

Victorian Climate Projections 2019

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What is Victorian Climate Projections 2019 (VCP19)?

Victorian Climate Projections 2019 (VCP19) is a Victorian Government research program to help Victorian communities prepare for climate change by providing authoritative and up-to-date information. CSIRO's Climate Science Centre developed local-scale climate projections data for Victoria at a 5 km by 5 km scale, covering average and extreme temperature and rainfall, relative humidity, evaporation and fire weather out to 2090 for moderate and high greenhouse gas emissions scenarios.

The project produced regional summaries, a technical report, publicly available datasets and guidance on how to use the information. The new research supports what we know from previous projections, as well as giving some new insights at a local scale into the hottest hot day temperatures, and rainfall around mountain ranges. The new information complements the existing climate change information for Victoria.

What is new in VCP19?

VCP19 presents the results from new local-scale climate projection modelling for Victoria. The VCP19 reports present the results from the new modelling in the context of existing climate projections for Victoria. This highlights where the projections reinforce what we knew from existing work, and also where VCP19 has produced new information.

Some new findings revealed by the local-scale downscaling include the potential for the hottest hot days to be even hotter than previously projected, and for the western slopes of the Victorian Alps to experience a greater decline in rainfall than the surrounding regions.

VCP19 also includes new projections of Victoria's climate in a world where climate change is limited to 2°C global mean temperature increase, as committed to under the Paris Agreement.

A set of [application-ready datasets](#) have been produced for use in impact assessments. A range of [guidance material](#) has also been developed to assist users make the most of the projections.

The [Information and data available from the 2019 climate projections](#) fact sheet has more information about the project outputs and how they may be useful.

What is different about VCP19 modelling?

VCP19 has produced local-scale climate data for a broad range of climate variables (including average and extreme temperature and rainfall, relative humidity and evaporation) out to 2090 for moderate and high greenhouse gas emissions scenarios.

There are different ways to produce local-scale climate data. VCP19 used a regional climate model developed by CSIRO to dynamically downscale six global climate models.

A detailed description of the methodology, including the host models used, is available in [chapter 2](#) of the Technical Report.

What other climate projections are there?

There are a number of existing climate projections projects that cover Victoria, which have been produced using various methodologies. Results from all these projects are valid and represent possible future climates, and VCP19 doesn't supersede them. In order to assess the potential impacts of climate change and plan for a more resilient Victoria in the future, it is important to consider all available projections and information for Victoria.

Victorian Climate Initiative (VicCI) produced climate and streamflow projections for the Victorian water sector. The projections are part of the [Guidelines for Assessing the Impact of Climate Change on Water Supplies in Victoria](#), which are recommended for most water resource applications.

Climate Change in Australia (CCIA) was a partnership between CSIRO and the Bureau of Meteorology that produced climate information at a regional scale in Australia in 2015. The projections are based on Global Climate Models with a 60-200 km grid resolution, supplemented by 50 km dynamical downscaling.

The VCP19 reports present results from the new modelling in the context of the VicCI and CCIA datasets, as well as other relevant datasets, such as the New South Wales and Australian Capital Territory Regional Climate Modelling project (NARCLIM) and Bureau of Meteorology Statistical Downscaling Model (BoM-SDM).

It is important to note that the new VCP19 projections complement rather than replace or supersede existing projections, as the modelling results all represent plausible futures. Using a range of projections increases the robustness of climate change planning.

Why did the Victorian Government produce another set of projections?

VCP19 provides publicly available, local-scale climate projections for a range of climate variables across the whole state of Victoria in a consistent format.

Climate models are regularly updated as our understanding of how parts of the climate system function improves. The VCP19 modelling uses a regional climate model to downscale global climate models. Global models 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 taking into account local differences. For example, Mt Hotham may be shown as having the same climate as Bairnsdale. The 5 km x 5 km resolution of VCP19 better represents complex topography such as urban areas, coasts and mountains, and also improves the representation of variability over short time intervals, improving the representation of extreme weather such as strong winds, storms and fire weather.

The new projections add to our knowledge about future climate change in Victoria.

For more information, see the fact sheet [Why do we need another set of projections?](#) on www.climatechange.vic.gov.au/vcp19.

Is VCP19 the ‘best available science’ that should be used under the *Climate Change Act 2017*?

It is recommended to follow the guidance in chapter 7 of the Technical Report and document decisions you make and the rationale behind them. The guidance directs you to consider the full range of possible future changes represented by VCP19 and other climate projections datasets. Understanding the full range of possible future changes from the full range of projections increases the robustness of climate change planning.

It is important to note that the new VCP19 projections complement rather than replace or supersede existing projections. Some other sets of projections are particularly suited to certain purposes, such as the Victorian Climate Initiative projections for water supply planning.

How do VCP19 projections compare to other projections for Victoria?

The new local-scale projections from VCP19 reinforces our understanding from previous climate projections that Victoria will continue to get hotter and drier in the future.

For example, the VCP19 rainfall projections align well with the projections provided to the water sector in the water sector Guidelines for Assessing the Impact of Climate Change on Water Supply. Multiple sets of projections, including VCP19, indicate a continued decline in cool season rainfall in the long term, although the change in summer rainfall is less certain.

Does VCP19 give any information relevant to the Paris Agreement to keep the global temperature rise below 2 degrees?

VCP19 includes new projections of Victoria's climate in a world where climate change is limited to 2°C global mean temperature increase, as committed to under the Paris Agreement.

Victoria is projected to experience significant change even under the Paris Agreement target, and how we would reach the target will also strongly affect the future of Victoria.

Has VCP19 been peer-reviewed?

A Technical Reference Group of climate scientists provided input into the modelling phase of VCP19 and the report development. The group members were Professor Rob Vertessy (Enterprise Professor, University of Melbourne; former CEO of Bureau of Meteorology), Dr Penny Whetton (Honorary Research Fellow, University of Melbourne and CSIRO) and Dr Karl Braganza (Bureau of Meteorology). In addition, the Technical and Regional Reports were reviewed by several climate scientists who were not directly involved in the project.

Will VCP19 be updated with new information in the coming years?

There is the potential for further products coming out of VCP19 modelling and analysis.

A new global climate modelling effort has seen improvement in the way the models represent the weather systems, clouds and aerosols. The results from these models will form the foundation of the Intergovernmental Panel on Climate Change's Sixth Assessment Report due in 2021. New national projections for Australia are likely to be produced soon after that. These may be used to update our understanding of climate change in Victoria and may feed into new projections for the state.

How can the VCP19 datasets be accessed?

The VCP19 datasets are available from the [VCP19 page](#) of the Climate Change in Australia website. It is recommended to use the Climate Futures Tool on Climate Change in Australia to assist with selecting an appropriate model or range of models for impact assessments.

Can I use the images and graphs from VCP19 reports?

Yes, please cite, using the citation provided in the Technical Report and the Regional Reports. Downloadable versions of the figures can be found on the [VCP19 page](#) of the Climate Change in Australia website. All figures and other material in the reports are published under a Creative Commons Attribution 4.0 Australian licence.

What tools are there to support people using VCP19 information?

[Chapter 7](#) of the Technical Report provides guidance on using VCP19. There is also further information on the VCP19 pages of Climate Change in Australia, including guidance material and learning resources on climate science, data selection and impact assessment. This also includes information about using the Climate Futures Tool to select appropriate models for impact assessments.

How will climate change affect my region?

Regional analysis of the VCP19 results has been done for ten regions across Victoria. The regions correspond to the Regional Partnership boundaries. Find the report for your region at <http://www.climatechange.vic.gov.au/vcp19>.

How do I incorporate the information from VCP19 into planning for the future of my business, community or family?

[Chapter 7](#) of the Technical Report provides guidance on how to incorporate the information from VCP19 into impact assessments. It is important to consider the level of detail of the information you need. Some assessment and planning can be done on basic information about trends, while other planning requires detailed information and climate datasets. It is important to consider the impact of climate change alongside the impact of other changes. For more information, see the fact sheet on [Thinking about the future](#) on www.climatechange.vic.gov.au/vcp19.

The [Climate Change in Australia website](#) also contains further information about using climate change information in impact assessments.

The Regional Adaptation Snapshots and Climate-Ready brochures on [DELWP's Climate Change website](#) provide examples of actions Victorians are taking to plan for climate change.

What is the Victorian Government doing about climate change?

The Victorian *Climate Change Act 2017* is the centrepiece of Victoria's commitment to take real and urgent action on climate change. We are leading our economy to net zero emissions by 2050 and supporting Victoria's resilience in response to the impacts of climate change. For further information on Victorian Government action on climate change, see:

- [Victorian Climate Change Act 2017](#)
- [Current actions to reduce emissions](#)
- [Adapting to climate change impacts](#)