

Why do we need another set of projections?

Climate projections need to be updated as our understanding of the climate system advances and our climate models improve.

National climate projections have typically been seen as current during the lifetime of the most recent assessment report from the Intergovernmental Panel on Climate Change (IPCC), the United Nations body that assesses the science related to climate change. These reports have been released in 1990, 1995, 2001, 2007 and 2013–14, with Australian projections following in 1992, 1996, 2001, 2007 and 2015, respectively. The next IPCC assessment is due out in 2021, with new Australian projections likely around 2024.

However, in the period between IPCC assessments and Australian projections our understanding of the climate system advances and our climate models improve, simulating our climate system better than they have in the past.

The 2019 Victorian Climate Projections (VCP19) provide a timely update to the climate projections knowledge base for Victoria.

Improved modelling

The quest to better understand the climate system and how it is changing is a monumental global effort. As we better understand how parts of the climate system function, climate models can be updated to better simulate the climate.

The VCP19 projections are based on global climate models (GCMs) developed for the IPCC assessment released in 2013–14 that formed the basis of the current Australian climate projections. However, we have made some improvements, including downscaling, to provide local-scale information for Victoria.

Downscaling climate models

GCMs typically use a grid cell size of 100–200 km so they will project the same climate for any place within a given grid cell up to 200 km across without accounting for local differences. For example, Mt Hotham may be shown as having the same climate as Bairnsdale.

To better represent regional climate, a smaller grid cell size is used through a process of downscaling. Dynamical downscaling means running a dynamical model also known as a regional climate model using output from a GCM as input.

The new downscaled modelling for VCP19 has a 5 km × 5 km spatial resolution. This better represents complex topography such as urban areas, coasts and mountains, which can have a significant influence on the local climate.

The finer-scale modelling also improves the representation of variability over short time intervals (e.g. 3-hourly, daily) providing future projections of extreme weather such as flooding, strong winds, storms and fire weather.

Building on what we already know

While the new projections represent the best available science and simulations for Victoria, it is important to note that they do not replace or supersede existing projections.

Rather, the new projections complement existing information, providing additional information about the range of possible future climates for Victoria.

More information

www.climatechange.vic.gov.au/vcp19
