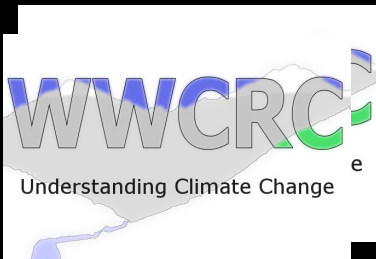


# ***What We Can Learn From The Ice***

*Science & the Future Landscapes of the Canadian West*

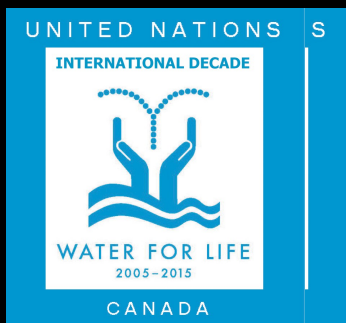
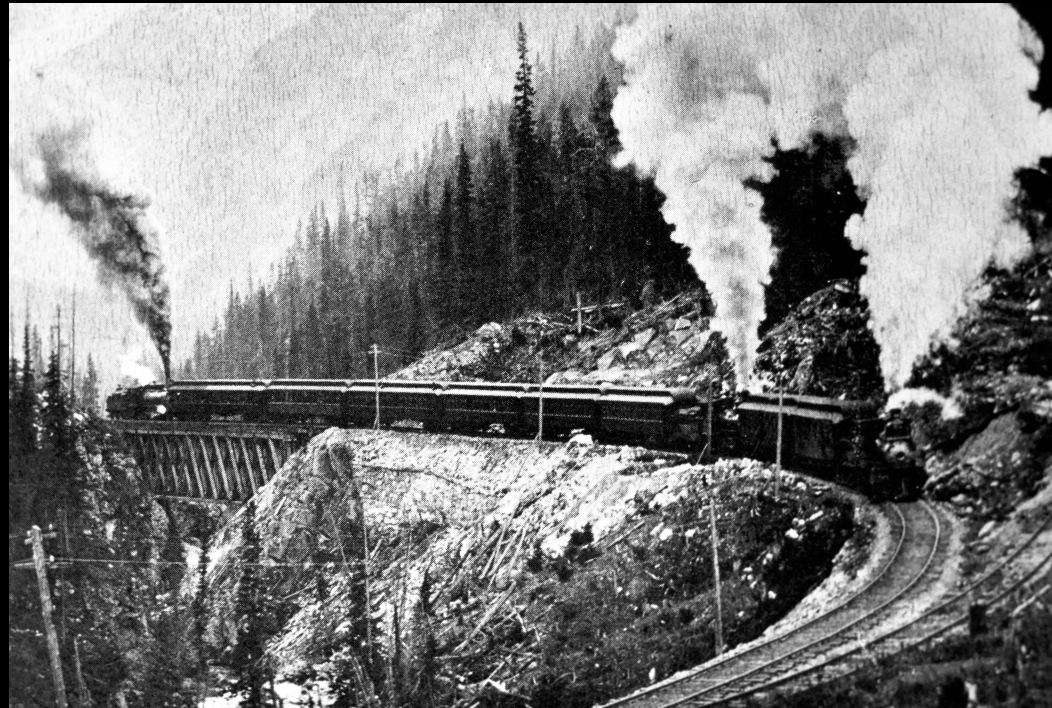
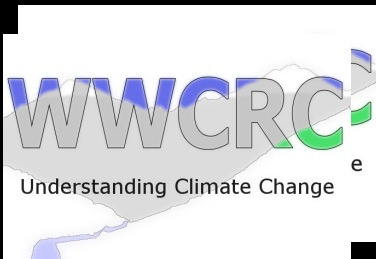


***A presentation by***  
***R.W. Sandford***

***Director***  
***Western Watersheds Climate Research***  
***Collaborative***

# ***What We Can Learn From The Ice***

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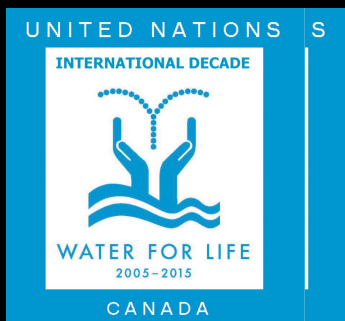
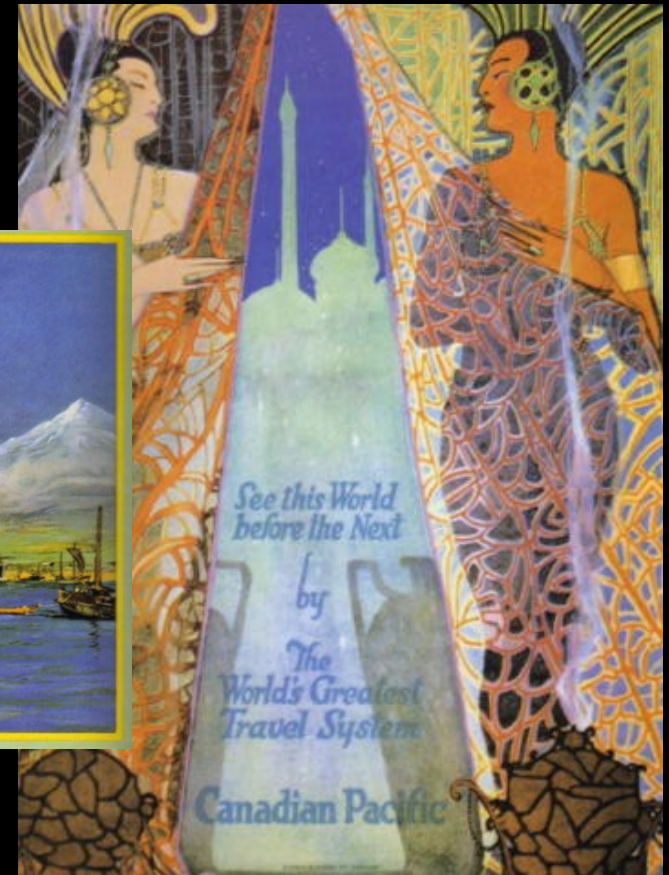
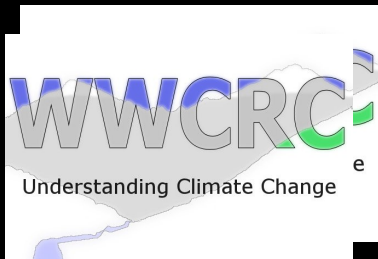


***Our headwaters National & Provincial Parks Network***

***One of the greatest public policy achievements in the history of the West***

# What We Can Learn From The Ice

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**"See This World Before The Next"**

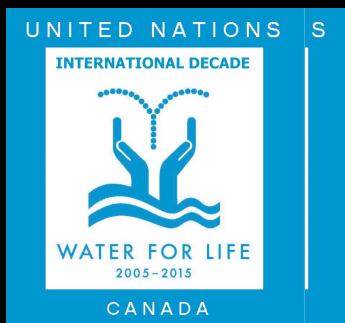
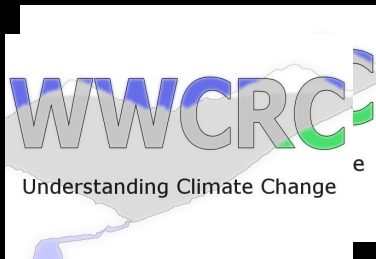


# What We Can Learn From The Ice

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## Why Glaciers Matter

*Photographs of the Illecillewaet Glacier in Rogers Pass from the Vaux Family Collection  
Courtesy of the Whyte Museum of the Canadian Rockies and Dr. Henry Vaux Jr.*



1902



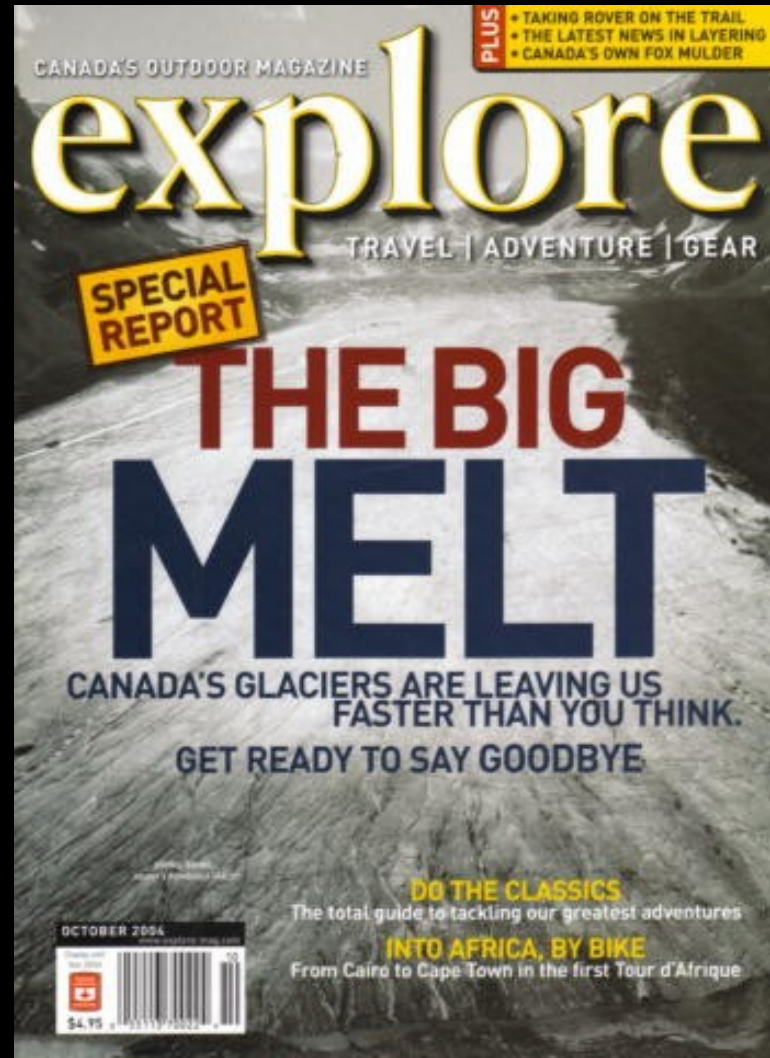
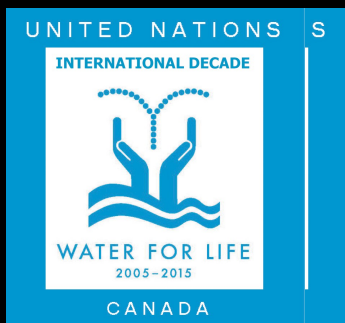
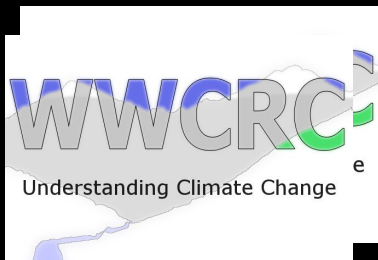
2002





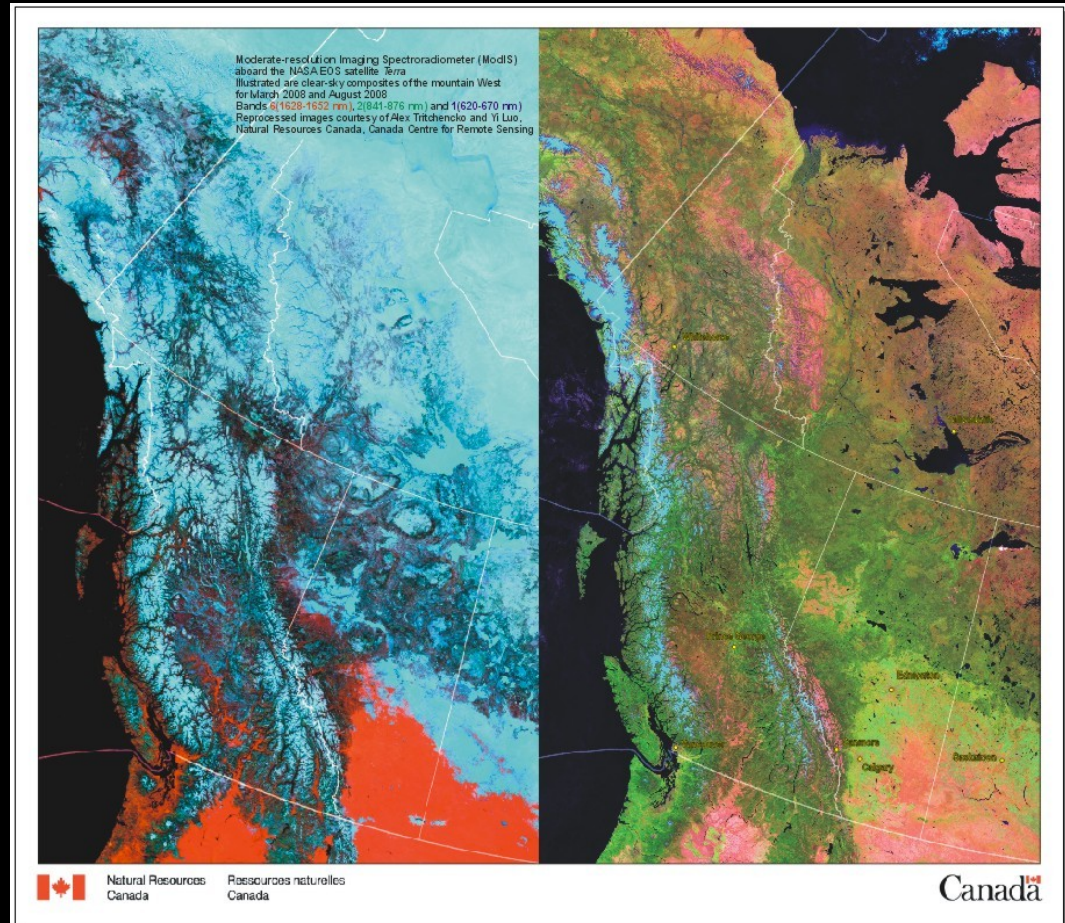
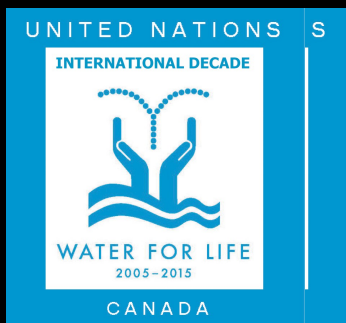
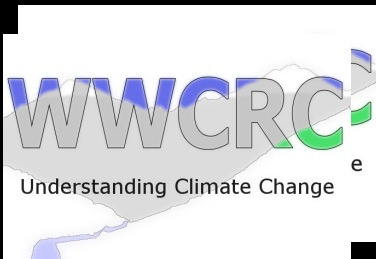
# What We Can Learn From The Ice

*Science and the Future Landscapes of the Canadian West*



# What We Can Learn From The Ice

## *Science and the Future Landscapes of the Canadian West*

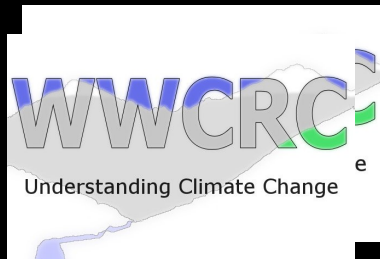


*Courtesy of Mike Demuth, Geological Survey of Canada*



# What We Can Learn From The Ice

*Science & the Future Landscapes of the Canadian West*

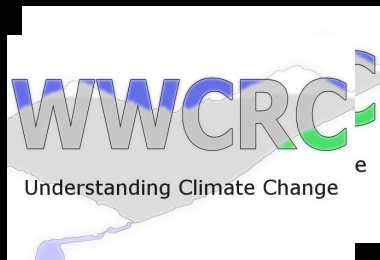


***Glaciers in the Bow River drainage were reduced in area by 25% in the last 50 years  
Who Are Our Main Water Users?***



# What We Can Learn From The Ice

*Science & the Future Landscapes of the Canadian West*



***We take reliable hydro-electric power generation for granted.***

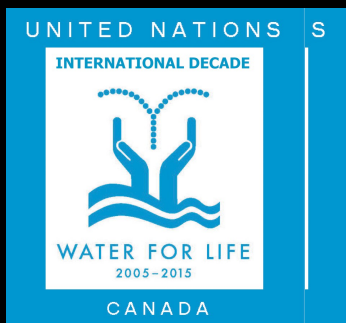
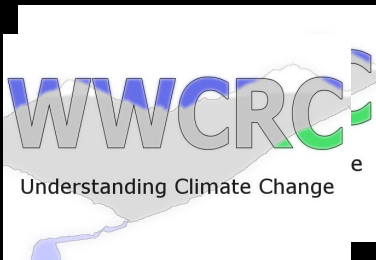
***Can we still?***

# ***What We Can Learn From The Ice***

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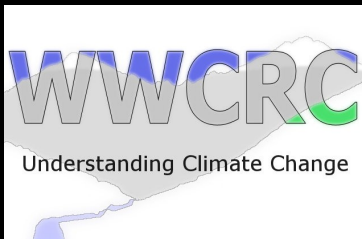
***Agriculture could be more important  
in the future than oil and gas***

***Provided it is able to address water quality and availability  
issues related to agricultural practices***



# *We are facing public policy trade-offs that we have never had to be made on a global scale before*

- **Cities, people, agricultural and nature all need water**
- **Cities are competing with agriculture and nature for water**
- **To provide nature with the water it needs in the arid regions of the world we have to accept that people will starve**
- **If we provide all the water agriculture needs to meet the food needs of a growing global population then natural systems will decline**

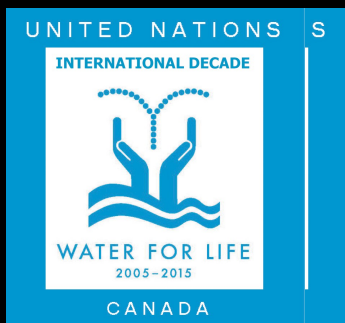
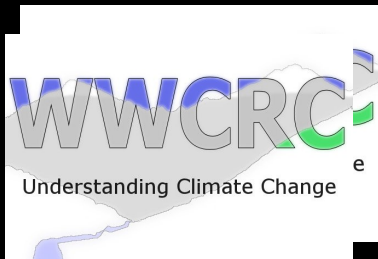


**Which do we choose?**



# What We Can Learn From The Ice

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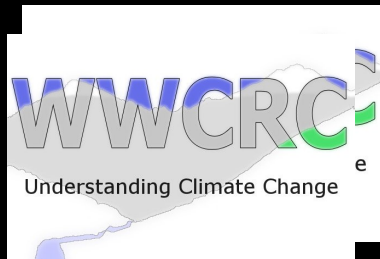


***The growing water needs of the energy sector***

***Future development could be limited by water availability***

# What We Can Learn From The Ice

*Science and the Future Landscapes of the Canadian West*

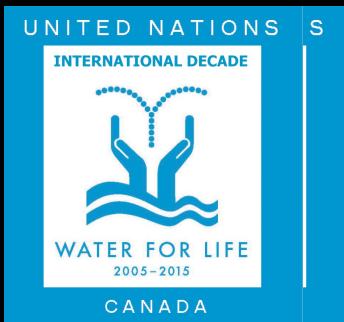


**Municipal Water Supply Planning  
Also depends on reliable information of  
snowpack and snow cover**



# What We Can Learn From The Ice

*Science & the Future Landscapes of the Canadian West*

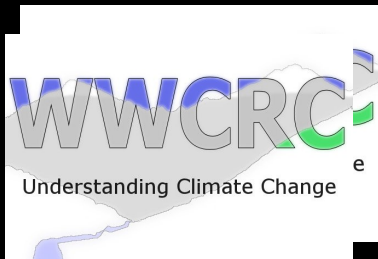


***Tourism & Recreation:  
Water As An Attraction in Its Own Right***



# What We Can Learn From The Ice

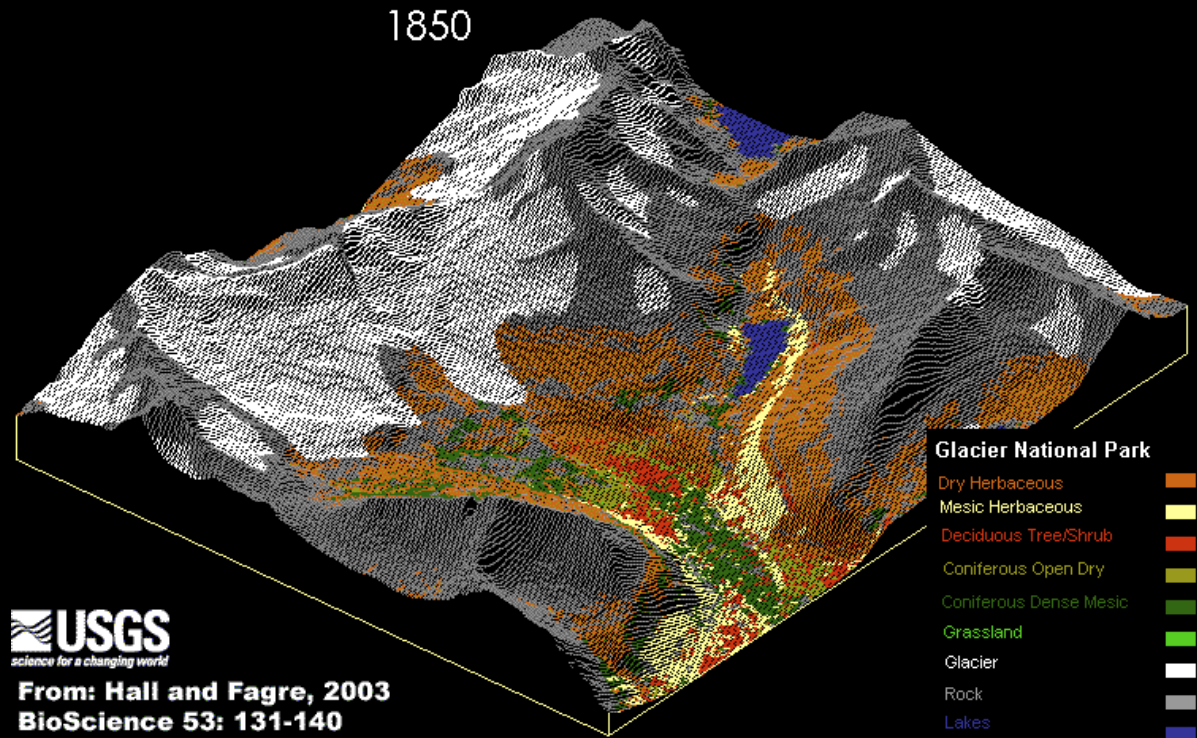
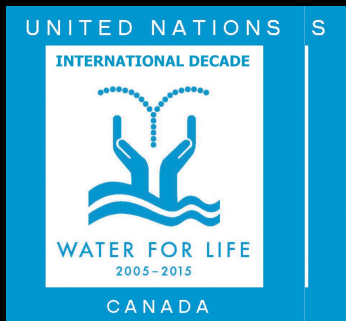
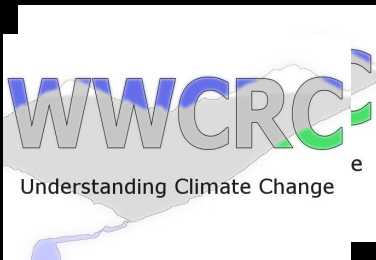
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***Recent studies suggest that 73% of the alpine tundra in the Western United States can no longer be classified as such***

# What We Can Learn From The Ice

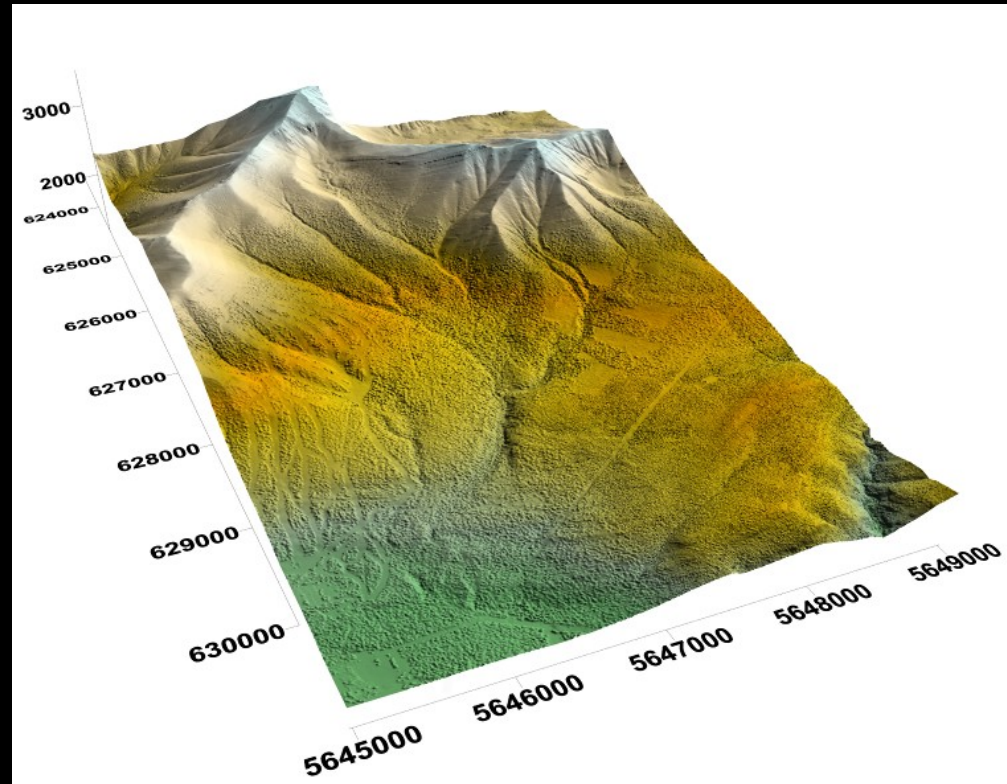
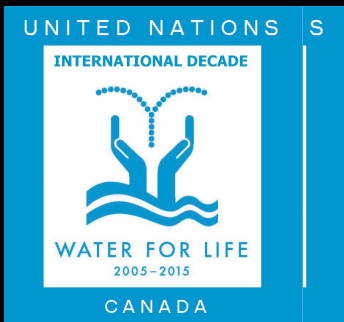
*Science & the Future Landscapes of the Canadian West*



From: Hall and Fagre, 2003  
BioScience 53: 131-140

# What We Can Learn From The Ice

*Science and the Future Landscapes of the Canadian West*



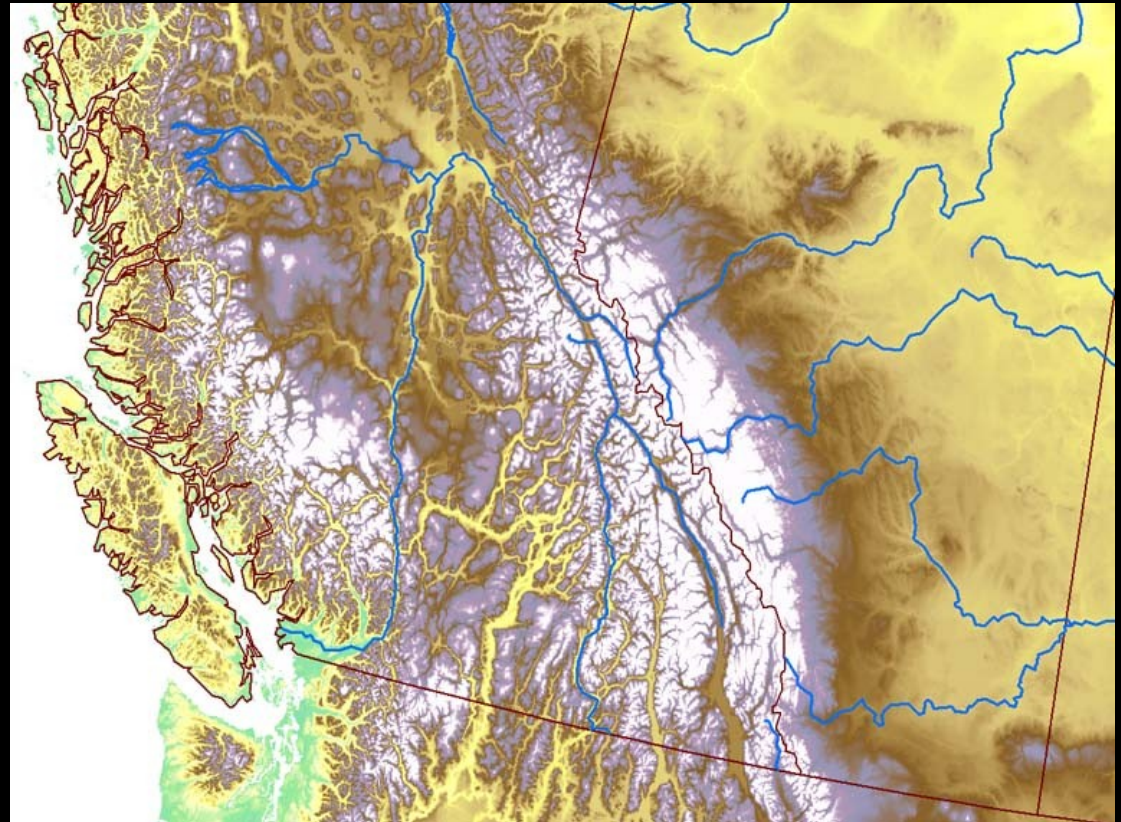
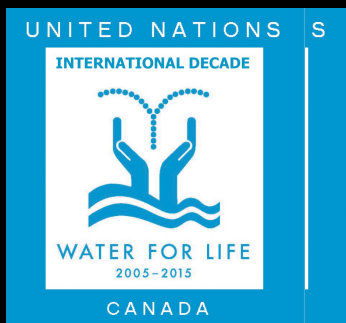
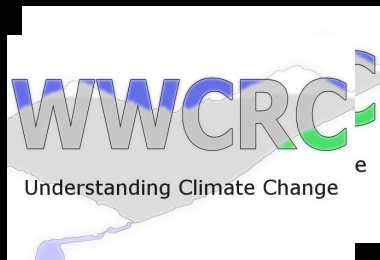
***Marmot Creek in Kananaskis  
Even non-glacial mountain watersheds are  
changing***

*Courtesy of John Pomeroy*



# What We Can Learn From The Ice

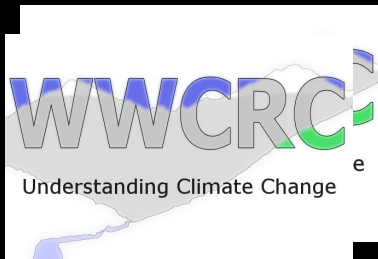
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***Nature As A Water User In & Of Itself***

# What We Can Learn From The Ice

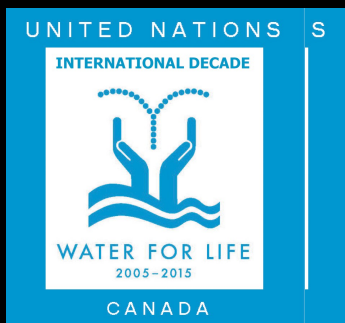
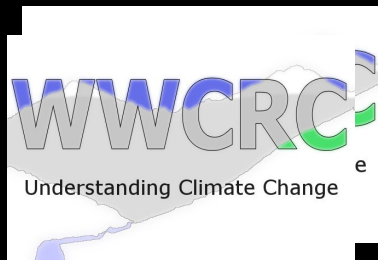
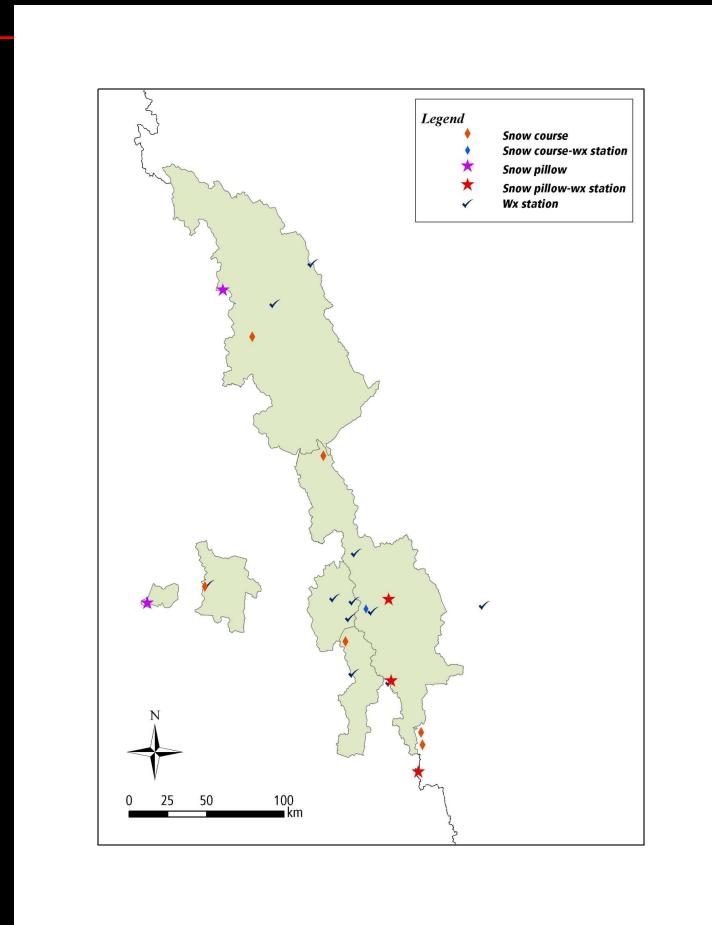
*Science and the Future Landscapes of the Canadian West*



***The Political Process As A Key  
Water Information User***

# What We Can Learn From The Ice

*Science and the Future Landscapes of the Canadian West*

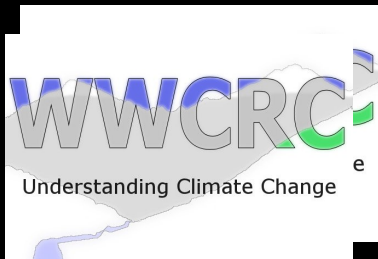


***We Can Do Much Better***



# What We Can Learn From The Ice

*Science & the Future Landscapes of the Canadian West*



***Improving Water Security Through  
Integrated Observation & Prediction  
Networks***