

Dear editor,

Thank you very much for the time and attention afforded to us. We were very happy to read the assessment of the reviews and hope that with this version of the manuscript to have addressed all their remaining comments. Please find below the reviewer's comments with our reply and changes made in the paper (highlighted in blue).

Kind regards

John O'Connor

With pleasure I read the revised manuscript by O'Connor et al on the effect of ground water depth on evapotranspiration, land surface temperature and vegetation growth. I was also one of the reviewers of the first version of the manuscript. The authors well answered to questions raised by both reviewers and incorporated the suggestions. Savanna is added to the manuscript as a distinct third land cover class, for example by adding it in fig. 2 and by discussing its characteristics and interest. This, together with the clear connection between the introduction (specifically paragraph 4) and discussion, greatly improved the structure of the paper. The methods section is clear and complete and the authors addressed all concerns of the reviewers in their revised manuscript. I have two small questions remaining and I have a few language related suggestions that the authors might want to look into. This is not a complete list, but just a few things that I came across when reading the paper.

Thank you for your kind assessment and helpful comments

L503: "water logging of soils has been shown to be an important factor in determining vegetation distribution". Is this statement based on literature?

Thank you for your comment. We have added two references related to the influence of water table depth on vegetation distribution. Ridolfi et al. (2006) and Rossatto et al. (2012) (Originally suggested in the previous round of review).

L470: "we also expected that the influence of WTD would be most important during the wet season transition". This hypothesis is not phrased in the introduction. Do you hypothesise the influence of WTD to be more important during the WST compared to the DST? If so, why?

Thank you for your question and sorry for the confusion. It was not our intention to imply one period was more important than the other but that the WST and DST were both important periods in the year. For this reason we have removed the word "most" so the text now reads "we also expected that the influence of WTD would be important during the WST".

- I suggest to define the abbreviations once and use them consistently throughout the document, e.g. DST and WST.

Changed: Dry season transition and Wet season transition have now been changed to the abbreviation DST and WST throughout the manuscript starting from the 2.3.2

- L55 “has lower leaf surface area”

Changed as suggested

- L56 “and agricultural vegetation usually has”

Changed as suggested

- L102 “agricultural crops are known”

Changed as suggested

- L107 “thus access to soil moisture is an important limiting factor for photosynthesis and transpiration”. Do you mean limited access to soil moisture?

Changed as suggested to limited access to soil moisture

- L127 “we expect to find”

Changed as suggested

- L146 “with a maximum of 700 m and a minimum of 100 m”

Changed as suggested

- L194 “Despite low albedo (..) and high net radiation”. What do you mean by despite?

Here we were suggesting that although there is high absorption of incoming radiation the high rate of evapotranspiration results in cooler land surface temperatures. In order to avoid confusion we have changed this sentence and it now reads “Evapotranspiration in the Amazon has been shown to result in a net cooling effect (Bonan, 2008) therefore, areas with lower LST will be observed in areas of higher ET (Eltahir and Bras, 1994)”.

- L200 “as EVI is less sensitive”

Changed as suggested

- L217 “due to our large sample size, we still have enough”

Changed as suggested

- L220 / L232: both start with finally

Changed: “Finally” was removed from the paragraph starting on L220

- L231 “SI.9.4”

Changed as suggested

- L234 “which was then applied to an accumulation to calculate” This sentence is unclear to me.

Changed: We opted to remove the reference to how seasonality is calculated as this is addressed in detail later in the paper. The sentence now reads “which was then used to calculate the seasonality of rainfall”

- L247 “the model overestimated deep WTD” / L458 “may be underestimated”

Changed as suggested

- L251 “these depths were selected as they represent rooting depth”

Changed as suggested

- L270 “crop vegetation has a low”

Changed as suggested

- L310 “The WST and DST periods were selected ..”

Changed as suggested

- L318 “shallow rooted vegetation”

Changed as suggested

- L376 “effect of ground water depth on Land Surface Temperature”

Changed as suggested

- L401 “between deep and shallow WTD”

Changed as suggested

- L412 with between, do you mean among?

Changed as suggested to Among

- L425 “we expect to see the largest influence of WTD in crop vegetation”.

Changed as suggested

- L428 “was not different between crop areas in ..”

Changed as suggested

- L430 replace “a high / a low” with for example a maximum / a minimum”

Changed as suggested

- L440 “and therefore evaporative cooling could explain the cooler”

Changed as suggested

- L476 “higher in shallow than deep WTD areas”

Changed as suggested

- L475 “during the WST EVI is increasing / increases faster”

Changed as suggested

- L531 “can vary between September at October”. Do you mean September and October?

Yes indeed Changed as suggested

- L561 the sentence “on a local scale show signs that ..” is unclear to me.

Changed: “So although our results are not directly relevant at regional or continental scales on a local scale shallow WTD areas are more productive than deep WTD.”

Additional changed made to the manuscript

L284 & L286: “At first” and “Secondly” were removed from the paragraph