Thanks to COVID-19 we now know the value of urban forests

Greg Moore

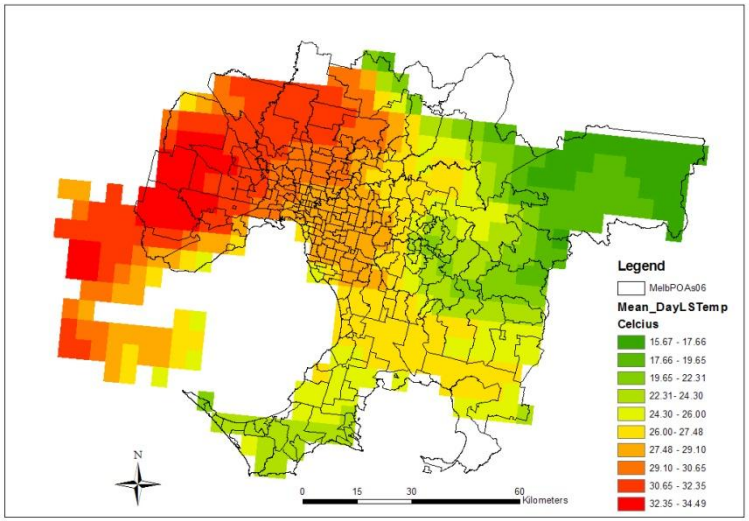
Climate Alliance

29 April 2022

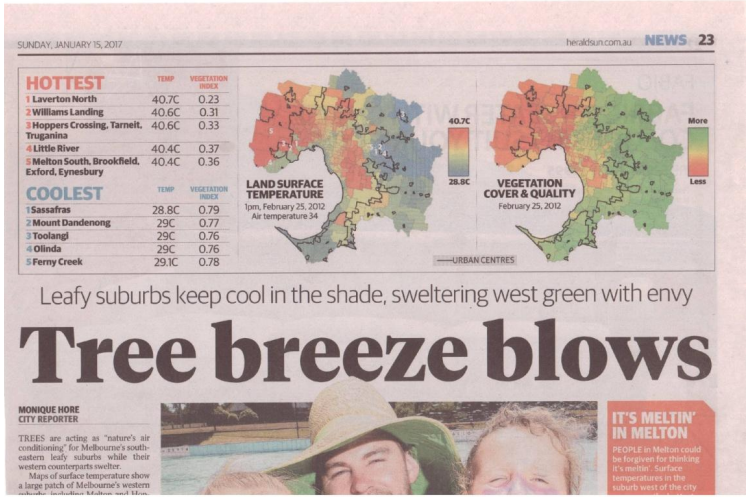
What we do affects not just a country but a whole continent and that is significant globally!

Scientists have been warning about climate change for 20-30 years and had hoped, or expected, that steps could be taken locally, and globally to reduce its adverse effects

School of Ecosystem and Forest Sciences - Burnley



HearaldSun, Sunday, January 15 2017



SUNDAY, JANUARY 15, 2017 heraldsun.com.au NEWS 23

HOTTEST	TEMP	VEGETATION INDEX
1 Laverton North	40.7C	0.23
2 Williams Landing	40.6C	0.31
3 Hoppers Crossing, Tarneit, Truganina	40.6C	0.33
4 Little River	40.4C	0.37
5 Melton South, Brookfield, Exford, Eynesbury	40.4C	0.36

COOLEST	TEMP	VEGETATION INDEX
1 Sassafras	28.8C	0.79
2 Mount Dandenong	29C	0.77
3 Toolangi	29C	0.76
4 Olinda	29C	0.76
5 Ferny Creek	29.1C	0.78

LAND SURFACE TEMPERATURE
1pm, February 25, 2012
Air temperature 34
40.7C
28.8C

VEGETATION COVER & QUALITY
February 25, 2012
More
Less

URBAN CENTRES

Leafy suburbs keep cool in the shade, sweltering west green with envy

Tree breeze blows

MONIQUE HORE
CITY REPORTER

TREES are acting as "nature's air conditioning" for Melbourne's south-eastern leafy suburbs while their western counterparts swelter.

Maps of surface temperature show a large patch of Melbourne's western

IT'S MELTIN' IN MELTON

PEOPLE in Melton could be forgiven for thinking it's meltin'. Surface temperatures in the suburb west of the city

The AGE, May 23, 2017,P 9

TUESDAY, MAY 23, 2017 THE AGE
NEWS 9

Climate-change flood risk doubled in new modelling

Adam Carey

Tens of thousands of homes and businesses in Melbourne face a growing risk of tidal flooding by century's end, with major roads, tram routes and industrial areas slipping under water as sea levels rise, new modelling shows.

Updated modelling predicts Victoria's coastline could be hit by a rise in sea level of two metres or more by 2100, due to the rapid melting of ice sheets in Antarctica and Greenland.

Such a rise would flood low-lying suburbs in Melbourne, including South Melbourne, Albert Park, Port Melbourne, Southbank, Docklands, Altona, Williamstown, Elwood, St Kilda, Seaford, Carrum, Bonbeach and Aspendale.

Large areas in Geelong and the seaside towns of Barwon Heads, Queenscliff and Point Lonsdale would also be inundated at high tide

tions made in the landmark 2013 report by the Intergovernmental Panel on Climate Change.

That report said a 74-centimetre sea level rise by 2100 was a worst-case scenario. Since then, ice sheets in Antarctica and Greenland have been found to be melting more rapidly than thought.

The 74-centimetre "worst-case scenario" is now considered probable, with a rise of two metres to 2.7 metres now a "plausible worst-case global mean sea level rise scenario", according to the NOAA.

'If the sea rises to that level it would be a national disaster.'
Alan Stokes, Australian Coastal Councils Association

The scientific agency mapped the

and visualise exactly how sea-level rise, driven by climate change, will permanently alter our coastline and neighbourhoods," Mr Eaton said. "We already knew this was going to be bad news for low-lying areas, but the latest science is telling us to brace for even worse."

Alan Stokes, executive director of the Australian Coastal Councils Association, said the revised modelling was a wake-up call for governments.

"If the sea rises to that level it would be a national disaster," Mr Stokes said.

He called on the federal government to reverse funding cuts it made to research to support climate-change adaptation, including an online tool for councils called Coast Adapt that faces a heavy funding cut from July 1.

"Coastal councils are at the forefront of dealing with these projected impacts but they are really tackling

The Age, Saturday, January 23, 2016

THE AGE SATURDAY, JANUARY 23, 2016
2 NEWS

Frightening picture for Melbourne revealed in

Benjamin Preiss
Josh Gordon

Melburnians should prepare for more extreme heat with double the number of hot days, less rain and harsher fire conditions in coming decades, the state government has been warned.

Analysis prepared for the Andrews government paints a frightening picture of Melbourne's future climate, with transport infrastructure vulnerable to flooding and heat stress, longer and more severe bushfires and pressure on hospitals from heatwaves.

The modelling, from the CSIRO and Bureau of Meteorology, predicts climate change could have a major impact on the state's health system, economy and environment, including shorter snow seasons, food production challenges and problems with transport infrastructure.

The forecasts were prepared as the Andrews government seeks to elevate climate change as a political issue ahead of possible new laws to tackle emissions.

The predictions, based on international climate models, show that under a high emissions scenario similar to the current trend, the number of days over 35 degrees in Melbourne would more than double from an average of eight a year to 17 by 2070. Average rainfall could drop by up to 23 per cent in the most extreme case.

"Despite an overall trend of declining rainfall, more of the rain that does fall will be in increasingly extreme downpours," it said. "This is likely to lead to an increase in the incidence of flooding events, particularly in urban-

"In 2050, under high emissions, the climate of Melbourne will be more like Adelaide now," the report says.

Even under a lower emissions scenario, average temperatures would still rise by 1.5 per cent by 2070 compared to the 1986 to 2005 average.

Environment Minister Lisa Neville said Victorians were already feeling the effects of a warmer climate. She said the government was working to ensure the "right legislation" would "deliver climate change action".

The economic, environmental and social ramifications of the changes are likely to be significant. The report warns future governments may need to consider moving "selected populations" in areas of extreme heat to other parts of the state. In one scenario Mildura would have 66 hot days a year.

Increased temperatures would hit Victoria's tourism sector, the projections show. "The impacts of climate change on tourism are likely to include increased heatwaves and harsher fire weather. Significant reductions in stream flows will adversely affect water-based tourism," it says.

The report finds temperatures have increased by up to 1.6 degrees in some parts of Melbourne since 1950.

Victoria's transport network would also be hit under the most extreme forecasts.

"Transport infrastructure will be increasingly exposed to periodic flooding and increased heat loading. Extremely high temperatures may also reduce the performance of the railway network, potentially leading to disruptions."

Warming seas and increased storm surges could also harm coastal ecosys-

Victoria
Our future
How climate change will affect us

More hot days and warm spells
Less rainfall in winter and spring south of the Great Dividing Range; less rainfall in autumn, winter and spring north of the Divide
More frequent and more intense downpours
Harsher fire weather and longer fire seasons

Is 30% an arboricultural magic number?

For those looking for a simple message in numbers, 30% tree canopy cover seems to hold some special magic:

- A forest is defined by tree canopy cover greater than **30%.**
- To maximise environmental benefits of canopy cover of or greater than **30%** is required.
- For a suburban block there is an increase in property value when trees are present, until the cover is **30%** or greater and the property value decreases.
- The target canopy cover for urban Australia, under current climate change scenarios should not be less than **30%.**

When Australians talk about climate change, it is apparent that:

- most are aware of the predictions of warmer weather and possibly lower rainfall
- most are unaware of the implication of raised atmospheric temperatures on storm events and wind speeds
- most seem to be unaware that for a huge continent like Australia, the effects will vary across the country
- generalising can be dangerously difficult
- few are aware of predictions of heavier rainfall events in drier months which compound the effect of a lowered rainfall or the increased likelihood of flash flooding

THE VITAL ROLE OF TREES IN COPING WITH CLIMATE CHANGE

- Heatwaves are the biggest killers of people of all natural disasters.
- In the Victorian on black Saturday 2009, 374 people died of heat-related causes during the heatwave
- Greatest number of deaths were in western and northern suburbs
- Greatest number of deaths correlated with absence of trees and greenspace

- Hundreds of people have died in heatwaves since
- **The easiest, least costly and most sustainable way of cooling cities and towns is by increasing the green space and tree canopy, but we are not doing it**

At the 2016 TREENET Symposium in Adelaide

Epidemiologists reported the following analyses of the value of treed open space and its cost saving to the Australian national health system:

- For type-2 Diabetes up to $800 million could be saved per annum
- For high blood pressure related illnesses and diseases, the cost savings were estimated at $4.2 billion per annum.

The total saving were estimated at $5 billion per annum.

Much of these savings comes from the simple effect of an increase in passive or active recreation that treed and shaded open space encourages.

Website: treenet .org

Recreational usage of Open Space Enhanced by the Presence of Trees:

The use of recreational open space for both active and passive recreation is known to be enhanced by the presence of trees in the landscapes.

The health benefits from increased activity and exercise can be quantified and in Victoria would save about $274 million per annum for the health department.

The Victorian Department of health noted:
promoting health and well being outcomes through promoting the use of alternative water resources such as stormwater to maintain green spaces, thereby enhancing physical activity and livability. (Dedman, 2010).

Ignorance → Inactivity → Negligence?

Diabetes Type 2

No Parks/trees → Inactivity → Increased weight → increased rates of tpe-2 diabetes

Negligence?

Heat Wave Related deaths

No Parks/trees → No shade (High UHI) → Increased excess deaths

Negligence?

Some high value social and medical benefits correlated with higher tree canopy cover that are typically under-appreciated (James et al. 2016

Lower heatwave related rates of mortality	Higher average baby birth weights
Lower overall crime rates	Better learning outcomes for students
Quicker recovery after hospital treatment	Fewer prescription medicines for residents
Reduced social disadvantage	May reduce self harm and suicide rates
Increased human resilience under stress	May reduce domestic violence
Longer life spans	Higher levels of resident general health

http://dx.doi.org/10.1289/ehp.1510363.

COVID-19 LESSONS FOR CLIMATE CHANGE

- With active recreation postponed, passive recreation became the physical activity with local parks and walking tracks packed.
- Not every suburb or every region is well served by treed open space.
- The most impoverished sectors of societies are the most disadvantaged in their access to and use of treed open space
- Links to obesity, poor physical/ mental health & social disadvantage
- During covid-19 lockdowns, the most disadvantaged members of a community were disadvantaged and subjected to higher levels of stress, because of a lack of accessible treed open space.
- Greater health benefits accrue to disadvantaged communities from the provision and use of treed open space and that its provision can be a mechanism for addressing social inequality

COVID-19 LESSONS FOR CLIMATE CHANGE

- Watching the use of public open space during the Covid-19 lock downs was a time when the importance of treed public open space for:

  - for human mental and physical health
  - general well-being
  - coping with the stressful situation in which many found themselves
  - coping with the increased risks of self harm and domestic violence
  - the learning environments for students
  - the potential development issues for pre-schoolers

gained major public attention

COVID-19 LESSONS FOR CLIMATE CHANGE

- Treed open space meets physical, mental and psychological needs
- These originate in the impact of locomotion on human evolution
- Navigating through large, connected greenspace engage many senses – sight, hearing, smell, and perhaps taste and touch – at once
- This activates the brain and hones spatial problem solving skills
- Finding your way needs purpose, planning, patience and knowledge of the space and memory if you have travelled there before
- This is multi-tasking *par excellence,* but requires large, biologically complex space
- These experiences facilitate human development from infant to adult
- Activities that place high demand on people stimulate the brain's many dopamine secreting neurones impacting on motivation, attention and persistence

School of Ecosystem and Forest Sciences - Burnley

Part of The Tan running and walking track that provides 3.8k of connected walking and running space around the Botanic Gardens. The sand track provides a low impact surface for users, and is illuminated for early morning and late night use. This track also provides access to an extensive system of city trails, but only after a major road is crossed.

COVID-19 LESSONS FOR CLIMATE CHANGE

- Public open spaces served their purpose admirably during Covid-19
- Given the opportunity and with proper planning they will do so again in enabling cities to cope with climate change
- However, if cities and suburbs keep losing green space and canopy cover then their capacity will be restricted and society as a whole will be the loser

In tight economic circumstances following Covid-19, one of the first areas subjected to budget cuts will be parks, gardens and greenspace

There is a history of cuts in the past by those who do not understand the value of green infrastructure. By raising an alert now, perhaps such a short-sighted outcome can be avoided

THE UNIVERSITY OF

MELBOURNE

POSTERA CRESCAM LAUDE

In Melbourne:

- parts of eastern and southern suburbs have a long history of urban development and less capacity for creating connected POS
- to the north and west, historically the lower (SES) sectors of the city, opportunities still exist for creating and connecting POS.
- The current populations of these parts of the city have lower household incomes, shorter life spans and high rates of disease related to high blood pressure, heart health conditions and type-2 diabetes,
- all related to a lack of physical fitness and reduced rates of active and passive recreation compared to people in other parts of the city
- Thus provision of POS and accessible recreational facilities are important parts of planning for the future of these sectors of the city.

Part of the “Emerald necklace” park system in Boston, USA designed by Frederick Law Olmsted .There are opportunities for cutting short longer walks if the need arises. There is excellent connectivity under the bridge on both sides of the stream. The paths on both sides are paved, but note the parallel desire line tracks made by runners and walkers. In other places, roads and low bridges obstruct the connectivity of this POS.

The definition of POS varies with country. In Victoria, open space is land that provides recreation and leisure benefits and POS is land in public ownership and/or under public management that provides recreation and leisure benefits, while private open space is land that is privately owned and provides recreation and leisure benefits

- Different types of POS have different levels of value to different users and what communities value in POS change over time
- Not all POS is green space, but green POS is often more highly valued by users
- The value of POS enhanced for some users by perceptions of solitude, presence of wildlife, higher biodiversity ownership of the space.

In many communities, publicly owned space is more highly valued than privately owned open space.

Impoverished sectors of societies have poorer access to and use of POS - to obesity, poor physical/mental health, social disadvantage

Even when POS is available in lower SES sectors, it is less frequently used by residents due to perceptions of danger, poor maintenance, vandalism or a lack of social cohesion and networking

There is evidence that greater health benefits may accrue to lower SES groups from the provision and use of POS and that providing POS could be a mechanism for addressing SES inequality

Connected POS over distances provides increased proximity and accessibility to the space and opportunities for diverse activities.

The public health and lower SES affecting northern and western Melbourne burdens on public health system, as the population ages, which add to the importance of the provision of connected POS.

School of Ecosystem and Forest Sciences - Burnley

A retro-fitted pedestrian/bicycle tunnel under a major urban road linking two sections of public open space previously obstructed by the road, Essendon, Victoria Australia. The cost of providing the tunnel was many times higher than if it had been built at the time of road reconstruction, approximately 20 years earlier.

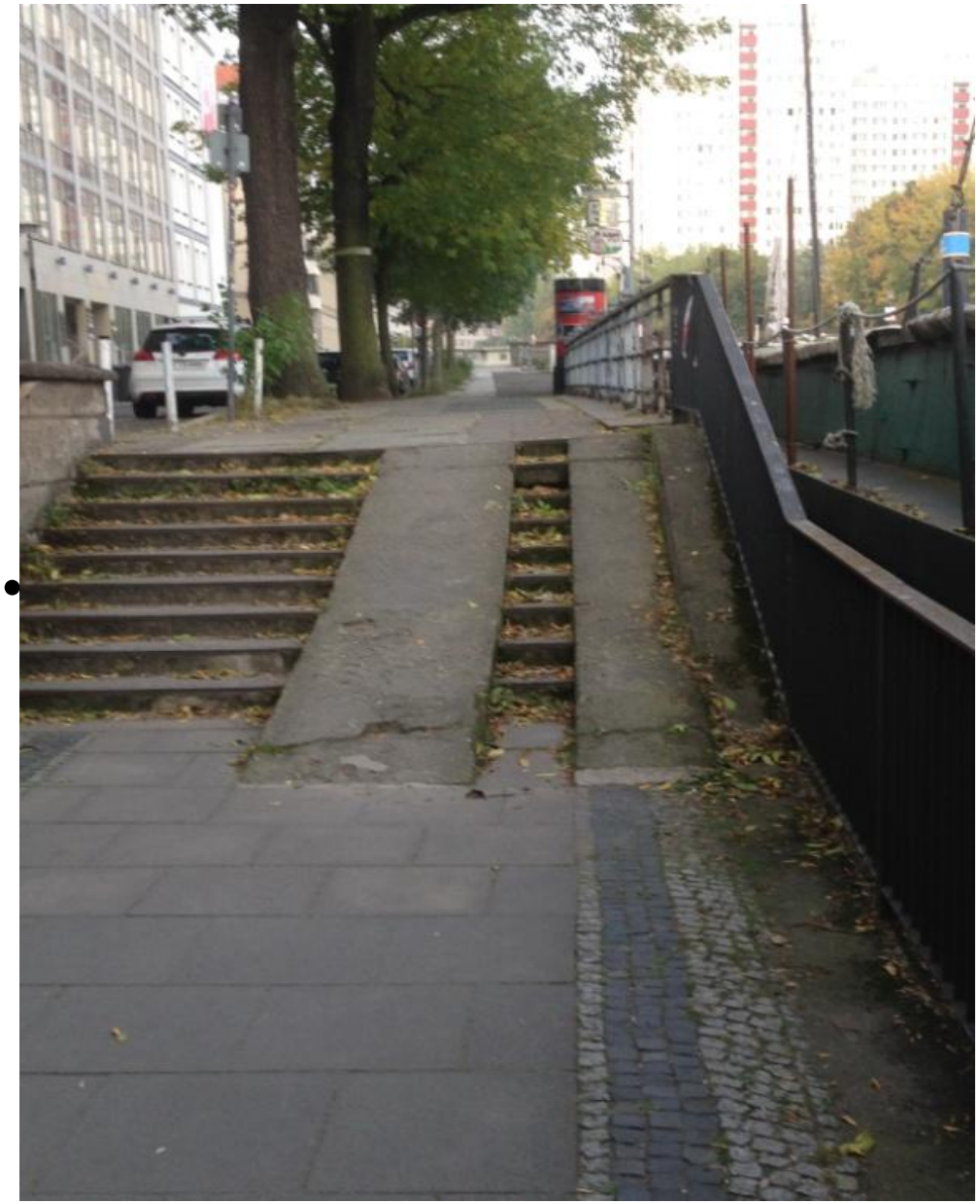


Figure 6. The possible obstruction of connected POS by steps on the banks of the Spree River in Berlin is relieved by a ramp on part of the steps. This is a simple, cheap and effective way of dealing with obstruction to connected open space for some user groups.

THE UNIVERSITY OF

MELBOURNE

POSTERA CRESCAM LAUDE