

**‘JOGER’
JOURNAL OF
GEOMATICS AND ENVIRONMENTAL
RESEARCH**

Volume 8, Number 2, 2025

<http://www.unilorinjoger.com>

Published by

Department of Surveying and Geoinformatics,
Faculty of Environmental Sciences,
University of Ilorin, Nigeria

EDITORIAL TEAM

EDITORIAL BOARD

Editor-In-Chief

Prof. J.B. Olaleye

Department of Surveying and Geoinformatics, University of Lagos, Lagos

Associate Editor-In-Chief

Prof. J.F. Olorunfemi

Department of Geography and Environmental Management, University of Ilorin

Managing Editor

Dr. Ayo Babalola

Department of Surveying and Geoinformatics, University of Ilorin, Ilorin

Editors

Dr. D.N. Olayinka

Dept of Surveying and Geoinformatics Engr, University of Lagos, Lagos

Dr. O.I. Mohammed

Dept of Surveying and Geoinformatics, University of Abuja, Abuja

Journal Manager & Corresponding Editor

O.A. Ipadeola

Department of Surveying and Geoinformatics, University of Ilorin, Ilorin

Assistant Editors

H.A. Ahmadu

Department of Surveying &
Geoinformatics.

University of Ilorin, Ilorin

A.O. Abdulyekeen

Department of Surveying &
Geoinformatics.

University of Ilorin, Ilorin

Editorial Advisers

Prof. O.T. Idowu – Federal University of Technology, Akure

Prof. A.A. Musa – Moddibo Adama University of Technology, Yola

Prof. M.N. Ono – Nnamdi Azikiwe University, Akwa

Dr. Y.D. Opaluwa - Federal University of Technology, Minna

Dr. J.D. Dodo – Centre for Geodesy & Geodynamics, Toro, Bauchi

Dr. A. S. Alademomi - University of Lagos, Akoka

Dr. Ogunlade Simeon - Federal University of Technology, Akure

Dr. E.G. Ayodele – University of Lagos, Akoka

Dr. N.A. Bello - University of Ilorin, Ilorin

Dr. A.B. Ola - University of Ilorin, Ilorin

Dr. Adeogun A. S. - University of Ilorin, Ilorin

Dr. Nzelibe I. U - Federal University of Technology, Akure

Correspondence to:

The Editor-In-Chief
Journal of Geomatics and Environmental Research
Department of Surveying and Geoinformatics
Faculty of Environmental Sciences
University of Ilorin, Ilorin. P.M.B. 1515, Ilorin, Kwara State, Nigeria
Email: editorjoger@gmail.com | joger@unilorin.edu.ng
Tel: +2347063404832

All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without prior permission in writing from the author or publisher.

Disclaimer:

The views expressed in this journal are those of the contributors and not necessarily those of the editorial board.

@Published by Department of Surveying and Geoinformatics, UNILORIN

Cover Photo/Design: AbleGod Concept | ablegodconcept@gmail.com

Text Layout: O.A. Ipadeola Dept. Surveying & Geo., UNILORIN

SUBSCRIPTION

Nigeria

- Authors and co-authors - #4,000 per copy (excluding postage)
- Individual Subscribers - #5,000 per copy (excluding postage)
- Institution or Library - #6,000 per copy (excluding Postage)

Africa: \$2000 per copy (Including postage)

Europe: \$3000 per copy (Including postage)

North America: \$4000 per copy (Including postage)

South America: \$4000 per copy (Including postage)

Other Continents: \$5000 per copy (Including postage)

Note: *All Fees are subject to review*

TABLE OF CONTENTS

Title Page	i
Editorial Team	ii
Subscription	iii
Table of Contents	iv
Note to Contributors	vi
Editorial	viii
<i>Integrating Physical and Legal Data for 3D Cadastre in Abuja, Nigeria</i>	(1-9)
Muhammad, B.A., Opaluwa Y.D., Zitta N., Onuigbo I.C.; Eyo, E.E.	
<i>Evaluating the Impact of Ground Control Network Type on UAV Photogrammetric Accuracy: NTRIP, Radio RTK, and GCP-Free P4-RTK</i>	(10-20)
Okorocha Vincent Chika, Ehigior Raphael, S.O. Osuji, H.A.P. Audu	
<i>Evaluating the Impact of Ocean Tide Loading Models on GNSS-Derived Coordinates Along the West African Coastline</i>	(21-29)
Oba, Tamunobelema, Hart, Lawrence	
<i>Spatiotemporal Analysis of Land Use and Land Cover Change in Gombe Local Government Area, Gombe State, Nigeria Using Remote Sensing Data</i>	(30-44)
Ojeniran, Theophilus Ayooluwa, Adewuyi, Adewale Isaiah, Adetunji, Samson Sunday, and Ogunde, Esther Haeerahat	
<i>Application of GIS and remote sensing in morphometric characterization of Ajilosun river basin, Ado Ekiti, Ekiti state, Nigeria</i>	(45-55)
Idowu, Ebenezer Tobi, Nnamani, Onyemaechi John, Idowu, Emmanuel Toluwalope	
<i>Spatio-Temporal Monitoring of Subsea Infrastructure Displacement, Seabed Morphodynamics, and Flow Velocity Variability</i>	(56-68)
Hart, Lawrence, Jackson, K.P., and Clifford Oribikunomaa	
<i>Optimising Campus Radio Wave Reach and Field-Signal Study of Search FM 92.3 MHz in Minna, Nigeria</i>	(69-77)
Gbedu, Adamu Mohammed, Adeniyi Gbenga, Suleiman Z. A. T, Hassan A. Samaila-Ija	
<i>Sustainable Housing and Market Adoptability in Urban and Peri-Urban Nigeria: Bridging Architectural Innovation and Real Estate Market Demand</i>	(78-86)
Anthony Ikpeme Ankeli, Busayo Emmanuel Akinwale, and Olusola Adekunle Asa	
<i>Geospatial Analysis of Land Surface Temperature and Multiple Spectral Indices in Kaduna Metropolis Using Remote Sensing</i>	(87-98)
Abdullahi, S. U. Akomolafe, E. A., Bukar, F. T., Makarfi, Y. I., & Ojonugwa, O. F.	
<i>UAV-Based Multispectral Imaging for Precision Crop Health Assessment in Oil Palm Plantations</i>	(99-110)
Abiodun, O. E., Lawal, A. B., Egbeyemi, L. O., Adeyemi, A. A., Victor, M. A.	
<i>Epochal Assessment of Sea Level Rise Across the Coastal Waters of Nigeria</i>	(111-124)
Akpanah, Itekena Gladstone and Jackson, Kurotamuno Peace	

- Mapping Climatological Trends in Soil Moisture Variability Across Nigeria*** (125-141)
Mefe Moses
- A Perception-Based Analysis of Academic Performance Factors among Estate Management and Valuation Students in Higher Education*** (142-152)
Augustina Chiwuzie and Busayo E. Akinwale
- Ergonomic Mismatch, Classroom Posture, And Musculoskeletal Discomfort Among Nigerian Primary School Pupils*** (153-164)
Bolaji Tajudeen Abdulraheem, Abdulrasaq Kunle Ayinla, Samuel Bolaji Oladimeji
- Geomatics-Based Approaches for Boundary Revalidation and Asset Delimitation at Erelu Water Works, Oyo State.*** (165-178)
Ibrahim A., Afonja Y. O., Iyiola F.O., Ejirika H. C., Oduyemi A. T.
- The Analysis of the Spatial Variability of Soil Nutrients using Geospatial Techniques for Improved Precision Agriculture Practices*** (179-191)
Michael Bako, Makama Daniel, Gbedu Adamu Mohammed, Ibrahim A., Oduyemi A.T.
- Geospatial Evaluation of Hydrocarbon Seepage on Vegetation Health in Iba Oku, Uyo Local Government Area of Akwa Ibom State, Nigeria*** (192-204)
Ekom Asuquo Etim, Aniekan Effiong Eyoh, Bariledum Daniel Nwilag
- Geodetically Referenced Single-Beam Bathymetry of Erelu Reservoir, Nigeria for Sedimentation Assessment and Monitoring*** (205-217)
Shittu, I.O., Hamid-Mosaku, A.I., Jimoh, O.A., Qaadri, J.A., Afonja, Y.O., Akindiya, O.M., Effiong, O.A.
- Monitoring Potential of Sustainable Investment of a Cemetery Land under the Urban Expansion in Ibadan, Nigeria*** (218-228)
Moradeyo O.S., Olukolajo M. A., Sakariyau J. K.
- Hotspots Mapping and Geoinformatics Analysis of Encroachment in Old Oyo National Park, Nigeria*** (229-243)
Ige J.O., Abolade O., Muhammed L.O., Adeniran A.D.

NOTE TO CONTRIBUTORS

The Journal of Geomatics and Environmental Research (JOGER) is a bi-annual journal published by the Department of Surveying and Geoinformatics, Faculty of Environmental Sciences, University of Ilorin, Ilorin, with a devotion to issues in the fields of geomatics, geospatial technology, and environmental research. Articles for submission are to be submitted through the journal website <http://unilorinjoger.com> and the email address of the journal editorjoger@gmail.com | joger@unilorin.edu.ng. The manuscript should be written using MS Word, New Times Roman font size 12, double-spaced on standard A4-sized paper. Articles should not exceed 15 pages. #2000 will be surcharged per page for any excess page above 15 pages. References within the text should be cited in APA 6th edition style, by author and year. The author could visit the journal website for more information on the JOGER author guidelines/template and submissions to the journal.

➤ Title

The title of the paper should be brief and short, written at the top of the page in all bold, capitalized, and centered. This should be followed by the name(s) of the author(s) and address (es). The email and phone number of the corresponding author must be specified.

All headings and subheadings should be well-defined, bold, and in sentence case.

➤ Abstract

The abstract should describe the background, problem statement, methods employed, major findings, and conclusions. The abstract should not exceed 250 words. At least five keywords should be provided.

➤ Introduction

This should give a concise and clear background of the subject matter of the article with the aim and objectives.

➤ Methodology

This should contain the instruments, materials, and procedures used in achieving the purpose of the work. This should be systematically and unambiguously stated.

➤ Results and Discussions

The results are expected to be presented in a precise manner, with ideas brought up from it and the findings discussed.

➤ Conclusions and Recommendations

This should contain a brief summary of the conclusions drawn from the study as a result of the findings. Recommendations from the findings should be stated.

➤ **Reference**

The referencing style should be APA 6th edition format for books and journals. The reference should contain all the authors cited in alphabetical order.

➤ **Tables**

Tables should be numbered consecutively throughout the paper, referring to them in the text as Table 1, Table 2, etc., with a title at the top of each table. Avoid the use of vertical rules. The table should not duplicate the results presented in the graphs.

➤ **Illustrations**

Illustrations in the form of maps, diagrams, and charts/graphs should be sequentially numbered and given concise titles, which should be written below the illustrations.

➤ **Units, Symbols, and Abbreviations:**

Only SI units as defined by the International Standard Organization (ISO) are acceptable. Abbreviations should be written in full at the first mention

➤ **Final Submission**

The revised and corrected manuscript, copyright form, and a copy of the payment receipt of thirty thousand naira (#35,000) for the publication fee should be returned through the journal's website <http://www.unilorinjoger.com> and email address: *editorjoger@gmail.com* / *joger@unilorin.edu.ng*. This payment only covers the online publication of the article, which is downloadable by each author. Authors interested in hardcopy shall pay the sum of #4000 per copy. Purchase by other interested readers is at the rate of five thousand naira only (#5,000) per copy. All payments should be made to the journal bank account as detailed below:

Account Name: Journal of Geomatics and Environmental Research
Account Number: 1015805521
Bank: Zenith Bank Plc.

EDITORIAL

It is with great pleasure that I present **Volume 8, Number 2 (2025)** of the *Journal of Geomatics and Environmental Research (JOGER)*, a bi-annual peer-reviewed journal published by the Department of Surveying and Geoinformatics, University of Ilorin, Nigeria. This issue further reinforces JOGER's mission to promote high-quality research that advances geomatics, geospatial technologies, and environmental studies, particularly within developing and emerging economies.

The articles featured in this volume reflect the growing interdisciplinary relevance of geomatics in addressing contemporary spatial, environmental, engineering, and socio-economic challenges. Several contributions advance **land administration and cadastral systems**, notably the integration of physical and legal datasets for 3D cadastre development in Abuja, as well as geomatics-based approaches to boundary revalidation and asset delimitation for critical water infrastructure in Oyo State. These studies demonstrate the role of geospatial frameworks in supporting sustainable land governance and infrastructure management.

A strong emphasis is also placed on **geodetic and positioning sciences**, with studies examining the impact of different ground control network configurations on UAV photogrammetric accuracy, the influence of ocean tide loading models on GNSS-derived coordinates along the West African coastline, and epochal assessments of sea level rise across Nigeria's coastal waters. Complementary hydrographic and marine studies further explore subsea infrastructure displacement, seabed morphodynamics, and reservoir bathymetry for sedimentation monitoring, underscoring the importance of precise spatial measurements in coastal and inland water environments.

This issue also presents extensive applications of **remote sensing and GIS** in environmental and urban studies. Contributions include spatiotemporal analyses of land use and land cover change, morphometric characterization of river basins, mapping of land surface temperature and spectral indices in urban areas, soil moisture climatological trends, and assessments of vegetation response to hydrocarbon seepage. Collectively, these studies highlight the utility of earth observation data in environmental monitoring, climate analysis, and ecological impact assessment.

Advances in **agricultural and resource management** are represented through geospatial analyses of soil nutrient variability and UAV-based multispectral imaging for precision crop health assessment in oil palm plantations. In addition, applied studies on radio wave propagation and signal optimisation demonstrate the relevance of geomatics in communication systems planning.

Beyond technical applications, this volume also broadens the journal's scope by addressing **human, educational, and socio-economic dimensions** of the built environment. Papers examining sustainable housing and market adoptability, perception-based factors influencing academic performance in higher education, ergonomic mismatch and musculoskeletal discomfort among school pupils, and the monitoring potential of cemetery land under urban expansion reflect the growing integration of spatial thinking into social and development studies.

Taken together, the contributions in this volume affirm the central role of geomatics and environmental research in supporting evidence-based decision-making, sustainable development, and societal well-being. I sincerely appreciate the efforts of all authors for their scholarly contributions, the reviewers for their rigorous and constructive evaluations, and the editorial team for their dedication to maintaining the journal's high quality.

We remain committed to providing a credible platform for researchers and practitioners, and we warmly invite further high-quality submissions in future editions of JOGER.

Thank you for choosing JOGER.

Prof. J. B. Olaleye

Editor-in-Chief

Journal of Geomatics and Environmental Research (JOGER)

University of Ilorin, Nigeria