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Spatial and Temporal Patterns of Drought in Hambantota District Using the SPI Index

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Abstract

Drought is a natural hazard that has significant socio-economic and environmental impacts and it is universally acknowledged as a phenomenon associated with scarcity of water. The Standardized Precipitation Index (SPI) can be used to indicate the associated spatial and temporal rainfall variation. The objective of this study is to assess the drought in Hambantota district using SPI index with three-time scales. The study used monthly precipitation data collected from 17 meteorological stations in the district for the period from 1961 to 2014. The data were analysed using the SPI calculator (SPI SL 6.exe) introduced by the National Drought Mitigation Centre (NDMC). The results have shown in terms of spatial distribution of drought frequency, the temporal pattern of occurrence, duration, magnitude and intensity of drought. The findings revealed that frequency in occurrence of drought was increasing over the time scale within the district. The persistent low rainfall, high rainfall variability and erratic rainfall, which were identified throughout the district have influenced significantly for the continuous occurrence of droughts in the Hambantota district. There have been mild, moderate, severe and extreme drought events and it revealed that there could be a higher probability of frequent occurrence of mild droughts than moderate, severe or extreme droughts in all stations. Extreme drought could be identified in western, north-western and northern parts of the district, whilst severe drought in the eastern and north-western parts and moderate droughts occurring in the central region. More frequent mild drought could be observed in northern, southern and central parts of the district. The results have also shown that there was a strong correlation between the drought duration and magnitude in the Hambantota district during the time period considered in the present study.

Key words: *Droughts, Standard Precipitation Index, special distribution, frequency, Hambantota district*

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