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Examining the Thermal Performance Characteristics of Outdoor Spaces in the Tropical Context of Kuala Lumpur

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ABSTRACT

The growing urban expansion in the tropical context of Kuala Lumpur in recent years has radically increased the need for creating more thermally comfortable and liveable outdoor spaces for the microclimatic enhancement of the urban environments. Nevertheless, despite the growing interest in the analysis of the circumstances of ameliorating the outdoor thermal comfort conditions in the tropics, this study argues that there is a need for more in-depth and comprehensive scholarly studies in hot and humid climate of Kuala Lumpur. In this study, using field measurement and parametric simulation via ENVI-met, the thermal characteristics of different outdoor spaces located in the university of Malaya (UM) campus are evaluated. The study looks at both shaded and unshaded outdoor environments and predicts their performance under versatile sky conditions. Findings reveal that many of the outdoor spaces in the UM campus fail to provide thermally pleasant environments for their users. The majority of these thermally uncomfortable outdoor spaces encompass very similar design attributes, i.e. openness to the sky with no possibility of shading, relatively far from the surrounded trees and considerably less vegetated, and covered by low albedo surface materials such as asphalt. To conclude, the study develops new technical guidelines to optimize the thermal performance of outdoor urban areas in the tropics.

Keywords: Outdoor Urban Environments; Outdoor Spaces; Thermal Performance Characteristics; Outdoor Thermal Comfort

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EXAMINING THE THERMAL PERFORMANCE CHARACTERISTICS OF OUTDOOR SPACES IN THE TROPICAL CONTEXT OF KUALA LUMPUR

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