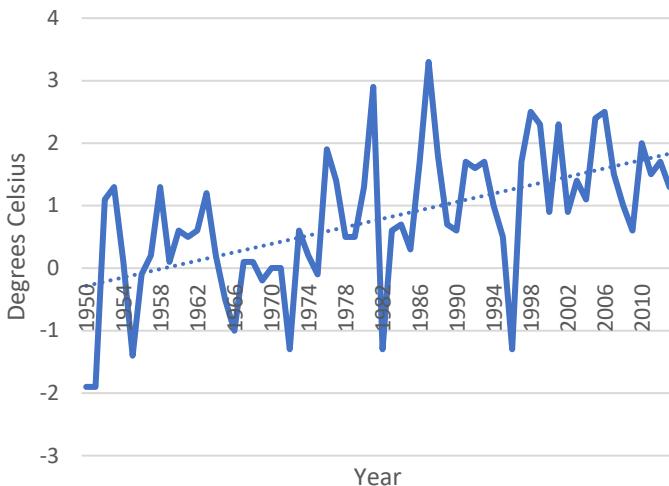


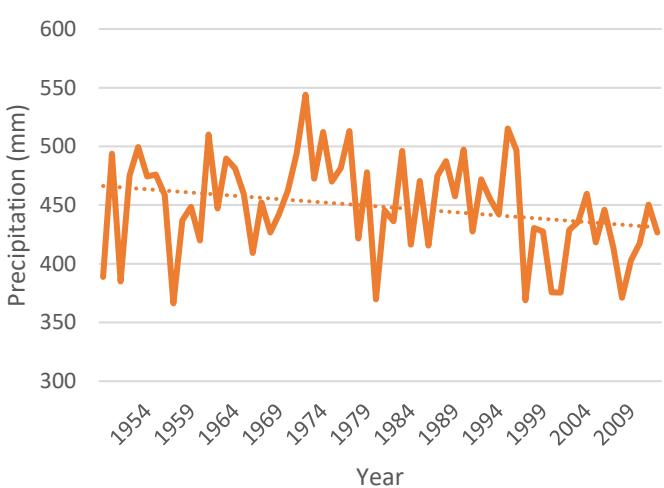
Climate Change in Alberta

Over the last 63 years, mean yearly temperatures have seen an upward trend. Yearly precipitation has declined over the last 63 years but are predicted to rise steadily over the next 70 years. Models based on the RCP4.5 vary in their estimates of increasing temperatures and precipitation but all of them predict an increase in these parameters. Plant hardiness zones have expanded northward, and greenhouse gas emissions saw little change between 2013 and 2017.

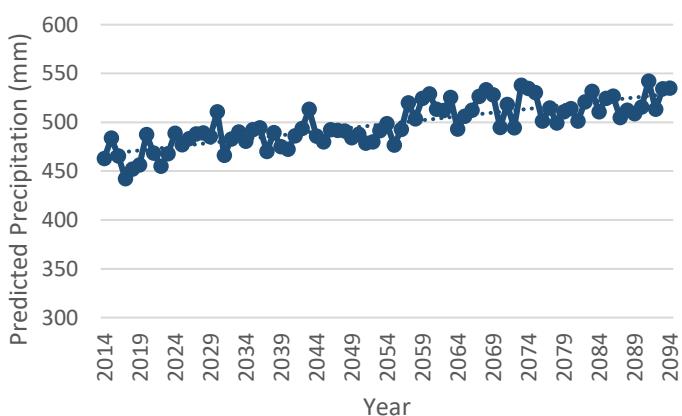
Mean yearly Alberta Temperatures (1950-2013).



Historical Precipitation for Alberta (1950-2013).



Predicted precipitation change for Alberta according to 24 models (2014-2095).

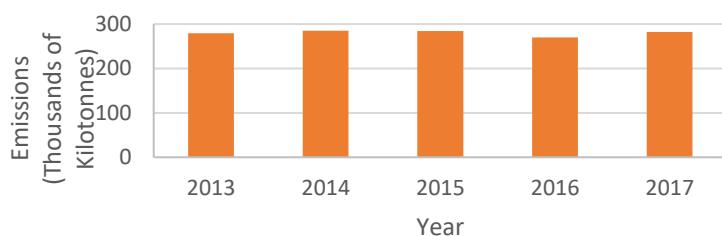


The Representative Concentration Pathway 4.5 (RCP4.5) provides a common platform for studying anthropogenic impacts. It makes assumptions based on historical data on expected future emissions, land use, energy use, and future technologies.

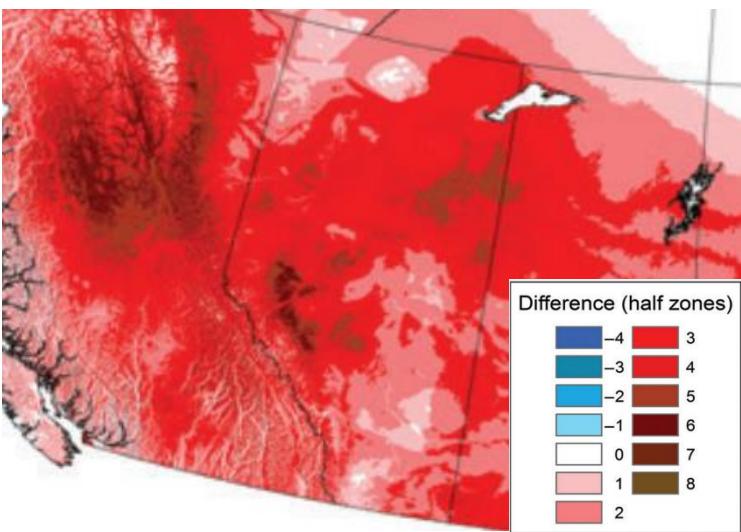
Mean annual temperature and precipitation change predictions by 2050s under the RCP4.5 scenario.

AOGCM (model)	Region			
	Alberta	Canada		
INM-CM4	1.9°C	6mm	1.9°C	6.8mm
CNRM-CM5	2.3°C	4mm	2.9°C	11mm
CCSM4	2.8°C	4mm	3.3°C	9.5mm
MPI-ESM-LR	3.0°C	7mm	3.4°C	11mm
IPSL-CM5A-LR	3.2°C	5mm	3.4°C	14mm
HadGEM2-ES	3.6°C	7mm	4.6°C	19mm
GFDL-CM3	3.2°C	24mm	5.7°C	27mm

Physical flow account for greenhouse gas emissions, Alberta (2013 – 2017).



Plant hardiness zone changes between 1931-1960 values and 1981-2010 values. Shows half zone differences.



Climate Atlas of Canada: Alberta. 2020. https://climateatlas.ca/data/prov/1/annual_meantemp_2030_85/line

University of Alberta. Andreas Hamann's personal website: Historical and projected climate data for North America. <https://sites.ualberta.ca/~ahamann/data/climate.html>

McKenney, D. W., Pedlar, J. H., Lawrence, K., Padadpol, P., Campbell, K., & Hutchinson, M. F. (2014). Change and evolution in the plant hardiness zones of Canada. *BioScience*, 64(4), 341-350. doi: 10.1093/biosci/biu016

