Disappearing Snow: Understanding local effects of climate change on resilience of social-ecological systems in the U.S. northern Rockies

University of Idaho

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Introduction and Objectives

Background:

Increased temperatures = Decreased length of snow season
Earlier snow melt = Increased potential growing season for forests
Increased growing season = Increased water stress during summer dry season
Increased drought stress = Increased risk from forest fire and beetle kills

Concern:

Communities need methods to gain local-scale information that can inform them about their vulnerability to these direct and indirect effects of climate change.

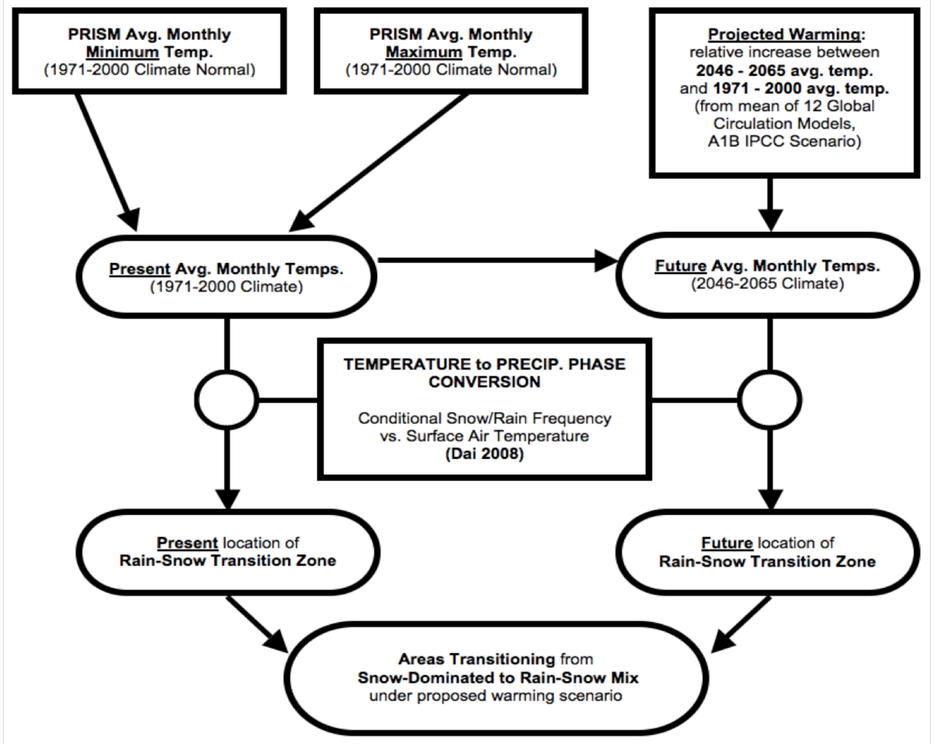
Objective:

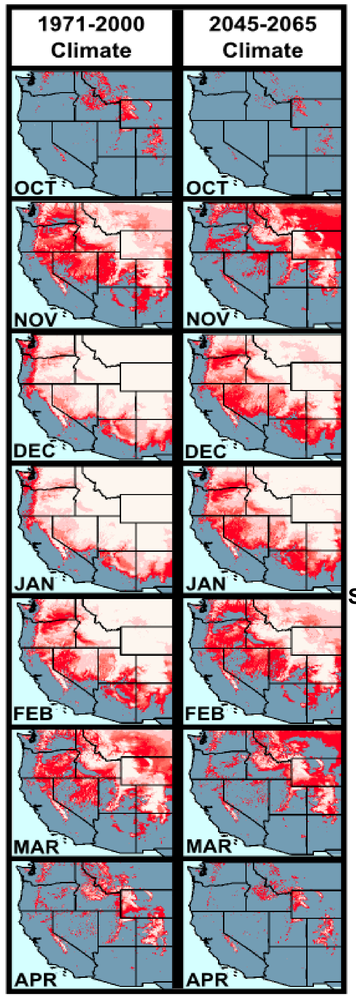
Create projections for the reductions in wintertime snowfall using a moderate warming scenario of the Intergovernmental Panel on Climate Change (IPCC)

Methods

= Input Data = Original Data Products = Conversion Steps

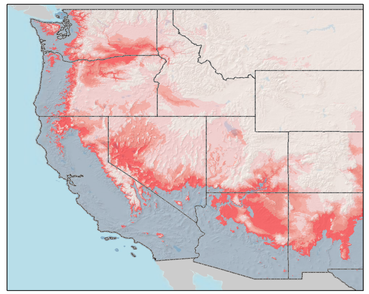
PRISM = Interpolation method for data gathered from meteorological stations (800m resolution, Daly 2008)



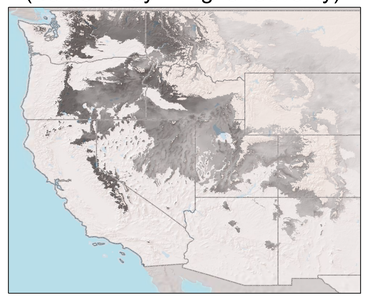


Main Findings

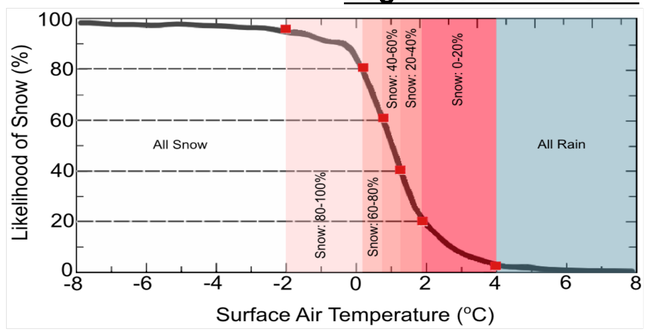
Rain-Snow Transition Zone
1971 - 2000 Climate
Wintertime Average Distribution



Areas Transitioning from Snow-Dominated to Rain-Snow Mix
under proposed warming scenario
(Darker Grey = Higher Severity)



Legend & Conversion



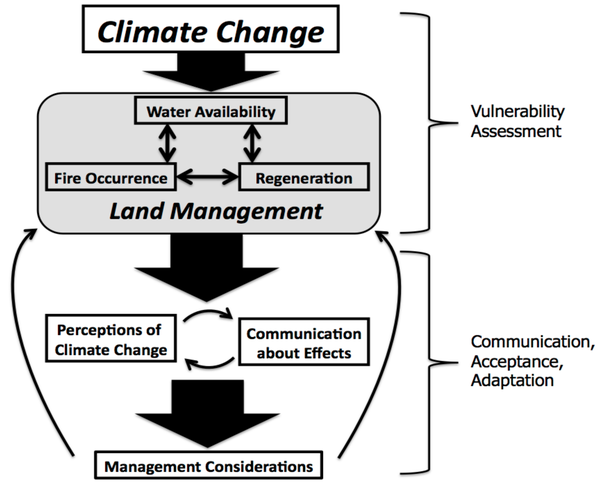
Future Directions & Broader Impacts

Step 1: Understand the local-scale effects of climate change through:
1A - site-specific predictive science **(this sub-project)**
1B - process-based research

Step 2: Present site-specific information to communities to help assess their vulnerability to climate change

Step 3: Evaluate the effectiveness of this process as a tool for changing perceptions of climate change

Resilience Framework of the Northern Rockies IGERT Team



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References:

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