Review of: "Modelling and Mapping of Aboveground Carbon of Oluwa Forest Reserve Using LandSat 8 TM and Forest Inventory Data"

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Potential competing interests: No potential competing interests to declare.

The manuscript details a regression model for aboveground carbon (AGC) developed using Landsat-8 Thematic Mapper data-derived vegetation indices. The paper emphasizes the high correlation between AGC and spectral indices to the tune of 94% with EVI and a similar correlation with NDVI, GNDVI, and SAVI. Overall, the research paper is a good attempt to derive models using optical data. However, there are multiple areas where the paper lacks clarity and novelty. I present my observations and comments for improvement in the research method and analysis.

Generic Comments

- The English language needs to be improved throughout the research paper.
- The references were not properly aligned in the references section.
- The captions in the tables are misaligned. Table 1's caption is below, while other tables have captions above.
- I cannot specifically see the novelty in this research work. I observe the research work as an extension of existing works in a different study area. Authors are requested to highlight the novelty in this research work.

Specific Comments

Authors, please provide a study area map and some photographs for your field visit

Field Data

1. The authors used a 30 x 30 m plot for AGC analysis. The conversion of a 30 m plot to hectare-level carbon would have uncertainties due to factoring. It requires an explanation in the manuscript.
2. The number of plots (data collected) is very less, in my opinion, for model development. Also, the statistics of the field data collection like mean DBH, mean biomass, mean forest stand height, mean carbon, and their respective standard deviations should be provided for clarity and understanding of the in situ data.
3. The wood density of the species present in the field should be added as a supplementary table. This would provide more clarity to the readers.

Method

1. The volume equation used should be given a reference.
2. Why were only these four spectral indices used in the study? Have the authors tried other vegetation indices?

3. There is no mention about the training and testing samples in the manuscript. If only 20 points are used to derive a relationship and the same 20 points are used to validate the model, the approach needs a serious rework. Because the same points on which the model has been developed will show very high accuracy. This is a major drawback in this research work.

Results and Discussion

1. The results lack proper presentation. Please provide appropriate graphs to show the correlation between in situ data and spectral indices

2. The results provided do not corroborate with other research papers which emphasize the saturation of spectral indices with increase in biomass. However, the authors have not shown such important results in the discussion section.

3. Also, the authors should provide more justification for how there is a very high correlation in a high biomass tropical forest.

4. The AGC map (Fig 1) does not represent a forested area. It seems to be like a contour map

A complete revision of this manuscript is required. More field data collection is required. A proper redesign of the methodology is suggested for the authors. Hope my comments will help authors to redesign and improve the research work.