Rainfall Prediction Model for the State of Telangana Using Arima Model: A Review

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Abstract

Background: As a result of global warming and climate change, the temperature of the atmosphere is rising day by day, which is linked to rainfall variability. Understanding this transition in the climate system is critical for resolving big global environmental issues. Furthermore, because rainfall is the most prevalent cause of stream flow, especially flood flow in the majority of rivers in India, it is vital to comprehend its pattern. The amount of rain that falls varies with the seasons. Differences in rainfall magnitude in different parts of a country at different times and locations throughout the year are complex and need to be researched further. This oscillation is responsible for a variety of hydrological difficulties, including floods and droughts.

Objectives: To do the statistical modelling on rainfall, groundwater and temperature dataset.

To use the ARIMA model to give prediction for next 3 months with probability model.

Methodology: The Power BI desktop program is used to create reports, while Power BI Services (Software as a Service - SaaS) is used to publish them and the Power BI system app is used to view them. The ARIMA model was used for the modelling and prediction of the rainfall dataset.

Results and discussion: The study of rainfall in India during the monsoon season (June to September) is critical for a variety of reasons, including economic growth, disaster management, and hydrological planning. On a smaller geographical scale, it's critical to comprehend mean rainfall and its variability. We have carried out the rainfall prediction model for the state of Telangana. We have carried out the development of mathematical model by using 20000 dataset point. The ARIMA model was successfully carried out for 3 months' prediction.

Conclusions and future work: The accuracy for 1st month, 2nd month and 3rd month is 96%, 87% and 80% respectively. In future study we can integrate the neural network to optimize the accuracy of prediction for first three months more than 90%.