

## FACT SHEET

# CLIMATE CHANGE IN NSW



Grass fire (credit: Shutterstock)

## OUR CLIMATE IS CHANGING

The climate of New South Wales is highly variable. The north-east of the state is dominated by summer rainfall and relatively dry winters. By contrast, the south of the state experiences regular rainfall during the winter.

The climate of New South Wales is changing. Australia's climate has warmed by 0.9 °C since 1910, and this has been accompanied by a large increase in extreme temperatures. Average temperatures have been steadily rising since the 1960s. The decade from 2001 to 2010 was the hottest on record, while 2014 was the hottest year in New South Wales.

The rate of change has also increased, with mean temperatures rising by 0.5°C per decade since 1990, compared to about 0.1°C per decade during the 1950s to 1980s.

Climate change will increasingly affect the environment and society in every part of the state. Changes in natural hazards are already being observed. For example, heat waves, heavy precipitation and severe bushfire conditions have become more frequent and more intense.

## FUTURE CLIMATE CHANGE IN NSW

New South Wales is projected to continue to warm in this century. The warming is projected to average about 0.7°C in the near future (2020–2039), increasing to about 2.1°C in the far future (2060–2079). There are not many differences across the state in the projected increases in average temperatures, with all regions becoming warmer. The warming projected for New South Wales is large compared to our normal natural temperature variability.

Climate change will exacerbate NSW’s natural climate variability, making it more difficult to manage our landscapes and ecosystems and the human activities that depend on them. Communities already affected by climate variability will be challenged by this shift in the climate.

Much of the state’s irrigated agriculture is located in the south-west, a region already sensitive to changes in water availability. Climate change may exacerbate water security in these areas. New South Wales’ coast is home to most of the state’s population, which has many high value assets and infrastructure that are susceptible to storm surges, sea-level rise and increased flooding.

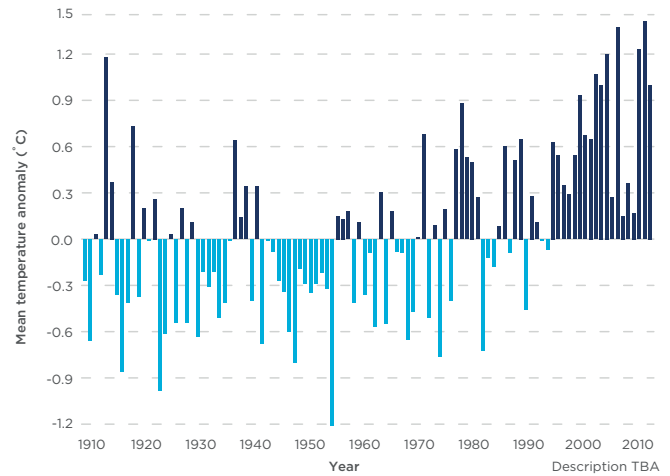


Figure 1: Annual mean temperature anomaly - NSW/ACT (1910-2015)<sup>3</sup>

## PROJECTED CHANGES IN NSW




Figure 2: Projected changes in climate and extreme events

- 1 Fawcett (2013), On the sensitivity of Australian temperature trends and variability to analysis methods and observation networks. The Centre for Australian Weather and Climate Research - Report No. 050
- 2 Office of Environment and Heritage, 2014, NSW Climate Impact Profile
- 3 Bureau of Meteorology, 2010, <http://www.bom.gov.au/climate/change/#tabs=Tracker&tracker=timeseries>

## PROJECTED IMPACTS IN NSW

### Heatwaves

- » Across most of NSW there will be more days over 40°C
- » Heatwaves are projected to occur more often and last longer, up to 3.5 days more on average
- » By 2030, there is projected to be up to 10 more heat wave days per year and by 2070 up to 33 more in the north of NSW. In the south, there is projected to be up to 7 more days.

 See the AdaptNSW webpage [Heatwaves](#) for more information

### Urban heat

- » Climate change is projected to increase temperatures in Sydney with maximum temperatures projected to increase by 0.7°C by 2030
- » Projected changes in urban land-use have the potential to more than double the temperature increases that climate change would otherwise cause.

 See the AdaptNSW webpage [Urban heat](#) for more information

### Human health

- » Climate change is projected to increase heat-related mortality and morbidity
- » Potential increases in water and food-borne disease are projected
- » The seasonality and distribution of diseases spread by organisms such as mosquitoes is projected to change.

 See the AdaptNSW webpage [Human health](#) for more information

### Floods and storms

- » Rainfall extremes that can cause riverine and flash flooding are projected to increase
- » By 2070, significant increases in several rainfall extreme indices are projected for some regions of NSW.

 See the AdaptNSW webpage [Floods and storms](#) for more information

### East Coast Lows

- » Small to moderate East Coast Lows (ECLs) are projected to decrease in the cool season
- » Extreme ECLs in the warmer months may increase in number.

 See the AdaptNSW webpage [East coast lows](#) for more information


### Sea level and coasts

- » Some influences affect sea levels on short timescales (less than one year) including seasonal factors, weather systems and variability of ocean water properties such as temperature and salinity
- » Past trends provide valuable evidence in preparing for future environmental change but, by themselves, are insufficient for assessing the risks associated with an uncertain future.

 See the AdaptNSW webpage [Sea level and coasts](#) for more information


### Bushfire

- » Average and severe fire weather is projected to increase in NSW in the future
- » Increases in average and severe fire weather are projected to occur mainly in summer and spring, with the largest increases by 2070 to occur in spring.

 See the AdaptNSW webpage [Bushfires](#) for more information

## Soil

- » NSW is projected to undergo an increase in soil erosion and erosivity (rainfall which causes erosion)
- » Soil organic carbon stocks are projected to decline over most of the state in the near future, although a slight increase is projected over the western regions
- » Soils in most of the eastern part of the state are projected to become more alkaline, while the western region's soils are projected to become more acidic.

 See the AdaptNSW webpage [Soil](#) for more information

## Water resources

- » In the near future, southern NSW is likely to experience small reductions in runoff while central and northern areas of the state have small increases
- » In the near future, less groundwater recharge is projected across much of NSW, especially in the south-east of the state.

 See the AdaptNSW webpage [Water resources](#) for more information

## Biodiversity

- » Climate change is emerging as a serious threat to native species and ecosystems and is expected to be an ongoing challenge to their effective conservation
- » Rising temperatures and sea levels, as well as climate-induced changes in fire regimes, water quality and ocean chemistry, will have wide-ranging impacts on biodiversity and will intensify existing threats such as habitat loss, weeds, pest animals and drought
- » The most vulnerable ecosystems include coastal, alpine, rainforest or fragmented terrestrial ecosystems, or ecosystems in areas vulnerable to fire or low freshwater availability.

 See the AdaptNSW webpage [Biodiversity](#) for more information

Central Park, Sydney, 2014 International Green Infrastructure Award Winner (credit: Olga Kashubin/Shutterstock.com)



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