

Australian Actuaries Climate Index shows extreme weather continued through winter; acute dry affects three states

19 November 2019

- Index shows below average rainfall across most of the country during winter 2019.
- Parts of WA, SA and NSW experienced the driest or second driest season since the beginning of the reference period (1981).
- Extreme temperatures were above average nationally, except North Queensland.
- Results are consistent with US data: June-August was second warmest globally in 140 years.

The Australian Actuaries Climate Index shows winter 2019 was among the driest on record, with six out of the seven states and territories experiencing below average rainfall relative to the reference period of 1981-2010.

Parts of Western Australia, South Australia and New South Wales experienced the driest or second driest season since the beginning of the reference period, reflecting the ongoing drought. Only parts of southern Victoria recorded rainfall that was close to, or above, the average during the reference period.

Although the latest index value is lower than the previous season, the individual component parts showed a continuation of the extreme weather conditions seen since the start of 2019. As well as lower rainfall across most of the country, extreme temperatures were experienced for every region except parts of north Queensland.

“Recent events, including the devastating bushfires in multiple states, underscore how important it is to get an objective view on climate patterns,” said Actuaries Institute President Nicolette Rubinsztein. “The Australian Actuaries Climate Index clearly shows extreme weather is happening more often,” she said.

The latest AACI showed large swathes of the country experienced unusually dry conditions, with WA, SA and NSW facing record levels of dryness, said actuary Rade Musulin, who collates the Index. This can be seen in the Southern and South Western Flatlands (West) in WA, and Rangelands South clusters, that spread from NSW across SA to WA, which had the driest and second driest seasons since 1981, respectively (Figure 2). These dry conditions reflect the extreme drought that parts of Australia has experienced since 2017.

Although some areas of North Queensland experienced extreme temperatures that were close to or below average, every other region in Australia was above average.

Winter 2019 was the seventh consecutive winter to show extreme high temperatures that exceeded those of the reference period. Figure 3 shows the proportion of the last 20 seasons (5 years) that have been above average. Most of the country has experienced above average extreme high temperatures for much of that time. Some parts of NSW have not experienced a single season below the reference period average in the past four years.

Projections from the Bureau of Meteorology (BoM) and Commonwealth Scientific and Industrial Research Organisation (CSIRO) indicate that this is likely to continue.

The temperature results are consistent with global experience as measured by the US National Oceanic and Atmospheric Administration (NOAA), which reported that the June-



August period was the second warmest in the last 140 years globally and the third warmest in the southern hemisphere.

Australian weather during the period was influenced by a combination of a neutral El Niño Southern Oscillation (ENSO) and historically strong positive Indian Ocean Dipole (IOD).

According to the BoM, a positive IOD results in below average rainfall and warmer days for much of central and southern Australia during winter-spring. Positive IOD events are often associated with a more severe fire season for southeast Australia.

“Actuaries are deeply involved in a wide range of work underway to better understand the risks of climate change and explore ways the risks may be managed,” said Actuaries Institute Chief Executive Elayne Grace. “Actuaries have examined, for example, the potentially significant effects there could be on people’s health, retirement incomes and access to affordable general insurance,” she said.

The Actuaries Institute recently made a [submission](#) to the ACCC on its Northern Australia Insurance Inquiry – Second Update Report, which said in part:

“Climate change is likely to trigger further changes in risk understanding, which may mean the market disruption issue will be with us for some time. Long-term consideration of climate change is essential. In particular, the implications of climate change need to be considered in building code, land use and infrastructure investment decisions.”

The index, which measures extreme weather conditions and sea levels across Australia, and how these vary over time, was launched in November 2018 and is updated quarterly. The Index shows changes in the frequency, or rate of occurrence, of extreme high and low temperatures, heavy precipitation, dry days, strong winds and changes in sea levels.

It is collated at the end of each season following the release of data from the BoM. The data is collected nationally and grouped into 12 climatically consistent regions. Each season is compared to the same season in previous years and against a reference period of 1981-2010.

Note: References to temperatures, dryness etc are based on the data underlying the AACI, which tracks changes in the frequency of extreme high and low temperatures, heavy precipitation, dry days, strong wind and changes in sea level, mainly concentrating on the 99th percentile of observations.

A link to the AACI is [here](#). Rade Musulin is available for comment.

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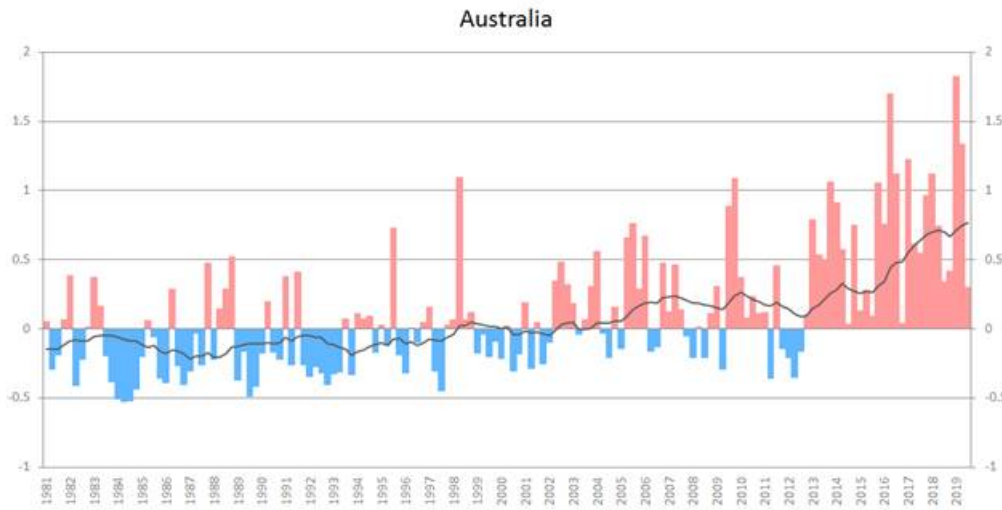
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As the sole professional body for Members in Australia and overseas, the Actuaries Institute represents the interests of the profession to government, business and the community. Actuaries assess risks through long-term analyses, modelling and scenario 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.



Figure 1 – Australian Actuaries Climate Index – Warm Temperature Component, Winter 2019



The black line in the chart above shows the five-year moving average. This provides a robust measure of how the index and weather extremes are trending over the longer term.

Figure 1 – Extreme Dryness in these Clusters

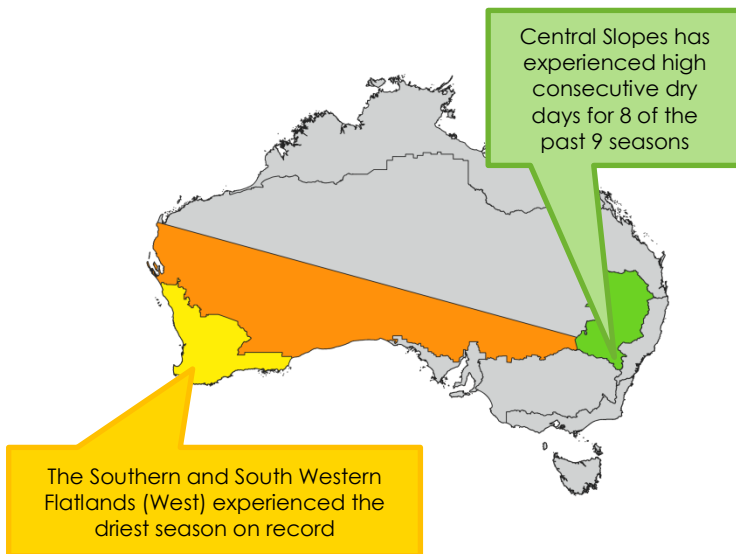


Figure 3 – Percentage of Above Baseline Seasons in Past 20 (High Temperature)

