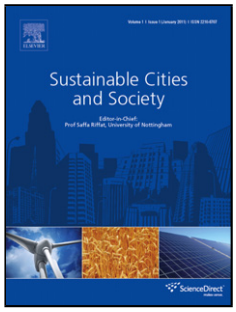
Accepted Manuscript



Title: Towards a satellite based monitoring of urban air temperatures

Authors: Benjamin Bechtel, Klemen Zakšek, Jürgen Oßenbrügge, Giedrius Kaveckis, Jürgen Böhner

PII: S2210-6707(16)30756-9
DOI: http://dx.doi.org/doi:10.1016/j.scs.2017.05.018
Reference: SCS 664

To appear in:

Received date: 18-1-2017
Revised date: 14-4-2017
Accepted date: 23-5-2017

Please cite this article as: Bechtel, Benjamin., Zakšek, Klemen., Oßenbrügge, Jürgen., Kaveckis, Giedrius., & Böhner, Jürgen., Towards a satellite based monitoring of urban air temperatures.*Sustainable Cities and Society* http://dx.doi.org/10.1016/j.scs.2017.05.018

Towards a satellite based monitoring of urban air temperatures

Benjamin Bechtel [1], Institute of Geography, University of Hamburg, (Germany)
Klemen Zakšek, Zentrum für Telematik, (Germany)
Jürgen Oßenbrügge, Institute of Geography, University of Hamburg, (Germany)
Giedrius Kaveckis, Institute of Geography, University of Hamburg, (Germany)
Jürgen Böhner, Institute of Geography, University of Hamburg, (Germany)

[1] Corresponding Author: benjamin.bechtel@uni-hamburg.de

Highlights

- We used dense time series of LST to estimate air temperature in urban and rural areas.
- The annual and diurnal cycles were well represented by the empirical models.
- Multi-temporal predictors considerably improved the results.
- They also enhanced the representation of the diurnal cycle, which is essential for UHI monitoring.

ABSTRACT

Timely meteorological data of high accuracy and spatiotemporal resolution can contribute to sustainable urban planning and management in terms of human thermal comfort, heat wave warning, air pollution prediction, as well as building and transport management among others. Today, the scientific knowledge about the specific urban climate is not fully