

Abstract

This study investigated the characteristics and changes in September-November (SON) rainfall over Uganda. The dominant mode of variability of SON rainfall was identified by performing Empirical orthogonal functions (EOF) analysis, using rainfall data from Climate Research Unit (CRU) for the period 1901 to 2013. Results indicate that the dominant mode of variability of SON rainfall exhibits a unimodal pattern, explaining 50.2% of the total variance. Mann-Kendall analysis was deployed to examine sudden changes in SON rainfall over the country. The findings show that the abrupt change in SON rainfall occurred in 1994. Further analysis reveal that SON rainfall over Uganda has a correlation pattern with the sea surface temperature (SST) over Indian, which depicts the positive phase of the Indian Ocean Dipole (IOD). Positive correlation is exhibited in the western IOD sub-region, while negative correlation is shown in the southeastern IOD sub-region. Further study of the both driest and wettest years during the investigated time span indicate that throughout the wettest year, there were positive anomalies in the western sub-region, contrary to the driest year, when same sub-region observed distinct negative anomalies. This illustrates that the positive phase of IOD enhances SON rainfall over Uganda, as opposed to the negative phase which inhibits SON rainfall. The evolution of the IOD can therefore be monitored for the improvement of SON rainfall forecasts, especially over Uganda so as to avoid the losses associated with weather extremes.