

# Projected rainfall



South Australia's environmental trend and condition report cards 2023

## Climate



Trend  
**Getting worse**



Condition  
**Not applicable**

Reliability  
**Fair**

STATE

### Trend

Average annual rainfall across South Australia is projected to decrease by between 4% and 23% by 2050 under plausible emissions scenarios.

Under a medium emissions (RCP4.5) scenario, average annual rainfall is projected to decline by 2–10% by 2030 and by 4–23% by 2050. Beyond 2050, changes are greater under a high emissions (RCP8.5) scenario, particularly later in the century. By 2090, projected rainfall declines are 7–20% under medium emissions and 23–37% under high emissions (top figure).

In most South Australian landscape regions, the projected decline is greater for average spring rainfall than for average annual rainfall. Under a medium emissions scenario, average spring rainfall is projected to decline by 8–24% by 2050. Beyond 2050, there is a further projected decline in the northern regions and Kangaroo Island, but not in the southern agricultural regions of the state. Changes are much greater under a high emissions scenario, with projected spring rainfall declines of 35–52% by 2090 (bottom figure).

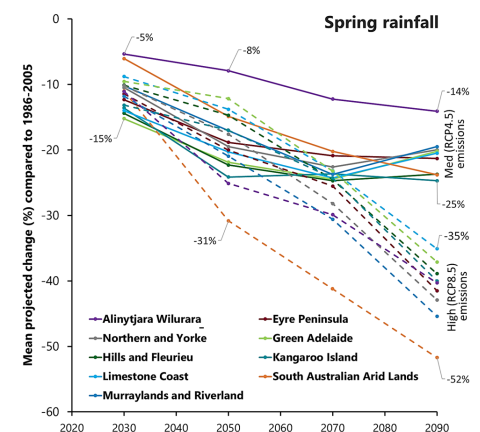
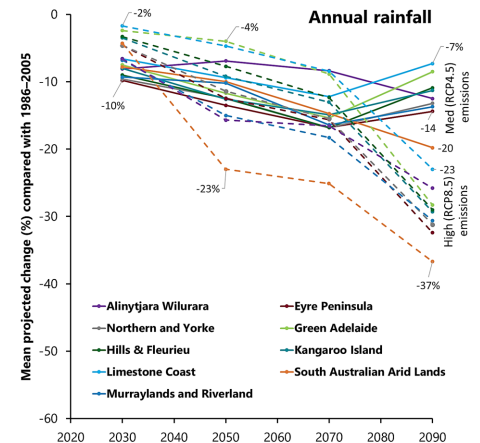
### Condition

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

This assessment draws from rainfall 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 rainfall during a baseline period spanning 1986–2005. Two scenarios of global atmospheric greenhouse gas concentrations are shown, representing medium and high greenhouse gas emissions.

Annual and spring rainfall across South Australia is projected to decline significantly by 2050.



### Why is rainfall 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 warming climate is declining rainfall in mid-latitudes (including South Australia), which will follow a widening of the tropics in a warmer planet. Declining rainfall impacts water security, agricultural yields, fire risk, and ecosystem function.

### 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 rainfall 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](#)



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Government of South Australia