Introduction

Lusaka, the capital city of Zambia, has been experiencing rapid urban growth. Rapid urbanization has caused rapid land use/cover (LULC) changes. The purpose of this study was to investigate the spatiotemporal pattern and processes of LULC changes and urban expansion in Lusaka City, Zambia.

Methodology

**LULC Classification**
- Data - Landsat TM & ETM+; Period - 1990, 2000, 2010; Method - Maximum Likelihood Classification; Software - ENVI 5.2.

**Landscape Change Dynamics**
- Selected landscape level spatial metrics generated in FRAGSTATS. (LPI - Largest Patch Index; PD - Patch Density; MPS - Mean Patch Size; LSI - Landscape Shape Index; IJI - Interspersion and Juxtaposition Index; AWMPFD - Area Weighted Mean Patch Fractal Dimension; CONTAG - Contagion; COHESION)

**Urban Sprawl Analysis**
- Method - Shannon Entropy ($H_n$) which measures the compactness or dispersion of urban/built up area.
- Equation: $H_n = - \sum_{i=1}^{n} P_i \log(P_i)$ - where $P_i$ is the proportion of the variable (e.g. built up area) in the $i$th zone. $H_n$ values range from 0 to log n; values closer to 0 representing compactness and values closer to log n representing dispersion.

**Sprawl reference zones**
- (1) Ward Groups (WGs) - grouped based on built area composition.
- (2) Distance to Location Factors: city center, major roads, major markets and rail station.

Results

**Land Use/Land Cover Changes**

**Distance to Location Factors**

**Conclusion**
- Built Up area increasing at rapid rate dominated by unplanned areas.
- Landscape fragmentation increasing and becoming more heterogeneous.
- Entropy shows increased and continued dispersion of the landscape - urban sprawl evident.