Thank you for your comments and positive feedback on our manuscript. Your comments have helped us to improve the quality of the manuscript. Provided below are responses to your comments.

Best regards,

The authors

Major comments

1. I recommend authors rework on Discussion part. Discussion is hard to follow. The study site is somewhat big, and there are many sub-basins (ecoregions) mentioned in the discussion. These sub-basins show different characteristics.

Response: The authors have revised the discussion section. In addition, the study area map will be labeled to clarify the different areas mentioned in the discussion.

2. P8L3. It should be better to include a justification/physical basis that why you selected 1.00, 0.50, and 0.25 for lag1, lag2, and lag3, respectively for weighted averages. Or basically define: "we arbitrarily choose following . . .. intuitively" etc.

Response: These weights were selected following the application of the method by different authors in previous studies (Delire et al., 2011; Liu et al., 2006).

3. P11.L29. 'Across the study period, stronger vegetation feedback was found with API than temperature'. Are there any recycling ratios reported in the hydrology literature for East Africa region for different ecosystems? I can sense the temperature and vegetation coupling as mentioned albedo change or energy portioning; however, it will be better to include further justification for vegetation and precipitation coupling.

Response: The vegetation-precipitation coupling in the east Africa has been reported in global and continental studies based mainly on the effects of vegetation cover on air masses (Keys et al., 2016; Spracklen et al., 2012; Tierney et al., 2011). To address this concern, relevant citations and a short description will be provided in the final draft manuscript.

4. P13.L21-25. I highly recommend a trend analysis in annual precipitation for the study period (or longer depending on data availability) in the study site. A positive and sustained trend in LAI is a result of what? – A precipitation increase or land-cover change? How do you think that this is a sustainability of vegetation cover? I agree that land-cover type will not change, getting denser (enhanced LAI) but up to forever? Definitely, not. I am speculating vegetation benefits/responds wet era in climatic fluctuations. Similarly, as you reported (P14.L24-25) there is a decline in annual precipitation in Kenya so, LAI is decreasing. Until where? So, definitely, it will be good to include trend analysis to discuss these portion better.

Response: Although not reported in our manuscript, we did a trend analysis on the precipitation data in the region and the observed trends did not coincide with LAI trends. However, API trends (Figure 2c) coincided with LAI trends in limited areas such as southern Tanzania and central Kenya. However, as we indicated in the conclusion section (P 15; L 15), a high resolution analysis particularly in areas showing decreasing LAI trends can be useful to clarify on the other factors such as human activities on the trends.

5. P14.L19-22. " . . .the decline vegetation activity to a decrease in solar radiation and temperature as a result of cloud cover during the wet season" (Brando et al., 2010; Hilker et al., 2014; Hutyra et al., 2007; Samanta et al., 2012).

   -Firstly, the study site of all these citations is the Amazon Basin where receives much more precipitation than East Africa and most probably seasonally energy-limited. I am not sure how much applicable are your citations?

   Response: The authors agree that vegetation response to wet conditions in our study area is likely to differ from the response in the Amazon. As a result, P14.L19-22 to be changed to "Similar results were obtained in the northern parts of Uganda and the Congo basin by Camberlin et al. (2007) based on correlations analysis of annual NDVI and annual Climate Research Unit (CRU) rainfall data."

   - Secondly, how much precipitation increase do you expect that there will be significant rise in cloudiness, and a significant reduction in incoming solar radiation?

   Response: Based on our analysis, this cannot be clarified. However, there is likelihood that the quality of the satellite data in these areas is deteriorated by cloud cover hence the potential influence on the correlation results.

6. P14.L23-23. If greenhouse gas emission causes an increase in ambient temperature, how the number of growing-season days are decreasing? It will be better briefly describe there: how Cook and Vizy (2013) described growing season days in their paper.

Response: The approach used by Cook and Vizy (2013) to define the growing season was based on a comparison of PET and precipitation, with the growing season onset defined as when precipitation exceeds one half of the PET. A summary of this information will be provided in the manuscript.

Minor comments

1. P4.L19. "This area receives high and well distributed rainfall". This statement requires a qualitative number. I recommend giving a range of mean annual precipitation for the Lake Victoria ecoregion.

Response: The range of annual precipitation in the Lake Victoria basin (500mm to 2500 mm) will be indicated in the revised manuscript.

2. P10.L3. I prefer elucidating a bit better. ". . .indicating that most vegetation cover in the region is likely to maintain historical trends". My understanding is there is no climate change in the region that long-term climatic means prevail in the region for a while. So, the ecosystem is in steady-state condition. All of the site (excluding 0.2% of the study site) will keep their land-cover/vegetation.

   Response: Both increasing and decreasing trends in LAI were also characterized by Hurst exponent greater than 0.5. The persistence of the LAI trends therefore applies in increasing and decreasing trends as well. This part of our analysis only considered LAI trends independent of the corresponding climatic trends.

3. P11.L8-10. Similar above. ". . .leading climatic variables indicate a possibility to predict vegetation dynamics using API,. . ..". My understanding is this behavior shows persistence in climate. A few months leading climate variable, especially precipitation due to water limitation, is enough to forecast vegetation dynamics in advance as a result of persistence in climate.

   Response: We concur with you and we rephrased the statement accordingly.

4. P15. L26. It will be better to re-write this statement: ". . .by sparse vegetation mainly composed of grass and shrubs thus at the 8 km spatial resolution used in this study". I think you use 8 km spatial resolution due to the availability of the dataset. It will be better to rephrase.

   Response: We have rephrased as suggested.

Minor Points

Response: Thank you for all the minor points you highlighted. We have revised the manuscript and corrected the typos.

References

Camberlin, P., Martiny, N., Philippon, N. and Richard, Y.: Determinants of the interannual relationships between remote sensed photosynthetic activity and rainfall in tropical Africa, Remote Sens. Environ., 106(2), 199–216, doi:10.1016/j.rse.2006.08.009, 2007.

Cook, K. H. and Vizy, E. K.: Projected changes in east african rainy seasons, J. Climate, 26(16), 5931–5948, doi:10.1175/JCLI-D-12-00455.1, 2013.

Delire, C., de Noblet-Ducoudré, N., Sima, A. and Gouirand, I.: Vegetation dynamics enhancing long-term climate variability confirmed by two models, J. Climate, 24(9), 2238–2257, doi:10.1175/2010JCLI3664.1, 2011.

Keys, P. W., Wang-Erlandsson, L. and Gordon, L. J.: Revealing Invisible Water: Moisture Recycling as an Ecosystem Service, PLoS One, 11(3), doi:10.4121/uuid, 2016.

Liu, Z., Notaro, M., Kutzbach, J. and Liu, N.: Assessing global vegetation – climate feedbacks from observations, J. Climate, 19, 787–814, doi:10.1175/JCLI3658.1, 2006.

Spracklen, D. V., Arnold, S. R. and Taylor, C. M.: Observations of increased tropical rainfall preceded by air passage over forests, Nature, 489(7415), 282–285, doi:10.1038/nature11390, 2012.

Tierney, J. E., Russell, J. M., Sinninghe Damsté, J. S., Huang, Y. and Verschuren, D.: Late Quaternary behavior of the East African monsoon and the importance of the Congo Air Boundary, Quat. Sci. Rev., 30(7–8), 798–807, doi:10.1016/j.quascirev.2011.01.017, 2011.