**INTRODUCTION**

The process of predicting the state of the atmosphere for a specific location in the future is called weather forecasting [1]. Interest in weather forecasting began from the earliest era, and the forecasting techniques were developed and have been changing with time, Several methods are used to generate weather forecasting, each of which differ in its accuracy and efficiency. There are three important steps that must precede the process of weather forecasting, which are to collect atmospheric data as much as possible, to understand the data and its inter-relation to determine the behavior of the atmosphere, and to use it in numerical models to predict the future state of the atmosphere. Recently, scientists tended to apply machine learning tools for weather prediction, because it does not require a deep and comprehensive understanding of the atmospheric process, thus it represents a good choice for weather forecasting [2].Machine learning (ML) is a process of learning a specific task without any human intervention, which will improve the performance only by ¡the continuous learning process. Learning methods are of three types: supervised learning that is based on labeled data, unsupervised learning, and the reinforcement. The vital process in all machine learning methods is extracting of the features, and then to use these. extracted features for various approaches, like classification and regression [3].Applying machine learning techniques in weather forecasting can compensate complex meteorological physics model. With the availability of metrological data set, the two authors were encouraged to select supervised learning method, which is multiple linear regression, instead of unsupervised learning or reinforcement learning [1]. There are different regression types used in machine learning, such as linear regression, logistic, polynomial regression. The simpler and most frequent method is linear regression, which is used for prediction [4].The aim of this paper is to develop a multiple linear regression model to predict the rainfall rate in Khartoum state, which depends on many variables. The remainder of this paper is organized as follows. Section II provides a brief survey about related work, Section III explains materials and methods, and Section IV shows our Results. Finally, Section V concludes the article.