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GSW12421: Automatic linear regression system for the study of climate change using temperature dataset in dominated Rajasthan State under Jodhpur district (India)

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Abstract

Understanding and predicting the impact of climate change in Rajasthan's Jodhpur district, amid various human-induced emission scenarios, is vital for guiding societal adaptation and mitigation efforts. However, the complexity of advanced climate models poses a significant obstacle. To address this, we propose an expert system using linear regression algorithms, aiming to uncover connections between short-term and long-term temperature responses under diverse climate-forcing scenarios. This approach not only accelerates climate change projections by reducing computation costs but also identifies early indicators of long-term climate responses, crucial for impact detection, prediction, and attribution. In the arid landscape of northwest India, Rajasthan undergoes a transformative climate shift marked by escalating temperatures. Intense heatwaves, once sporadic, now persist, disrupting ecosystems alongside altered rainfall patterns. The unreliable monsoon risks agriculture and water security, impacting the rhythm of life. Frequent extreme events, like droughts and floods, pose threats to Rajasthan's agriculture, challenging farmers, and sustainability. Scarce water resources face further strain from altered precipitation, increased evaporation, and rising temperatures, affecting both urban and rural areas. Rajasthan's unique biodiversity faces risks due to temperature and precipitation shifts, potentially unravelling its delicate ecosystem. Moreover, the futuristic study of climate change involves advanced models, early warning systems, impact assessments, and adaptive strategies.

Keywords: Climate Change analysis, Expert System, Machine Learning, Linear Regression Algorithms, Temperature Dataset