General Overview Of Rainfall Pattern In East Africa

Rainfall is a renewable resource, highly variable in space and time and subject to depletion or enhancement due to both natural and anthropogenic causes. Therefore, knowing the variations in the general rainfall pattern is valid to understand the climate change variations. Rainfall occupies an important position in the climatic studies of any region as it's a product of climatic phenomena such as evaporation, condensation, vapour pressure and formation of cloud. It plays an important role in the assessment of climatic water balance of a region. It claims a first place in the practical importance as it controls humidity and aridity of a region and consequently the agricultural efficiency. Moreover, it also plays a major role in the assessment of floods and drought events of a region. Because of its practical and climatological implications, it is vital to place interest on its characteristics -amounts, monthly and seasonal variations, percentage, intensity, variability and its areal distribution (Awasthi, 1995).

The rainfall received over Kenya is mostly due to the convergence of the Northeast and Southeast trade winds over the Intertropical Convergence Zone (ITCZ). This leads to Kenya having two major rainy seasons; March-April-May (MAM) and October-November- December (OND). The March-May rainfall marks the long rains season whereas the October- December marks the short rain season. Basically, the two seasons occur due to the shifting of the ITCZ as it moves from the Northern Hemisphere to the southern and vice versa.

The ITCZ is a narrow band of low pressure in which air masses moving equatorward from the Southern Hemisphere and Northern Hemisphere converge. It is characterized by high humidity, heavy precipitation, deep cloudiness, winds and low pressure. Its north-south movement is due to the movement of the overhead sun. The convergence zone is difficult to locate at low levels over East Africa due to the complex effects of topography and low-level synoptic circulations. It is however detectable in the wind field near 700mb (Mukabana and Pielke, 1996; Kiangi et al., 1981). It is the main synoptic scale system that controls the intensity and migration of seasonal rainfall over Eastern Africa.

Over East Africa, it comprises of both the zonal and meridional arms in around November to March months (Ininda, 1995; Okoola, 1999). The zonal arm/component is formed by the convergence of Northeasterly and Southeasterly trade winds. The north-south movement of this component is primarily responsible for both the long and short rainfall seasons over this region. Its strength depends on the intensity of the trade winds which is in turn determined by the subtropical anticyclones. The meridional component is formed by the convergence of easterly winds from the Indian Ocean and moist westerlies from the Atlantic Ocean and the Congo Basin. It oscillates between longitudes 25°E and 36°E. It sometimes couples with the quasi-permanent Lake Victoria Trough to give active weather over much of western Kenya throughout the year (Asnani, 1993).