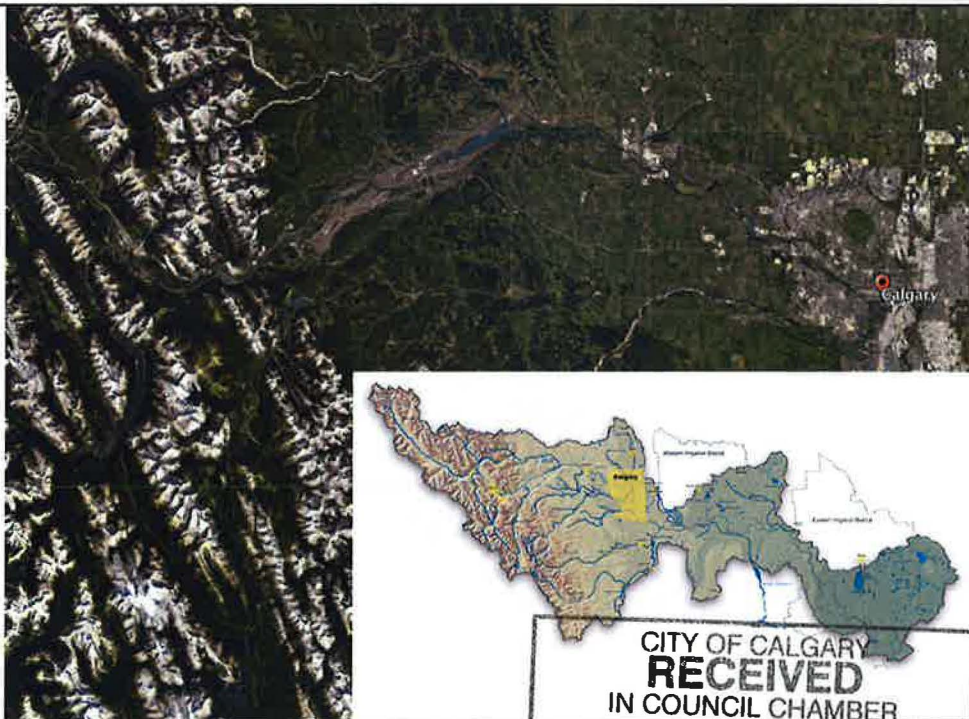


Water Supply and Security

Dr. Dave Sauchyn, Director
Prairie Adaptation Research Collaborative
University of Regina

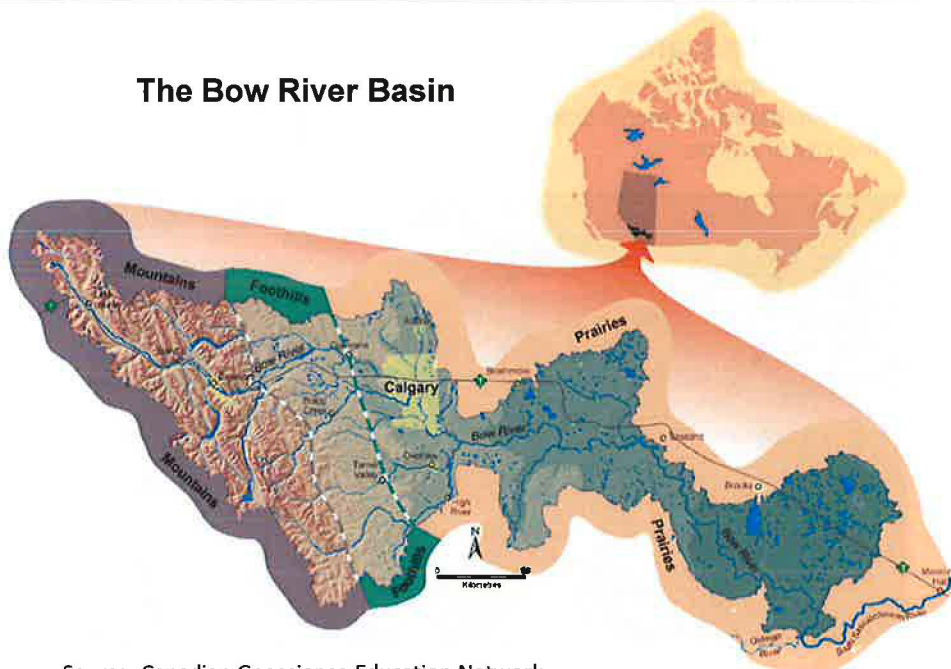


Calgary City Council Strategic Session, 13 May, 2019



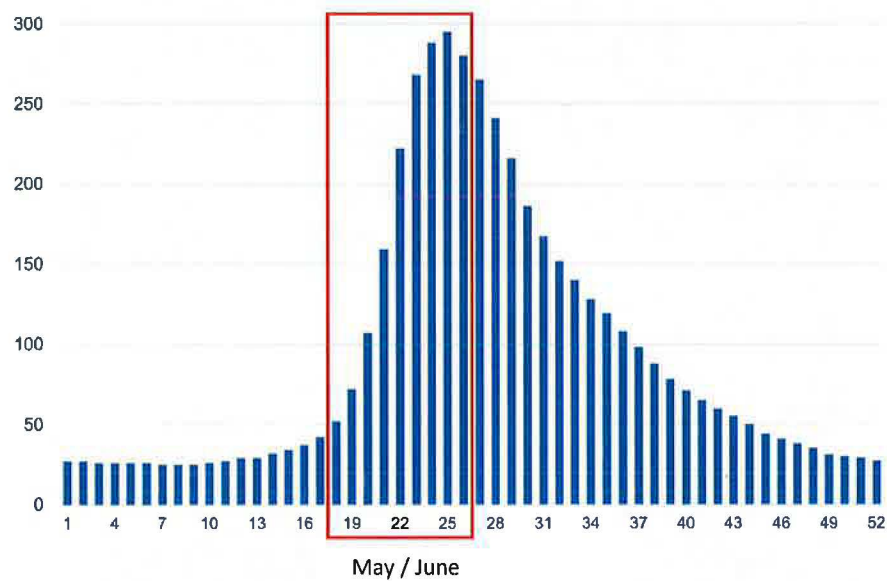
MAY 13 2019
ITEM: CA019-0648
Distribution
CITY CLERK'S DEPARTMENT

The Bow River Basin

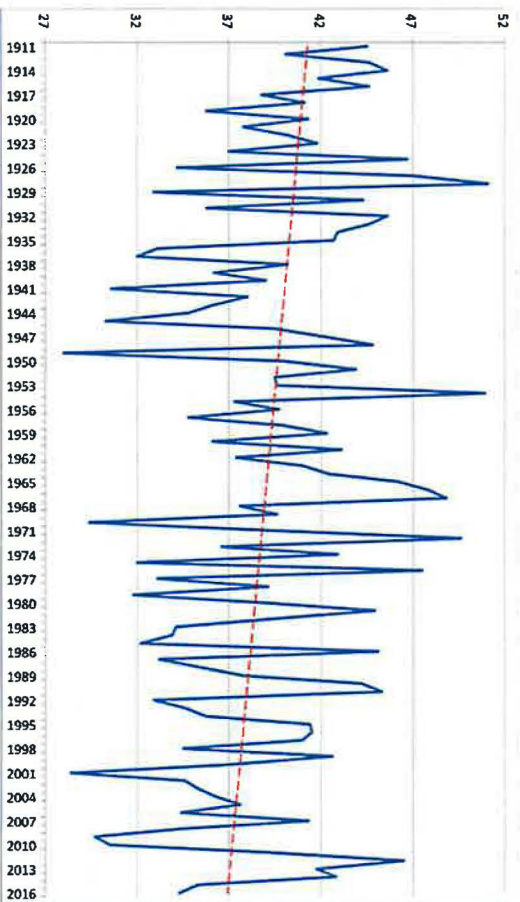


Source: Canadian Geoscience Education Network

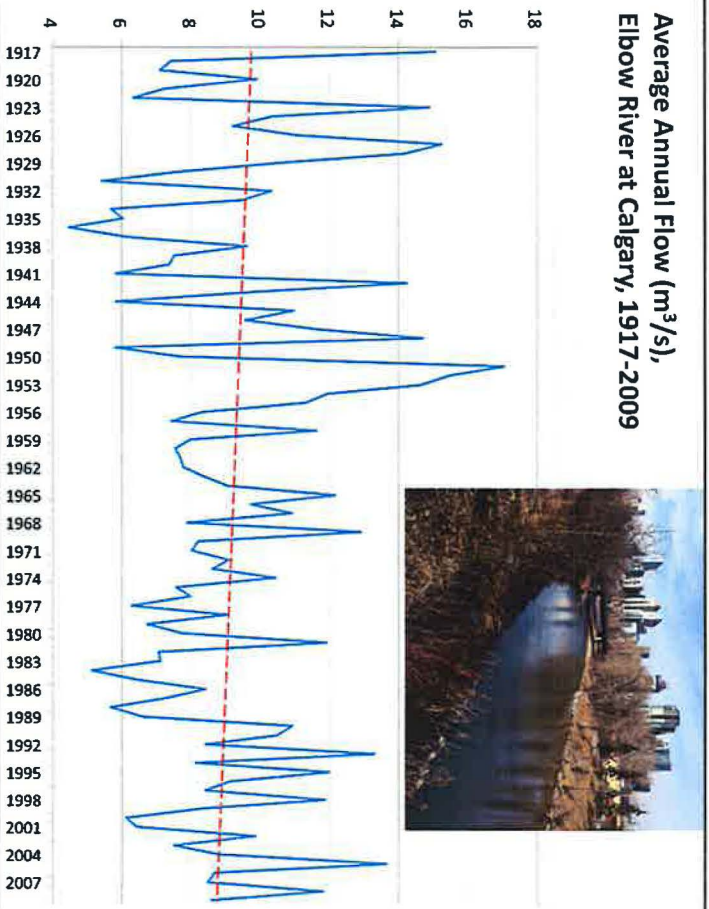
Average Weekly Flow (m^3/s), Bow River at Calgary



Average Annual Flow (m^3/s), Bow River at Banff, 1911 to 2016



Average Annual Flow (m^3/s),
Elbow River at Calgary, 1917-2009



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

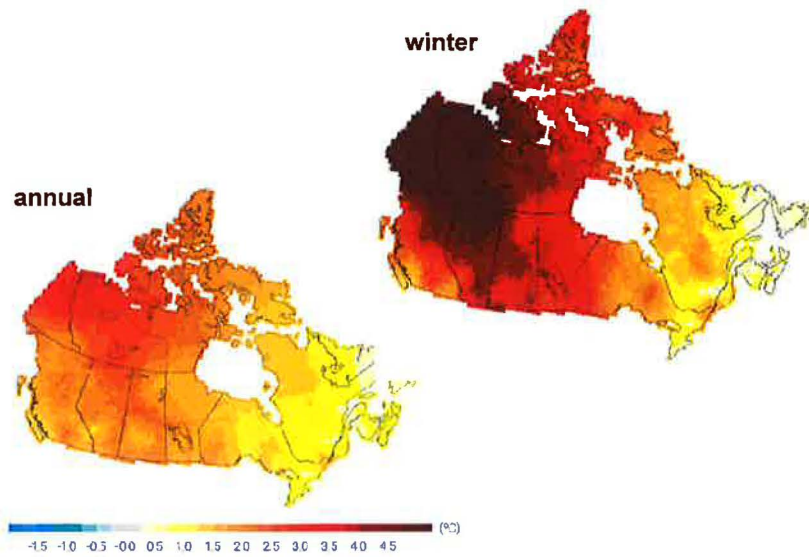
Our Economy

- Costing Impacts and Adaptation
- Economic Sector Perspectives

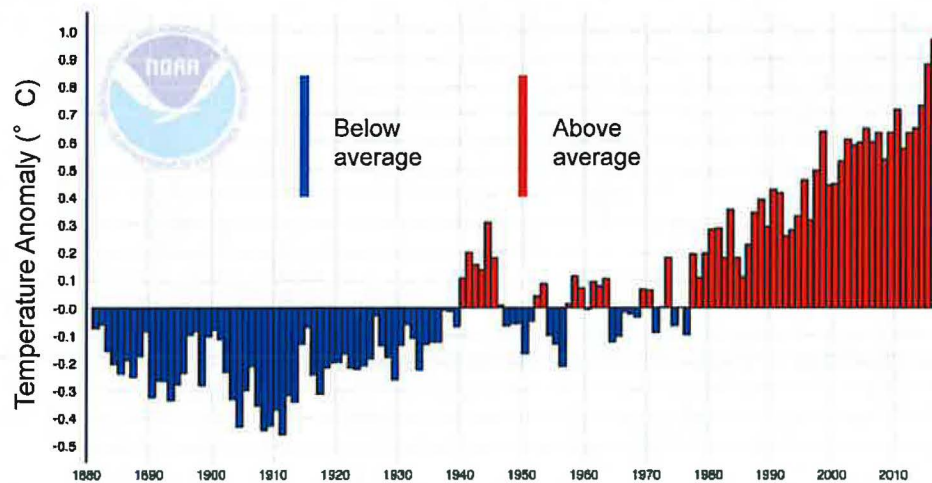
Looking Forward

- International Dimensions
- New and Emerging Issues

Temperature Trends across Canada, 1948-2016

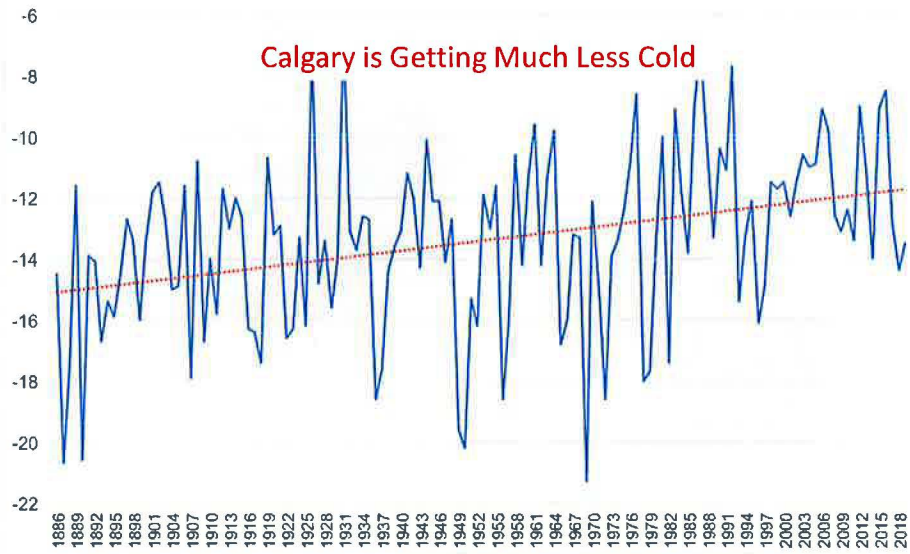


April 2019 marks was the **412th consecutive month** with temperatures above the 20th century average



www.ncdc.noaa.gov/sotc/global/201801

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



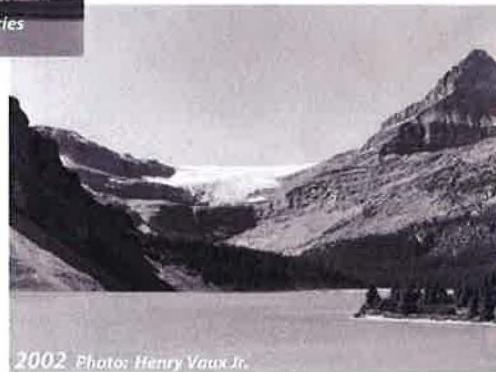
We are losing the advantage of a cold winter





Bow Glacier

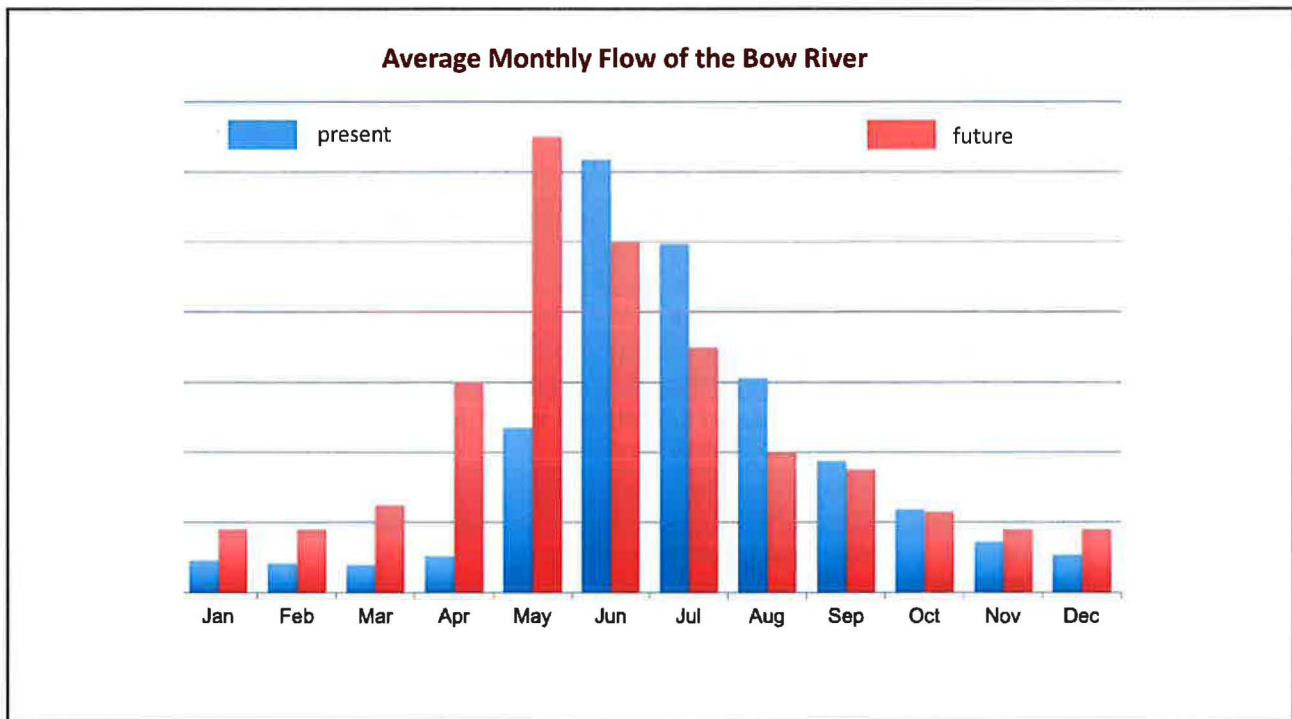
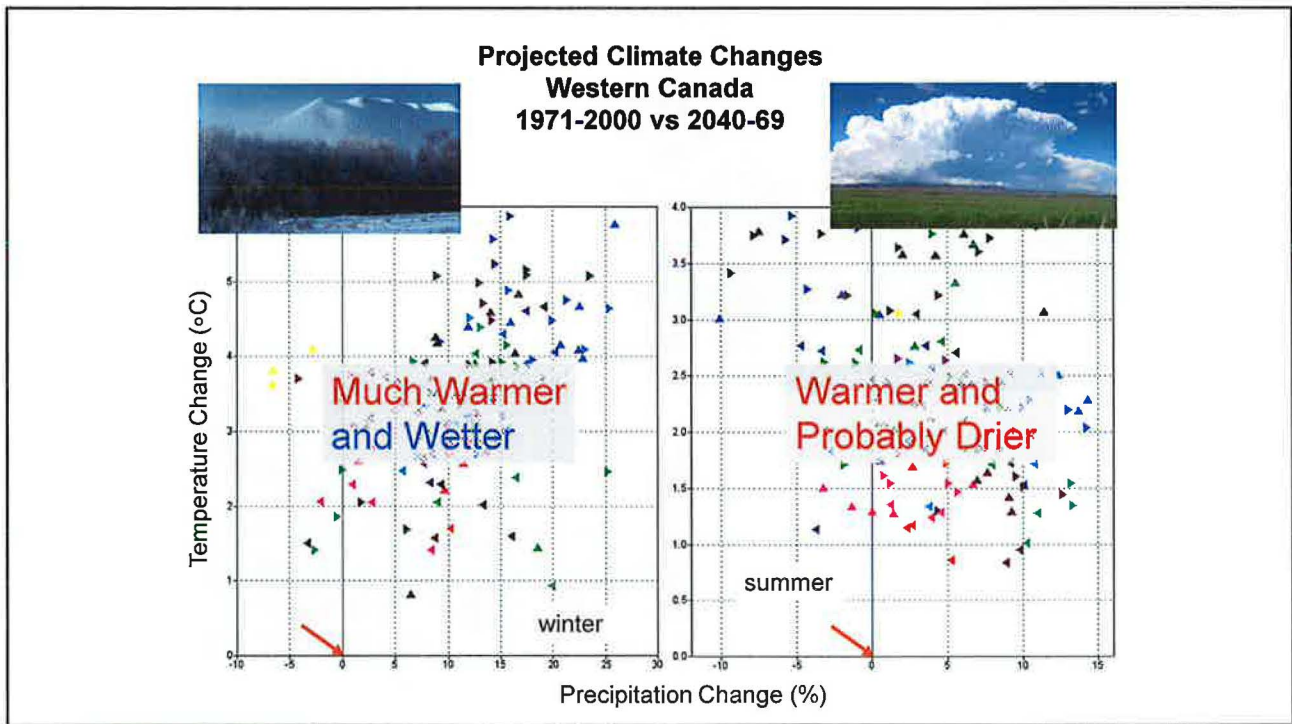
Henry Vaux (2014)
"Legacy in Time"

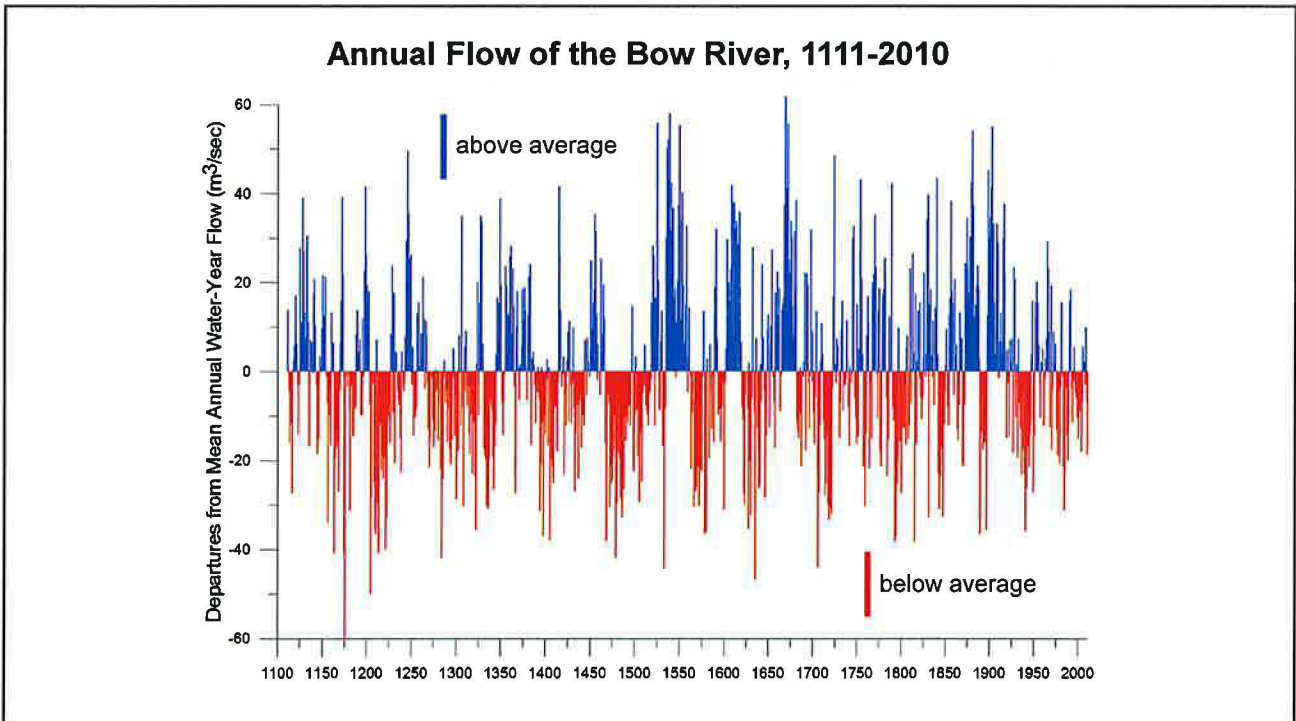
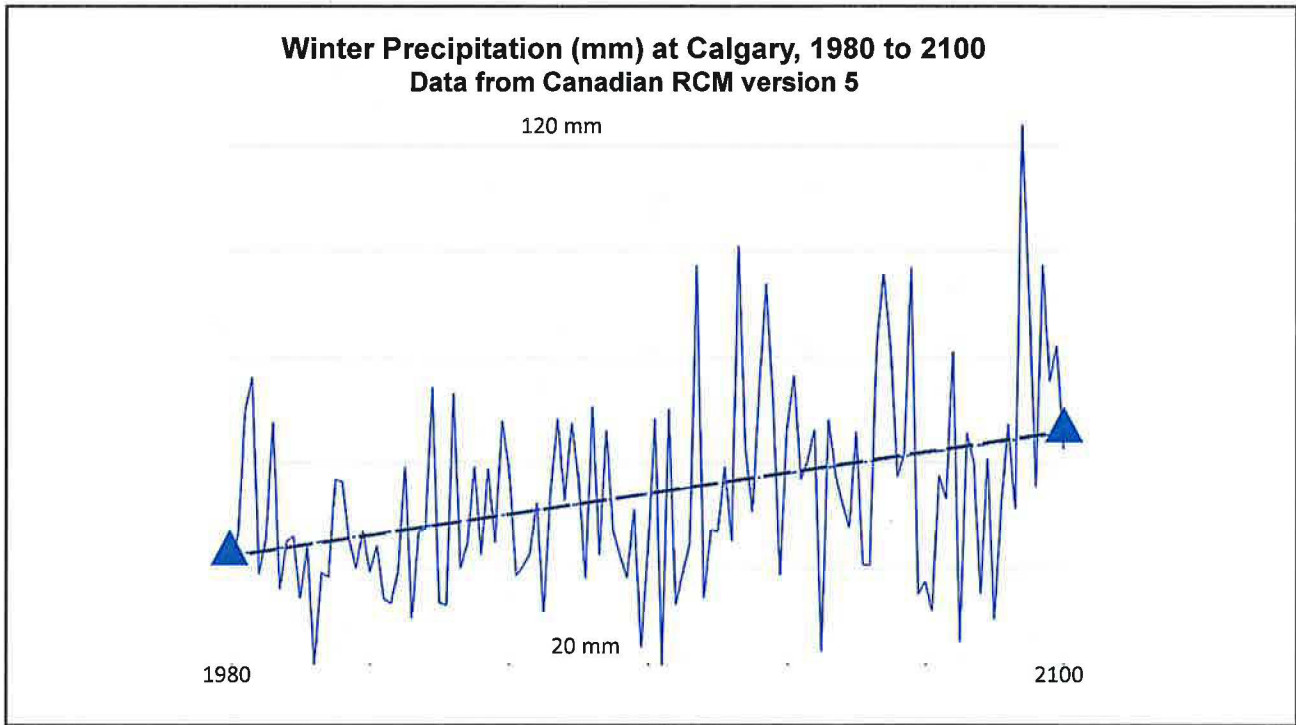


Impact of Climate Change on Water Quality

| Climate event | Resulting Impact in Water Quality |
|--|--|
| Increased precipitation and higher intensity | Increased erosion resulting in increased turbidity, colour and nutrients |
| Higher flows | Increased resuspension of material, increased turbidity |
| Lower flows | Initially reduced turbidity, but large reductions of flows could increase nutrients and other parameters |
| Droughts | Initially reduced turbidity and colour, but large increases when precipitation returns |
| Forest fires | Initial large pulse and extended increase of colour, turbidity and nutrients |
| Warmer temperatures | Increased growth rates of algae? |

Source: EPCOR Water Canada







NEWS CALGARY

Lessons learned in 2005 still could not have prepared for worst flood in Alberta's history, says environment minister ¹⁸

BY KEVIN MARTIN, CALGARY SUN

FIRST POSTED: TUESDAY, JUNE 25, 2013 07:56 PM MDT | UPDATED: TUESDAY, JUNE 25, 2013 08:17 PM MDT

"What Alberta has experienced in this past week was unprecedented"