

Abstract

The influence of the El-Nino Southern Oscillation (ENSO) evolution phases and monthly precipitation over the 47 counties in Kenya is analyzed using Pearson product moment correlation analysis. Anomalies of Sea Surface temperatures from the National Climate Data Centre of the National Oceanic and Atmospheric Administration are employed for the periods 1983-2012 while estimates of precipitation rate (in mm/day) are sourced from the African rainfall Climatology project version 2 of the Climate Prediction Centre. Using GrADS software, and Climate data Operators, estimates of Precipitation are extracted for each station representing each of the 47 counties of Kenya. The study has shown that El-Niño Southern Oscillation can explain as high as 50% of seasonal rainfall over the country during the season of October-December. However, the ENSO signal are found to be less influential on the March-May rainfall over the country explaining lows of 2% of the rainfall variability. Time series plots of the analyzed Niño indices and rainfall anomalies are found to be in harmony during the October-December season but in complete disharmony during the March-May season on a zero lagged analysis. The study has found that, 46% of rainfall variability over Northern counties of Marsabit, Wajir, Garissa and Turkana as well as coastal counties of Mombasa, Lamu, Kilifi, Kwale and Taita-Taveta can be explained by the El-Niño Southern Oscillation evolution during the same period of occurrence. Similarly, over the Central highlands, counties of Meru, Nyeri, Laikipia and Nakuru as well as western counties of Trans-Nzoia, Bungoma, Vihiga, Kisumu, Homabay and Kisii, the El-Niño Southern Oscillation can explain highs of 36% in seasonal rainfall variance during the October-December season. The variability explained is found to decrease with increase in lag with predictability potential of rainfall over many counties confined to one month lag during the October-December season.