Longitudinal Assessment of Urban Land Transformations with Multi-Sensory Remote Sensing in a Semi-Arid Metropolitan City

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Abstract:
Land use Land cover changes are a dynamic process on the surface over time. This has become integral to modern environmental monitoring and natural resource management. Geo-rectified remote sensing data enables the detection of changes in land use and cover, known as LULC change detection. This study aims to analyze changes in land use and cover within the Jaipur Municipal Corporation, Jaipur, Rajasthan, India, utilizing multi-temporal remote sensing data (Landset-5 for 1995, 2005 and Landset-8 for 2015). Four primary LULC classes were identified: Built-Up Areas, Barren Land, Vegetation, and Water Bodies. The investigation reveals a significant 4.35-fold increase in built-up areas from 1995 to 2015, while water bodies expanded from 0.21% to 0.34% of the total area. Vegetation also increase from 12.21% in 1995 to 14.87% in 2015 and barren lands experienced notable depletion of 32.70% from 1995 to 2015. Understanding these dynamic changes necessitates the application of GIS and remote sensing techniques.

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