

PREFACE

Assessment of Change in NDVI over the Parvara River Basin in the Context of Climate Change Using the Google Earth Engine. Climate change has emerged as one of the most significant challenges of our time, impacting ecosystems and natural resources across the globe. In this context, monitoring and understanding changes in vegetation dynamics become crucial for assessing the ecological health and resilience of vulnerable regions. The Parvara River Basin, with its diverse ecosystem and susceptibility to climate variations, presents an ideal study area to investigate the effects of climate change on vegetation. The Normalized Difference Vegetation Index (NDVI) has proven to be a valuable tool for assessing vegetation dynamics and health. By quantifying the amount and VIGOR of green vegetation, NDVI offers insights into changes in photosynthetic activity and vegetation responses to environmental factors. Leveraging the power of remote sensing and advanced geospatial technologies, the Google Earth Engine provides a unique platform for analysing large-scale imagery and deriving meaningful information for ecological studies.

This research paper aims to delve into the assessment of change in NDVI over the Parvara River Basin, focusing on the context of climate change. By employing the Google Earth Engine as a robust analytical tool, the study offers a comprehensive analysis of the temporal variations in NDVI and their implications for the region's ecosystem. The primary objective of this research is to identify and understand the annual and seasonal patterns of NDVI in the Parvara River Basin. By examining the fluctuations in vegetation activity throughout the year, we gain valuable insights into the response of the region's vegetation to changing climatic conditions. Furthermore, the assessment of temporal changes in rainfall, using the Climate Hazards Group InfraRed Precipitation with Station (CHIRPS) dataset, allows us to establish connections between precipitation patterns and vegetation dynamics.

Through a combination of satellite imagery, geospatial analysis, and statistical modelling, this research aims to shed light on the complex interactions between climate change, NDVI, and the Parvara River Basin's ecosystem. The findings have the potential to inform policymakers, researchers, and environmental practitioners about the impacts of climate change on vegetation dynamics and guide the development of appropriate strategies for sustainable land and water resource management. It is our hope that this research paper will contribute to the growing body of knowledge on climate change impacts and the use of advanced geospatial tools in ecological assessments.