

***Interactive comment on* “The use of remote sensing to quantify wetland loss in the Choke Mountain range, Upper Blue Nile basin, Ethiopia” by E. Teferi et al.**

**E. Teferi et al.**

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Reply to the comments of referee #1

The authors wish to thank the reviewer #1 for the review and critical comments. The critical parts of the paper were revised and the paper is now clearer and more consistent. We agreed with almost all the comments of reviewers and reworked the paper based on the comments and suggestions. We hope to get invited to submit the revised version. We feel the paper has benefited from the comments and appreciate the suggestions. Please see below details of how and where we added the required

information, or why we did not agree with a specific comment.

General comments: Overall, the paper seems to be an unprecedented work for the study area. Moreover, the authors have clearly stated the scientific relevance of the work for the study area in that they explicitly explained the conservation and/or management of wetlands are issues from local to global scale. As such the use of Remote Sensing data are considered as cost effective approach as compared to the ground truth data and scarce ground observation. Another attractive nature of the paper is their use of different data source for tackling the problem. The findings were properly presented with nice explanation in discussions and results section. However, there are some specific elaborations needed for the completeness of the publication as explained below.

Response: We are grateful to the reviewer who took the time to review our research paper in detail.

Specific Comment: Even though each sections of the paper show the flow of the research work, it would be nice if the organization of the paper is addressed in the introduction section. So that, a reader can get a clear image of the paper in advance. If you allow me, I may suggest moving the last paragraph to methodology section and adding the organization of your paper.

Response: We have added some statements about the organization of the paper in the revised introduction section. We have also moved the last paragraph to methodology section.

Comment: P6245:L15 "...the wise management of wetlands is impaired by the general public and decision makers." The term "wise" management gives kind of vague information. Hence it would be nice if you could specify or either omits the usage of the term. The sense of your statement seems to address conservation rather than management.

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Response: We have omitted the usage of the term "wise".

Comment: P6246:L12 "Landsat, SPOT, AVHRR, IRS, radar systems (Ozesmi and Bauer, 2002), ASTER (Wei et al., 2008; Pantaleoni et al., 2009) and MODIS (Callan and Mark, 2008) are the most frequently used satellite sensors for wetland detection."- The sensors' acronyms needs to be defined at least once when they appear in the text for the first time. The proper using of the acronyms is one the major weaknesses of the paper. (Example MODIS was explained on P6260 L10 however it is used as an acronym on P6246L12)

Response: We have defined the acronyms accordingly.

Comment: P6246:L27 "In this paper post-classification comparison change detection approach which compares..." The idea in this statement is almost a repeated later in the methodology section (Section-3). It would be nice if you could merge this paragraph with section 3.

Response: We have merged the above paragraph with section 3.2.7.

Comment: P6246 to P6254: Sections 3.2.1 through 3.2.5 are too extended explanations. As these can be referred from the available publications cited by the author; it would be nice if the explanation focuses on the methods used for the research under consideration.

Response: We have reduced parts of sections 3.2.3 and 3.2.4. But the authors feel that if the explanations under section 3.2.1 and 3.2.2 are reduced, the paper won't maintain the critical information.

Comment: P6255:L1 (Image Classification): In this section it has been mentioned that there were different sources of ground truth data for image classification. It would be nice to explain the methods of keeping temporal homogeneity when one uses those different sources of observation for classification of back dated image (1986/2005). For example the ground truth data collected in the period from June 2009 to March

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2010 were used to classify images acquired in 1986/2005. Another issue is the spatial scales of the topographic map of 1:50 000 are not compatible with the resolution of the images used. Hence such scale issues needs to be addressed at least as a limitation under scarce data.

Response: To associate the spectral classes of the year 2005 image (GLS 2005) with information classes ground reference data were collected from SPOT-5 image (5m) of the year 2007. Then the selected sampling points were further checked further during field visit in 2009. Since the acquisition period of GLS 2005 is between 2003-2008, time difference between the image acquisition and ground data collection is minimal. For the 1986 image ground truth data were collected from the 1984 topographic map with 1:50 000 scale. Besides, in places where there is difficulty in identifying land covers manual interpretation of photographs (1982) of that specific area were carried out (for example, for 3 locations). It is true that the spatial scale the topographic map and Landsat TM are not compatible but in areas where there is no better data, topographic maps still have invaluable contribution for validation. Furthermore, the authors feel that it always good to use a larger scale for ground truthing and validation work.

Comment: P6259:L4 “Again based on Table 5...” It should be corrected as table 6; otherwise, table 5 has nothing to do with the areal coverage of the land use/land cover classes.

Response: We have corrected it accordingly.

Comment: P6274: Figure 2- The figure needs to be redrawn. The arrow on the classified image is misleading or if there is some scientific meaning it has to be explained.

Response: We have removed the figure totally.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 6243, 2010.

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