AUTHORS RESPONSE TO REVIEWER 1

The reviewer's feedback is highly appreciated. We believe this will help improve the quality of our submission. Below are our brief responses to the issues raised in the supplementary document. Our responses are in blue while reviewer's comments are in black.

General Comments

1. **Some sentences are quite length and become convoluted. I recommend splitting long sentences into shorter sentences.**

   As advised, we split the long sentences into shorter ones. The entire manuscript has been edited for both sentence construction and grammar.

2. There are many instances where the author seems unsure of the results and will state something to the effect of "XYZ probably indicates…" or "ZXY might indicate…" The discussion of the results is fine, and while uncertainty in some areas is unavoidable it should not be the default position to 'hedge your bets'.

   We have worked on this and accordingly revised the manuscript.

3. Parts of the Materials and Methods section can be summarised and synthesised. It is already quite a lengthy manuscript and parts of the Materials and Methods sections provide unnecessary detail.

   Our intention with the lengthy materials and methods is to be as explicitly as possible. The objective is to make the study easily reproducible. To this effect, we revised some sentences and effort was made to make the section as concise as possible.

Abstract

Line 34 – 35: Please rephrase the beginning of the sentence: "This goes to show that during the dry season Miombo…"

The sentence has been revised.

Introduction

Line 55 – 56: "…and may go up to November…: - do you mean extend into November? Please change here and in the Materials and Methods section.

Line 56 – 57: Please rephrase the sentence. It is clear what you are stating but it can be stated better (…phenophases require to study the evaporation process…?)

The sentences have been rephrased accordingly.

Materials and Methods

Line 104 – 105: please rephrase: “It is also located in the largest Miombo Ecosystem component, wetter central Zambezian Miombo…” Line 195: Please check Eq. 7 – should Δea not be written as Δea.fit ? Please check consistency between symbols/conventions between Eqs. 5 – 9. Line 371 – 375: Please rephrase these sentences e.g. “The 2 m length was observed sufficient length for the temperature…”

The observations been addressed.

Results and Discussion

Figure 6: Please correct the unit for wind direction.

This was an oversight. The correct unit(s) have been used

Line 558: Please correct the sentence: “The BR-DTS approach appear to have correctly captured…”

This has been revised as advised

Line 572 – Line 576: Please split the following sentence into multiple sentences: “The plausible explanation for the relatively higher evaporation in August and September during the dormant phenophase could be that the leaf fall and leaf colour transitions (i.e., Figure 8) in some Miombo species at a given time, across the three phenophases, is compensated by the leaf flush process in other species thereby striking the dry season 30 percent variation (Frost, 1996) balance in canopy cover display ensuring availability of 70 percent evaporative surface that increases as the phenophases transition from dormant to green-up.”

The sentences have been revised accordingly

Line 730 – 750: Please go through these paragraphs and correct where necessary e.g. “Possible explanation for this pattern in MOD16…” and “…which indicate occurrence of health green vegetation…”

The sentences have been revised accordingly

References

Please ensure a consistent reference style. A few references are presented differently to the majority (names and initials in full & journal title etc.).

The references have been formatted accordingly

AUTHORS RESPONSE TO REVIEWER 2

We find the reviewers observations and comments extremely helpful. We have made effort to address the issues raised. If we missed any of the comments it's not intentional. Our responses are in blue. Additional comments are in the attached pdf document.

In this paper the DTS method was used to estimate total evaporation in a Miombo Woodland in Mpika, Zambia. These results were compared with four remote sensing products. I commend the project team for the installation and maintenance of the equipment at what must have been a challenging site. The measurements in this particular vegetation type is where the paper makes a significant contribution. A second contribution is that remote sensing models do not do a great job of estimating ET accurately in tall, heterogenous natural vegetation types. In fact, I wondered whether this is not two separate papers with the first being the DTS measurements and the second the remote sensing? However, separately, they may be a bit sparse?

We appreciate the observations about splitting the paper into two. We are glad to say that there is already a paper speaking to this observation. The paper is focused on comparing satellite-based evaporation estimates at basin scale and across the various phenophases of Miombo forest. It will be assessed under HESS Journal.

It would have helped me to understand the canopy better, if there had been a temporal graph of LAI, preferably measured monthly. It could be a satellite derived product though if no measurements were taken.

We did not take measurements of LAI and NDVI. However, we took photographs of the top of the forest canopy across phenophases. The temporal graph of LAI and NDVI has been added in the remote sensing paper. Nevertheless, we have also added the same graph in this paper. We have also included additional photographs (Figure A3 in the appendices). We believe this will help with the understanding of the phenophase dynamics in the Miombo forest canopy cover. This information is also available in Zimba *et al.* (2020) (*Zimba, Henry, Coenders-Gerrits, M., Kawawa, B., Savenije, H., Nyambe, I., & Winsemius, H. (2020). Variations in canopy cover and its relationship with canopy water and temperature in the miombo woodland based on satellite data. Hydrology, 7(3). doi: 10.3390/HYDROLOGY7030058).*

The Atmos41 was not the ideal choice of instrument to validate the DTS air T and RH measurements and it is designed to be a low maintenance station and not really for

research grade experiments. Radiation shielding is the main problem and this is mentioned where the data is assessed.

This was a challenge. In the absence of “research grade equipment” we used the ATMOS-41 to observe if there were major differences in the DTS temperature measurements.

This work makes a useful contribution but the grammar and language needs improvement throughout. It really made it difficult for me to review as it detracted from the scientific content. So, my suggestion is major revision of the grammar and manner in which sentences are structured.

We had the entire manuscript grammar edited. We believe the grammar issues raised have been adequately addressed.

Generally, I’m happy with the paper structure and even the paragraphs are structured well. The paragraphs explaining why the RS models have problems are quite long and hard going to read through. I suggest possibly trying to put the info into a table to reduce the length of the paragraphs?

It is difficult to shrink the information into a table and convey the same information. However, to make the section more concise we have revised the long sentences and some components. The revised paragraphs should now be easily understood.

I think the title needs to be reviewed or considered. Much of the paper is about RS but this is not reflected in the title? Consider replacing the word ‘measuring’ with ‘estimating’? Did you actually measure evaporation? You measured temperatures really?

A very important observation. We reviewed the title and it now includes the remote sensing component. We believe the new title covers the important aspects of the paper.

Please note the pdf attached with 232 comments and edits. I gave up on grammar issues at the start of section 3.5. I would think that most of the comments can be addressed relatively easily.

We have responded to each of the 232 comments in the pdf document. We addressed all the issues raised as suggested by the reviewer. The entire manuscript

has been checked for grammatical errors and necessary corrections have been made.