Review of: "Open-Source Remote Sensing Determination of Carbon Emissions From Tropical Deforestation Scenarios in Southeast Nigeria"

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Potential competing interests: No potential competing interests to declare.

This manuscript, titled "Open-Source Remote Sensing Determination of Carbon Emissions From Tropical Deforestation Scenarios in Southeast Nigeria," provides an interesting analysis of the application of open-source remote sensing tools in quantifying carbon emissions from deforestation in the Southeast region of Nigeria. However, there are several areas where the manuscript could be improved to enhance its clarity, analysis, and overall impact:

Abstract

The abstract summarizes the main findings but does not provide enough background context. Add 1-2 sentences at the beginning to explain the importance of monitoring deforestation and carbon emissions in this region.

Avoid abbreviations in the abstract (spell out acronyms like GFW, CO2-eq).
Make sure keywords accurately reflect the content of the paper. Consider adding keywords like "land cover change," "REDD+," "remote sensing," etc.

1. Introduction:
- The introduction provides a good overview of the importance of forest resources and the challenges faced by Nigeria in terms of deforestation and carbon emissions. However, it could be more focused and concise. Some parts, such as the discussion on climate change and its impacts (paragraph 2), could be shortened or moved to the discussion section.

2. Problem Statement:
- The problem statement is well-articulated, highlighting the lack of compensation from the Global Climate Fund and the challenges faced by Nigerian researchers in obtaining remote sensing data due to high costs. However, the reference to the COVID-19 pandemic's impact on deforestation rates (paragraph 3) seems tangential and could be omitted or addressed more concisely.

3. Methodology:
- The methodology section is comprehensive and provides detailed information on the study area, field data collection procedures, and assessments of forest cover variables using the GFW tool. However, there are a few areas that could be improved:
  - The description of the study area could be more concise, focusing on the most relevant details.

- The field data collection procedures could be summarized, as some of the details may not be necessary for the scope of the paper.

- The section on assessments of forest cover variables using the GFW tool could benefit from a clearer structure, with separate subsections for each step or analysis performed.

4. Presentation of Results:

- The results section is well-organized and presents the relevant findings clearly. However, there are some areas that could be improved:

- The first subsection, "Spatial Areal Extent of Southeastern Forest Reserves in Nigeria," seems less relevant to the main objective of quantifying carbon emissions from deforestation scenarios. This section could be shortened or moved to an appendix.

- Figures 6 and 7 could be combined into one figure for better comparison of tree cover loss and gain trends.

- The units used for carbon emissions (MtCO2eq/year, Mt, kt) could be more consistent throughout the paper.

- The authors should provide more interpretation and analysis of the results instead of simply presenting the data.

- The authors should consider adding statistical analyses to support their findings, such as hypothesis testing, correlation analyses, or regression models, where appropriate.

5. Discussion:

- The discussion section is quite lengthy and covers a wide range of topics. While the information provided is valuable, it could be more focused on the core findings of the study and their implications.

- The discussion on climate change and its impacts (paragraphs 1-3) could be condensed, as these topics have already been introduced in the introduction.

- The discussion on the challenges faced by Nigerian researchers (paragraph 4) seems to be a reiteration of the problem statement and could be shortened or omitted.

- The discussion on ecosystem restoration, forest landscape restoration, and bamboo forestry (paragraphs 6-8) could be more concise and directly linked to the study's findings and recommendations.

6. Conclusion and Recommendation:

The conclusion and recommendation section provide a concise summary of the main findings and recommendations. However, the authors should consider the following improvements:

- The conclusion could be more comprehensive, highlighting the key contributions and implications of the study.

- The recommendations should be more specific and actionable, providing clear guidance for policy makers and stakeholders.

To improve the manuscript, the authors should consider the following:

1. Focus and conciseness: Ensure that the content is focused on the core objective of quantifying carbon emissions from

deforestation scenarios, and make the writing more concise throughout the paper.

2. Structure and organization: Improve the structure and organization of the paper by separating sections into clear subsections, where appropriate, and ensuring that the flow of information is logical and coherent.

3. Consistency: Maintain consistency in the use of units, terminology, and formatting throughout the paper.

4. Relevance: Assess the relevance of each section and subsection to the main objective of the paper, and consider shortening or removing sections that are less relevant or tangential.

5. Literature review: Provide a more comprehensive review of relevant literature, focusing on studies that have quantified carbon emissions from deforestation scenarios using remote sensing techniques, particularly in Nigeria or similar contexts.

6. Limitations and future research: Discuss the limitations of the study and suggest avenues for future research that could address these limitations or build upon the current findings.

Overall, the manuscript provides valuable insights into the use of open-source remote sensing for monitoring carbon emissions from deforestation in Southeast Nigeria. However, the authors should consider revising the manuscript to improve its organization, focus, analysis, and presentation of results. Additionally, they should provide more in-depth interpretation, discussion, and actionable recommendations based on their findings.