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Rainfall Interpolation Analysis in the Ijzer Basin Based on Neural Networks

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Accurate spatial distribution of rainfall during extreme weather events is crucial for hydrological analysis and flood forecasting. Despite the availability of numerous neural network-based models for spatiotemporal rainfall interpolation, challenges remain due to the limited number of rain gauges and the presence of missing values in the recorded data. These limitations introduce significant uncertainties into existing models. This study focuses on the Ijzer Basin in Belgium, using 20 years of data collected at 15-minute intervals, including rainfall, humidity, and temperature measurements et. etc. By training several neural network models on these data, we aim to identify the most accurate model for rainfall interpolation. Results indicate that Long Short-Term Memory (LSTM) networks demonstrate superior performance compared to other models in capturing the spatial distribution of rainfall.