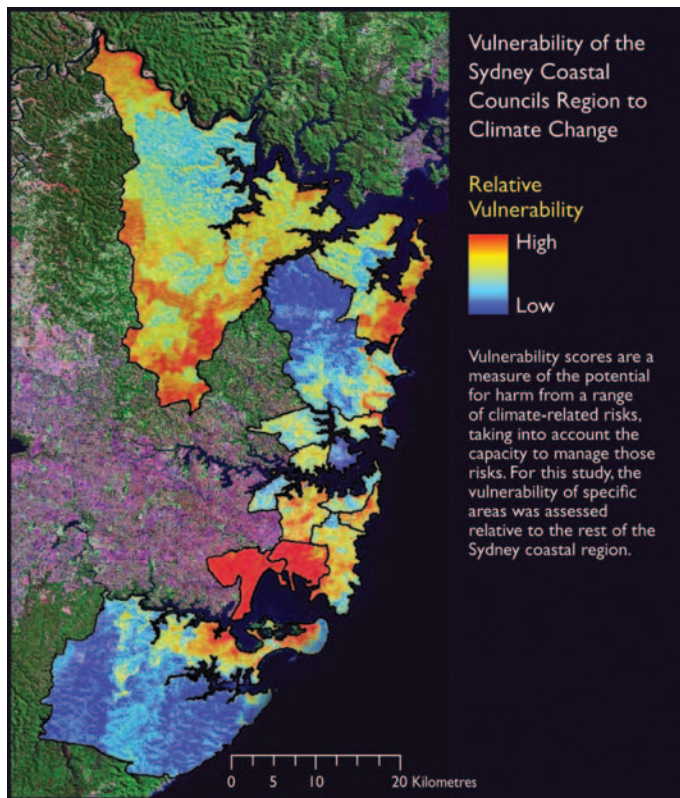


Research

Mapping climate impacts on our coastal cities



Climate change projections and socioeconomic data were used to generate maps of vulnerability to impacts on health, sea levels, storms, bushfires and natural resources. CSIRO

Dr Ben Preston, a CSIRO scientist from the Climate Adaptation National Research Flagship, is working with local councils and state governments to help them plan for the sea and weather impacts of climate change on key coastal areas.

According to researchers from Macquarie University, half of Australia's addresses are within seven kilometres of the coast. Dig deeper into their data and you'll discover that around six per cent of homes are within three kilometres of the coast and less than five metres above sea level.

That equates to around 710 000 coastal homes at risk from wild storms and rising sea levels caused by climate change. Add extremes of heat

and rain, and the results do not bode well for our coastal homes and infrastructure, or natural resources and, probably, public health.

It's a situation that needs urgent attention. But to plan for these kinds of impacts, local

CSIRO's Kathleen McInnes found that storm surges, which occur once in 100 years at present, could now be expected on average once every 40 years by 2030.

governments need specifics; they need to know exactly how their regions will be affected by potential climate change effects.

The first research project under the collaborative program was with the Sydney Coastal Councils Group, a

network of 15 coastal councils in metropolitan Sydney. Further projects are now being planned for other major Australian cities.

Dr Preston says climate change will affect coastal and city areas in different ways.

'It really depends on their geographic location, demographics, and the resources and tools at their disposal to manage future climate change risk.'

For the Climate Adaptation Flagship researchers, the collaboration with councils means the end results are more likely to be adopted. The councils provide insights on local issues and community characteristics, and the infrastructure demands and geography that dictate how each region reacts to climate change.

For example, researchers used climate change projections and socioeconomic data from the Sydney coastal councils to generate vulnerability maps for five climate change impacts: extreme heat and health effects; sea-level rise and coastal management; extreme rainfall and stormwater management; bushfires; and ecosystems and natural resources.

Dr Preston's team concluded the Sydney coastline is likely to become warmer, drier and more vulnerable to rising sea levels and erosion. But some areas will be more resilient due to their relative wealth, adaptability, preparedness and expenditure on infrastructure.

The Victorian cities of Casey and Frankston, and the regional councils of Bass Coast, Cardinia and Mornington Peninsula, south-east of Melbourne, are also working with Dr Preston's team. These regional councils have banded together to form

the Western Port Greenhouse Alliance.

By modelling climate change in the region, examining the impacts on people and infrastructure, and assessing the risks to local governments and communities, the researchers have begun to consider potential ways to adapt to the impacts.

The results suggest increasing temperatures, increased fire risk and significant changes in rainfall are likely in Victoria.

CSIRO's Kathleen McInnes found that storm surges, which occur once in 100 years at present, could now be expected on average once every 40 years by 2030.

'The area of land exposed to storm surges might increase in size by four to five per cent by 2030,' she said.

In both Sydney and Western Port, the research was followed by adaptation workshops with local council staff. These workshops investigated how results could inform local government policy. Follow-up case studies underway in the Sydney suburbs of Leichardt, Mosman and Sutherland Shire are due to be finalised in September.

The changes projected for these specific locations will be reflected in many other towns and regions around Australia's coastline, giving the results from these local studies national relevance.

Future climate change adaptation studies are planned over the next year for south-east Queensland, along with a \$2 million high-resolution digital elevation model for coastal urban areas to map inundation risks from climate change in other major areas such as Perth, Brisbane, the Gold Coast, Sydney, Melbourne and Adelaide.

● **Matthew Levinson**

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