

# Potential indicators of neighbourhood solar access in urban planning - Solar access metrics simulated for urban design iterations and case studies

**SND-ID:** 2022-137-1. **Version:** 1. **DOI:** <https://doi.org/10.5878/jf63-ay82>

## Download data

Solar\_access\_metrics\_simulated\_for\_neighbourhood\_iterations\_and\_case\_studies\_sheet1.csv (2.2 KB)

Solar\_access\_metrics\_simulated\_for\_neighbourhood\_iterations\_and\_case\_studies\_sheet2.csv (473 bytes)

Solar\_access\_metrics\_simulated\_for\_neighbourhood\_iterations\_and\_case\_studies\_sheet3.csv (583.91 KB)

Solar\_access\_metrics\_simulated\_for\_neighbourhood\_iterations\_and\_case\_studies\_sheet4.csv (582.04 KB)

Solar\_access\_metrics\_simulated\_for\_neighbourhood\_iterations\_and\_case\_studies\_sheet5.csv (1.23 KB)

Solar\_access\_metrics\_simulated\_for\_neighbourhood\_iterations\_and\_case\_studies.xlsx (1.21 MB)

## Download all files

2022-137-1-1.zip (~2.35 MB)

## Citation

Czachura, A. (2022) Potential indicators of neighbourhood solar access in urban planning - Solar access metrics simulated for urban design iterations and case studies (Version 1) [Data set]. Lund University. Available at: <https://doi.org/10.5878/jf63-ay82>

## Creator/Principal investigator(s)

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## Research principal

[Lund University](#) - Division of Energy and Building Design

## Description

The data contains results of a study that analysed solar access metrics for urban planning purposes. The purpose was to evaluate metric correlations to find suitable simple indicators of solar performance that can be applied to assess urban designs.

The data contains inputs for creating the neighbourhood design iterations and metrics as outputs of simulations. Neighbourhood models were created using Rhino 7 and Grasshopper, while metrics were simulated using Grasshopper and Ladybug Tools.

The metrics are described in the review article: Czachura, A., Kanters, J., Gentile, N., & Wall, M. (2022). Solar Performance Metrics in Urban Planning: A Review and Taxonomy. In Buildings (No. 393; Vol. 12, Issue 4). <https://doi.org/10.3390/buildings12040393>

The model setup is described in the article: Czachura, Agnieszka, Niko Gentile, Jouri Kanters, and Maria Wall. 2022. "Identifying Potential Indicators of Neighbourhood Solar Access in Urban Planning"

Buildings 12, no. 10: 1575. <https://doi.org/10.3390/buildings12101575>

The excel file comprises of five data sheets: two containing data descriptions and three containing research data. The results are solar access metrics, which were used in a correlation study and other statistical analyses to determine their suitability for urban planning assessment purposes.

Sheet 1 'metric\_descriptions': Description of metrics

Sheet 2 'headings': Description of headings

Sheet 3 'Iterations\_Stockholm': Neighbourhood models generated in an iterative process using geometrical constraints were simulated to obtain multiple solar access metrics, assuming the Stockholm climate.

Sheet 4 'Iterations\_Frankfurt': The same neighbourhood models generated in an iterative process using geometrical constraints were simulated to obtain multiple solar access metrics, assuming the Frankfurt climate.

Sheet 5 'Case-Studies\_Frankfurt': Case studies of real neighbourhood designs from Malmö city were simulated to obtain multiple solar access metrics, assuming the Frankfurt climate. These metric datasets were used for validation purposes.

Data available in xlsx and csv format

**Data contains personal data**

No

**Language**

[English](#)

**Data format / data structure**

[Numeric](#)

[Text](#)

**Geographic spread**

Geographic location: [Sweden](#), [Germany](#)

Geographic description: The data concerns two locations, for which weather files were applied to simulate metrics: Stockholm (Sweden) and Frankfurt (Germany). Case studies originate from Malmö (Sweden), but were simulated with the Frankfurt weather.

**Responsible department/unit**

Division of Energy and Building Design

**Contributor(s)**

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## Funding

- Funding agency: Swedish Energy Agency
- Funding agency's reference number: 49518-1

## Research area

[Architectural engineering](#) (Standard för svensk indelning av forskningsämnen 2011)

[Other civil engineering](#) (Standard för svensk indelning av forskningsämnen 2011)

[Energy engineering](#) (Standard för svensk indelning av forskningsämnen 2011)

## Keywords

[Environmental indicators](#), [Statistical models](#), [Urban design](#), [Sunlight](#), [Urban planning](#), [Solar access](#), [Daylight](#)

## Publications

Czachura, Agnieszka, Niko Gentile, Jouri Kanters, and Maria Wall. 2022. "Identifying Potential Indicators of Neighbourhood Solar Access in Urban Planning" *Buildings* 12, no. 10: 1575.

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If you have published anything based on these data, [please notify us](#) with a reference to your publication(s). If you are responsible for the catalogue entry, you can update the metadata/data description in DORIS.

## Accessibility level

Access to data through SND

Data are freely accessible

## Use of data

[Things to consider when using data shared through SND](#)

## Versions

Version 1. 2022-10-03

## Contact for questions about the data

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