

Technical University of Denmark



## Importance of detailed meteorological information for smart city development

**Davis, Neil; Badger, Jake; Giebel, Gregor; Hahmann, Andrea N.; Sempreviva, Anna Maria**

*Published in:*

Book of Abstracts. DTU's Sustain Conference 2015

*Publication date:*

2015

*Document Version*

Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

*Citation (APA):*

Davis, N., Badger, J., Giebel, G., Hahmann, A. N., & Sempreviva, A. M. (2015). Importance of detailed meteorological information for smart city development. In Book of Abstracts. DTU's Sustain Conference 2015 [L-5] Lyngby: Technical University of Denmark (DTU).

## DTU Library

Technical Information Center of Denmark

---

### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

## Importance of detailed meteorological information for smart city development

Neil Davis<sup>1</sup>, Jake Badger<sup>1</sup>, Gregor Giebel<sup>1</sup>, Andrea Hahmann<sup>1</sup>, Anna Maria Sempreviva<sup>1</sup>

1: DTU Wind Energy

\*Corresponding author email: neda@dtu.dk

Smart cities rely on the development and implementation of Key Performance Indicators to help drive decision making. Many of these indicators rely on atmospheric data as an input. For example, buildings depend on air temperature and solar radiation to determine heating or cooling needs, and flood control systems need accurate precipitation information.

Additionally, renewable energy production is dependent on weather. Therefore, high resolution modeling can be used to investigate the strategic planning of urban energy networks, and provide advanced forecasting of distributed power plant production. Climatological studies can aid in identifying extreme conditions that fall outside of the range of normal variance, but have significant impact on the cities operation.

The meteorological section of DTU wind energy is the only meteorological section at DTU and has a wide range of competencies in mapping and forecasting atmospheric conditions.

Urban meteorology focuses broadly on two areas.

1. The description of atmospheric variation inside of urban areas through the study of the urban boundary layer and the urban heat island effect. The figure shows how temperature can vary across a city.

2. The influence of urbanization on larger circulations and the climate system, such as changes in precipitation patterns.

Standard meteorological forecasts do not resolve these impacts at high detail. Therefore, localized microscale studies can provide decision makers with additional information to better run a smart city.

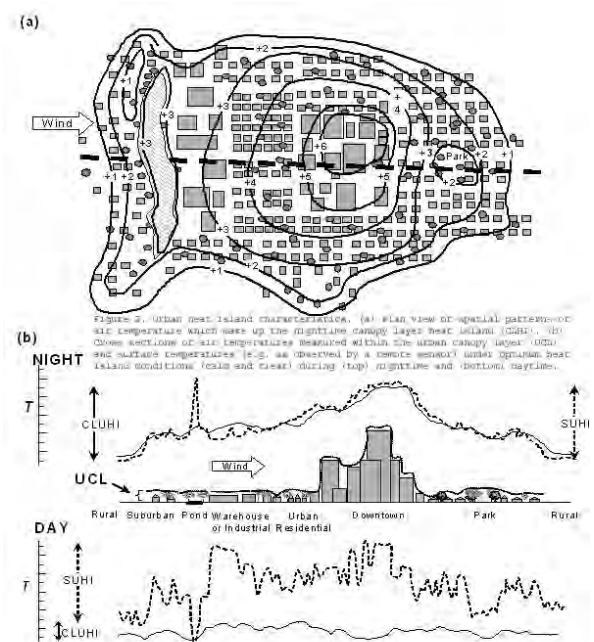


Illustration 1: From <http://actionbioscience.org/environment/vogt.html>