

Climate change in the Central Tablelands

The Central Tablelands region is located in central NSW, and includes the major towns of Bathurst, Cowra, Lithgow, Mudgee and Orange.

The region has a number of natural resource assets and is home to a diverse range of agricultural industries. This information is part of a series of factsheets highlighting changes and options for the region associated with climate change.

Current climate in the Central Tablelands

The Central Tablelands has a temperate climate with mild to warm summers and no dry season. The region contains high elevation landscapes which provide a predominantly mild climate relative to adjoining regions to the north, west and south. Being inland, there is marked seasonal and diurnal variation in temperature.

Rainfall is distributed fairly evenly throughout the year, with a slight summer increase, however there is a wide multi-annual variation driven largely by El Nino Southern Oscillation (ENSO) cycling. The region has a relatively high rainfall in comparison to neighbouring regions to the north, west and south, and is a critical source location for water resources in the Macquarie and Lachlan river catchments.

Future climates

Temperature

There is a very high confidence that all temperature indices (maximum, minimum, seasonal, annual and extremes) will continue to increase over the coming decades, as a consequence of global climate change. Based on NSW Government climate modelling both average maximum and minimum temperatures are expected to rise in central NSW by around 0.7°C by 2030, and 2.1°C by 2070. This represents a significant acceleration in the rate of temperature rise in comparison to the 20th Century rates.

Daily maximum temperature rises will be greatest in spring and summer for the Central Tablelands for both 2030 and 2070 projections. Minimum temperatures will also rise, although this will be less pronounced in winter.



*View across the Tablelands.
Photography – Clare Kerr*

Rainfall

For central NSW, there is medium confidence that average rainfall will decrease in spring and increase in early autumn although annual totals will remain similar to current conditions. By 2070, a clear shift towards summer/autumn dominance will become evident, with a possible slight increase (5-10%) in annual totals. Extra rainfall in summer and autumn is projected to be associated with increased intensity events.

Relative humidity and evapotranspiration

A decline in relative humidity is projected for all seasons with medium to high confidence, although changes in the near term are projected to be small. There is a high confidence that potential evapotranspiration will increase in all seasons as warming progresses.

Drought and soil moisture deficit

Increased temperatures, coupled with increases in potential evapotranspiration and changed distribution of rainfall has been shown at a global scale to indicate an overall drying trend which may lead to a worldwide agricultural drought by mid-century. Increased aridity, or soil moisture deficit, is projected due to a global increase in potential evapotranspiration, although prospects for Eastern Australia are yet to be determined.

Extreme weather and fire

The number of potential frost days in the Tablelands are projected to decrease significantly, even in the near term. This matches the long term trend over the late 20th Century towards fewer and less significant snowfalls. Snowfalls are now an irregular event in the region, and mainly confined to the highest mountains or plateaus.



Orange storm clouds. Photography – T Gardiner

The majority of the Central Tablelands region will have increases in extreme hot days, however the percentage increases are significantly less than areas to the north and west. The Mixed Farming Slopes local landscape is most at risk for significant increases in extreme hot days and high altitude areas will also be affected by warming temperatures.

The most significant increases in fire weather will be in summer and spring, with potential reductions in Forest Fire Danger Index in autumn. These results are consistent with the recent trend towards an earlier onset of the fire season (now early - mid spring) in Eastern Australia.

Potential impacts

Climate change will impact on natural resources, agriculture, biosecurity, emergency management and local communities to varying degrees across the region.

Many of the general impacts of climate change will be common across all agricultural industries, including possible water deficits, heat stress for both livestock and workers, shifting growing seasons and extreme effects such as hail, flooding and extended drought.

Changes to the frequency, intensity and seasonality of rainfall, coupled with the high likelihood of increased temperatures across the region will impact on the survival capacity of many species, especially those already at the margins of their ranges or independently vulnerable.

A combination of a drying landscape, reduced groundcover and the increased erosive power of future summer storms will cause an increased likelihood of sheet, rill and gully erosion.

Projected climate changes for the entire country will promote the spread of tropical species into regions further south. Many of these will be pest and weed species, including insects, insect-borne livestock viruses, cattle ticks, cane toads and other feral animals.

Emergency response, health and social services are most at risk of serious implications for their operations. All models suggest an increased risk of fire, flooding, storm damage (winds and hail), heatwaves and drought for many regions within NSW, including the Central Tablelands.

Adaptation options

Building capacity in communities and resilience in soils, vegetation, water resources, businesses, farms and agricultural industries should be key drivers when adapting to climate variability and long term change.

It is important to monitor changes and in turn manage assets such as soils and water resources carefully based on trends being seen at both local and regional scales.

Local natural resource management is crucial for on-ground adaptation, but needs to be effectively linked to regional or national scale planning. Land managers should consider multiple benefit approaches to all natural resource activities, for example, maintaining adequate native vegetation corridors for species migration, stock shelter and carbon sequestration.

Monitoring and control of new pest animal and weed invasions as they occur is also an important consideration.

Mitigation opportunities should also be taken advantage of as they arise. This may include investment in on ground activities such as revegetation and rehabilitation of degraded lands to improve ecosystem services and store carbon so it cannot contribute further toward climate change.

Information sources and additional reading

More information and specific adaptation options can be found in our Planning for Climate Change factsheets <http://centraltablelands.ils.nsw.gov.au/our-region/key-projects/planning-for-climate-change-project>

State of the Climate 2014 – Bureau of Meteorology (BoM) and CSIRO, (2014), www.bom.gov.au/state-of-the-climate/

Adapt NSW – NSW Office of Environment and Heritage www.climatechange.environment.nsw.gov.au/

Climate Change in Australia (CSIRO/Bureau of Meteorology) www.climatechangeinaustralia.gov.au/en/

National Climate Change Adaptation Research Facility www.nccarf.edu.au/

For more information contact your nearest Central Tablelands Local Land Services office on 1300 795 29 or visit

www.ils.nsw.gov.au/centraltablelands

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For updates go to www.ils.nsw.gov.au/centraltablelands