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Targeted urban heat mitigation strategies using urban morphology databases and micro-climate modelling to examine the urban heat profile

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Strategies for urban heat mitigation often make broad and non-specific recommendations (i.e. plant more trees) without accounting for local context. As a result, resources might be allocated to areas of lesser need over those where more urgent interventions are needed. Also, these interventions might return less than optimal results if local conditions are not considered. This project aims to assist with these interventions by providing a method to examine the urban heat profile of a city through an automated systematic approach. Using urban morphology information from databases such as WUDAPT, areas of cities are clustered into representative local climate zones (LCZs) and modelled at a micro-scale using localised features and properties. This bottom up modelling approach, using the VTUF-3D, UMEP, and TARGET models, allows these areas to be assessed in detail for their human thermal comfort performance and provide a city-wide heat map of thermal comfort. It also allows mitigation scenarios to be tested and targeted for each cluster type. A case study performed using this method for Melbourne is presented.