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Morphological and Climate Balance: proposal for a Method to analyze Neighborhood urban forms by way of densification

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Highlights

- The implementation of compact cities affects the liveability of public open spaces.
- A method of climate and morphological assessment was proposed at the microscale.
- Climate variables were collected from thirty-six street cross-sections on the study domain.
- Three climate zones were found distributed according to distinct morphological patterns.
- The results may support municipal planners designing neighborhood plans and TOD strategies.

Abstract

The major cities in the world have adopted certain strategies for people densification to optimize transport costs, to multiply exchanges of goods, to maximize social networking, as well as to promote economic growth. The implementation of such compact cities have profoundly affected the livability of public spaces and the comfort of pedestrians so far. In order to assess the environmental sustainability of this process, a method of analysis is proposed and applied at a local scale. Combining a morphological and climate site assessment, the method is addressed to urban areas affected by a process of built densification or relevant changes. A case study was performed in São Paulo, in an urban area of 100 hectares. Inside this domain, different climatic and morphological environments were selected to perform a more detailed comparative analysis of the samples chosen. Climate variability was observed in various points of the domain, despite their very close distances. Three climate zones were identified and morphologically described. The results showed an effective correlation between the spatial arrangement of urban cross-sections and the related climate conditions at the neighborhood level; as a consequence, they could contribute to facing the issue of Compact City Design, improving its environmental performance.

Keywords: Urban Morphology; Urban Climate; Assessment method; Compact Cities; Built and Open Spaces; Neighborhood Scale.

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