



Washington Climate Change Impacts Assessment Yakima River Basin

Background – Introduction

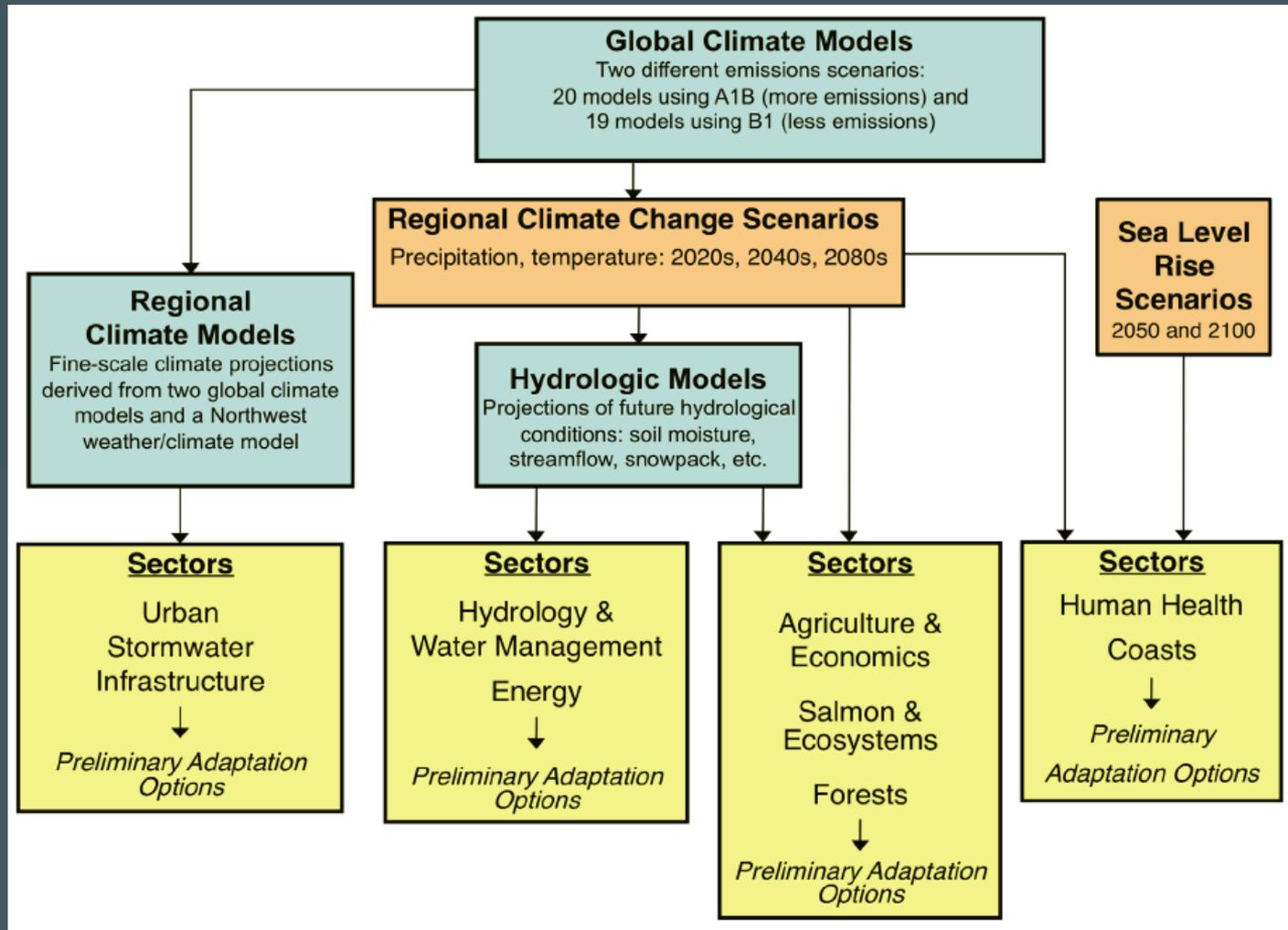
- Comprehensive assessment of impacts of climate change
 - HB 1303 (April 2007)
 - Department of Community, Trade and Economic Development
 - Department of Ecology
 - University of Washington Climate Impacts Group

Background – Approach

- Impacts of climate change on state of Washington resources
 - Use global climate model projections to develop 6 regionally-specific composite scenarios
 - 2 emissions scenarios (low & medium)
 - 3 time periods (2020s, 2040s, 2080s)
 - Summarize consequences for important sectors in Washington
 - Eight sectors covered in summary



Background – Approach

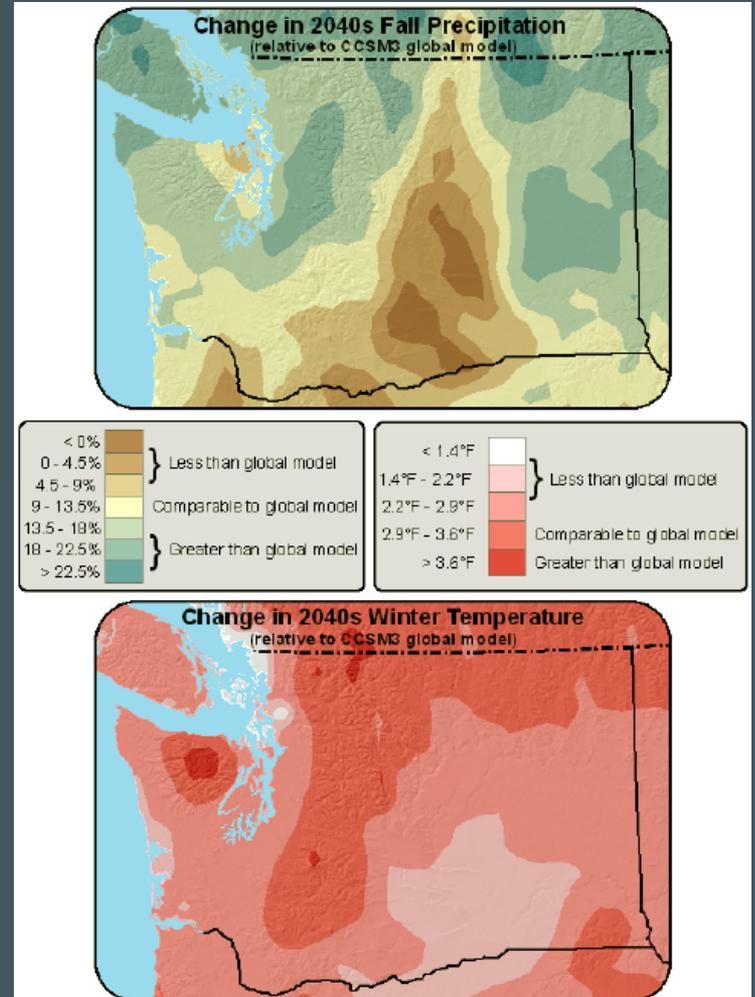
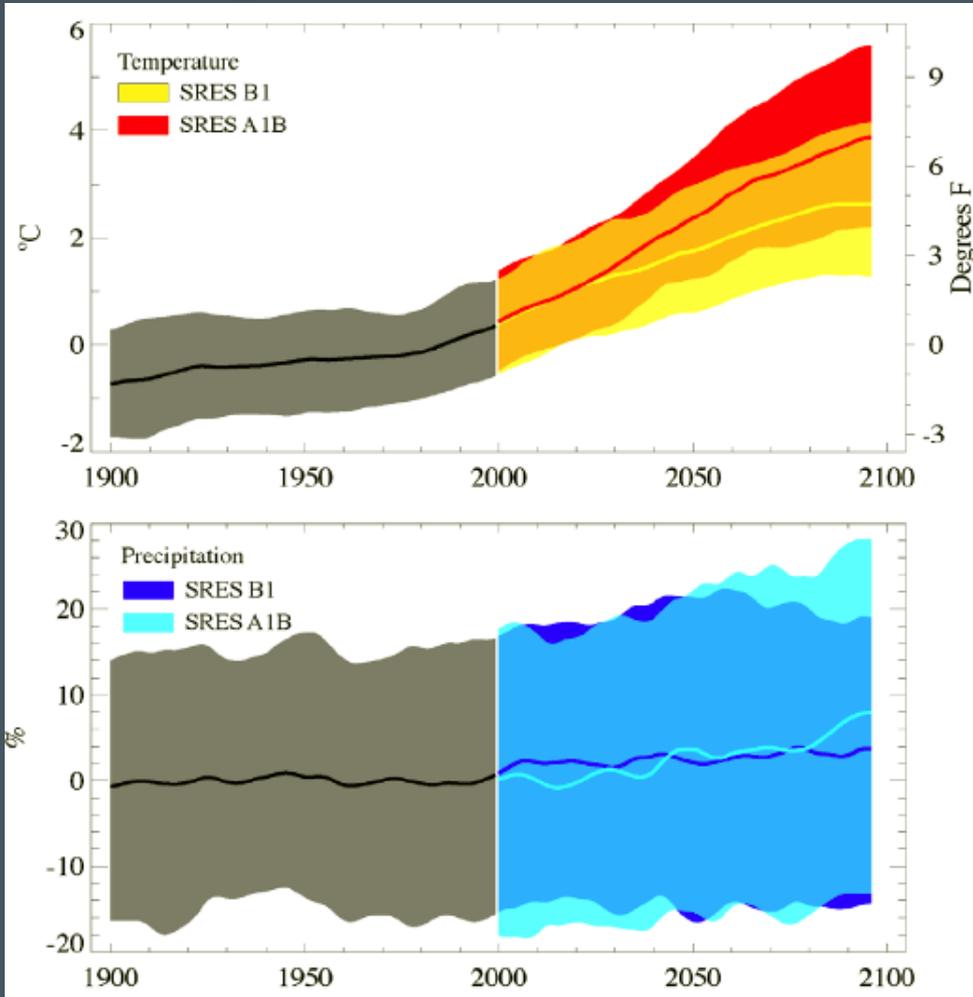


Key Findings – Temperature & Precipitation

- Temperature
 - Increase in average annual temperature
 - Warming occurs during all seasons
- Precipitation
 - Significantly varies
 - Small change when averaged over models

	Temperature Change (F°)	Precipitation Change (%)
2020s	+2.2 (+1.1 to +3.3)	+1 (-9 to +12)
2040s	+3.5 (+1.5 to +5.2)	+2 (-11 to +12)
2080s	+5.9 (+2.8 to +9.7)	+4 (-10 to +20)

Key Findings – Temperature & Precipitation

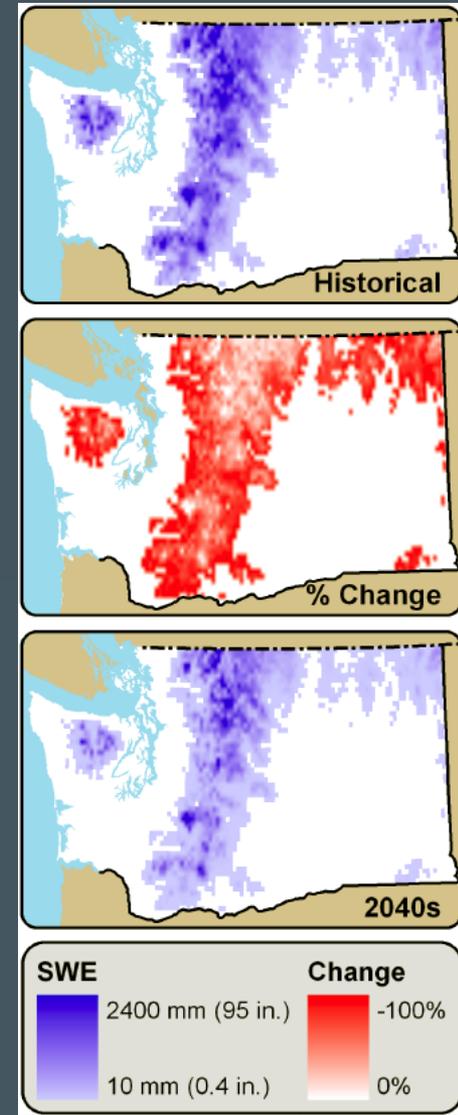


Key Findings – Hydrology and Water Resources

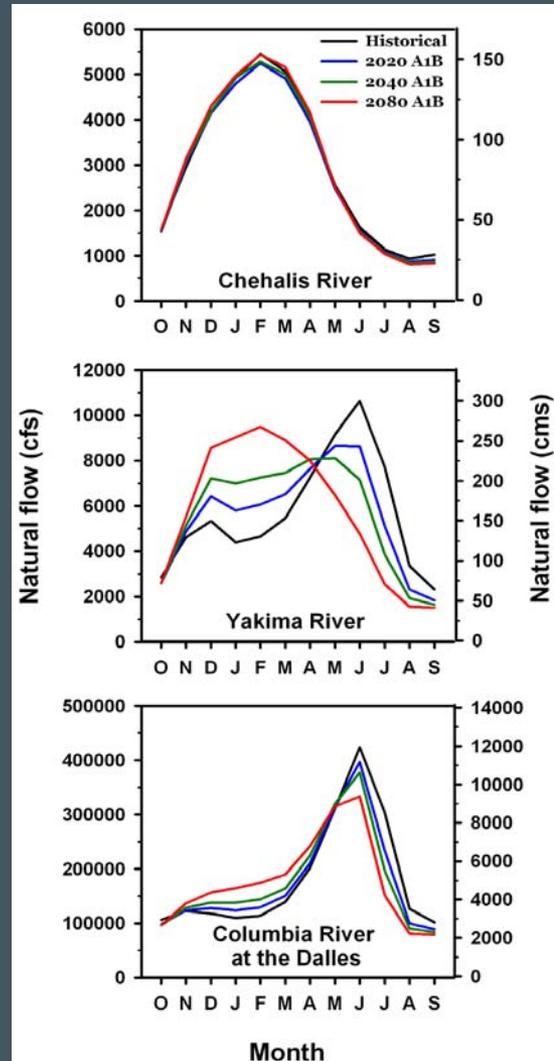
- Dependent on type of watershed
 - Snowmelt dominant
 - Rain dominant
 - Transient
- Summary divided into 3 sections
 - Regional hydrology
 - Water management in Puget Sound region
 - Water management in Yakima River basin

Key Findings – Hydrology and Water Resources

- Regional hydrology
 - April 1 snow water equivalent decreases across state
 - 28-29% by 2020s
 - 38-46% by 2040s
 - 56-70% by 2080s
 - Streamflow timing will change in snowmelt dominated and transient watersheds by 2080s
 - Rain dominated watersheds will not likely have streamflow timing changes



Key Findings – Hydrology and Water Resources



Key Findings – Hydrology and Water Resources

- Water Management in Yakima River basin
 - Significant proration (lower than 75%) expected to increase
 - 32% of years (15-54% range) in 2020s
 - 36% of years in 2040s
 - 77% of years in 2080s
 - Irrigation season will likely be shorter
 - Growing season will likely be 2 weeks earlier
 - Crop maturity will likely be 2-4 weeks earlier

Key Findings – Salmon Production and Distribution

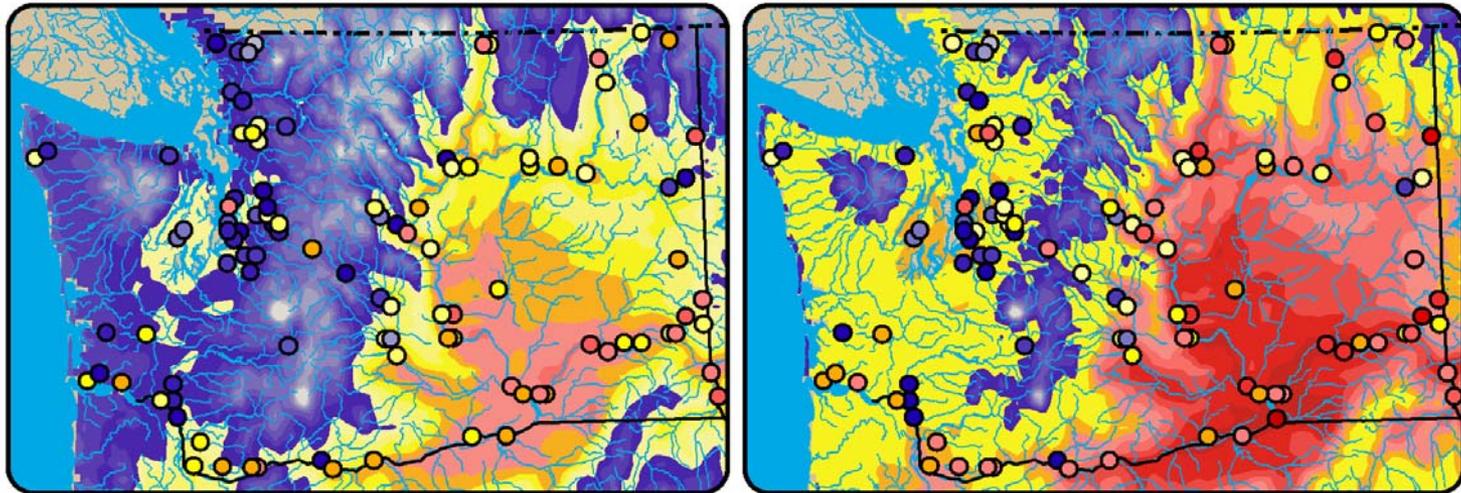
- Rising stream temperature will reduce quality and quantity of freshwater salmon habitat
 - Duration of temperatures causing migration barriers and thermal stress projected to quadruple by 2080s for interior Columbia Basin
- Flood risk will likely increase in Puget Sound river systems and interior Columbia Basin
 - Increases risk of streambed scouring of spawning habitat
- Consequences vary with populations and life cycle locations

Key Findings – Salmon Production and Distribution

August Mean Surface Air Temperature and Maximum Stream Temperature

Historical

2040s A1B

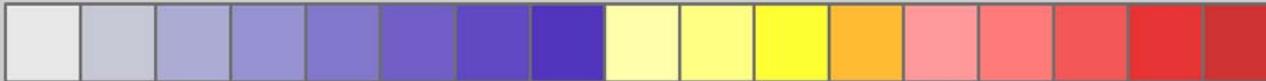


≤ 10

15

20

26 °C



Favorable for Salmon

Stressful for Salmon

Fatal for Salmon

≤ 50

60

68

79 °F

Resources

- Conference material
 - <I:\Administrative\Conferences\Climate Change-Seattle-12Feb09>
 - Conference presentations (audio & PowerPoint)
 - Executive summary
 - Report
- UW Climate Impacts Group
 - Web site: <http://ces.washington.edu/cig/>