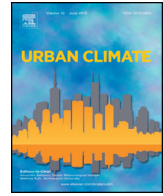




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A “Local Climate Zone” based approach to urban planning in Colombo, Sri Lanka

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ABSTRACT

Integrating climate-sensitive design with the local planning process is fundamental to managing the warming trend in the growing high-density tropical cities. However, the current planning regime is yet to address the challenges posed by local, regional and global warming. An in-depth understanding of the interaction between the physical form and the climatic context is beginning to emerge but, data needs and methods of analysis remain problematic at present to translate this into practical planning applications. In this paper, we showcase a simpler method of contextual analysis using the Local Climate Zone (LCZ) system and draw lessons for climate-sensitive planning in warm humid Colombo, Sri Lanka and other data-poor developing cities.

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1. Introduction

It is now well agreed that adapting to climate change is better addressed at the city scale (Mills et al., 2010; Mills, 2007; Grimmond et al., 2010; Georgescu et al., 2014). Given the rapid growth in urbanisation, the associated serious degradation of environmental conditions and the lower cost of adaptive action, tropical cities are ripe for such action. Yet, knowledge of climate change, and especially the local urban climate change in tropical cities is weak. Not only are there fewer studies on tropical urban climate, the available work is biased towards descriptive studies (Roth, 2007). Application of climate knowledge in urban planning in the tropics remains rare (Ng, 2016).

One of the key difficulties in applying urban climate knowledge to planning decision making in the tropics is the lack of data, both in terms of significant land use land cover elements as well as their effects on local climate. Furthermore, the results of urban climatology are not communicated in a way that is meaningful or

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understood by city planners (Oke, 2006). A system that could bridge both these difficulties is the recently proposed Local Climate Zone (LCZ) approach – a classification system that attempts to define urban areas into 10 built and 7 land cover types of ‘uniform regions of surface-air temperature distribution’ (Stewart and Oke, 2012; Stewart et al., 2014). It is increasingly being applied to tropical contexts (Villadiego and Velay-dabat, 2014; Siu and Hart, 2013; Peng and Jim, 2013; Thomas et al., 2014; Puliafito et al., 2013, etc.) as well as elsewhere (Emmanuel and Loconsole, 2015; Middel et al., 2014; Unger et al., 2014; Alexander and Mills, 2014; Leconte et al., 2015; Müller et al., 2013).

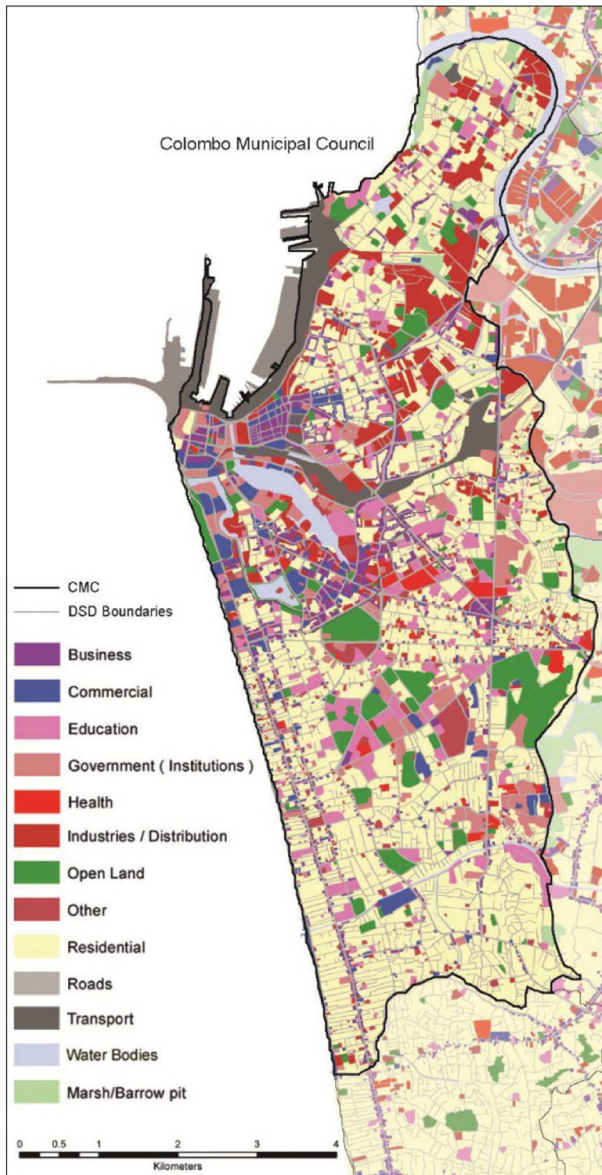


Fig. 1. Land use map of Colombo, 2013.
Source: JICA, 2014.

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