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## Land-Use/Land-Cover Changes and Their Influence on Urban Thermal Environment in Zhengzhou City During the Period of 1986 to 2026

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Rapid urbanization has become a major urban sustainability concern due to environmental impacts, such as development of urban heat island (UHI) and the reduction of urban security states. To date, most research on urban sustainability development has focus on dynamic change monitoring or UHI state characterization. While there is little literature on UHI change analysis. In addition, there has been little research on the impact of land use and land cover changes (LULCCs) on UHI, especially simulates future trend of LULCCs, UHI change, and dynamic relationship of LULCCs and UHI. The purpose of this research is to design a remote sensing based framework that investigates and analysis that how the LULCCs in the process of urbanization affected thermal environment. In order to assesses and predicts impact of LULCCs on urban heat environment, multi-temporal remotely sensed data from 1986 to 2016 were selected as source data, and Geographic Information System (GIS) methods such as CA-Markov model were employed to construct the proposed framework. The results shown that (1) there has been a substantial strength of urban expansion during the 40 years study period; (2) the most far distance urban center of gravity movement from north-northeast (NEE) to west-southwest (WSW) direction; (3) the dominate temperature were middle level, sub-high level and high level in the research area; (4) there was a higher changing frequency and range from east to west; (5) there was significant negative correlation between land surface temperature and vegetation, and significant positive correlation between temperature and human settlement.