

Forest Gaps and Data Gaps: Choosing Relevant Sites and Strategies for Collecting Actionable Data

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Seattle Public Utilities: Land Ownership, Mountain Watersheds, Municipal Water Supply



Habitat Conservation Plan



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Cedar River Watershed
Habitat Conservation Plan

Habitat Conservation Plan

Managing the Watershed

Fish and Landsburg

Managing River Flows

Species

List of Measurements

About the HCP



About the HCP

Habitat conservation planning is a tool to achieve both species protection and water supply protection. Learn about what actions we're taking to improve species and habitats, HCP history, oversight committees, how we work with other organizations, and more.
[Learn more >](#)

Measurements of success

Many of the HCP's benefits for fish and wildlife can only be realized over a long period of time. For example, efforts to restore stream and forest habitat typically take many decades before results are evident
[Learn what we measure and why >](#)

Cedar River Watershed Habitat Conservation Plan
The Cedar River Watershed Habitat Conservation Plan (HCP) is a 50-year, ecosystem-based plan that was prepared to address the declining populations of salmon, steelhead and other species of fish and wildlife in the Cedar River basin.

Prepared under the Endangered Species Act (ESA), the plan is designed both to provide certainty for the City of Seattle's drinking water supply and to protect and restore habitats of 83 species of fish and wildlife that may be affected by the City of Seattle's water supply and hydroelectric operations on the Cedar River.



Forest Restoration and Snow Hydrology



Forest Restoration and Snow Hydrology

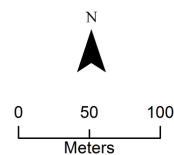


Benefits and Products from Research Collaboration

- Education and Research
- Snow Interception Rate
- Snow Melt Rate
- High Definition LiDAR



Tree Height (m)
High : 40
Low : 0



Data Gaps in Forest-Snow Interactions

Susan Dickerson-Lange



Data Gaps: Forests and Snow



Interception



Melting



Local Scale



Stand Scale

Data Gaps: Forests and Snow



Thinned
2nd Growth Forest

Photo courtesy of Michelle Ma



Snow
Measurements



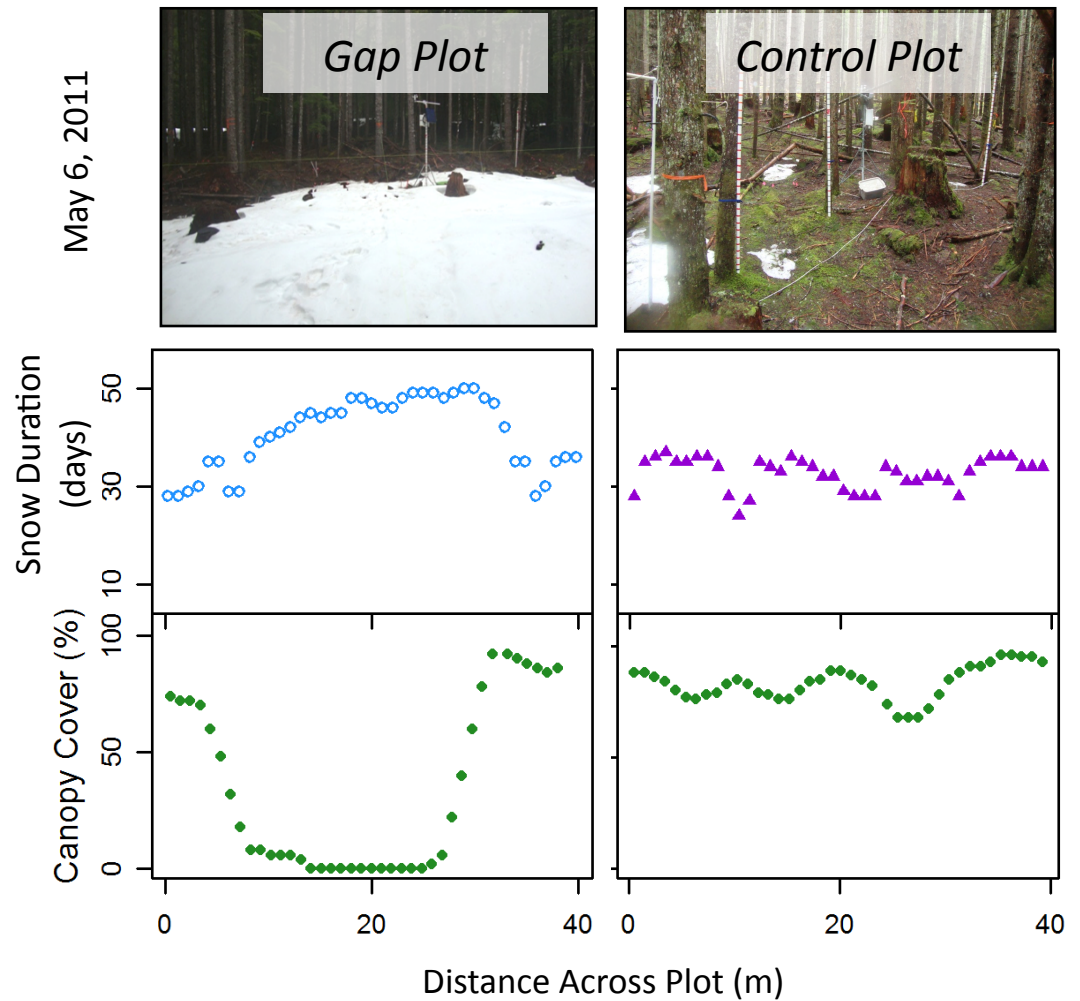
Hemispherical
Photos

Products: Science Perspective

Quantifying Interception

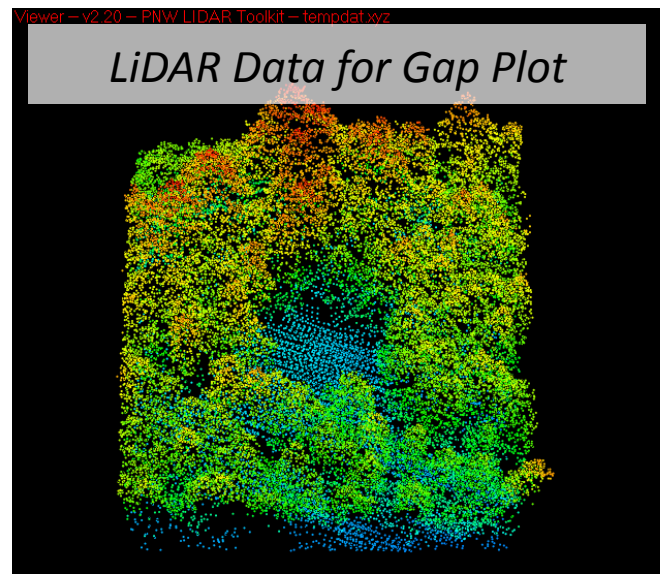
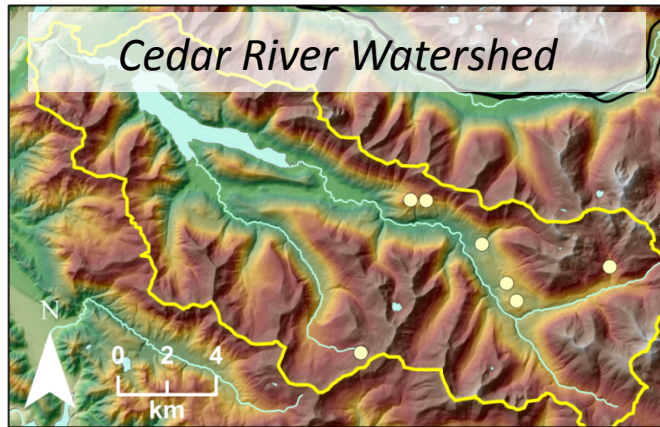


Quantifying Snowmelt Timing



Products: Science Perspective

Modeling to scale up to a watershed



Climate is a key control

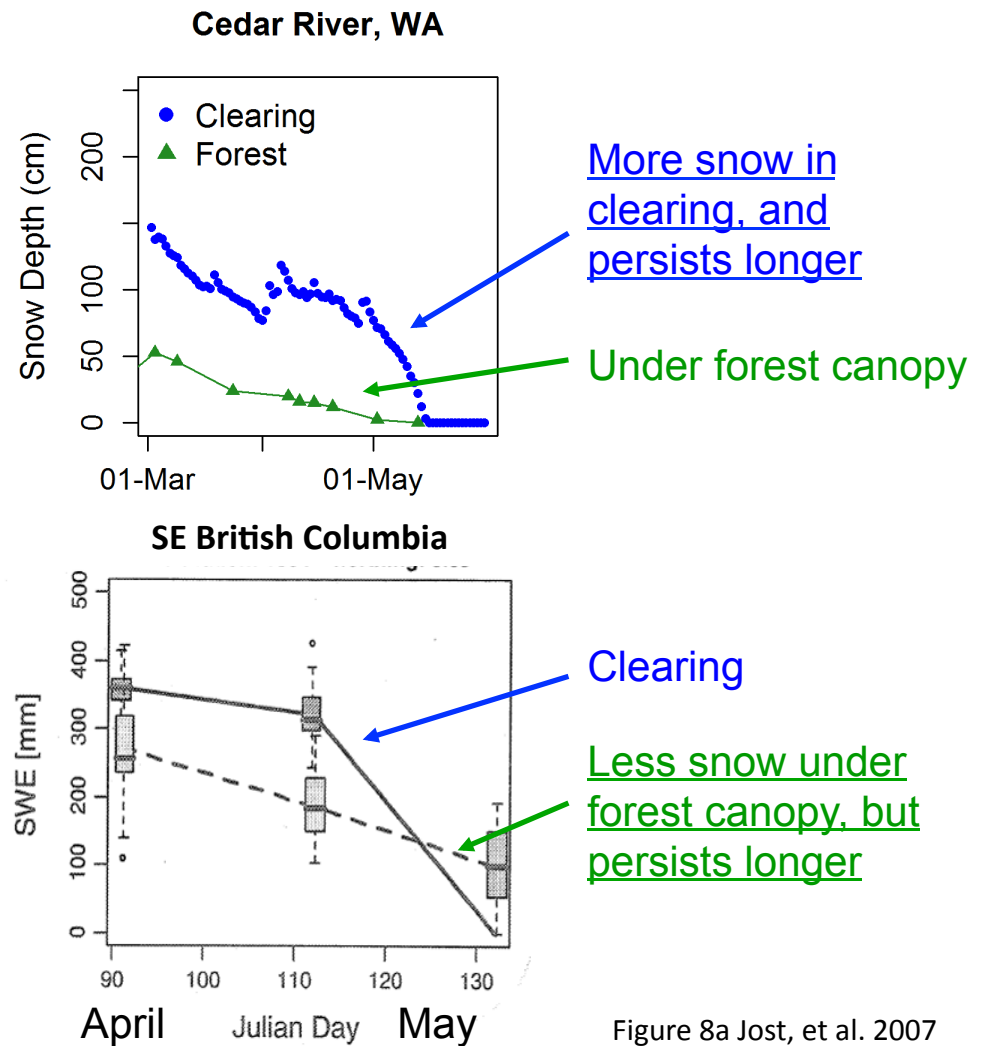
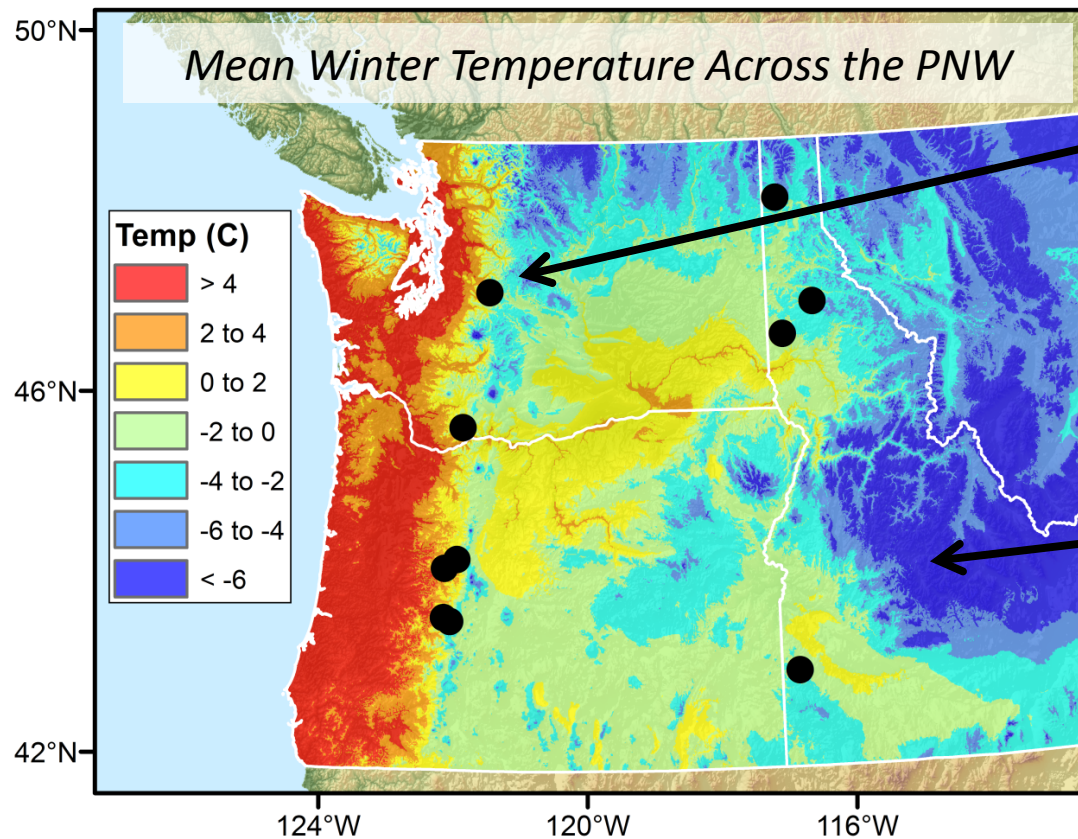


Figure 8a Jost, et al. 2007

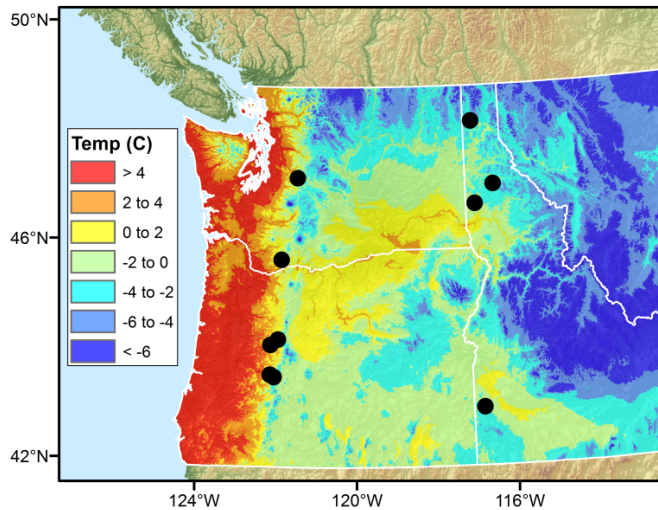
Scaling Up: Motivation



At the Cedar River study sites,
snow persists up to
2 weeks longer in gaps

In locations with colder winters,
snow persists up to
2 weeks longer under the forest

Scaling Up: New Data Gaps



Collaborating
Field Sites



Citizen Science:
Geo-tagged Photos



Management
Regimes

Conclusion: Collaboration



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Project Website: <http://depts.washington.edu/mtnhydr/research/PNWsnowforest.shtml>