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PII: S0360-1323(16)30505-4
DOI: 10.1016/j.buildenv.2016.12.018
Reference: BAE 4748

To appear in: Building and Environment

Received Date: 2 October 2016
Revised Date: 1 December 2016
Accepted Date: 10 December 2016


This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.
An integrated local climatic evaluation system for green sustainable eco-city construction: a case study in Shenzhen, China

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Abstract: Rapid urbanization has caused a series of environmental problems and increased demand for urban resources. The concept of green, sustainable eco-city constructions is becoming a world-wide common view. Considering the energy configuration and environmental suitability assessment, the outdoor local climate and thermal comfort conditions in a regional area should be effectively evaluated and analyzed to satisfy the resource-saving and environment-friendly demands. This paper proposes a new local climatic evaluation system (LCES) to predict and express local climatic patterns under different urban forms. The system has three modules: a pre-processing module, a dynamic calculation module, and a post-processing module. The pre-processing module uses GIS for parameter design and statistics. The calculation module adopts a regional climatic prediction model to calculate hourly climatic parameters from five dynamically linked sub-modules. The post-processing module expresses the climatic spatial visualizations through the temporal-spatial distributions of climatic

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