



ALBERTA INNOVATES

Research and Innovation Project – Knowledge Transfer Summary

- Project Title:** Rocky Mountain Water Supply Resilience and Vulnerability Evaluation
- Project No:** 2347
- Project Lead:** John Pomeroy, University of Saskatchewan
- Partners:** Alberta Innovates, University of Saskatchewan, Alberta Agriculture and Forestry (AAF), Alberta Environment and Parks (AEP), Parks Canada, Environment and Climate Change Canada, Natural Resources Canada, City of Calgary, Spray Lakes Sawmills, Bow River Basin Council, Fortress Mountain Resort , Nakiska Ski Resort, Brewster Travel Canada, University of Calgary, McMaster University, University of Waterloo
- Status:** Ongoing

Project Summary:

In the last few years Alberta has been impacted by severe mountain-derived flooding (2013) and drought (2015) that have caused flood damages exceeding \$6 billion and drought damages to tourism, ecosystem health, and food and energy production (un-estimated at this point). These water crises suggest that the reliability and safety of Alberta's mountain waters are at risk, and therefore risks associated with climate change and extreme weather need to be reassessed and the potential to manage mountain watersheds for water resiliency re-examined.

The project will determine how climate, headwater basin forest cover and topography control streamflow generation and how this varies across the Bow and Elbow river headwaters. It will also assess whether these basins enhance or dampen the effects of climate change, floods and droughts on downstream streamflow, and how forest management can be used as a tool to promote water resource resiliency to climate change and extreme weather events. This project will use instrumented research watersheds, enhanced computer models, and a team of highly skilled graduate student, postdoctoral scientists and engineers to: 1) better understand governing hydrological processes for mountain water supply; 2) demonstrate improved numerical prediction of mountain streamflow using this understanding; and 3) better assess historical and future mountain water resiliency in the Bow and Elbow river basins using this hydrological model, historical observations and climate model outputs.

Outcomes:

None available.

Links:

[Global Waters Future Initiative](#)

Alberta Innovates Contact:

Brett Purdy

brett.purdy@albertainnovates.ca