Wind and comfort, in seconds

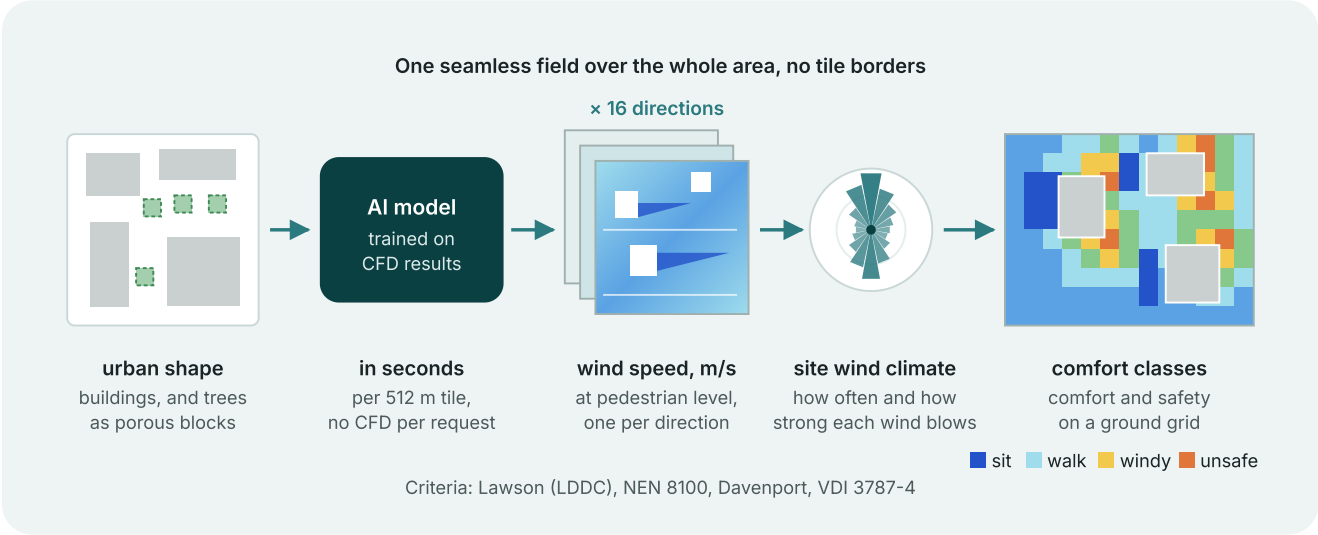
Wind speed at pedestrian level, and where people can sit, stand or walk in comfort. From the urban shape and the local wind climate, for one block or a whole district.

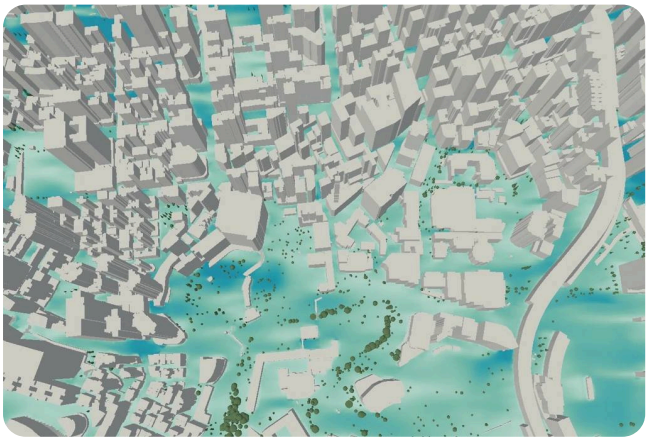
0.988
index of agreement with our own high-fidelity CFD

0.31 m/s
mean absolute error against the same CFD

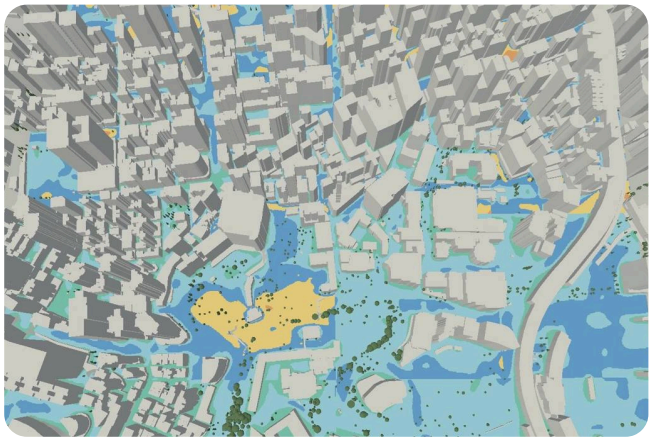
16
wind directions, combined with the local wind climate for the comfort classes

An AI model trained on CFD results estimates the wind field from the urban shape. It does not run CFD per request. Comfort classes are aligned with Lawson (LDDC), NEN 8100, Davenport and VDI 3787-4. Hourly mean wind, not gusts.



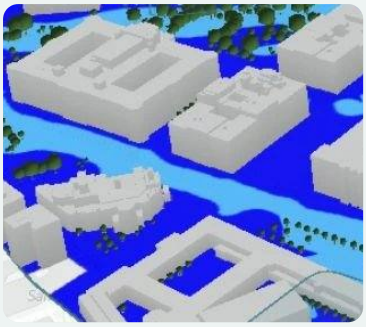


Wind speed at pedestrian level for one wind direction, Hong Kong, from the AI model in seconds.



Pedestrian wind comfort over the year, same site, Lawson criterion. Blue areas suit sitting and standing; yellow areas are windy.

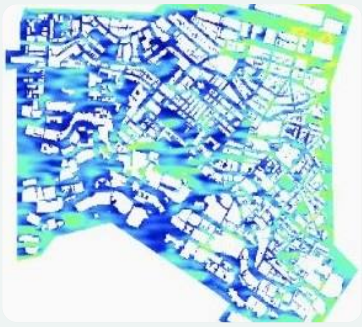
What your users could get from it



Do the entrances and terraces stay calm?

See which doors, terraces and seats are calm enough over the year, and which get the wind.

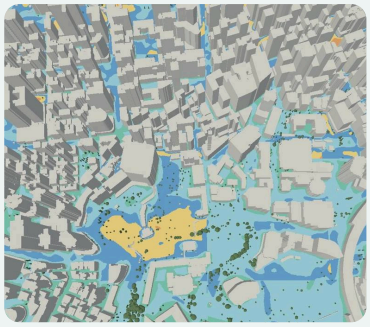
Sell it as: entrance and terrace check



Which massing option gives a calmer square?

Run each option in seconds and compare the comfort maps side by side, before the design is fixed.

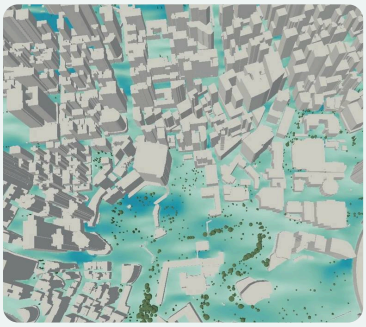
Sell it as: option compare



Where do balconies, playgrounds and outdoor dining work?

Find the spots that are calm enough to sit and play, and the spots that need a screen or trees.

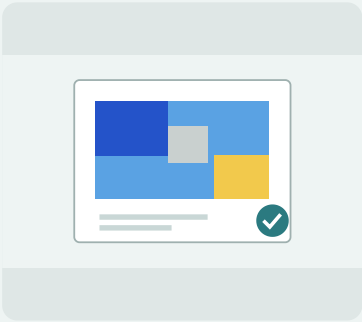
Sell it as: outdoor use map



Is it safe at the corners of tall buildings?

The safety classes show where strong wind at tower corners and passages is a risk for people.

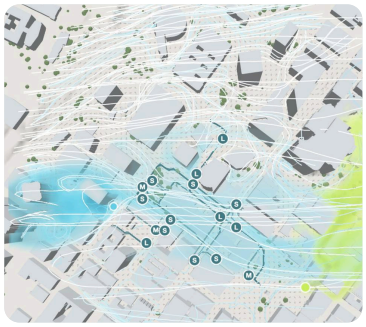
Sell it as: tower safety check



Is the plan ready for the permit?

A wind comfort map for the whole site as a first check, before the formal study the permit needs.

Sell it as: permit first check



Need more detail?

On demand

Our 3D wind model (CFD) gives wind at any height and 3D flow lines for detailed studies. It has its own sheet.

Sell it as: detailed 3D wind study

Three ways into your web app

1 · A layer while you design

Wind speed or comfort classes on the ground, in the map or 3D view. Move a block and run it again.

2 · One number per option

The share of the square that is calm enough to sit, or the area that is unsafe. Easy to compare.

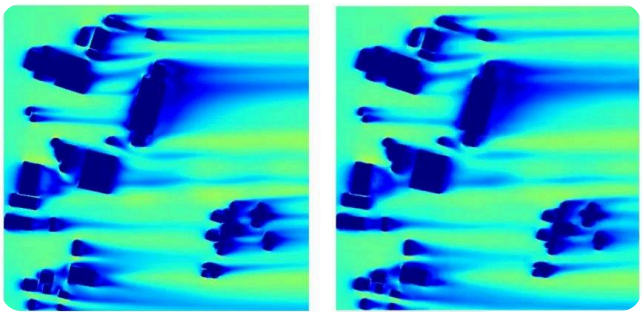
3 · A district map

Whole districts in parallel tiles, joined into one seamless map for reports and planning.

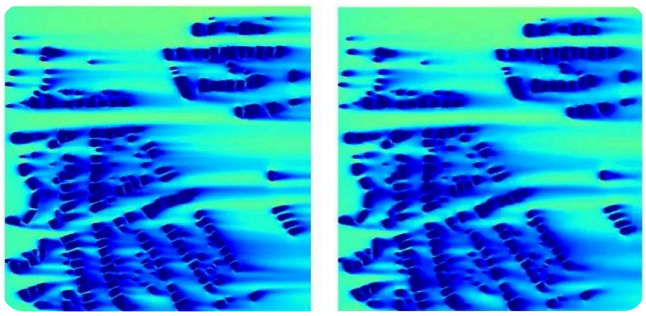
One upload, more answers. The same buildings also give sun, daylight and heat comfort. The wind field also feeds the felt heat on every street.

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; each tree is a porous block of fixed size that slows the air	City tree register
Wind climate Now	Wind statistics of the site from the weather file, for 16 directions	Your own wind station data
Comfort criterion Now	Lawson (LDDC), NEN 8100, Davenport or VDI 3787-4	The criterion your city asks for



Left: our high-fidelity CFD. Right: the AI wind model, same buildings and wind direction. The wakes behind each block match.



A low-rise district, same test. On the test set, the model agrees with our CFD at 0.988 (index of agreement), mean absolute error 0.31 m/s.

What it does

- Wind speed in m/s at pedestrian level, for any wind direction
- An AI model trained on CFD results: seconds per 512 m tile
- Comfort and safety classes over 16 directions and the local wind climate
- Lawson (LDDC), NEN 8100, Davenport and VDI 3787-4 criteria
- Whole districts in parallel tiles, as one seamless field
- Trees as porous blocks
- Hourly mean wind, not gusts
- The 3D wind model (CFD) on demand, for detailed studies

This model is for screening and design. For a formal study, use full CFD or a wind tunnel.

Next step: send us one site where people sit, walk or wait outside. We map the wind comfort and show you the calm and the windy spots.

Images: Hong Kong and Vienna demo sites and test sites, our models; 3D wind image, our CFD model (Los Angeles demo). infrared.city