

ABSTRACT:

This study focuses on describing the patterns and trends of five selected rainfall indices in Peninsular Malaysia, based on daily rainfall data from 1975 to 2004. Five rainfall indices based on two main seasons, the northeast and southwest monsoons, were analyzed: total rainfall, frequency of wet days, rainfall intensity, frequency of wet days (extreme frequency), and rainfall intensity (extreme intensity) exceeding the long-term mean 95th percentile. The findings indicated that the eastern areas of the Peninsula were strongly influenced by the northeast monsoon, while the southwest monsoon had the greatest impact on the western part of the Peninsula, particularly the northwest. In studying the trends of these rainfall indices, the non-parametric Mann-Kendall test was used. The serial correlation and cross-correlation structure of the data were accounted for in determining the significance of the Mann-Kendall test results. It was found that there were differences in trend patterns over the Peninsula during both seasons, with a decrease in total rainfall and a significant decrease in frequency of wet days leading to a significant increase in rainfall intensity over the Peninsula, except in eastern areas, during the southwest monsoon. In contrast, a trend of significantly increasing total rainfall and an increase in frequencies of extreme rainfall events during the northeast monsoon caused a significantly increasing trend in rainfall intensity over the Peninsula to be observed. However, no significant trend was observed with respect to extreme intensity during both monsoons over the Peninsula. The findings of this study suggest that rainfall patterns in Peninsular Malaysia are very much affected by the northeast monsoon, based on the larger magnitude of changes observed in the rainfall indices.