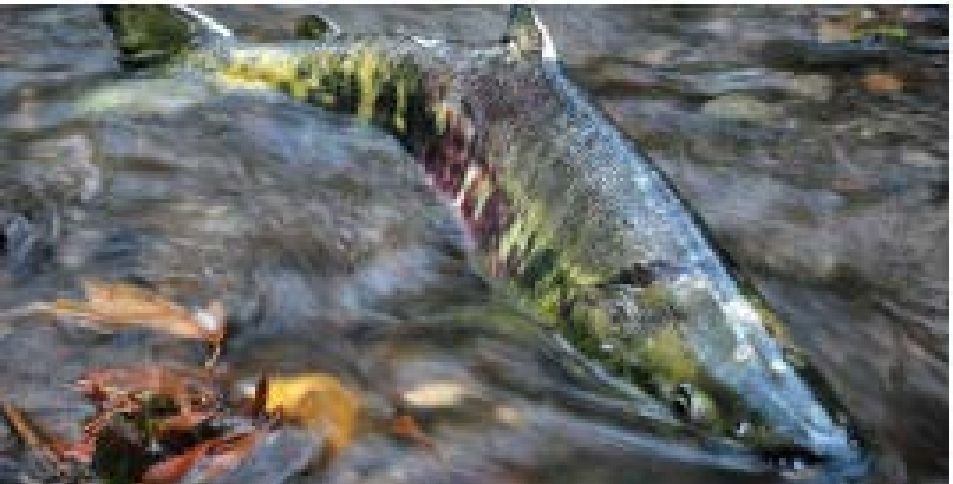
# CLIMATE CHANGE AND OUR NATURAL RESOURCES

## A Report from the Treaty Tribes in Western Washington



Eliza Ghitis, NWIFC

December 14, 2016

# Outline

- Treaty Tribes and Our Homelands
- Global Warming and Climate Change
- Freshwater Aquatic Environments
- Coastal and Marine Environments
- Terrestrial and Upland Environments
- Impacts Across the Landscape
- Moving Forward: Adaptation and Opportunities

# Treaty Tribes in Western Washington

# Implications for Treaty-Protected Resources

# Overview of Implications

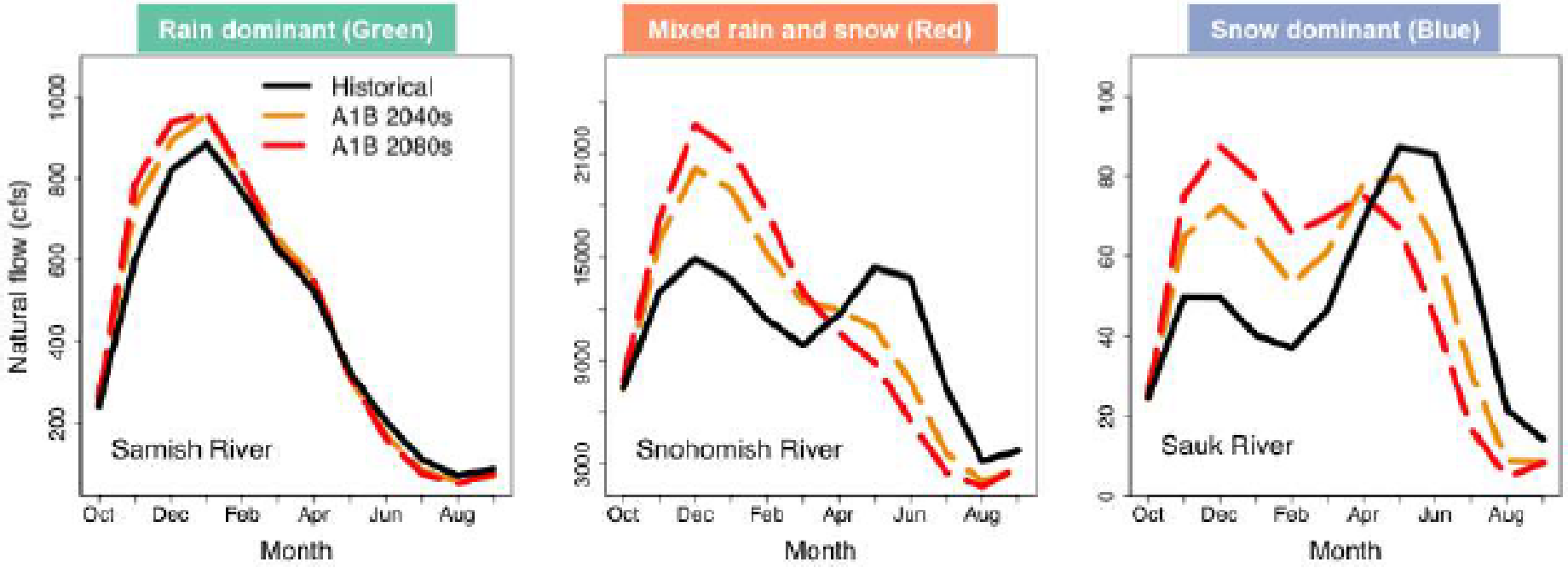
- Declining runs of salmon and trout
- Migration of marine fish and replacement with new species
- Declining populations of shellfish and closing of harvest areas
- Loss of traditional harvest areas and important cultural sites
- Loss of water supplies for drinking and other needs

# Overview of Implications

- Declining populations and migration of wildlife and birds out of hunting grounds
- Decreased plant productivity and shifts in species ranges
- Changes in timing of key life stages in a variety of species
- Loss of access routes to important sites
- Negative health outcomes and loss of opportunities to engage in traditional cultural activities.

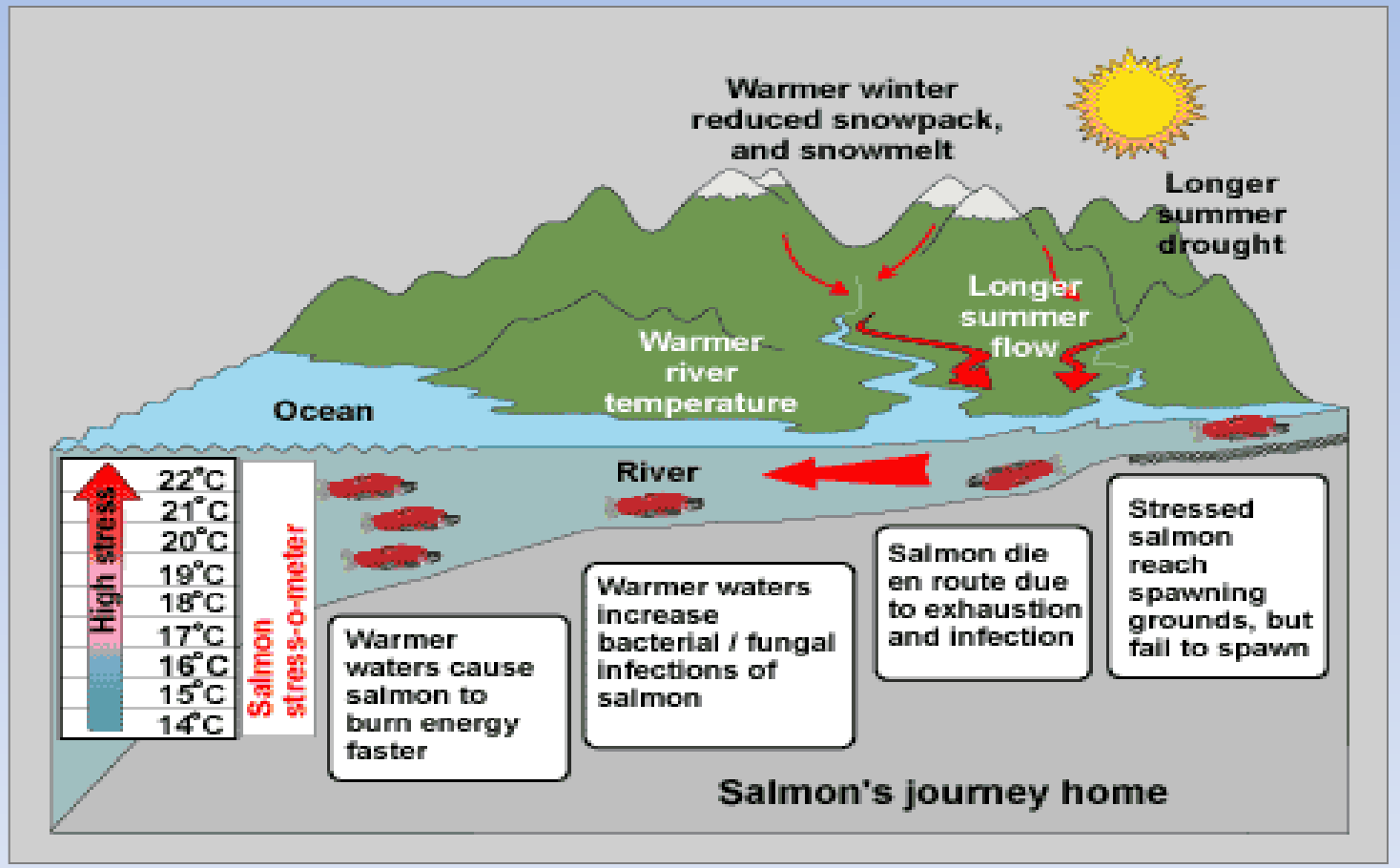
# Freshwater Aquatic Environments

# Changing Hydrographs




Shift in timing and magnitude of streamflows for a moderate greenhouse gas emissions scenario.
Source: Mauger et al. 2015

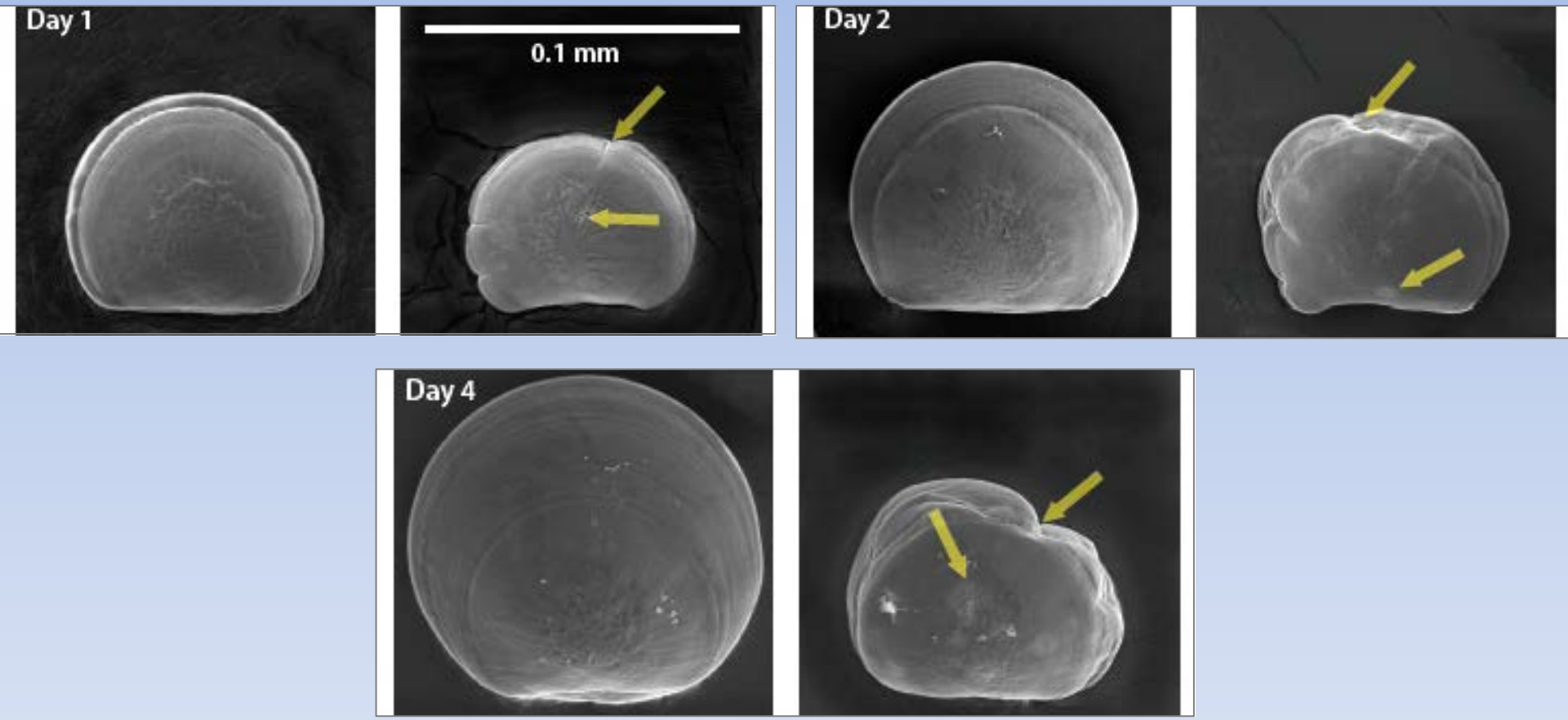
# Stream Temperature and the Salmon Stress-O-Meter




Robert Fuerstenberg, King County DNRP

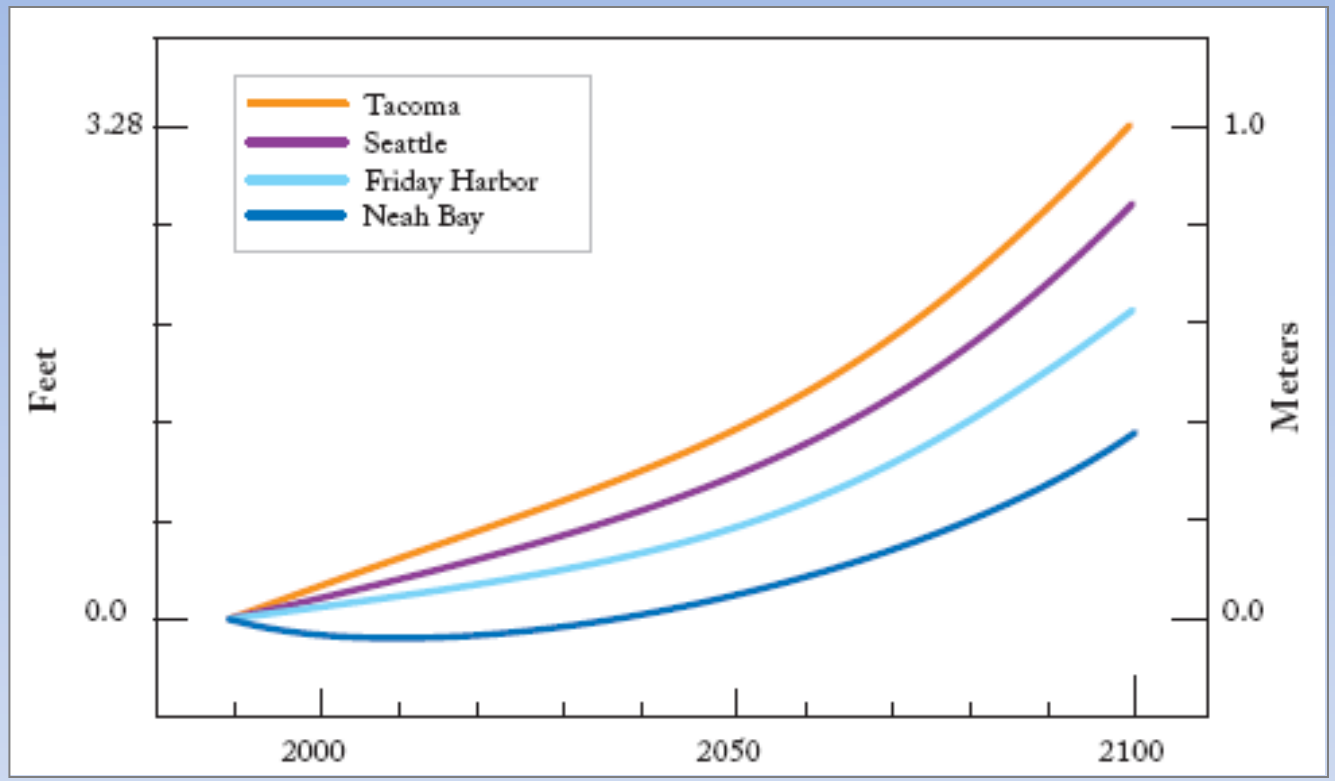
# Coastal and Marine Environments

# Ocean Acidification




Pacific oyster larvae from the Taylor Shellfish Hatchery with shells dissolving in acidic water (right) and healthy larvae (left).
Brunner and Waldbusser, OSU

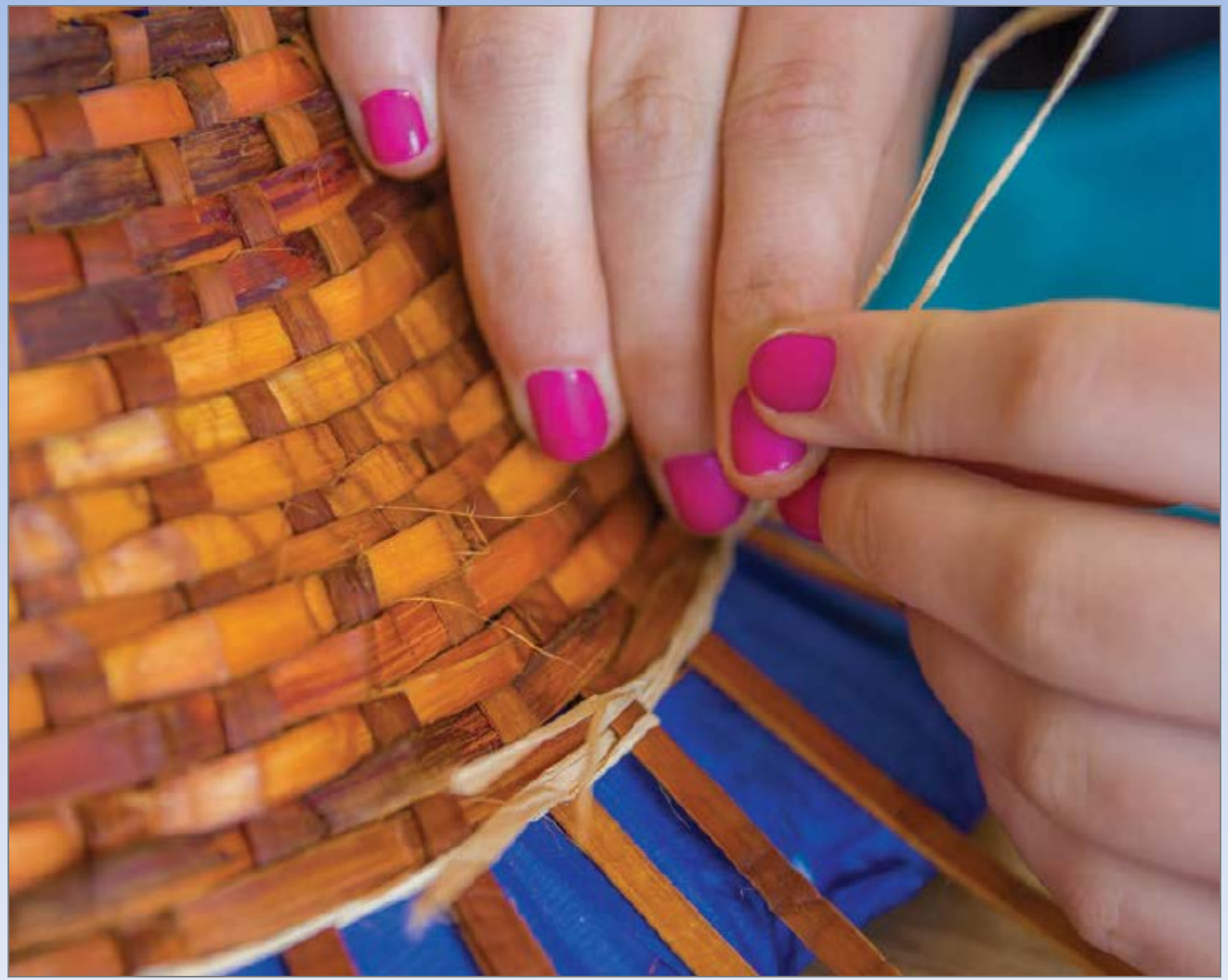
# Sea Level Rise



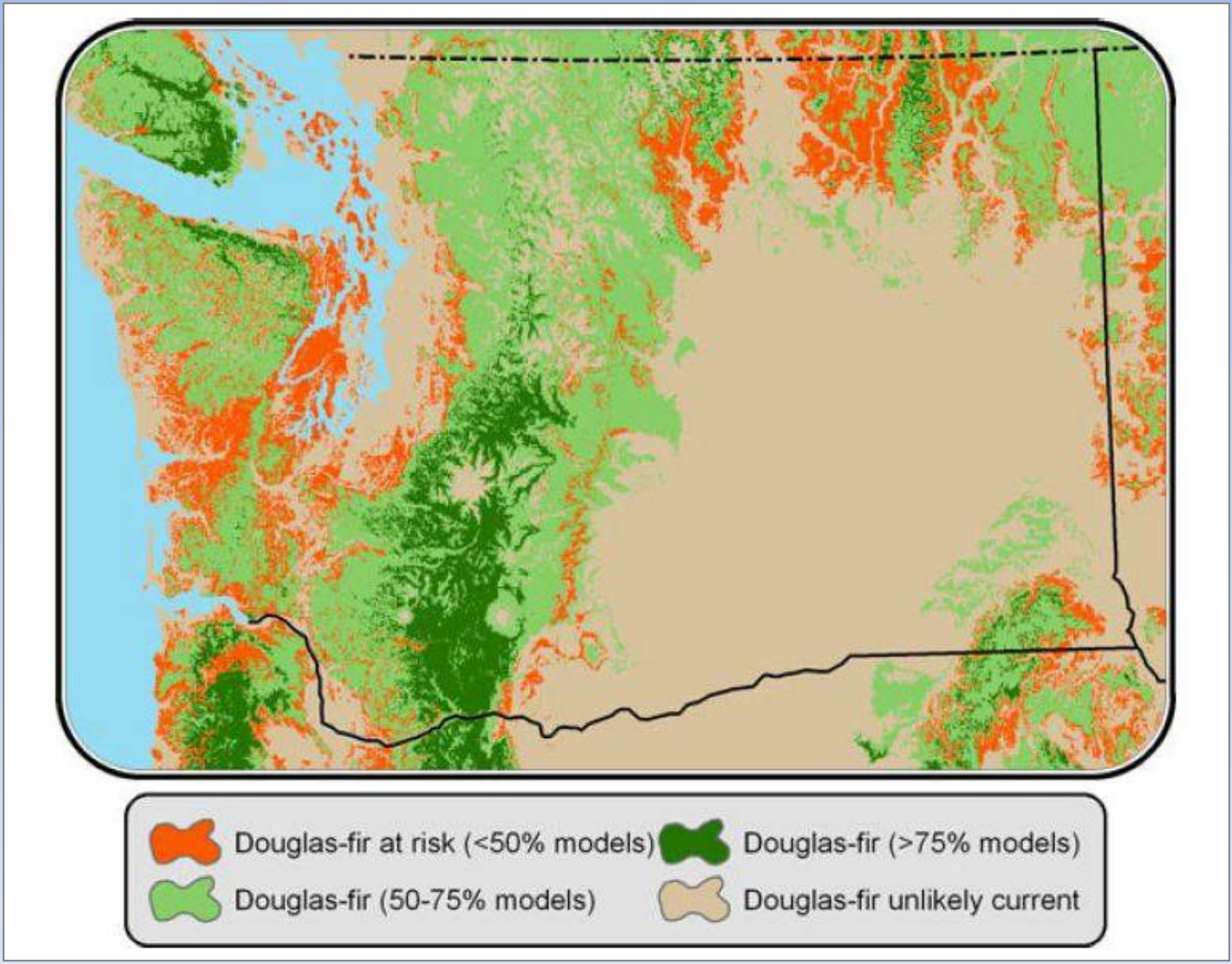

Adapted from Snover et al 2013. Sources: NRC 2012, Mote et al. 2008

| Location | 2050 | 2100 |
|---|---|---|
| Washington State | +7 in. (-1 to +19) | +24 in. (+4 to +56) |
| Puget Sound | + 6 in. (+3 to +22) | +13 in. (+6 to +50) |
| Central & Southern WA | +5 in. (+1 to +18) | +11 in. (+2 to +43) |
| NW Olympic Peninsula | 0 in. (-5 to +14) | +2 in. (-9 to +35) |

# Terrestrial and Upland Environments



# Species Distribution



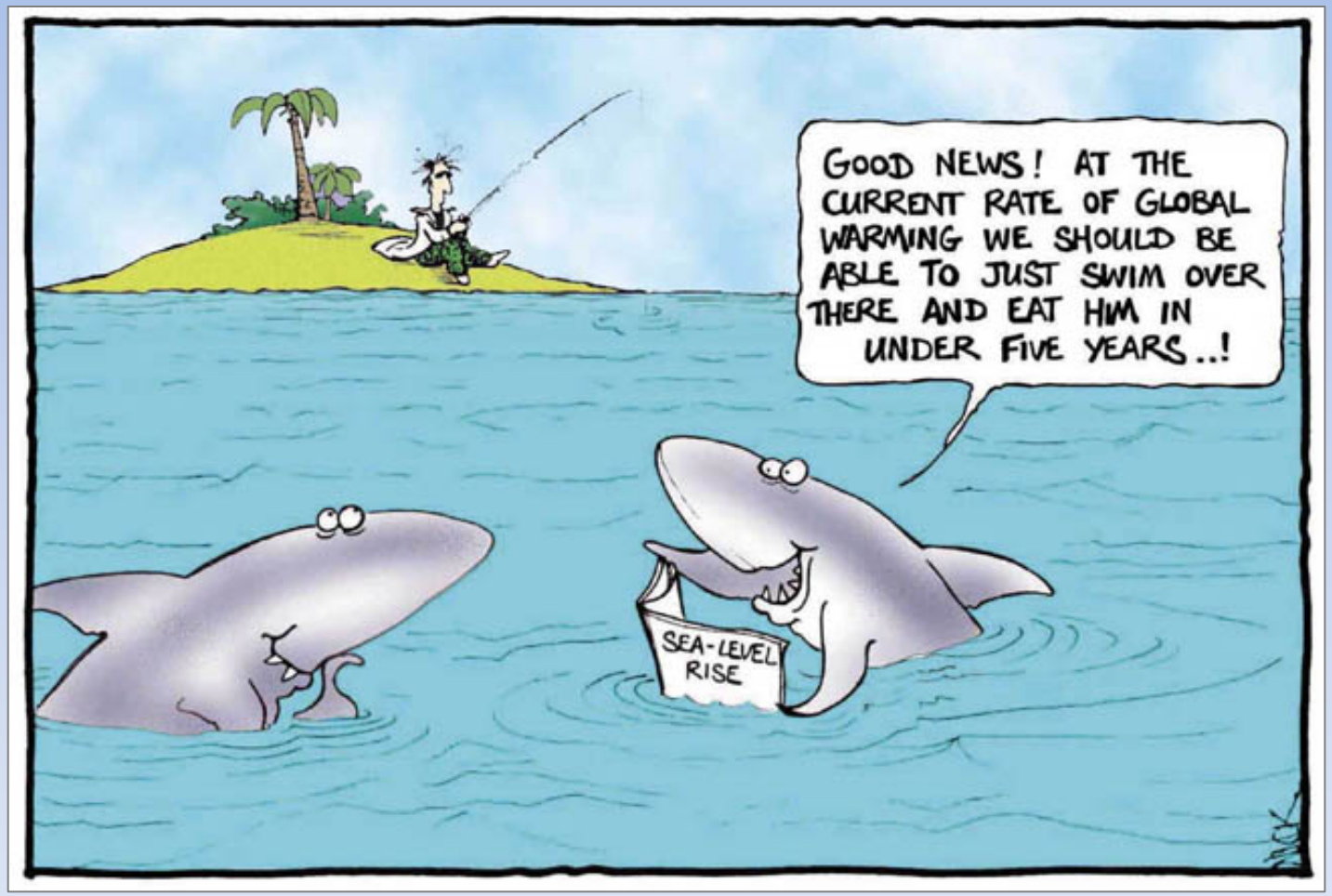

Percentage of statistical models that suggest the climate will support Douglas fir. Orange areas are at greatest risk while dark green areas are at the lowest risk. Source: Littell et al. 2010

# Wildfire

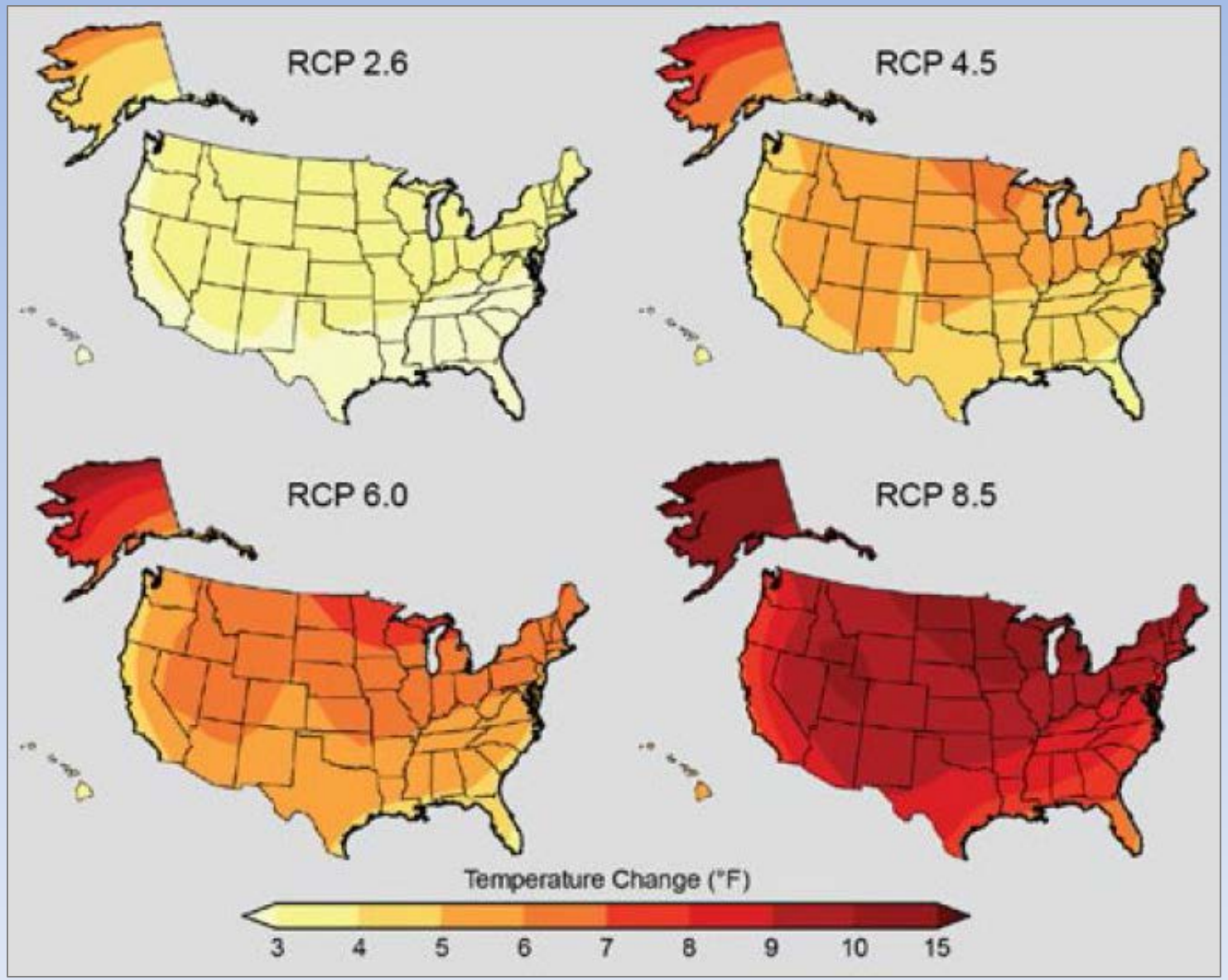
2015 Paradise Fire in the Queets Valley, Olympic National Park

# Impacts Across the Landscape

# Moving Forward



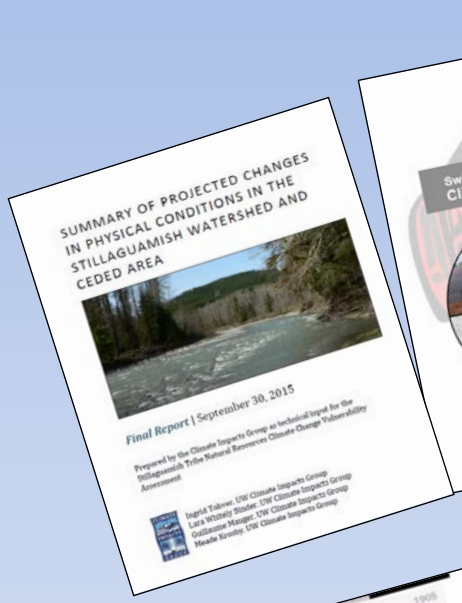
# GHG Emissions Scenarios

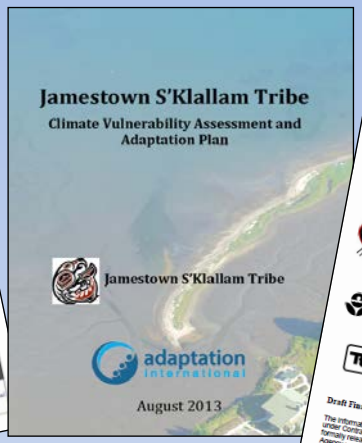


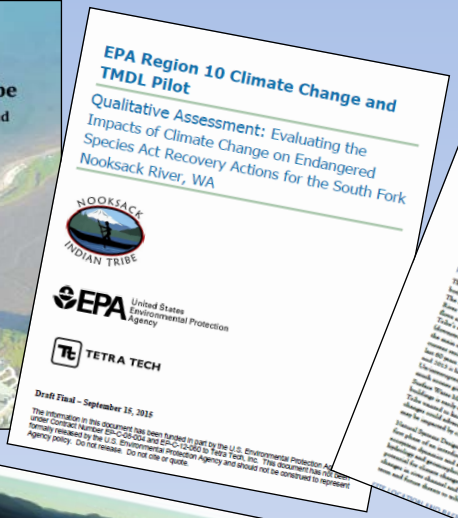

Change in average surface air temp for 2070-2099 relative to 1970-1999. NOAA NCDC/CICS-NC

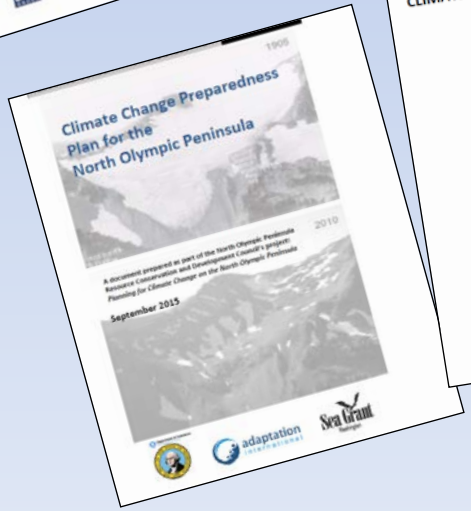
# Adaptation Actions

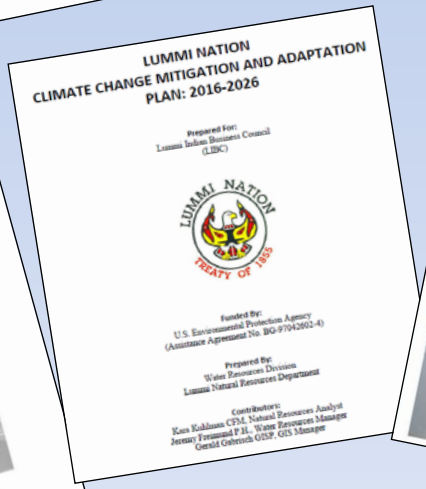
# Tribes Taking Action

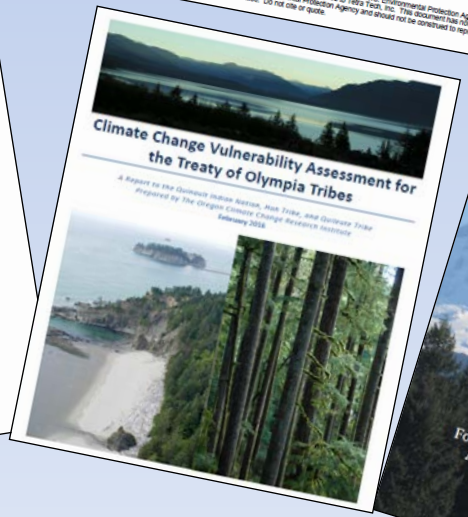






# Questions?

Download the report at:
wtreatytribes.org/climatechange/

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