

## Australian Actuaries Climate Index hints at high bushfire risk ahead

**27 JULY 2023**

New data from the Australian Actuaries Climate Index (AACI) indicates that conditions are ripening for a return of destructive bushfire seasons in Australia, with a significant drop in recent extreme rainfall and a rise in extreme temperatures.

The Index, which measures the frequency of extreme weather against a base period (1981-2010), recorded its 31<sup>st</sup> consecutive positive index value in Autumn 2023. This was driven by a combination of an increase in extreme high temperatures and above average maximum sea levels, offset somewhat by a decrease in extreme rainfall, recorded during March, April and May.

The frequency of extreme high temperatures was above average in northern and eastern parts of the country, but lower than average in the south and west. This marked a turnaround from last summer when most regions recorded a negative index value (denoting an absence of extremes).

Most coastal areas recorded above average maximum sea levels during Autumn, particularly the east coast, which recorded its third highest index value.

The Index also recorded below average frequency of extreme rainfall for most of Australia, particularly along the east, south and north coasts as La Niña's three-year reign finally waned. Similarly, the Bureau of Meteorology noted that autumn rainfall was 10% below average for Australia as a whole<sup>1</sup>.

Rade Musulin, lead collator of the Australian Actuaries Climate Index, said with Australia's transition to an El Niño alert phase in late May and models pointing toward a positive Indian Ocean Dipole developing, there is a strong likelihood that rainfall will continue to decline, and a significant dry period may begin.

"More dry weather along with the record amounts of vegetation growth from three years of consistent wet weather means the conditions are primed for potentially high bushfire risk in the summers ahead," he said.

"Whether that starts in early 2024 or 2025 is unknown. But we are heading in that direction. All the ingredients are there."

The Bureau of Meteorology currently has an El Niño Alert in place, with a 70 per cent chance of one developing.

Mr Musulin said while he expects significant temperatures to be recorded in Australia this summer, it is too early to say whether there will also be extreme heatwaves like those currently gripping southern Europe, North Africa, the Middle East as well as parts of the United States and Asia.

"It's not crystal clear yet because of the dynamics of how heatwaves work in the northern hemisphere compared to the southern hemisphere. So, it would be premature to say Australia is heading into heatwaves like those we're seeing in places like Athens and Texas.

"But given what we're seeing on the news from Europe, combined with what the Australian Actuaries Climate Index is telling us, it's certainly time to be vigilant."

Mr Musulin added that while the AACI shows signs of the cyclical weather pattern changing from La Niña into a possible El Niño, it also provides a strong signal that the underlying Australian climate has changed.

"It shows a longer-term trend of an increasing frequency of extremes (relative to the Index baseline period of 1980-2010)," he said.

"So, this is a sign that we need to think about how these things develop over time. What the Climate Index is showing us is consistent with the warming climate."

**[The latest Actuaries Digital article on the AACI can be found here.](#)**

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<sup>1</sup> [http://www.bom.gov.au/clim\\_data/IDCKGC2AR0/202305.summary.shtml](http://www.bom.gov.au/clim_data/IDCKGC2AR0/202305.summary.shtml)

**Rade Musulin, lead collator of the AACI and Principal at Finity Consulting, is available for comment.**

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## **About the AACI**

The Index measures the frequency of extreme weather conditions and sea levels across Australia and how these vary over time. It covers extreme high and low temperatures, extreme rainfall, consecutive dry days, extreme wind and sea level.

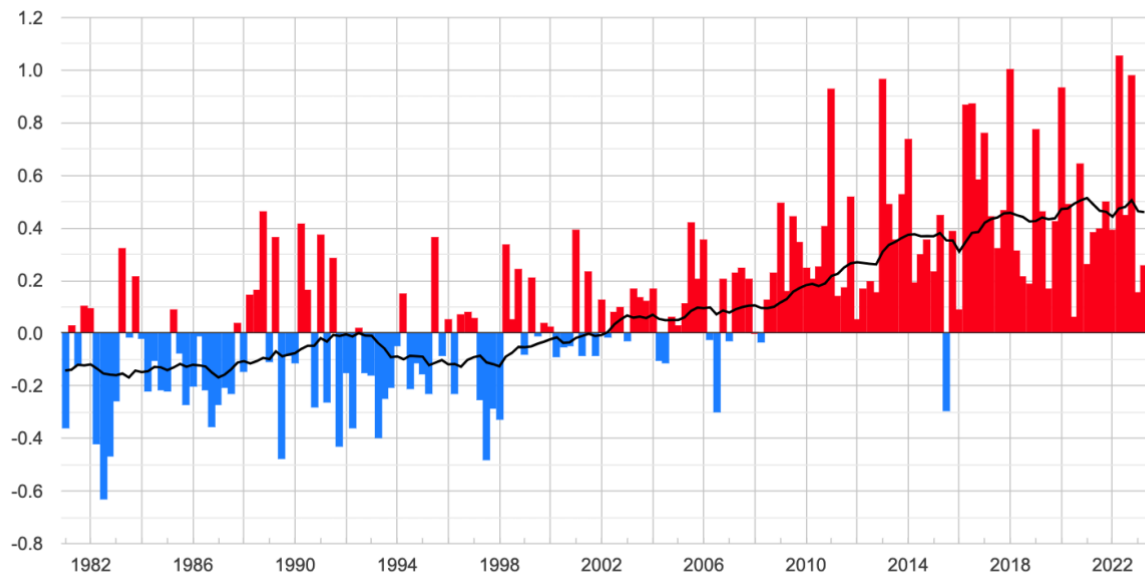
Unlike many other measures, the climate index focuses on changes in the extremes. This is a more relevant metric for the insurance industry than averages, as it correlates more closely with damage. This is done by measuring how often we observe exceedances of the 99th percentile of the reference period of 1981-2010.

## **About the Actuaries Institute and the Profession**

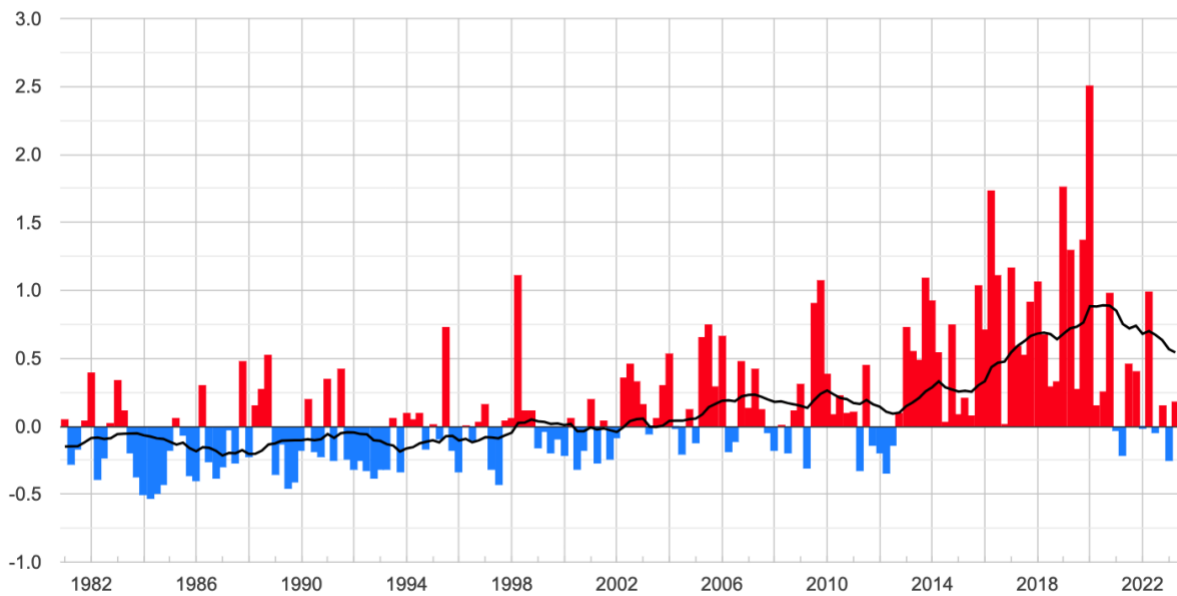
As the peak professional body in Australia, the Actuaries Institute represents the profession to government, business and the community, and holds the 'public interest' or 'common good' as a key principle in developing policy.

Actuaries use data for good by harnessing the evidence to navigate into the future and make a positive impact. They think deeply about the issue at hand, whether it's advising on commercial strategy, influencing policy, or designing new products. Actuaries are adept at balancing interests of stakeholders, clients, and communities. They're called upon to give insight on complex problems, they'll look at the full picture. Actuaries analyse the data and model scenarios to form robust and outcome-centred advice.

**Australian Actuaries Climate Index**



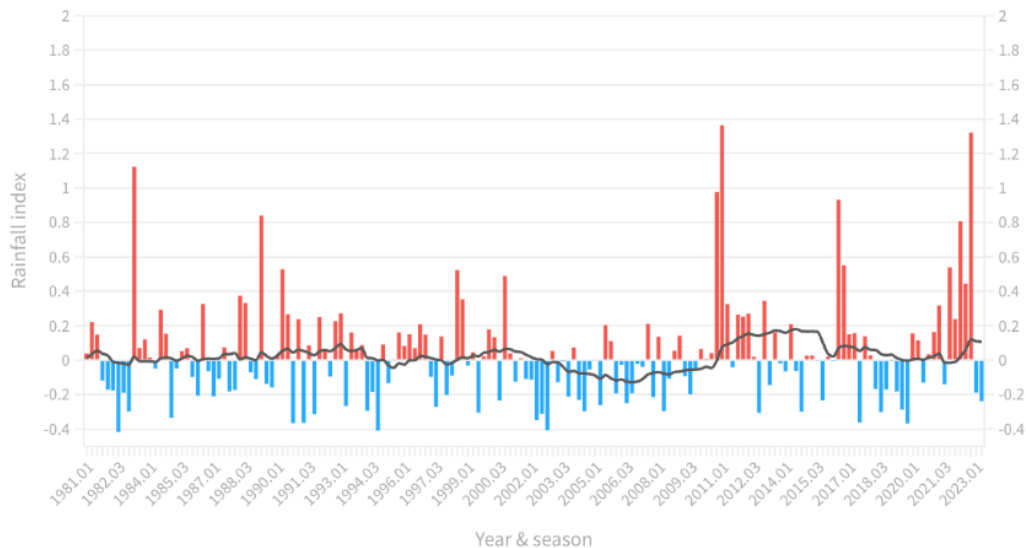
**Warm Temperature Index**



## After several years of extremely wet weather, the rainfall index was negative for almost all of Australia.

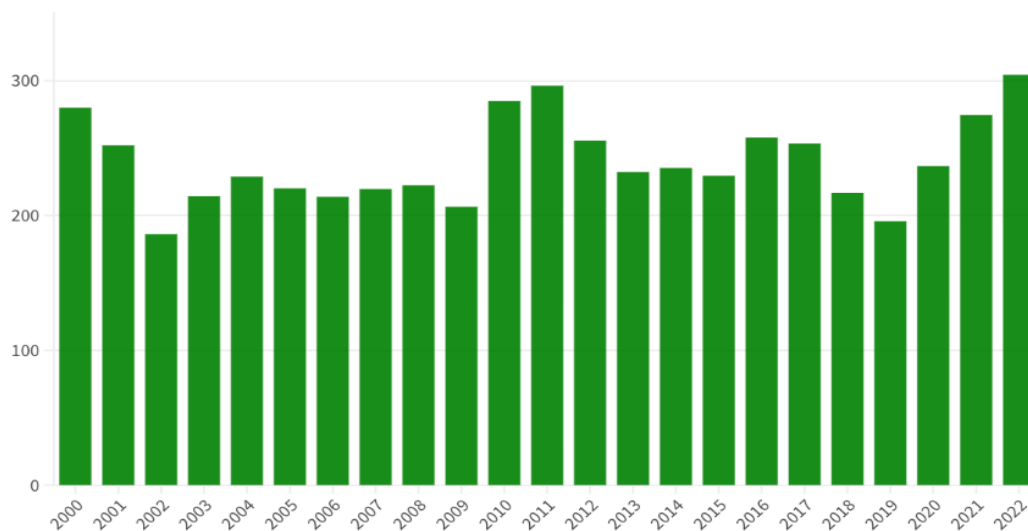
Australian Actuaries Climate Index: Rainfall Index

Australia ▼



## Extreme rainfall during La Niña led to record levels of vegetation growth in Australia in 2022

National average vegetation carbon uptake (gC per m<sup>2</sup>)



Source: [Australia's Terrestrial & Environmental Research \(TERN\)](#) and the [Australian National University \(ANU\)](#).