PCIC Update

Winter 2025

PACIFIC CLIMATE IMPACTS CONSORTIUM

BC Risk and Resilience Assessment Released

The British Columbia Disaster and Climate Risk and Resilience Assessment was recently released through ClimateReadyBC, the public information portal for BC's Ministry of Emergency Management and Climate Readiness. This report, to which several PCIC scientists contributed, is a comprehensive assessment of six natural and climate-related hazards in BC. The report also examines a range of possible impacts and associated risks to diverse populations across the province.

The report, which follows a prior climate risk assessment conducted by the province in 2019 to which PCIC also contributed, is a response to both the ongoing progression of human-caused climate change and the devastating extreme weather events that have struck British Columbia in recent years. The

latter include the deadly extreme heat event of summer 2021, severe flooding in the southwestern part of the province in fall 2021. This also includes the advent of a widespread and protracted wildfire season over the past decade. Through its applied research focus and in-house modelling expertise, PCIC scientists were able to provide important background and context on the connection between climate variability and change and the increasing frequency of these weather-related threats as we consider the future risk landscape. By clearly presenting the state of knowledge on past impacts from such events, along with insights from future climate projections, the report underscores the urgency of understanding the risks that the changing climate poses for our province.

In contributing to the report, PCIC provided expert scientific assessment, knowledge translation, and applied research, including newly analyzed, downscaled climate projections of the extreme heat hazard in the province (Figure 1). These projections were produced from a subset of global climate model simulations drawn from the latest phase of the Coupled Model Intercomparison Project. PCIC scientists also authored a comprehensive provincial climate overview document (included as an appendix to the report) and led the Climate Change Advisory Working Group, a panel of subject-matter experts sharing their knowledge and research experience on the relevant climate hazards across BC.

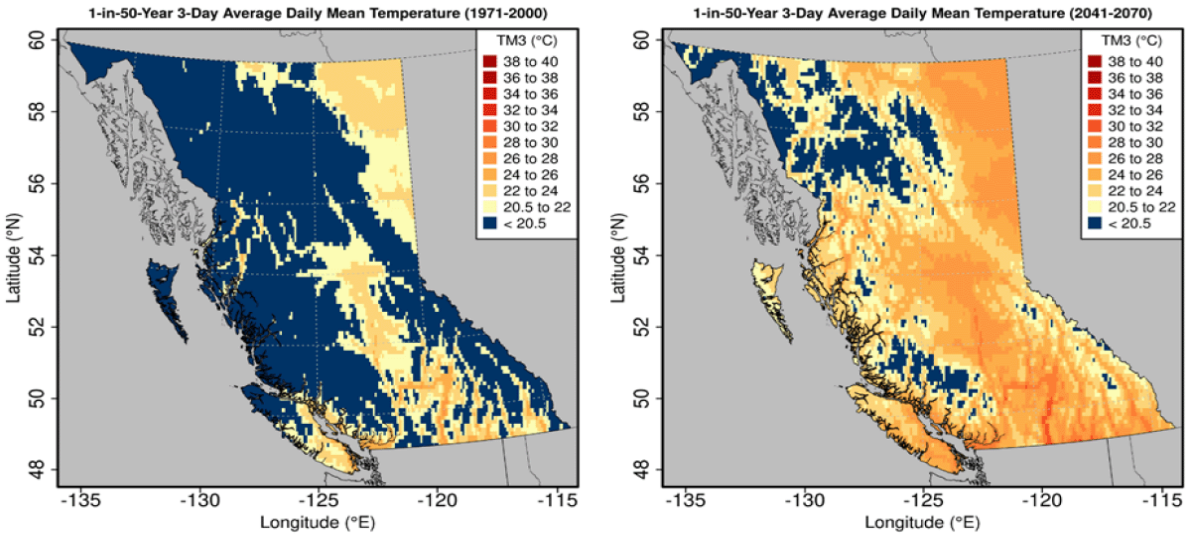


Figure 1: This figure shows the mean temperature of a 1-in-50 year, 3-day heatwave event in the historical (1971-2000) period (left), and in the climate projected for the 2050s (right). Results for the median of model projections are shown. This index was developed by PCIC for the Risk Assessment.

Following on this work, PCIC is developing an updated series of regional climate summaries to support our users and also the next phase of the provincial assessment. These summaries will provide historical and projected future climate overviews for each sub-region of BC, using updated, fine-scale downscaled climate scenarios for both the recent historical period and the future. To aid in the study of future impacts in BC, PCIC's team calculated an extensive set of seasonal and annual indices that reveal the changing character of climate averages and extremes over BC's recent past and projected future. Many of these indices, such as those for heating and cooling degree-days, multi-day heatwaves, and drought are targeted toward specific sectors and needs expressed by our varied users. This work will help to ensure that reliable, actionable information is available to support adaptation. PCIC is grateful to the British Columbia Ministry of Emergency Management and Climate Readiness who supported our contributions to the report and this ongoing work.

Read more about The British Columbia Disaster and Climate Risk and Resilience Assessment at ClimateReadyBC.

Continued Outreach to Small, Rural and Remote BC Communities

PCIC is proud to contribute to the CoNext Climate Preparedness Hub. This free five-month training program is funded by Natural Resources Canada and led by Heron Bridge Consulting in partnership with multiple collaborators, including PCIC. The aim of CoNext is to build climate resilience in small, rural, and remote

BC communities, by equipping both Indigenous and non-Indigenous planners with the skills and tools needed to develop effective adaptation strategies.

With CoNext now running with a second cohort of communities in BC, PCIC recently led a training session introducing participants to future climate projections and their role in long-term planning. Alongside this, PCIC provided over a dozen community climate data summaries. These offer a high-level overview of the projected climatic changes in a region across a number of indicators, along with a short summary of potential impacts. This provides participating communities with a customized snapshot of climate projections for their regions to inform future planning. In addition, PCIC staff have continued to facilitate a variety of training exercises and discussions during the current program. This work follows on from PCIC's active role with the first cohort of communities and the key support we provided during development of the program. These contributions are one way in which PCIC is working to support communities across British Columbia, including Indigenous communities, in their climate adaptation efforts.

ClimateData.ca Version 2 Launched

PCIC is proud to contribute to the development of a new version of Canada's national climate data portal, ClimateData.ca, which was launched in the fall of 2025. The platform has undergone a major update and reorganization, improving the user interface and making it easier for visitors to navigate the site. The ability to customize, visualize, and download the climate data in a form that's more readily usable for applications has also been enhanced compared to the previous version. Additional user guidance and instructional articles were

added to help users better understand the data they're looking at on the site. What hasn't changed is that PCIC's high-quality statistically downscaled climate scenarios data remain as the backbone of the site, including a wide selection of our sector-relevant climate indices. Many of the site improvements were influenced by discussions between PCIC's science and engagement staff and ClimateData's development team. We closely collaborated to achieve our mutual goal of delivering these complex datasets to a wide audience of users. PCIC staff also acted as test users and provided reviews of new content added to the site.

To highlight one of PCIC's latest contributions to the new site, our staff wrote an engaging article on the influence of climate and climate change on salmon in BC. This extensive blog post explains the sensitivity of the impacts that they face due to ongoing climate change, and outlines the climate data and information available to support conservation and adaptation. The article presents the topic not just through a Western science lens, but also through the perspective of First Nations who have harvested salmon for thousands of years in the region. Specifically, the piece shares insights on the vital cultural role of salmon from a member of the QENTOL, YEN / W̱SÁNEĆ Marine Guardians Program, a community-led organization operating on the traditional lands where PCIC stands.

PCIC is a proud partner of ClimateData.ca, and shares the guiding vision that motivates all Canadian climate service providers, namely, to improve the application and accessibility of trustworthy climate data, to empower users and thereby increase climate resilience.

Read more and watch a video that covers the updates to ClimateData.ca.

Try the new ClimateData.ca.

Read the article on salmon in BC.

New PCIC Corporate Report Released

PCIC's Corporate Report for the 2024-2025 fiscal year is now available. It has been an incredibly busy year, with PCIC's scientists, support staff and engagement team continuing our committed work in the area of regional climate services. Our Corporate Report provides a broad overview of the major activities over the past year, using accessible language. This year's report features PCIC's contributions to two broad-based climate assessments, for BC and Canada, and also more targeted work such as that relating to a new standard for extreme precipitation promoted by the Canadian Standards Association. Our research on constraining climate projections from global climate models, thereby reducing the uncertainty in possible future values, which argues that the observation-constrained future projection of global temperature change should be considered as prediction rather than scenarios, is also discussed in the report. In addition, the report summarizes the most recent applications of both hydrologic modelling and statistical downscaling techniques that are under continual development at PCIC. Readers can learn how this work leads to continual and visible improvements to PCIC's online tools and data products. Last but not least, the report highlights PCIC's impactful and ever-present training and engagement activities across our varied community of users.

Read PCIC's 2024-2025 Corporate Report and learn more about our array of regional partnerships and projects and also our contributions to climate science knowledge.

PCIC Science Brief on Potential Changes to Internal Climate Variability

PCIC's most recent Science Brief covers research in the Journal of Climate which used global climate model simulations to examine how internal climate variability might change as the planet warms. The Science Brief discusses these findings and what they might mean for the future climate in British Columbia. PCIC Science Briefs are a regular series of brief reports on recent climate science literature, relevant to stakeholders in British Columbia and surrounding areas. PCIC has developed these briefs because it recognizes the need for a bridge between the cutting edge of climate science research and the various stakeholders who need access to this knowledge, in plain-language reports, filtered for regional relevance, and suitable for consideration in planning and adaptation. PCIC Science Briefs contextualize and explain the results and implications of important scientific findings.

Read the Science Brief.

Website Launch

In July, PCIC launched its new website, featuring a refreshed design and layout while continuing to provide the same data, tools, and information freely to users. The site is now hosted by the University of Victoria (UVic) but remains accessible through pacificclimate.org. This transition allows PCIC to benefit from the university's regular software infrastructure and security updates, protecting

our valuable assets of online data products and tools. Users will also notice a similar look and feel to other UVic sites, simplifying visitors' access to content and information.

One change users may notice is that PCIC's publications library is now hosted on UVicSpace. UVicSpace, a part of UVic's library system, is an open access scholarship and learning repository. This allows users to search PCIC's library by publication title, author, subject and date, and also locate video content and recordings of past events in this collection.
We are grateful to our UVic colleagues, whose support ensured a smooth transition to the new platform. This move has strengthened our connection with the broader UVic community.

Please contact pcicsupport@uvic.ca if you have questions or would like to offer feedback on the new website.

Staff Profile: Ed Beard

Ed Beard is PCIC's Content Development and User Engagement Coordinator. As part of PCIC's user engagement team, Ed actively seeks out the perspectives, experiences, and needs of various communities and climate service users across BC through events, working groups and committees. The insights gained from this engagement then inform the content development part of his role: translating climate science and data into accessible and understandable formats—including reports, presentations, graphs, and infographics—based on user needs.

Currently, Ed is working on three regional climate assessments, facilitating sessions for the CoNext Climate Preparedness Hub training program (mentioned earlier in this newsletter), and continues to engage in working groups and committees, to ensure PCIC's training and engagement supports communities in using climate information. Notably, Ed works closely with colleagues at CCCS, and other regional climate service providers across Canada,

to provide climate information and learning materials via Canada's national climate data platform, ClimateData.ca. Ed is also available to help users who would like to learn more about how to use PCIC's online tools and data products for their specific projects.

With an academic background in Geography and Environmental Science and experience working on conservation and climate issues for the UK Government, Ed is passionate about empowering local communities to lead on conservation and climate action. In particular, he notes, "I feel privileged to be able to work with and learn from Indigenous communities in BC, who are knowledge holders because of their historical relationships with the land which continue to this day."

PCIC Seminar Series

In October, Dr. Roberta Hamme, a chemical oceanographer and professor in the School of Earth and Ocean Sciences at University of Victoria, delivered a presentation in PCIC's seminar series. Her talk, titled "Deoxygenation, Carbon Uptake, and Acidification in the Oceans around Canada," presented the latest research on changes in oxygen and carbon dioxide, measured both in the nearby Pacific Ocean and in the global oceans. Her presentation revealed that while oxygen amounts in the ocean have decreased in recent decades, the relationship to warming temperatures (which normally decrease the solubility of gases in ocean water) is complex: other factors such as ocean circulation and ventilation to the surface, also need to be better understood. While PCIC's past work has mostly focused on climate variability and change in the atmosphere

and on land, Dr. Hamme's presentation was a valuable look into ongoing changes in the oceans.

We are also pleased to announce two upcoming seminars for 2026:

- On January 14th, James Hiebert, the Lead of PCIC's Computational Support Group, will be delivering a talk titled *Weather to Run: Building Climate Data Infrastructure for Science and Society*.
- On February 4th, Dr. Nathan Gillett, Research Scientist at the Canadian Centre for Climate Modelling and Analysis will speak on, *The Canadian Rapid Event Attribution System*.

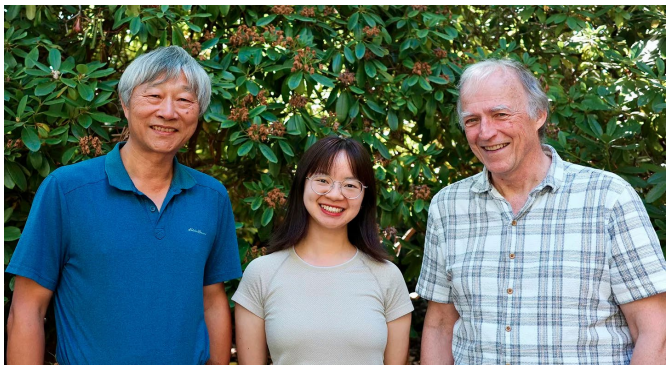
We will be sharing more details for these talks in the new year.

PCIC Staff Changes

Over the past summer and fall, PCIC bid a fond farewell to four staff members, Rod Glover, Dr. Pei-Ling Wang, Kristyn Lang and Loni Feffer. Rod was PCIC's Web Front-End Developer, who worked to create and improve the web applications and online tools PCIC uses for visualizing and delivering climate data. His work was integral for many of the tools that PCIC users rely on today. Pei-Ling, PCIC's Climate Mapping and Data Scientist, worked on the creation of high-resolution time-series maps of BC's climate, and also on the quality control of the station data used for these maps. Kristyn was PCIC's Climate Impacts Analyst and Knowledge Translator. At PCIC, Kristyn's work focused on evaluating precipitation extremes in a new national dataset, analyzing downscaled climate projections for climate risk assessment, and communicating these results to a

range of users. Working as part of the User Engagement team as our Indigenous Communities Climate Knowledge Translator, Loni focused on building capacity to provide climate services for Indigenous communities and organizations. With gratitude we say farewell to Rod, Pei-Ling, Kristyn and Loni, and thank them for their contributions to PCIC.

RECENT ARTICLES



From projection to prediction

PCIC researchers published work that shows a new constrained projection method that can significantly reduce uncertainty in future global warming projections and how these may be viewed as skillful predictions. Read more.

PCIC Director Again Recognised as Highly-Cited Researcher

Dr. Xuebin Zhang is among six scholars from the University of Victoria who have been included in Clarivate's Highly Cited Researchers list for 2025. This is Dr. Zhang's fifth year on the list.
Read more.

Publications

Li, **T.**, **F.W. Zwiers**, **X. Zhang** and X. L. Wang, 2025: Constrained Estimates of Externally Forced Past and Future Warming for Canada. *Earth's Future*, **13**, 10, e2025EF006374, doi:10.1029/2025EF006374.

Kirchmeier-Young, M.C., G. Li, H. Wan and **X. Zhang**, 2025: Heat Wave Trends in Canadian Regions. *Atmosphere Ocean*, **63**, 4, 241–251, doi:10.1080/07055900.2025.2521501.

Kirchmeier-Young, M.C., G. Li, **X. Zhang**, and X. L. Wang, 2025: Attribution of Changes in Canadian Precipitation. *Atmosphere-Ocean*, **63**, 5, 367–375, doi: 10.1080/07055900.2025.2545849.

Qian, B., X.L. Wang, **F.W. Zwiers**, and Y. Feng, 2025: Observed Changes in Canada's Snowfall as Inferred from Precipitation and Daily Mean Temperatures. *Atmosphere-Ocean*, 1–15, doi:10.1080/07055900.2025.2586566

Sun, Y., W. Dong-Qian and **X. Zhang**, 2025: Progress in climate change detection and attribution studies in China. *Advances in Climate Change Research*, **21**, 2, 153-168, doi: 10.12006/j.issn.1673-1719.2024.280.

Wang, T., Y. Sun, **X. Zhang**, X.Q. Yang and H. Song, 2025: Detectable anthropogenic influence in mean precipitation of China. *Geophysical Research Letters*, **52**, 12, e2025GL114870, doi:10.1029/2025GL114870.

Wang, X.L., Y. Feng, V. Isaac, **F.W. Zwiers**, L.A. Vincent and M.M. Hartwell, 2025: Observed Surface Wind Speed Trends Inferred from Homogenized in Situ Data and Reanalysis Datasets. *Atmosphere-Ocean*, 1–17, doi:10.1080/07055900.2025.2570920.

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