

## Analyzing the Effects of Land Use and Land Cover Changes on Paddy Cultivation Using Remote Sensing: A Case Study of Sooriyawewa, Sri Lanka

CG Malavipathirana<sup>1#</sup>, KA Dinusha<sup>1</sup>, KUJ Sandamali<sup>1</sup> and WDDP Withanage<sup>2</sup>

<sup>1</sup> *Department of Spatial Sciences, General Sir John Kotelawala Defence University,  
Sri Lanka*

<sup>2</sup> *Survey Department of Sri Lanka, Sri Lanka*

#35-sursc-0006@kdu.ac.lk

Land-Use and Land-Cover (LULC) change research is a type of environmental research that is closely associated with socioeconomic development. At present, the LULC changes mainly occur due to physical developments and agricultural processes. Paddy is one of the major crops grown in Sri Lanka. Hambantota district is ranked in the fifth place in rice production in Sri Lanka, and Sooriyawewa is the driest Divisional Secretary Division (DSD) in Hambantota District, but it is recorded as the DSD with the most paddy cultivation. However, nowadays there are a number of factors that hinder the paddy cultivation there. This research aims to identify the existing system for monitoring the LULC changes in paddy cultivation, to recommend applicable Remote Sensing techniques, to quantify the LULC changes over paddy cultivation in Sooriyawewa during the past 4 decades and finally to examine the underlying causes for LULC changes over the paddy. For this research, Landsat images were downloaded from 1980 to 2019 with a specified time gap and supervised classification was used for the land cover classification for all images to detect the paddy variation in this area. The obtained net changes between 1980 to 2019 are: paddy, other crops, forests, water bodies, built up areas and barren lands. According to the LULC changes between 1980 to 2019, there was a -15.50% decrease in paddy areas but built-up areas, other crops indicate significant increases of 11.97% and 10.08% respectively. This is a temporal problem in this area and this study is useful for relevant authorities for decision making, preparing urban development plans, planning infrastructural development and supervision, land use planning, natural resource conservation and environmental sustainability.

**Keywords:** *land use and land cover, classification, remote sensing*