

Changes of Temperature and Precipitation Extremes in Anuradhapura District, Sri Lanka during 1981–2019

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Anuradhapura is one of the major agriculturally important districts located in the low country dry zone of Sri Lanka and recently frequent crop failures were reported owing to extreme climatic events such as droughts and floods. Although, many researchers have investigated the climatic changes of the area during the past several years, very few attempts can be seen on studying the extreme climatic events. Therefore, the objective of this study was to analyze the occurrence of extreme climate events in Anuradhapura district in Sri Lanka. Using daily minimum and maximum temperature and precipitation data from 1981 to 2019, four extreme temperature and six extreme precipitation indices which were defined by Expert Team on Climate Change Detection and Indices (ETCCDI), were analyzed by RClimeDex software package (Version 4.0.2). Simple linear regression was performed to detect the significance of trends of extreme events. The number of very heavy precipitation days (R20), number of days above 25mm (R25), very wet days (R95p), extremely wet days (R99p), annual total wet days precipitation (PRCPTOT) and simple daily intensity index (SDII) have increased during the study period, but did not show a significant ($P > 0.05$) trend. A significant ($P < 0.05$) positive trend was observed for warm nights (TN90p) and negative trends were observed for cool nights (TN10p) and diurnal temperature range (DTR). Non-significant negative trend was observed for warm days (TX90p) during 1981-2019 period. It can be concluded that there is an increasing trend in the occurrence of extreme precipitation indices and conspicuous changes in temperature indices during 1981-2019 period in Anuradhapura district.

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