How hot it feels, street by street

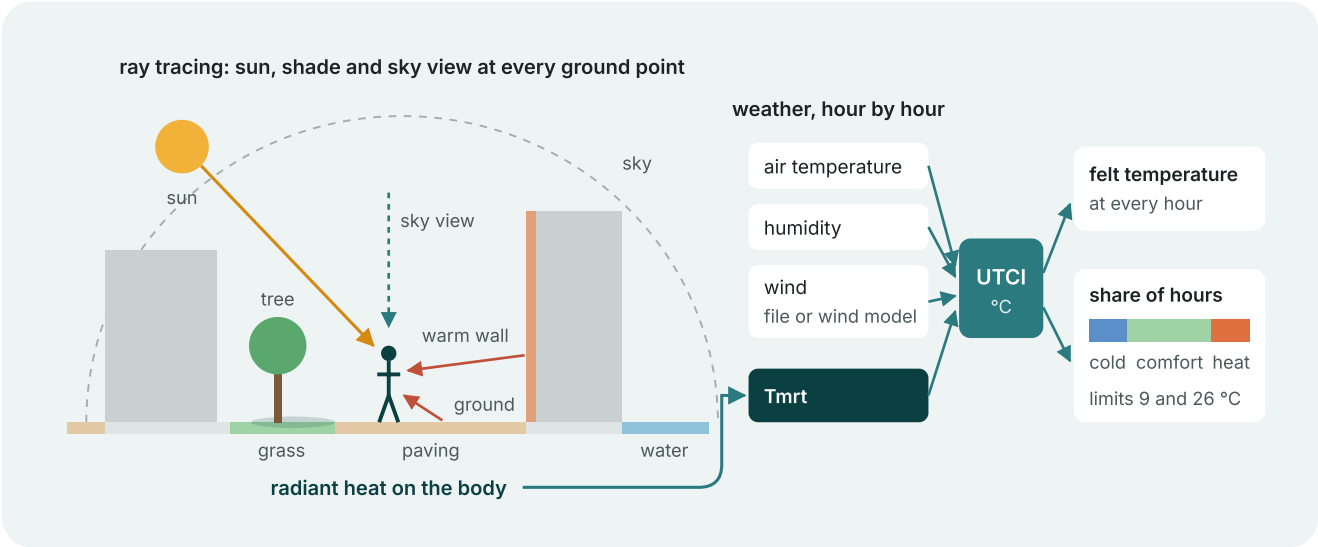
Felt temperature (UTCI) at every ground point, hour by hour, from sun, shade, warm walls, wind and the weather. Then the share of hours in comfort, heat stress and cold stress.

4.5 K
typical error of radiant heat (Tmrt) against street sensors in Gothenburg

r 0.92–0.94
same cooling pattern from new trees as the PALM-4U research model

≈ 5 s
per 512 m scenario. A whole city as a live layer

Tested against street measurements with six-direction radiometers and globe thermometers in four cities, and against PALM-4U for new street trees. Aligned with UTCI (Bröde et al. 2012) and VDI 3787-2.



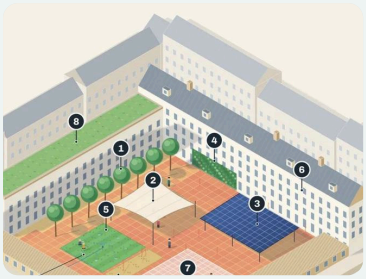


Vienna, Danube Canal: felt temperature for one hot hour. Light = hottest, purple = cooler shade.



Same place over a season: share of comfortable hours. Blue = more hours in comfort, red = fewer.

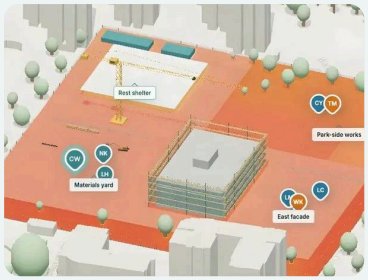
What your users could get from it



Which design makes the square cooler?

Compare trees, shade sails, grass, water and paving on one square. See where the felt heat drops, and by how much.

Sell it as: cooler square check



When is outdoor work too hot?

Felt temperature on the site, hour by hour from the forecast. Plan breaks, shade and heavy work for the cooler hours.

Sell it as: heat work plan



Where does the city need cooling first?

Heat stress hours for every street of a city, as a live layer. Find hot spots and the nearest cool spots for a heat action plan.

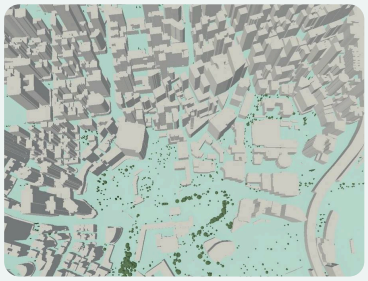
Sell it as: city heat map



Is the route safe on race day?

Felt heat along a marathon route or around an event area, for the forecast day. Put water and shade where the heat is.

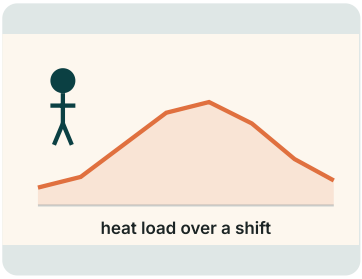
Sell it as: event heat check



Where is it too cold in winter?

Cold stress hours from low sun and local wind. Find the windy corners at entrances, stops and playgrounds.

Sell it as: winter comfort map



How much heat does one worker take? Next

Add up the felt heat along a person's route and hours, for one shift. Compare shift plans before the hot day.

Sell it as: personal heat load

Three ways into your web app

1 · A layer while you design

Felt temperature on the ground, in the map or 3D view. Add trees or a shade sail and run it again in seconds.

2 · One number per option

"Comfort hours up on the square." "Heat stress hours down at the school." Easy to compare between options.

3 · A live forecast

A whole city as a live layer, updated with the weather forecast, hour by hour.

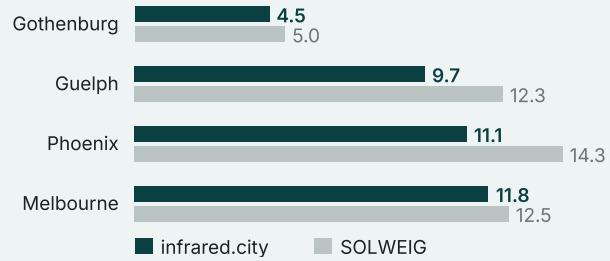
One upload, more answers. The same buildings and trees also give sun hours, daylight, solar radiation and wind. The wind model feeds local wind into the felt temperature of every cell.

What goes in, and how it is tested

INPUT	WE GET IT AUTOMATICALLY	BETTER, IF YOU HAVE IT
Buildings Now	Your massing model, and the neighbours from OpenStreetMap or open 3D city models	Your own context model
Trees Now	Open tree data, with crowns that give shade	City tree register
Ground materials Now	Grass, water and paving from open map data	Your design surfaces
Installations Now	Shade sails and canopies you draw in the design	Your own design objects
Weather Now	Weather file or the live forecast: air temperature, humidity, wind, sun	Your own weather station
Local wind Now	Wind per cell from our wind model, or the weather-file wind	

Radiant heat (Tmrt) against street sensors

Typical error (RMSE), K. Same inputs in our model and in SOLWEIG, a widely used research model.



Six-direction radiometers and globe thermometers. 1 K of Tmrt is about 0.3 to 0.5 °C of UTCI.

New street trees, against PALM-4U

PALM-4U is a detailed research model of the city climate.

r 0.92–0.94 same pattern of cooling, Prague, three tree scenarios

0–3 of 1,655 cells change in the opposite direction

−4.2 °C cooling under new trees, Gothenburg (PALM-4U: −4.3 °C)

≈ 5 s per scenario, against about 1 hour on 64 cores

What it does

- Felt temperature (UTCI, °C) at every ground point, hour by hour
- Share of hours in comfort (9 to 26 °C), heat stress (26 °C and above) and cold stress (below 9 °C)
- Sun, shade and sky view by ray tracing; ground and wall surface temperatures
- Trees, grass, water, paving and shade installations count
- Local wind per cell from the wind model, or the weather-file wind
- One 512 m scenario in about 5 s; a whole city as a live layer, updated with the forecast

Limits: the body model is simplified, reflections from buildings are simplified, and results depend on the weather input.

Next step: pick one square, street or site where heat matters. We run it hour by hour and show you where people feel it.

Images: Vienna, Barcelona and demo sites, simulated with our model. Accuracy: street measurements in four cities.