

Actuaries Institute: extreme weather marks 42 of 43 seasons

Embargoed 1 November 2021

- **Extremes include high or low temperatures, rising sea levels, rainfall, dry days, and wind.**
- **Every season over more than a decade - except one - recorded weather considered 'extreme'.**
- **Winter 2021 shows trend toward extreme weather, but no national records set.**

On the third anniversary of its launch, the Actuaries Institute today said its Climate Index shows that 42 of the last 43 seasons recorded extreme weather, including high or low temperatures, high rainfall, strong wind, or rising sea levels.

The Australian Actuaries Climate Index is released quarterly, shortly after the end of each Winter, Spring, Summer, and Autumn, using data from the Bureau of Meteorology.

The data tracks 12 regions across Australia, measuring extreme weather or sea levels that can have catastrophic impacts on individuals, businesses, and communities. It shows how the occurrence of extremes is changing over time.

Each season is compared to the same season in previous years, and against a reference period from 1981-2010.

Since 2011, only one season, Winter 2015, recorded weather that is outside what is historically considered extreme.

"The Climate Index was designed to help policymakers and businesses assess the frequency of weather extremes including temperatures, rainfall, dry days, wind and rising sea levels over time," said Actuaries Institute President Jefferson Gibbs.

"It is the culmination of extensive research, which began with data from Australia's Bureau of Meteorology, the Commonwealth Scientific and Industrial Research Organisation (CSIRO), leading insurance and natural hazard scientists and regulators," Mr Gibbs said.

The Index for the latest quarter - Winter 2021 - shows no national records were set, but the trend to extremes continues.

Parts of Australia experienced a cold start to Winter, but average temperatures rose by August, making Winter one of the warmest on record, according to the Bureau of Meteorology¹.

Nationally, there was less rainfall. Rainfall was 4% below long-term averages. But parts of Victoria experienced extreme flooding in June, with some rivers rising by up to five metres in 12 hours at the beginning of the month.

A review three years after the Index was launched and looking back at data to the beginning of 2011, shows record high and low temperatures driving the Index over 36 of 43 seasons², and higher than average sea levels in 40 of 43 seasons.

"Over the last three years, we have seen record high and low temperatures and Index values that are consistently above the reference period, which is evidence of the effect of global warming on Australia's climate," said Rade Musulin, convenor of the Actuaries Institute's Climate Risk Working Group, and lead researcher on the Index.

¹ <http://www.bom.gov.au/climate/current/season/aus/summary.shtml>

² Although it has not always been the same season that each of these two components have contributed to the Index.



The United Nations-supported International Panel on Climate Change (IPCC) 6th Assessment Report stated more frequent extremes would increase the severity of heatwaves; heavy precipitation associated with flooding would become more intense and frequent; and there would be compounding events, including heatwaves, drought, and fire weather.

Climate actuaries, who are expert risk assessors, have found that of the top 10 global catastrophes examined between 1970 and 2019, storms accounted for about \$521 billion in global economic loss, while floods account for about \$115 billion of losses³.

For every degree increase in temperature, the atmosphere can hold 6-7% more moisture. Converted to rainfall, this means more severe or intense storms and a greater likelihood of flooding.

Higher temperatures can also result in direct economic loss, either through extreme weather events, such as typhoons, cyclones, and hurricanes, which occur in warmer climates, or seemingly benign changes: loss of economic activity as high temperatures impact workforces.

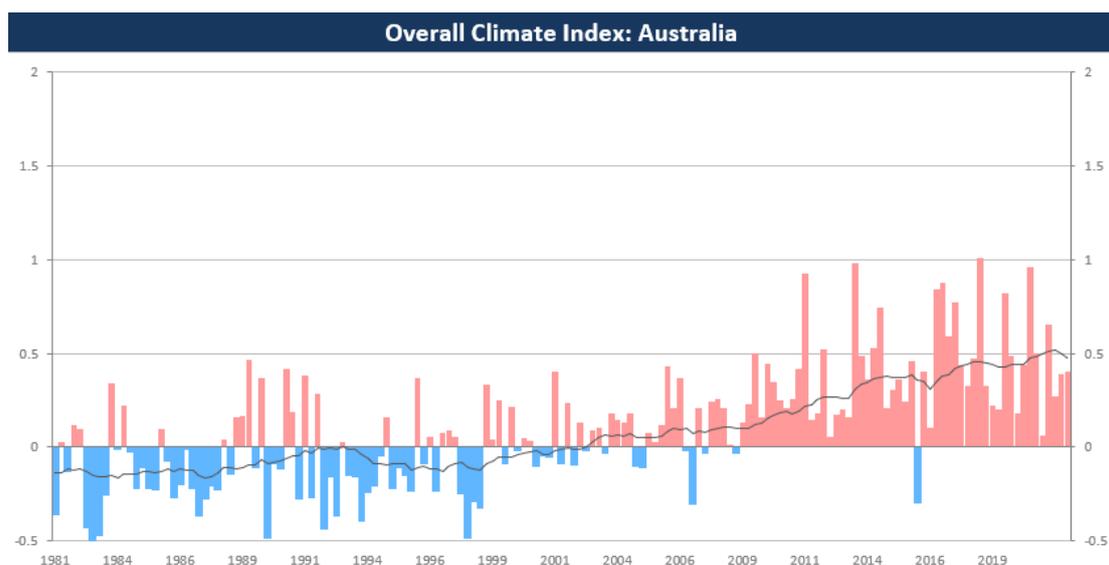
The Australian Actuaries Climate Index helps identify regional impacts within Australia, and will allow, over time, better risk management where weather patterns are known to cause extreme damage.

“Actuaries are very well placed to look at risks that come from complex events, like extremes in weather,” said Actuaries Institute Chief Executive Elayne Grace.

“It is clear that the Index is showing more extremes over time,” Ms Grace said. “It’s up to all stakeholders, including governments, business and individuals, to ensure those increased risks are mitigated and a steady transition made to a sustainable future.”

The Index is calculated by Finity Consulting for the Actuaries Institute at the end of each season, following the release of data from the Bureau of Meteorology.

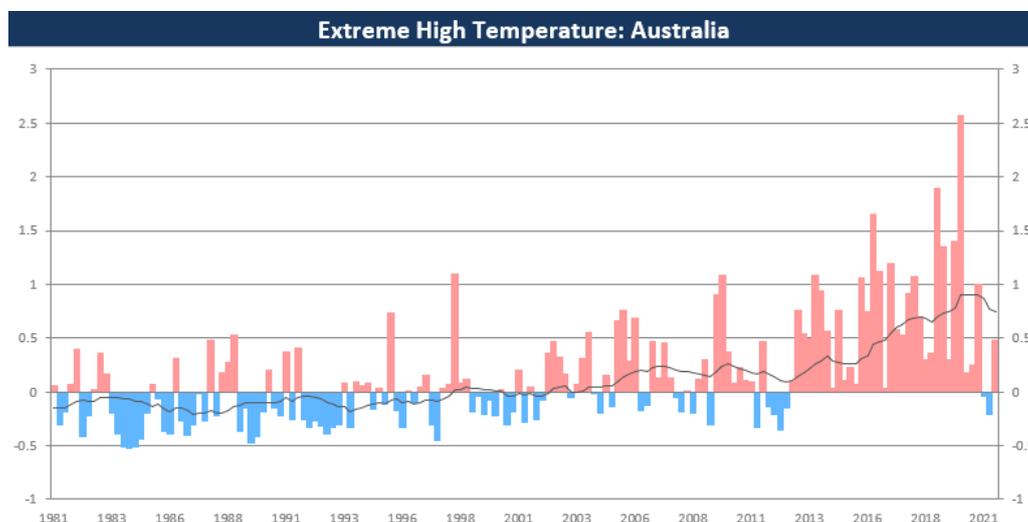
All but one season in more than a decade recorded a positive index value, indicating more frequent extreme weather observations.



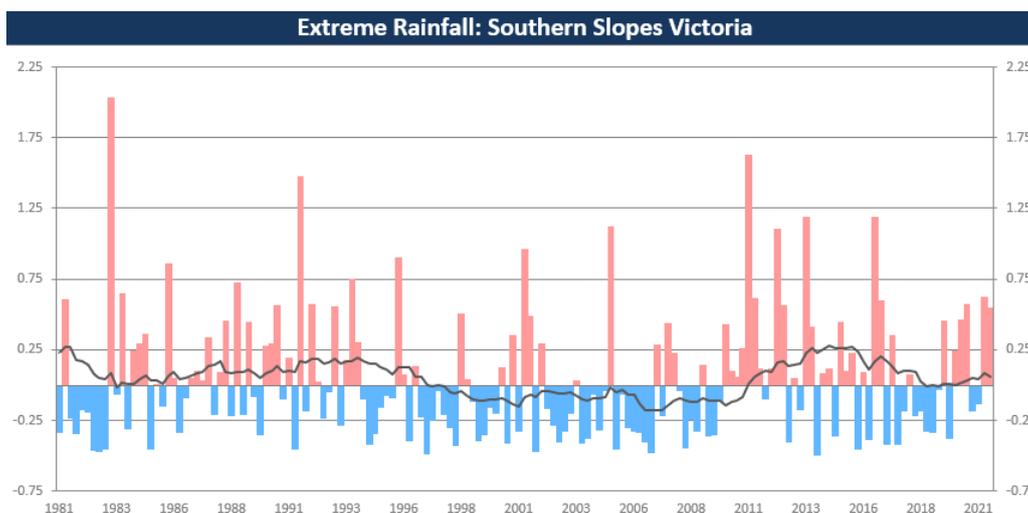
³ <https://www.actuaries.digital/2021/08/18/counting-the-cost-of-catastrophes-with-climate-change/>



Australia recorded a positive value on the extreme temperature index, confirming the BoM's observations of a warmer winter than average.



The Southern Slopes Victoria experienced some extreme rainfall this winter, which caused flooding in parts of Victoria.



The Actuaries Institute's broad range of papers on climate risk can be found here: [Climate Risk Resource Centre](#).

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

For media inquiries please contact:

Michelle Innis P&L Corporate Communications
m +61(0) 414 999 693

About the Actuaries Institute

As the sole professional body for Members in Australia and overseas, the Actuaries Institute represents the interests of the profession to government, business and the community. Actuaries assess risks through long-term analyses, modelling and scenario planning across a wide range of business problems. This unrivalled expertise enables the profession to comment on a range of business-related issues including enterprise risk management and prudential regulation, retirement income policy, finance and investment, general insurance, life insurance and health financing.