**CONCLUSION**

In this paper, authors have used multiple linear regression model to predict the rate of precipitation (i.e., rainfall rate) for Khartoum state, based on some weather parameters taken as the independent variables Those weather parameters are the mean temperature, maximum temperature, minimum temperature, Dewpoint, sea level pressure, station pressure, mean visibility and wind speed. The average of the mean square error between the actual and predicted value during training and testing phase was calculated. It was found that obtained results show that the mean square error between actual and predicted values of the rainfall precipitation rate (PRCP) has been significantly decreased during testing time. It has been found to be 85% when the amount of test data equals the amount of training data, and 59% when more test data is used. Explanation of this reduction needs supplementary research. for example, it may indicate that the model used needs more data in the training phase.