



Climate change adaptation in the Midlands

What does the science tell us – how are conditions expected to change out to 2100?

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Irrigation is increasing in our landscape to diversify options and buffer against unpredictable rainfall. Photo: Graham Green

Climate change adaptation has already commenced out of necessity for some. Summers are becoming unbearably hot in many parts of Australia and the bushfire risk is escalating. People are eying off Tasmania as a place of relief from insufferable summers. Most of us have probably met people in and around our district who have had enough of summer seasons on the mainland. Some mainlanders have become fearful of summer, or simply no longer want to endure it.

People from places where heat extremes are starting to bite have identified Tasmania as a safer place to be as climate change unfolds. This is their adaptation decision. The Midlands has been discovered by some and arguably offers a premium lifestyle choice with its temperate climate, relatively low flood risk, and absence of risk associated with sea level rise and coastal storm surge.

Many locals however are aware that climate change is no longer speculation. We have runs on the board – we now know what 1°C of warming feels like, we've observed the consequences of this change in our own landscape and for our own way of living. 1°C of average warming¹ may not seem like much but it's the never-been-seen-before extremes that push us, and our environment, to the brink. Climate-related extreme events can cause major disruption, they stretch our capacity to adapt or to even cope at all.

People choosing Tasmania or the Midlands as a lifestyle choice, some for climate related reasons, is one thing but for farmers it's different. Farmers are much more invested in the climate. Weather, both daily and seasonal, is something that can make or break annual profitability. We know the angst that has been wrought particularly on our local farming friends, with drought, less rainfall, increasing evaporation, extended periods of low soil moisture, and seasonal uncertainty. Decisions of how to adapt aren't always straight forward, it often means taking calculated risks because a changing climate is less predictable.

Adaptation for farmers often means being faced with significant financial decisions. One of these is whether to invest in irrigation infrastructure and water allocations as a measure to diversify options and to buffer against the prospect of unreliable rainfall. There is also the question as to whether availability of irrigation water is a long-term option – the source of Midlands irrigation water, the central plateau, is an area that is predicted to become drier.

In our part of the world we are fortunate that the current pace of change does buy us some time. Communities from other parts of the planet aren't so lucky. For some communities in the Arctic, life as they've known it is now over because stability and cohesion relied upon permafrost staying frozen and a reliable extent and thickness of sea ice. Once tipping points are reached, options disappear. If climate change is allowed to progress with no concerted effort to reduce greenhouse gas emissions, adaptation will become increasingly challenging, and that includes for us too.

So how do we know what is to come? Scientific modelling can tell us a lot. The Climate Futures for Tasmanian program has produced outputs at a fine resolution across Tasmania for several timeframes, out to 2100, and for different greenhouse gas emissions scenarios². The project was designed to understand

¹ Intergovernmental Panel on Climate Change - Human-induced warming reached approximately 1°C above pre-industrial levels in 2017, this is an increase in combined surface air and sea surface temperatures averaged over the globe.

² <https://climatefutures.org.au>

the impacts of climate change on Tasmania's weather, water catchments, agriculture and climate extremes. It's an impressive scientific modelling effort spanning over a decade. The comprehensive Climate Futures data set enables generation of a modelled climate scenario for particular timeframes and locations. The modelled outputs importantly consider different greenhouse gas emissions scenarios.

The Climate Futures data is essential information on which adaptation strategies can be made as it frames the likely risks. So what may we expect for the Midlands by the end of this century? Under the 'business as usual scenario' (where there is no effective effort to reduce greenhouse gas emissions), this is what the modelling tells us:

Modelled climate for the Southern Midlands 2080-2100
(data sub-set RCP6 Scenario)

- average annual temperature to increase by 3.4°C
- the hottest temperature of the year to increase by 4.3°C;
- annual hot days (greater than 30°C) to increase from 10 to 31;
- annual frost risk days to decline by around 85%;
- mean annual evaporation to increase by 34%;
- average annual Forest Fire Danger Index to increase by 55%;
- mean annual rainfall to decline by 43 mm (minus 7.5%) with the biggest decline in spring;
- a trend to longer dry spells;
- heavy rainfall events will increase - including those that may lead to erosion or flooding.

The full 2020 Climate Futures data set for the Southern Midlands has been posted at the following web page:
<https://www.southernmidlands.tas.gov.au/climate-change-and-energy-efficiency/>

With a set of numbers like that, we risk becoming what increasing numbers of mainlanders are wanting to escape from. This is a scenario we should work to avoid at all cost.