undertaken. It would strengthen the paper to have a stronger relationship between the changes in streamflow and these changes demonstrated.

The reference to the monthly results in the paper when they are not actually included needs revision. If they are important/relevant enough to be discussed in the paper, then they should be provided. Beyond this, there were several grammatical and spelling errors in the manuscript (see attached pdf). A thorough proof read is required. Other comments are included in the attached pdf.

Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/hess-2016-318/hess-2016-318-RC1-supplement.pdf>

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