

Forecasting of daily rainfall at Ercan Airport Northern Cyprus: a comparison of linear and non-linear models

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ABSTRACT

Forecasting of complex and chaotic phenomena such as rainfall is very challenging. Prediction of precipitation in airports helps agencies responsible for air traffic control in terms of planning and decision making. Conventional methods often provide imprecise forecasts, which may lead to flight delays and economic losses. This paper presents a comparison of linear and non-linear models for the forecasting of daily rainfall at Ercan Airport, Northern Cyprus. The study uses daily meteorological data consisting of relative humidity, minimum and maximum temperature, wind speed, solar radiation, and rainfall for 10 years (2008–2018) for Ercan Airport. The accuracy of the model is evaluated using the determination coefficient, mean square error and mean absolute percentage error performance indices. Simulation results indicate that the performance of the non-linear models is more accurate. The developed model could serve as a reliable rainfall forecasting tool for Ercan Airport.

Keywords: MLR; ANN; ANFIS; Northern Cyprus; Rainfall

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