

Regional Planning and Water Management

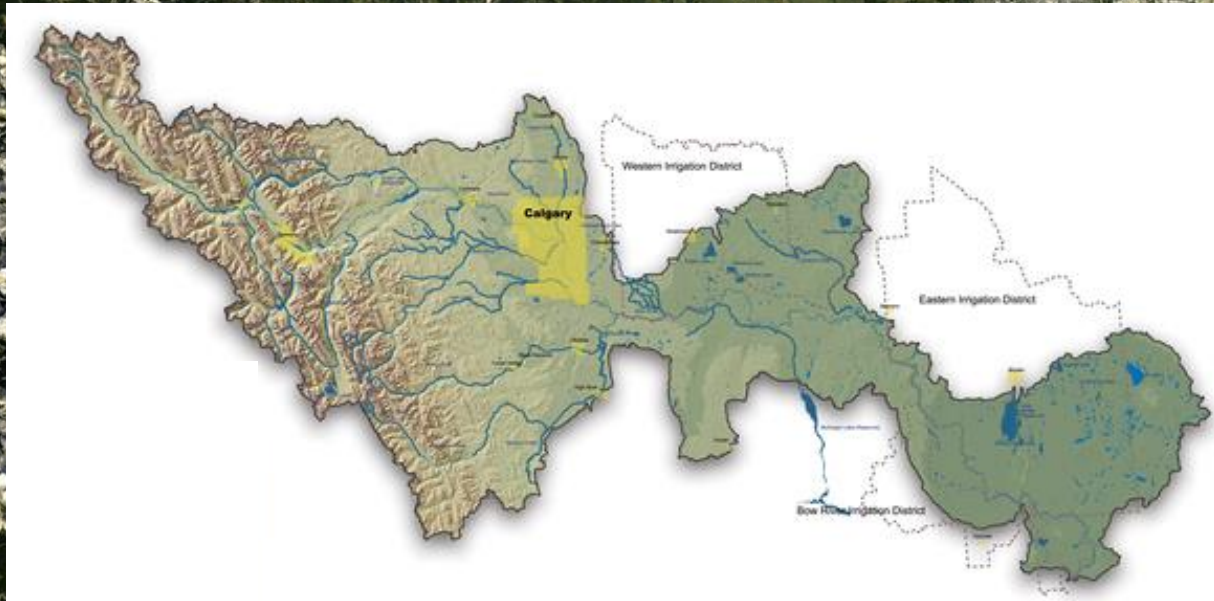
Dr. Dave Sauchyn, Director

Prairie Adaptation Research Collaborative

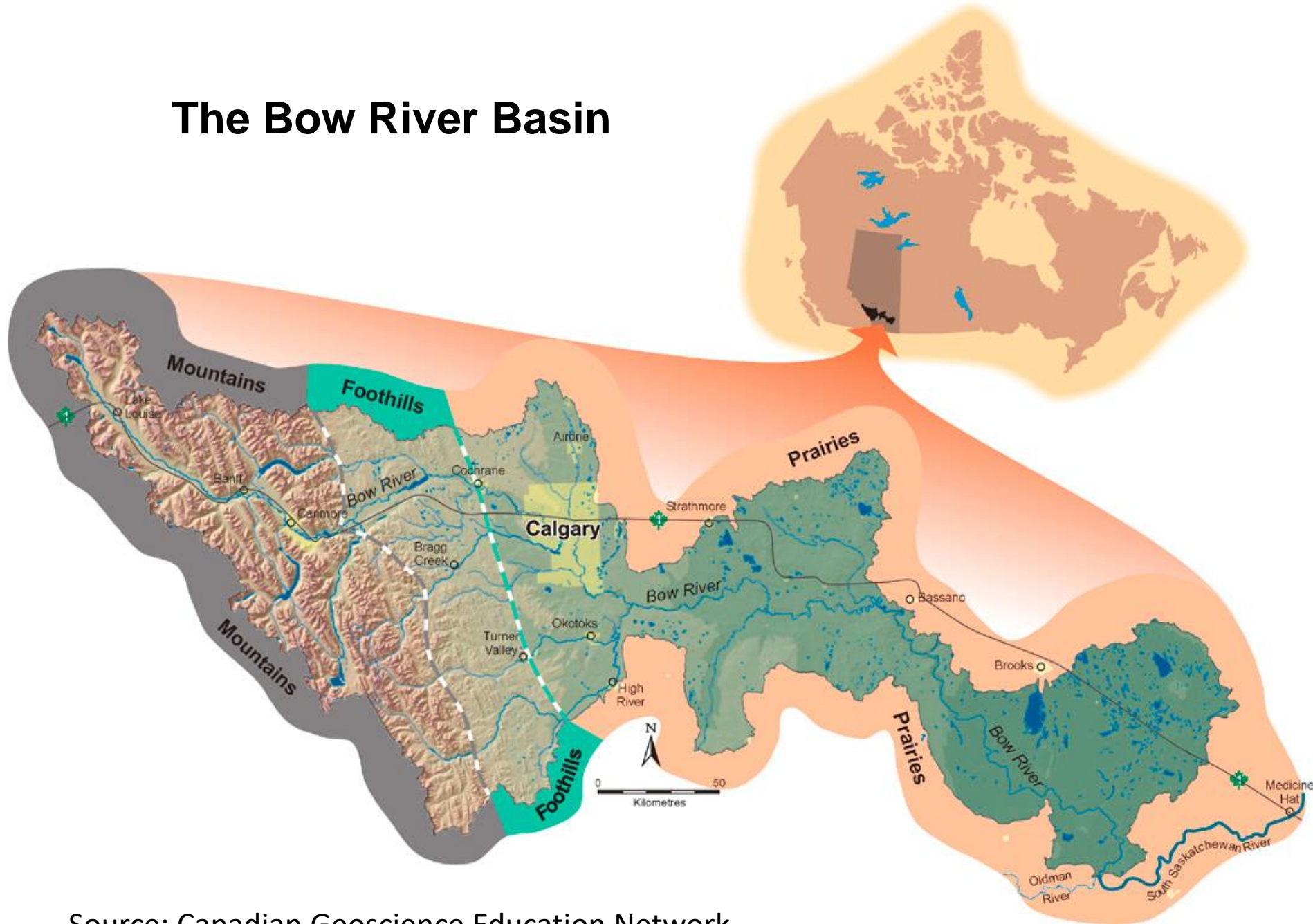
University of Regina



Calgary Metropolitan Region Board, May13, 2019

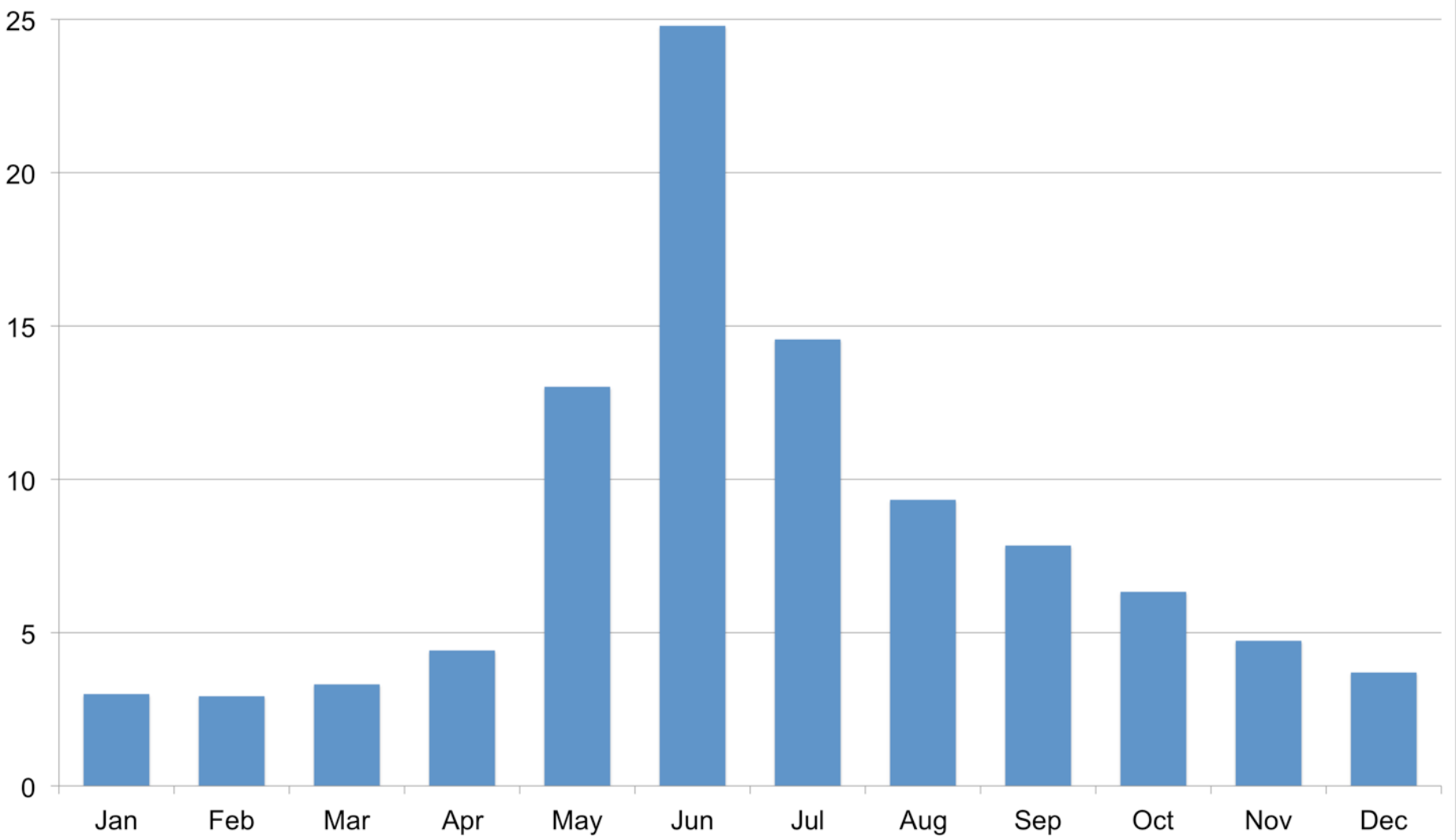


The Bow River Basin

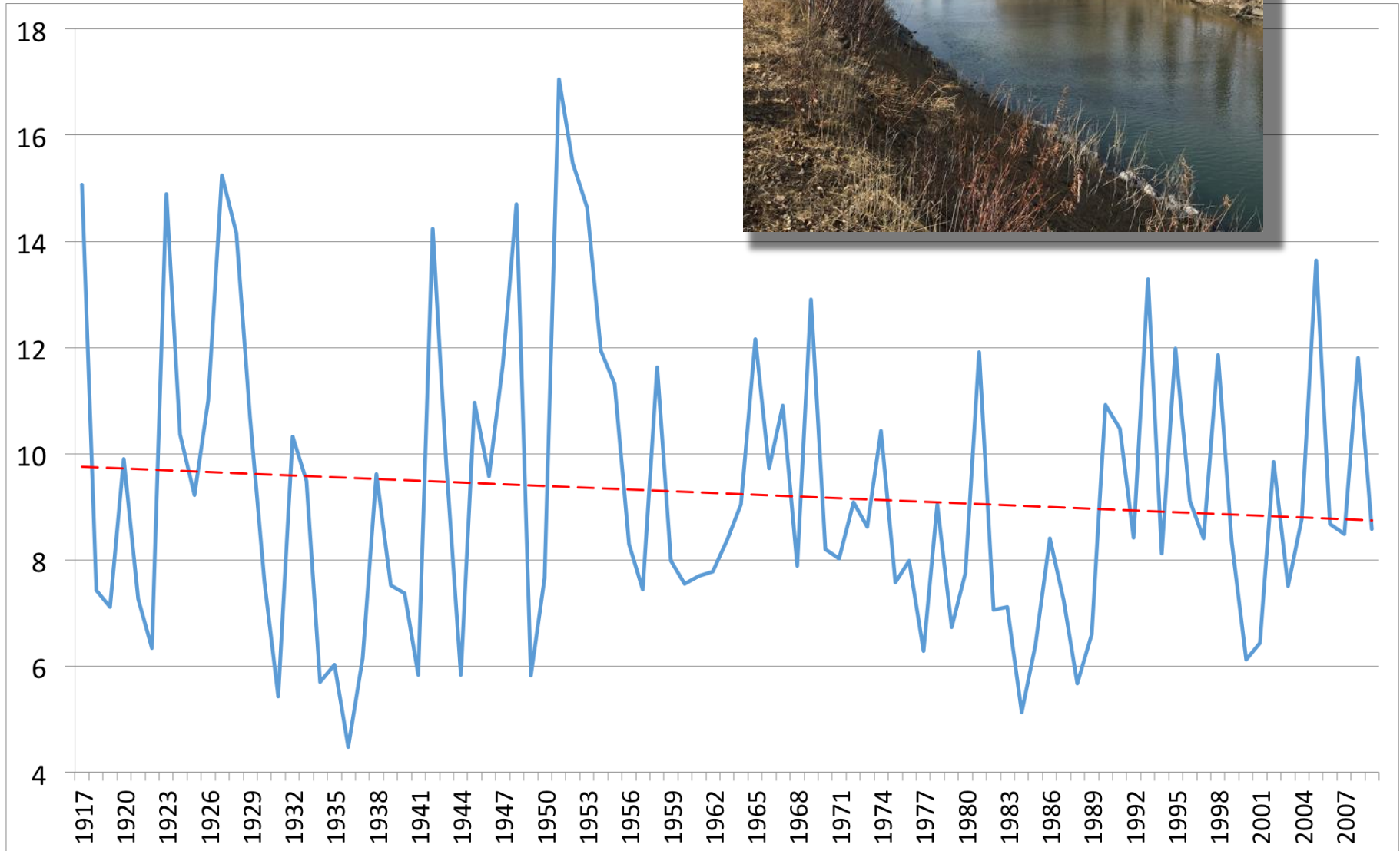


Source: Canadian Geoscience Education Network

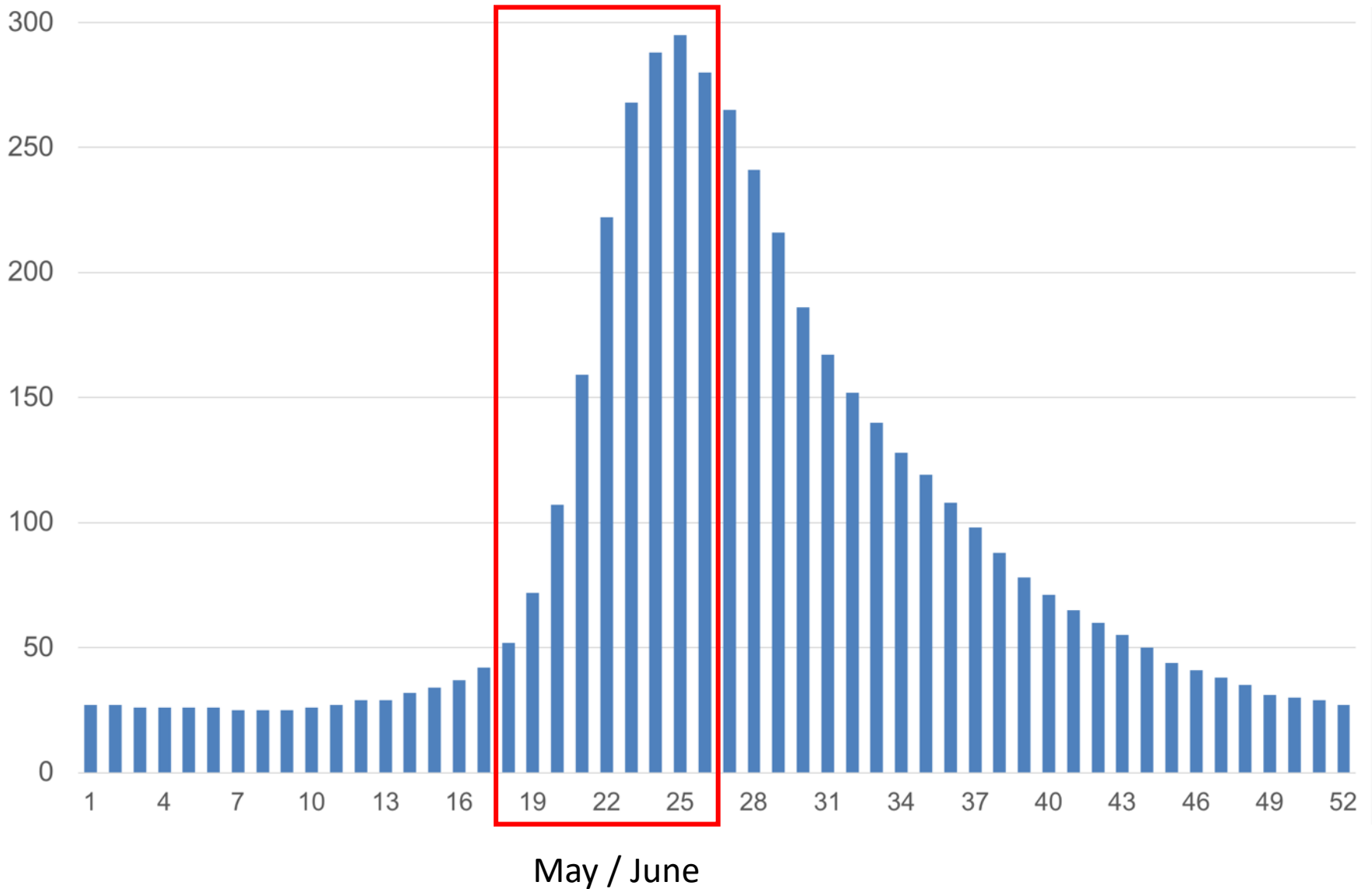
Average Monthly Flow (m³/s), Elbow River at Bragg Creek



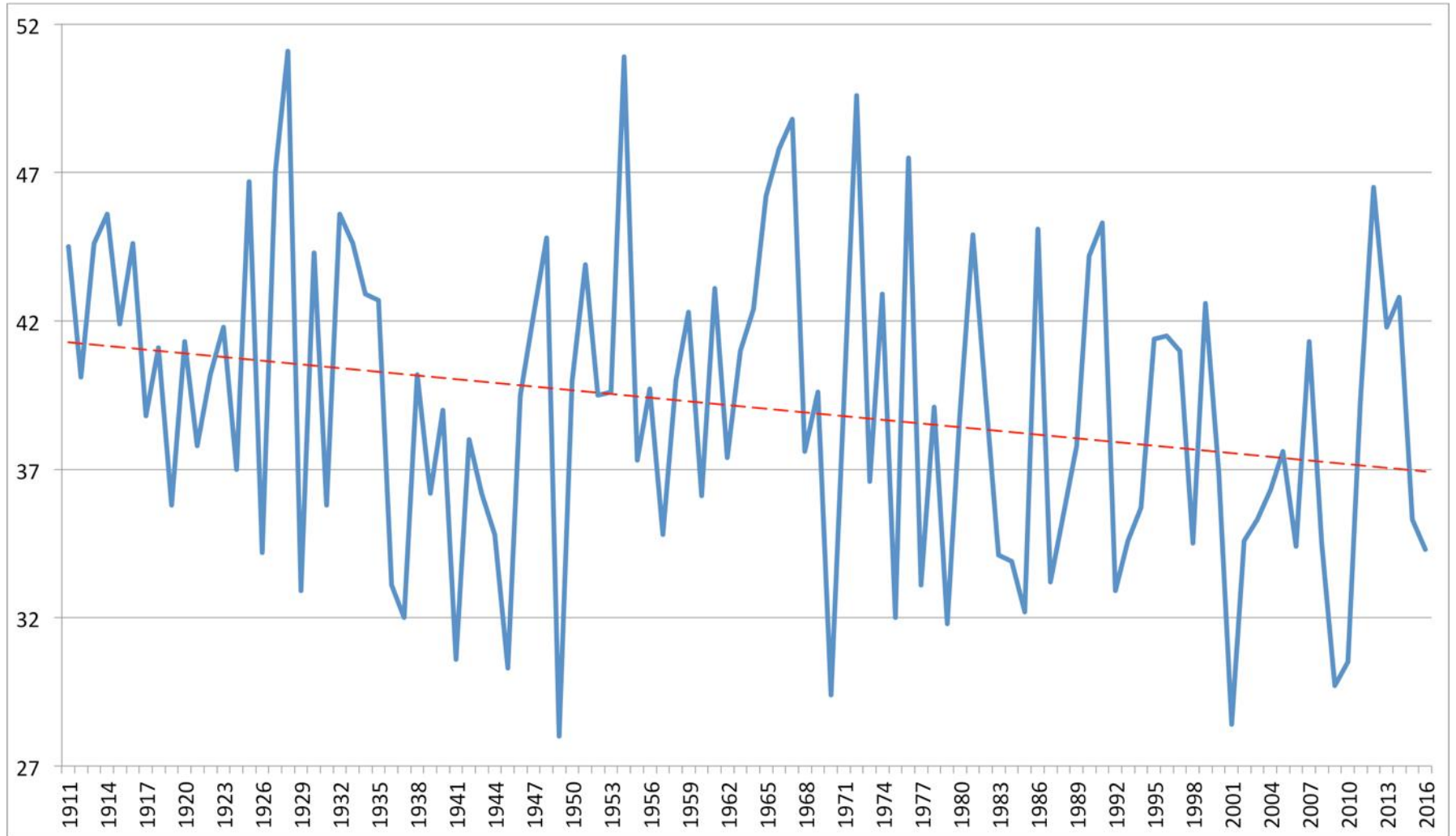
Average Annual Flow (m³/s), Elbow River at Calgary, 1917-2009



Average Weekly Flow (m³/s), Bow River at Calgary



Average Annual Flow (m³/s), Bow River at Banff, 1911 to 2016



Bow Glacier



*1902 Photo: Whyte Museum of the Canadian Rockies
(V653/NA-1115, Vaux Family Fonds)*

Henry Vaux (2014)
“Legacy in Time”



2002 Photo: Henry Vaux Jr.

Opinion

Report on devastating Canadian climate change a far bigger issue than Jody Wilson-Raybould: Neil Macdonald



According to a new report, Canada's climate is warming at roughly twice the rate of the rest of the world



Neil Macdonald · CBC News · Posted: Apr 01, 2019 3:00 PM ET | Last Updated: April 1



Canada's Changing Climate Report

This report is about how and why Canada's climate has changed and what changes are projected for the future. Led by Environment and Climate Change Canada, it is the first report to be released as part of *Canada in a Changing Climate: Advancing our Knowledge for Action*.

<https://changingclimate.ca/CCCR2019/>

Chapters

Canada in a Changing Climate - Regional Perspectives

- British Columbia
- **Prairies**
- Ontario
- Quebec
- Atlantic Provinces
- Northern Canada

Canada in a Changing Climate- National Issues

Our Society

- Urban
- Rural
- Indigenous

Our Environment

- Water Resources
- Ecosystem Services

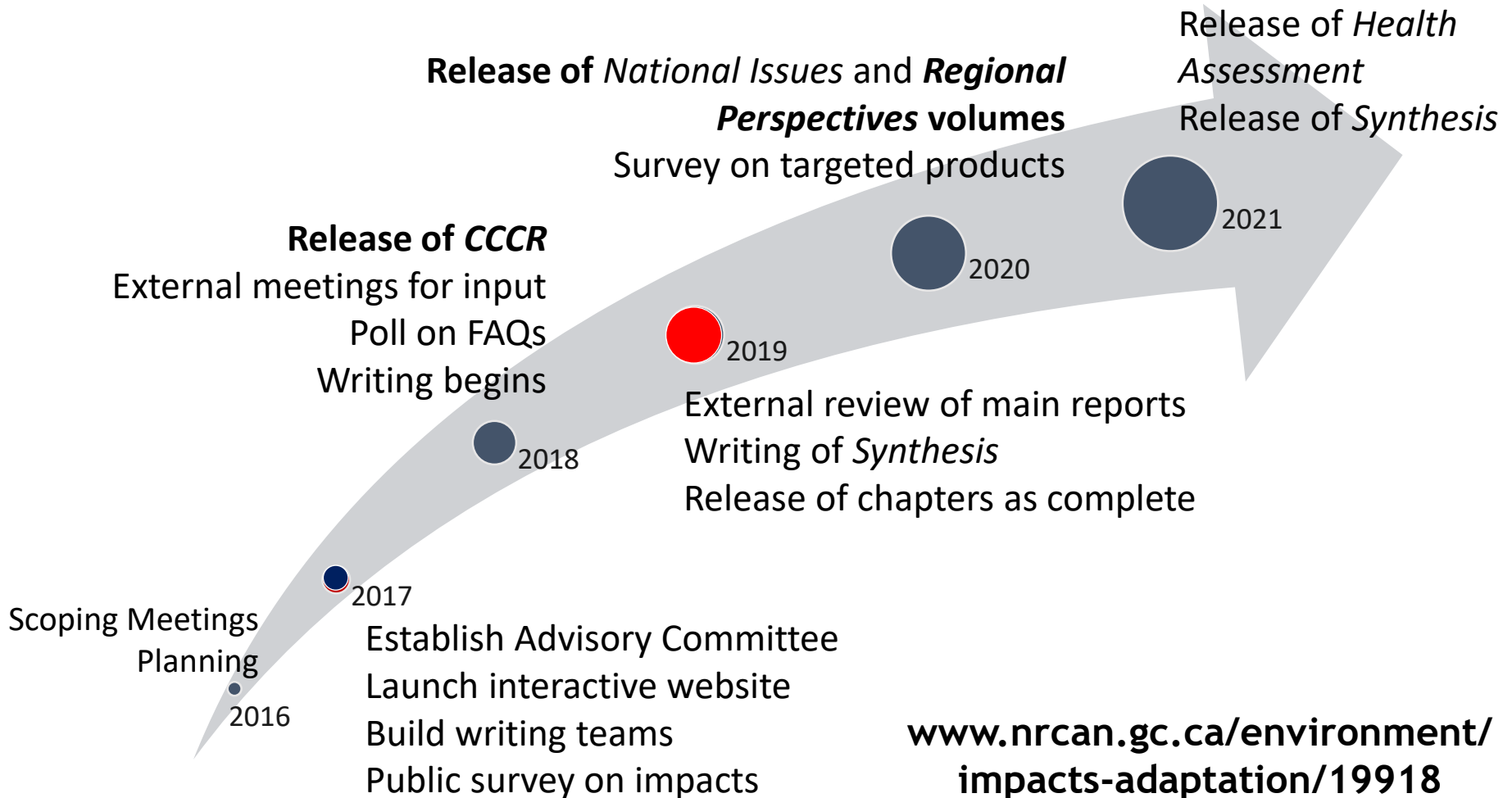
Our Economy

- Costing Impacts and Adaptation
- Economic Sector Perspectives

Looking Forward

- International Dimensions
- New and Emerging Issues

Overall Timeline





CCCR2019

REPORT

Canada's Changing Climate Report

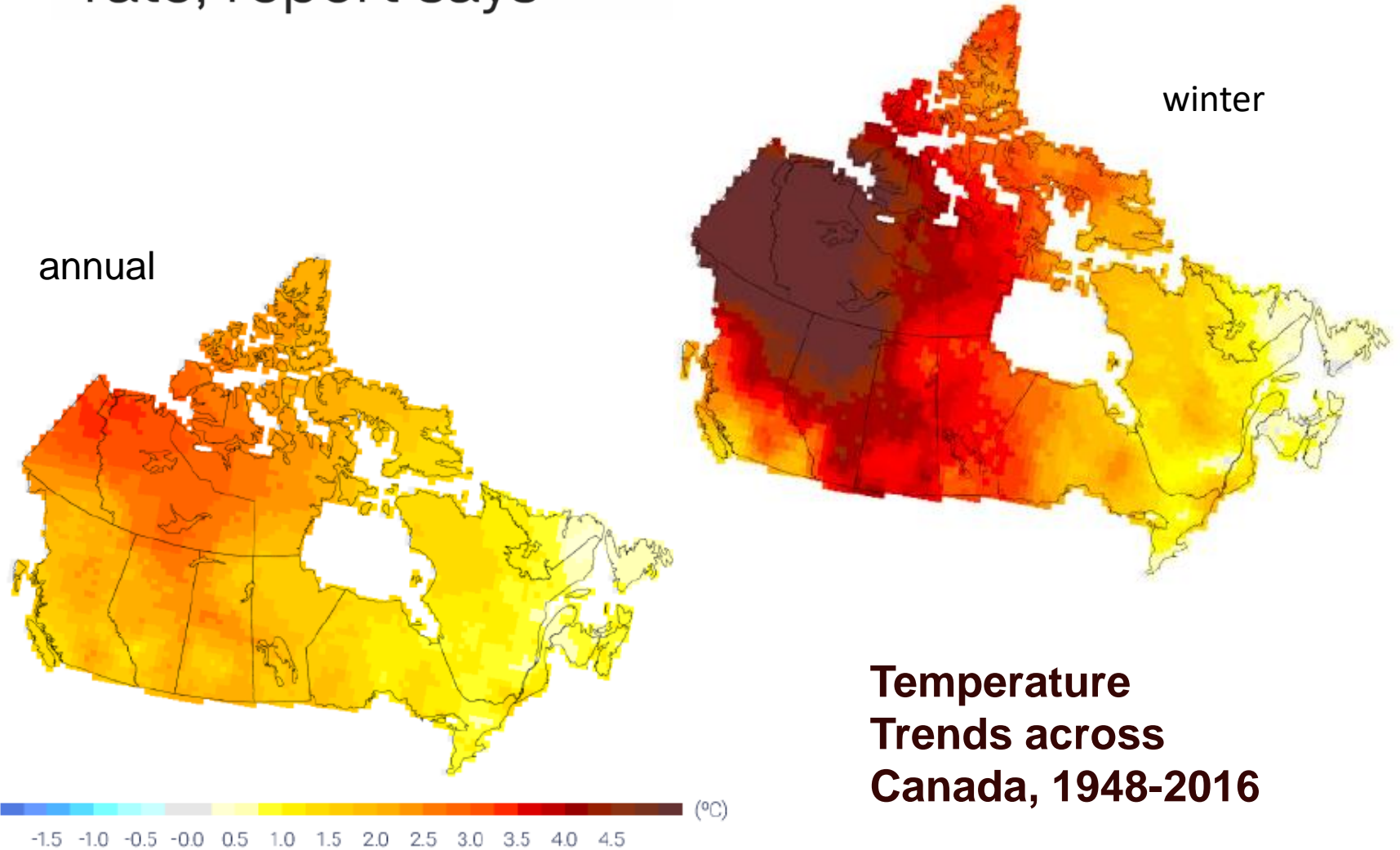


Government
of Canada

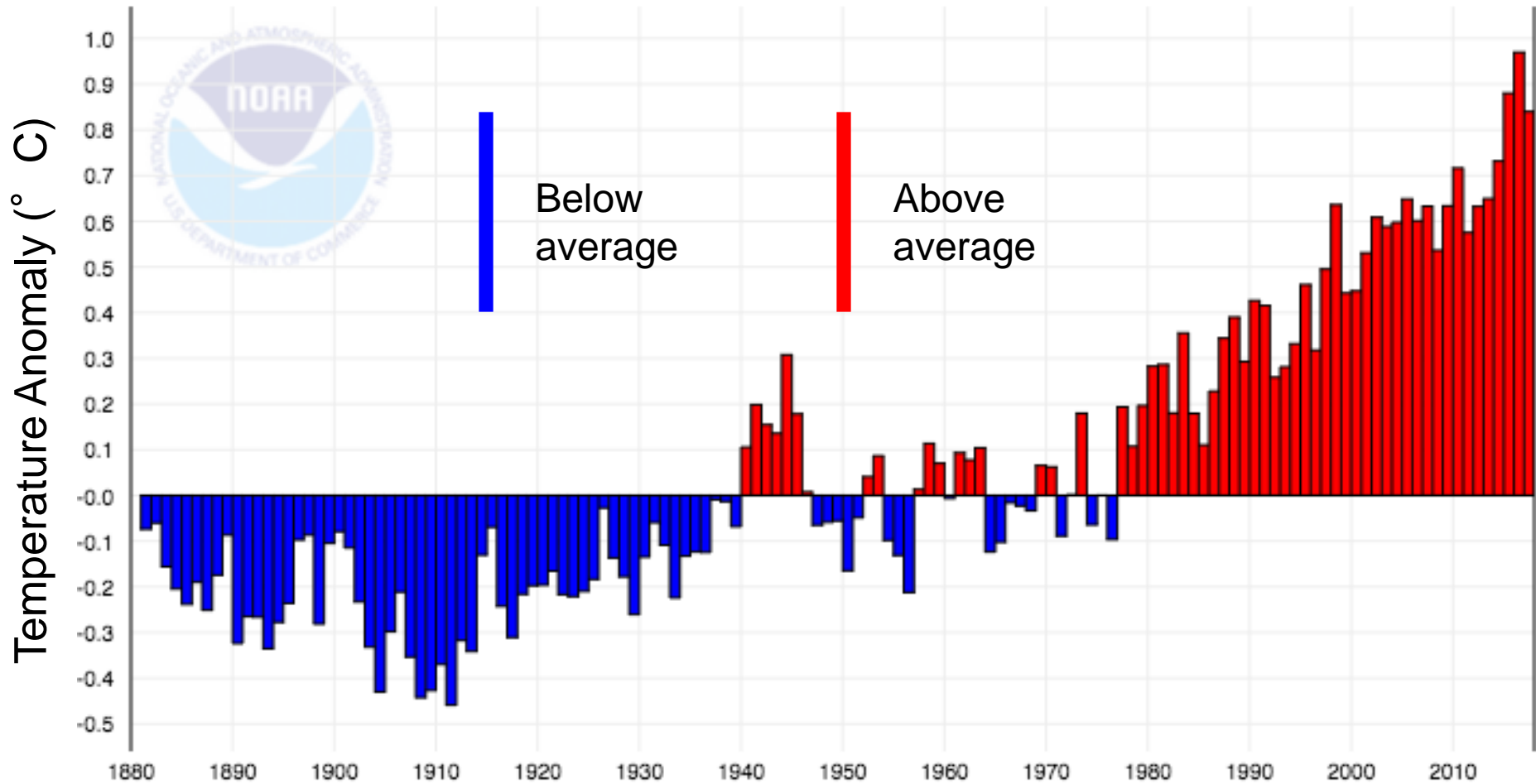
Gouvernement
du Canada

Canada

Canada is warming at twice the global rate, report says

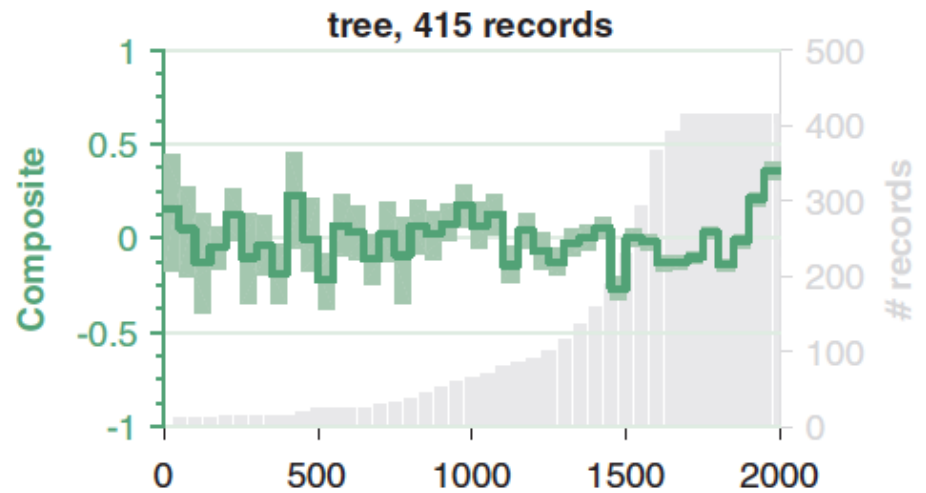
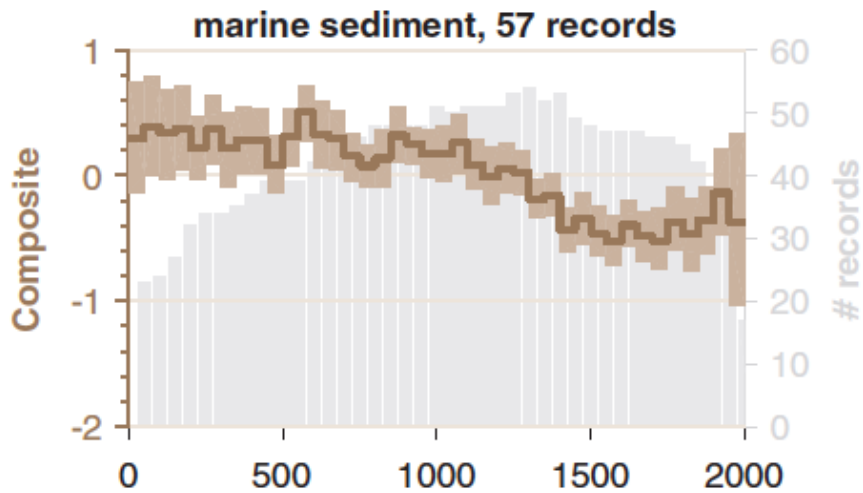
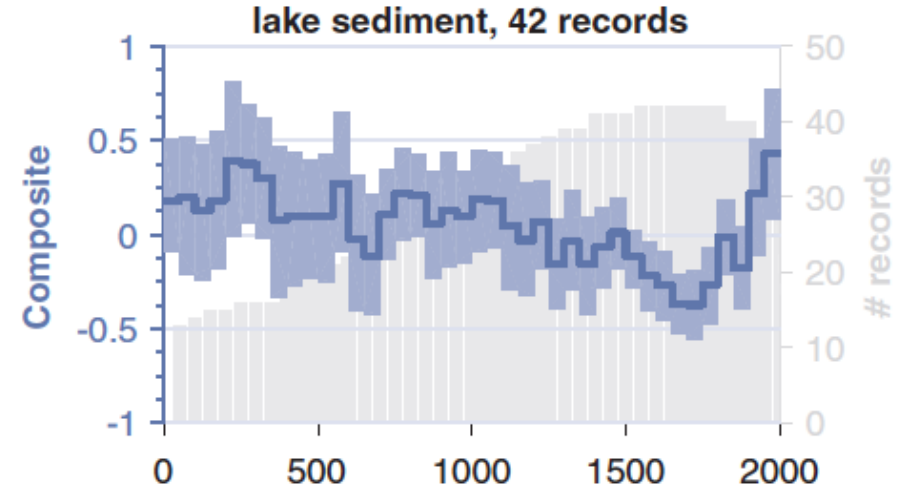
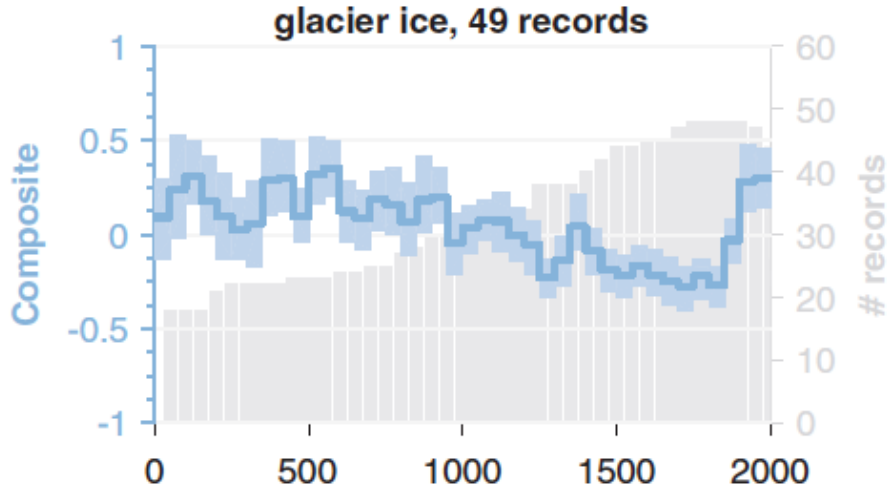


April 2019 marks was the **412th consecutive month** with temperatures above the 20th century average





PAGES2k Consortium. 2017. A global multi-proxy database for temperature reconstructions of the Common Era, *Nature Scientific Data*



“It would be hard to design a threat more likely to induce highly abstract thoughts.”

Why don't we care about climate change?

Dan Gardner, **The Globe and Mail**

December 21, 2018

- *So why isn't our collective concern remotely proportionate to the danger?*
- *What dominates our forward-looking thoughts is **the here and now**, or the nearby and soon.*
- ***Climate change is distant*** in every dimension. *The worst of it lies decades in the future, to be suffered in far-off lands by foreigners very different from us.*

Weather is the clothes you're wearing
Climate is your whole wardrobe



January 25, 2015: 17°

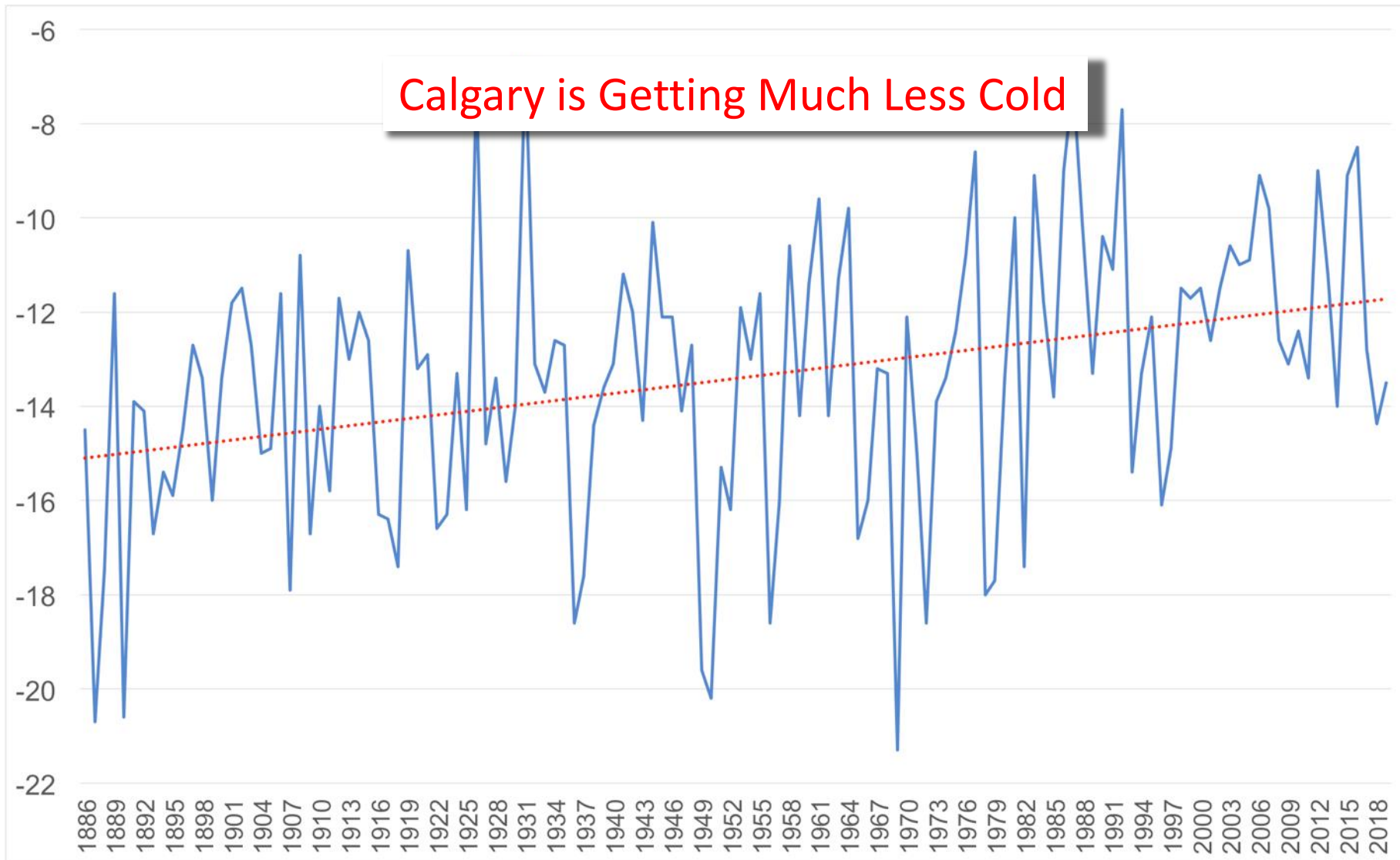
“A customer from Texas called and what they weather will be like when they visit in April.”
Calgary car rental agency employee

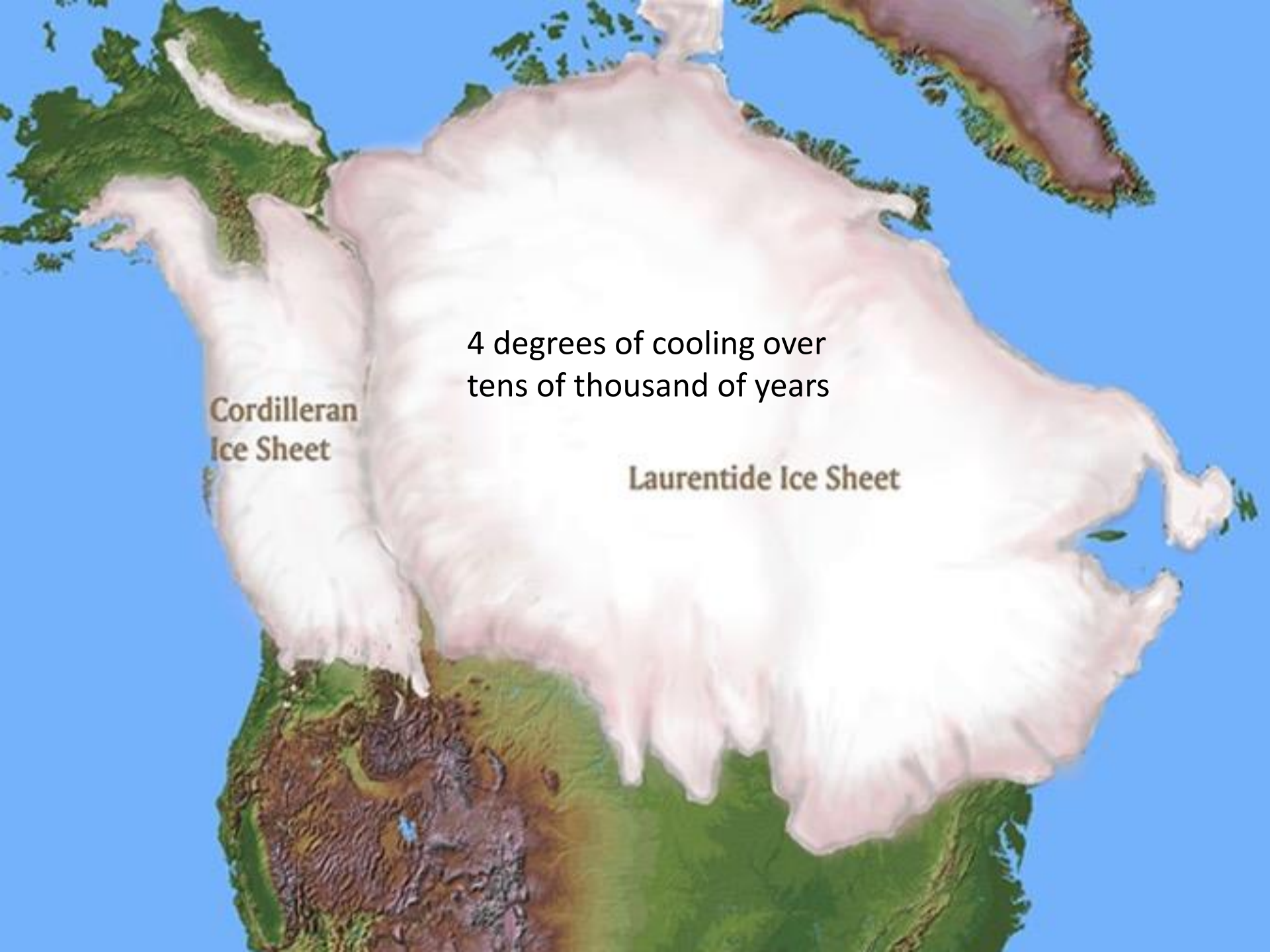
“I’ll believe in climate change, when we get weather we don’t expect”
Irrigation District Manager



August 22, 2015: 4°

Average Minimum Winter Temperature (°C) at Calgary, 1886 to 2019





4 degrees of cooling over
tens of thousand of years

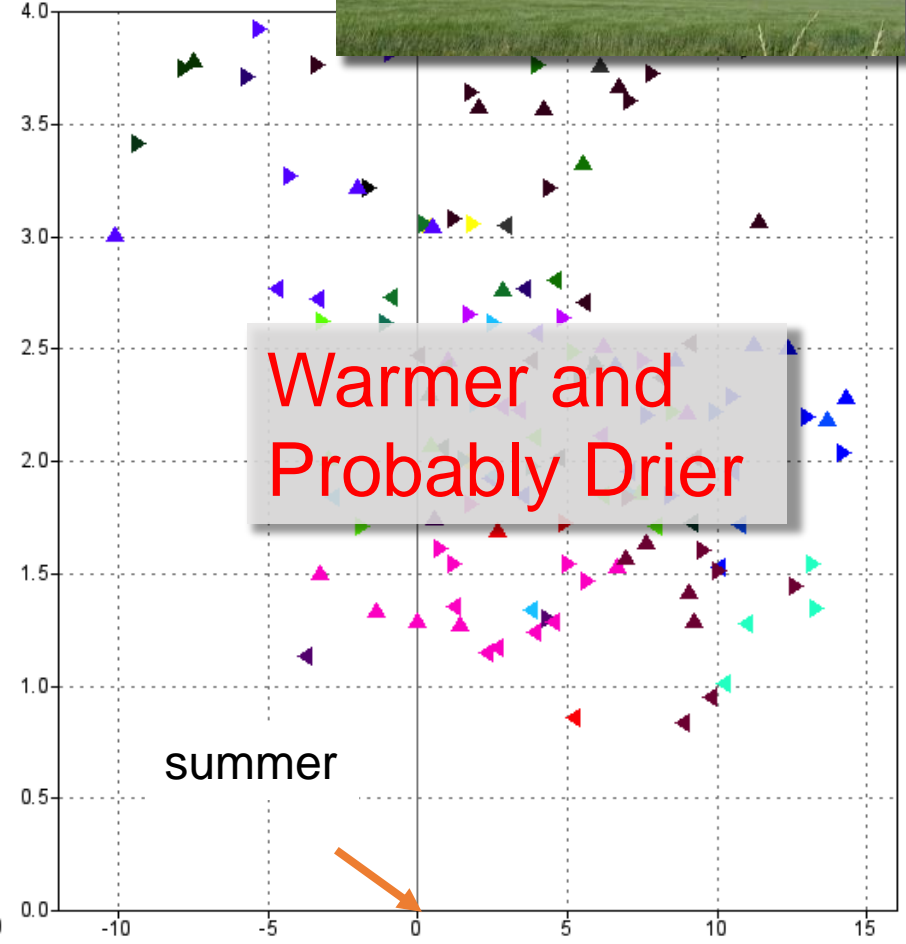
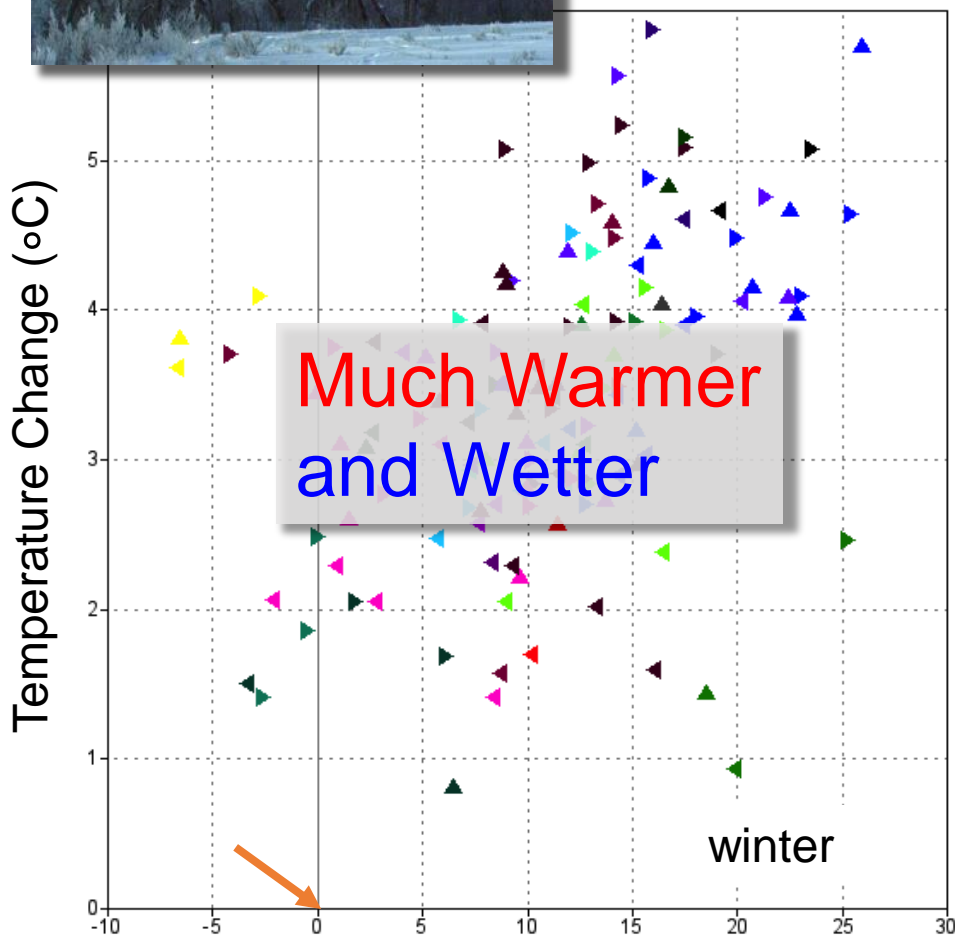
**Cordilleran
Ice Sheet**

Laurentide Ice Sheet

We are losing the advantage of a cold winter

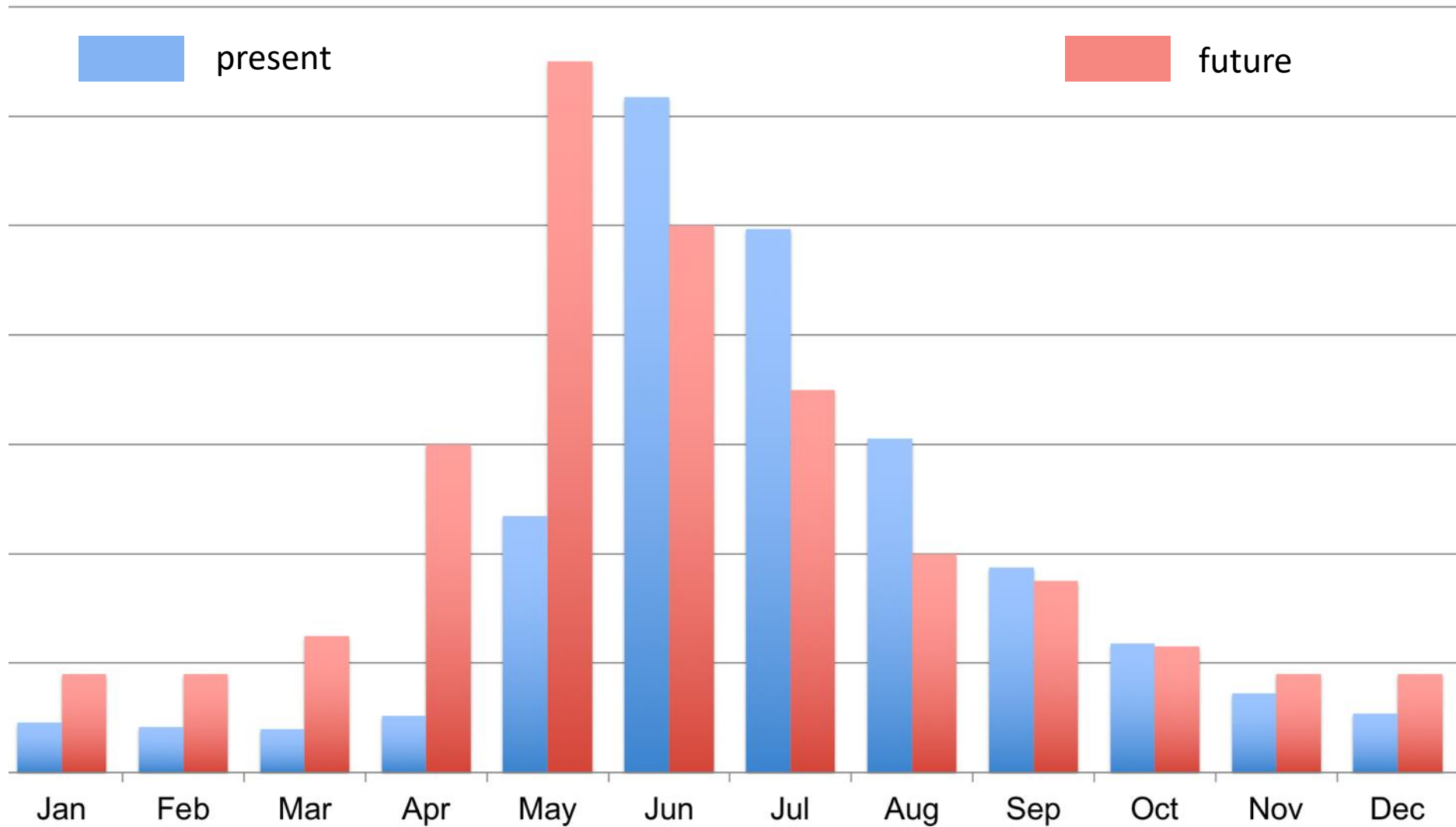


Projected Climate Changes Western Canada 1971-2000 vs 2040-69



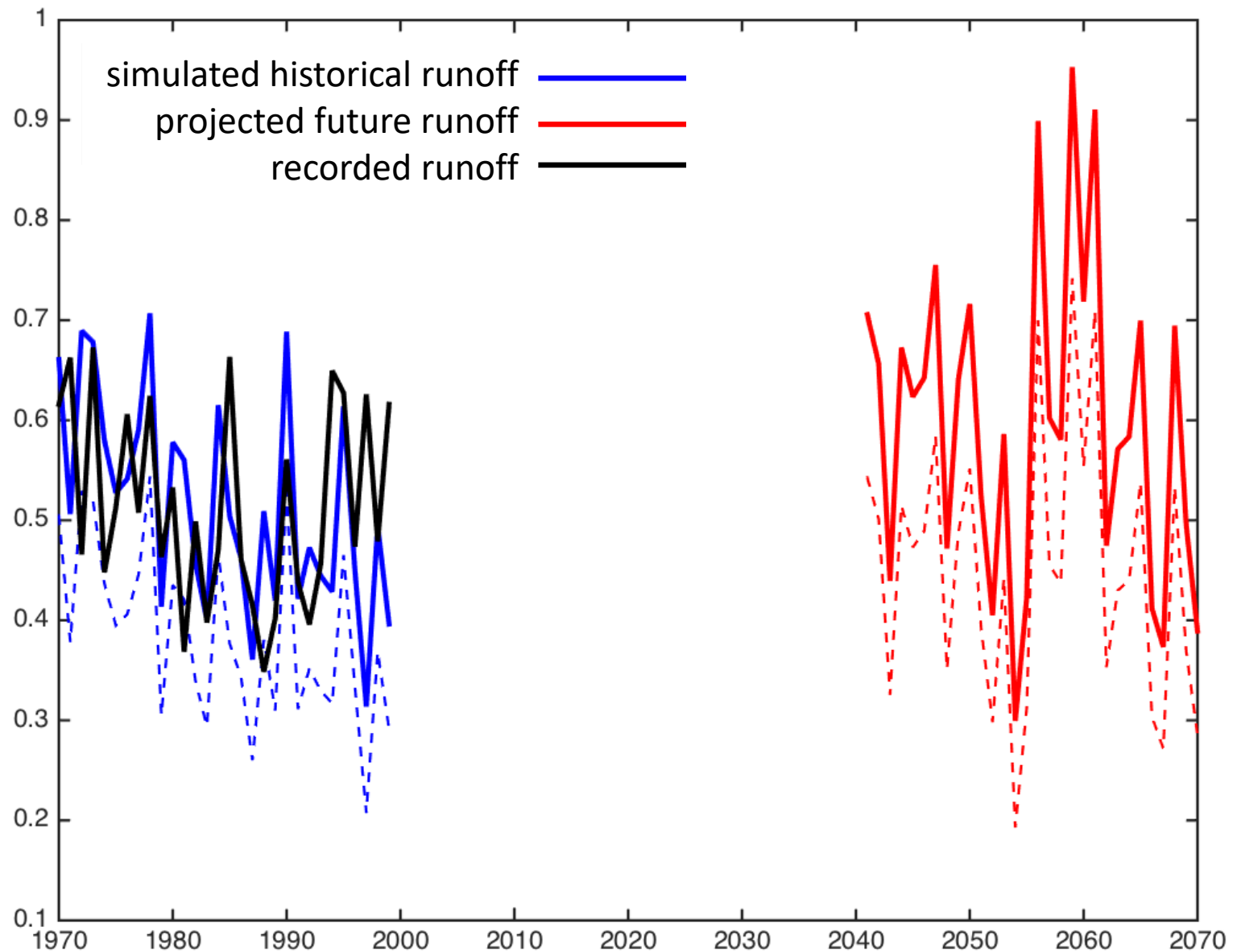
Precipitation Change (%)

Average Monthly Flow of the Bow River

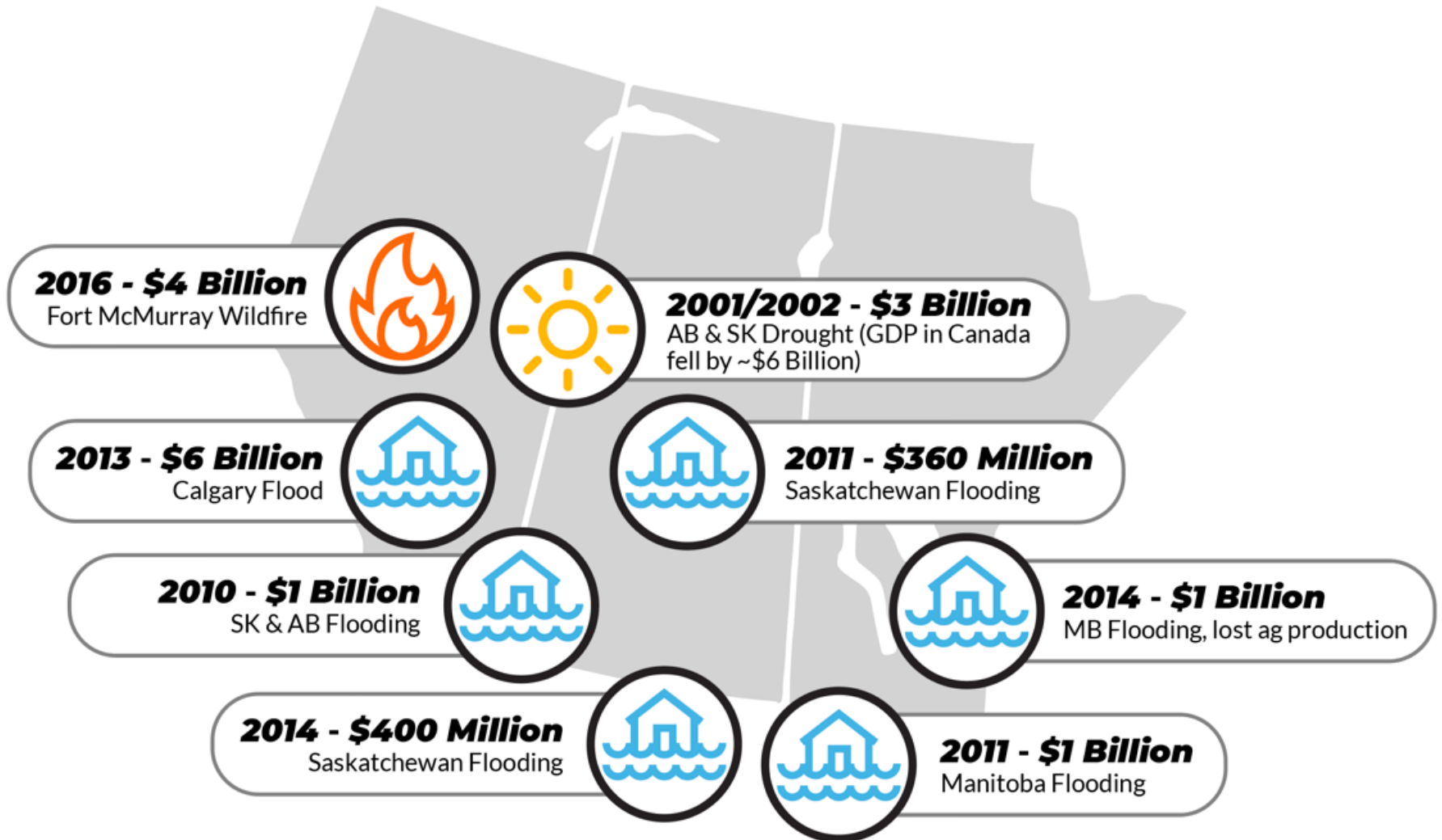


Runoff (mm/day) in the Bow River Basin, 1971-2000 vs 2041-2070

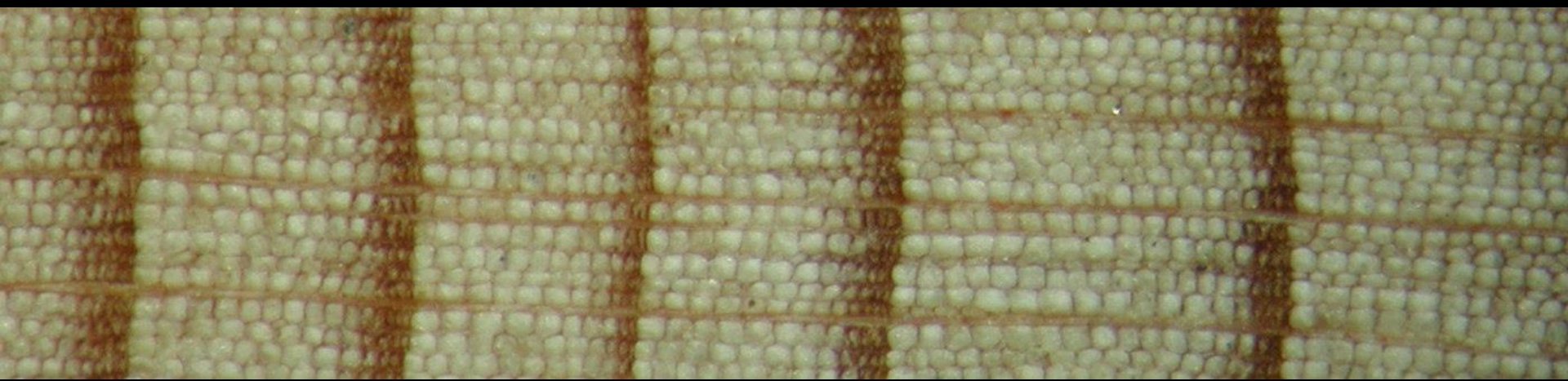
From the Canadian Regional Climate Model version 4

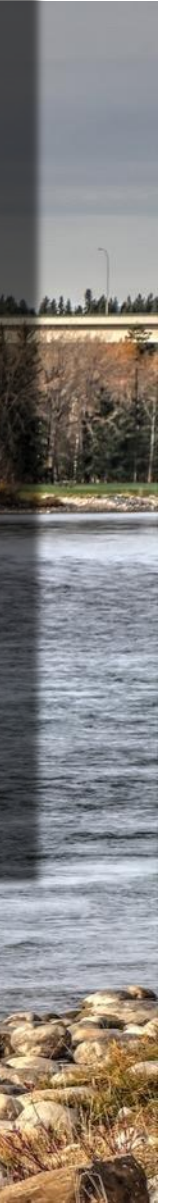
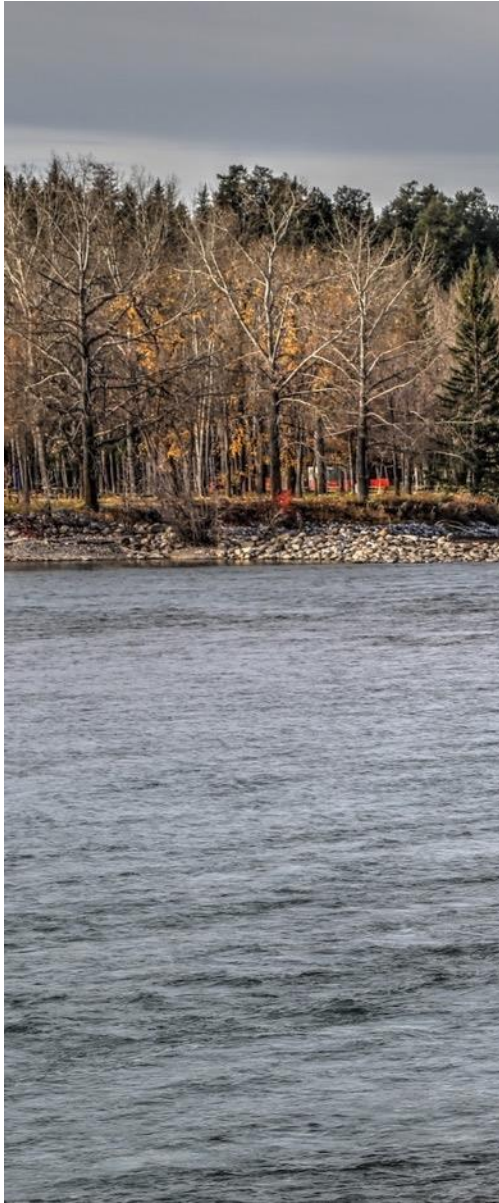


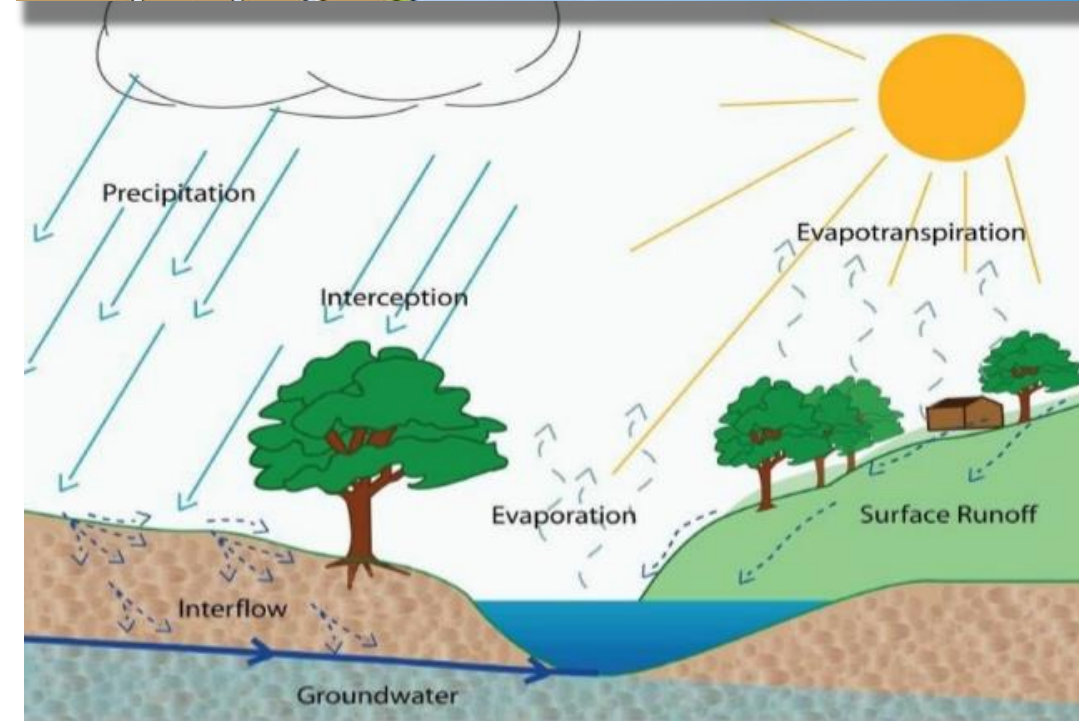
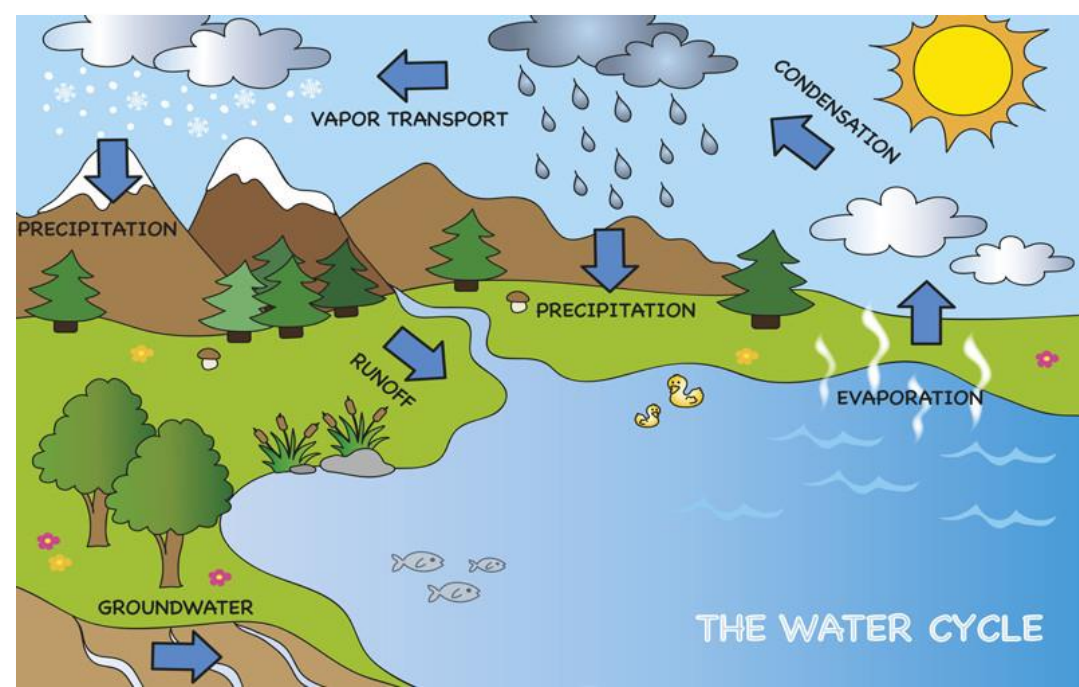
Recent Extreme Events in the Prairie Provinces



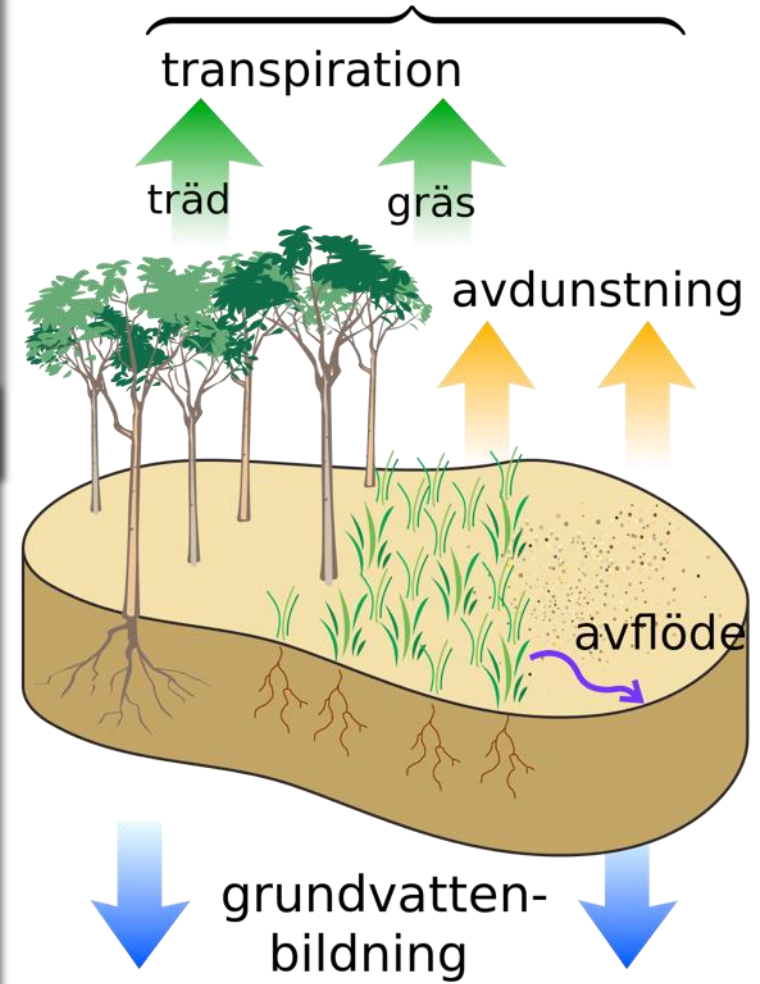
Source: PCC, U of W



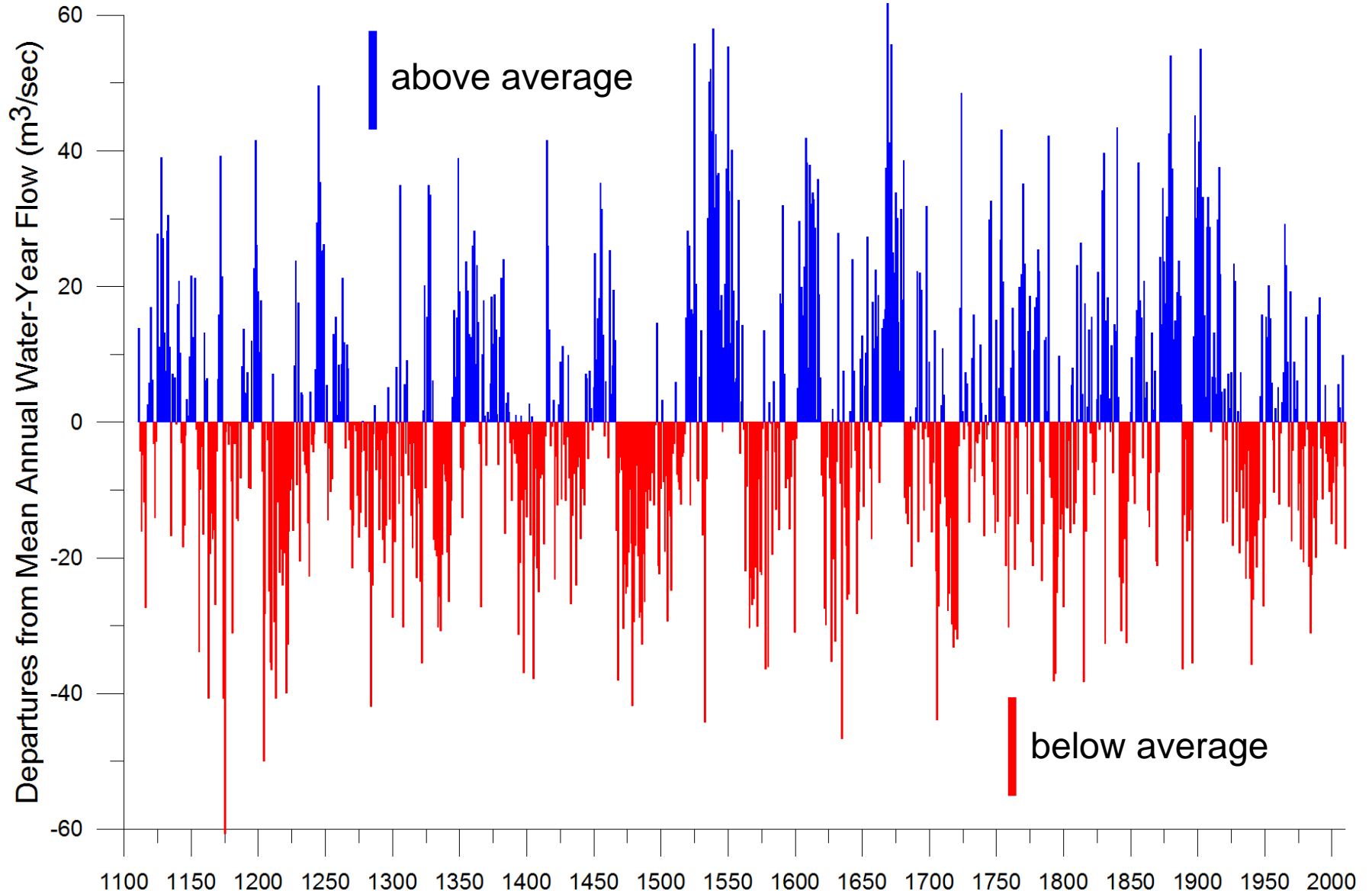




evapotranspiration =
transpiration + avdunstning



Annual Flow of the Bow River, 1111-2010



Winter Precipitation (mm) at Calgary, 1980 to 2100

Data from Canadian RCM version 5

