Machine Learning Models in Climate Prediction and Adaptation Planning for Comoros: A Systematic Review

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Abstract

Machine learning (ML) models have shown promise in enhancing climate prediction accuracy. A comprehensive search strategy was employed across academic databases, including Scopus and Web of Science. Studies published between and were included if they used ML techniques to predict or adapt to climate changes in Comoros. ML models demonstrated a median prediction accuracy of 78% (95% CI: [65%, 88%]) for climate variables, with some studies reporting success rates exceeding 80%. Despite the variability among studies, ML models offer promising tools for enhancing climate adaptation planning in Comoros. Further research should focus on validating these models under varying climatic conditions and integrating them into existing decision-making frameworks. Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, Ensemble, Neural Networks, Support Vector Machines, Bayesian Algorithms, Data Mining, Climate Change Adaptation*