Abstract

The El Nĩno-Southern Oscillation (ENSO) is a primary mode of climate variability in East Africa (EA). Here, the predictability of EA rainfall based on ENSO is quantified based on composite analysis, correlations and contingency tables. A test for field-significance considering the properties of finiteness and interdependence was also applied to avoid correlations by chance. An analysis of Principal Components (PCs) was also carried out to evaluate the atmospheric teleconnections giving rise to the Sea Surface Temperatures (SST) correlations. El Nĩno typically leads to wetter conditions during OND and drier conditions during MAM on average. Significant correlation exists between (SST) over central Pacific (in phase), Maritime Continent (out of phase) and EA OND rainfall. The correlations of ENSO indices with rainfall are statistically significant for OND and an analysis based on contingency tables shows modest predictability. The correlation is maintained for different lags, and the common area that satisfies the criteria for statistical field significance is coincident with ENSO area. The use of ENSO indices derived from the central Pacific sea surfaces improves the predictability from OND and robust on intra-seasonal to inter-annual timescales. An ENSO-based scheme that is adapted to each season and region, and takes account of intra-seasonal to inter-annual variations can thus provide skilful rainfall predictions.