

Abstract

Rainfall and temperature series impact heavily on the performance of a country's agricultural production as a component of the economy especially in a developing country like Kenya. These series were analyzed to study the evolution of their mean variability. In particular, this study sought to model the Temporal Rainfall Patterns in different Zones in Kenya considering temperature trends as indicators of the rainfall variations. In achieving this objective, a broad statistical approach was used, based on inference on their entire series to predict the mean amount of rainfall using the Maximum and Minimum temperatures processes. Data on different counties in Kenya regarding rainfall and temperature was obtained from the respective weather stations. The study then came up with zones dependent on rainfall using cluster Analysis. Models specific to each created zone were fitted and included the Poisson, Quasi-Poisson and Negative Binomial models which belong to the broad class of Generalized Linear Models (GLMs). Using the AIC criterion, we identified Negative Binomial model as the best model for the variability of rainfall patterns in these Zones as maximum and minimum temperatures changes, and the discussion about them made thereof.