REVIEWER'S REPORT

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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

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

Reviewer Name: Dr. Manju M

Date: 10-07-2025

Reviewer's Comment for Publication.

1. The study effectively updates outdated forest maps of Taï National Park using object-based classification and Sentinel-2 imagery.

2. Integration of extensive field data significantly improved classification accuracy and ecological relevance.

3. Identification of forest facies, including transitional zones, enhances understanding of vegetation heterogeneity.

4. Results provide a valuable spatial framework for biodiversity monitoring and sustainable forest management.

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Detailed Reviewer's Report

1. **Objective**: To update the forest formation map of Taï National Park and develop a physiognomic typology using high-resolution satellite imagery and field data.

2. **Data Sources**: Six Sentinel-2 images (January and May 2020) and 9,287 field observation points collected along 293 transects (2 km each).

3. **Preprocessing**: Sentinel-2 data were atmospherically corrected to obtain surface reflectance values for accurate analysis.

4. **Methodology**: Object-based image analysis (OBIA) using ORFEO Toolbox, including segmentation, SVM classification, and confusion matrix validation.

5. **Forest Types Identified**: Four major formations—open-understory forest (66%), closed-understory forest (30%), hydromorphic forest (6.9%), and shrublands (0.02%).

6. **Facies Mapping**: Spatial heterogeneity analysis at a 25-hectare grid scale revealed eight ecological facies, including transitional zones.

7. **Field Data Role**: In situ descriptors (canopy, understory, herbaceous cover, hydromorphic indicators) were crucial for training and validating the classification model.

8. **Ecological Insights**: Transitional facies represent ecologically important zones, potentially serving as unique habitats for biodiversity.

9. **Applications**: Provides a robust spatial reference for ecological monitoring, resource inventory, conservation planning, and adaptive park management.