**Studying urbanization in Louisville and Lexington metropolitan cities in Kentucky**

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Urbanization process reduces forest and agriculture land area and increases the impervious surface area (ISA). Impervious surface is the surface that prevents the infiltration of water into the soil, such as roads and rooftops. Land surface temperature (LST) is an important factor of urban heat island (UHI), and normalized difference vegetative index (NDVI) value is an indicator of urban climate. These values can be used for the analysis of imperviousness of an area. This study was conducted to explore the values of 2018 LST, NDVI, and percent ISA of Louisville and Lexington, metropolitan cities in Kentucky, to compare urbanization in these cities. NDVI maps for both cities were derived in ArcMap, using raster calculator. Landsat 8 thermal infrared band 10 and 11 were used to calculate LST in ArcMap. Percent ISA was calculated by using 2016 national land cover dataset. A higher degree of urbanization was found in Louisville compared to Lexington. Furthermore, these parameters (LST, NDVI, and percent ISA) were analyzed at Census Block Group (CBG) level, using grouping analysis tool in ArcMap for both cities separately. This study suggests that Lexington and its suburb areas reveals a more systematic pattern of urbanization, whereas, in Louisville a more scattered pattern is observed in urbanization process.