Projected temperature

Climate

South Australia's environmental trend and condition report cards 2023

Trend
Getting worse

Condition
Not applicable

Reliability
Good

STATE

Trend

Average daily maximum temperatures across South Australia are projected to increase by between 1.4 and 2.2 degrees Celsius (°C) by 2050 under plausible emissions scenarios.

Two scenarios of global atmospheric greenhouse gas concentrations are shown, representing medium (RCP4.5) and high (RCP8.5) emissions (top figure). Under medium emissions, average maximum temperatures could increase by between 1.0°C and 1.3°C by 2030 and by between 1.4°C and 1.8°C by 2050. Changes are even greater under high emissions, with projected increases of between 1.0°C and 1.3°C by 2030 and between 1.5°C and 2.2°C by 2050. Beyond 2050, temperatures are projected to rise considerably more, particularly under a high emissions scenario.

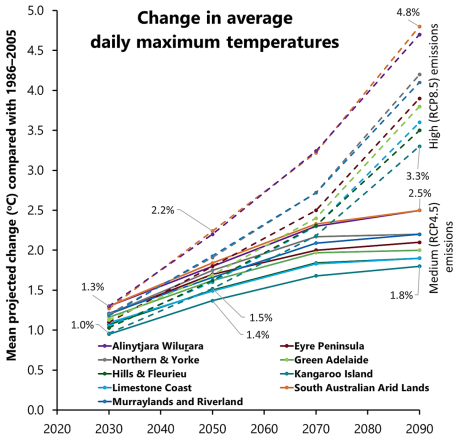
With increasing average temperatures, there is a greater occurrence of very hot weather. For example, for Adelaide, the average annual number of days reaching 40°C or more in the 20 years from 2020–2039 is projected to increase to 3 days per year, compared to 1.2 days per year during the 1986–2005 period (bottom figure).

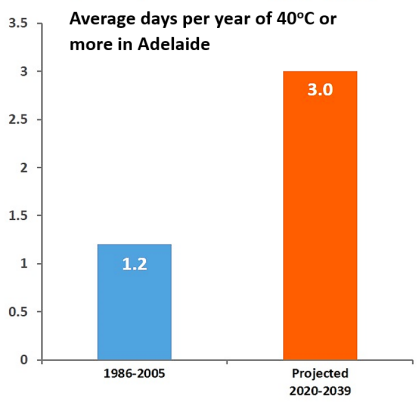
Condition

A condition rating is not applicable as this is an assessment of projected temperatures under likely climate scenarios.

This assessment draws from temperature projections presented in the Government of South Australia's Guide to Climate Projections for Risk Assessment and Planning. Each of the graphed projections is the average of 6 projections from a combination of 3 global climate models and 2 regional climate models. The projected changes are relative to temperatures during a baseline period spanning 1986–2005 and are in addition to the approximately 0.7°C of warming that occurred between the pre-industrial baseline period of 1850–1900 and recent baseline period of 1986–2005.

Higher maximum temperatures and more days of 40°C or more are projected for South Australia.





Why is temperature important?

Climate affects almost every part of our lives. Communities, industries, landscapes and ecosystems all develop with a tolerance for a range of climate variation. If the climate changes beyond that range of tolerance, then they must either adapt, migrate, transform or decline.

One example of the impact of a rise in average temperatures is an increase in the occurrence of severe heatwaves. This has important implications for human health, food production and biodiversity.

What are the drivers?

According to the Australian Academy of Science, "Earth's climate has changed over the past century. The atmosphere and oceans have warmed, sea levels have risen, and glaciers and ice sheets have decreased in size. The best available evidence indicates that greenhouse gas emissions from human activities are the main cause. Continuing increases in greenhouse gases will produce further warming and other changes in Earth's physical environment and ecosystems."

What is being done?

Climate change projections, including temperature projections, are periodically improved and updated in line with advancements in climate modelling.

Actions in response to the changing climate include those that mitigate South Australia's emissions as part of a global effort to stem further change in the global climate. The Government of South Australia has statewide goals to reduce net greenhouse gas emissions by more than 50% by 2030, achieve net zero emission by 2050, and achieve 100% renewable energy generation by 2030.

For further information see: technical information

Government of South Australia