Climate

Sea level

SA trend and condition report card 2020

STATEWIDE

Trend
Getting worse

Condition
Fair

Reliability
Very good

Trend

Sea levels along South Australia's coast rose by 1.5–4 mm per year between 1965 and 2018, and the rate of rise is projected to increase in the future.

Observations at all sea level gauges in South Australia (top figure) indicate a trend of a gradual rise in sea level.

Sea level rose 17 cm in the 20th century. However, since 1992, global sea levels have risen more than 8 cm. Further rises in sea level are projected, with the rate of rise to increase through the 21st century.

Measurements are stated relative to a local fixed reference height that, in some cases, may be changing over time due to slow changes in the elevation of the land level at the location. Hence, in some locations, the movement of the local reference point is a component of the observed rise.

Condition

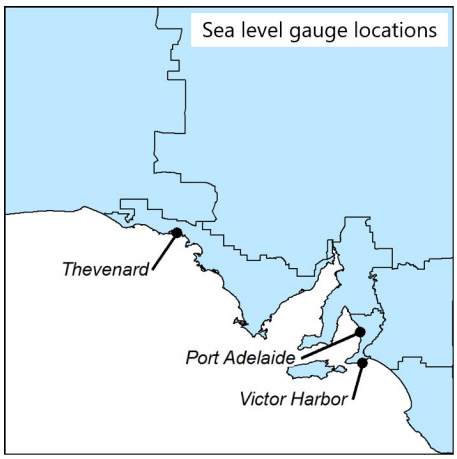
The condition is rated as 'fair' because the observed changes in sea level do not currently affect most social, economic and environmental values.

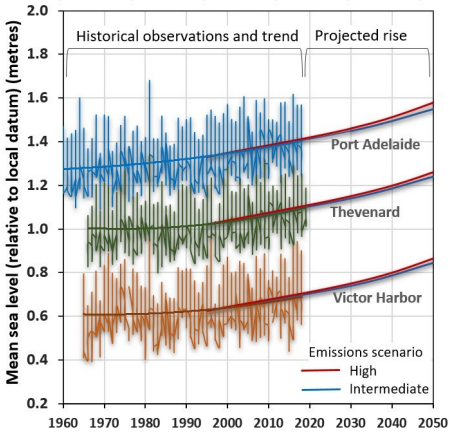
Most of the rise observed is due to thermal expansion of oceans as a result of a rise in water temperature and melting of continental ice.

By mid-century, sea level is projected to rise approximately 22–25 cm compared with the mean level during 1986–2005 (bottom figure).

The CSIRO and Bureau of Meteorology (BOM) projections for sea level indicate that the rate of rise will increase through the century. The rate of rise is affected by the future greenhouse gas emissions scenario.

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





Why is climate 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.

Rising air and water temperatures result in a global rise in sea levels due to thermal expansion of oceans and melting of continental ice, placing some low-lying coastal assets at an increased risk of seawater inundation.

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?

BOM maintains an array of monitoring stations that measure sea level very accurately. BOM's Australian Baseline Sea Level Monitoring Project monitors sea level around the coastline of Australia to identify long-term changes.

High-resolution land surface elevation mapping of the South Australian coastline is maintained by the Department for Environment and Water to enable the risks of rising sea level to coastal communities and infrastructure to be assessed.

For further information, see Technical information