

Interactive comment on “Estimation of flooded area in the Bahr El-Jebel basin using remote sensing techniques” by M. A. H. Shamseddin et al.

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We are grateful to Y. Mohamed for his valuable comments, all his remarks will be fully considered in the final version.

Response can be summarized as following:

1. Page1854 ,line 25 reveals the author’s meaning to swamp and Sudd words
2. The authors are not going to declare that their results will end the ongoing controversial debates of swamp or sudd area in southern part of the Sudan. However, the authors’ results are coincided with previous results, only.
3. The authors preferred to be leave the complexity of the words wetland and/or swamp (for more details see Shahin, 2002, Falkenmark and Rockstroem, 2004), and the authors have thought the word flooded is suitable than the word wetland, swamp, etc.

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4. The paper doesn't show all images, however, it just shows examples.
5. The authors do agree with Y. Mohammed that the seasonal torrents have appreciated amounts that affected the Sudd water balance, and the sudd water balance is more sensitive to inflow, as well. However, the lake Victoria outflows has the greatest share, and this fact is well cited. On the other hand, lacks of data is the main problem, as many gauges have been broken due to civil war.
6. More details about moisture recycling are available (i.e. see Mohamed, 2005).
7. It is clear on page 1853, line 2 "Newhouse" is not a reference, and thus not listed.
8. Our study area is a part of southern Sudan and doesn't cover all southern Sudan area.
9. As for the topography question, page 1854, line 20 shows our reference.
10. Concerning rainfall data, the study area is vast, thus one point data is not representative, and the area is flat thus a single station representing large area might be acceptable. Generally, the area lacks measuring stations.
11. The paper's text shows that the normal mean of 1970 -2000 was used.
12. The suggestion of using Table 1 or A1 may be accepted, however, the authors prefer to concentrate the focus of the readers first on the differences of evaporation estimation results, only.
13. Appendix D1 stated the problem of cloud contamination.
14. Due to lack of ground truth data, the authors used unsupervised classification techniques, and for more details see the ENVI user guide (listed in reference).
15. The paper has mentioned the pre-conducted researches (Travaglia et. al., 1996, Mohamed, 2005, etc). Actually the difference of results instigated our study.
16. $V = (1/k)A$ equation was used. Page 1859, line 16 shows our reservation of this

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assumption.

17. The authors do agree with any comparison, many elements should be considered. The comparison with Victoria outflows, and/or with Travaglia results is to show the general trend or pattern.

18. We do agree that the swamp area includes open water, vegetation ... etc. but, to use open water evaporation or evapotranspiration for the area is still controversial issue (i.e. the estimation of Bucher (1938) wasn't accepted, actually the figure of Mohamed (2005) using SEBAL model is so close to Bucher figure's). Generally, the study has used both methods. It is worth mentioning that, the study is not concerned too much with evaporation estimation issue but uses as a tool.

19. We do agree that it is too difficult to make a comparison between 2002, and 2004 individual years with the mean of 1961-1983, however, the lacking of updating data is the problem.

20. The word steady flow of Lake Victoria does not mean there is no difference in outflows (see Table 4, page 1865).

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