

## **Trends and Variability Assessment of Rainfall in Vhembe South Africa**

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**ABSTRACT** This study focuses on assessing trends and variability in rainfall of Vhembe District South Africa. Mann-Kendall trend analysis and Sen's slope estimator are used in determining the changes in the rainfall climatology. The interesting observation is that humid zone and semi-arid zones in the district exhibit different behaviour as far as trend analysis is concerned. Due to diverse rainfall zones, this study provides major evidence that rainfall is highly variable within local settings. The direction of rainfall trend was, in general, downward and statically significant across the semi-arid zone. Statistically significant (downward) trends (95% to 99%) were observed in densely populated areas affected by urban sprawl, depleted vegetation cover, or other human development such as large-scale farming and construction. Generally, changes in rainfall characteristics were mostly observed to start in the mid-1990s. Global climate change influence on the changes in rainfall characteristics was not conclusive. However, the local anthropogenic climate change was obviously one of the causes of changes in rainfall.