

## USE OF RClmDex TO ASSESS TEMPERATURE EXTREMES: A CASE STUDY IN ANURADHAPURA, SRI LANKA

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Climate change in terms of temperature increment is evident in Sri Lanka. Increased temperature negatively affects crop cultivation and different crops have critical growth stages that are sensitive to temperature. For example, the spikelet sterility in rice is induced by high temperature of around 35 °C that directly reduces the yield. Therefore, this study aimed to analyse the temperature extremes in Anuradhapura, which is one of the major rice growing areas in the country, using observed daily temperature data. Temperature data for 1975-2005 period were collected from the Department of Meteorology, Sri Lanka. Extreme temperature indices of Expert Team on Climate Change Detection and Indices (ETCCDI) were used with modifications and analysis were performed using RClmDex tool. The 90<sup>th</sup> percentile of maximum and minimum temperatures for the study period were 35.4 °C and 25.5 °C respectively. The highest maximum temperature for *Yala* and *Maha* seasons were recorded in year 1983 (39.6 °C) and 1977 (38.4 °C) respectively. Warm days (% of time when daily maximum temperature >90<sup>th</sup> percentile) showed a non-significant ( $p > 0.05$ ) increment in both *Yala* and *Maha* seasons. In contrast, significantly ( $p < 0.05$ ) increasing trends were reported for warm nights (% of time when daily minimum temperature >90<sup>th</sup> percentile) in both seasons while a higher increment was from the *Maha* season. A significant ( $p < 0.05$ ) increment of tropical nights (annual count when daily minimum temperature >25 °C) was observed at Anuradhapura, but the summer days (annual count when daily maximum temperature >35 °C) was not significantly ( $p > 0.05$ ) increased. In this work, temperature extremes were studied using different aspects of temperature. Lack of recent data hindered the application of the findings, but this protocol can be successfully applied to study the climate change and impact of climate variability on crop cultivation in Sri Lanka.

**Keywords:** *Climate change, ETCCDI, RClmDex, Temperature extremes*