

URBAN WEATHER DATA AND BUILDING MODELS FOR THE INCLUSION OF THE URBAN HEAT ISLAND EFFECT IN BUILDING PERFORMANCE SIMULATION.

DOI: 10.1016/j.dib.2017.08.035.

Abstract. This data article presents files supporting calculation for urban heat island (UHI) inclusion in building performance simulation (BPS). Methodology is used in the research article "From urban climate to energy consumption. Enhancing building performance simulation by including the urban heat island effect" (Palme et al., 2017) [1]. In this research, a Geographical Information System (GIS) study is done in order to statistically represent the most important urban scenarios of four South-American cities (Guayaquil, Lima, Antofagasta and Valparaíso). Then, a Principal Component Analysis (PCA) is done to obtain reference Urban Tissues Categories (UTC) to be used in urban weather simulation. The urban weather files are generated by using the Urban Weather Generator (UWG) software (version 4.1 beta). Finally, BPS is run out with the Transient System Simulation (TRNSYS) software (version 17). In this data paper, four sets of data are presented: 1) PCA data (excel) to explain how to group different urban samples in representative UTC; 2) UWG data (text) to reproduce the Urban Weather Generation for the UTC used in the four cities (4 UTC in Lima, Guayaquil, Antofagasta and 5 UTC in Valparaíso); 3) weather data (text) with the resulting rural and urban weather; 4) BPS models (text) data containing the TRNSYS models (four building models).

Keywords:

Building performance simulation; Geographical Information Systems; Principal Component Analysis; Urban Weather Generator; Urban heat island