

2016 State Report Card

What are the causes and consequences of climate change for South Australia?

Human activities that increase the concentrations of carbon dioxide and other heat-trapping gasses in the atmosphere are the main cause of the current change in global climate. These heat-trapping gasses increase the [greenhouse effect](#) by stopping heat from leaving the atmosphere. This results in temperature increases in the lower atmosphere and Earth's land and ocean surfaces, changes to weather patterns, and increases the amount of water the atmosphere can hold. The largest contributor over time to climate change, carbon dioxide, is released by activities such as the burning of coal, oil, and natural gas. Clearing of native vegetation, which absorbs carbon dioxide and [stores it as carbon](#), also contributes. Atmospheric carbon now exceeds 400 parts per million—40 per cent higher than 100 years ago, and a level not seen for millions of years.

Without careful planning changes in temperature and the amount and frequency of rain, will affect our drinking water supplies and our primary industries. Sea levels around South Australia have been rising by almost five millimetres each year. The [upper estimate](#) for 2100 sea levels are 1.1 metres higher than in 1990, potentially affecting 60,000 coastal buildings and 6763 kilometres of roads and other assets, valued at over A\$45 billion.



Year 2090: Projected changes in temperature and rainfall

	Intermediate emissions		High emissions	
	°C	mm	°C	mm
AW	+2.0	-9.9	+4.0	-13.8
SAAL	+2.0	-9.9	+4.0	-13.8
EP	+1.7	-9.1	+3.1	-19.2
NY	+1.9	-14.1	+3.4	-23.6
SAMDB	+1.8	-11.0	+3.3	-21.5
AMLR	+1.8	-7.7	+3.2	-15.6
KI	+1.4	-8.0	+2.6	-16.9
SE	+1.6	-6.8	+2.9	-15.7



State target

Improve capacity of individuals and community to respond to climate change

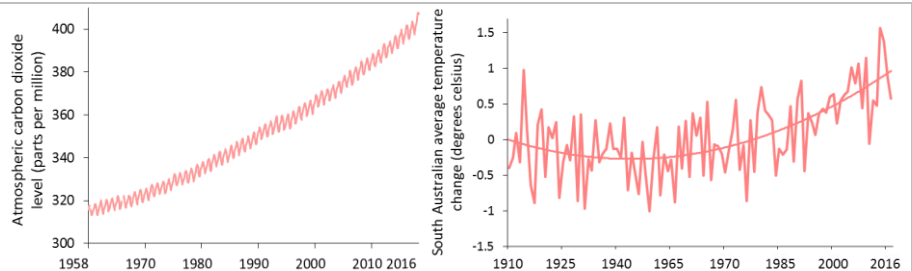
Trend (1990–2016)

Getting worse

Carbon dioxide concentrations continue to increase in the atmosphere, which will further contribute to increased temperatures

Increasing air temperatures are caused by increased greenhouse gasses, such as carbon dioxide, entering the atmosphere (graphs on right).

Research is ongoing so that scientists can reliably predict the impacts of climate change.



Where we are at (2016)

Poor

Atmospheric concentrations of greenhouse gasses are increasing. Australia remains one of the highest emitters per capita.

Australia is the [13th largest](#) emitter of greenhouse gases globally. In South Australia, average air temperatures have increased by around one degree since 1910 (graph right). Climate projections are established under [low](#), intermediate and high emissions scenarios. If emissions are reduced in the next 20 years (low emissions) then temperatures are projected to rise one degree by 2050 then stabilise. The [intermediate scenario](#) projects an increase of around 1.8 degrees by 2090 (table top right) while a [high emission](#) scenario projects an increase of 3.2 degrees by 2090. Rising temperatures will increase the threat of bushfires, result in longer and hotter heatwaves and alter weather patterns potentially decreasing rainfall by up to 14 per cent by 2090 (table above).

The heat waves in South Australia in 2013 and 2015 were record breakers and the longest December heat wave on record occurred in 2015, with four consecutive days exceeding 40 degrees. Northern South Australia experienced its warmest minimum temperatures in autumn 2016, while record rainfall occurred in September in eastern South Australia. In addition to sea level rise, extreme events, such as drought, flood and heatwaves, are predicted to occur more frequently and will continue to degrade our natural and built environments. Outcomes over this century, and in longer term, are strongly dependent on emissions in the next few decades. The Australian Government has set the target of reducing carbon emissions to [26–28 per cent](#) less than the emission levels produced in 2005, by 2030. South Australia has a number of [initiatives](#) to reduce greenhouse gas emissions.

Reliability of information



Excellent

Further information: [Technical information for this report](#), [Bureau of Meteorology data and information on climate change](#)

