

Abstract:

The City of Nairobi is located at longitude 36 50' E mid 1 18' S. The mean altitude is around 1,700 meters above the mean sea level but as the city has a highly variable topography, this height ranges from 1,600m (to the East) to over 1,800 (to the West and Northwest of the Central Business District (CBD)). The prevailing winds have a strong Easterly component. The Northeasterly winds prevail during the northern winter while the southeasterlies are dominant during the southern winter. Computed frequency wind roses show that the surface winds at the city of Nairobi have a high frequency of easterly flow for all months of the year. However, some westerlies are observed during the period June, July and August which are associated with the high pressure ridge that prevails over East Africa during the period. During this period, the winds are also observed to be more variable both in speed and direction. There is also large diurnal variability with the day-time winds being highly constant in direction than is the case with night-time conditions. The Inter Tropical Convergence Zone (ITCZ) is the main climatic feature that produces rainfall over the city of Nairobi. Following the movement of the overhead sun, the ITCZ passes over the city of Nairobi twice a year resulting in a bimodal distribution of rainfall. The long rains are centered around April while the short rains are centered around November. Although climatologically the onset of the long rains is around the middle of March. Observations have shown that there is considerable variation from year to year. The cessation of long rains coincide with the northward movement of the ITCZ in May but the advection of moisture from the Indian Ocean associated with the Indian Monsoons can result in significant orographically related rainfall during May and June. The short rains around November are often of short duration, but cold air outbreaks from middle latitudes and influx of Congo air mass may bring rains during the month of December. The cloud cover distribution follows that of rainfall as should be expected. However, the high pressure ridge that invades most of East Africa during June, July and August brings considerable amount of low clouds often accompanied by light rains, drizzle and fog, mainly in the morning hours. In a similar fashion, the mean temperature at the city of Nairobi are closely associated with the distribution of cloud cover. The maximum temperatures occur during the afternoons of clear sides when insolation is maximum. The minimum temperatures are greatly influenced by strong radioactive cooling associated with clear night sides. Hence large diurnal range of temperature can be expected. The moisture bearing South Easterly winds which have had a long track over the Indian Ocean increase the relative humidity over the city of Nairobi while the North Easterly winds which have flown over the dry continental areas of Northern Hemisphere are relatively dry. It is, therefore, seen that the city of Nairobi is influenced by climatic factors that characterize a region within a Trade Wind Belt.