

TEMPORAL AND SPATIAL RAINFALL VARIABILITY IN *MALWATHU OYA* RIVER BASIN IN SRI LANKA

S.D. Madurapperuma Arachchige¹, N.S. Abeysingha^{1,2}, Ram L. Ray² and L. P. Muthuwatta³

¹*Department of Agricultural Engineering and Soil Science, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.*

²*College of Agriculture and Human Sciences, Prairie View A&M University, USA.*

³*International Water Management Institute, Pelawatta, Battaramulla, Sri Lanka.*

The temporal and spatial variability of rainfall significantly impacts water resource management, agricultural productivity, and ecosystem health in river basins. The aim was to investigate the temporal and spatial variability of rainfall and identify the possible impacts of climate change on rainfall variability. This study analyzed 44 years of rainfall data (1976–2020) at 28 stations across the *Malwathu Oya* river basin, Sri Lanka. Standardized anomaly, coefficient of variation, monotonic trends of rainfall and dry days, and the onset and retreat of monsoon were computed for 44 years. The impacts of climate change were evaluated by comparing these variables before and after the year 2000 using the Wilcoxon signed-rank test. Results exhibited a significant increase in annual rainfall within the *Malwathu Oya* river basin, primarily influenced by the upstream region. Additionally, the downstream area exhibited a notable reduction in dry days, indicating more consistent rainfall. Total annual rainfall displayed a significant increase after the year 2000, probably due to climate change, and the overall temporal patterns of rainfall events remain consistent with those of before 2000.

Keywords: Coefficient of variation, Monotonic trends, Standardized anomaly