

Response to Editor's comments:

Thank you for providing your responses to the two reviewers' comments. Based on your responses, I understand your reasons for not conducting further analysis as suggested by the reviewer. However, some text adjustments must be made before the paper can be accepted for publication in HESS. I found the text rather lengthy, with many repetitions, and not very concise. Detailed comments and suggestions regarding how the text should be revised can be found in the attached document. Please do not feel obligated to agree with all my comments, but the message is that the text should be more focused without losing the scientific content.

The authors would like to thank the editor for the comments. We agree with the general comment that the text is sometimes unnecessarily long and can be shortened. Following the comments, we moved the less important information to the Supplement, reduced the size of some of the large graphics, and condensed the text where possible. These changes were made ensuring the essence of the paper remained the same and important details were not discarded. The manuscript is now 34 pages long compared to the original 47 pages.

Please see below the specific responses to the major comments. Minor revisions such as text revisions and deletions suggested by the editor were made throughout the manuscript but not listed here.

Major Comments:

Line 1: I found the abstract to be a bit too long. Please shorten it to include only the motivation, what was done, and key results. It is now too detailed.

The abstract was shortened from 31 lines to 21 lines (little over half a page).

Line 64: Please move all appendixes to the supporting material (SM), i.e., uploaded to the HESS system as a separate file so it will not be part of the main text.

In the prior version, the Appendices described some of the data and the supplementary material (SM) had graphics and additional material (data, GIS files, etc.). In the revised version, all appendices are part of the SM. The entire SM document was revised accordingly and will be uploaded as a separate file.

Line 65: Move to the SM. Shouldn't be presented as part of the main text.

Description of the PBCOR dataset and graphics were moved to the SM.

Line 80: Move to the method section.

Introduction has been revised and the text moved to the Methods section.

Line 89: In data or methods - but this is not related to the introduction

Introduction has been revised and the text moved to the Data section.

Line 108: Change all "Figure X (panel(y))" to "Fig. Xy".

The above change was made everywhere, except the beginning of the sentence where HESS journal template requires the use of the word "Figure".

Line 112: Where is the reference to Table 1 in the text? Also - could this be presented as SM?

This table was moved to the SM.

Line 123: The paper is a bit lengthy and in many places it can be shorten. This is a good example. This information is not needed.

The unnecessary text was deleted as suggested. Changes were made throughout the manuscript as per this suggestion.

Line 148: Add the relevant labels in the figure

The figure was reduced in size but otherwise left unchanged for the sake of convenience. The description of the text was condensed to about half its original size.

Line 151: Can be considerably shorten. This entire paragraph can be summarized in two sentences, pointing on the land use product that was used and indicating the uses that were grouped together. No need to inform the readers the spatial allocation of the units - it is clearly visible in the figure.

The description was condensed to about half its original size.

Line 157: I suggest merging the two panels into one (for example, contours for the elevation and colors for the land cover) so the figure can be a single column (8 cm width) instead of two columns.

The color scheme for elevation is a bit awkward. Why not following a traditional color scheme, e.g., changing from blue (low) to red (high)?

The figure was reduced in size but otherwise left unchanged for the sake of convenience. We agree that the color scheme is somewhat unusual. Since a number of graphics within the paper and the SM document use a similar color scheme, we left the figure unchanged.

Line 244 (Figure 7): I don't see the need for this figure to stretch over an entire page. It is okay to keep the width stretched over two-columns (i.e., 16 cm), but please reduce it to half page maximum, or even less (i.e., up to 12 cm). No need to repeat Eq. 5 for example.

The figure was reduced from its original size to about half a page.

Line 244: You are often using the term "in this study" or similar expressions. I think it is clear that everything that is presented in the paper is relevant to "this study". I would remove most of these indications (I counted more than 20 so far...).

The phrase "in this study" was used too often. It was removed wherever possible. In the revised manuscript, there are only three instances of them.

Line 287: Present as SM

This figure was moved to the SM.

Line 422: Figure 12: Please see if you can rescale this figure to be a single column (8 cm width) figure.

This figure has been rescaled to a single column figure.

Line 423: I am not sure this summary is needed. If you prefer to keep it, maybe you can think how to shorten it into a single paragraph mentioning only the key results you would like to highlight?

This summary has been deleted.

Line 634: Appendices: Change appendixes to SM and show in a separate file.

All appendices are part of the SM. The SM document has been revised accordingly.