“Global Warming Basics & Rogue Basin Consequences”

SOREEL August Institute 2018

Alan Journet & Kathy Conway
541-301-4107 – 541-324-4501

http://socan.eco
alanjournet@gmail.com
climatequestions@socan.info

Southern Oregon Climate Action Now
SOCAN
Confronting Climate Change

Part Three:

Implications for the Rogue Valley

Biome Distribution

Boreal Coniferous Forest

Deciduous Forest

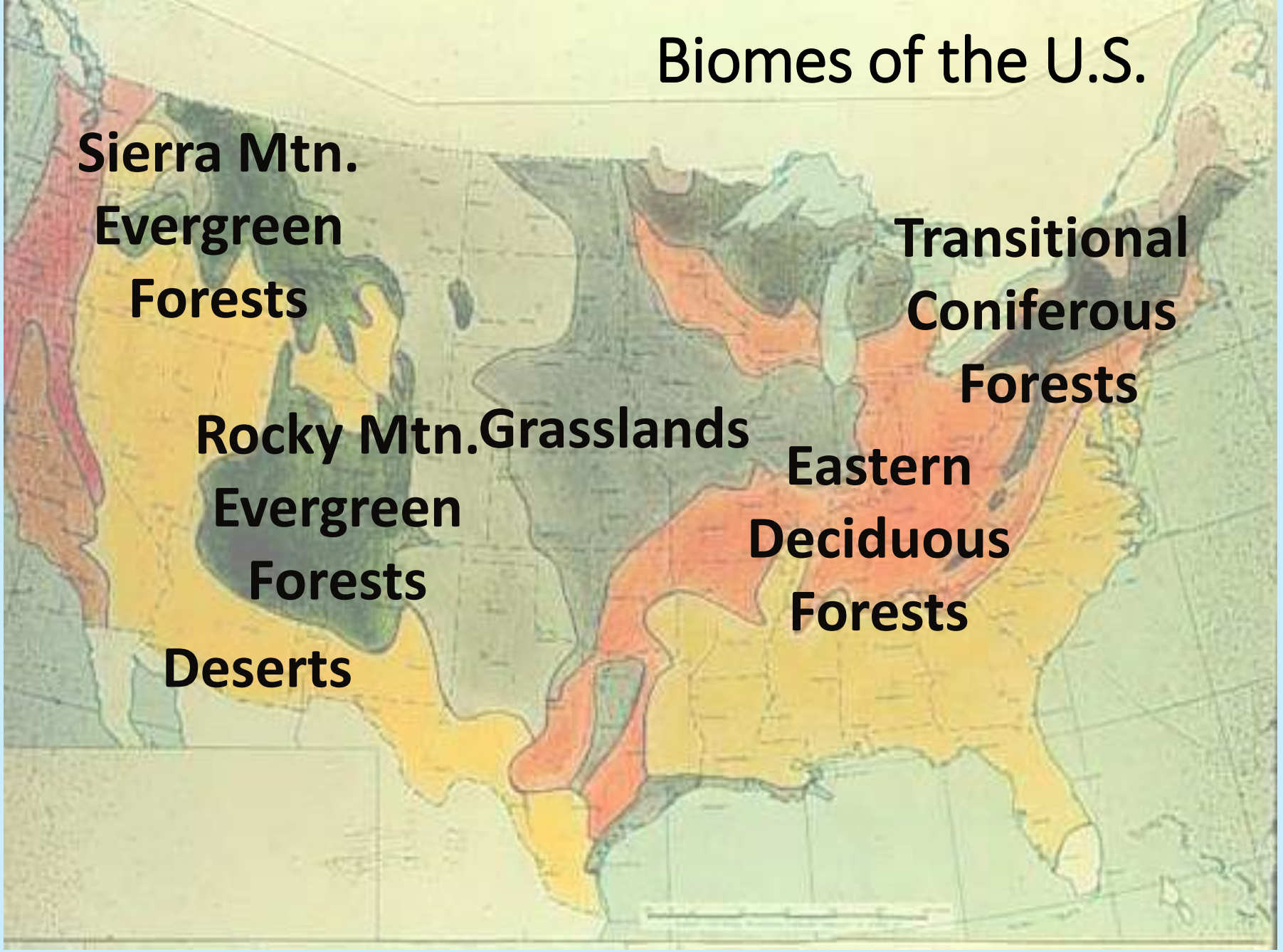
Tropical Rain Forest

Desert

Grassland

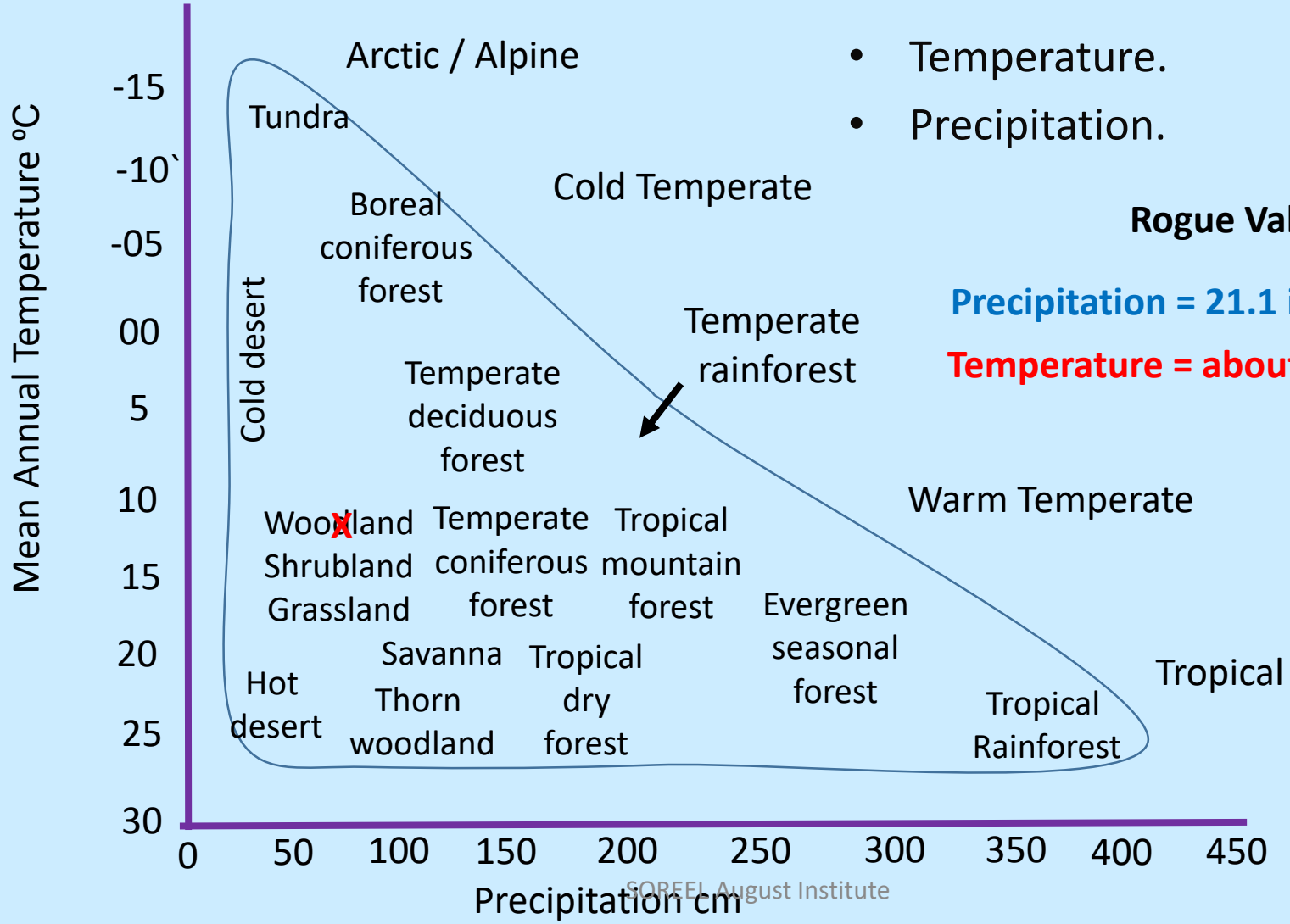
Tundra

Savannah


Biomes of the U.S.
Sierra Mtn. Evergreen Forests
Transitional Coniferous Forests
Rocky Mtn. Evergreen Forests
Grasslands
Eastern Deciduous Forests
Deserts

What Determines Biome Location?

Whittaker's Biome Chart



- Temperature.
- Precipitation.

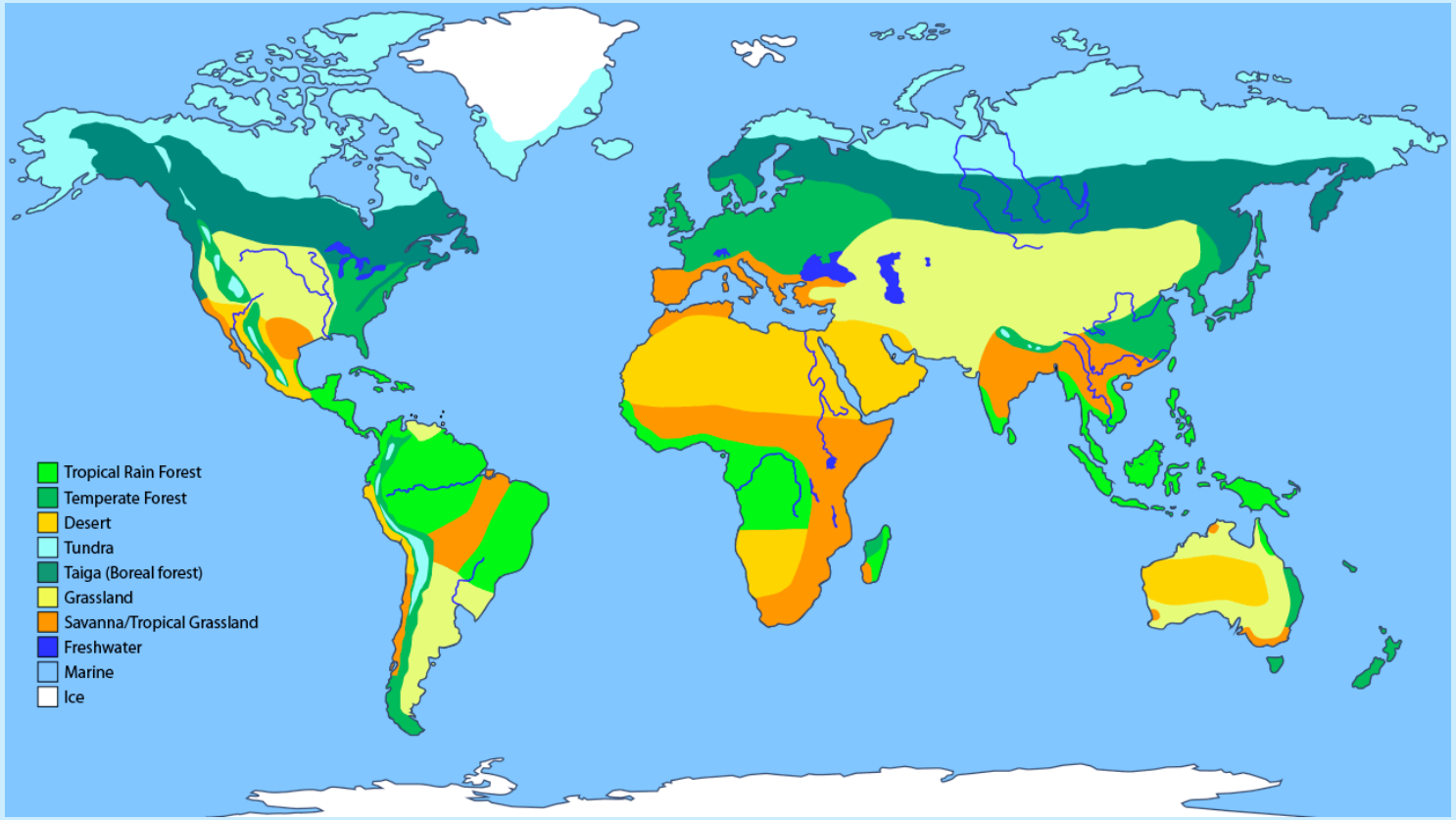
Rogue Valley, Oregon

Precipitation = 21.1 inches; 53.5cm

Temperature = about 53.3°F = 11.8°C

So what, you might ask?

Biomes of the world.



Not only do these represent where our flora and fauna live…but

These control the agricultural and forestry potential of our land

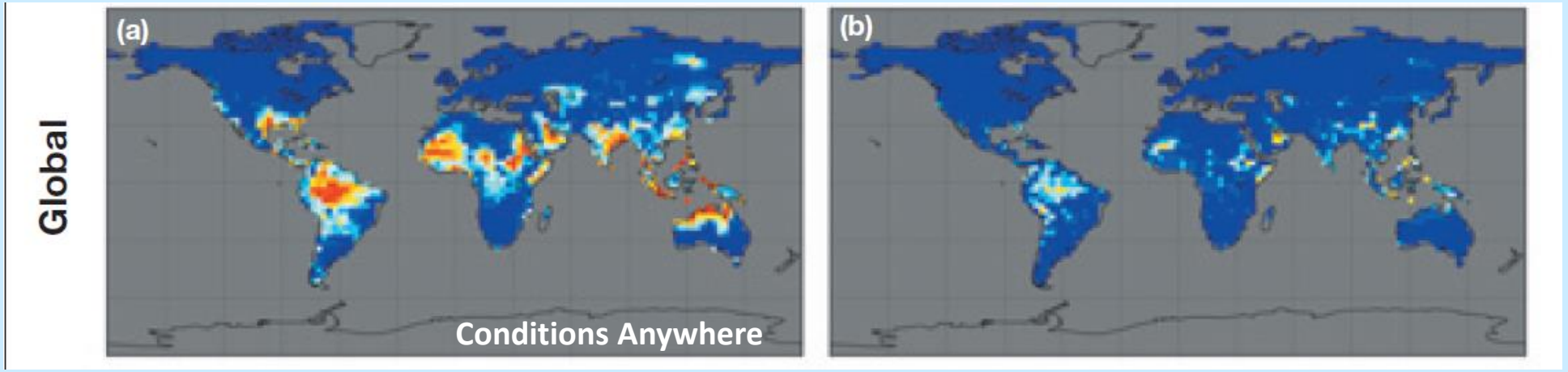
https://askabiologist.asu.edu/explore/biomes

POTENTIAL FUTURE (TO 2100) OF CURRENT NATURAL COMMUNITIES

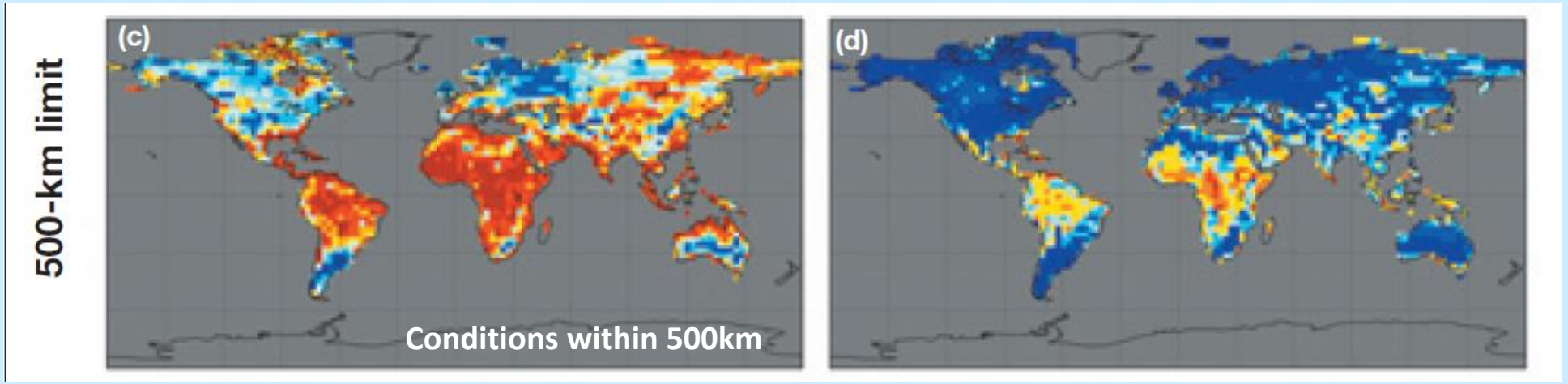
A2: Business as usual CO_2 → 850 ppm **B1: Some redress: CO_2 → 550 ppm**

Probability of existing: Red = 0; Blue = 1

(a) and (b) anywhere on Earth



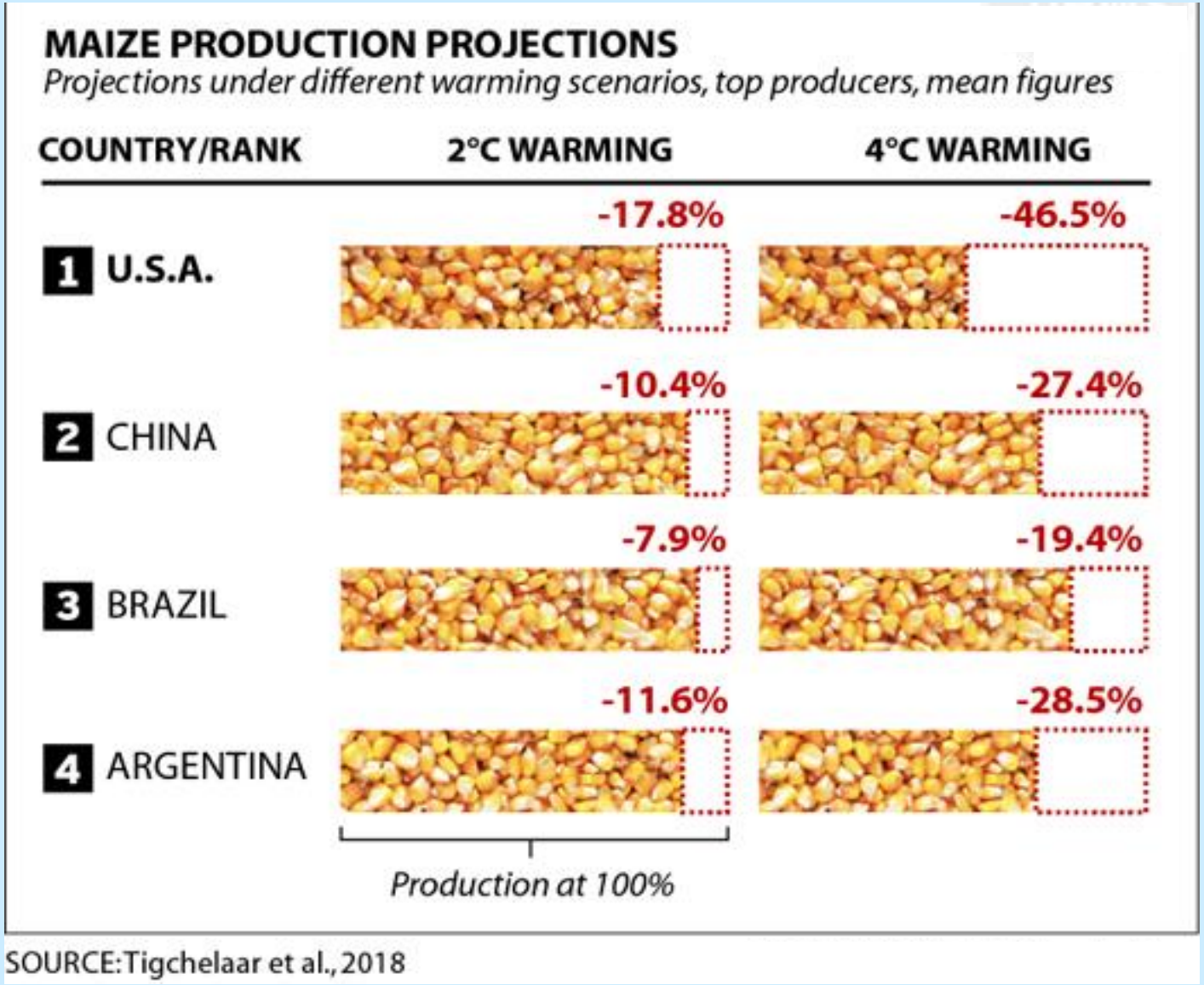
(c) and (d) within 500 km of current location



Williams & Jackson 2007: http://www.frontiersinecology.org/paleoecology/williams.pdf

What regions will be most affected?

Climate Change Risks to Corn Production



https://insideclimatenews.org/news/11062018/climate-change-research-food-security-agriculture-impacts-corn-vegetables-crop-prices?utm_source=EHN&utm_campaign=c14fa2ca20-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_8573f35474-c14fa2ca20-99402545

Natural Community Condition Trends

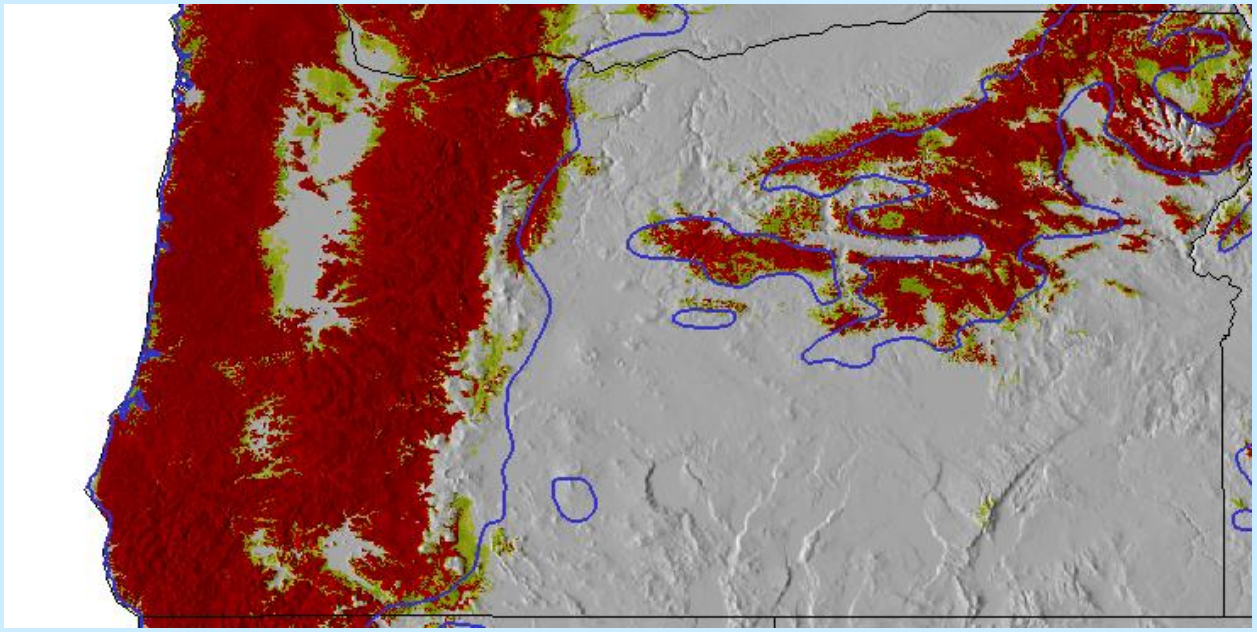
1 - Elimination of spruce/fir/hemlock forest,

2 - Reduction in Douglas fir dominated association,

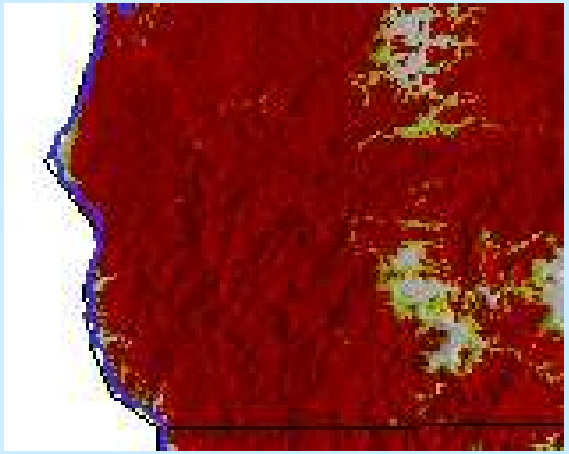
3 - Possible expansion of Ponderosa pine association,

4 - Expansion of Oregon oak chaparral association,

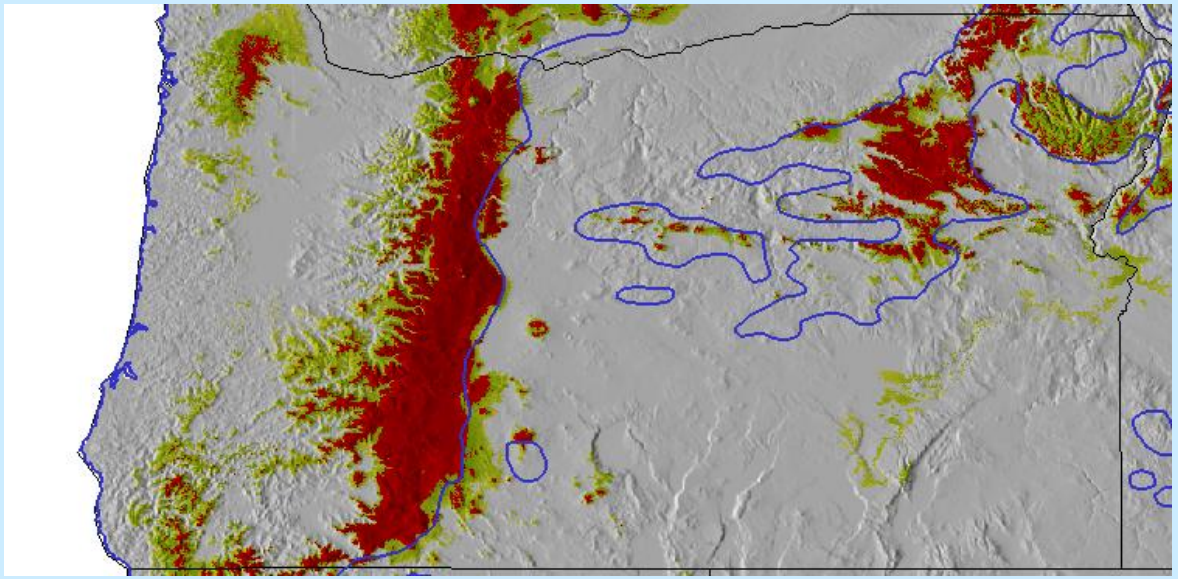
5 - Expansion of shrubland and grassland.



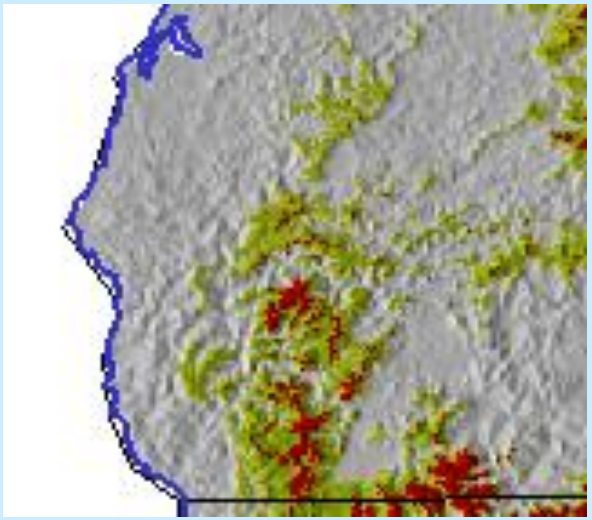
Douglas fir Now



http://forest.moscowfsl.wsu.edu/climate/species/speciesDist/Douglas-fir/current.png

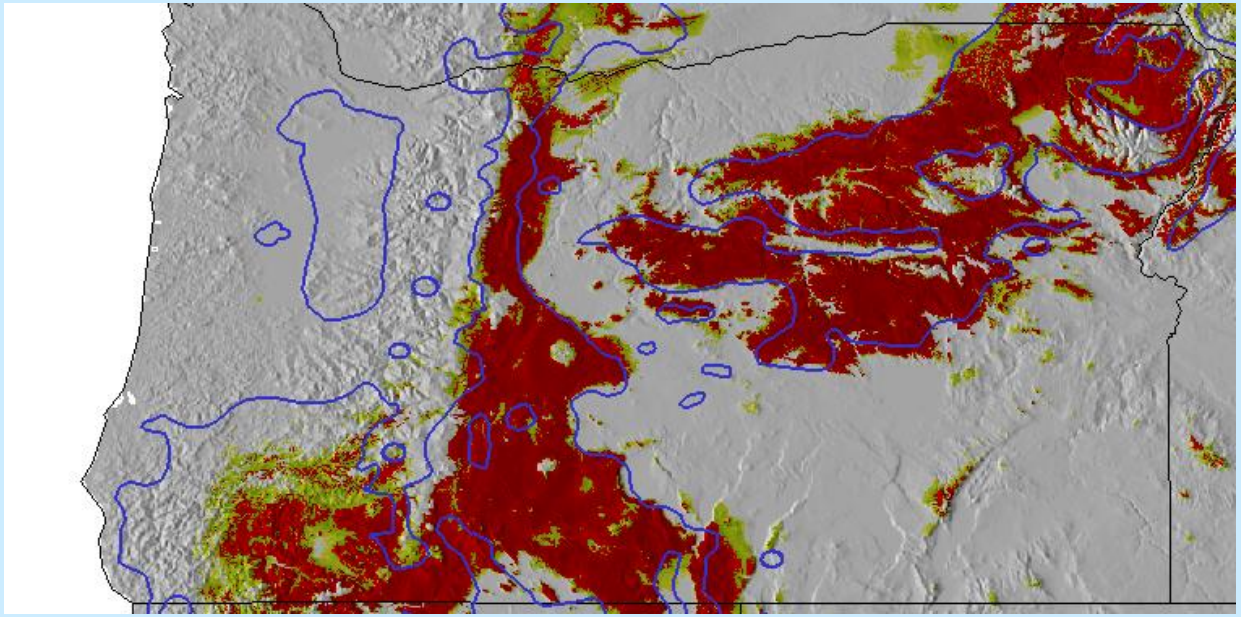


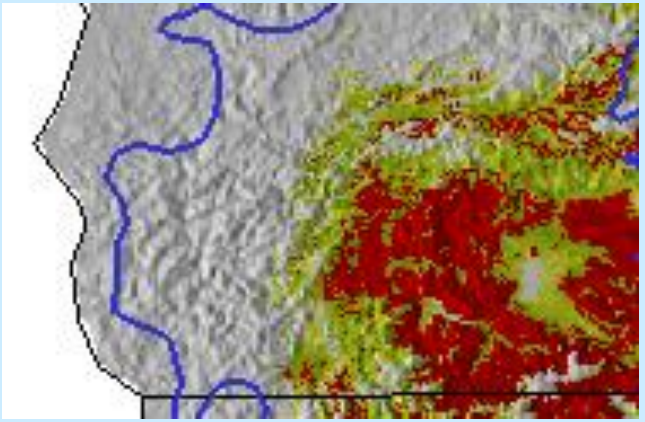
Douglas fir in 90 years



http://forest.moscowfsl.wsu.edu/climate/species/speciesDist/Douglas-fir/CGCM3_A2_y2090.png

Ponderosa pine now





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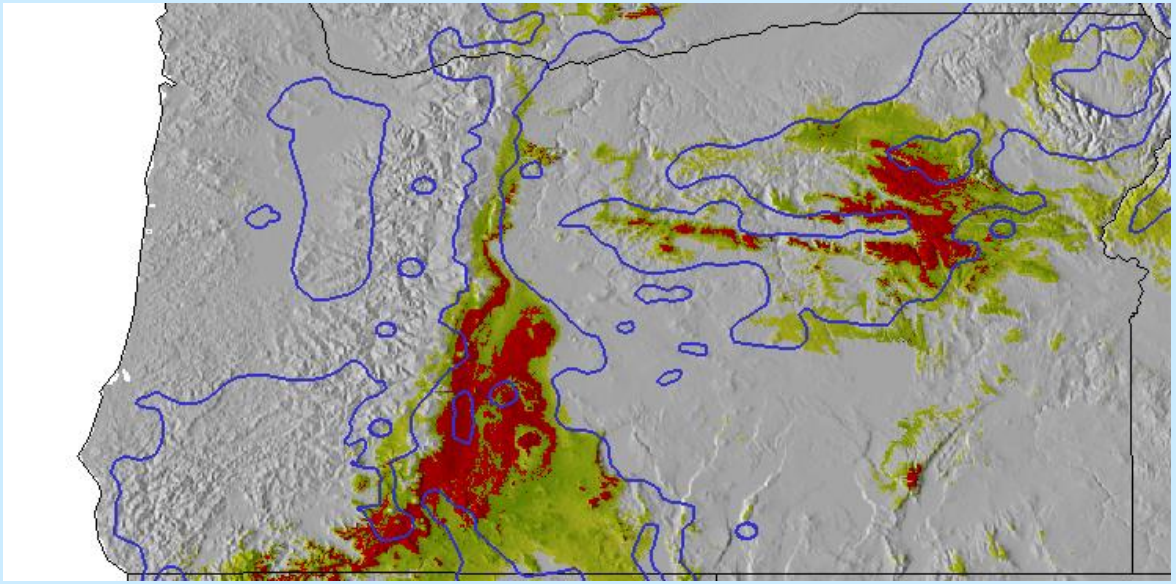
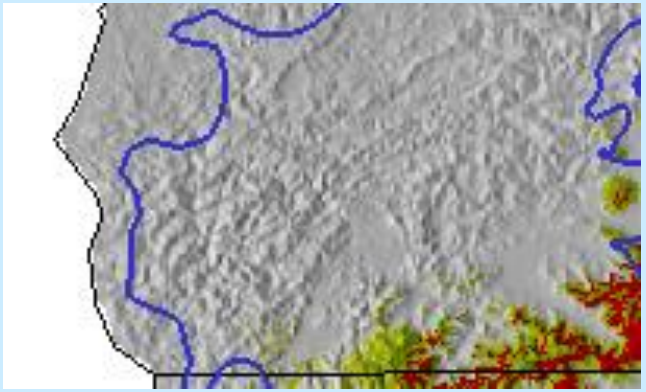
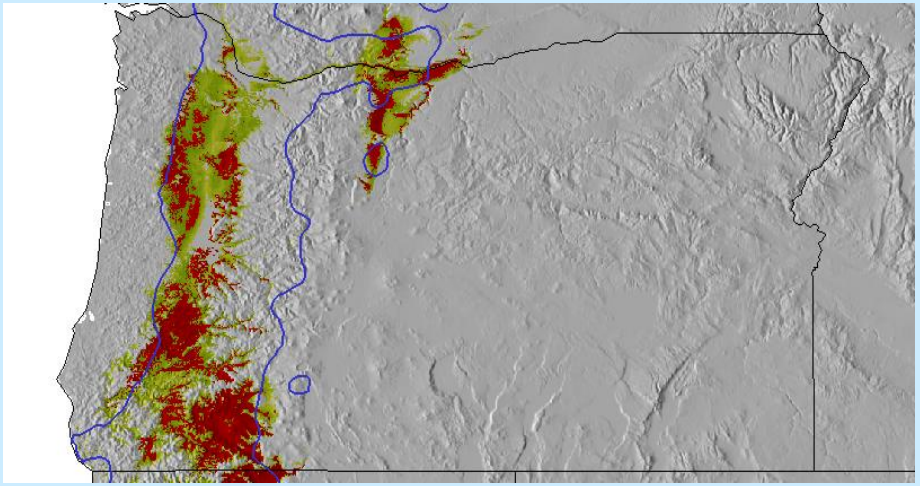
Ponderosa pine in 90 years

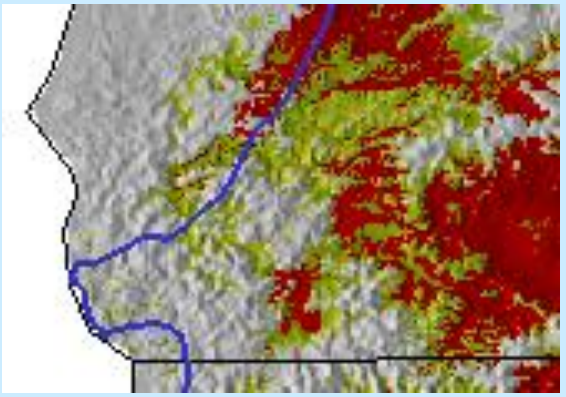




http://forest.moscowfsl.wsu.edu/climate/species/speciesDist/Ponderosa-pine/CGCM3_A2_y2090.png

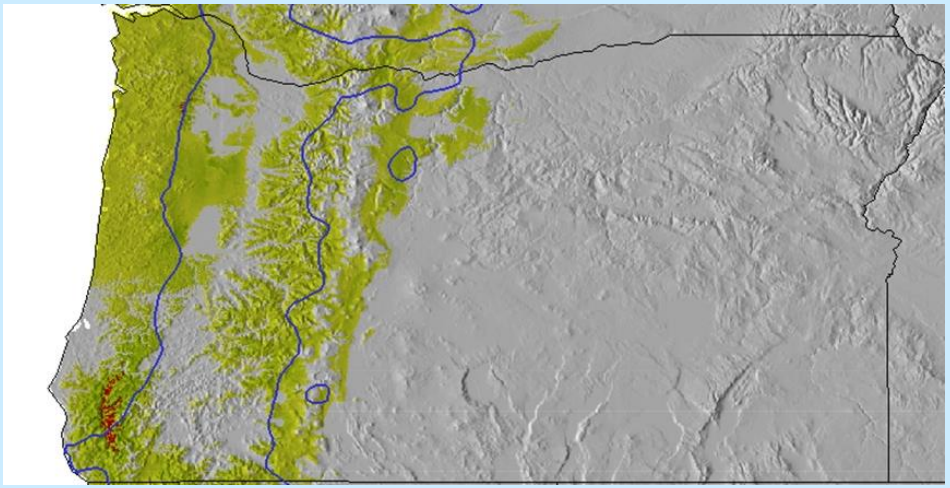
Garry oak now

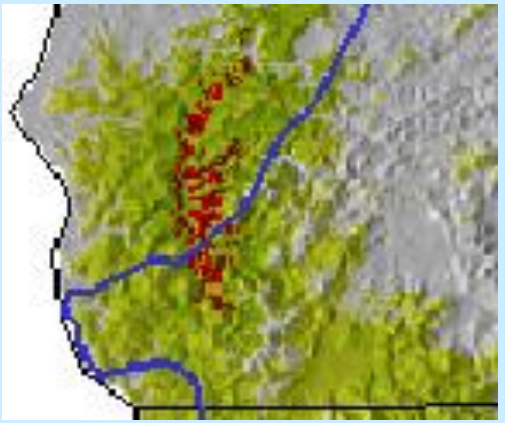




http://forest.moscowfsl.wsu.edu/climate/species/speciesDist/Oregon-white-oak/current.png

Garry oak in 90 years





http://forest.moscowfsl.wsu.edu/climate/species/speciesDist/Oregon-white-oak/HADCM3_A2_y2090.png

Western Wildfires & Climate Change

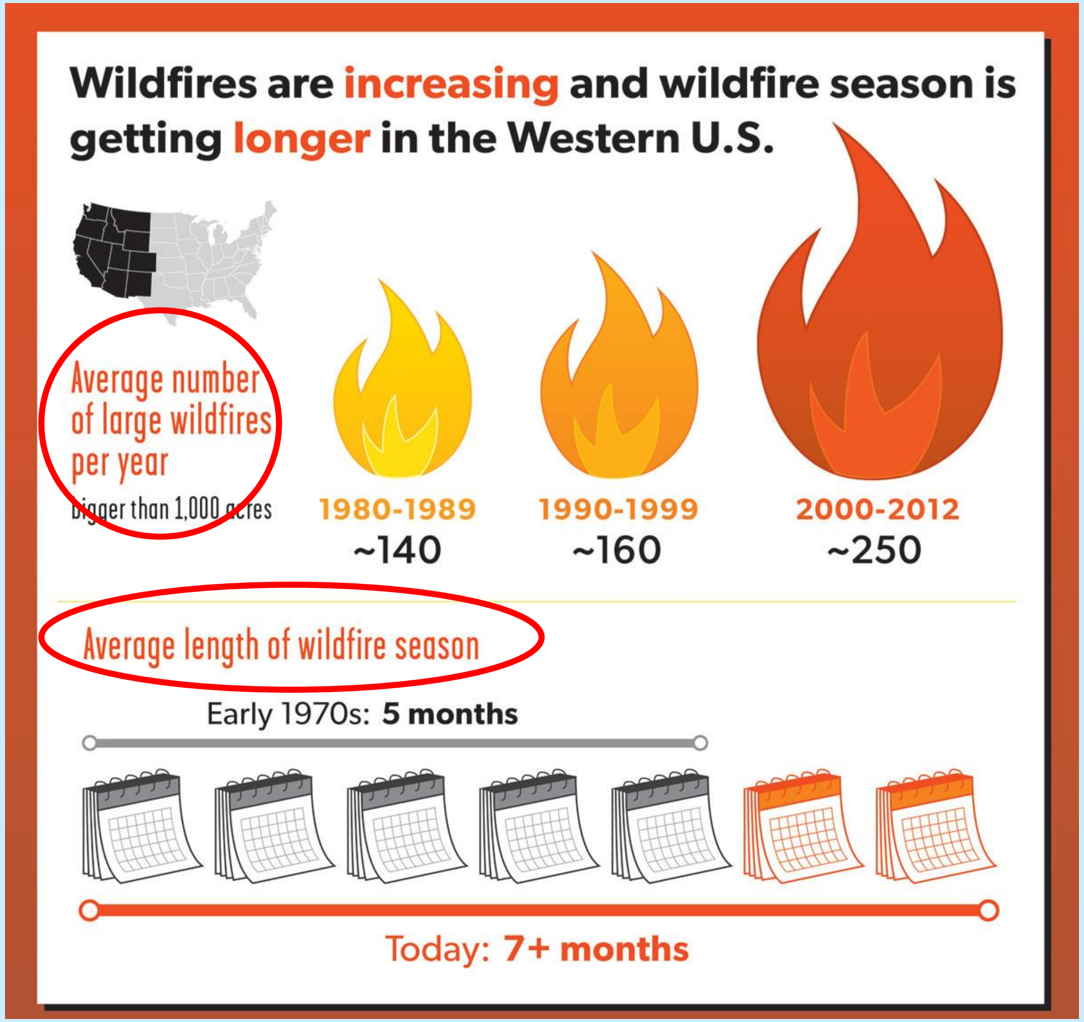
- **0.5^{0}C is the difference between a high fire year and a low fire year.**

(http://news.discovery.com/earth/climate-change-yellowstone-fires.html)

Forest studies tell us wildfire frequency is high when annual average temperature is high and snowmelt arrives early.

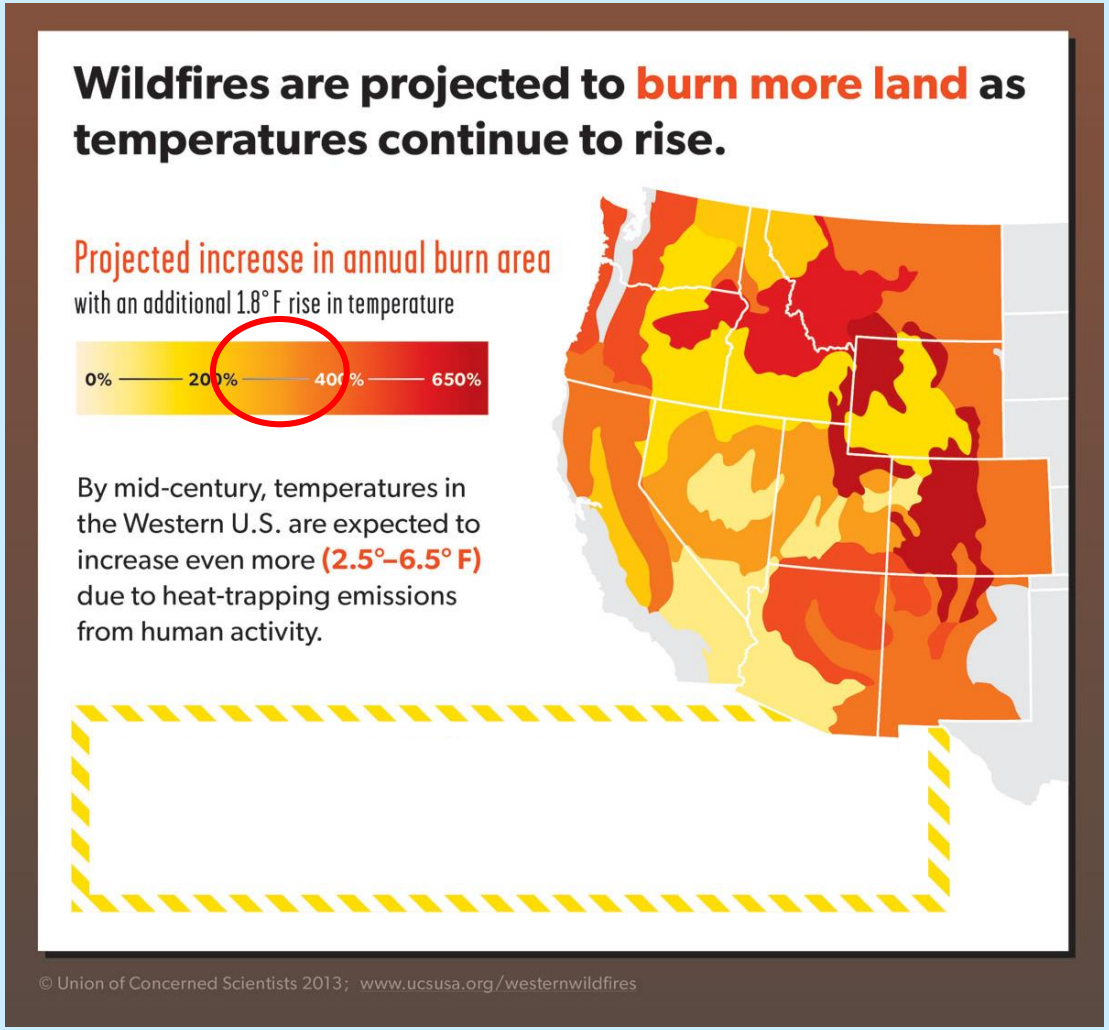
Exactly the historic trends and projections discussed

Western Wildfires & Climate Change



http://www.ucsusa.org/global_warming/science_and_impacts/impacts/infographic-wildfires-climate-change.html

Western Wildfires & Climate Change



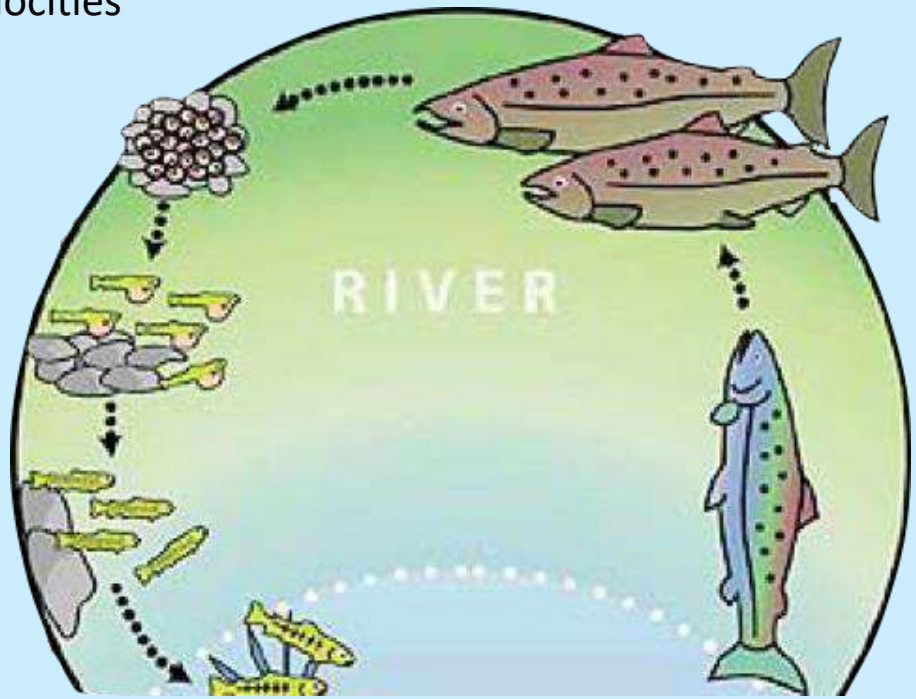
http://www.ucsusa.org/global_warming/science_and_impacts/impacts/infographic-wildfires-climate-change.html

Max Temp ≈ 72 - 75°F
Spring Chinook growth optimum
= 60.1°F

Eggs (in gravel)
clear water
low velocities

Spawning (in streams)
redding gravels
energy and other fish

Alevin / Fry (in gravel)
clear water
low velocities



Parr (streams)
cold water
low velocities
passage

Adult Fall Migration
(in River)
cold water
enough water
passage

Growth & Maturation:
(in Ocean)
Conducive Chemical environment
Food

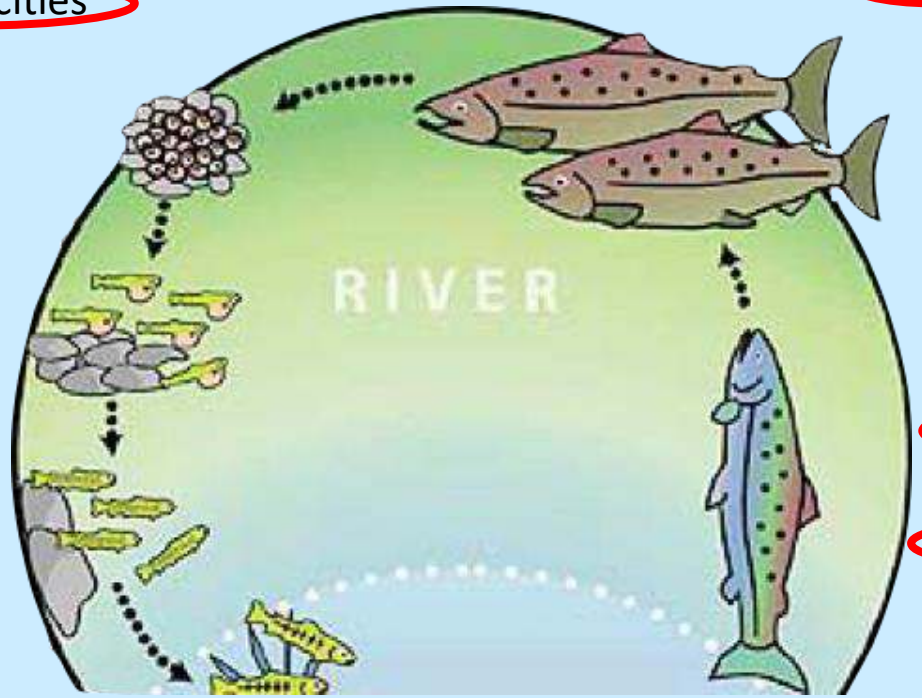
Salmon's Habitat Needs

Courtesy Jakob Shockey, APWC

Climate Change Effects

Eggs (in gravel)
clear water
low velocities

Spawning (in streams)
redding gravels
energy and other fish



Alevin/Fry (in gravel)
clear water
low velocities

Parr (streams)
cold water
low velocities
passage

Adult Fall Migration
(in River)
cold water
enough water
passage

LARGE WILDFIRES

SEVERE WINTER STORMS

Growth & Maturation:
(in Ocean)
Conducive Chemical environment
Food

HIGHER WATER TEMPS.

DIMINISHED SNOWPACK

Salmon Habitat Needs

Courtesy Jakob Shockey, APWC


ANY COMMENTS OR QUESTIONS ????