Prediction of a cold wave in Río Grande, Tierra del Fuego

This study explores the effectiveness of a machine learning model designed to predict cold waves in Río Grande, Tierra del Fuego. This binary classification model was trained with historical meteorological data, such as temperature, humidity, wind speed, and atmospheric pressure, collected between 2021 and 2024. The dataset was used to train two algorithms: Decision Tree and Random Forest, which achieved an accuracy of 96%, outperforming the Decision Tree model. The results show that Random Forest is more effective and allows predicting future cold waves with a high degree of confidence. The model was developed in Google Colab using libraries such as Pandas, Matplotlib, and others, which allowed for efficient data management and visualization. This approach could be adapted to other regions affected by extreme weather events and integrated into local early warning systems. **In the future, more variables or real-time data could be added to help the model achieve greater accuracy.** This predictive capability could allow local governments and emergency services to take preventive measures and allocate resources more efficiently. In short, models like this help improve community preparedness, reduce health risks, and contribute to climate resilience strategies.