

Projected sea level



Climate

South Australia's environmental trend and condition report cards 2023



Trend
Getting worse



Condition
Not applicable



Reliability
Good

STATE

Trend

Mean sea levels in South Australia are projected to rise approximately in line with global sea levels over the course of this century.

Globally, mean sea levels rose by 15–20 cm from 1900 to 2018. The projections of the Intergovernmental Panel on Climate Change (IPCC) indicate that sea levels will continue to rise, and the rate of rise will increase through the 21st century.

The projected changes in sea levels at individual South Australian coastal locations (bottom figure) vary by up to 14 cm by 2100 but are generally similar to projected changes in global mean sea levels.

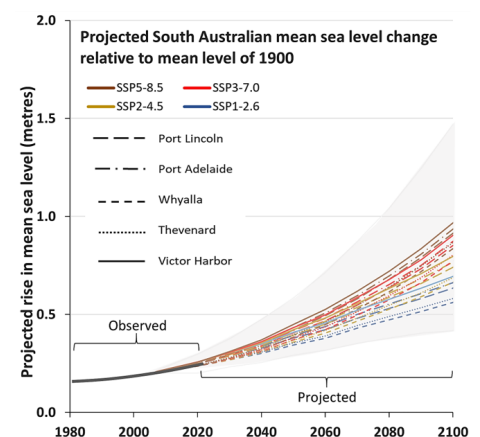
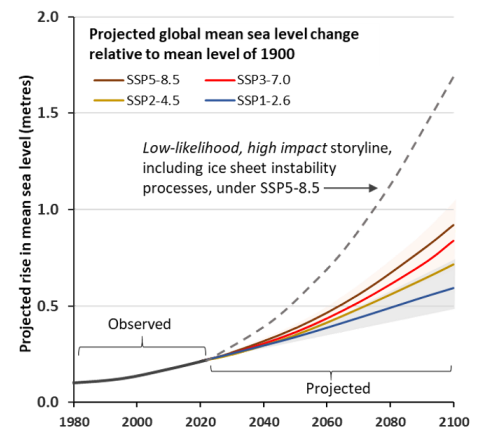
The rate of rise is affected by the future greenhouse gas emissions scenario. Under a low emissions scenario (SSP1-2.6), global mean sea level is projected to rise a further 15–23 cm by 2050 and 33–62 cm by 2100, compared to the mean level during 1995 to 2014 (top figure). Changes are greater under a high emissions scenario (SSP5-8.5), with a projected further rise of approximately 16–33 cm by 2050 and 63–101 cm by 2100.

Condition

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

Under the higher emissions scenarios (SSP5-8.5), there is great uncertainty in sea level projections for 2100 and beyond associated with the uncertain responses of continental ice-sheets to warming. In the IPCC's low-likelihood, high-impact storyline under a high emissions scenario (dashed line, top figure), ice-sheet instability processes could drive sea level rise at a much faster rate this century, with a possibility of accelerating to 1.5–2.0 m of rise by 2100 (compared with mean sea level in 1900) and up to 5 m by 2150.

Sea levels along South Australia's coast are rising, and the rate of rise is projected to increase in the future.



Why is projected sea level important?

A sustained and substantial rise in sea levels due to thermal expansion of oceans and melting of continental ice will expose low-lying coastal assets, environments and infrastructure to an increasing risk of coastline erosion and seawater inundation.

What are the drivers?

Most of the sea level rise projected is due to thermal expansion of oceans due to a rise in water temperature, and the melting of glaciers and continental ice sheets, with some additional contributions from changes in the mass of water stored on land.

Greenhouse gas emissions from human activities are the main cause of warming atmosphere and oceans. Continuing increases in greenhouse gases will produce further warming and consequent changes in Earth's physical environment.

What is being done?

An array of tide gauge stations monitor sea levels around the coastline of Australia to identify long-term changes.

Land surface elevation mapping of the South Australian coastline is maintained by the Department for Environment and Water to enable the assessment of risks of rising sea level to coastal communities and infrastructure. This is used to map sea flood hazards along sections of the state's coastline for a range of sea level rise scenarios.

For further information see: [technical information](#)



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Government of South Australia