

Abstract

This study investigates the atmospheric circulation associated with extreme rainfall events. This study investigates the atmospheric circulation associated with extreme rainfall events over the coastal West Africa. The rainfall data used was sourced from the Global Precipitation Climatology Centre (GPCC), spanning from 1981 to 2010. The atmospheric datasets used were obtained from the ERA-Interim reanalysis. The study employed the Z-Index to categorize dry and wet years into seven distinct grades. The analyses focused on the summer monsoon rainfall season experienced in July to September (JAS). The extreme drought years were identified to be 1982 and 1983, while extreme wet years were pointed out to be 1999 and 2007. The area of study was dominated by anomalous westerly moisture transport, characterized by convergence at low level during wet years. The major source of moisture over the study area is Atlantic Ocean. Dry and wet years are characterized by, respectively, positive and negative low-level geopotential height anomalies. Although the results of this study do not give a diagnosis of the reported rainfall variability, the information herein can be useful in the monitoring and update of seasonal forecasts. Accurate and reliable seasonal forecast is beneficial in that it helps to minimize loss of lives and destruction of property.