**Hydrology and
Earth System
Sciences**
Discussions

Interactive comment on "Analysis of the combined and single effects of LULC and climate change on the streamflow of the Upper Blue Nile River Basin (UBNRB): Using statistical trend tests, remote sensing landcover maps and the SWAT model" *by* Dagnenet F. Mekonnen et al.

Anonymous Referee #1

Received and published: 10 March 2018

In this manuscript the authors investigate the combined and separated impacts of LULC and climate change in the period 1971-2010 on discharges in the Upper Blue Nile River basin at gauge El Diem. They apply the Mann-Kendall and Pettit tests to analyse trends in precipitation and the Blue Nile River discharges. The results show that there is no significant trend in rainfall over the catchment (15 stations) but the discharges at El Diem have increased significantly. The authors attribute this mainly to LULC changes. Overall the subject is interesting and relevant in the context of land and

water management, human activities and climate change. However, I have some major concerns with regard to the 1. Style: language and technical issues like too many grammatically incorrect sentences or numbers provided in the text differ from numbers in tables etc., 2. Methodology: Surface runoff and infiltration, two very important processes in the context of this study, are simulated by the SWAT model using the curve number approach, which is not critically discussed in the manuscript, 3. Conclusions: According to the study, average annual rainfall has not significantly increased in the simulation period but streamflow increased significantly and the authors conclude that this is mainly due to changes in LULC.

I added a lot of specific comments to the manuscript (PDF) attached and I am summarizing only the main general comments in this document here. Solely due to the large number of comments I had to make, I have the impression that the manuscript has not been prepared very carefully.

General comments 1.1 Style (language): It is disappointing that the language in most of the sections is quite poor. Many sentences are way too long and in addition most of them are grammatically incorrect, which makes reading unnecessarily tedious. An exception or an example of adequate use of comprehensible language are the Sections 4.2.2, 4.3, and 5.2. I strongly recommend proof-reading by a native speaker before resubmission. In a possible second round of review, I would reject the manuscript only because of language issues. One example of a confusing sentence is: page 12 lines 6-8: "This result tallies well with earlier studies in the basin at station level such as that of (Gebremicael et al., 2013) who analysed for nine stations of UBNRB on an annual basis and the result of eight stations were similar, except for the Debire markos station." ???

1.2 Style (technical issues) Numbers provided in section 5.3 lines 5-6 differ from numbers in Table 6. Relative change values have been calculated wrongly. In Section 5.4 the authors say that mean annual streamflow increase by 15.6%. However, calculating the relative change from the numbers provided in Table 8, the relative change is

18.15% (see comment in manuscript PDF file). Inconsistent use of terms: P-value → p-value; flow → streamflow Figure 1: The map should be improved. It is, for instance, not easy to identify the 15 rainfall stations, because they are sometime hidden by the flow stations. You may simply use different sizes of map symbols to avoid this. ...

The other general and specific comments are discussed in the manuscript PDF.

Please also note the supplement to this comment:
https://www.hydrol-earth-syst-sci-discuss.net/hess-2017-685/hess-2017-685-RC1-supplement.pdf

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2017-685, 2017.