

Northeast Climate Vulnerability Assessment

Climate Projections

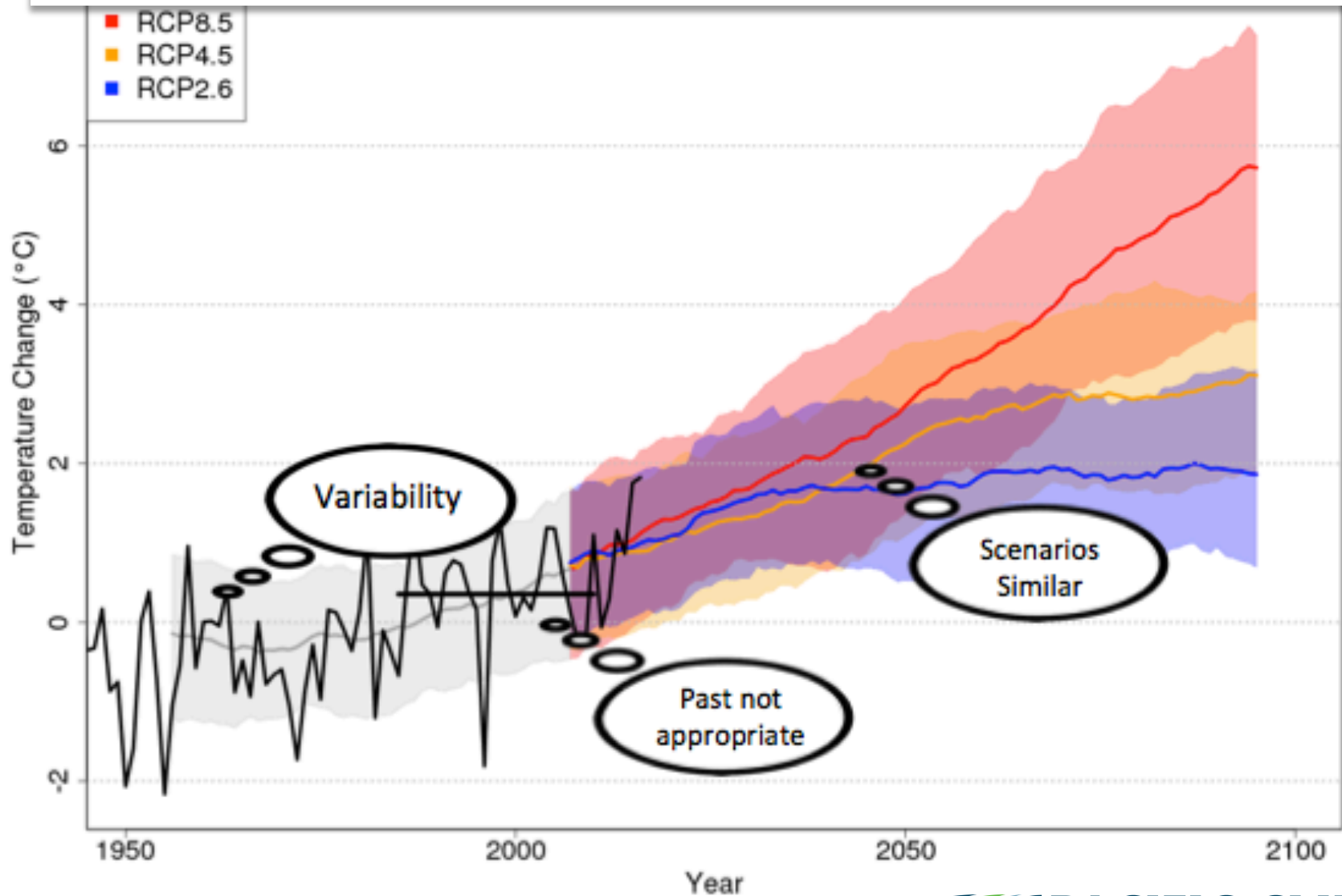


Fraser Basin Council

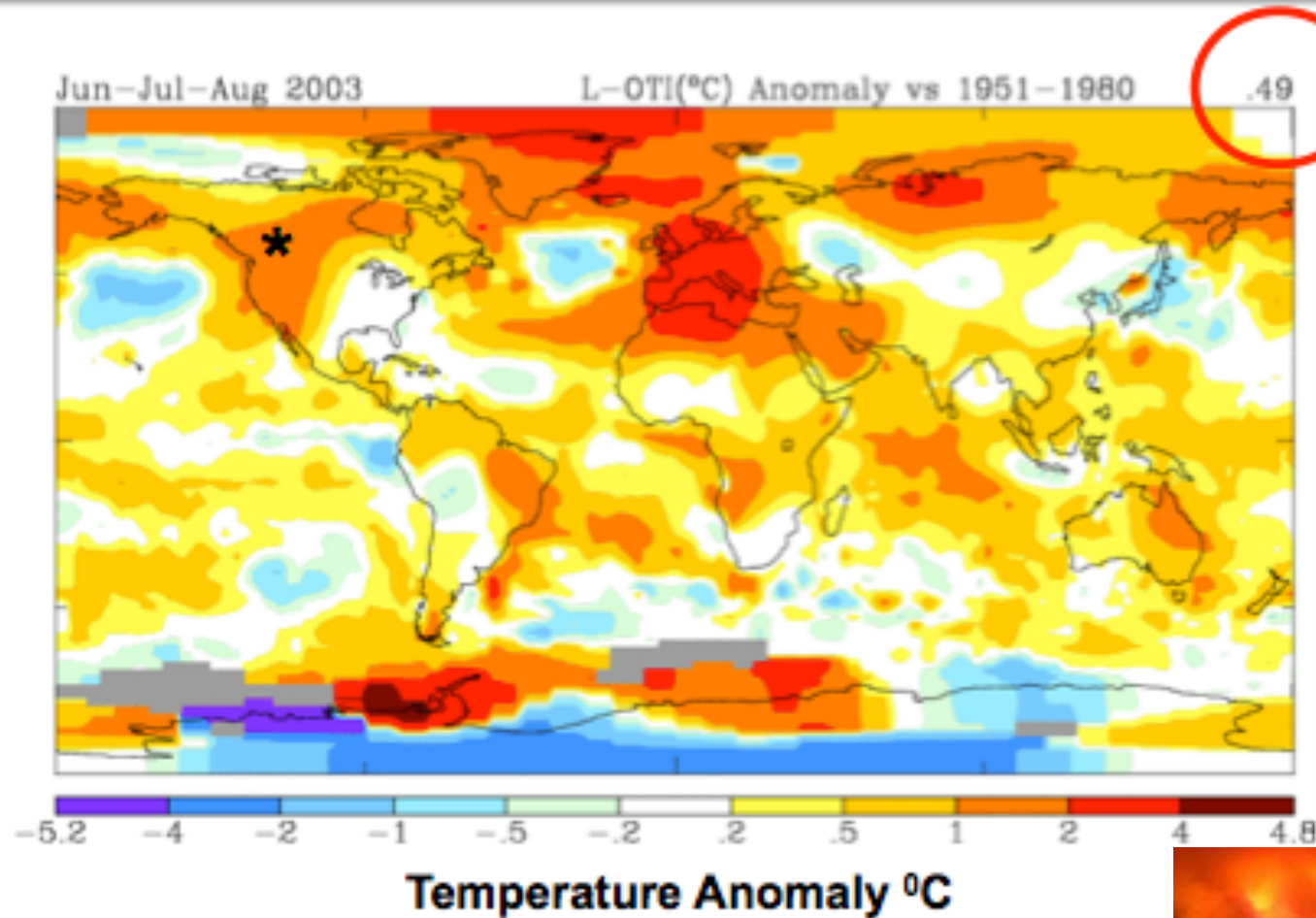


Key Concepts

Future temperature change in BC



Climate is the long-term statistics of weather



 **PACIFIC CLIMATE
IMPACTS CONSORTIUM**

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

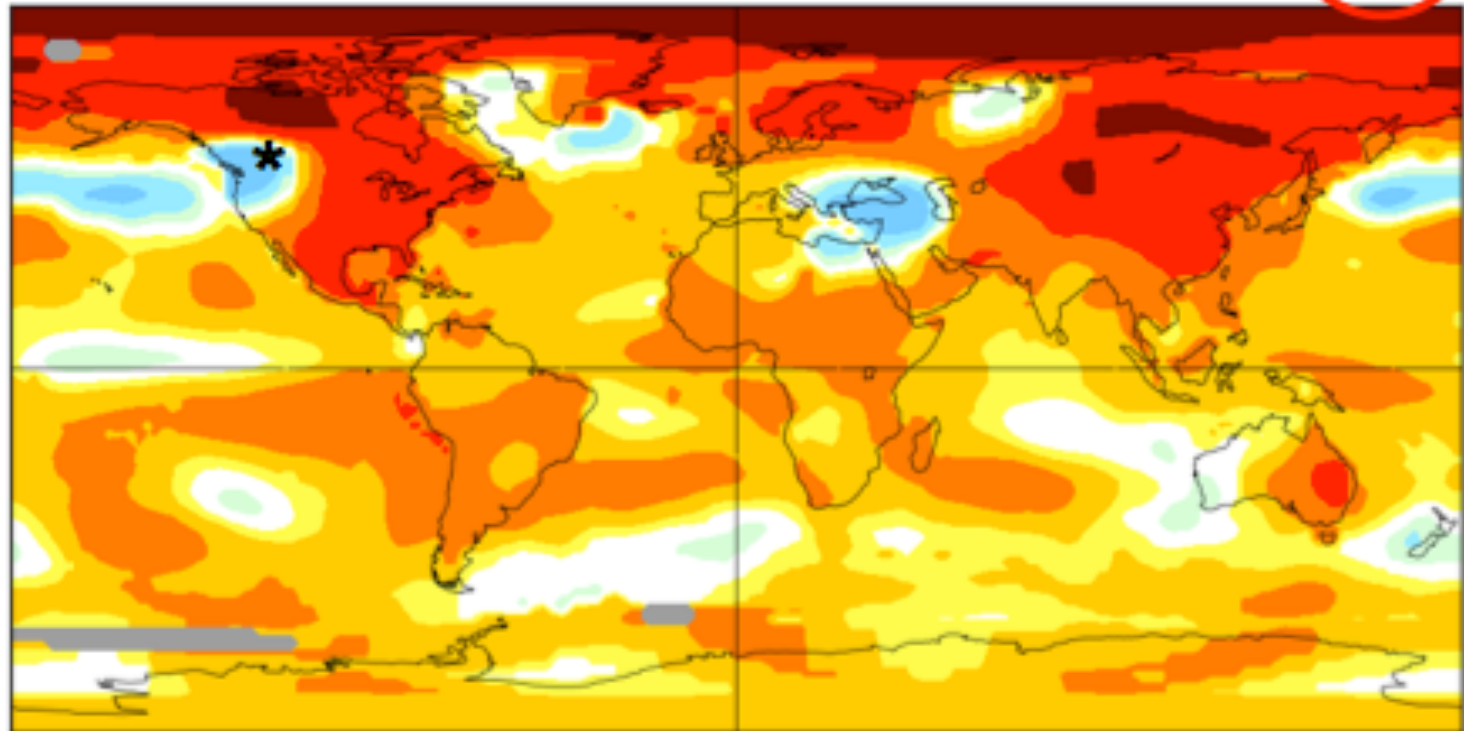


Climate varies by location and with time

Dec-Jan-Feb 2017

L-OTI(°C) Anomaly vs 1951-1980

0.98



-4.1 -4.0 -2.0 -1.0 -0.5 -0.2 0.2 0.5 1.0 2.0 4.0 6.3

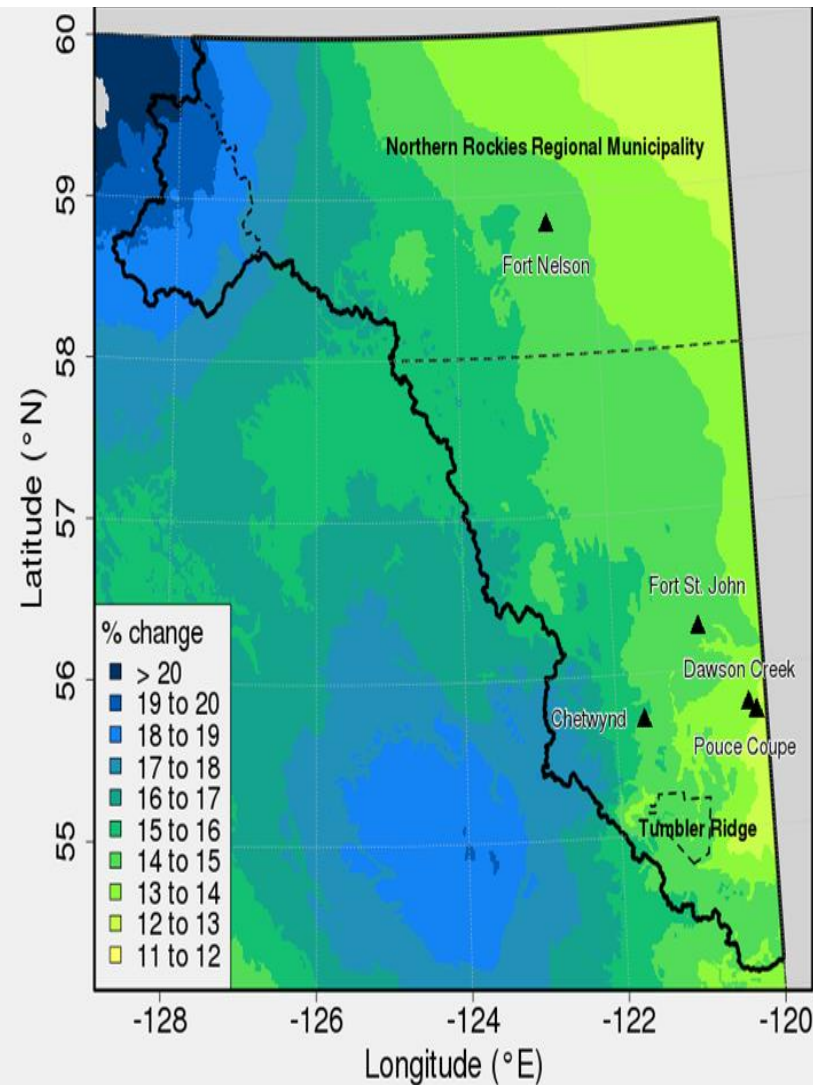
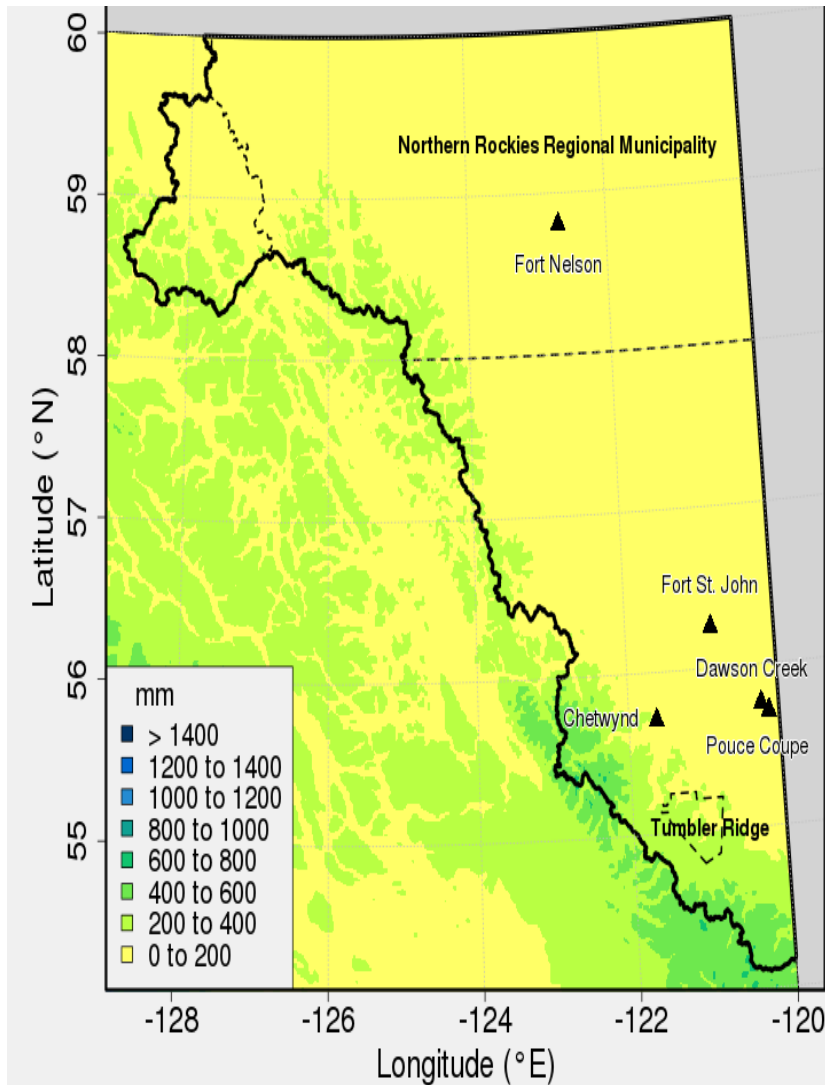
Temperature Anomaly °C



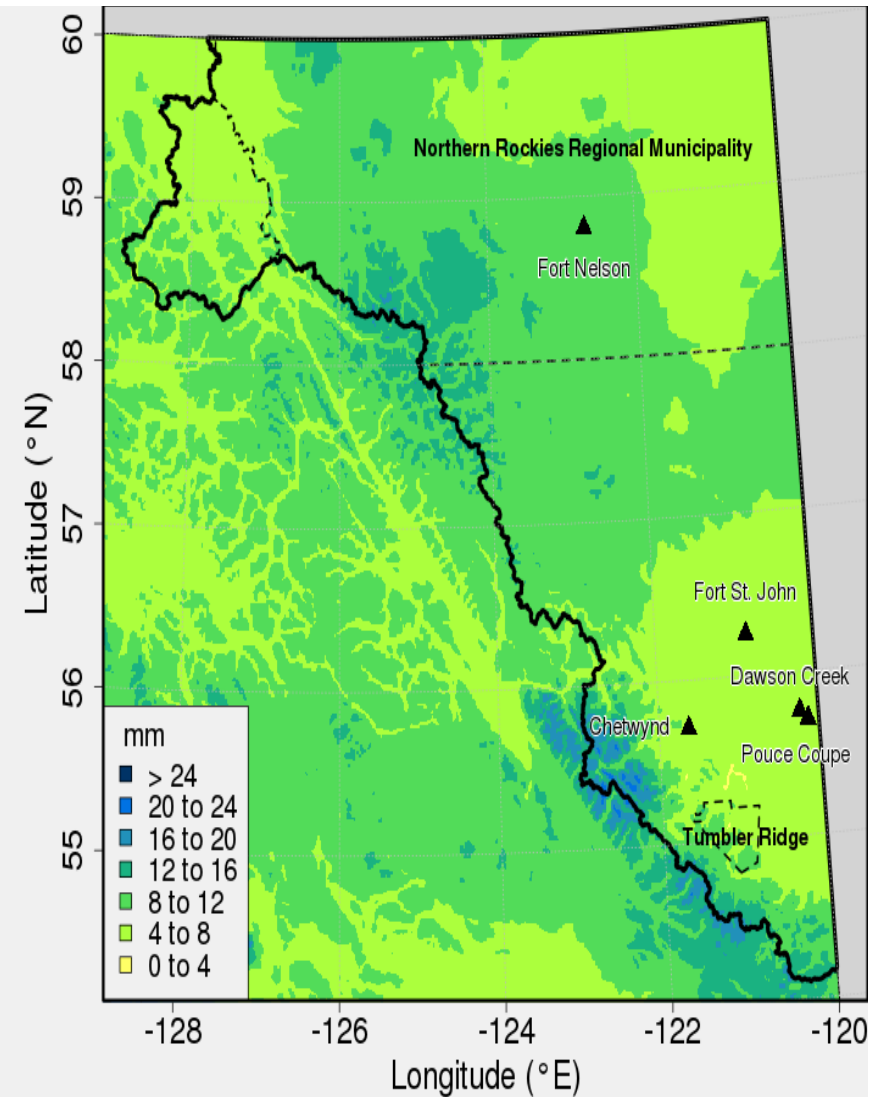
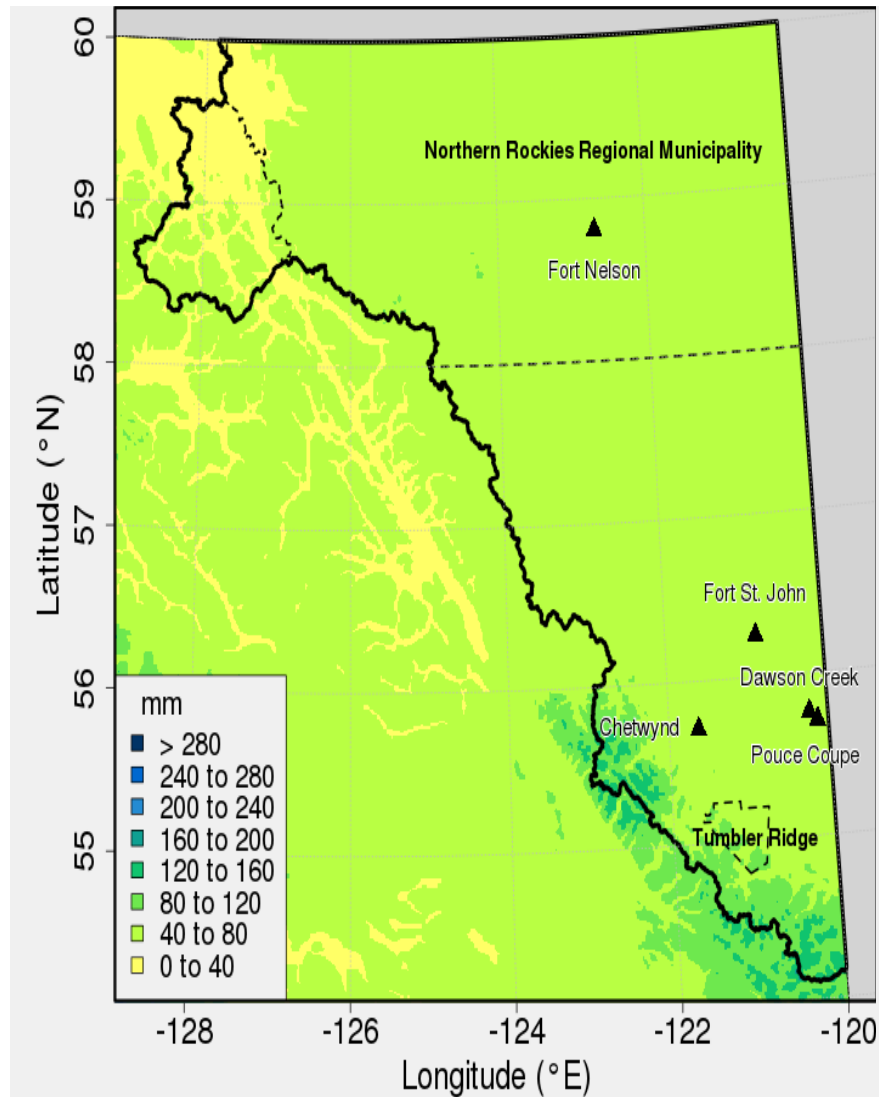
<https://bit.ly/2REZNUR>

Projections

Increased average precipitation in all seasons



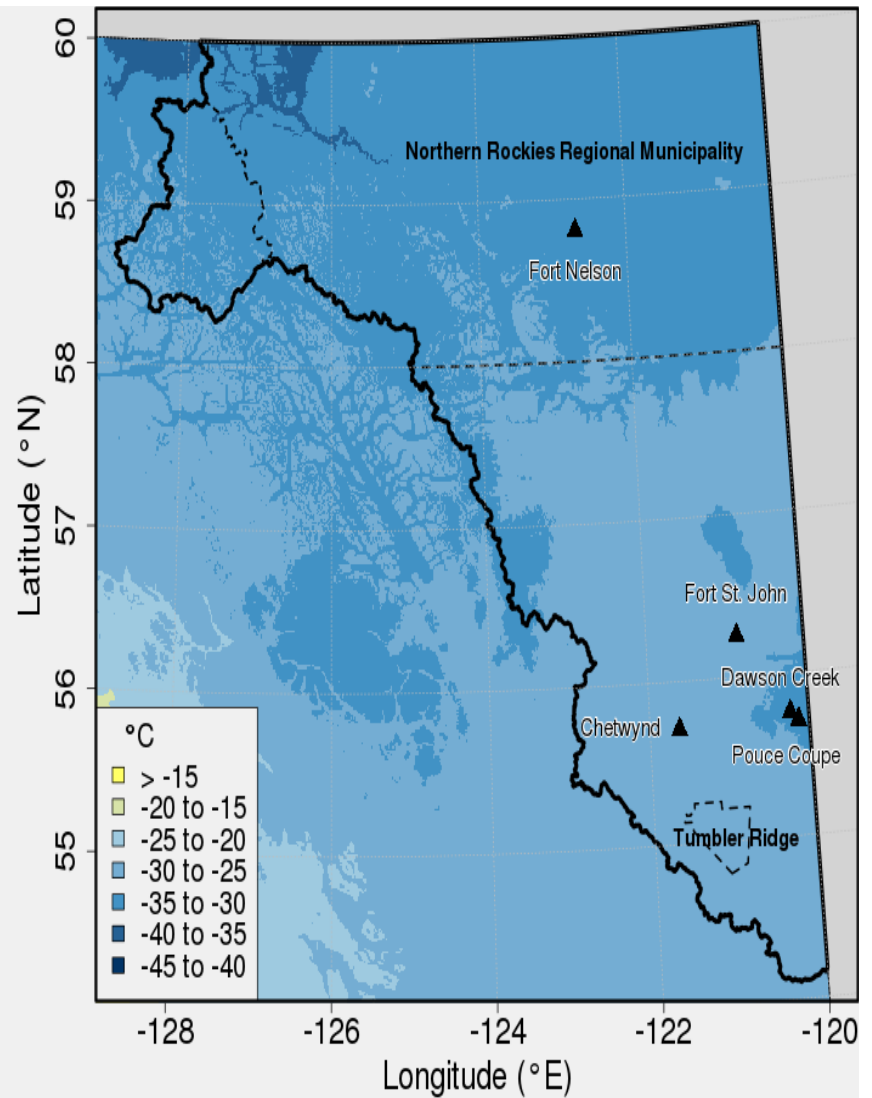
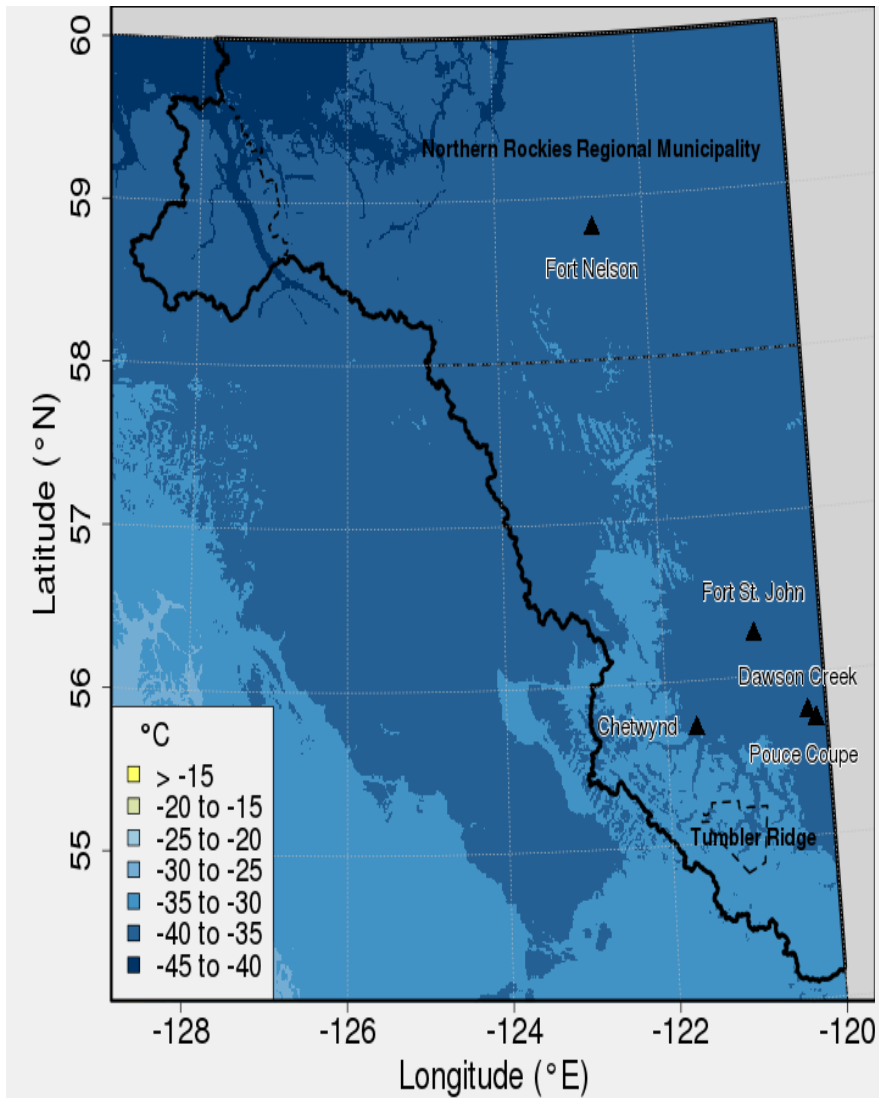
Increased precipitation on wet days



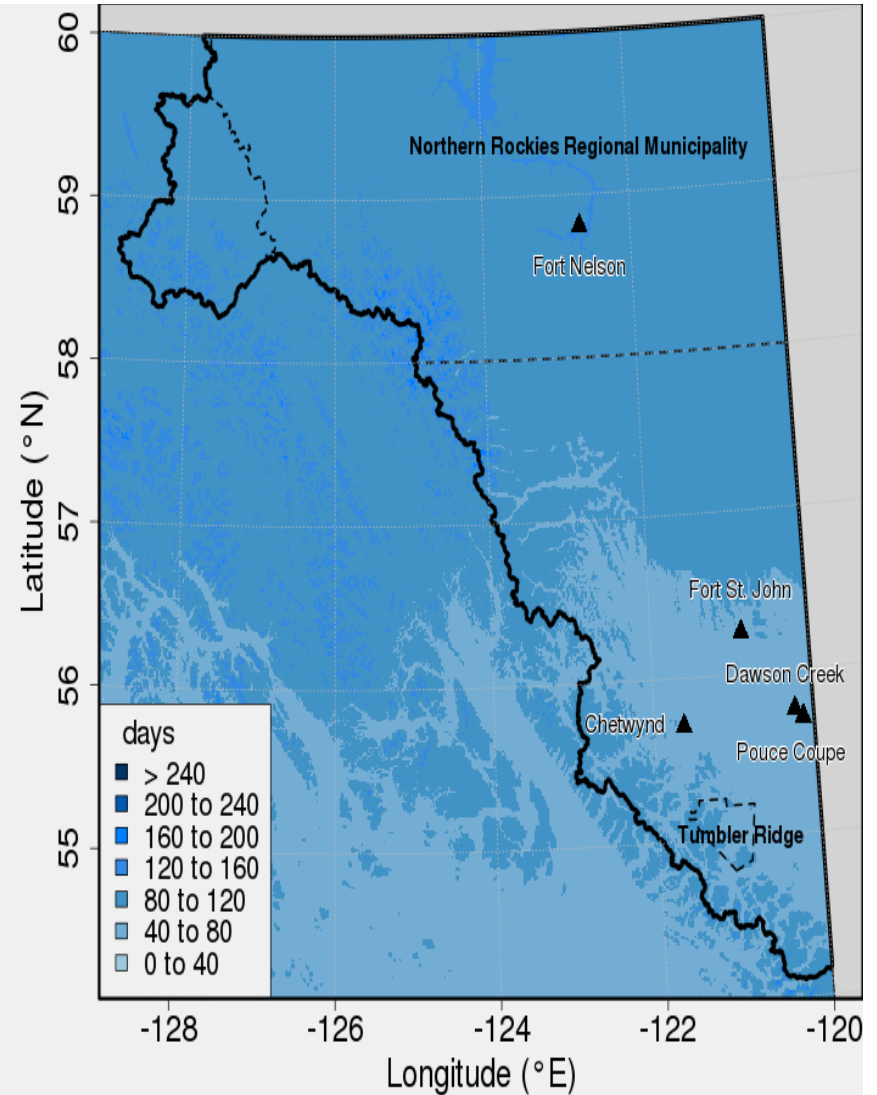
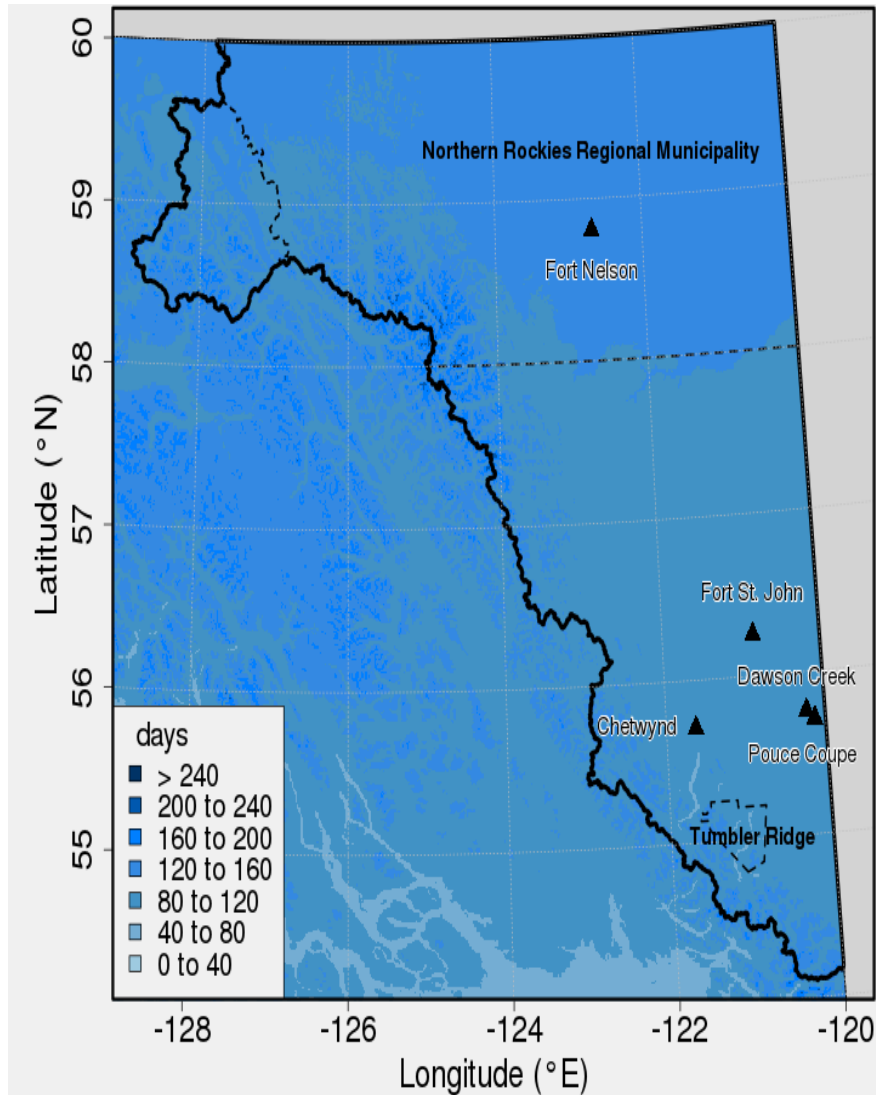
Heavy Precipitation - Impacts

- Localized flooding and sewer surcharge
- Strain and stress on municipal wastewater systems and private layouts and dugouts
- Damage to key transportation infrastructure including highway washouts

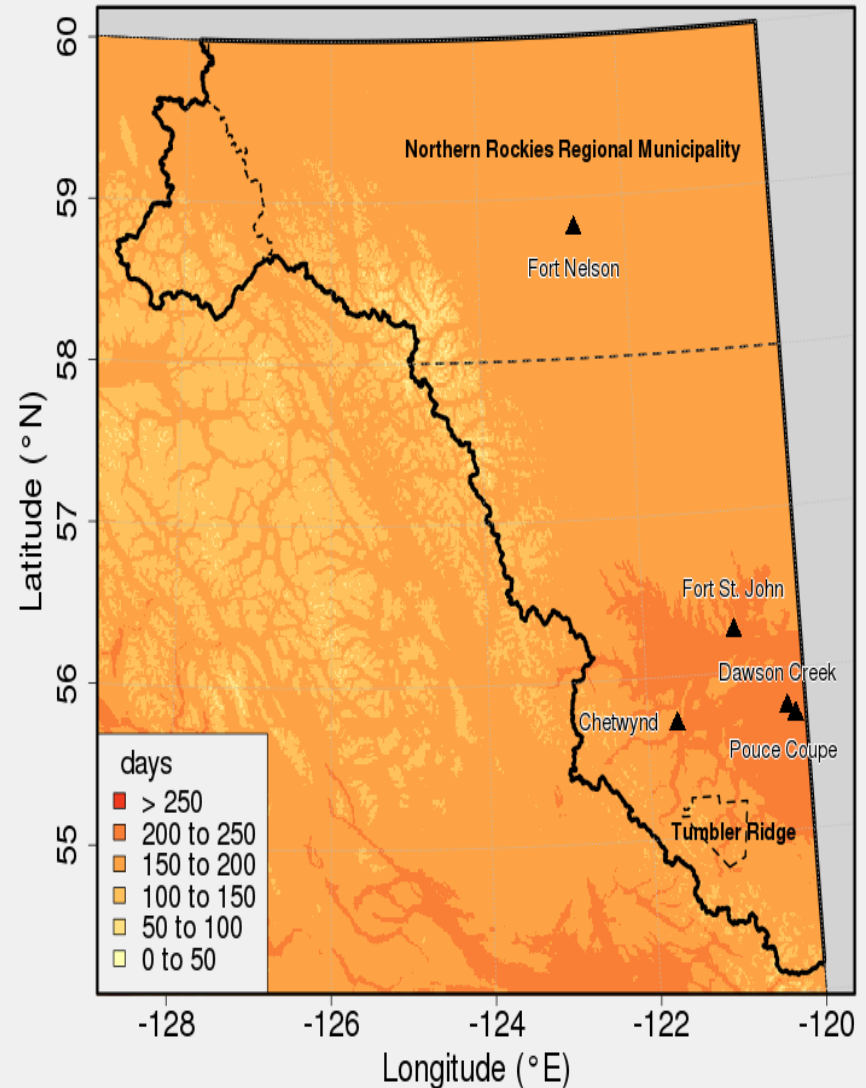
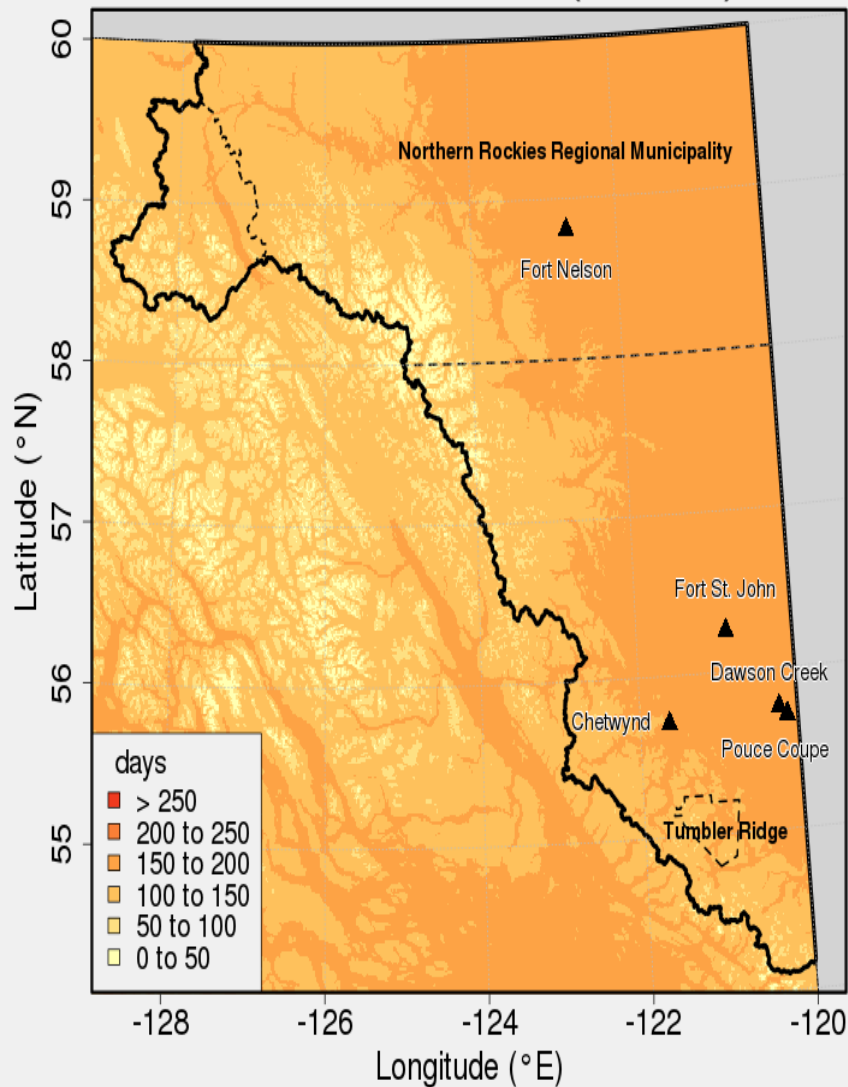
Coldest days less cold



Fewer cold days



Longer potential growing season



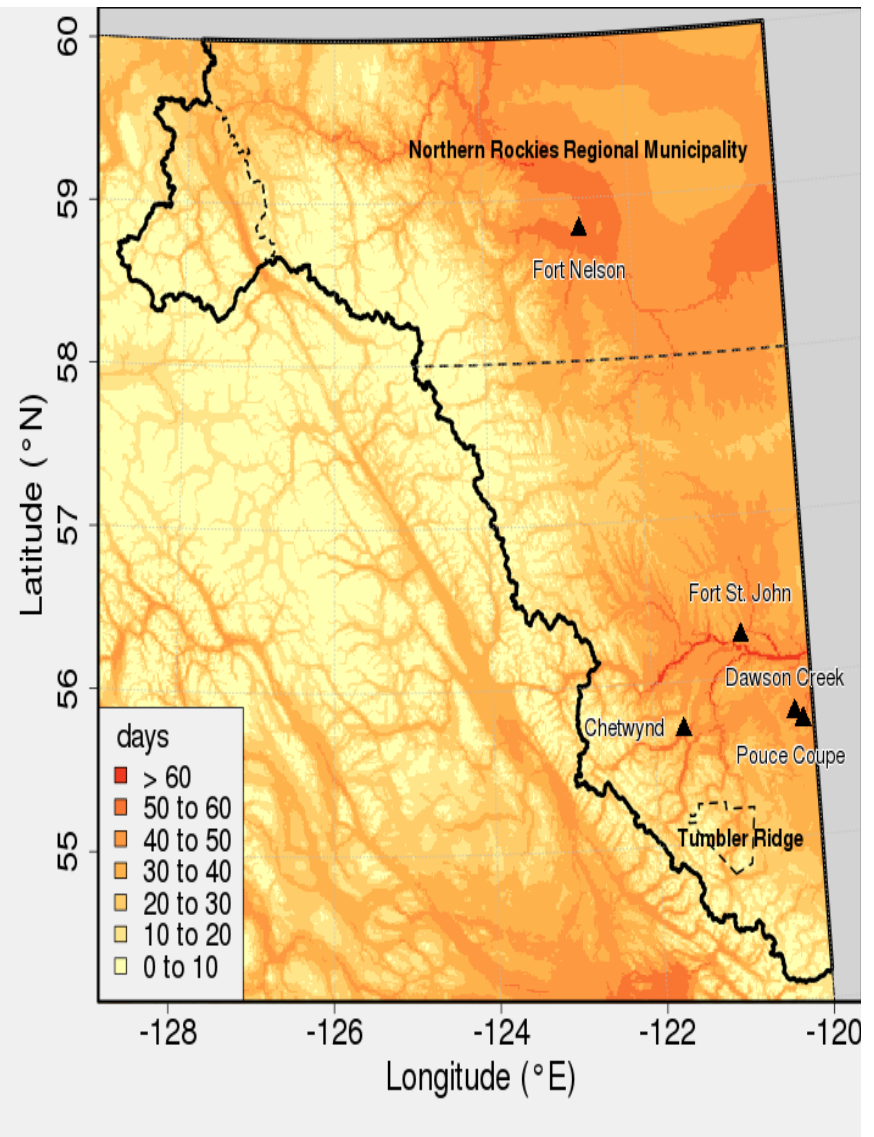
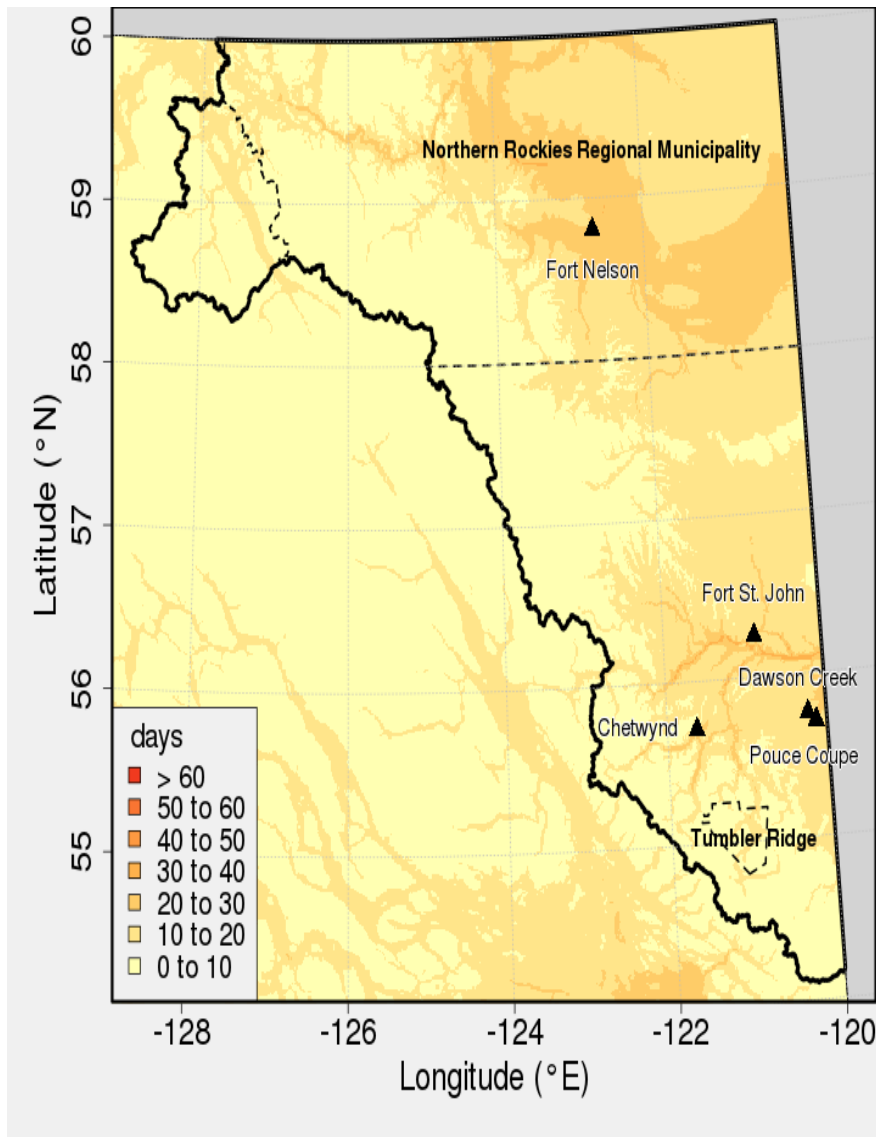
Warmer Winters - Impacts

- Increasing freeze-thaw cycles decrease durability of infrastructure
- Increasing pest infestations negatively impact agriculture and forestry (spruce beetle)
- Rain on snow causes street flooding and closures and damage to nearby infrastructure.
- Affects dormancy requirements negatively affecting the value of haskap berry

Poll Question

Which impact from warmer winters was not rated high risk?

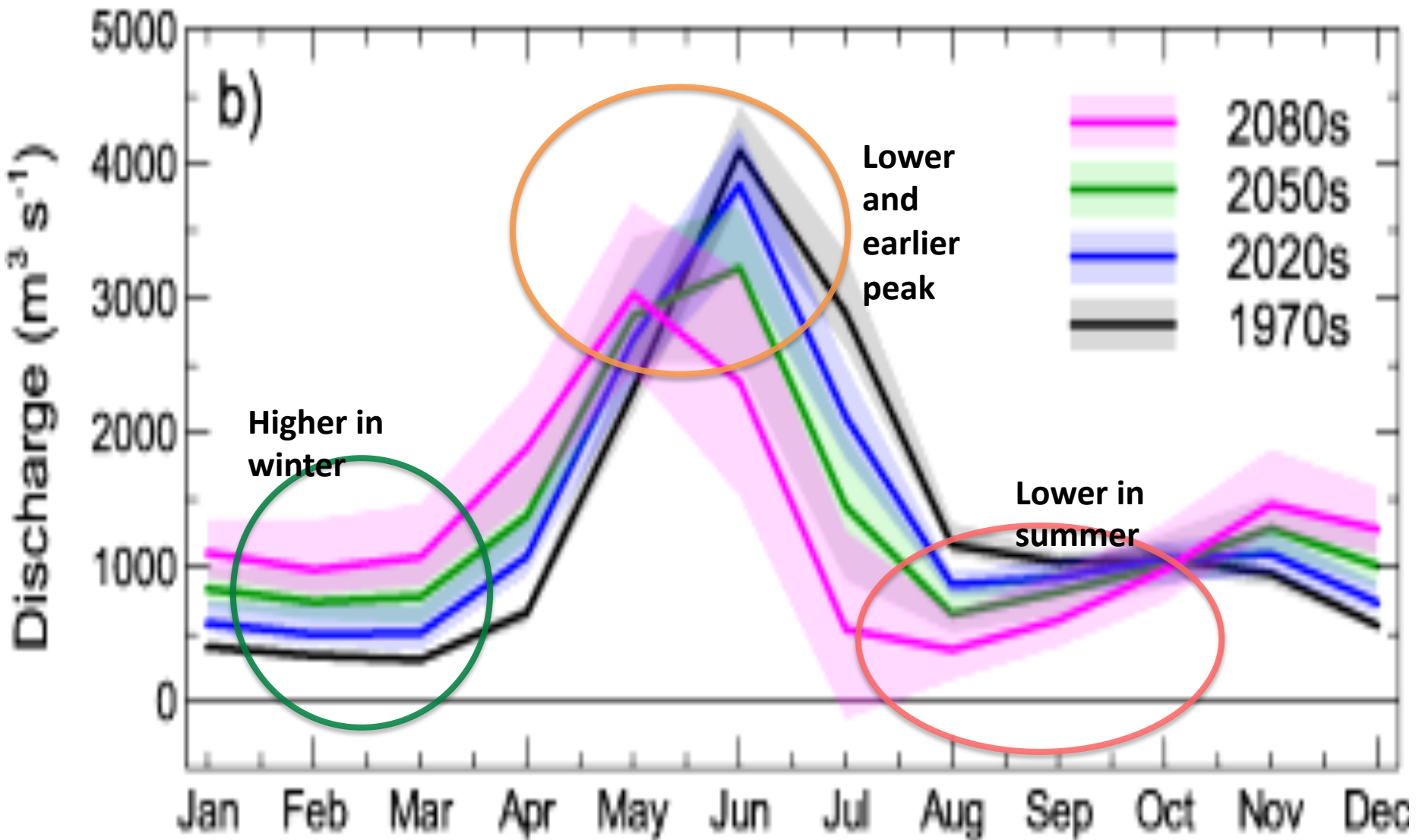
Increased hot days



Hotter Summers - Impacts

- Increased wildfire risk in nearby large forested areas
- Impacts to community health due to poor air quality
- Inability to discharge effluent due to low flow
- Increases potential for drought and decreased water supply in late summer

Future streamflow: Peace River @ Taylor



Statistical emulation of streamflow projections from a distributed hydrological model: Application to CMIP3 and CMIP5 climate projections for British Columbia

Water Resources Research

Volume 50, Issue 11, pages 8907-8926, 19 NOV 2014 DOI: 10.1002/2014WR015279

<http://onlinelibrary.wiley.com/doi/10.1002/2014WR015279/full#wrcr21222-fig-0010>

Riverine Flood Risk - Impacts

- Increase costs and require more capacity for clean-up and restoration
- Contribute to cumulative anxiety, stress and mental health challenges
- Cause avulsions and bank erosion impacting aquatic habitat
- More atypical flow patterns impact water management

Extreme events - Impacts

- Impact transportation leading to isolation from critical services, jobs, evac routes
- Cause more frequent power outages
- Puts pressure on the capacity of community volunteers including ESS and fire fighters
- Decreases the durability of infrastructure
- Increasing demands on municipal resources

Projections - Summary

Poll Question

- In which season is rainfall decreasing in the Northeast?



General Trends

Precipitation

- More rain in autumn and spring, summers still the wettest
- More intense storms

Temperatures

- Higher temperatures year round
- Longer growing season length

Snowpack and Streamflow

- Earlier peaks, higher winter flows, less snowpack



THANK YOU

Erica Crawford: erica@shiftcollaborative.ca

Tamsin Mills: adaptcollaborative@gmail.ca

Kerri Klein: Kerri@shiftcollaborative.ca

www.shiftcollaborative.ca

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