

COMPARATIVE ANALYSIS OF METEOROLOGICAL DROUGHT IN DRY, WET, AND INTERMEDIATE ZONES: A FOCUS ON POLONNARUWA, KANDY AND KURUNEGALA

*M.R.F. Fasna*¹, *H.M.K.C.W. Herath*²

Drought is a major and far-reaching global challenge, particularly when it comes to meteorological droughts, which are extended dry periods caused by insufficient rainfall. This study aimed to compare the occurrence of meteorological droughts in dry, wet, and intermediate zones in Sri Lanka, focusing on Polonnaruwa, Kandy, and Kurunegala districts. The analysis was based on 30 years of monthly rainfall data (1993-2023) obtained from the Department of Meteorology of Sri Lanka (Colombo). Standard Precipitation Index (SPI) was used to analyze the rainfall data and identify periods of meteorological drought within these districts. The results revealed that Polonnaruwa experienced drought conditions for 21 out of the past 30 years, totaling 170 drought months, with most droughts (102 months) occurring during the Southwest monsoon. In Kurunegala, only the year 2003 was classified as a moderate drought year, with 56 months identified as moderate drought periods, mostly during the Northeast monsoon. Interestingly, 15 of the past 30 years were identified as wet years in the Kurunegala district. The study also highlighted an increase in meteorological drought events in Kandy over time, based on SPI findings. From 2007 to 2021 in Polonnaruwa, there was a decrease in the Normalized Difference Vegetation Index (NDVI) and an increase in Land Surface Temperature (LST). Both LST and meteorological drought occurrences are increasing, indicating a positive correlation. Among the three districts, Polonnaruwa was identified as the most vulnerable to meteorological droughts. To reduce the impact of drought, the study suggests measures like water recycling, the adoption of drought-resistant crops, and increased reforestation efforts.

Keywords: Dry zone, Intermediate zone, Meteorological Drought, SPI Index, Wet zone

¹ Department of Geography & Environmental Management, Sabaragamuwa University of Sri Lanka. fasnaf1999@gmail.com

² Department of Geography and Environmental Management, Sabaragamuwa University of Sri Lanka.