REVIEWER'S REPORT

Manuscript No.: **IJAR-52730**   Date: 12-07-2025

Title: INTEGRATION OF OBJECT-BASED CLASSIFICATION USING SENTINEL-2 IMAGERY AND IN SITU DATA TO IDENTIFY AND MAP FOREST FACIES IN THE HUMID AND HYPER-HUMID TROPICAL FOREST CONTINUUM OF TAÏ NATIONAL PARK, SOUTHEASTERN CÔTE D' IVOIRE

Recommendation:
Accept as it is ....
Accept after minor revision.................
Accept after major revision ....
Do not accept (*Reasons below*) ....

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

Reviewer Name: Tahir Ahmad

Reviewer's Comment for Publication.

The abstract effectively introduces the scientific context and motivation for the study, highlighting the limited geospatial documentation of Taï National Park despite its ecological importance as a primary tropical forest in West Africa. It clearly identifies the gap in existing data—reliance on binary classifications and outdated aerial maps—and frames the research as a significant contribution toward addressing that limitation.

The description of methodology is precise and technically rich, outlining the integration of Sentinel-2 satellite data with a substantial volume of in situ observations (9,287 points across 293 transects). The use of an object-based classification approach, through tools such as the ORFEO Toolbox and specific modules for segmentation and classification, is thoroughly presented. Validation using a confusion matrix adds credibility and robustness to the study.

The results are well summarized, with a classification of the major forest types and a fine-grained facies mapping. The quantitative breakdown (e.g., 66% open-understory forest) and identification of ecologically transitional zones reflect detailed analytical depth.

The conclusion reinforces the utility of the integrated method for high-accuracy forest mapping and management, which is particularly relevant for conservation planning and ecological monitoring. The keywords provided are specific and aligned with the study's themes.

Introduction Review

The introduction offers a solid theoretical and historical overview of satellite remote sensing, emphasizing its pivotal role in ecological assessment and forest management. The citation of

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foundational and contemporary works (e.g., Verger 1984, Bonnet et al. 2011, Hansen et al. 2013) supports the academic grounding of the study. The geographical focus on tropical regions, particularly under-represented areas like West Africa, adds relevance and significance to the research.

The tone is scholarly, and the articulation of concepts such as spatial resolution and forest dynamics reflects technical precision. The introduction smoothly transitions into the relevance of advanced processing techniques like object-based classification, preparing the reader for the detailed methodological framework that follows.

Overall Evaluation

The manuscript exhibits strong scientific merit, combining sophisticated remote sensing techniques with extensive field data to enhance the ecological understanding of Taï National Park. The integration of satellite imagery and ground-truthing is well justified and executed, and the object-based approach is suitably detailed. The abstract and introduction are both clear, well-structured, and technically sound, making a valuable contribution to the field of forest mapping and tropical ecosystem monitoring.