

# London heat boost underestimated

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London's urban heat island effect, which keeps night-time temperatures in the capital warmer than in surrounding rural areas, may have been underestimated by up to 45 per cent.

The heat can pose serious health risks, particularly for the elderly and very young.

Until now, the effect has been measured by calculating the difference between temperatures in St James' Park in the city, and Wisley - a rural site just outside the M25.

But new research, published in the journal *Science of the Total Environment*, found night time temperatures in parks can be up to 4°C cooler than in the streets nearby. So the St James' Park measurements might have dramatically underestimated the [urban heat island](#) in the

capital.

'In the summer time, built-up areas effectively act like a storage heater,' says Dr Kieron Doick of Forest Research, the research agency for the UK Forestry Commission, who led the research. 'They store up heat during the day and release it at night.'

'The extra heat can pose a real health risk, so it's important to understand the impact that planning decisions have on temperatures in our cities.'

'Our data shows that if you want to get a true measure of the urban [heat island effect](#), you can't just measure it from St James' Park – you need to measure the temperatures in the streets as well.'

Summer heat accounts for an estimated 2,000 premature deaths in the UK every year. By the 2080s, this figure is expected to rise to 10,800 because of climate change.

The [urban heat island effect](#) can raise night-time temperatures in London by as much as 9°C.

There is strong evidence from around the world that green spaces can take the edge off the effect by creating pockets of cooler air within the city. Plants use up excess solar energy they absorb during the day by converting water into vapour, and so release less of it back into the atmosphere as heat at night.

To see how far these cooler pockets of air can bring down temperatures on the surrounding streets, scientists took readings in and around Kensington Gardens in central London from August to December in 2011. From August to October, the average night-time [urban heat](#) island effect was 2.8°C.

They found that the cooling effect of the park extended for between 20 and 440 metres depending on the conditions and, on average, brought temperatures down by 1.1°C.

It was most pronounced on hot, still nights, when it was needed most, occasionally bringing temperatures down by as much as 4°C.

'Compared to other studies from around the world, the reach of the cooling effect was actually smaller and it's an interesting question as to why that is the case,' says Doick.

'It could be something to do with the make-up of city, but it might also be because we took our measurements up-wind from the park, whereas cooling is understood to extend in the direction of the prevailing breeze.'

The team plan to report on further measurements from different sites around the city in the coming months.

In recent weeks, campaigners have raised concerns about the future of public green spaces. A report by the Heritage Lottery Fund suggested that almost half of local authorities are considering selling parks or transferring their management because of budget cuts.

'Our work does lend support to the idea that we need to maintain expenditure on parks,' says Doick.

'The royal parks such as Kensington Gardens are great for cooling the urban heat island, as our research has shown. But little pockets of green space around the city can be really important for keeping temperatures down in the summer as well.'

Parks are likely to have the opposite effect in winter, he adds, effectively providing a buffer against the extremes of both seasons.

'In winter, vegetation seems to prevent the parks from getting as cold as surrounding areas,' he explains. 'For example on a cold morning you might notice that the ground around a hedge in your garden is relatively unaffected by the frost.'

**More information:** Kieron J. Doick, Andrew Peace, Tony R. Hutchings, 'The role of one large greenspace in mitigating London's nocturnal urban heat island', *Science of the Total Environment*, 2014. [DOI: 10.1016/j.scitotenv.2014.06.048](https://doi.org/10.1016/j.scitotenv.2014.06.048)

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