

## Australian Actuaries Climate Index: Spring 2022 high due to a soaking

19 January 2023

- **Australian Actuaries Climate Index at third highest value ever in Spring 2022**
- **Driven by extreme rainfall and high sea levels, especially in south-eastern Australia**
- **Moderate temperatures across most of Australia provide some reprieve, Wet Tropics the exception**

The Australian Actuaries Climate Index recorded the third highest index value in Spring 2022 since the Index began (Figure 1).

This was primarily driven by extreme rainfall, especially in the south-eastern parts of the country. The Central Slopes, which covers inland parts of NSW and QLD, and the Southern Slopes (Tasmania) both recorded the highest ever extreme rainfall index value, due to a combination of cyclical climate drivers – a La Niña event, a negative Indian Ocean Dipole and a positive Southern Annular Mode. (Central Slopes shown in Figure 2.)

On the ground this was experienced as storms and floods that generated more than 17,000 claims with estimated insured losses of \$477 million<sup>1</sup>. This follows \$250 million of claims arising from the flooding in western Sydney in July, and \$5.65 billion due to flooding in February and March. According to the Insurance Council of Australia, one in 25 Australians has made a flood or storm-related claim since January 2020<sup>[1]</sup>.

The sea level index for Australia as a whole was also the third highest value ever in Spring 2022, and particularly pronounced in south-eastern Australia. However, it largely went unnoticed due to the flooding events along the east coast. The Intergovernmental Panel on Climate Change (IPCC) has found that sea level rise in Australasia has been higher than global averages in recent decades<sup>2</sup>. Long-term, coastal erosion and coastal inundation are key risks many communities in Australia will need to manage.

Elayne Grace, Actuaries Institute Chief Executive, said: “Sea level increases are predicted as a significant issue in decades to come, and is a certain indication of climate change. This is going to become an increasing issue given about 87% of Australia’s population live within the coastal zone”<sup>3</sup>.

“The Spring reading underscores the importance of the step change Australia is finally seeing in investment and commitment at all levels of government, business and community to adapt to and manage the consequences of climate change”.

As noted in the recent Institute Green Paper, [Home insurance affordability and socioeconomic equity in a changing climate](#), current projections show insurance affordability will be a growing challenge for a significant number of households.

A reprieve was the extreme high temperature index was negative for most of Australia, indicating a lower frequency of extreme high temperatures than the reference period of 1981-2010. The Wet Tropics, which covers the most northern parts of Queensland, was an exception and recorded the highest extreme temperature index value to date (Figure 3).

Rade Musulin, Chair of the Actuaries Institute Climate Risk Working Group, added: “When we experience extremes, we don’t experience them across the board. What we have seen in the Spring quarter is extreme rainfall but moderate temperatures. Next Spring quarter we will probably be talking about the opposite, with El Niño expected to bring low rainfall, dryer conditions and very high temperatures.”

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<sup>1</sup> <https://www.insurancebusinessmag.com/au/news/natural-catastrophe/insurers-have-a-12-billion-storm-and-flood-damage-bill-429015.aspx#:~:text=The%20ICA%20said%20July%27s%20severe,cost%20of%20nearly%20%24250%20million>

<sup>2</sup> [https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC\\_AR6\\_WGI\\_Regional\\_Fact\\_Sheet\\_Australasia.pdf](https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Australasia.pdf)

<sup>3</sup> <https://soe.dcceew.gov.au/coasts/pressures/population>



The outlook for Australia includes another wet summer before conditions change. The Bureau of Meteorology (BoM) forecasts Australia will enter a drier, hotter El Niño phase<sup>4</sup> from June.

These naturally occurring cycles sit against a backdrop of a changing climate. Australia's climate has warmed by approximately 1.47 degrees since 1910, which leads to more extreme weather, triggering things like droughts, floods, and bushfires. High intensity rainfall events have also become more common<sup>5</sup>.

The Index is calculated at the end of each season by Finity Consulting following the release of data from the BoM. It draws on six component indices measuring changes in the frequency of extreme high and low temperatures, heavy precipitation (rainfall), dry days, strong winds and changes in sea levels across 12 Australian regions that are climatically similar. It mainly concentrates on the 99th percentile of observations. Each season is compared to the same season in previous years, and against a reference period from 1981-2010.

We have included links to the [latest article](#) and the latest [graphs](#). The Actuaries Institute's broad range of papers on climate risk can be found here: [Climate Risk Resource Centre](#).

Rade Musulin, Chair of the Actuaries Institute Climate Risk Working Group and Principal at Finity Consulting, is available for comment.

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As the peak professional body for Members in Australia and overseas, the Actuaries Institute represents the interests of the profession to government, business and the community.

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.

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<sup>4</sup> <http://www.bom.gov.au/climate/model-summary/#tabs=Bureau-model&region=NINO34>

<sup>5</sup> <http://www.bom.gov.au/climate/outlooks/#/overview/influences>



Figure 1:

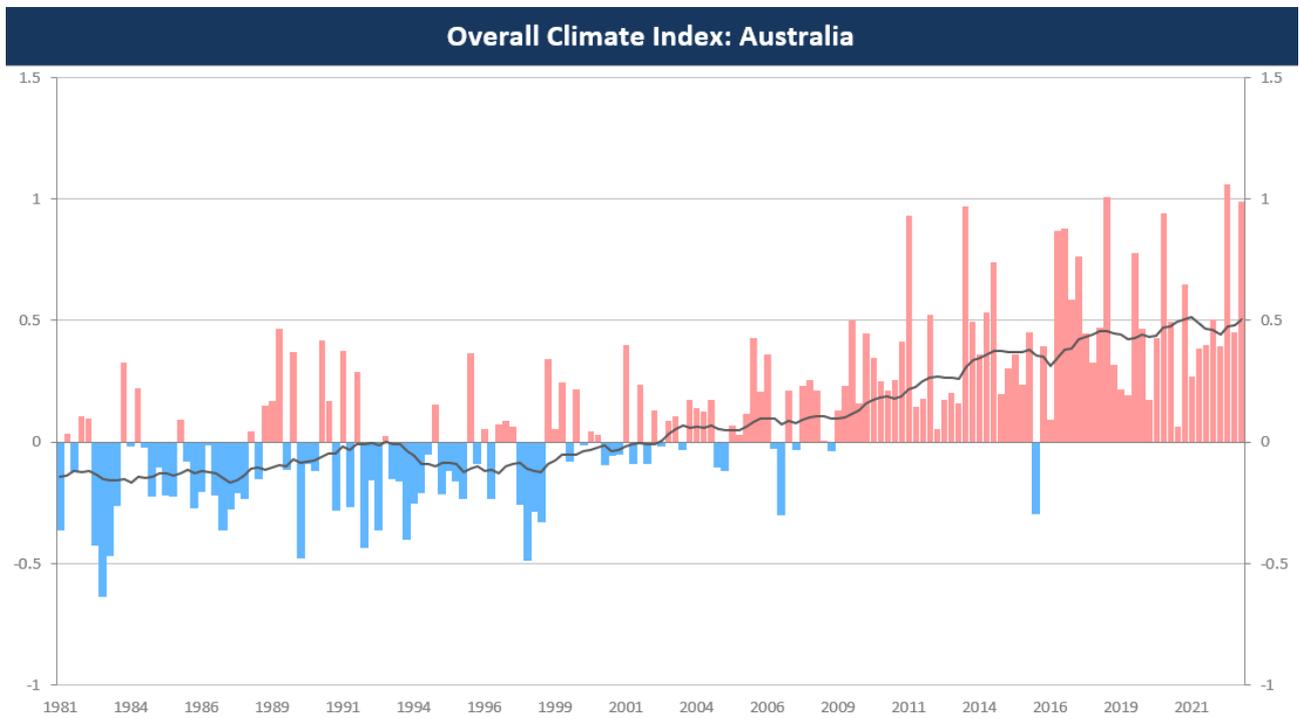


Figure 2:

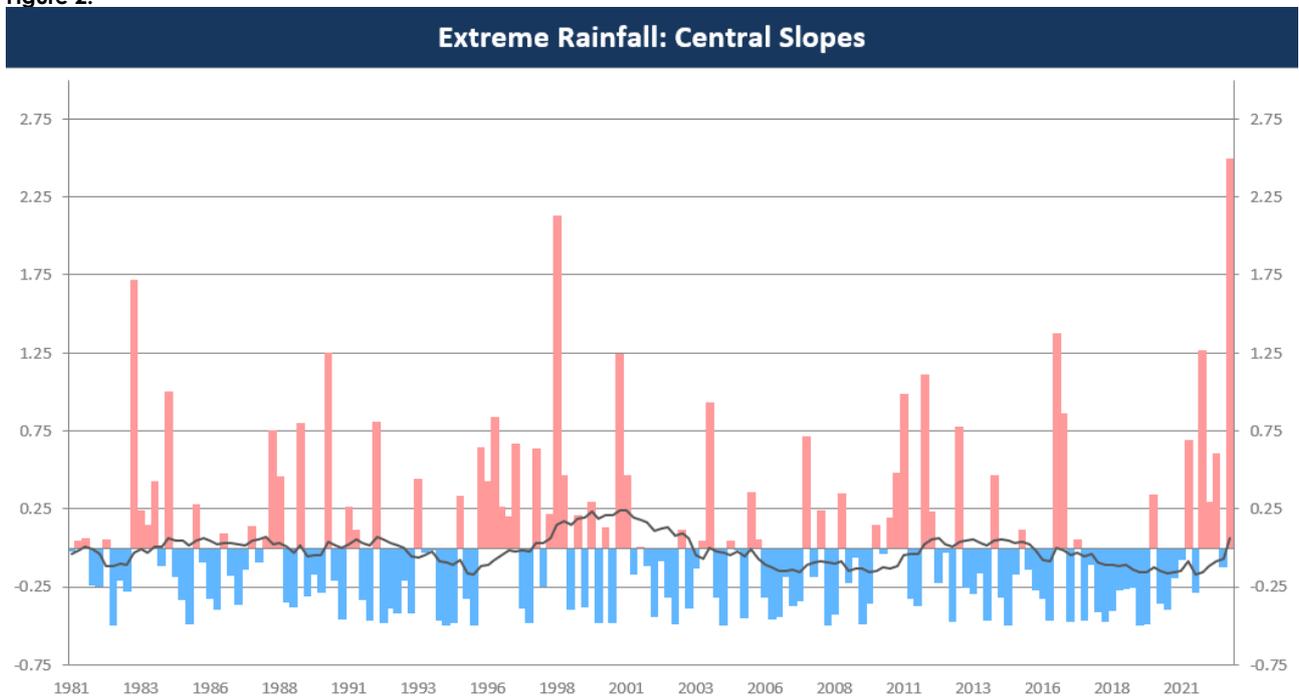
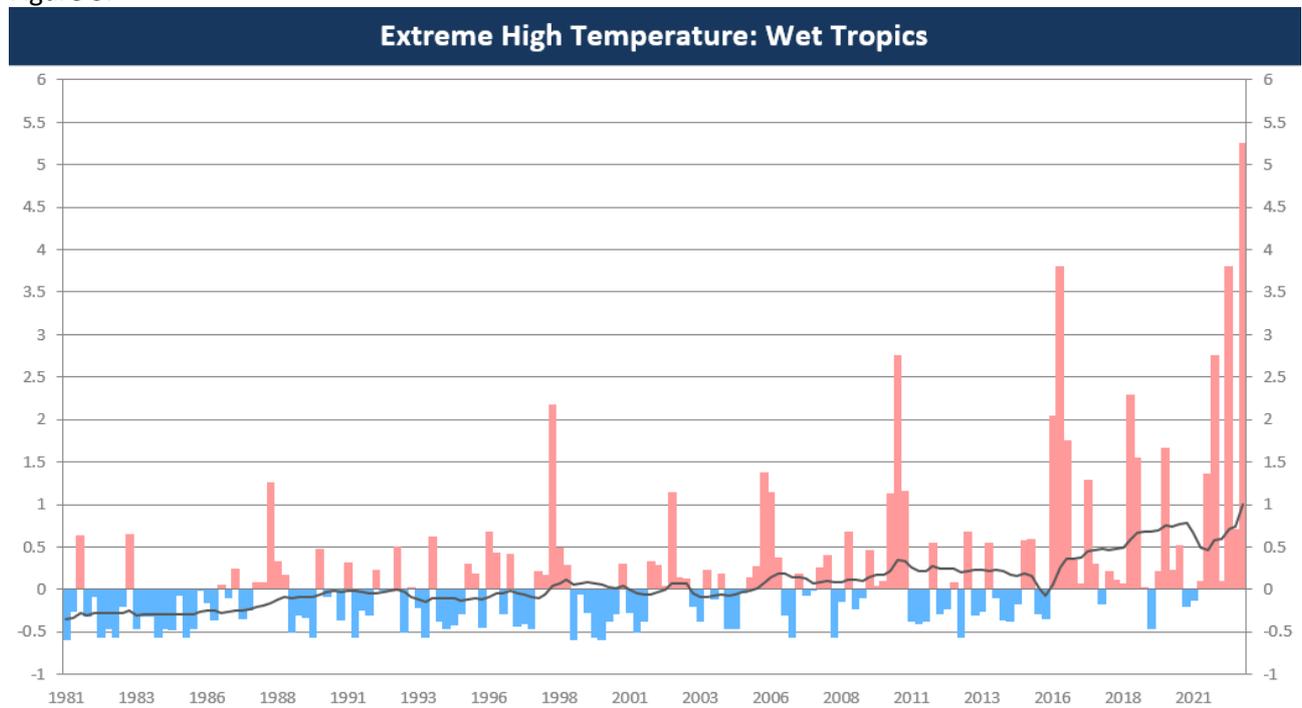




Figure 3:



Note to charts: A zero reading on the vertical axis indicates the level of extremes being the same as the average over the reference period of 1981-2010. Red bars/areas indicate a reading which is above the reference period average and blue bars/areas indicate a reading which is below the reference period average. The black line shows the five-year moving average and provides a robust measure of how the index and weather extremes are trending over the longer term.