African Oceanography Studies (Earth Science focus)

Methodological Evaluation of Field Research Station Systems in Senegal Using Multilevel Regression Analysis

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Abstract

This study evaluates the effectiveness of field research station systems in Senegal, focusing on their ability to contribute to environmental science knowledge. Multilevel regression analysis was employed to evaluate the performance of field research stations in Senegal. The model accounts for both station-level and regional variability in environmental data collection and analysis. The multilevel regression analysis revealed that station efficiency gains varied by region, with some stations demonstrating a 15% increase in data accuracy over their initial baseline. This study provides insights into the operational effectiveness of field research stations in Senegal and highlights the need for targeted interventions to enhance regional environmental monitoring capabilities. Based on findings, recommendations include resource allocation strategies that prioritise high-performing stations and collaborative efforts to improve data quality across all regions. Multilevel regression analysis, Field research stations, Environmental science, Senegal The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, multilevel modelling, nested data, spatial analysis, resource allocation, infrastructure assessment, environmental impact* □□

ABSTRACT-ONLY PUBLICATION

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