

Abstract

This study presents the past and future variations in mean rainfall and temperature over East Africa (EA) based on reanalyzed datasets, and Coupled Model Intercomparison Project Phase 5 (CMIP5). Past climate is limited to 1951-2010 while climate simulations for a baseline period (1961–1990) and projection period (2071–2100), are compared. There is an overall reduction in rainfall, while temperature trend is positive over EA. CMIP5 models overestimate and underestimate seasonal rainfall of October–December (OND) and March–May (MAM), respectively. Rainfall is projected to increase under the RCP4.5 and 8.5 scenarios. Larger increases in rainfall will occur in OND than in MAM. During the last half of the 21st century, EA is likely to warm by 1.7–2.8 and 2.2–5.4 °C under the RCP4.5 and RCP8.5 scenarios, respectively, relative to the baseline period. The central parts of Kenya and the Lake Victoria Basin will witness the highest increases in seasonal rainfall. Understanding the future climate variability in EA is important for planning purposes especially for sectors like agriculture that are mainly weather dependent. However, these results are based on relatively coarse resolution models prone to bias and therefore should be used with caution.