

Climate Change Office



Climate change

Each part of the world has different weather conditions and patterns, known as a climate. Climate change means that these conditions and patterns are changing. For example, this could mean warmer temperatures, different rainfall patterns, or natural disasters like floods and bushfires might happen more often.

Science shows that the world's climate is changing, and it is caused by human activities.

Climate change is a serious and complex issue, which presents challenges and opportunities for Tasmania.

What are greenhouse gases (emissions)?

Many human activities release greenhouse gases. These gases trap heat in the atmosphere and increase the temperature of the earth, which leads to changes in the climate.

The gases with the most significant impact on global warming are water vapour, carbon dioxide, methane and nitrous oxide. Other common greenhouse gases include ozone and chlorofluorocarbons.

Greenhouse gases are measured in tonnes (T) and mega-tonnes (a million metric tonnes) of carbon dioxide equivalent (Mt CO₂-e), which is a way to group all greenhouse gases together into a single measurement, based on how much global warming they may cause.

What are carbon sinks?

Plants, soils and oceans remove carbon dioxide from the atmosphere and store it, known as sequestration or storage. An area that stores a lot of carbon, like a forest, is sometimes called a 'carbon sink'.

What's the difference between climate and weather?

Weather is measured over a short period of time, like your weekly forecast or monthly outlook. Climate tells us about atmospheric conditions over relatively long periods of time.

Where does our information come from?

There is a range of scientific information available about the projected impacts of climate change at the local, national and international levels.

The three main sources of information for Tasmania are:

- The Climate Futures for Tasmania Project
- The CSIRO / Bureau of Meteorology
- The Intergovernmental Panel on Climate Change (IPCC)

What are the projected climate change impacts for Tasmania?



Significant change in rainfall patterns



Increase in storms, creating coastal erosion



Rise in annual average temperatures



More hot days and heatwaves



Fewer frosts



Longer fire seasons, more days of high fire danger



Increased ocean acidification and water temperature



Rise in sea levels



Increased windspeed

Temperature

- Average temperatures will continue to rise. Tasmanian temperatures are projected to rise by about 2.9° Celsius under the high emissions scenario, and about 1.6° Celsius under the low emissions scenario.
- Temperature increases in Tasmania are less than the projected global average temperature rise, due to the moderating influence of the Southern Ocean.

Wind

- Increase in average wind speed across the state.

Rainfall

- There is no significant projected change to total statewide annual rainfall.
- However, significant changes are projected in the regional and seasonal pattern of rainfall across the state:
 - The West Coast is projected to experience a significant increase in rainfall in winter; and a significant decrease in rainfall in summer after 2050.
 - The central plateau district is projected to experience a steady decrease in rainfall in every season out to 2100.
 - The North-East Coast is projected to experience a steady increase in autumn and summer rainfall.
- Significant increase in pan evaporation (a measurement of the loss of water from a pan over a period of time).



Marine impacts

- Mean sea level will continue to rise. For Tasmania, this is predicted to be between 0.39 and 0.89 metres by 2090.
- Increase in mean statewide sea surface temperature (SST) in all seasons by the end of the century.
- Greater increase in SST in the east and north-east than other regions, due to the southward extension of the East Australian Current.
- An increase in ocean acidification levels and East Coast water temperature by up to 2-3 degrees Celsius by 2070 (relative to 1990 levels).

Frost

- By 2100, it is projected that the incidence of frost will reduce by about half.
- For many areas of Tasmania, the period of frost risk is also projected to shorten from March-December (10 months) to May-October (6 months).

Runoff

- Runoff is excess water from rain or snow melt, flowing over land.
- Runoff is affected by changes to both rainfall and evapotranspiration (where water lost from the land surface is both evaporated and transpired by plants). By 2100 it is projected that there will be a slight increase in the state's total amount of runoff.
- However, runoff is projected to decrease markedly in Tasmania's central highlands, and increase in the important agricultural regions of the Derwent Valley and the Midlands.

Extreme events

- Increased frequency and intensity of storm events.
- Increased instances of coastal erosion and coastal inundation.
- Longer fire seasons and more days at the highest range of fire danger.
- More hot summer days and more heatwaves.
- Drought in some parts of the state.
- River flooding in some catchments.

