Calculation of Climatic Indices for Daily Temperature and Precipitation During 1990-2015 in the Kelani River Basin, Sri Lanka

06 Nov.
ET 39

Gamlath Rallage M. B. Gunathilake[1(*)], Pavithra M. Weerasekara[2], Vishvanath Chandrasekharan[3], Migalahandi D.S. De Silva[3]

[1]Panditharathne Constructions, Kandy, Sri Lanka, [2]Asian Institute of Technology, Pathumthani, Thailand, [3] Faculty of Social Sciences and Humanities, Rajarata University, Sri Lanka

[(*)]E.mail :miyurubandaragunathilake@gmail.com

Evaluation of trends in the historical climate of the Kelani River Basin will essentially provide useful insights in future decision making and planning of activities related to climate vulnerable sectors. This particular study uses the RClimDex software to calculate nine precipitation related and six temperature related extreme indices during 1990-2015 at four rainfall gauging and two meteorological stations in the Kelani River Basin, Sri Lanka. Increasing trends of tropical nights (TR 20), summer days (SU 25) and monthly maximum value of daily minimum temperature (TN_x) signify that the Kelani River Basin is also under the threat of warming. Notably, monthly maximum value of daily maximum temperature (TX_x) and monthly maximum value of daily minimum temperature (TX_n) show small negative trends at both Colombo and Katunayake meteorological stations. Consecutive wet days (CWD) and dry days (CDD) exhibit mixed trends in this study. Maximum 1-day precipitation (R1) shows positive trends in three rainfall stations while maximum 5-day precipitation (R5) shows negative trends in three rainfall stations during the period of analysis. Positive trends in total precipitation in extremely wet day related indices reported at three of the rainfall stations clearly indicate that the intensity of rainfall has increased during 1990-2015. The results of this study are in line with the findings of previous researches conducted in Sri Lanka related to precipitation and temperature indices. The outcomes and recommendations of this study can be mainstreamed into the national adaptation planning of climate change to develop climate resilient frameworks and adaptation policies.

Keywords: Rainfall, temperature; RClimDex, climatic indices, Kelani River Basin