

Climate Change And Wildfires in the Northwest

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Skagit Climate Science Consortium Forest Dialogue 11/19/2021



W EARTHLAB
UNIVERSITY of WASHINGTON

The New York Times

The Pacific Northwest, Built for Mild Summers, Is Scorching Yet Again

DAILY COMMENT

THE NEW YORKER

SEATTLE UNDER THE HEAT DOME

As global temperatures rise, the Pacific Northwest is obliterating heat records.



Epic Drought Means Water Crisis on Oregon-California Border



After one month, Dixie Fire continues to rage with hundreds of homes destroyed

Rain to bring serious flooding to Skagit County; Hamilton residents urged to evacuate



VANCOUVER | News

B.C. storm: Highways blocked, streets flooded, schools closed, power out, city evacuated

Climate change has and is expected to continue to increase wildfire activity in the Western US.

Climatic Factors Affecting Northwest Fire Potential

Temperature:

Spring
Summer



Precipitation:

Spring & summer
Fall onset
Convective activity



Snowpack:

Spring meltout



Fuels:

Moisture (aridity)
Quantity (fine fuels)



Climate Change and Future Wildfire Potential

Temperature:

Hotter summers



Precipitation:

Less in summer
More in spring & winter



Climate change
interacts with
all of these...



Snowpack:

Reduced
Earlier melt



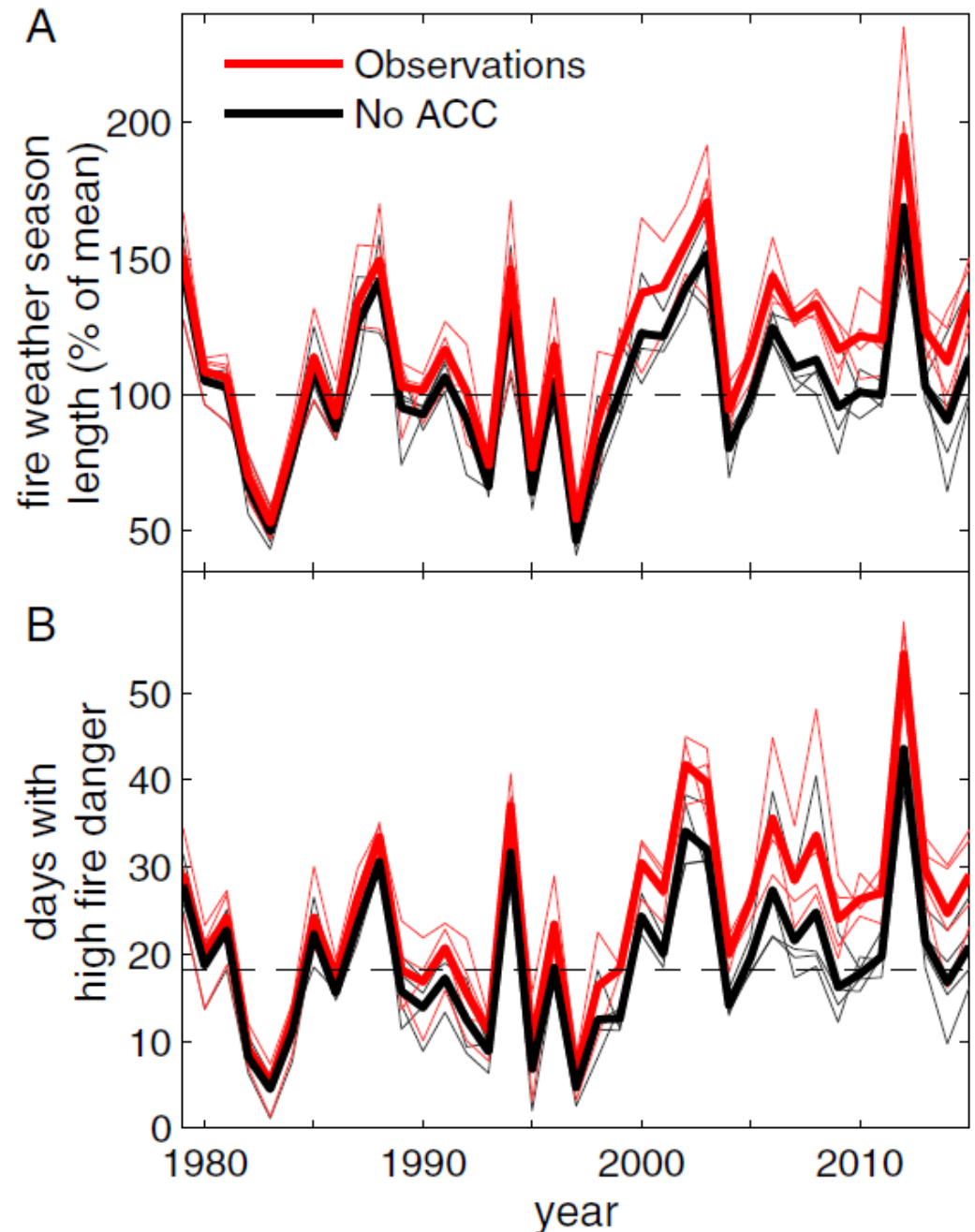
Fuels:

Increasing aridity
More fine fuels

Natural and Human-Caused Climate Changes

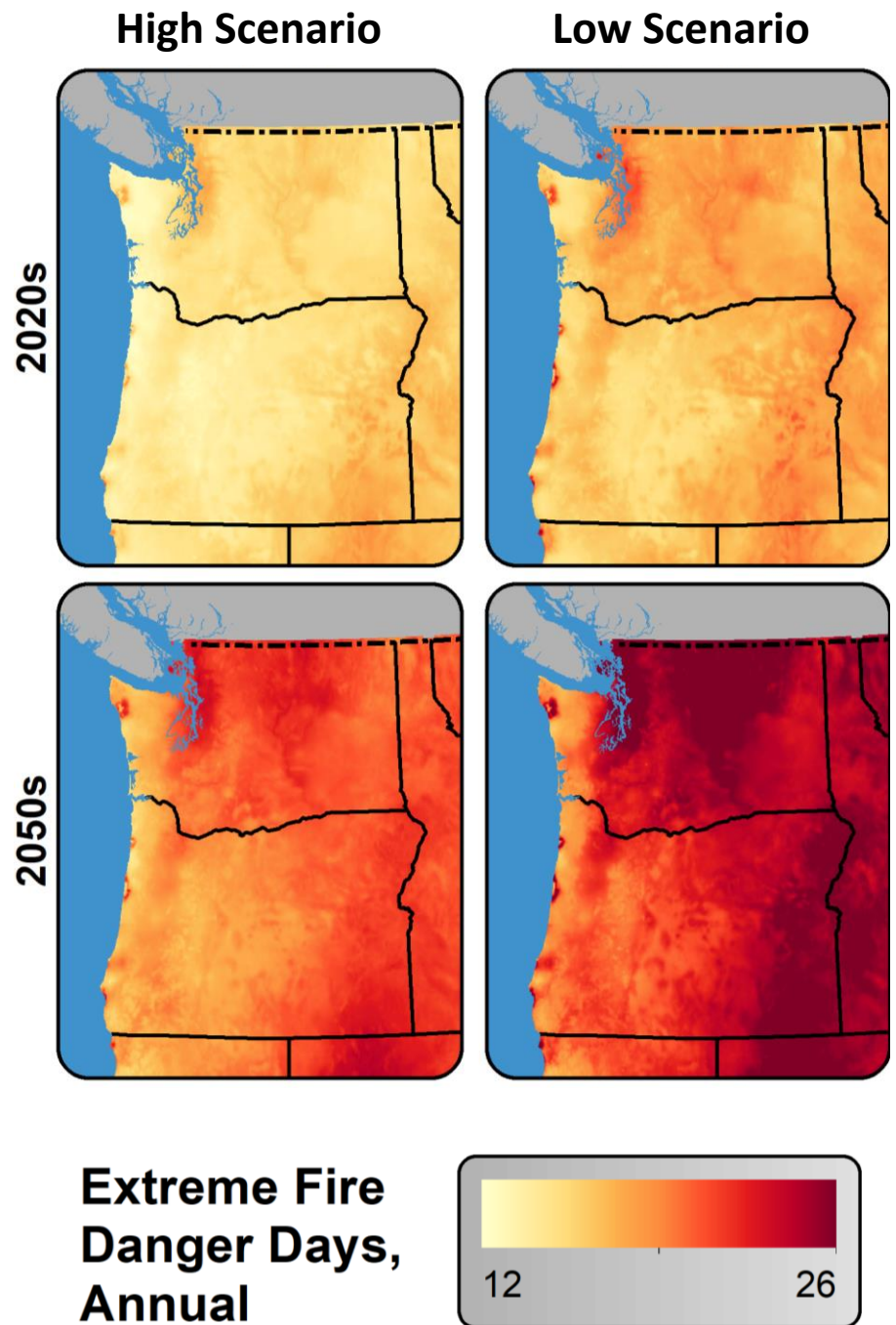
“Anthropogenic climate change accounted for ~55% of observed increases in fuel aridity from 1979 to 2015 across western US forests”

“We estimate that human-caused climate change contributed to an additional 4.2 million ha of forest fire area during 1984–2015.”



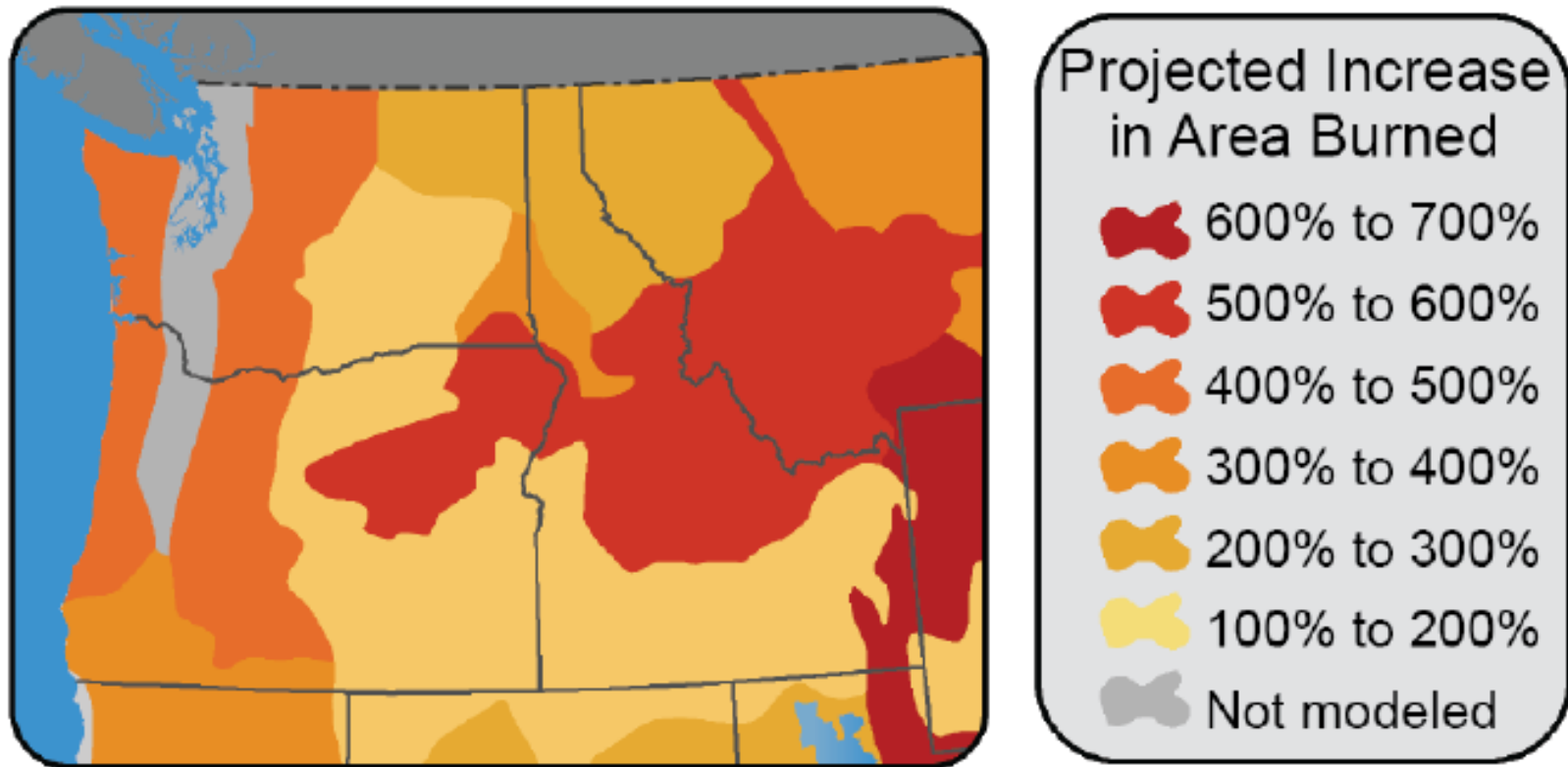
Expected Changes in Wildfire Activity

- More days with extreme fire danger
- Longer fire seasons
- More large wildfires
- Greater acreage burned



Data Source: Climate Toolbox

Projected Increase in Area Burned for the 2040s Relative to 1980-2006.



Dry Interior Fire-Adapted Forests

- 
- Historically
- Low fuels
 - Frequent fires
 - Low severity


Arid Shrub Steppe and Grasslands

Historically

- Low fuels
- Moderately frequent (10- 30 years)
- Low severity

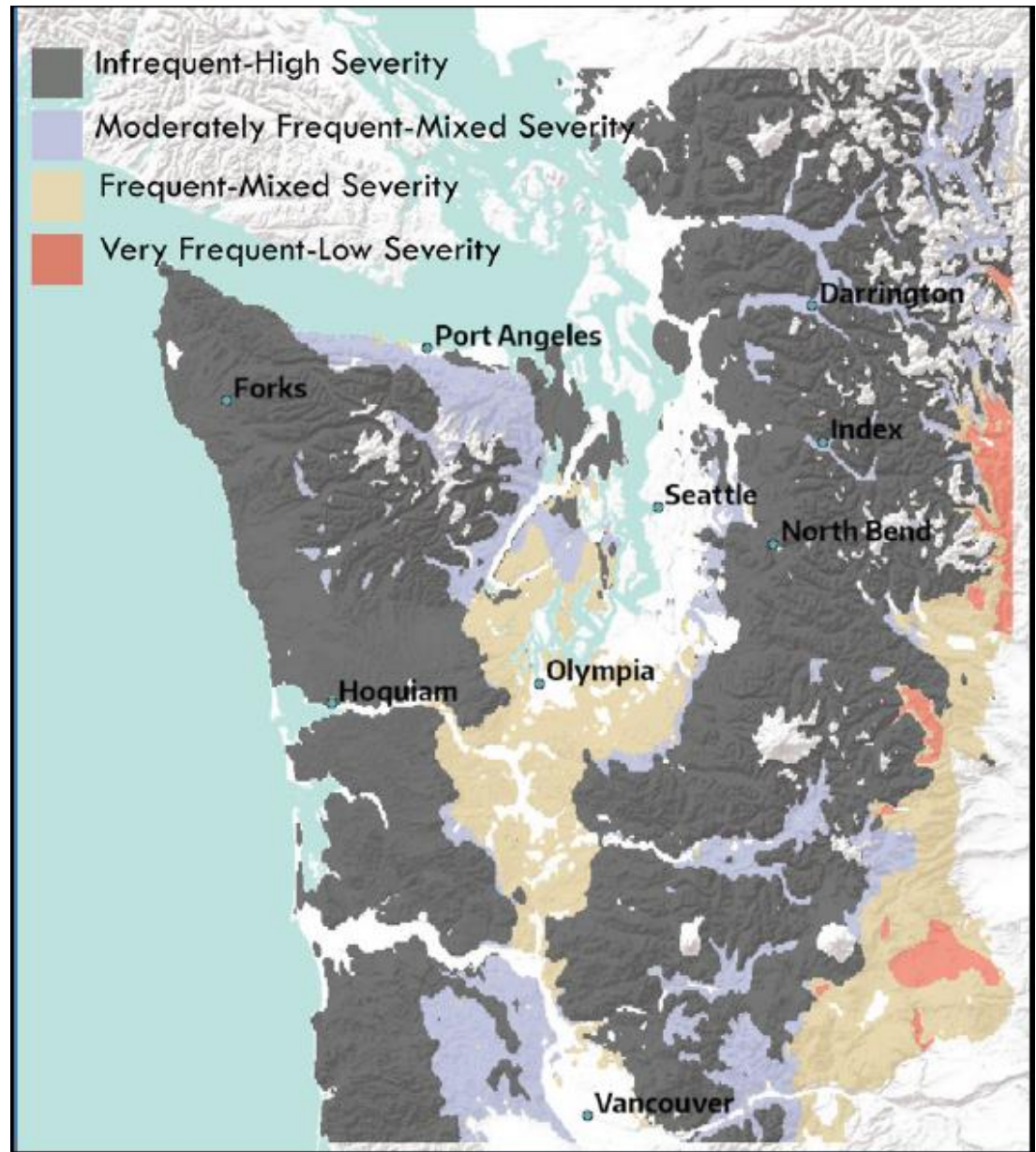
Although climate change is also expected to increase wildfire potential in western Washington, the relationship between climate and wildfire in this region is unique for the West.

Wet Forests of the western Pacific Northwest

- 
- Naturally heavy fuels
 - Infrequent (200- 600 yrs)
 - Dry summers but not always

Wildfire in Western Washington

- Infrequent
- High severity fires that typically kill large forested areas
- Large (250,000 to 1 million acres)



Not all fires in western Washington are alike.

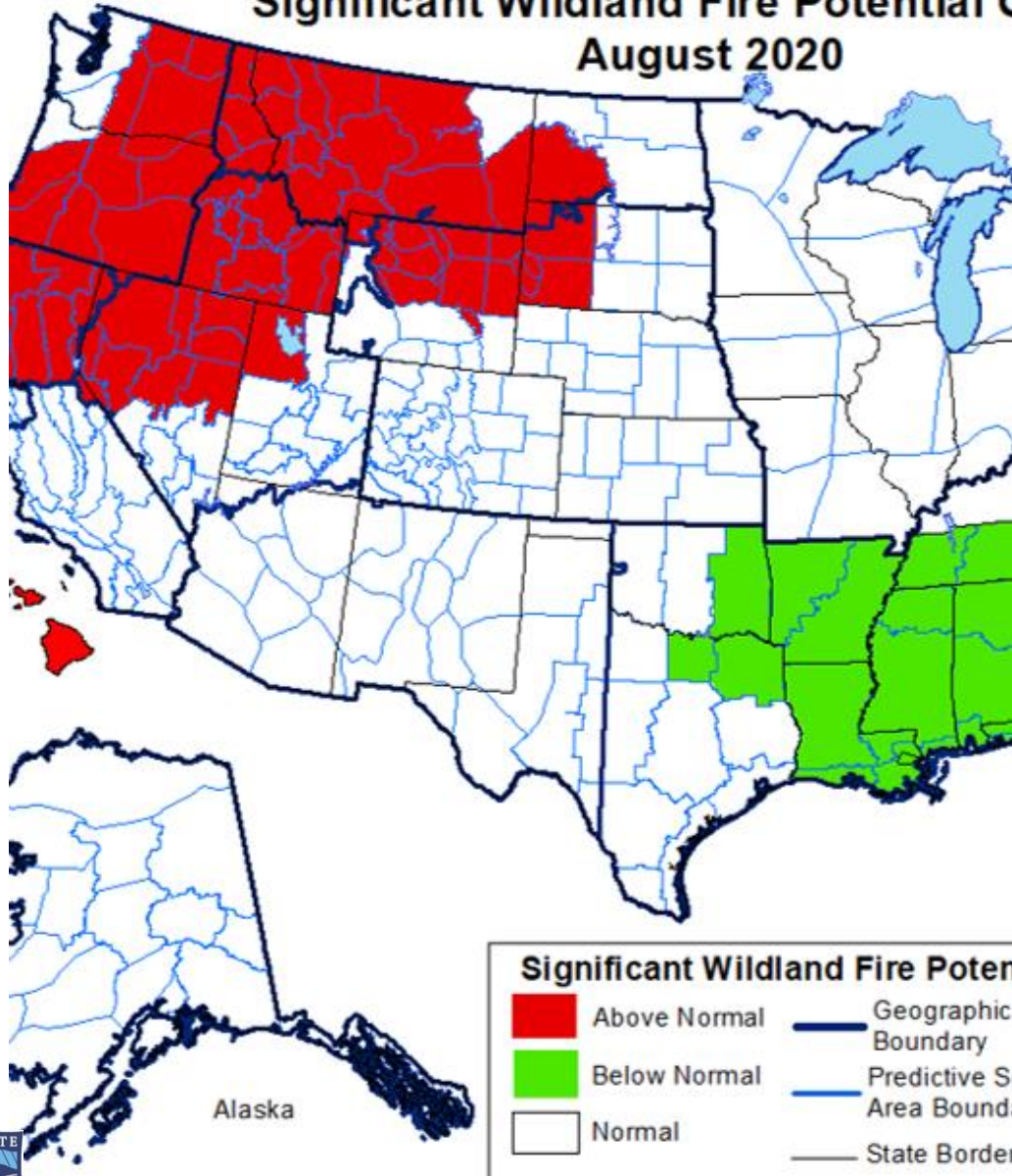
More common: fires less than 25,000 acres appear to be driven by more moderate climate conditions.

Rare: large, fast-moving fires driven by high winds and extreme fire weather conditions.



**The unique role of wildfire in
the western Pacific Northwest
affects how we can plan,
prepare, and live with wildfire.**

Significant Wildland Fire Potential C August 2020

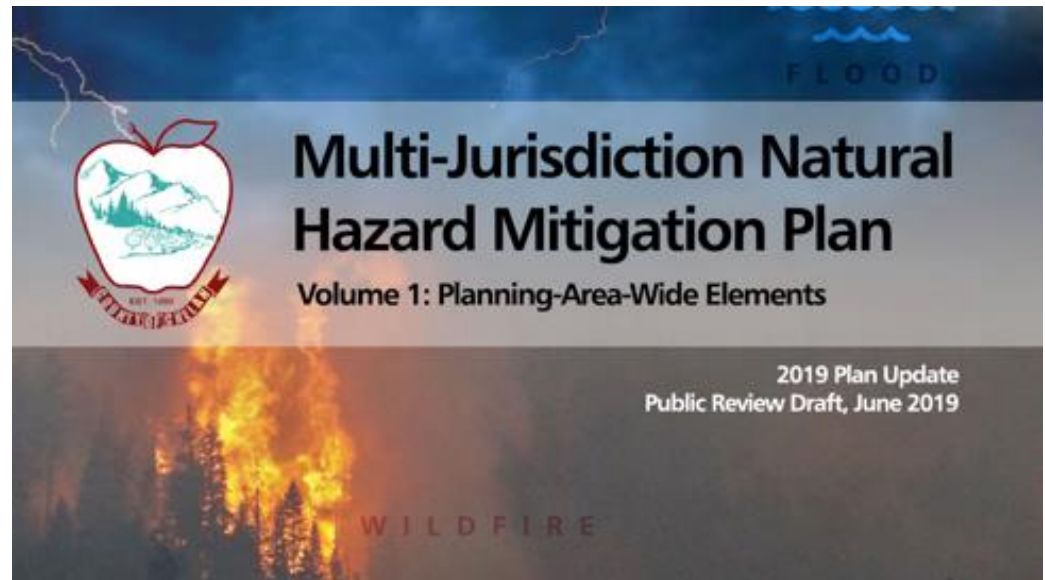


Awareness & Prevention

- Maintain awareness of fire season conditions
- Limit activities that could cause ignitions

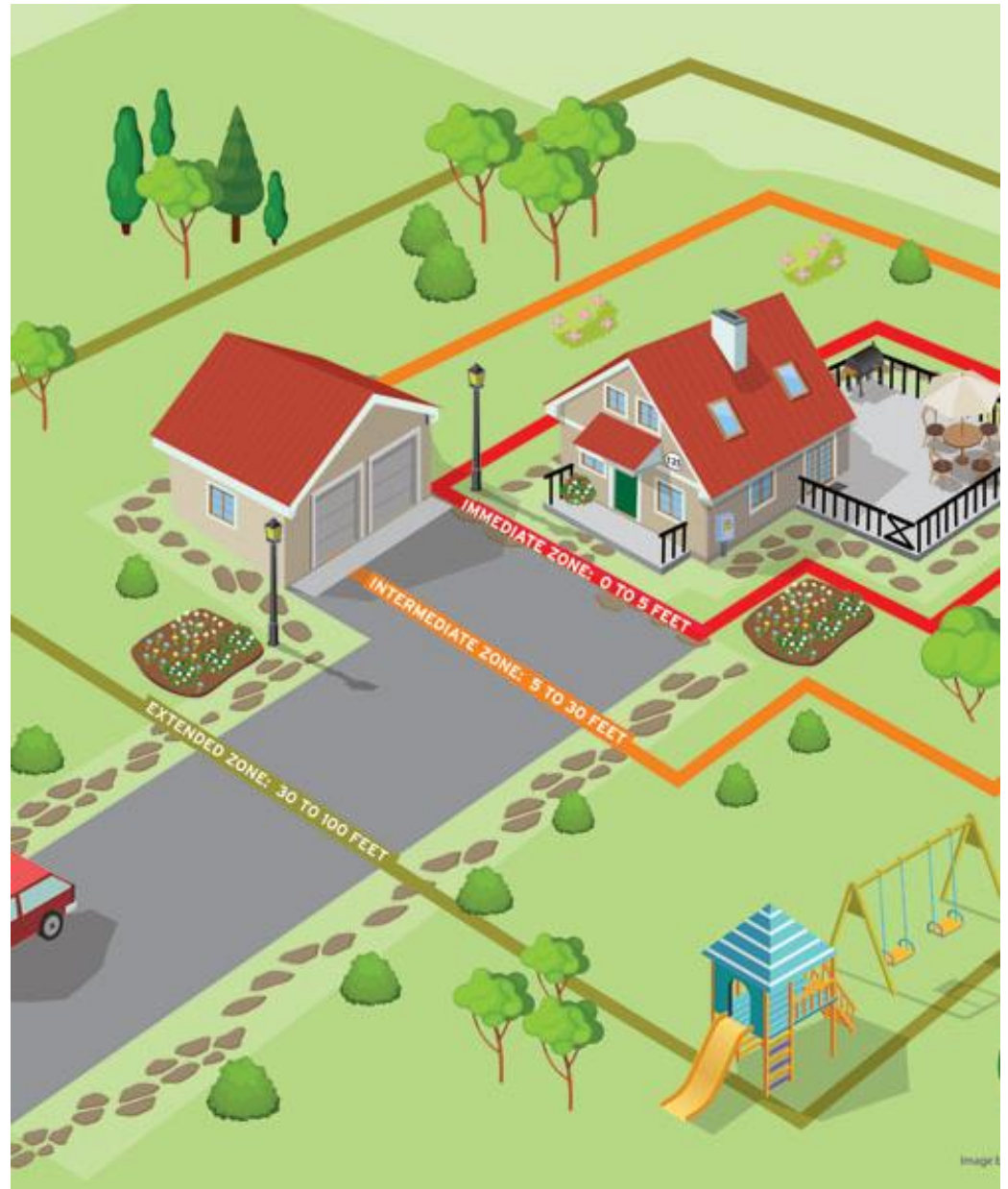
Emergency Response & Preparedness

- Hazard mitigation planning
- Wildfire response capacity
- Landuse planning and building codes
- Evacuation routes and planning

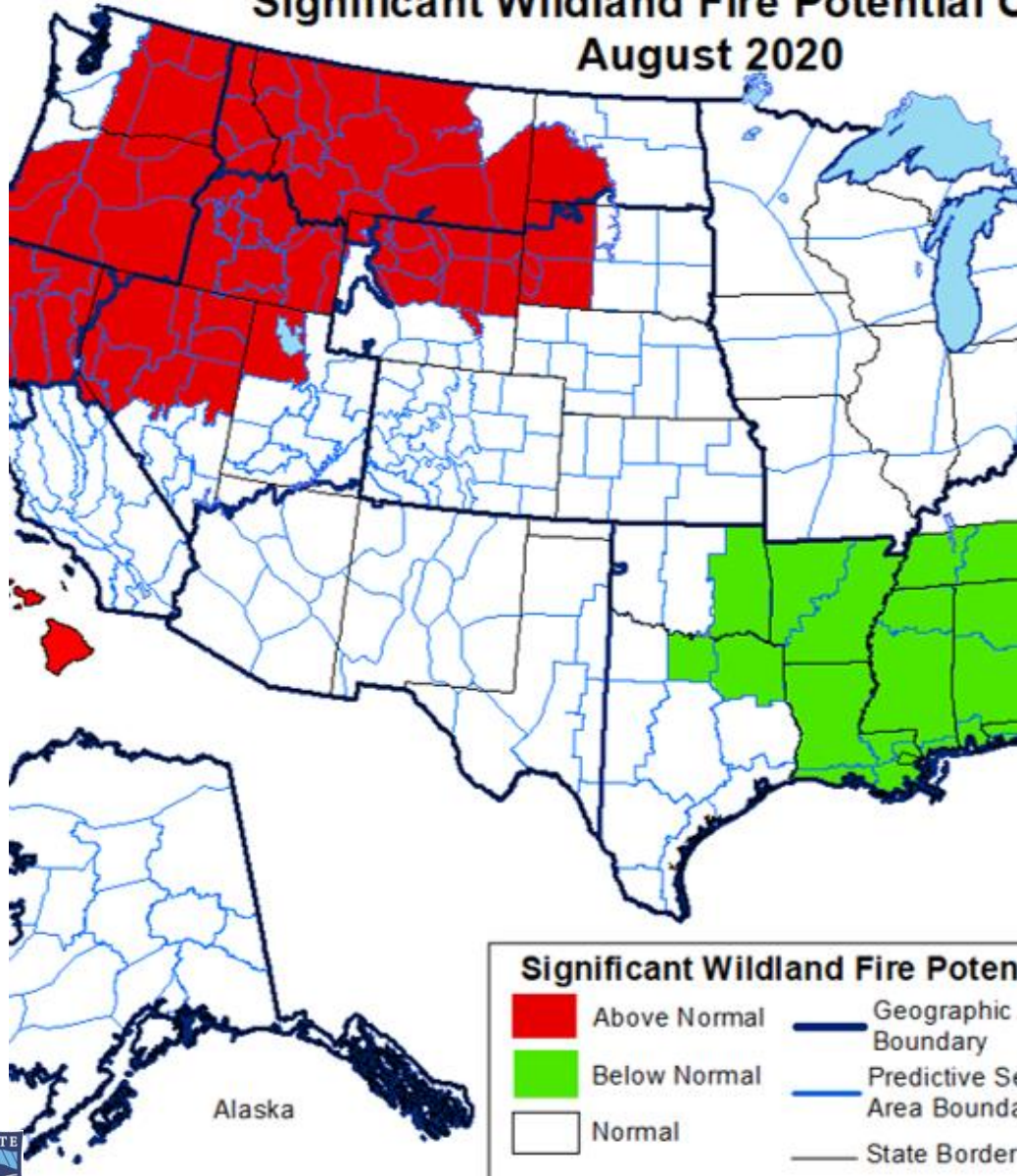


Protect People, Communities & High Value Resources

- Firewise USA principles for structures
- Vegetation management immediately near homes and access routes
- Strategic fuel breaks



Significant Wildland Fire Potential C August 2020



Post-fire Planning & Management

- Erosion and landslide prevention
- Protection and restoration of water quality and supply
- Plan ahead for post-fire response
- What vegetation will be planted where?
- What sources for seeds and plans



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Extra Slides

Historical wildfires in western Washington were **BIG**

1700 fire events

> 1 million acres on the Olympic Peninsula

3 million acres in western Washington

Yacolt complex, southwestern Wash (1902)

500,000 acres

Tillamook, northwest Oregon (1933, 1939, 1945, 1951)

350,000 acres



Forest Management Legacy

Thinning and prescribed burning can reduce fire risk in dry fire-adapted forests where fire has been excluded and fuels have accumulated.



Eastside Pine prior to harvesting (2002) Strata - E2G (approx. 300+ Trees Per A



Eastside Pine after harvesting (2002) Strata - E3N (approx. 90-110 Trees Per Ac.)

The wildland-urban interface is growing

Nearly half of the population in the western U.S. lives in the wildland urban interface.

Since 1990, 60% of new homes in California, Oregon, and Washington have been built in the wildland urban interface.

