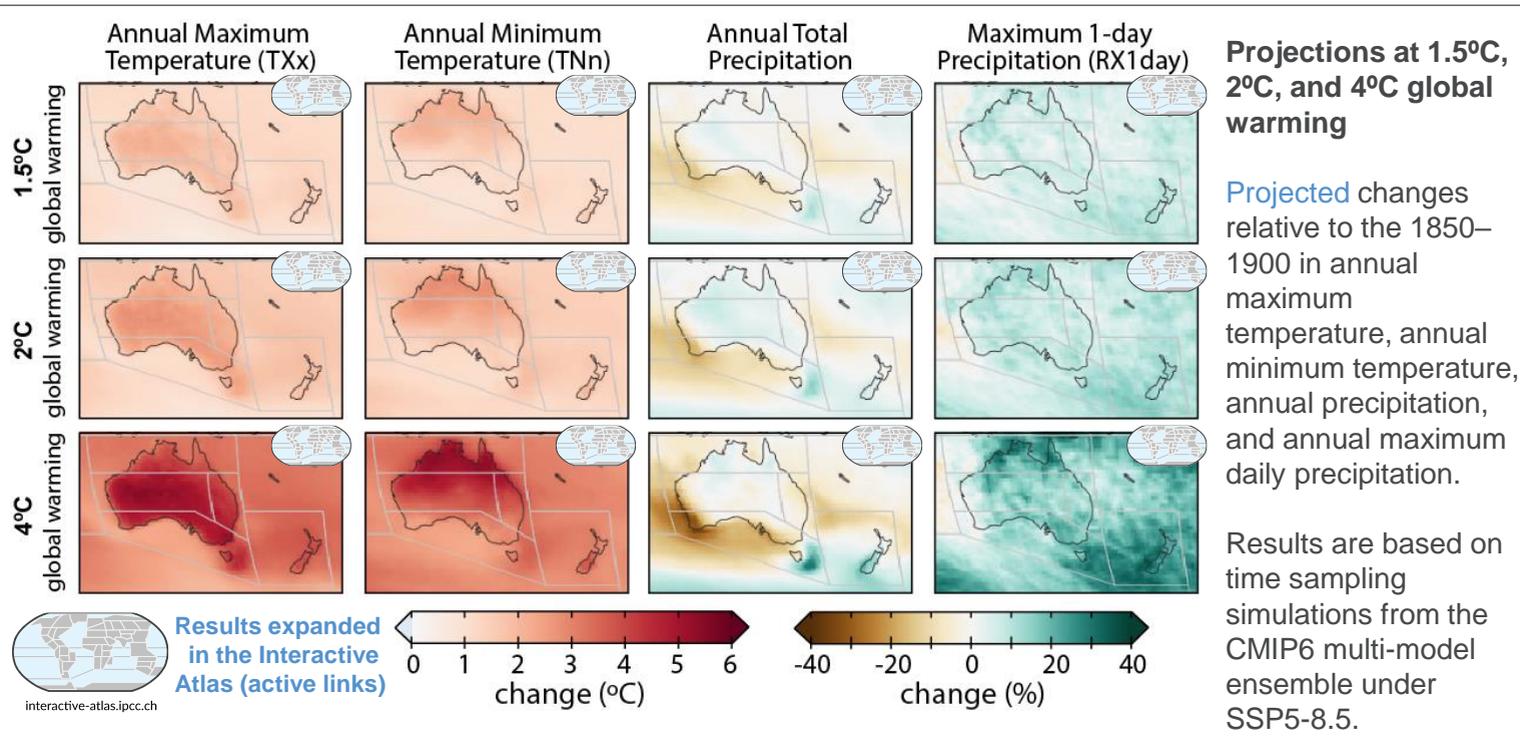


Regional fact sheet - Australasia

Common regional changes

-  Australian land areas **have warmed** by around 1.4°C and New Zealand land areas by around 1.1°C between ~1910 and 2020 (*very high confidence*), and annual temperature changes **have emerged** above natural variability in all land regions (*high confidence*).
-  Heat extremes **have increased**, cold extremes **have decreased**, and these trends **are projected** to continue (*high confidence*).
-  Relative sea level **rose** at a rate higher than the global average in recent decades; sandy shorelines **have retreated** in many locations; relative sea level rise **is projected** to continue in the 21st century and beyond, contributing to increased coastal flooding and shoreline retreat along sandy coasts throughout Australasia (*high confidence*).
-  Snow cover and depth **have decreased** and **are projected** to decrease further (*high confidence*).
-  Frequency of extreme fire weather days **has increased**, and the fire season **has become longer** since 1950 at many locations (*medium confidence*). The intensity, frequency and duration of fire weather events **are projected** to increase throughout Australia (*high confidence*) and New Zealand (*medium confidence*).
-  Heavy rainfall and river floods **are projected** to increase (*medium confidence*).
-  An increase in marine heatwaves and ocean acidity **is observed** and **projected** (*high confidence*).
-  Enhanced warming in the East Australian Current region of the Tasman Sea **is observed** and **projected** (*very high confidence*).
-  Sand storms and dust storms **are projected** to increase throughout Australia (*medium confidence*).
-  Changes in several climatic impact-drivers (e.g., heatwaves, droughts, floods; see Introduction fact sheet) **would be** more widespread at 2°C compared to 1.5°C global warming and even more widespread and/or pronounced for higher warming levels.



Notable features include larger **projected** changes at each warming level for all four climate variables:

- different spatial pattern of **projected** changes to annual maximum compared to minimum temperatures;
- precipitation decrease in southwest Australia and increase in southern New Zealand (*high model agreement*);
- a general increase in annual maximum precipitation even in some areas of decreased annual precipitation.

Please note that some **projected** changes show important seasonal differences.

Northern Australia (NAU)

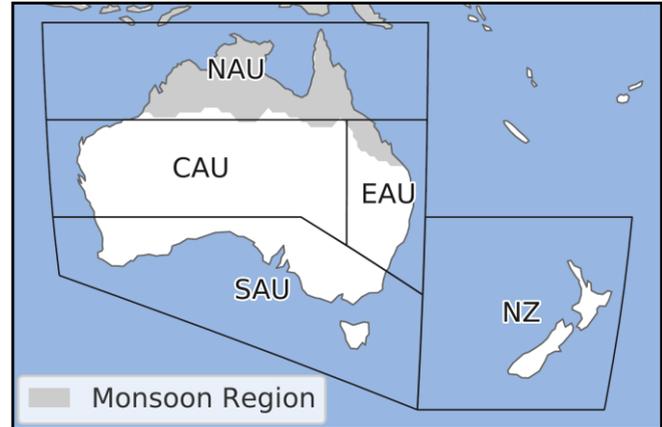
- **Observed** increase in annual mean and heavy rainfall and decrease in droughts and tropical cyclones (*medium confidence*).
- **Projected** mean rainfall changes are uncertain. An increase in heavy rainfall and river flooding **projected** by mid century (*medium confidence*).
- **Projected** decrease in cyclone frequency but increase in the proportion of severe cyclones (*medium confidence*).

Central Australia (CAU)

- Greater **observed** and **projected** warming than coastal regions under all future scenarios (*high confidence*).
- A **projected** increase in heavy rainfall and river flooding (*medium confidence*).

Southern Australia (SAU)

- **Observed** rainfall decrease, increase in agricultural and ecological droughts (*medium confidence*).
- **Projected** reduction in mean rainfall, particularly in the cool season, increase in aridity, and increase in meteorological and agricultural and ecological droughts (*medium confidence*).
- Southwest area in SAU: Significant rainfall decrease in 1910-2019, **attributable to human influence**, increase in agricultural and ecological drought (*high confidence*), rainfall **very likely to continue** decreasing under all future scenarios.

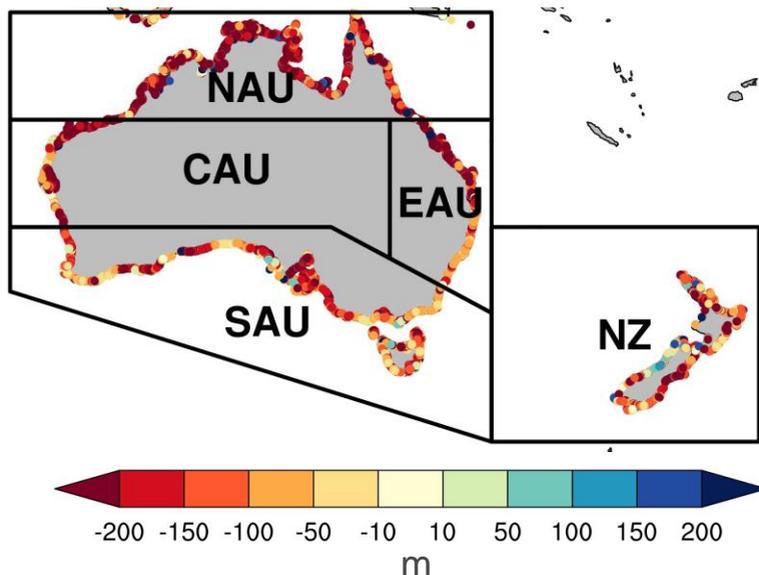


Eastern Australia (EAU)

- **Projected** decrease in mean cool season rainfall, but more extreme rainfall events (*medium confidence*).
- Agricultural and ecological droughts are **projected** to increase at 2°C global warming and greater (*medium confidence*).

New Zealand (NZ)

- **Projected** increase in winter and spring rainfall in the west and south, with less rainfall in the east and north, and more summer rainfall in the east of both islands, with less rainfall in the west and central North Island (*medium confidence*).
- Glaciers **have retreated** and **are projected** to retreat further (*high confidence*).



Changes in the potential median shoreline position along sandy coasts by the year 2100 relative to 2010 (meters)

This figure uses climate model projections (CMIP5) under a very high greenhouse gas emissions scenario. Negative values indicate shoreline retreat.

- Only very high emissions for the late century are shown, values are lower for lower emissions pathways and for mid-century.
- The map shows the median result, there is a range of possibilities around this, with a larger range in NAU late century than other regions. These **projections** are of the potential retreat, in the absence of additional sediment sinks/sources or any physical barriers to shoreline retreat.

Links for further details:

Common Changes: TS.4.3.2.3, TS.4.3.1 Atlas.6; 12.4.3, Table.11.1 and 11.2, 1.4.2.2, Interactive Atlas.
Subregions: TS.4.3.2.3, s12.4.3, Atlas.6, Interactive Atlas
Page 1 Figure: Interactive Atlas, Atlas.6
Page 2 Figure: TS.25, Figure.12.7