

WEBINAR SERIES



Climate tools: What are they good for? Absolutely something... but you can't always get what you want

February 13th 2020

With: **KARI TYLER**, User Engagement and Training Specialist,
Pacific Climate Impacts Consortium, University of Victoria

Notes:

- The webinar will start at 13:00 EST / 10:00 PST
- All lines are muted during the presentation
- Go to [slido.com](https://www.slido.com) (smartphone or computer) to participate in live polls. **code: pcic**
- Audio connection: 1-844-630-9442; code: 731 447 065

Webinar Series

Understanding decision-making about climate change impacts at a small watershed scale



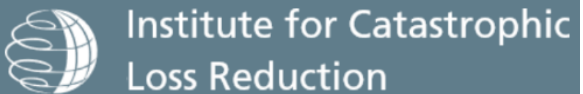
February 6

An Overview of Climate Change Tools Applied to Small Watershed Design
Flood Calculations – Matt Kurowski, FPInnovations, Vancouver



February 13

Climate tools: What are they good for? Absolutely something... but you can't always get what you want – Kari Tyler, Pacific Climate Impacts Consortium, University of Victoria



February 27

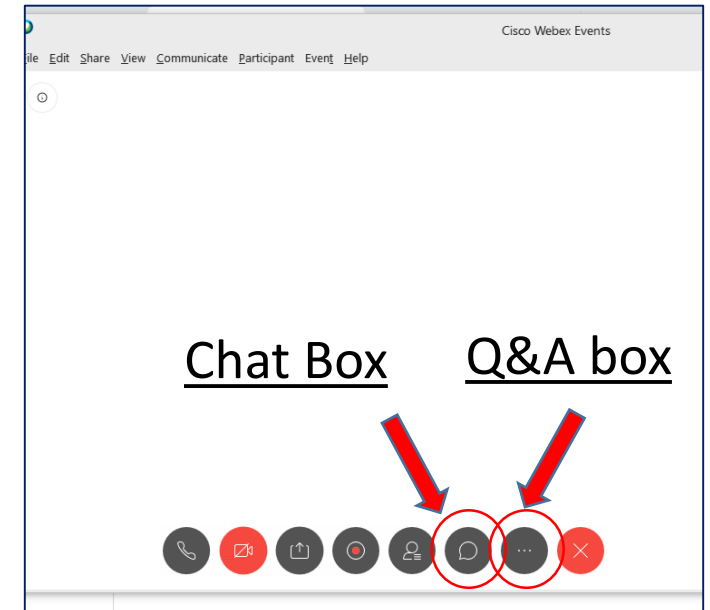
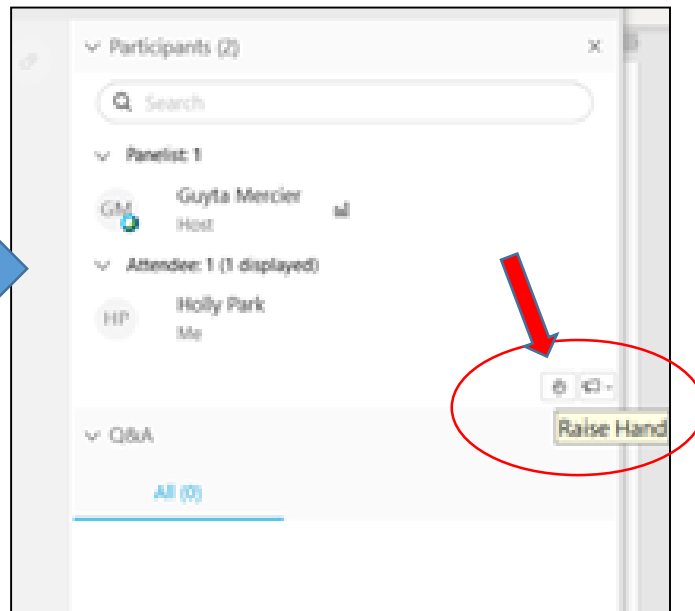
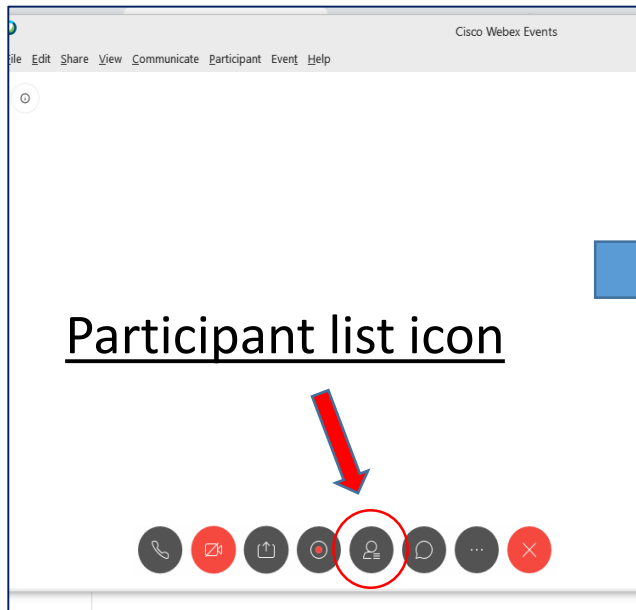
Rainfall Intensity Duration Frequency Curves for Future Climate Scenarios: A Publicly Accessible Computer Tool – Dr. Simonovic, Institute for Catastrophic Loss Reduction, Western University

Asking Questions

1. Open the participant list at the bottom of the screen to open a new window.

At the bottom right of this new window, use the raise hand icon to indicate that you would like to ask a question using audio.

2. You can also type your question in the Chat Box or the Q&A Box. Both are accessible at the bottom of your screen.





Questions/Discussion

Brian Chow – Chief Engineer, FLNRORD, Victoria

Matt Kurowski – Researcher, FPInnovations, Vancouver

Kari Tyler – User Engagement and Training Specialist,
Pacific Climate Impacts Consortium

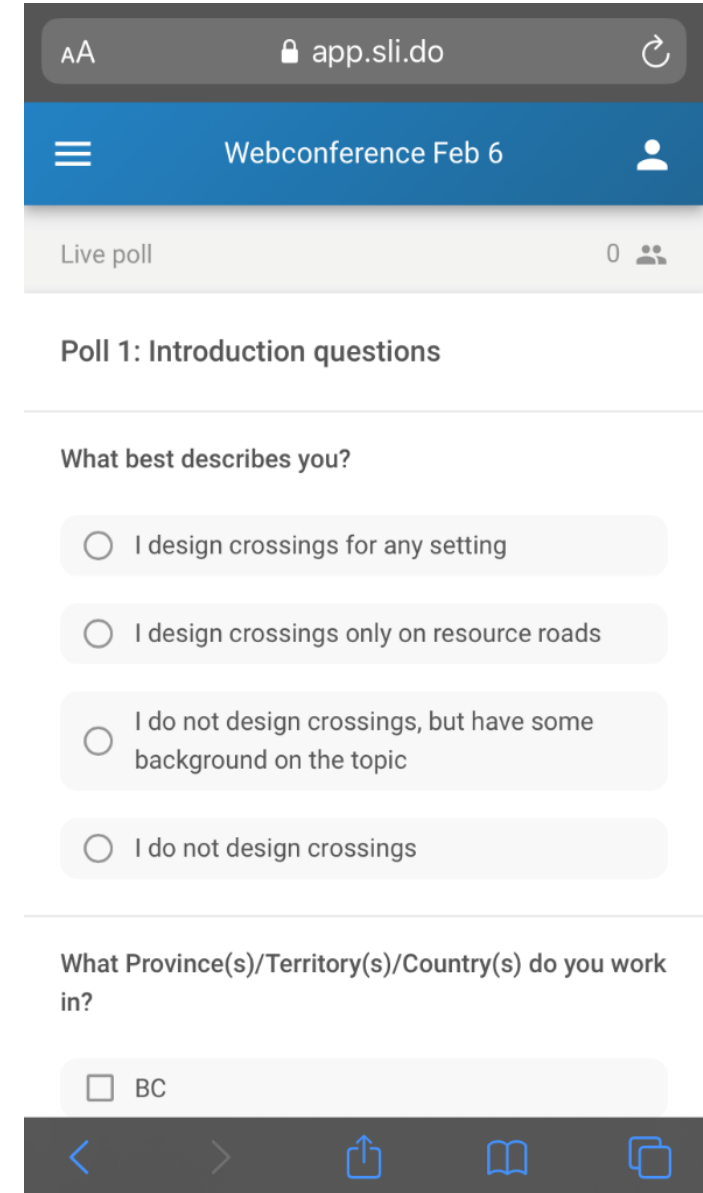
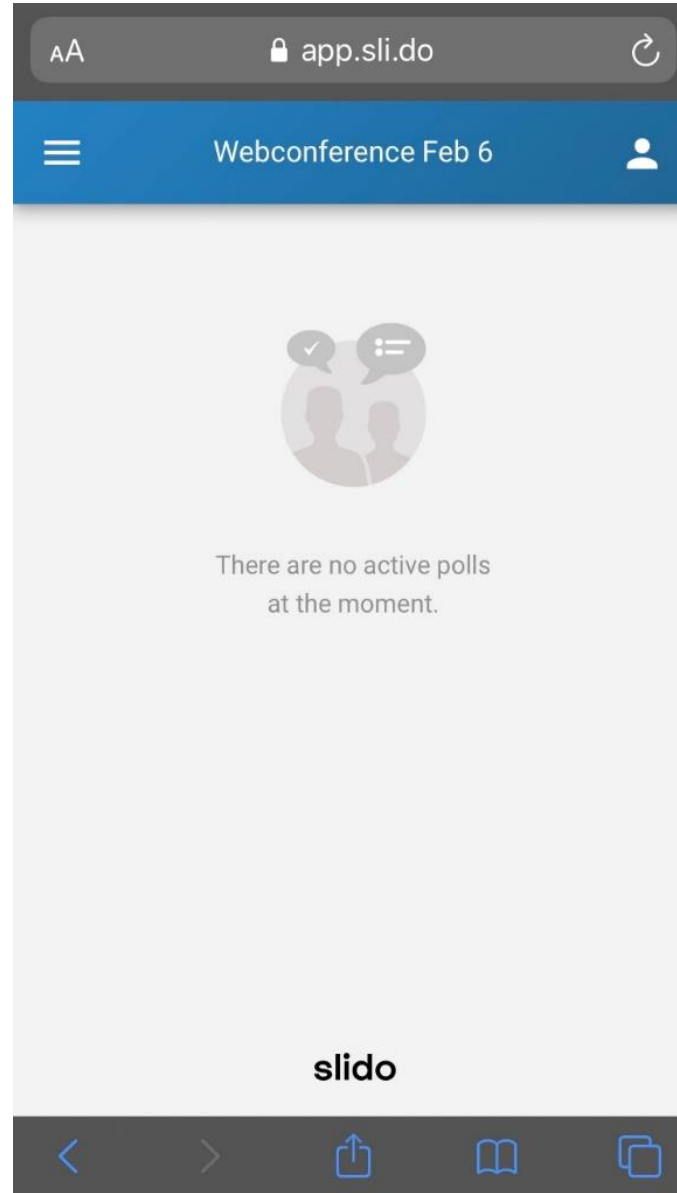
Arelia Schoeneberg – Hydrologist, Pacific Climate Impacts
Consortium

Dr. Slobodan Simonovic – Professor Emeritus, Institute
for Catastrophic Loss Reduction, Western University

Poll # 1

Learning about who is here

go to: slido.com code: pcic



Why this webinar series?

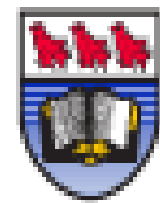


Ministry of
Forests, Lands, Natural
Resource Operations
and Rural Development

Climate Tools: What are they good for?

13 February 2020

FPI Webinar Series; Climate Change tools for Small Watershed Crossings



University
of Victoria

Kari Tyler

Climate Tools.. What are they good for?

Absolutely something



...But you can't always get what you want

Weather: conditions at a specific location & time

December 2nd 2005

- -1°C snowing in _____
- 19°C sunny in _____

Climate: long term statistics of weather

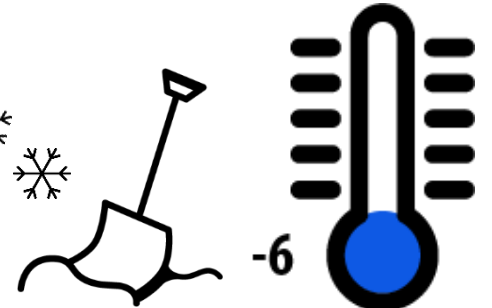
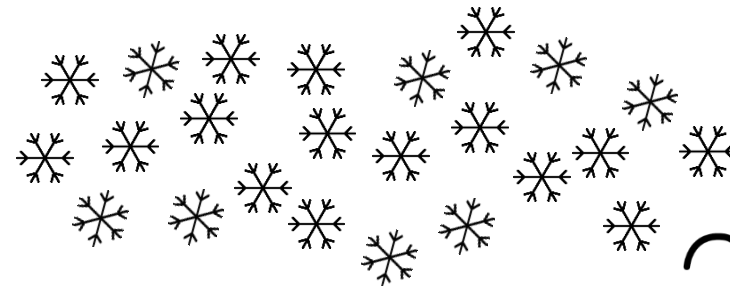
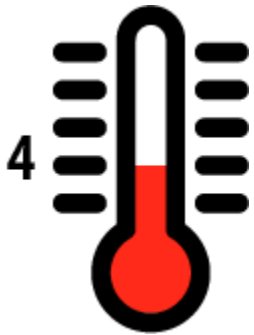
Climate: Long Term Statistics of Weather

- Weather: conditions at a specific location and time
 - December 2nd 2005

- -1°C snowing in Victoria
- 19°C sunny in Montreal



- Climate: long term statistics of weather
 - 1971-2000 average December

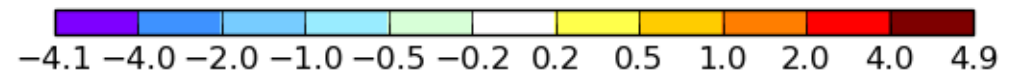
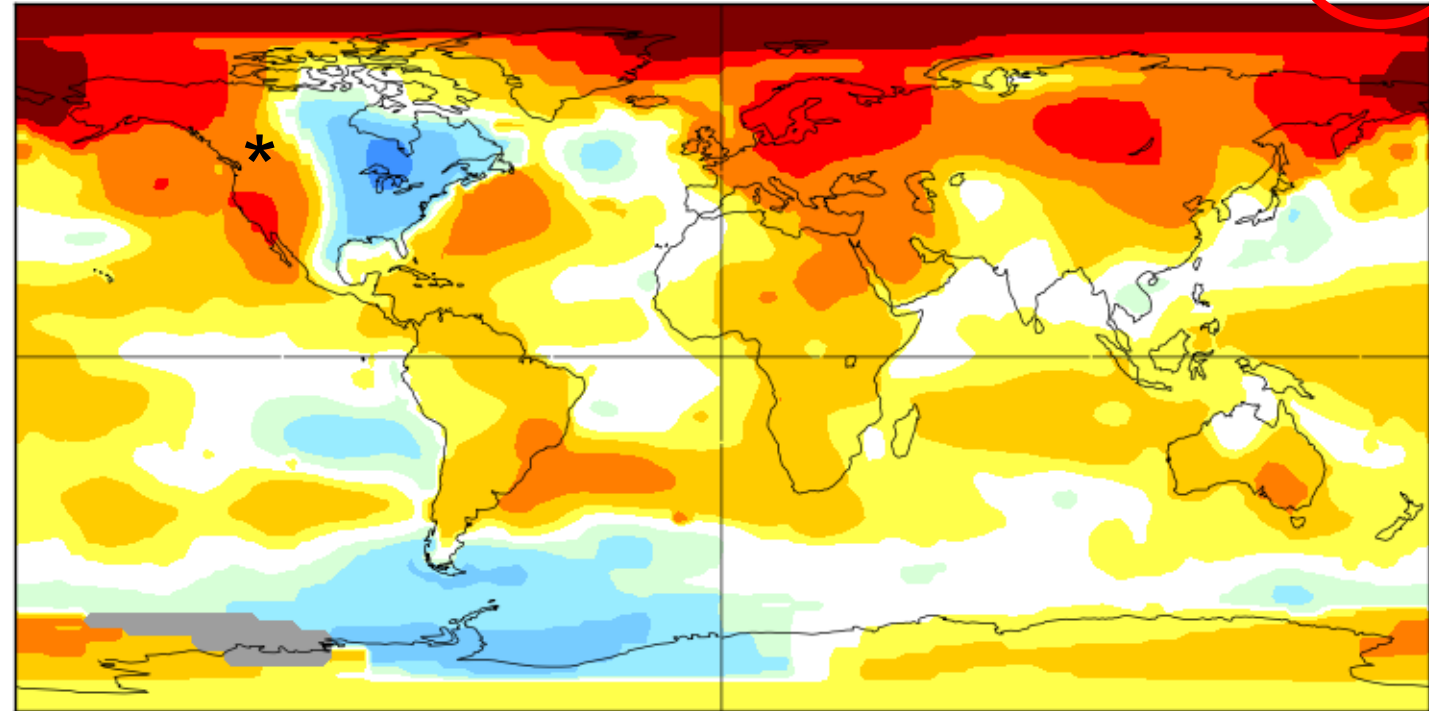


Climate varies by location & with time

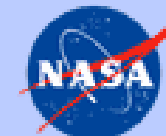
Dec-Jan-Feb 2014-2015

L-OTI (°C) Anomaly vs 1971-2000

0.51



Temperature Anomaly °C



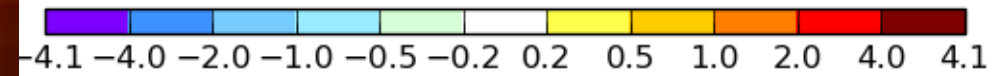
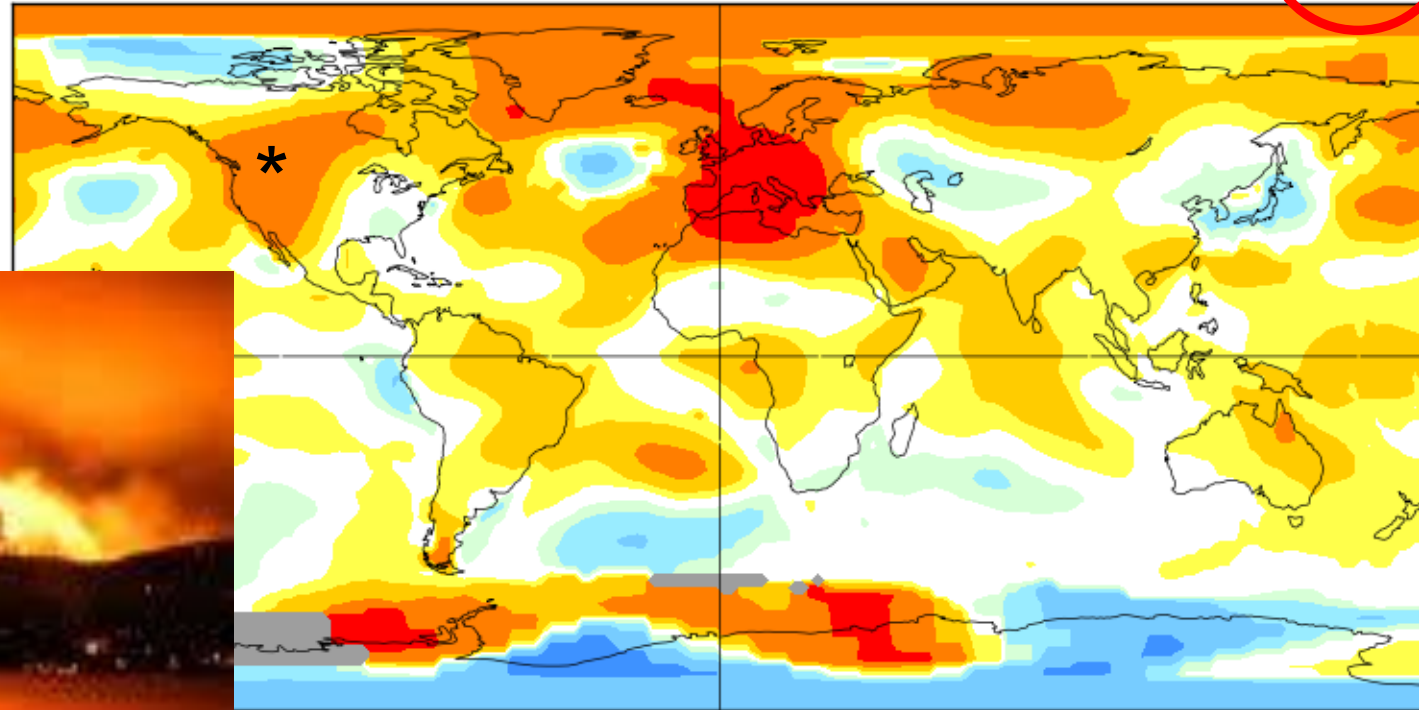
Goddard Institute for Space Studies
New York, N.Y.

Climate varies by location & with time

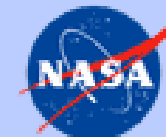
Jun-Jul-Aug 2003

L-OTI(°C) Anomaly vs 1971-2000

0.36



Temperature Anomaly °C



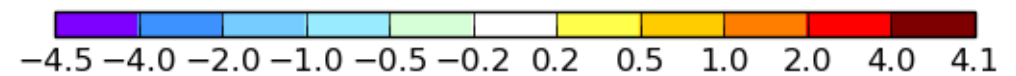
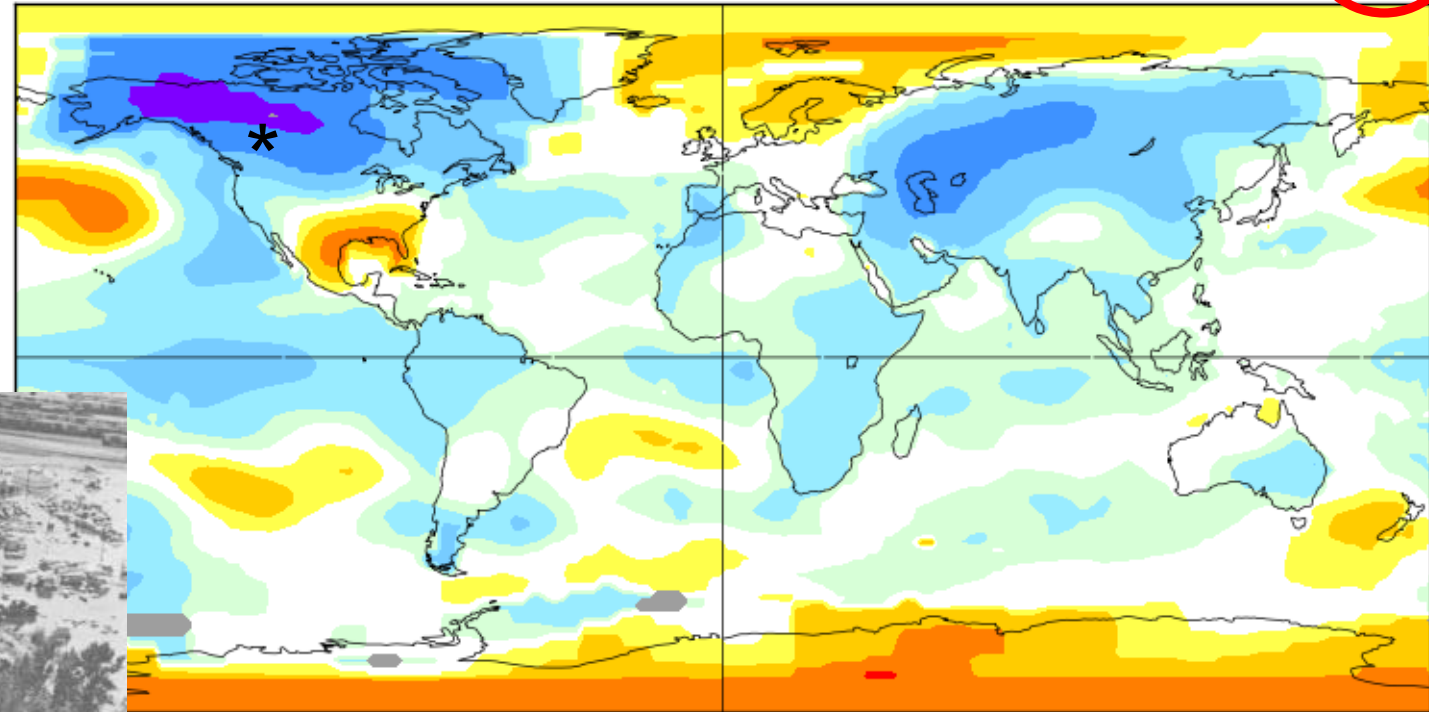
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Climate varies by location & with time

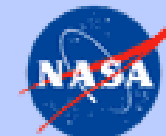
Dec-Jan-Feb 1971-1972

L-OTI(°C) Anomaly vs 1971-2000

-0.39

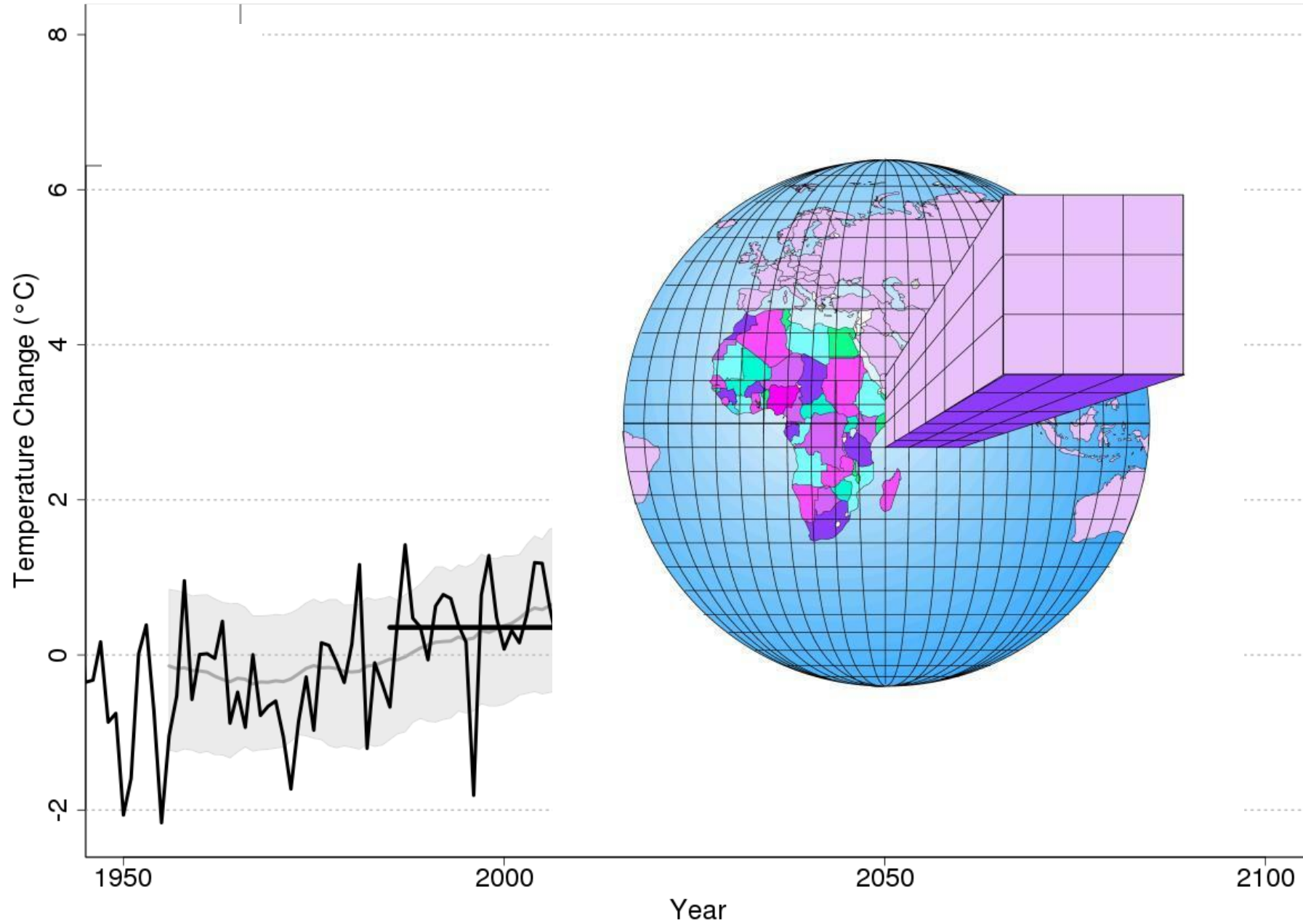


Temperature Anomaly °C

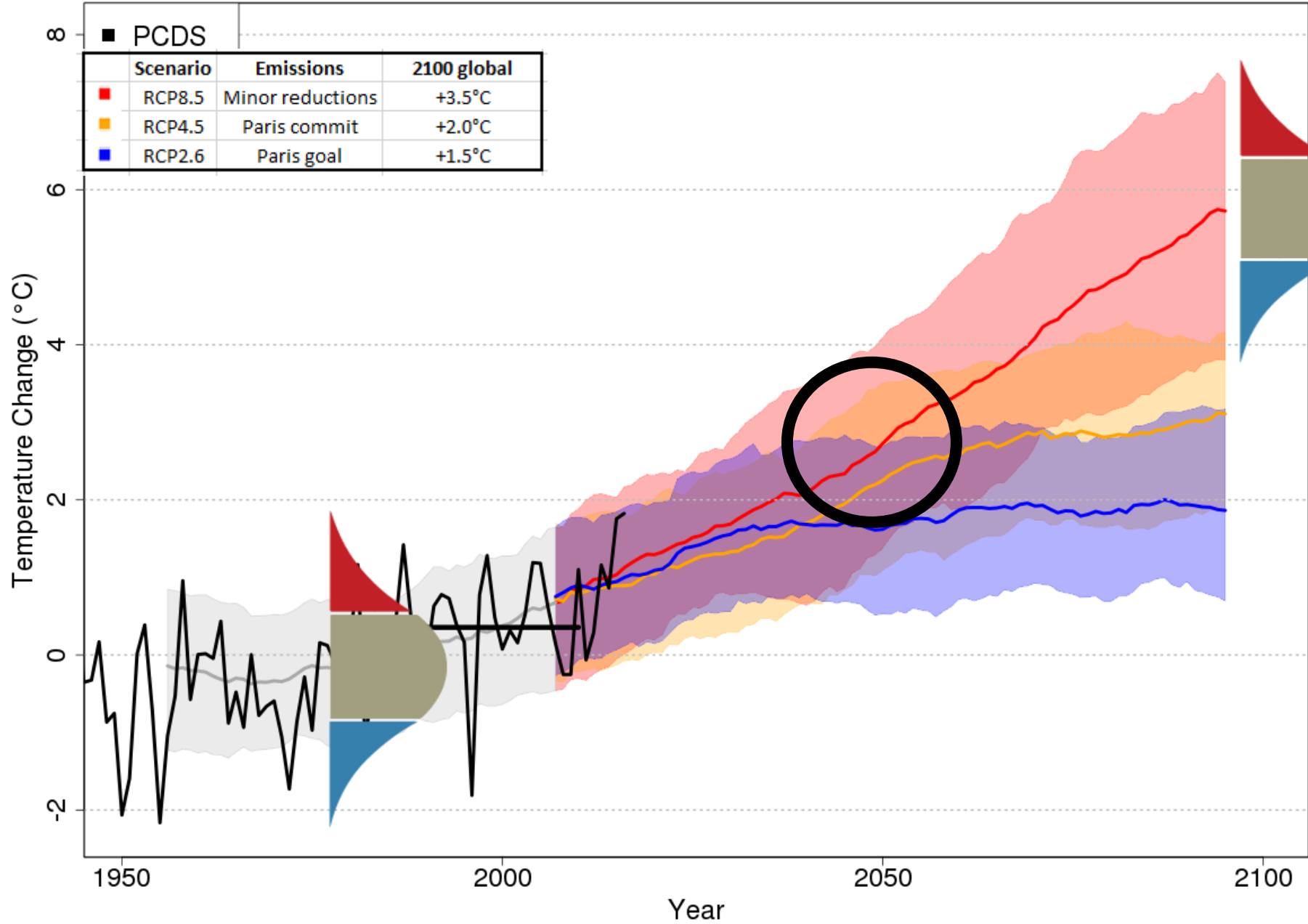


Goddard Institute for Space Studies
New York, N.Y.

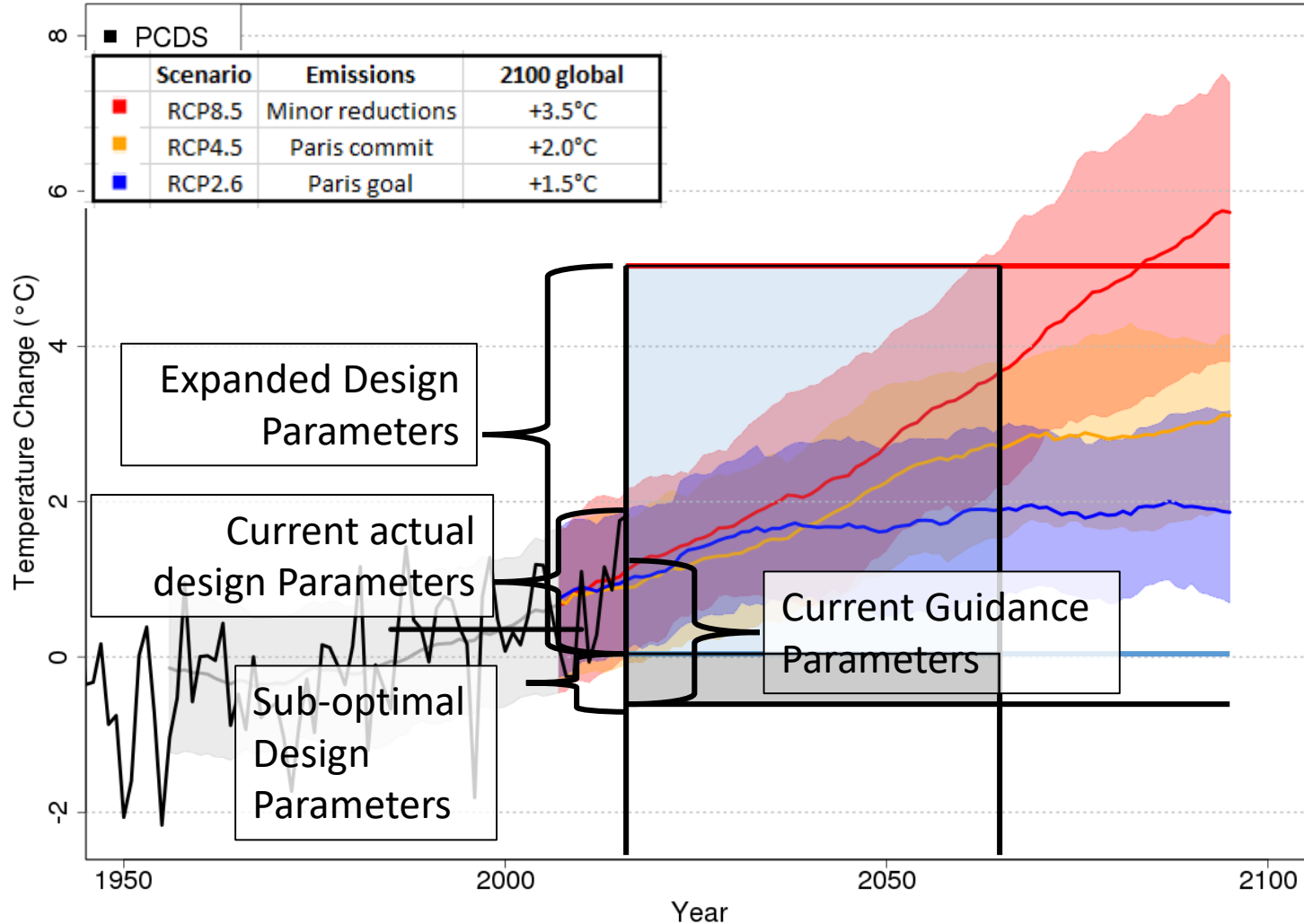
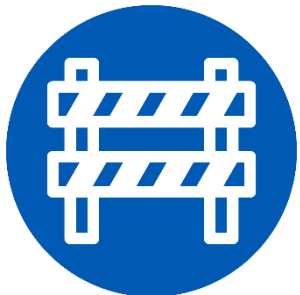
Historical average BC temperature → future



Future Warming in BC

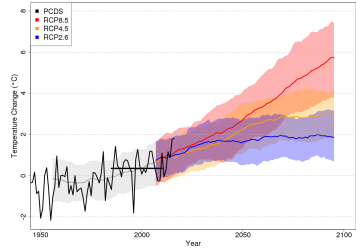


Climate Design Parameters



1. Future will be different from the past
2. The present is different from the past
3. There are a wider range of conditions to design for.
4. Conditions continue to change in all but best case
5. 2050s cautious roughly equals 2070s optimistic

Adaptation Best Practices

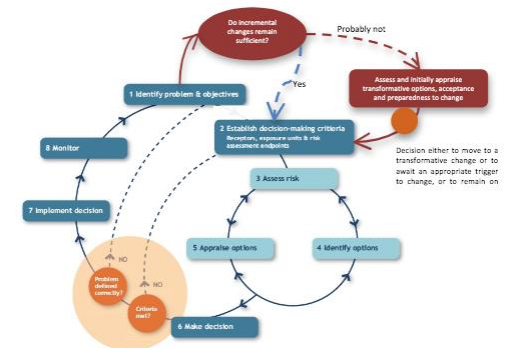


- Start using future projections

- Expect future climate information to be different from what you used in the past



- Talk to people with different roles



- Iterate: learn, rinse, repeat, learn, bump, turn, keep going, try again...

Resource – BC climate projections reports

[Metro Vancouver](#)

[Capital Regional District](#)

[Cowichan Valley Regional District](#)

[Vancouver Coastal Health](#)

[BC Agriculture & Food Climate Action Initiative](#)

PCIC Climate Explorer

<https://pacificclimate.org/analysis-tools/pcic-climate-explorer>

- Go to the link & try for yourself!

PCIC CLIMATE EXPLORER

PCIC's Climate Explorer (PCEX) is a tool for locating, visualizing and downloading data describing projected future climate conditions for regions of interest within the Pacific and Yukon Region. PCEX uses global climate model output from the fifth phase of the Coupled Model Intercomparison Project (CMIP5), BCCAQv2 10-kilometre resolution downscaled data, and the CLIMDEX indices of climate extremes, with a daily time resolution. PCEX provides visualizations in the form of maps and graphs

PCIC's Climate Explorer allows you to:

- select data from a dozen global climate models, three greenhouse-gas emissions scenarios, and many variables including temperature, precipitation, and climate indices
- select a specific time horizon (e.g., 2050s, 2080s, etc.) for output from each GCM
- define your specific region of interest and generate maps, plots, and data downloads pertaining to the area you specify
- generate maps showing projected changes for a specific region using downscaled data and generated climate extremes indices from each GCM
- compare specific climate variables for each GCM with the results from all of the other models to provide context for each individual model's results
- plot how climate variables change over time for each GCM
- display box plots for each future climate projection for the GCM

PCIC's Climate Explorer is a modern replacement for the Regional Analysis Tool (which will be discontinued) and is a more sophisticated complement to PCIC's [Plan2Adapt](#) tool. With a more complex user interface and greater number of configurable options, the Climate Explorer is designed to serve the needs of technical users who need climate change information for engineering and impact studies.

Use [PCIC's Climate Explorer](#).

PCEX VIDEOS

Use the following links for help on how to use the PCEX Tool:

[Watch a video tour of the basic features of PCEX.](#)

[Watch a video tutorial demonstrating how to determine the 1-in-50 return period maximum 1-day precipitation at a specific location.](#)

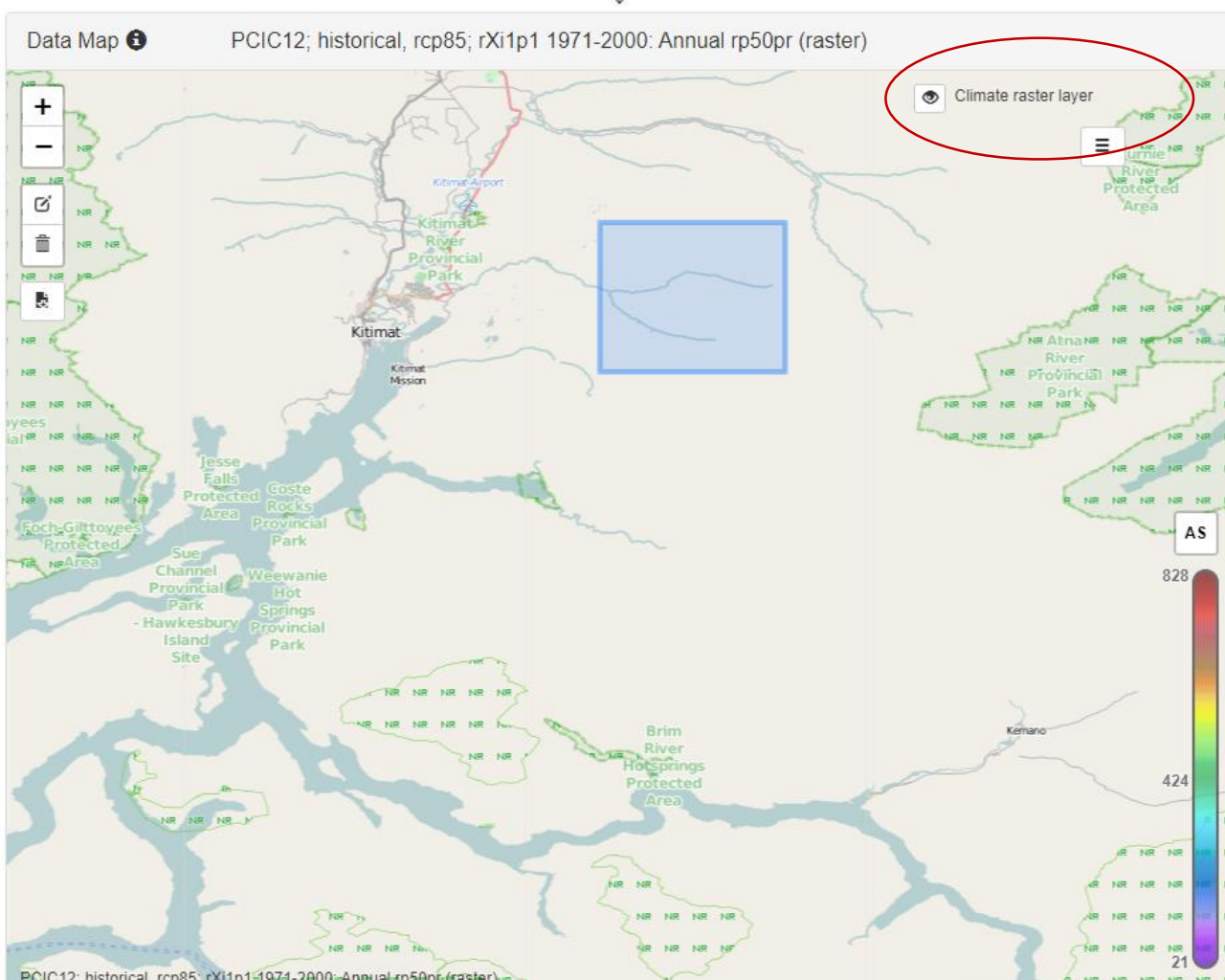
Dataset Filter ⓘ

Model ⓘ PCIC12

Emissions Scenario ⓘ Historical, then RCP 8.5

Variable ⓘ rp50pr - 50-year annual maximum one day precipitation amount

Filtered Datasets Summary ⓘ PCIC12 historical, rcp85: rp50pr → 4 datasets



filtered datasets ↓

Statistical Summary ⓘ PCIC12 historical, rcp85: rp50pr

Time of Year ⓘ Annual

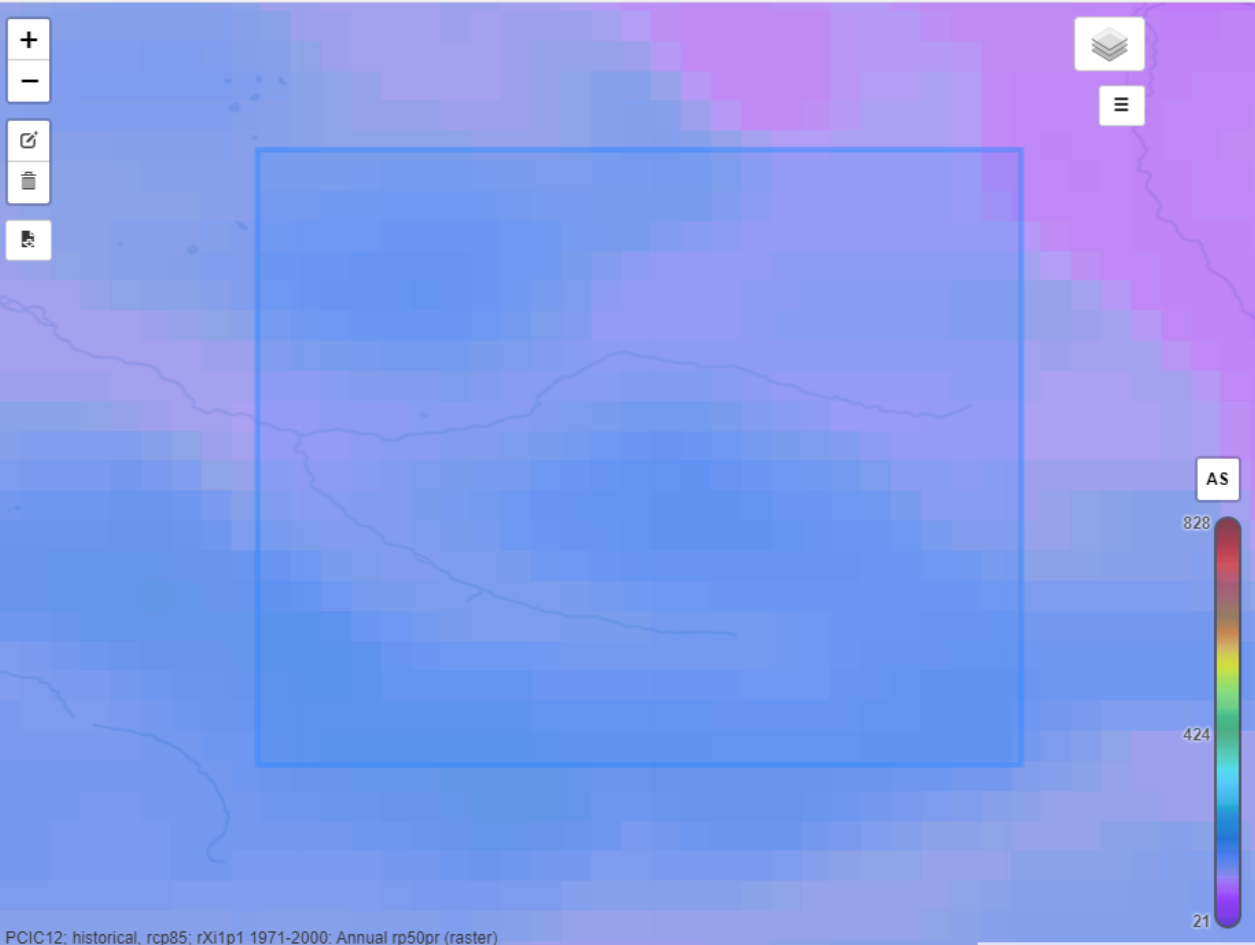
Export Data ⓘ XSLX CSV

Run	Averaging Peri...	Min	Max	Mean	Median	Std.Dev	Units
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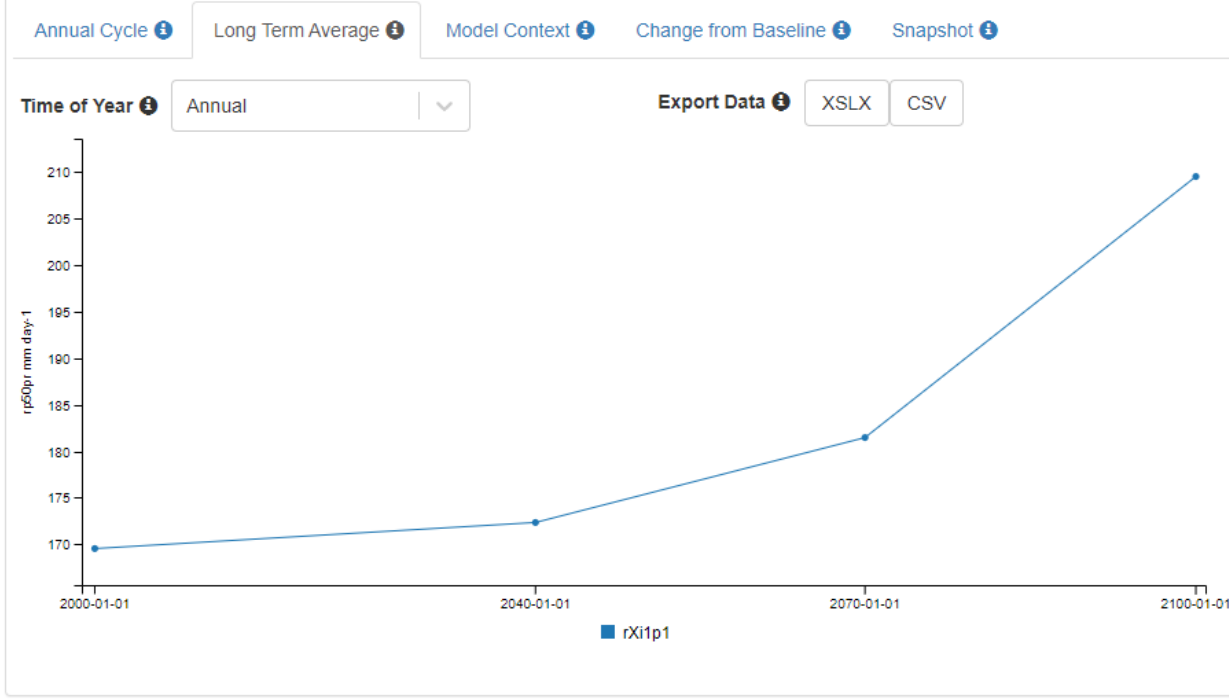
Model ⓘ | **Emissions Scenario** ⓘ | **Variable** ⓘ
 PCIC12 | Historical, then RCP 8.5 | rp50pr - 50-year annual maximum one day precipitation amount

Filtered Datasets Summary ⓘ | PCIC12 historical, rcp85: rp50pr → 4 datasets

Data Map ⓘ | PCIC12; historical, rcp85; rXi1p1 1971-2000: Annual rp50pr (raster)




Data Graphs ⓘ | PCIC12 historical, rcp85: rp50pr



Statistical Summary ⓘ | PCIC12 historical, rcp85: rp50pr

Time of Year ⓘ | Annual | **Export Data** ⓘ | XSLX | CSV

Run	Average Peri...	Min	Max	Mean	Median	Std.Dev	Units
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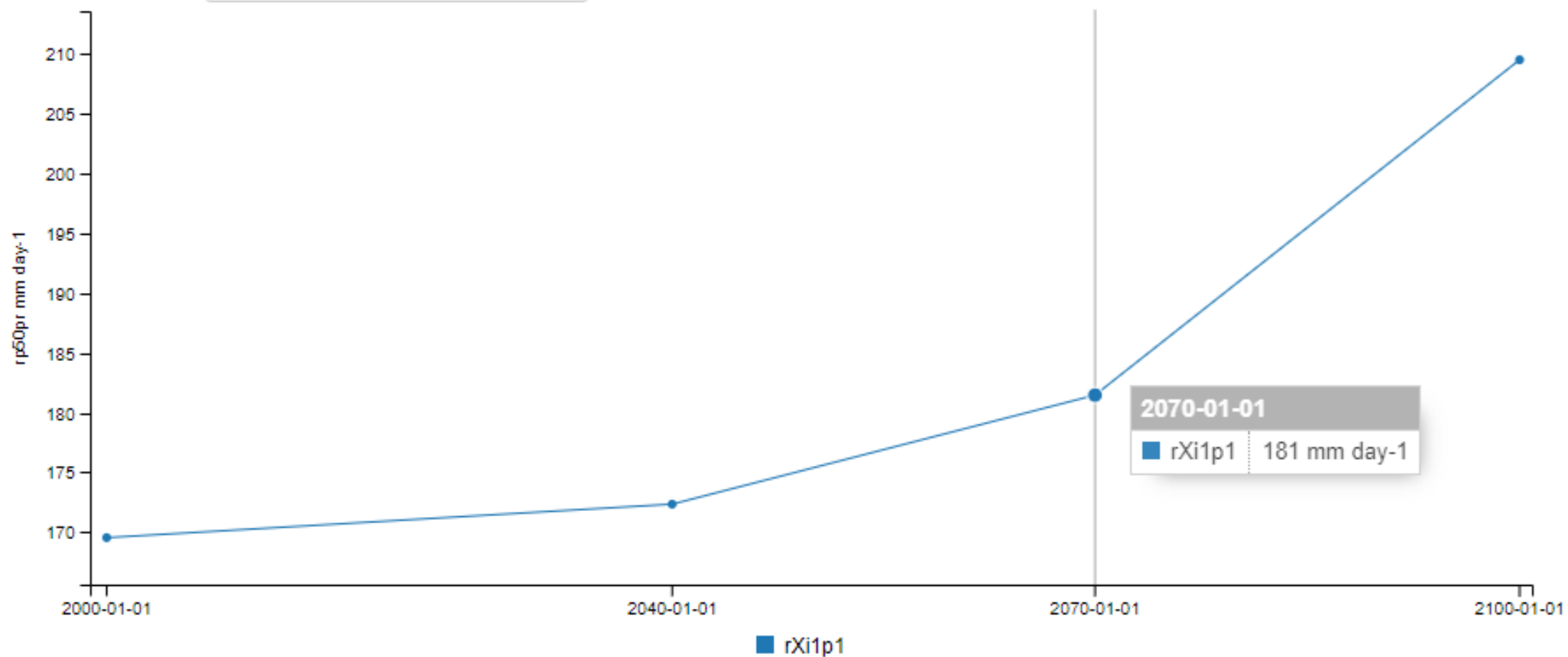
[Annual Cycle !\[\]\(2bdfe261b986065ee0ac76460d6528c9_img.jpg\)](#)[Long Term Average !\[\]\(dfbd6b3763a6d1d9afaa974f64e2e4b5_img.jpg\)](#)[Model Context !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95_img.jpg\)](#)[Change from Baseline !\[\]\(23d9fc146e83b5c3013cfa32c784f8d5_img.jpg\)](#)[Snapshot !\[\]\(c694a3ff3b077d76910920a6a1593ab4_img.jpg\)](#)Time of Year 

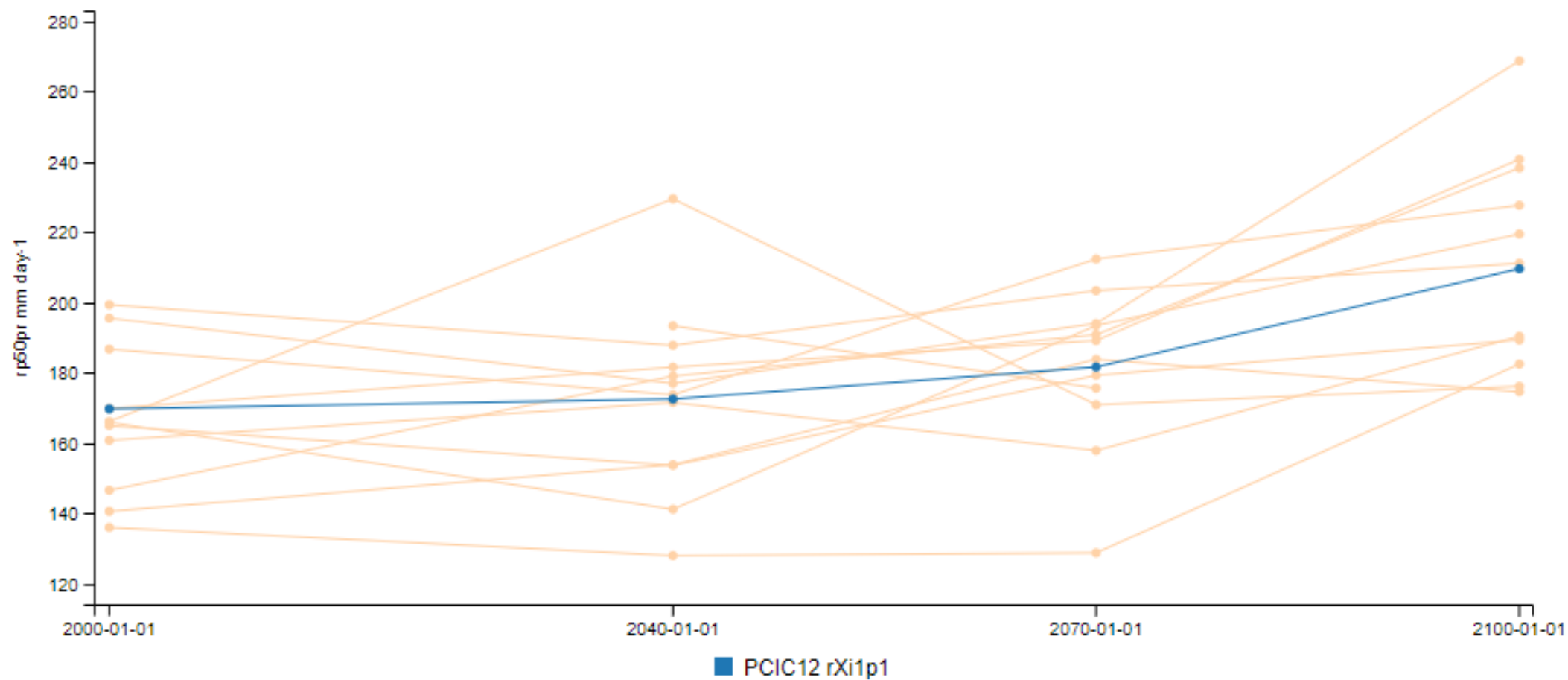
Annual

Export Data 

XSLX

CSV



[Annual Cycle !\[\]\(2e897e890e69d81eae4503a8342c36b0_img.jpg\)](#)[Long Term Average !\[\]\(bd1a142de767a21e5362c595f844a4ff_img.jpg\)](#)[Model Context !\[\]\(e2376d476d06eb31946dc01a69a4403a_img.jpg\)](#)[Change from Baseline !\[\]\(74d4806277d7e73349d8e8c0897931e9_img.jpg\)](#)[Snapshot !\[\]\(0aff635c4179ba9e710b00f4b01d3b20_img.jpg\)](#)

[Annual Cycle](#) [Long Term Average](#) [Model Context](#) [Change from Baseline](#) [Snapshot](#)

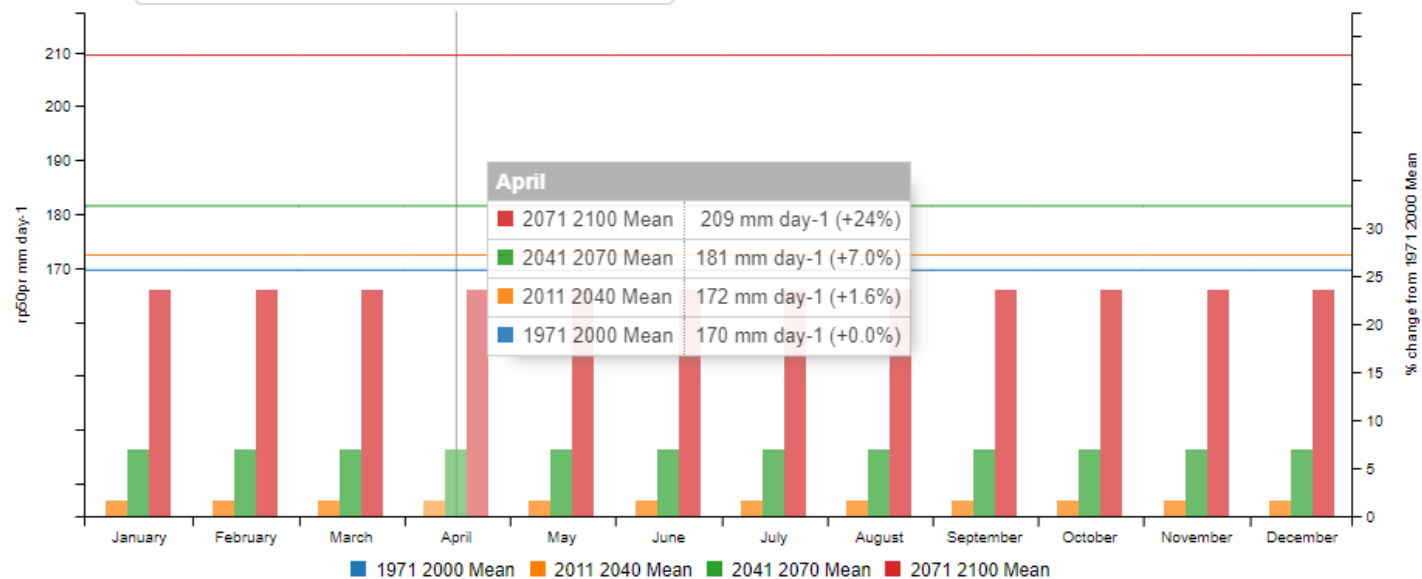
Dataset

Run 1 (rXi1p1), 1971–2000

Export Data

XSLX

CSV



filtered datasets ↓

Time of Year

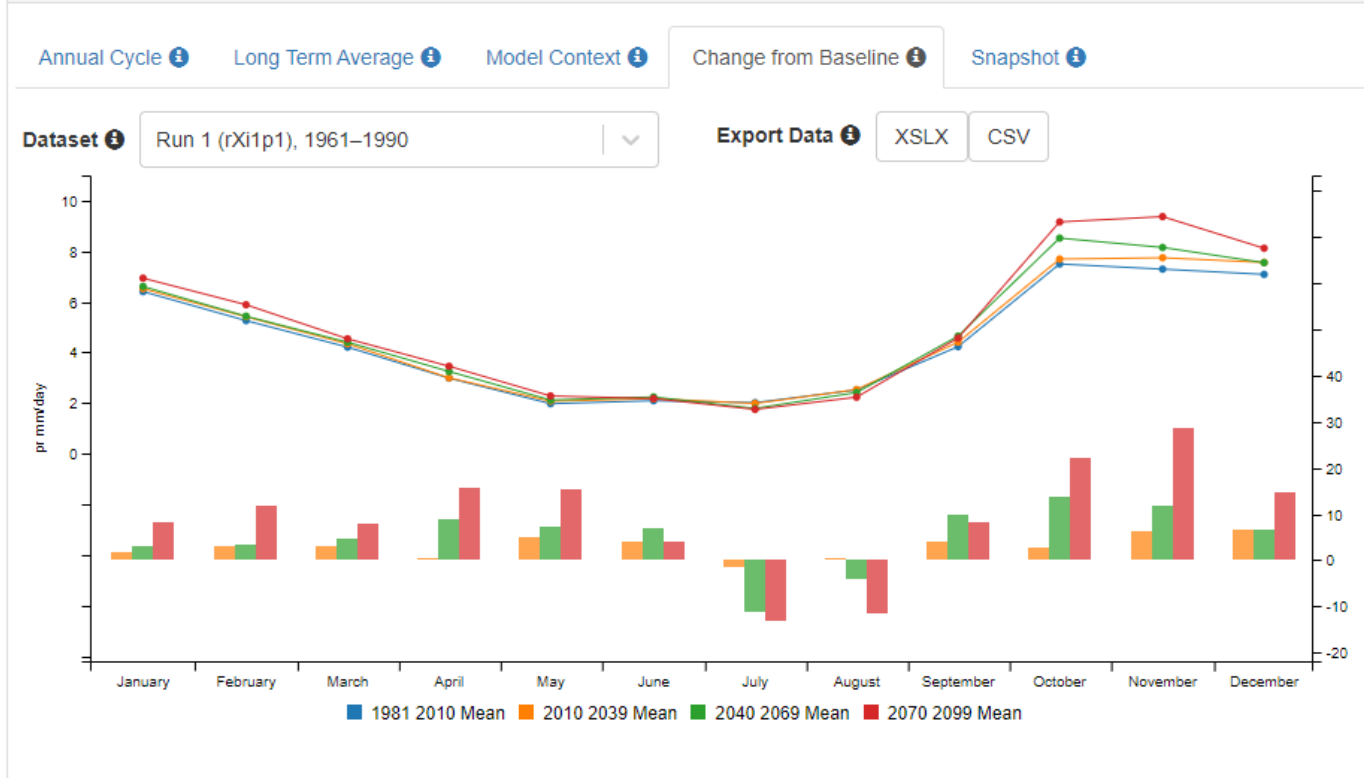
Annual

Export Data

XSLX

CSV

Run	Averaging Peri...	Min	Max	Mean	Median	Std.Dev	Units
rXi1p1	1971 - 2000	120.68	205.46	169.56	169.67	18.44	mm day-1
rXi1p1	2011 - 2040	124.99	208.74	172.36	171.86	17.67	mm day-1
rXi1p1	2041 - 2070	127.91	223.83	181.46	181.81	20.43	mm day-1
rXi1p1	2071 - 2100	147.66	253.5	209.44	208.94	21.89	mm day-1



filtered datasets ↓

Statistical Summary ⓘ PCIC12 historical, rcp85: pr

Time of Year ⓘ October | Export Data ⓘ XSLX CSV

Run	Averaging Peri...	Min	Max	Mean	Median	Std.Dev	Units
rXi1p1	1961 - 1990	6.63	8.31	7.42	7.45	0.56	mm/day
rXi1p1	1981 - 2010	6.71	8.4	7.5	7.53	0.56	mm/day
rXi1p1	2010 - 2039	6.88	8.61	7.69	7.72	0.58	mm/day
rXi1p1	2040 - 2069	7.63	9.53	8.52	8.56	0.64	mm/day
rXi1p1	2070 - 2099	8.2	10.24	9.16	9.2	0.68	mm/day
rXi1p1	1971 - 2000	6.6	8.28	7.39	7.42	0.56	mm/day



All Datasets Summary ⓘ

10805 datasets total

Dataset Filter ⓘ

Model ⓘ

PCIC12

Emissions Scenario ⓘ

Historical, then RCP 8.5

Variable ⓘ

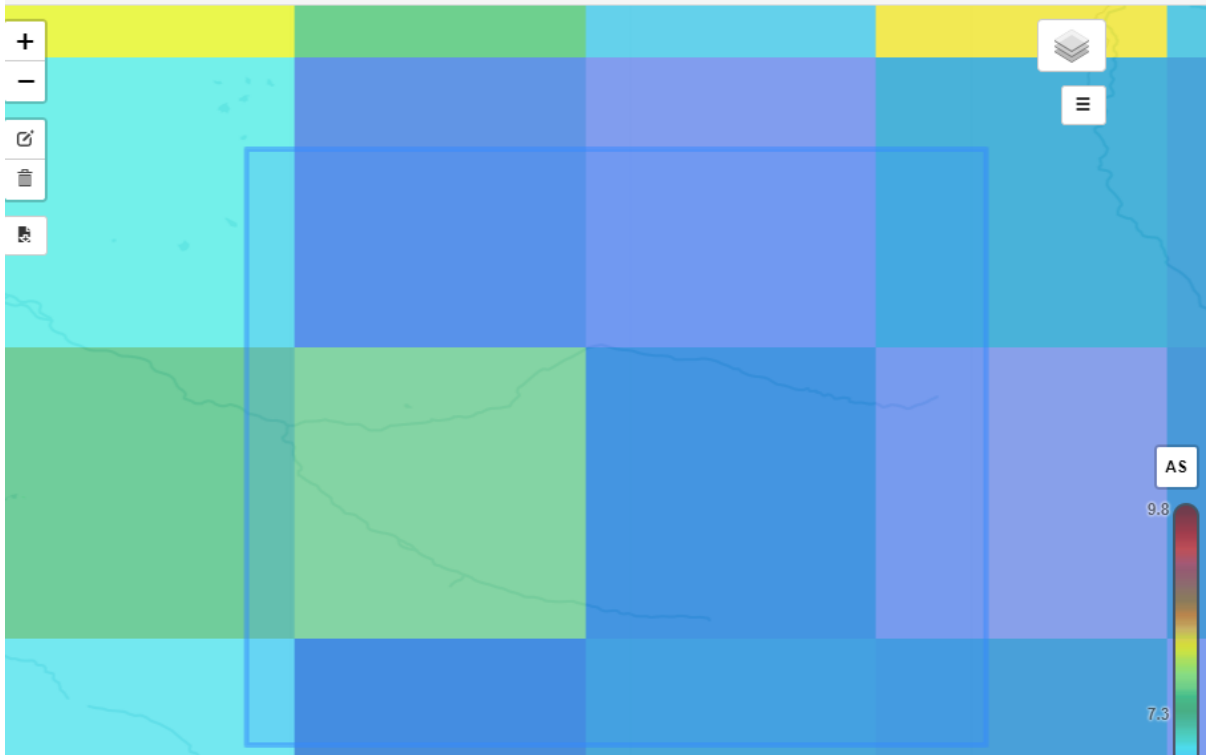
tasmax - Daily Maximum Near-Surface Air Temperature

Filtered Datasets Summary ⓘ

PCIC12 historical, rcp85: tasmax → 18 datasets

Data Map ⓘ

PCIC12; historical, rcp85; rXi1p1 1961-1990: Annual tasmax (raster)



Data Graphs ⓘ

PCIC12 historical, rcp85: tasmax

Annual Cycle ⓘ

Long Term Average ⓘ

Model Context ⓘ

Change from Baseline ⓘ

Snapshot ⓘ

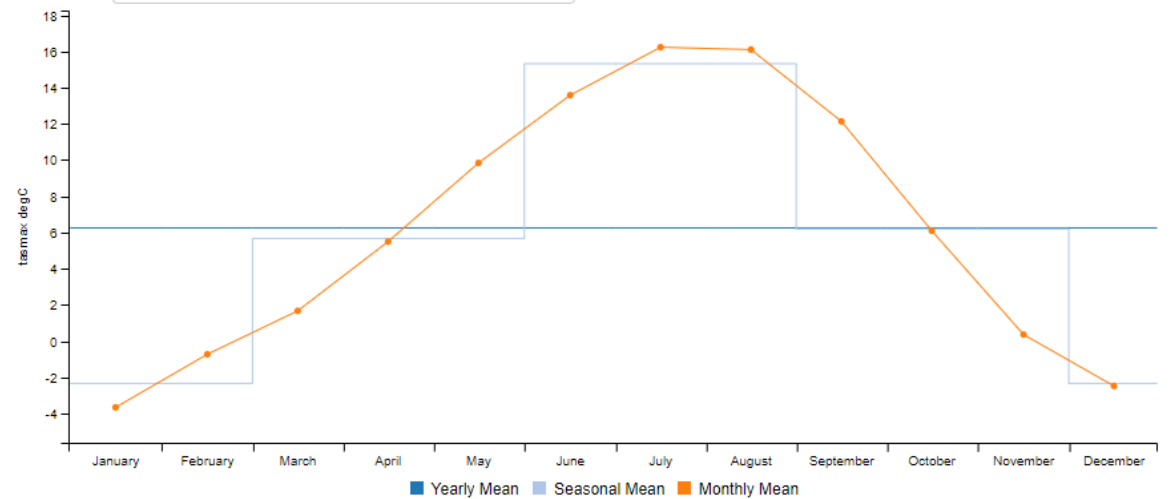
Dataset ⓘ

Run 1 (rXi1p1), 1961-1990

Export Data ⓘ

XSLX

CSV



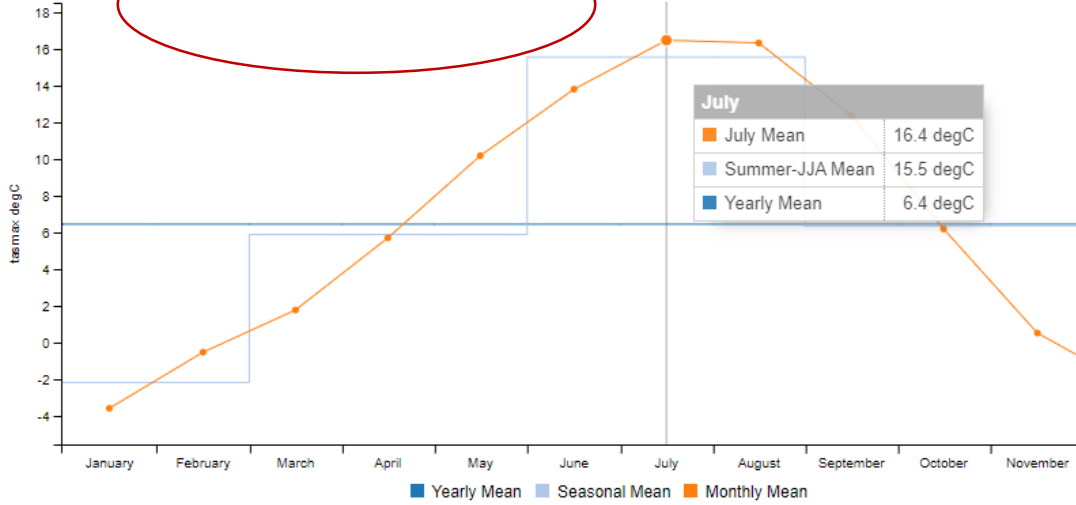
filtered datasets ↓

Data Graphs ⓘ PCIC12 historical, rcp85: tasmax

Annual Cycle ⓘ Long Term Average ⓘ Model Context ⓘ Change from Baseline ⓘ Snapshot ⓘ

Dataset ⓘ Run 1 (rXi1p1), 1971–2000

Export Data ⓘ XSLX CSV

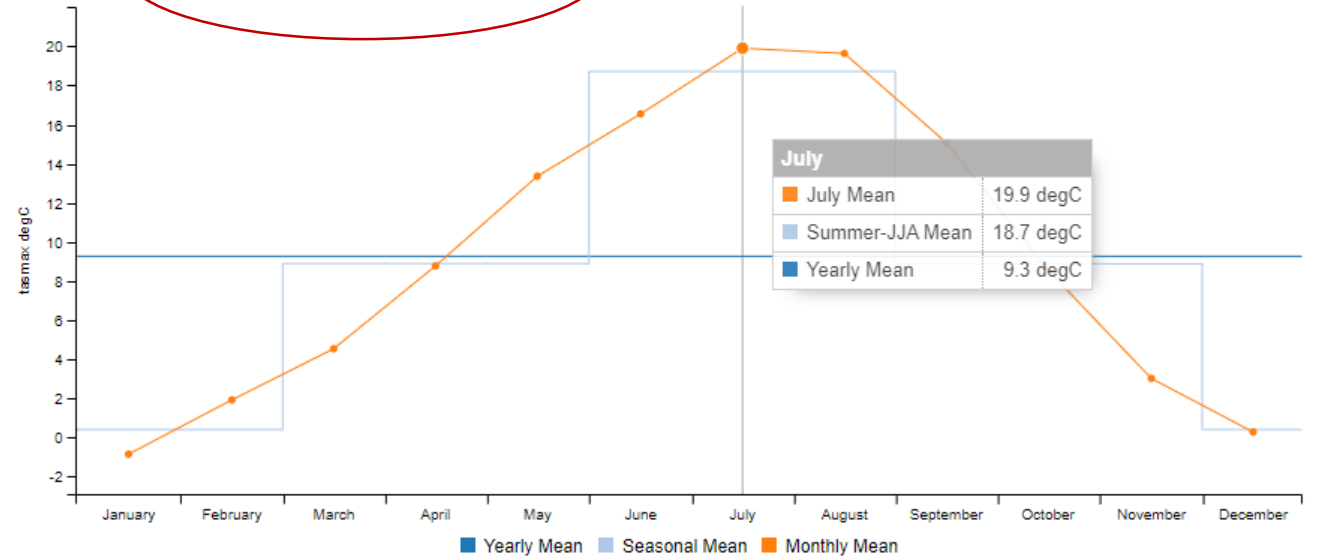


Data Graphs ⓘ PCIC12 historical, rcp85: tasmax

Annual Cycle ⓘ Long Term Average ⓘ Model Context ⓘ Change from Baseline ⓘ Snapshot ⓘ

Dataset ⓘ Run 1 (rXi1p1), 2040–2069

Export Data ⓘ XSLX CSV



[Annual Cycle](#) [Long Term Average](#) [Model Context](#) [Change from Baseline](#) [Snapshot](#)

Dataset

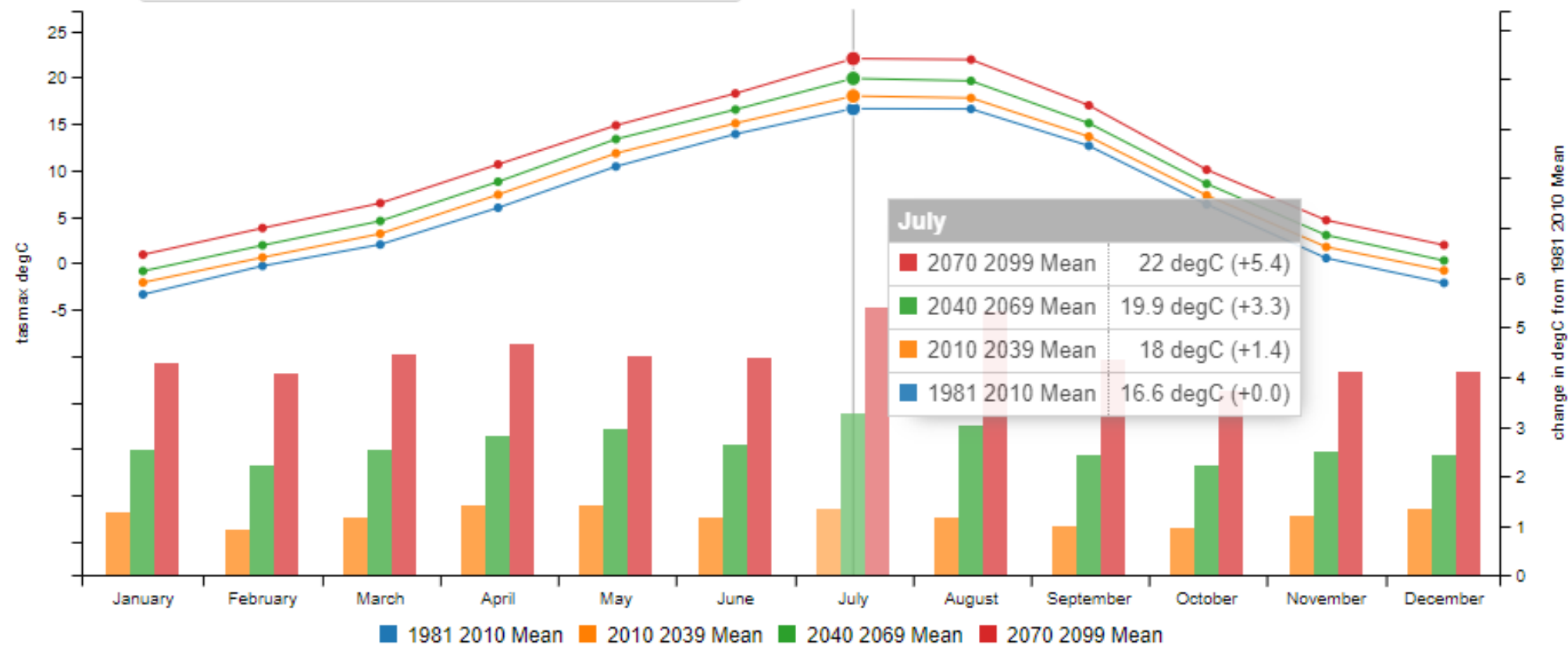
Run 1 (rXi1p1), 1961–1990



Export Data

XSLX

CSV



PCIC Hydrology Tools [\(<https://pacificclimate.org/data>\)](https://pacificclimate.org/data)



[Home](#) / [Data Portal](#) / [Gridded Hydrologic Model Output](#)

GRIDDED HYDROLOGIC MODEL OUTPUT

- Provides access to gridded $\sim 30 \text{ km}^2$ projections of hydrologic states for the Peace, Fraser and Columbia
- Future simulations with VIC-GL model using 12 GCMs from CMIP5, 6 models and both RCP 4.5 and RCP8.5
- Data includes: Baseflow, Evapotranspiration, Glacier Area, Glacier Mass Balance, Glacier Outflow, Potential Evapotranspiration, Precipitation, Rainfall, Snow Melt, Snow Water Equivalent, Surface Runoff, Total Column Soil Moisture and Transpiration.



[Home](#) / [Data Portal](#) / [Station Hydrologic Model Output](#)

STATION HYDROLOGIC MODEL OUTPUT

- Provides access to simulated streamflow data for locations throughout British Columbia
- Streamflow data were simulated using the Variable Infiltration Capacity (VIC) model
- Simulated data includes daily streamflow time series for over 120 sites located in the Peace, upper Columbia, Fraser and Campbell River watersheds
- GCMs from CMIP3, SRES emissions scenarios A1B, A2, B1

Resource: online tools

Resources to accompany BC Regional Adaptation Collaborative webinar
30 November 2016

Plan2Adapt <http://pacificclimate.org/analysis-tools/plan2adapt>

PICS short course http://pics.uvic.ca/education/climate-insights-101#quicktabs-climate_insights_101=1

ClimateBC

- HectaresBC <http://www.hectaresbc.org>
- ClimateWNA <http://genetics.forestry.ubc.ca/cfcg/ClimateWNA/ClimateWNA.html>
- ClimateBC Online <http://www.genetics.forestry.ubc.ca/cfcg/ClimateBC40/Default.aspx>
- BC Climate Explorer <http://www.bc-climate-explorer.org/>

PCIC Data Portals <https://pacificclimate.org/data>

Data Basin

<https://nplcc.databasin.org/galleries/5a3a424b36ba4b63b10b8170ea0c915e#expand=105363%2C106698%2C106712%2C110010%2C105359%2C105364>

<https://pacificclimate.org/news-and-events/news/2016/webinar-climate-tools>

Summary

Region & Time

Temperature

Precipitation

Snowfall

Growing DD

Heating DD

Frost-Free Days

Impacts

Notes

References

Summary of Climate Change for Fraser-Fort George in the 2050s

Climate Variable	Season	Projected Change from 1961-1990 Baseline	
		Ensemble Median	Range (10th to 90th percentile)
Mean Temperature (°C)	Annual	+1.7 °C	+1.2 °C to +2.6 °C
Precipitation (%)	Annual	+7%	-1% to +13%
	Summer	-1%	-8% to +5%
Snowfall* (%)	Winter	+10%	-3% to +18%
	Spring	-2%	-10% to +9%
Growing Degree Days* (degree days)	Annual	+245 degree days	+152 to +407 degree days
Heating Degree Days* (degree days)	Annual	-624 degree days	-944 to -432 degree days
Frost-Free Days* (days)	Annual	+20 days	+12 to +31 days

The table above shows projected changes in average (mean) temperature, precipitation and several derived climate variables from the baseline historical period (1961-1990) to the 2050s for the Fraser-Fort George region. The ensemble median is a mid-point value, chosen from a PCIC standard set of Global Climate Model (GCM) projections (see the 'Notes' tab for more information). The range values represent the lowest and highest results within the set. Please note that this summary table does not reflect the 'Season' choice made under the 'Region & Time' tab. However, this setting does affect results obtained under each variable tab.

* These values are derived from temperature and precipitation. Please select the appropriate variable tab for more information.

Resource – guidance documents

[BC Ministry of Transportation and Infrastructure Technical Circular](#)

[EGBC guidance document](#)

[National guidebook on climate scenarios](#)

Resource: climate change adaptation fundamentals



The ResiliencebyDesign Lab's **Inspiring Climate Action (ICA)** project has just launched its website. This site will be a hub for connecting those interested in climate adaptation in BC and beyond.

<https://secure.royalroads.ca/cscourses/climate-change-adaptation-fundamentals>

Resource: climate change in BC



BC Agricultural Climate Adaptation
Research Network

Get Involved

Home People ▾ Events Projects ▾ Resources ▾ Partners ▾ Contact Us

MODULE 1: USING FUTURE CLIMATE PROJECTIONS

Home / BC Agriculture and Climate Change Education Series / Module 1: Using Future Climate Projections

| Home | Module 1 | Module 2 | Module 3 | Module 4 |

Module 1: Using Future Climate Projections

Trevor Murdock and Kari Tyler, Pacific Climate Impacts Consortium

Trevor Murdock explains how climatology is being used for projecting climate change related challenges and opportunities in the British Columbia agriculture sector. This includes an overview of climate science concepts and tools and case study examples of regional work that the Pacific Climate Impacts Consortium has done for agricultural stakeholders across the province. Kari Tyler provides an introduction to how climate science can be integrated into programming and move organizations and institutions along the path of adaptation to climate change impacts.

Live recording of Module 1 webcast (1 hr, 12 mins)

www.bcacarn.com/educationseries/module-1-using-future-climate-projections/

Thank you

Kari Tyler
ktyler@uvic.ca



Asking Questions

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At the bottom right of this new window, use the raise hand icon to indicate that you would like to ask a question using audio.

2. You can also type your question in the Chat Box or the Q&A Box. Both are accessible at the bottom of your screen.

