# Drone-Assisted Thermal Sensing: A Community-Oriented Approach to Urban Heat Mitigation

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**SUMMARY**

This study presents the methods, results, and potential applications of drone-based thermal visualization for mitigating urban heat islands (UHI). The urban heat island effect arises from anthropogenic materials and infrastructure that absorb and retain solar radiation, leading to elevated surface and air temperatures. To capture the localized dynamics of heat distribution, unmanned aerial vehicle (UAV) or drone equipped with thermal sensors were deployed to generate high-resolution thermal maps with less than 3×3 centimeters per pixel of a public streetscape in Taman Teratai, Johor Bahru. The study area comprised residential blocks, small-scale industrial facilities, small shopping mall, shade trees, green spaces, and a river corridor. This study aimed to analyze the temporal thermal behavior of common urban materials, quantify surface area distribution across temperature ranges, and determine their relative impacts through a comparative analysis of different land cover types. The resulting baseline dataset provides a benchmark for evaluating the effectiveness of planned streetscape revitalization measures in reducing the heat island effect. This work highlights the potential of UAV thermal sensing as a valuable tool for urban microclimate monitoring, sustainable design and climate-resilient city planning.

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