

Washington State's Integrated Climate Change Response Strategy

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2009 State Legislation

- Directs five state agencies (including WSDOT) to work together to develop an “*integrated climate change response strategy to better enable state and local agencies, public and private businesses, nongovernmental organizations, and individuals to prepare for, address, and adapt to the impacts of climate change.*”

RCW 43.21M.010

Foundation for Strategy

Leading the Way:
Preparing for the Impacts
of Climate Change in
Washington

Recommendations of the
Preparation and Adaptation
Working Groups



2008 PAWG reports



**The Washington Climate Change
Impacts Assessment**

*Evaluating Washington's Future
in a Changing Climate*

Executive Summary



A report by
The Climate Impacts Group
University of Washington
June 2009

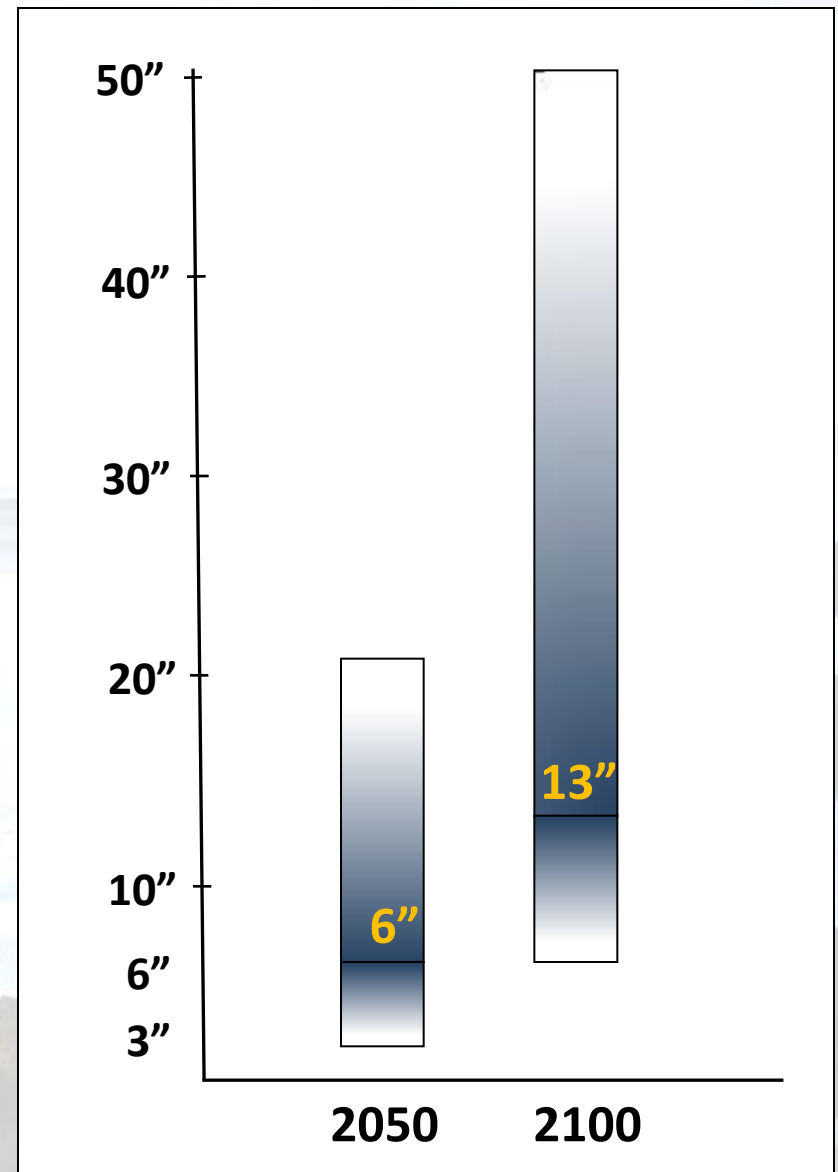
**UW/Climate Impacts Group
(CIG) Feb. 2009 Assessment**



Sea Level

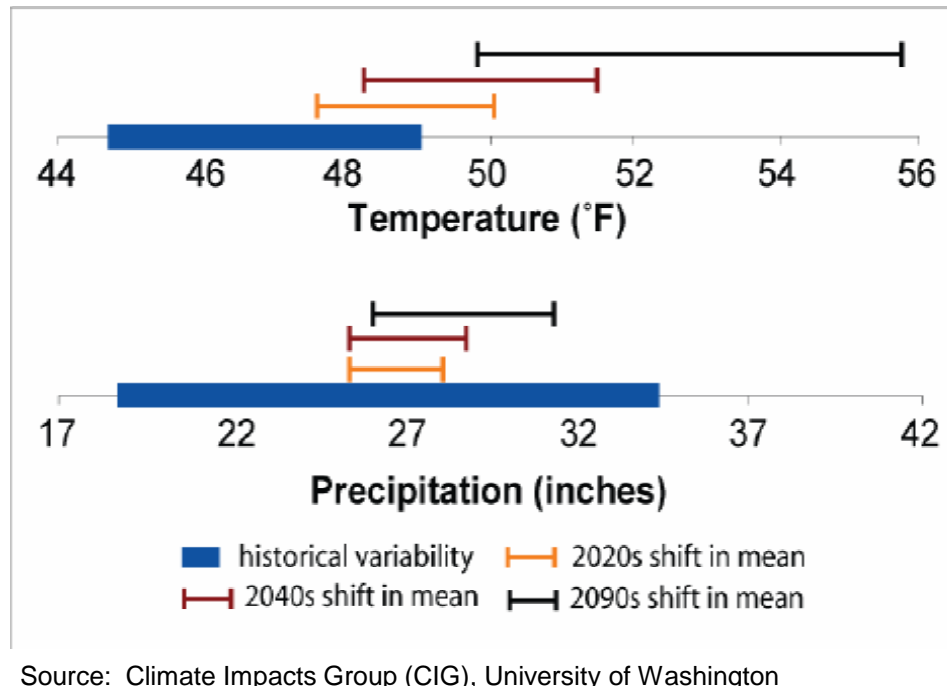
Sea level rise (SLR) will increase the risk of flooding, erosion, and habitat loss along much of Washington's 2,500 miles of coastline.

- **Global SLR: 7-23"** by 2100
- **Medium** estimates of SLR for **2100**:
 - +2" for the NW Olympic Peninsula
 - +11" for the central/southern coast
 - +13" for Puget Sound
- Higher estimates (up to 4 feet in Puget Sound) cannot be ruled out at this time.



Projected SLR in Washington's waters relative to 1980-1999, in inches. Shading roughly indicates likelihood. The 6" and 13" marks are the SLR projections for the Puget Sound region and effectively also for the central and southern WA coast (2050: +5", 2100: +11").

Precipitation Changes Relative to 20th Century



Source: Climate Impacts Group (CIG), University of Washington

High confidence in projected temperature changes, less in precipitation changes



Key Impacts in Washington

Sea level rise

Transition from snow-dominant to rain-dominant watersheds

Wildfire, river dynamics, landslides, and more



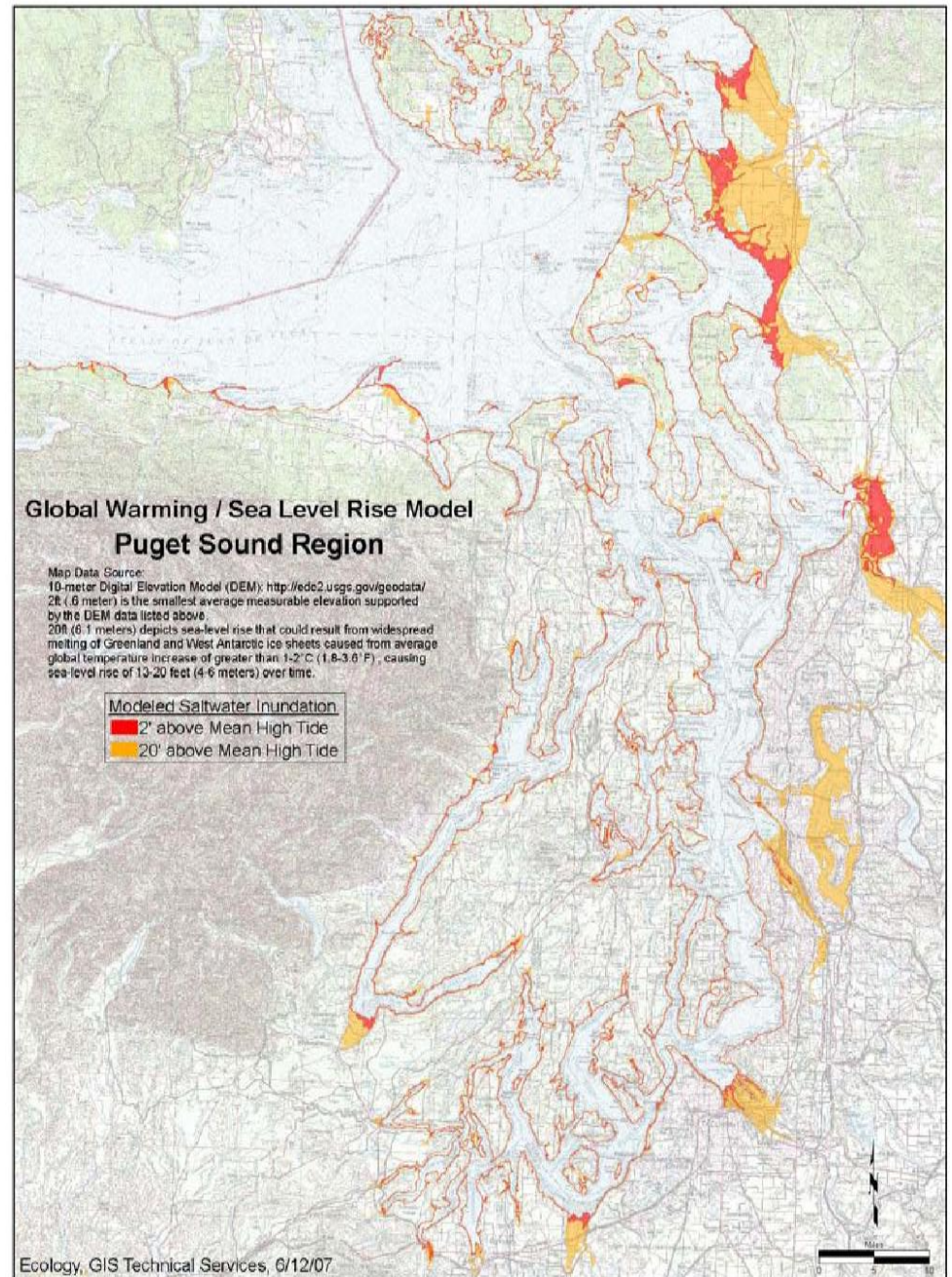
Sea level rise effects

Inundation

Wave height increases

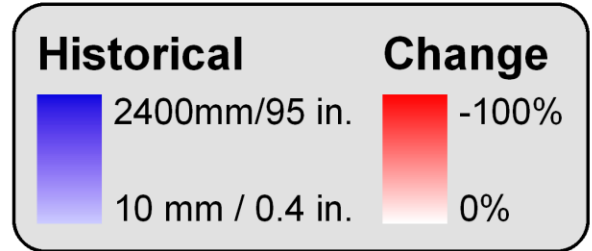
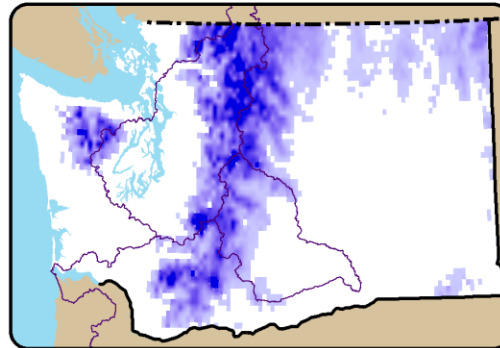
Erosion

- Inundation maps draw attention to large, low-lying areas where extensive flooding is possible
- These maps downplay high risk areas where flooding is not the primary hazard (downtown waterfront, bluff landslides, contaminated shoreline sites)



Key Impact: Loss of Snow Cover

Historical

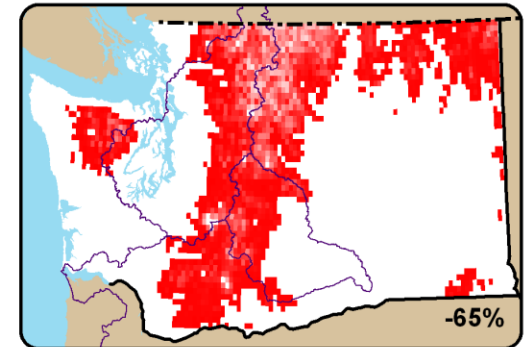
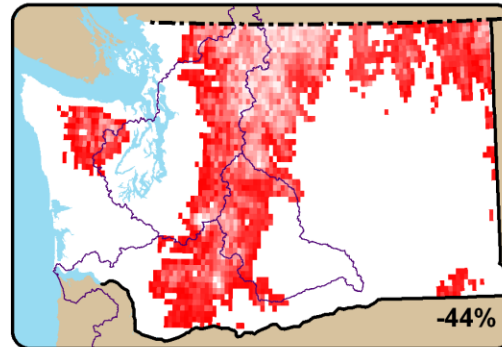
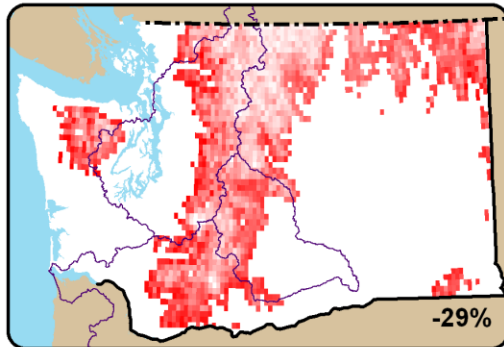


2020S

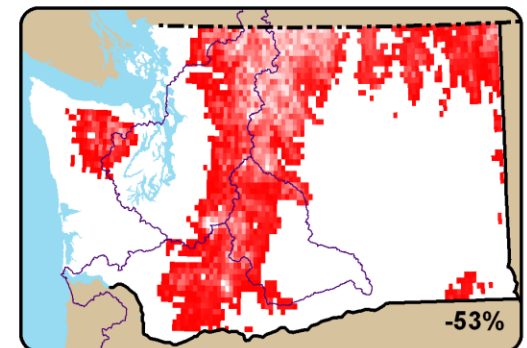
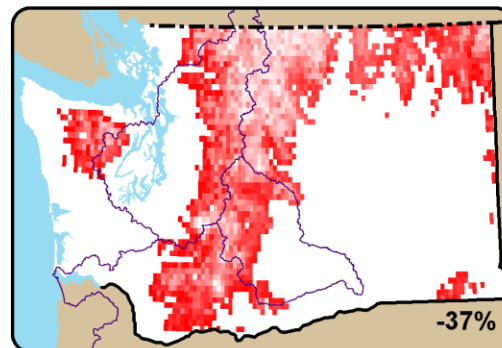
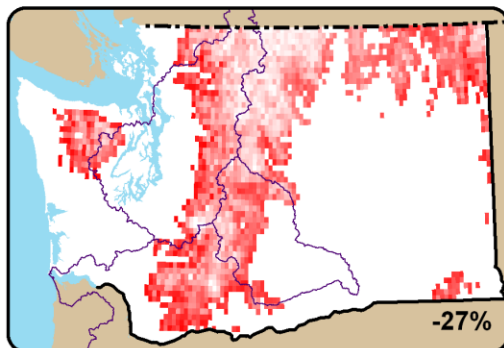
2040S

2080S

A1B



B1

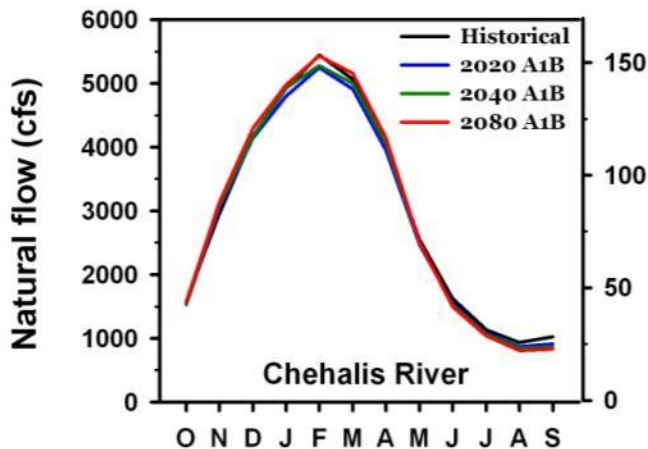


Changes in Flood Risks



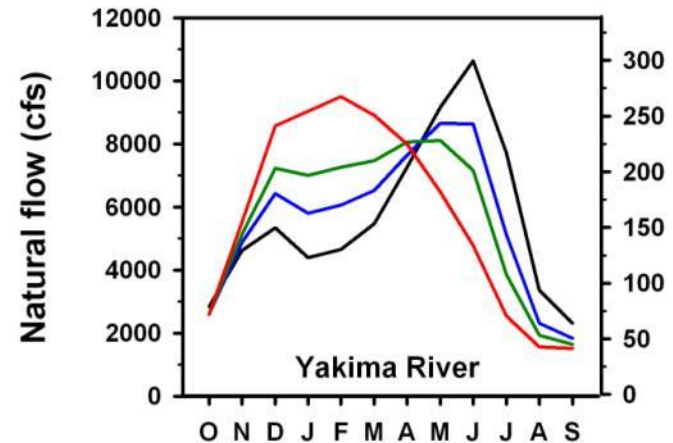
- Floods in western WA will likely increase in magnitude due to the combined effects of warming and increasingly intense winter storms.
- In other parts of the State, changes in flooding are mixed, and in eastern WA projected *reductions* in spring flood risk are common due to loss of spring snow cover.

Rain Dominant



Chehalis River (Western WA)

Mixed Rain/Snow



Yakima River (Eastern WA)



Changes in River Dynamics

Hoh River flooding

Channel migration and avulsion



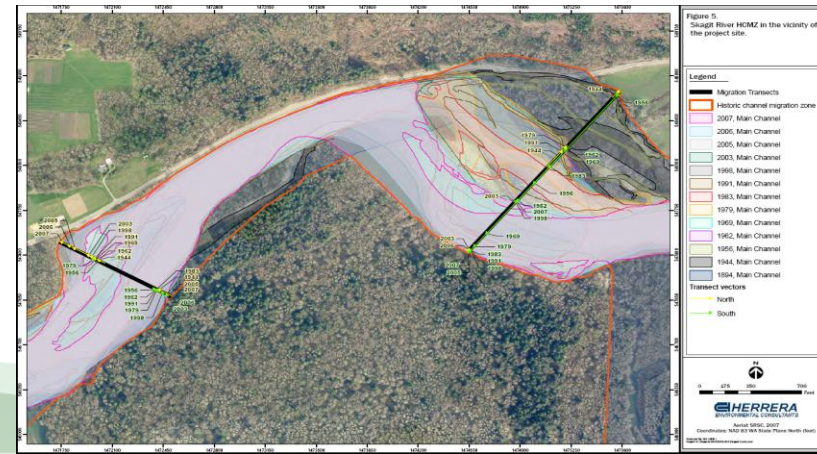
Scour and damage to structures

US 12 Davis Creek

WSDOT and Sustainable Transportation

- Cross-divisional, comprehensive
- Societal, system, project, individual opportunities
- Current science basis
- Climate change reports to legislature and governor

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WSDOT Adaptation

Asset Management and Climate Change

- Scenario planning
- Sea level rise mapping
- Scour monitoring
- Vulnerability assessment
- Risk assessment



Increasing infrastructure resiliency

- Limit armoring
- Restore shorelines
- Targeted removal of dikes
- Improve processes for siting new construction
- Set back development
- Protect key geomorphologic processes (sediment supply)
- Identify critical natural and built environments
- “When engineering is inevitable, be imaginative”