

Rainfall trend detection in Northern Nigeria over the period of 1970-2012

ABSTRACT

This study examined the trends in variability and spatial distribution of annual rainfall over northern Nigeria during the period 1970-2012 with a view to understand the pattern of rainfall trend (significance and magnitude), by applying various statistical tools on the data obtained from 11 weather stations. The non-parametric Mann– Kendall test was used to determine the statistical significance of trends while the magnitude of trends was derived from the Sen slope estimator of the linear trends using Kendall robust line fitting. Map of rainfall trends was generated by applying a geo-statistical interpolation technique to visualize the detected tendencies. The findings revealed that a significant positive increase of 2.16mm in rainfall was recorded in the entire northern Nigeria within the period of 1970 to 2012. It further indicated that majority of the stations revealed an upward trend, with Bauchi, Borno, Kebbi and Sokoto stations showing significant positive trends of 8.13mm, 4.30mm, 4.76mm and 4.42mm respectively. It is concluded that there is high variability in rainfall in the northern Nigeria which signifies a clear evidence of climate change in the region.

Keyword: Rainfall trend; Man-Kendall test; Northern Nigeria; Climate change