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REVIEWER'S REPORT

Manuscript No.: IJAR-55345

Title: Cartographie des zones à risque d'inondation et analyse de la vulnérabilité dans la 1 commune d'Abobo, 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		Good		
Techn. Quality		Good		
Clarity		Good		
Significance	Excel			

Reviewer Name: Dr Thirunahari Ugandhar

Detailed Reviewer's Report

Reviewer Comments

General Assessment

The manuscript entitled **"Flood Risk Mapping and Vulnerability Analysis in the Commune of Abobo, Côte d'Ivoire"** presents a comprehensive and well-structured study addressing recurrent urban flooding using remote sensing, GIS, and multi-criteria decision analysis. The topic is timely, highly relevant to urban risk management in West Africa, and aligned with current scientific and societal concerns related to climate variability and unplanned urbanization.

Overall, the manuscript demonstrates strong scientific rigor, appropriate methodological choices, and meaningful results that contribute to flood risk assessment and urban planning.

Scientific Quality and Methodology

The methodology employed in this study is robust and clearly described. The integration of:

- Landsat 9 OLI satellite imagery,
- SRTM Digital Elevation Models,
- Satellite-derived rainfall data,
- Population density and land-use data,
- Saaty's Multi-Criteria Hierarchy Process (AHP),

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is scientifically sound justified. The weighting schemes for hazard and vulnerability factors are coherent and consistent with established literature. The use of ArcGIS Pro and ENVI software ensures reliability and reproducibility of the analysis.

The classification accuracy of land-use mapping (Kappa coefficient of 99.52%) indicates excellent classification performance.

Results and Interpretation

The results are clearly presented through well-designed thematic maps, allowing easy visualization of flood-prone zones. The identification of five flood risk classes (very low to very high) provides a practical framework for decision-making.

The discussion appropriately contextualises the findings with previous studies conducted in Abobo and other regions of Côte d'Ivoire, confirming the consistency and validity of the results. The identification of highly vulnerable zones such as Samaké, Agbékoi, Sagbé Nord, and Avocatier Agnissankoi is particularly relevant for local authorities and disaster management agencies.

Originality and Contribution

The study provides significant added value by:

- Combining recent satellite data with multi-temporal rainfall information,
- Applying a multicriteria GIS-based approach at the municipal scale,
- Producing operational flood risk maps that can support urban planning and disaster risk reduction.

The work strengthens the scientific literature on flood risk assessment in rapidly urbanizing African cities.

Clarity and Organisation

The manuscript is logically structured, with clear sections covering introduction, materials and methods, results, discussion, and conclusion. Figures and tables are relevant and enhance comprehension.

Minor language and formatting improvements are suggested, including:

- Correction of typographical errors,
- Harmonisation of terminology,
- Slight improvement of sentence flow in some sections.

These issues are minor and do not affect the scientific content.