
**Landsat-based vegetation abundance and surface temperature for surface urban heat island studies:
The tale of greater Amman municipality in the Hashemite Kingdom of Jordan**

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Abstract: This study aims to assess the spatial and temporal variations in vegetation abundance and surface temperature (ST) in the greater Amman municipality, Jordan, using Landsat satellite data. The study area is characterized by rapid urbanization and a semi-arid climate. The research methodology involves the use of the Normalized Difference Vegetation Index (NDVI) to measure vegetation abundance and the Landsat Surface Temperature (LST) algorithm to estimate surface temperature. The results show a significant decrease in vegetation abundance and an increase in surface temperature over the study period, indicating the urban heat island effect. The findings suggest that urban planning and green infrastructure development are crucial for mitigating the impacts of climate change in urban areas.

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