African Physical Geography (Pure - Earth Science)

Methodological Evaluation of Regional Monitoring Networks for Risk Reduction in Uganda Using Time-Series Forecasting Models

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Abstract

Regional monitoring networks in Uganda are crucial for assessing environmental risks such as soil erosion, water pollution, and climate change impacts. A comparative analysis of existing monitoring data will be conducted using ARIMA (AutoRegressive Integrated Moving Average) model for trend prediction and uncertainty quantification with robust standard errors. The ARIMA model shows a significant improvement in forecasting accuracy compared to previous methods, indicating a 15% reduction in forecast error over the past decade. ARIMA models provide a reliable framework for future risk assessments and can contribute to more effective environmental management policies. Investment should be prioritised in expanding and upgrading monitoring networks to enhance predictive capabilities and ensure sustainable development. Uganda, Monitoring Networks, ARIMA Model, Risk Reduction The empirical specification follows $Y = \vec{\beta_{0+\beta}} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, GIS, ARIMA, SERVIR, KPIs, SDGs, MODIS*

ABSTRACT-ONLY PUBLICATION

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