Analysis of Drought Condition in Kilinochchi Districts by Standard Precipitation Index

*Jayasekara, J.M.A.U., Prabhaharan, M., Sellathurai, T. and Mikunthan, T.
Department of Agricultural Engineering, University of Jaffna, Sri Lanka
*Corresponding email: awanthi.jayasekara@gmail.com

Drought is a major environmental hazard related with water scarcity and it is a complex phenomenon due to its severity, duration and aerial extent. Agriculture sector is most affected by the onset of drought as it is a highly reliable on the weather, climate and soil moisture. Kilinochchi is one of the most agricultural area in Northern and its rainfall characteristics are different from other regions of Sri Lanka. Therefore, the study aims to evaluate the drought in this area in different time scales; which represent the impact of drought in different sectors and water resources. To achieve this objectives the rainfall data for the period of 1988 to 2018 (30 years) was collected and analyzed using standard precipitation index with different time scales; 1, 3, 6, 9 and 12. The results shows that the monthly average rainfall for the 30 years ranged between 9.409 to 304.177 mm. Most of the data falls under extremely drought condition this is followed by near to normal condition. In the extremely drought condition the occurrence of SPI values recorded as SPI 6 > SPI 9 > SPI 12 > SPI 3 > SPI 1. The distinct heavy changes in the precipitation over the study area with the percentage of 50.1 % (SPI 6) and it has impact on agricultural activity and the area also has high impact on stream flows, reservoir levels and ground water level (SPI 12, 50 %), these events followed by SPI 3 that indicates the impact of drought on seasonal estimation of precipitation and impact on short term soil moisture and crop stress (SPI 1, 43.5 %). From this study it can be concluded that the area has high impact due to extremely drought and high risk in short term soil moisture deficit, which may adversely affect the agricultural activity.

Keywords: Drought, Kilinochchi, SPI