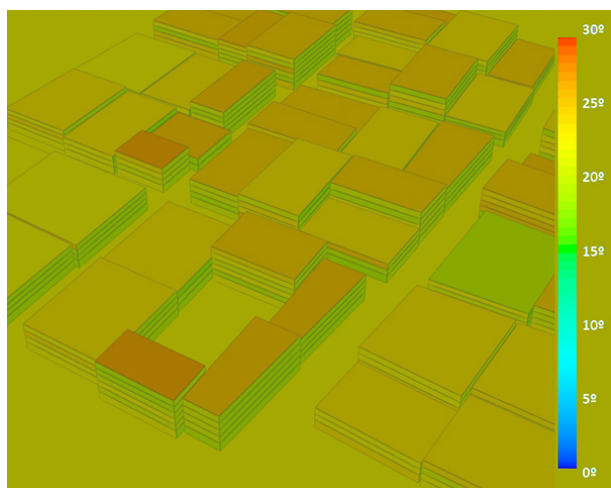


A Level-of-Detail Technique for Urban Physics Calculations in Large Urban Environments

Munoz, David; Besuievsky, Gonzalo; Patow, Gustavo A.



In many applications, such as urban physics simulations or the study of the solar impact effects at different scales, complex 3D city models are required to evaluate physical values. In this paper we present a new technique which, through the use of an electrical analogy and the calculation of sky view factors and form factors, allows to simulate and study the thermal behaviour of an urban environment, taking into account the solar and sky radiation, the air and sky temperatures, and even the thermal interaction between nearby buildings. We also show that it is possible, from a 3D recreation of a large urban environment, to

simulate the heat exchanges that take place between the buildings of a city and its immediate surroundings. In the same way, taking into account the terrestrial zone, the altitude and the type of climate with which the simulations are carried out, it is possible to compare the thermal behaviour of a large urban environment according to the chosen conditions.