

## Accepted Manuscript

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

Authors: Mehmet Elci, Benjamin Manrique Delgado, Hans-Martin Henning, Gregor P. Henze, Sebastian Herkel



PII: S2210-6707(17)31590-1  
DOI: <https://doi.org/10.1016/j.scs.2018.03.015>  
Reference: SCS 1022

To appear in:

Received date: 21-11-2017  
Revised date: 18-2-2018  
Accepted date: 14-3-2018

Please cite this article as: Elci, Mehmet., Delgado, Benjamin Manrique., Henning, Hans-Martin., Henze, Gregor P., & Herkel, Sebastian., Aggregation of Residential Buildings for Thermal Building Simulations on an Urban District Scale. *Sustainable Cities and Society* <https://doi.org/10.1016/j.scs.2018.03.015>

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.

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

Mehmet Elci<sup>1,\*</sup>, Benjamin Manrique Delgado<sup>1</sup>, Hans-Martin Henning<sup>1</sup>, Gregor P. Henze<sup>2</sup> and Sebastian Herkel<sup>1</sup>

<sup>1</sup>Fraunhofer Institute for Solar Energy Systems ISE, Freiburg, Germany

<sup>2</sup>University of Colorado, Boulder, CO, USA

\*E-mail address: mehmet.elci@ise.fraunhofer.de / Fraunhofer ISE, Heidenhofstrasse 2, 79110 Freiburg, Germany / Tel.: +49 (0)761 4588 5582 / Fax: +49 (0)761 4588 9950

## 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

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات