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REVIEWER'S REPORT

Manuscript No.: IJAR-55848

Title: Assessment of Half-decadal variability of Mangrove health cover over the Indian Sundarban region using Remote Sensing and GIS technique

Recommendation:

Accept as it is .....

Accept after minor revision.....

Accept after major revision **YES...**.....

Do not accept (*Reasons below*) .....

Rating	Excel.	Good	Fair	Poor
Originality		**Good**		
Techn. Quality			**Fair**	
Clarity			**Fair**	
Significance		**Good**		

Reviewer Name: Prof. Dr. R. Hema Krishna

Detailed Reviewer's Report

General Evaluation

The manuscript addresses an important topic long-term mangrove dynamics in the Indian Sundarbans using remote sensing, rainfall variability, shoreline change, and bio-carbon flux. The study is relevant to climate change mitigation, coastal management, and ecosystem monitoring. However, several methodological, interpretational, and presentation issues limit its current suitability for publication. Major revision is required.

Strengths of the Manuscript

1. Long-term analysis (1990–2019) using multi-temporal Land sat data provides valuable historical insight into mangrove dynamics.
2. Integration of NDVI, rainfall (TRMM), shoreline change, and bio-carbon flux is conceptually strong and interdisciplinary.
3. Use of half-decadal change detection (HDCMD) is innovative and relevant for trend analysis.
4. Application of DSAS shoreline change analysis adds geomorphologic relevance.
5. Findings have direct implications for coastal zone management and climate mitigation.

Major Weaknesses of the Manuscript and Recommendations

1. Abstract:

Overly descriptive and lengthy. Quantitative results (area change, uncertainty, confidence) are not clearly summarized. Claims on bio-carbon sink/source are strong but insufficiently validated. Reduce length to ~200 words. Clearly state objectives, datasets, methods, key numerical findings, and implications.

2. Introduction:

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Literature review is outdated in parts; limited references after 2018. Research gap is not clearly articulated. Objectives are scattered and not stated as clear research questions or hypotheses. Update literature (post-2020 studies).Clearly define novelty and research gap. End with clearly stated objectives/hypotheses

3. Data and Methodology:

NDVI thresholding and HDCMD classification criteria lack justification and uncertainty analysis. No accuracy assessment or validation using field data or secondary datasets (e.g., FSI mangrove maps).Atmospheric correction using ACOLITE is described but parameter settings and assumptions are unclear. Rainfall and carbon flux datasets have coarse spatial resolution, but scale mismatch is not discussed. Statistical methods (correlation analysis) lack significance testing (p-values, confidence intervals). Justify NDVI and HDCMD thresholds scientifically. Add accuracy assessment/validation. Discuss spatial resolution mismatch and uncertainty. Include statistical significance testing.

4. Results and Discussion:

Results are largely descriptive; quantitative comparisons and uncertainty estimates are missing. Area statistics are reported inconsistently across periods. Figures are overcrowded and legends are difficult to interpret. Limited critical comparison with recent regional and global mangrove studies. Cause effect relationships (rainfall–NDVI–carbon flux) are assumed rather than rigorously demonstrated. El Niño influence is mentioned but not supported with climatic indices.

5. Conclusion:

Conclusions repeat results without sufficient synthesis. Policy and management implications are general and not evidence-driven.

6. Language and Presentation:

Numerous grammatical errors and awkward sentence constructions. Inconsistent use of units, symbols, and terminology (e.g., bio-carbon flux, NBCF). Figures and tables need professional formatting.

7. References:

No references are identified in results and discussion? Why?

Other Minor remarks:

Figure 1: Showing the Study Area—Not in bold like other figures. –Just check
Arrange keywords in alphabetical manner
Insufficient references, Additional references are needed, Arrange references as per journal style.