The agricultural economy in Nigeria is largely rain-fed. In this situation, changes in the average rainfall and variability would affect agricultural and food production. Variability in rainfall (increases and/or decreases) can be expected to intensify the cycle of poverty in an agrarian economy like Nigeria. Therefore, any strategy for adapting agriculture and food systems to a changing climate and rainfall pattern should be evidence-based and should enhance climate resilient agriculture and economic development. The analysis involved mapping of rainfall variability and food poverty data using descriptive statistics and geographical information systems approaches. The results revealed agro-climatological and socio-economic differences in the patterns and hotspots of rainfall variability and food poverty index in time and space. The results also underscored the vulnerability of specific parts of the country to the impacts of climate change. Therefore, there is the need for strategic, regional, sectoral and socio-economic policy for addressing food poverty issues in the context of climate change in Nigeria.