# CSIRO maps Darwin's hot spots and heat-health vulnerability

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On the back of Darwin's record-breaking November heat, scientists from Australia's national science agency CSIRO have released two reports, one mapping the city's surface temperatures and one providing strategies to deal with urban heat.

Researchers mapped Darwin's land surface temperatures after the wet season and in the dry season, including thermal 'hot spots' and areas of potential high heat-health vulnerability.

Lead researchers Jacqui Meyers and Dr Brenda Lin have also proposed heat mitigation strategies for the future.

Ms Meyers said surface temperature hot spots in Darwin include:

- New housing developments on the outskirts of Darwin (these areas will become cooler once trees and gardens become established)
- Areas with large numbers of buildings, roofs, paved surfaces and little vegetation cover, including industrial areas like Winnellie, roadways like the Stuart Highway, and wharf areas like East Arm, and
- The airport, sports grounds and rural areas during the dry season, when there are large patches of bare ground and dry grass. These areas become slightly cooler during wetter months.

The future looks hot for the Top End, with climate change projections

for the Northern Territory showing the number of days above 35°C could increase significantly by 2030.

"Knowing where hot areas are in Darwin is key to making urban planning decisions that will reduce the urban heat-island effect. Because, while people do acclimatise to the local climate, heat-related illness is a regular occurrence in Darwin," Dr Lin said.

The researchers mapped heat-health risk by combining land surface temperature and demographic and socioeconomic data.

The report identifies areas with potentially higher heat-health vulnerability—where more residents may be exposed to higher temperatures, have a higher risk of heat-related illness, and fewer economic resources to respond, by investing in adaptation strategies like increasing tree cover.

CSIRO has also released an accompanying report on the latest science in urban heat mitigation, helping to inform future heat mitigation plans by the Northern Territory Government and the City of Darwin.

The second report looks at potential actions for Darwin, such as cool buildings, water features, water sensitive urban design, and green infrastructure, such as green roofs.

The research outlines best practice ideas from cities with similar wet-dry tropical climates, like Florida, USA, and Bangalore, India, as well as other cities with wetter (tropical rainforest) climates like Singapore, which is well-known for its heat mitigation innovation.

"What surprised me is that there is so little research into heat mitigation in wet-dry tropical climates, like Darwin," Dr Lin said.

"It's tropical but it's not always raining, it's not always humid—this makes it more challenging to find nature-based solutions because the water supply isn't there in the long dry season.

"The good news is this also presents an opportunity for Darwin to become a world leader in the science and innovation of heat mitigation among cities with a wet-dry tropical climate."

Both reports were delivered as part of the Darwin Living Lab, a 10-year collaboration between the Australian and Northern Territory governments and the City of Darwin, under the Darwin City Deal.

"City of Darwin is committed to addressing climate change, and the two reports released by CSIRO and our own Draft Climate Change Response will provide a strong and collaborative roadmap to address climate change," Lord Mayor Kon Vatskalis said.

"We must take action now, to mitigate the impacts of climate change, to human health, ecosystems, infrastructure and our economic sustainability."

**More information:** The reports are available online: research.csiro.au/darwinlivinglab/

Provided by CSIRO

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