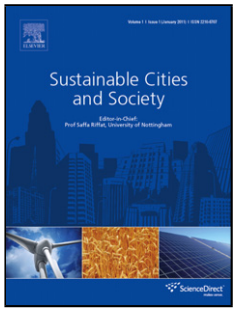

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Aggregation of Residential Buildings for Thermal Building Simulations on an Urban District Scale

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Highlights

- The effect of aggregation of building models on the simulation results is explored.
- Aggregating according to specific properties diminishes the error compared to a total aggregation.
- Aggregation with respect to certain building properties yields better results than others.
- Errors due to aggregation depend on the structure of the aggregated district.
- Errors are relatively low compared with errors commonly encountered in this field.

Abstract

Knowing the energy demand at the scale of neighborhoods allows the conception of efficient energy administration systems that aid to reach sustainability in the built environment. When energy demand data is not available, simulation models can provide estimations and thus enable the analysis of a neighborhood. To simulate the space heating demand of a residential building stock, often an aggregation is carried out. Aggregation implies using one or a few representative models to replace a larger number of building models. This paper explores the effect of the aggregation method on model accuracy when applying a first-order building model for the space heating