



Modelling Atmospheric Dynamics and Climatic Variability Over East Africa

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Abstract

This study addresses a current research gap in Physics concerning Modeling Atmospheric Dynamics and Climate Variability over East Africa in Egypt. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured review of relevant literature was conducted, with thematic synthesis of key findings. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Modeling Atmospheric Dynamics and Climate Variability over East Africa, Egypt, Africa, Physics, review article This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. The empirical specification follows $Y = \beta_{0+\beta}^{-} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *East African, Climate Modelling, Atmospheric Dynamics, Variability Studies, Regional Climatology, Dynamical Systems Theory, Numerical Weather Prediction*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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