“Global Warming Basics & Rogue Basin Consequences”

SOREEL August Institute 2018

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Southern Oregon Climate Action Now
SOCAN
Confronting Climate Change

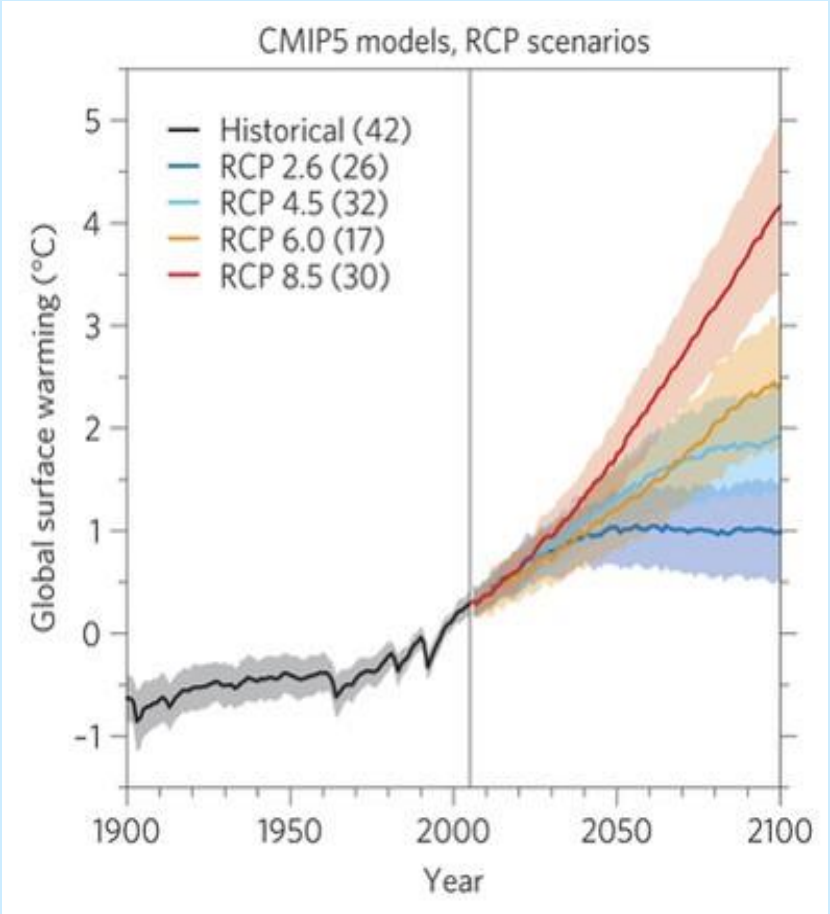
Part Two:

Jackson County Climate Trends and Projections

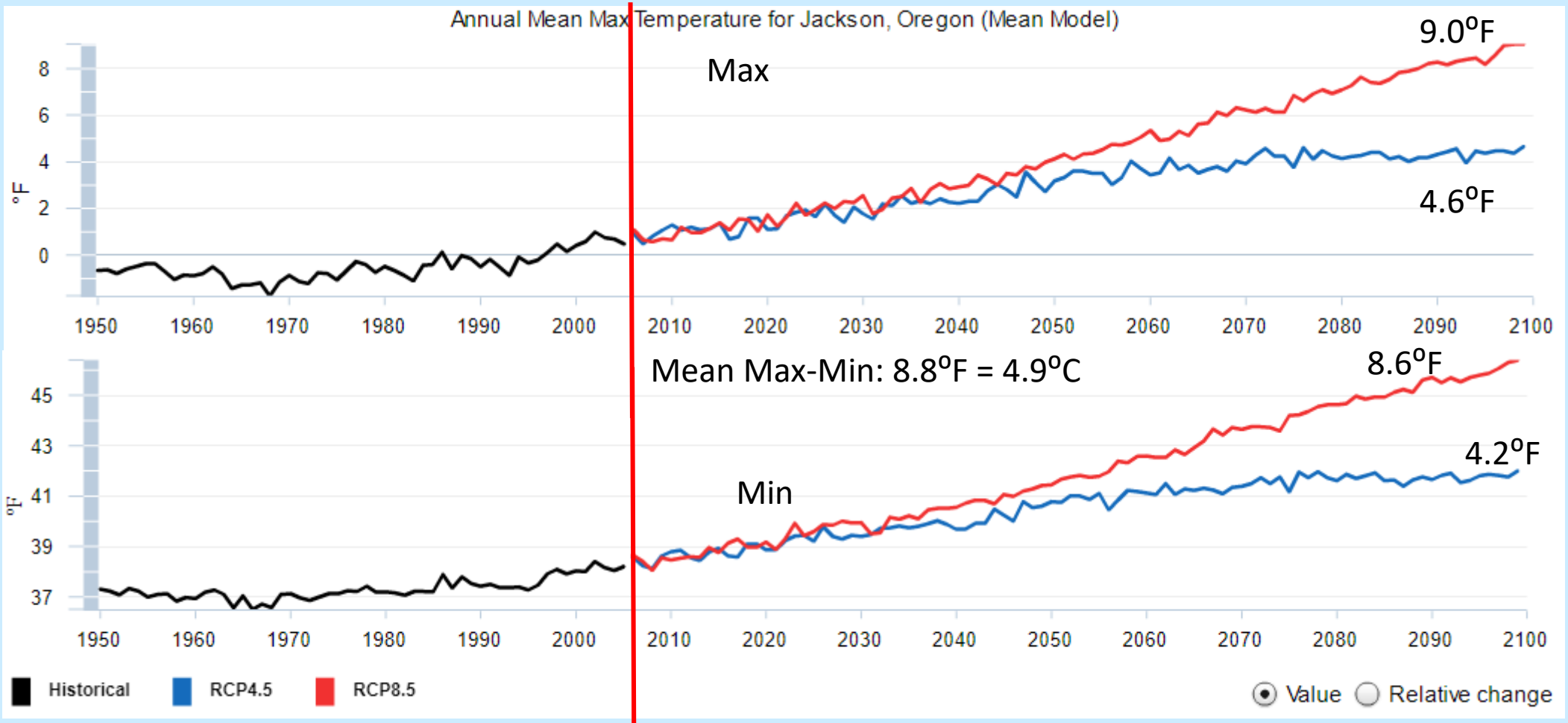
Model Scenarios
(Predictions *vs* Projections)

Representative Concentration Pathways (RCP)

- 2.6 Low level emissions (immediate cessation)
- 4.5 Ambitious reductions in emissions trajectory
- 6.0 Less ambitious emissions reduction trajectory
- 8.5 Rapid increase in emissions – 'Business as Usual'

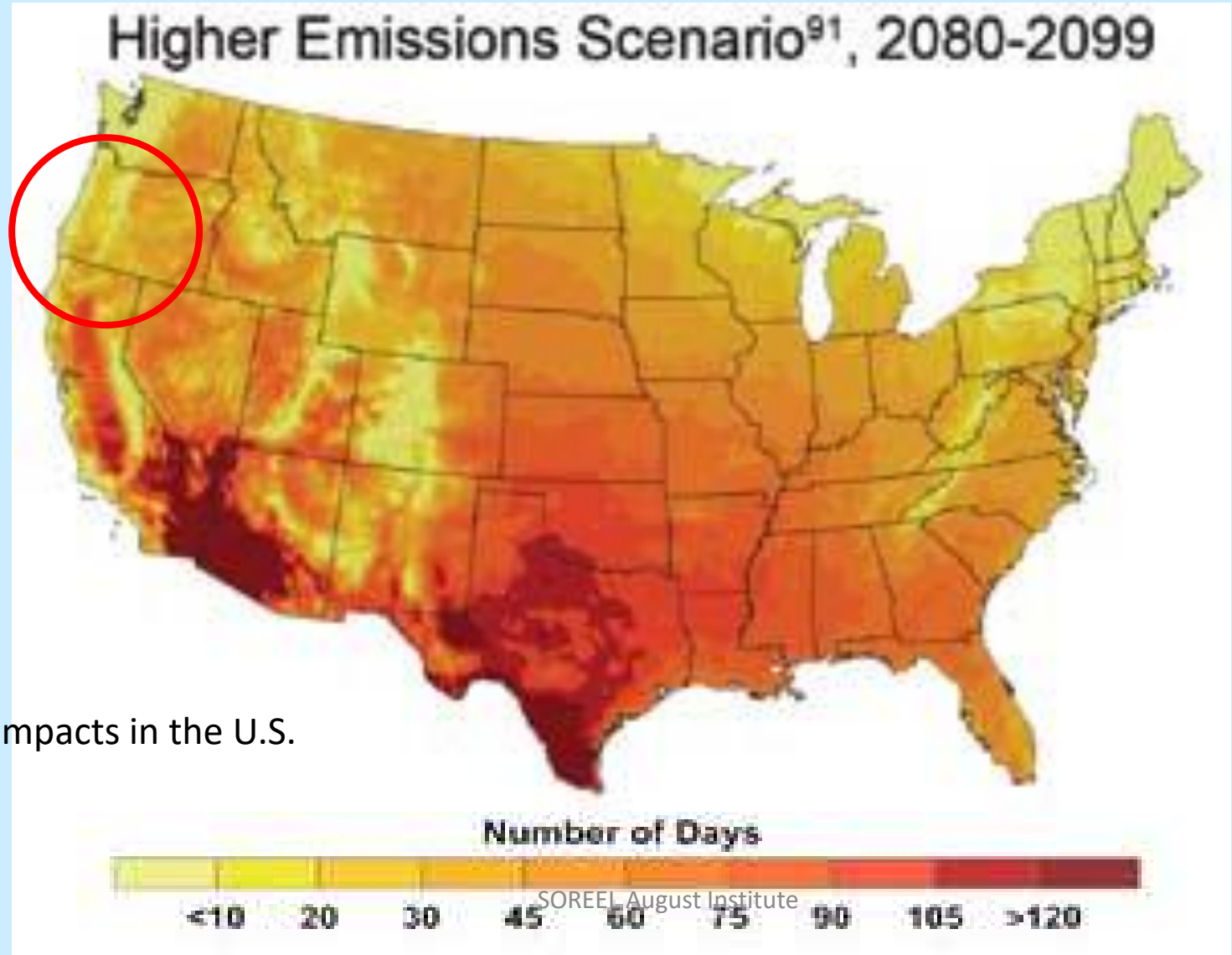


Jackson County Temperature



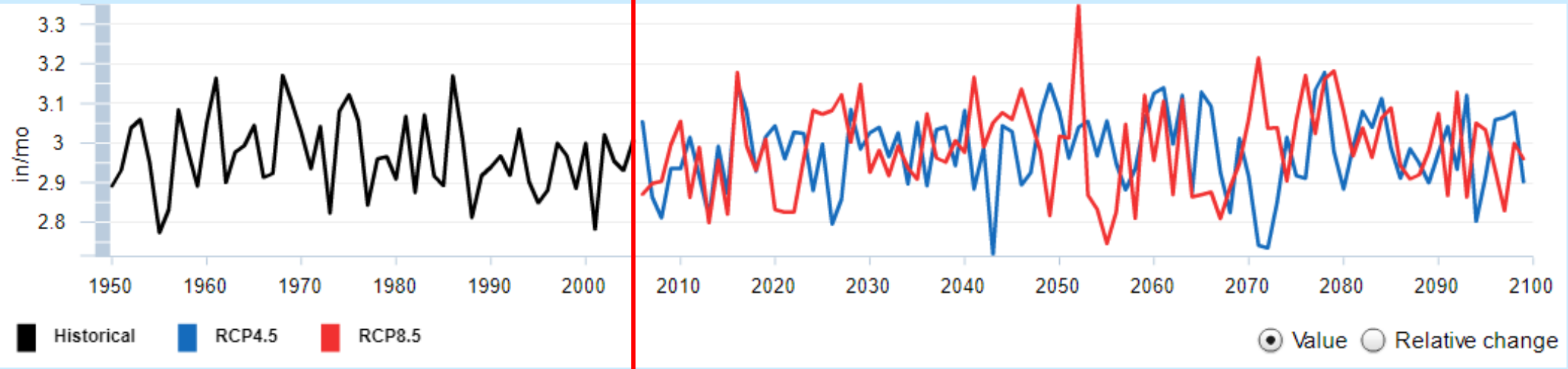
http://www.usgs.gov/climate_landuse/clu_rd/apps/nccv_viewer.asp

Projected Heat Waves: Number of Days > 100°F



Global Climate Change Impacts in the U.S.

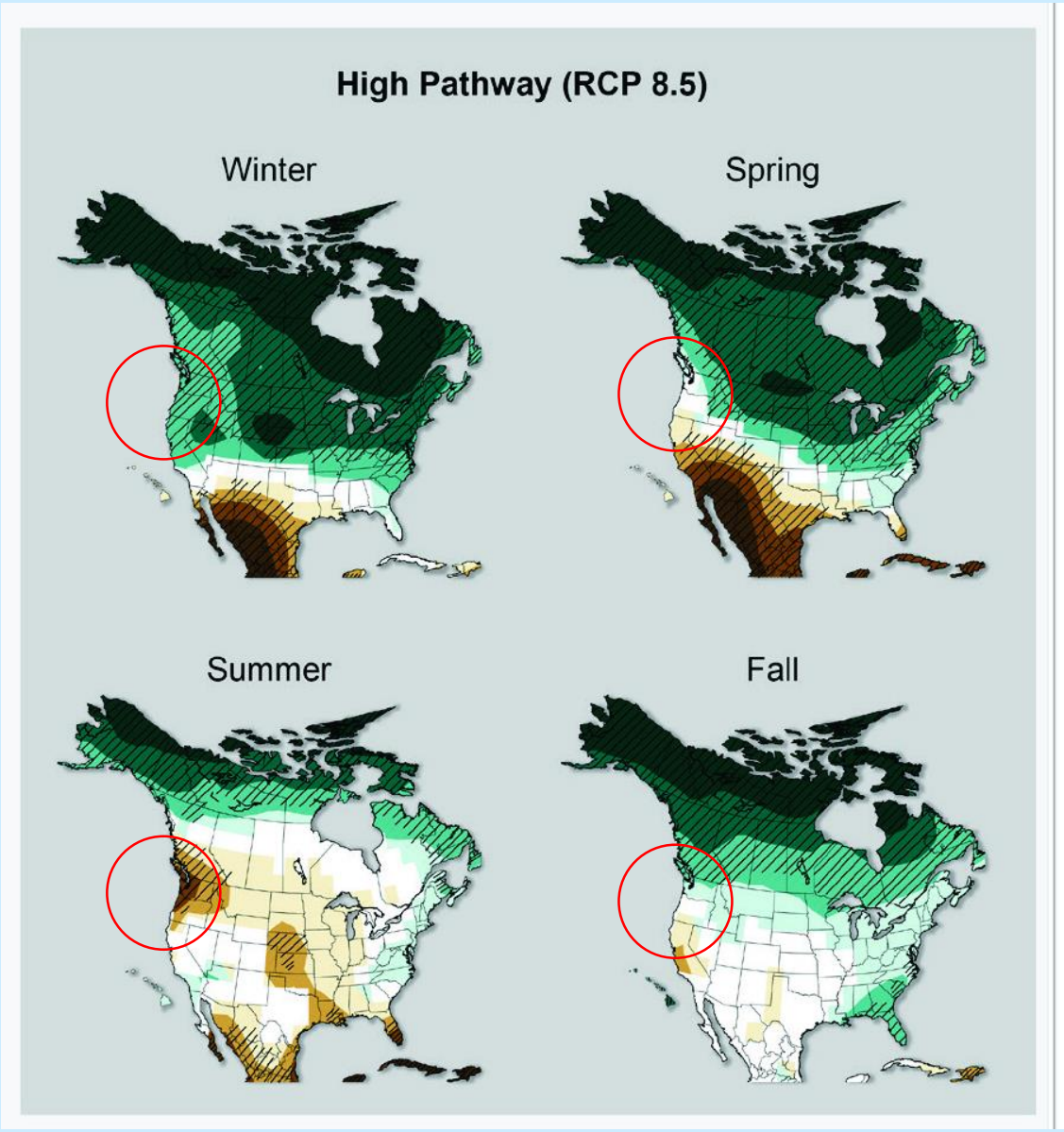
PRECIPITATION

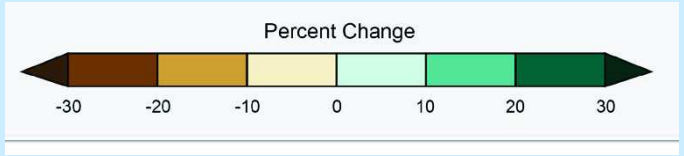


http://www.usgs.gov/climate_landuse/clu_rd/nccv/viewer.asp

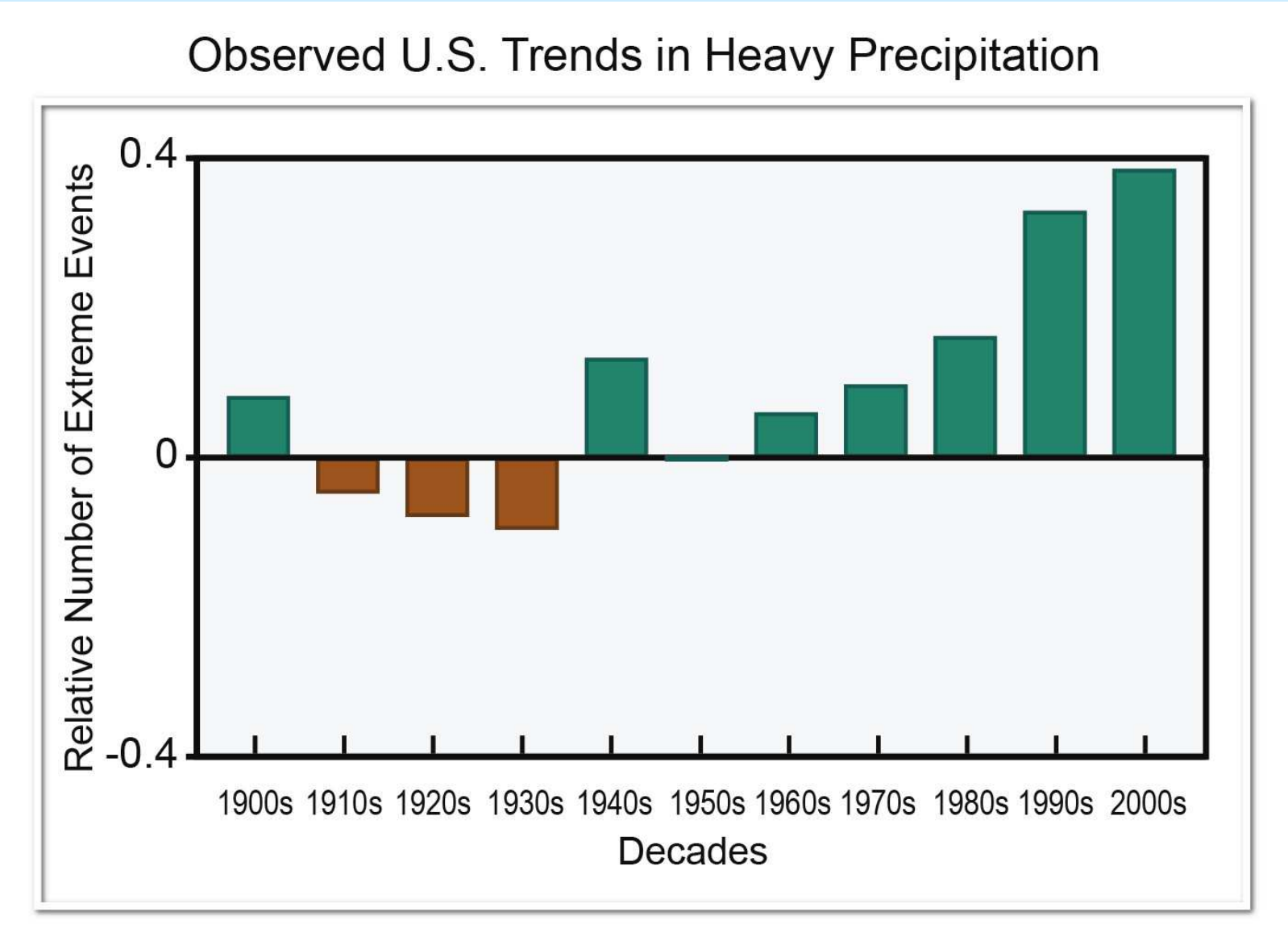
Projected Precipitation Seasonal Pattern –

High Emissions Scenarios = 'Business As Usual'





http://www.globalchange.gov/what-we-do/assessment



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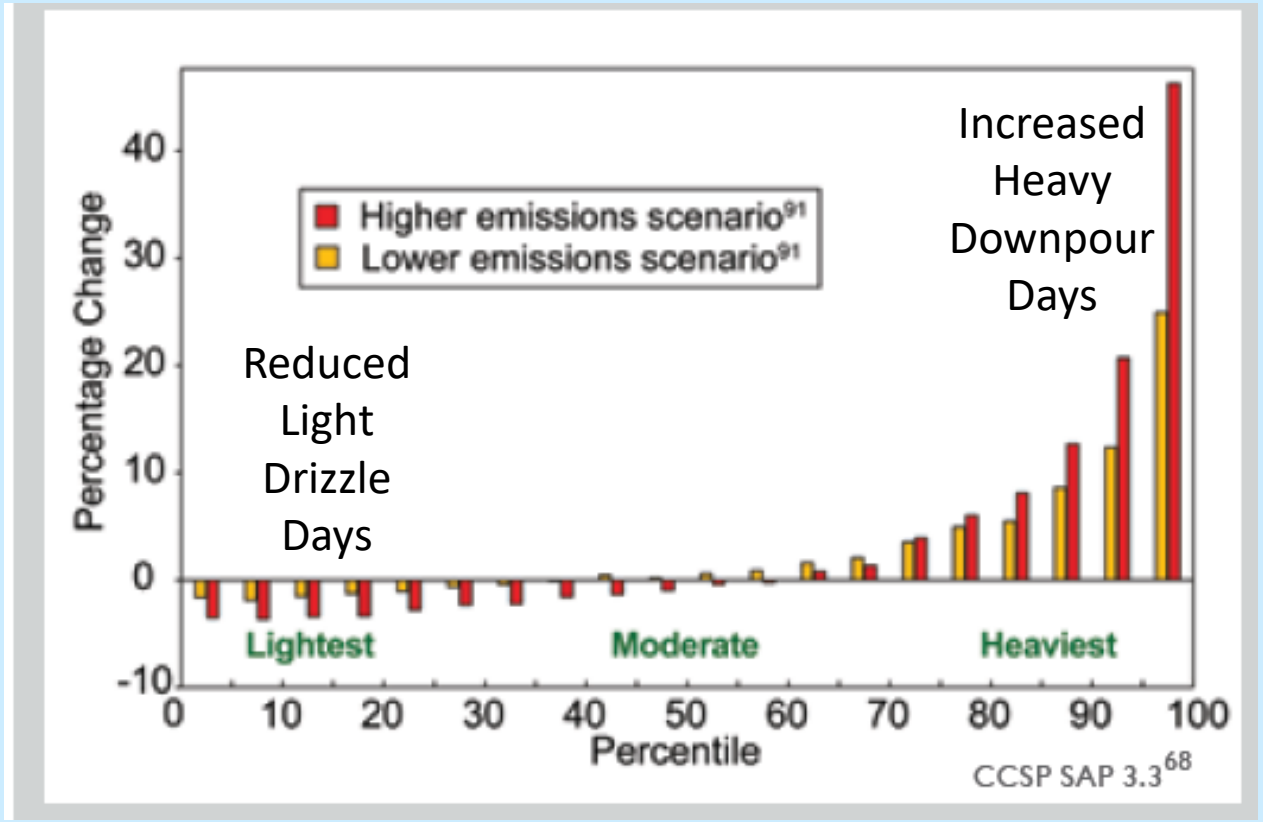
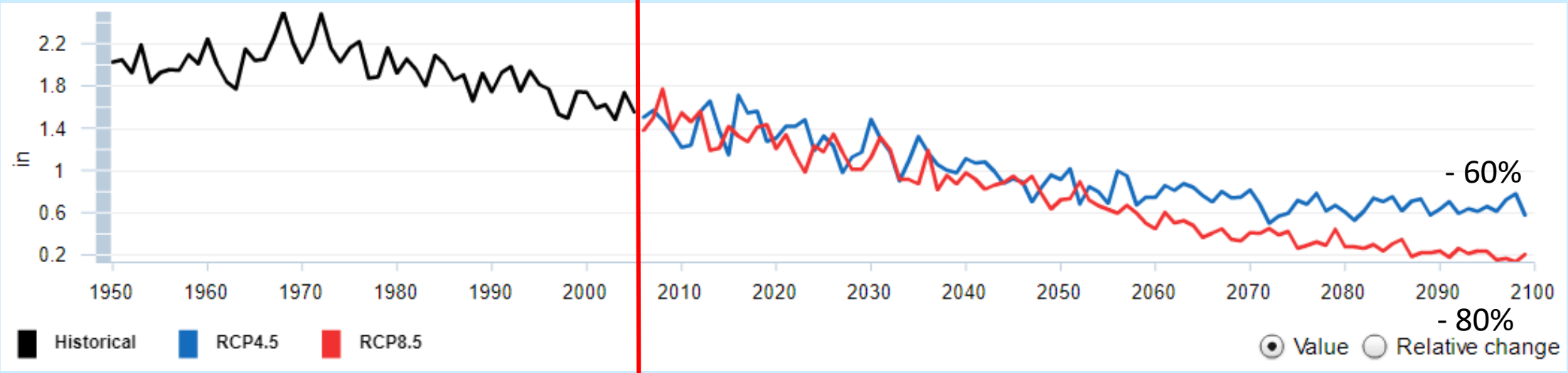


Projected Patterns in Light, Moderate & Heavy Precipitation Events by 2090s

Global Climate Change Impacts in the U.S.

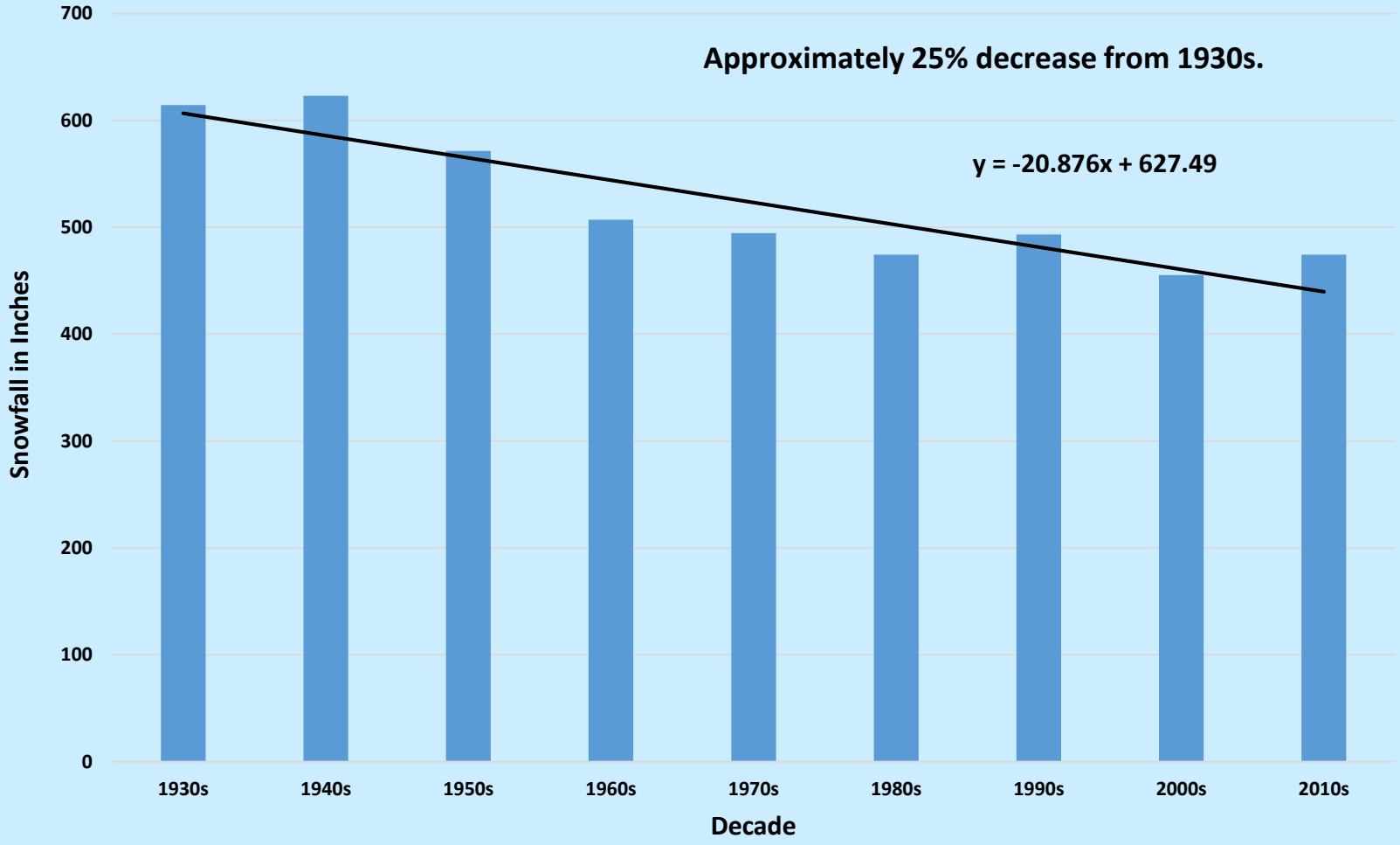
Snow Water Equivalent Jackson County



http://www.usgs.gov/climate_landuse/clu_rd/nccv/viewer.asp

=-.8 as % of app 0.8 = 100% drop

Mid-Elevation Snowfall Crater Lake 7,000 – 8,000 ft

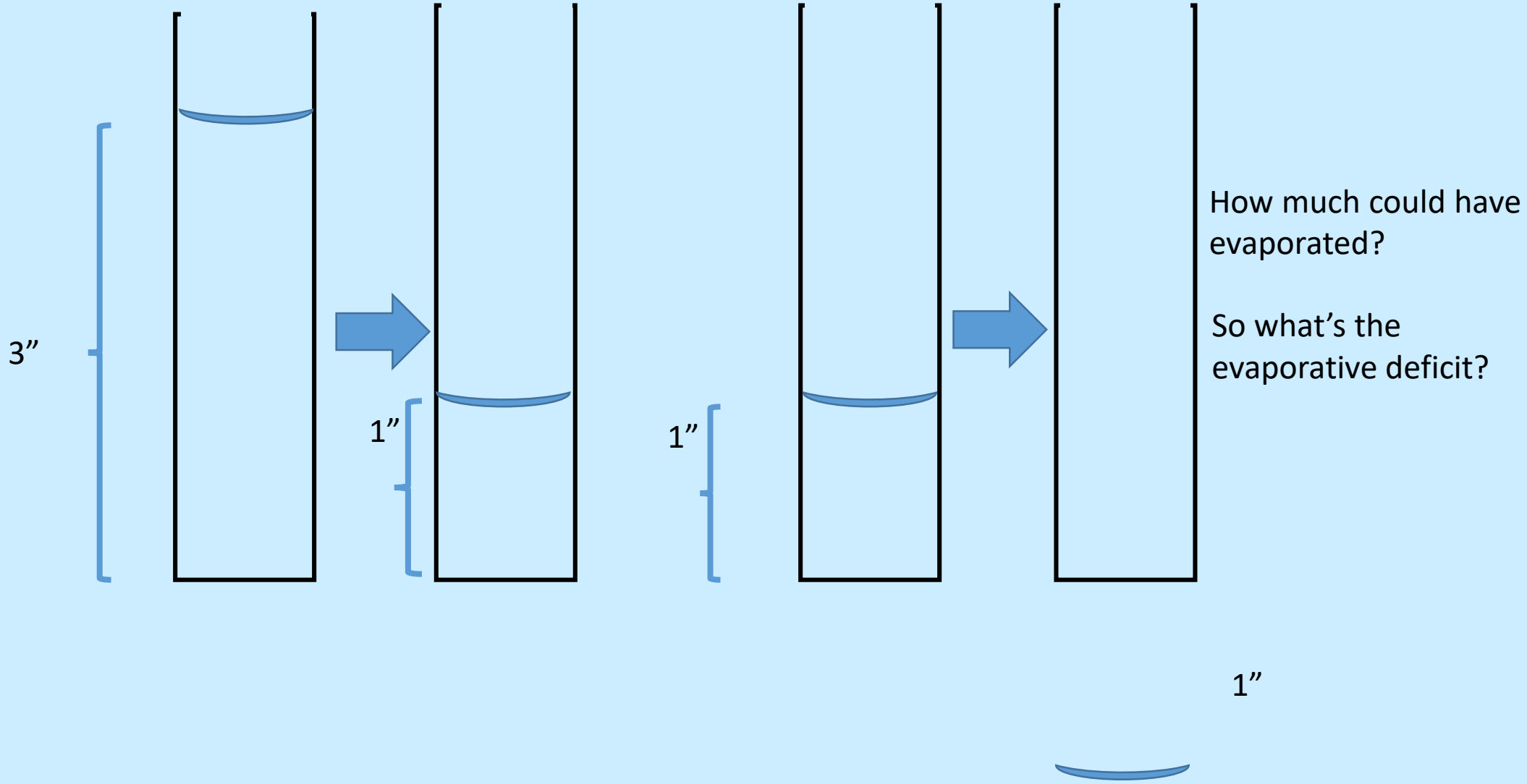


N. California 1950 - 2000

Below 7500’ 13% decline
Above 7500’ 12% increase

Evaporative Deficit

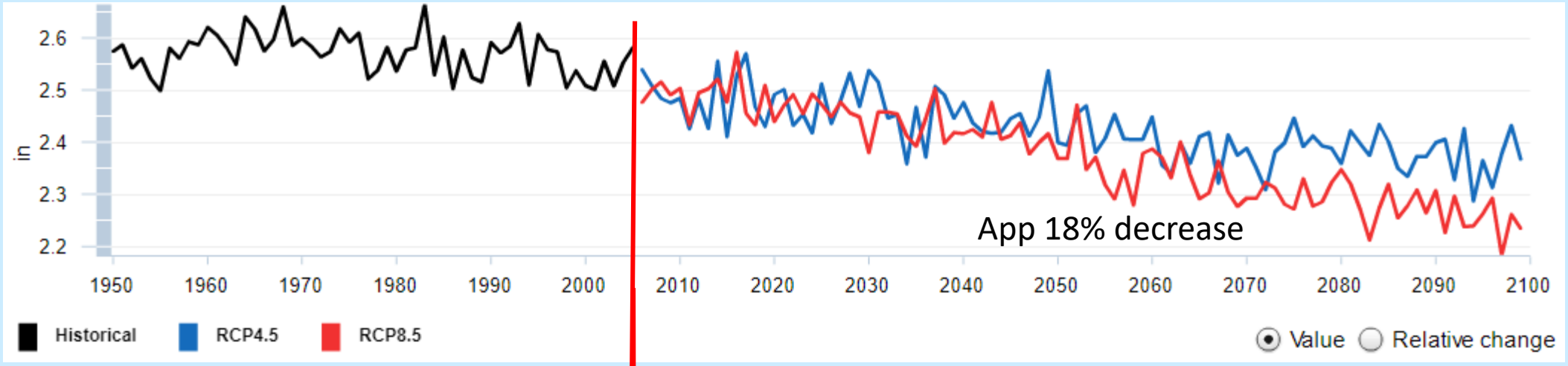
How much evaporated?

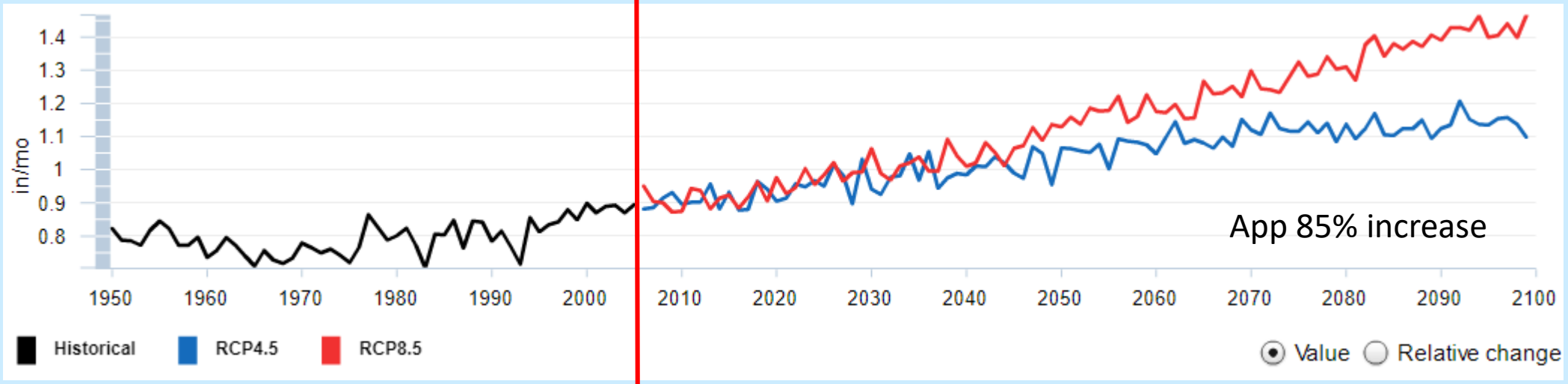


How much could have evaporated?

So what’s the evaporative deficit?

Soil Moisture and Evap Deficit Jackson County



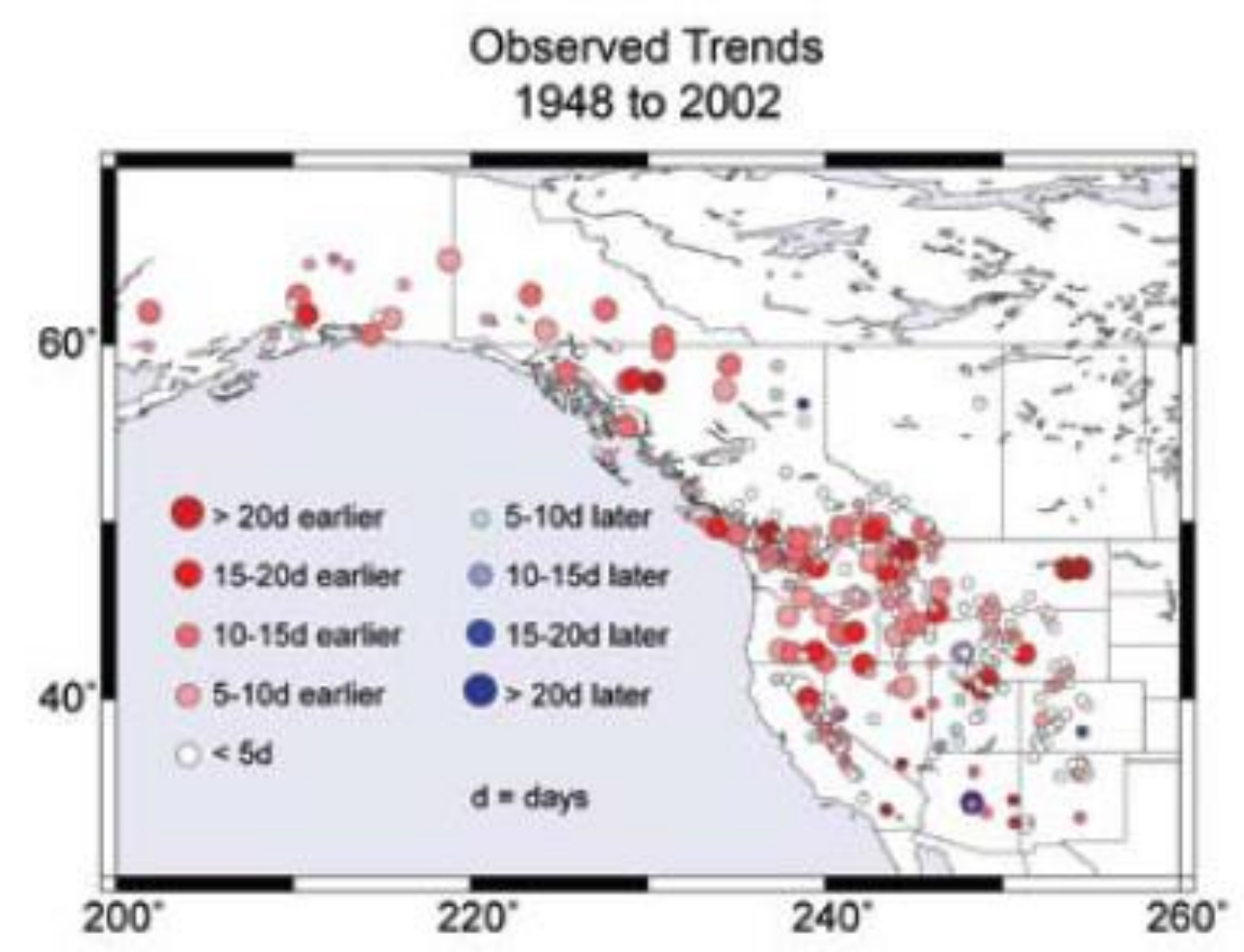


Snowmelt

What do you think happens to the date of snowmelt – the date when river flow from melting snow increases? (Center of stream flow mass)

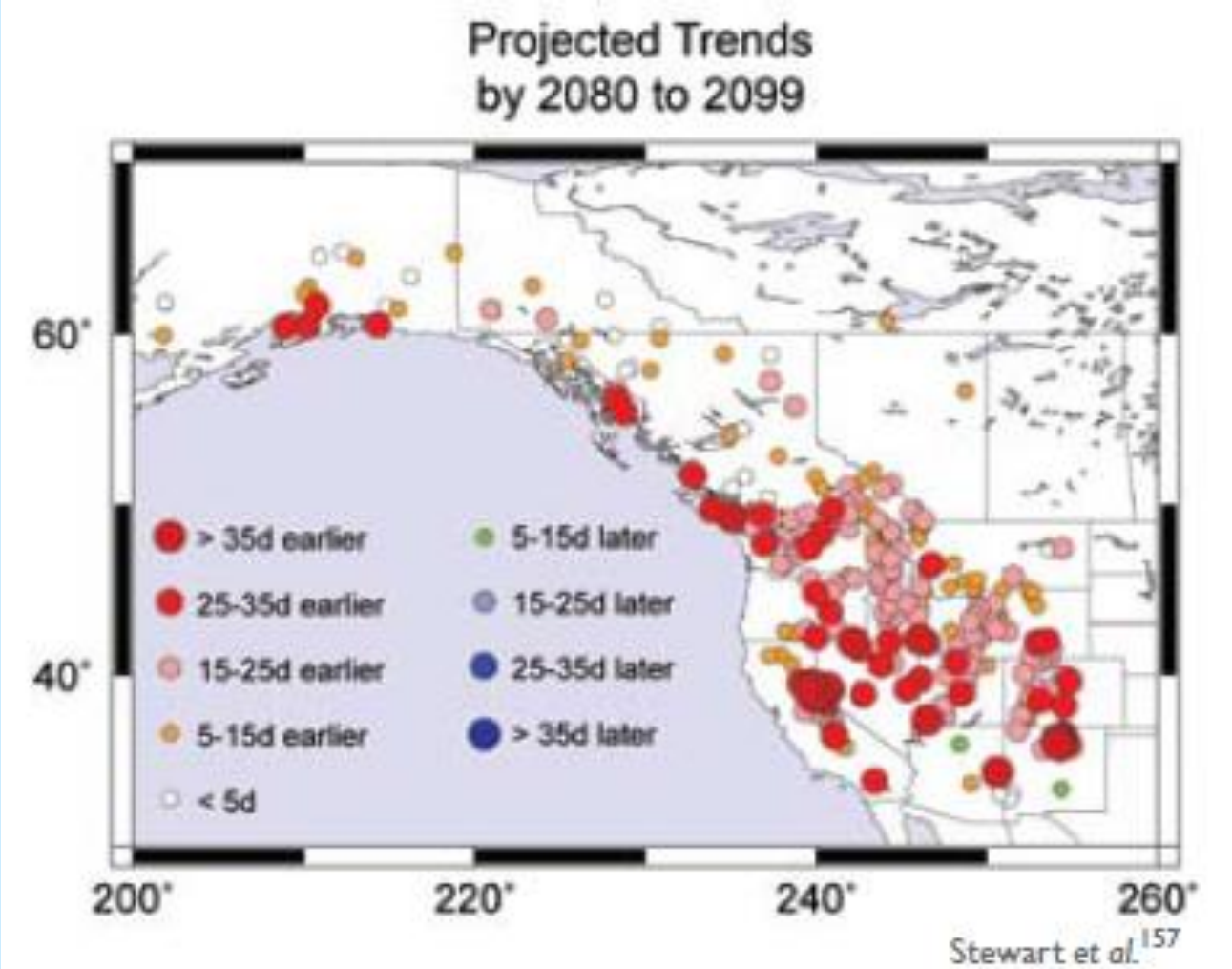
It occurs earlier (‘cos temp is warming) but happens more slowly (’cos solar intensity earlier is lower)

And what does that do to date when peak stream flow occurs?



Historic Stream Flow Timing in Western States

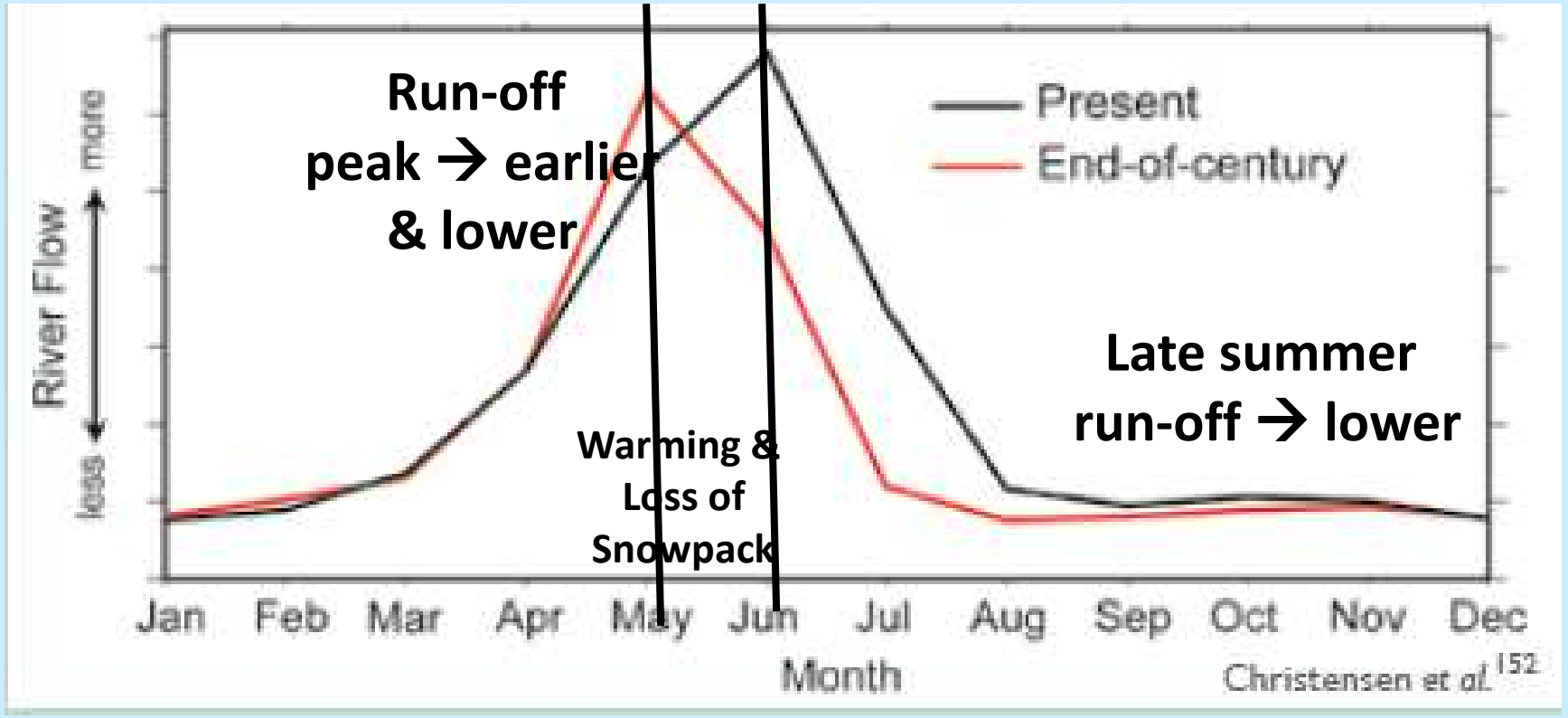
Global Climate Change Impacts in the U.S.



Projected Stream Flow Timing in Western States

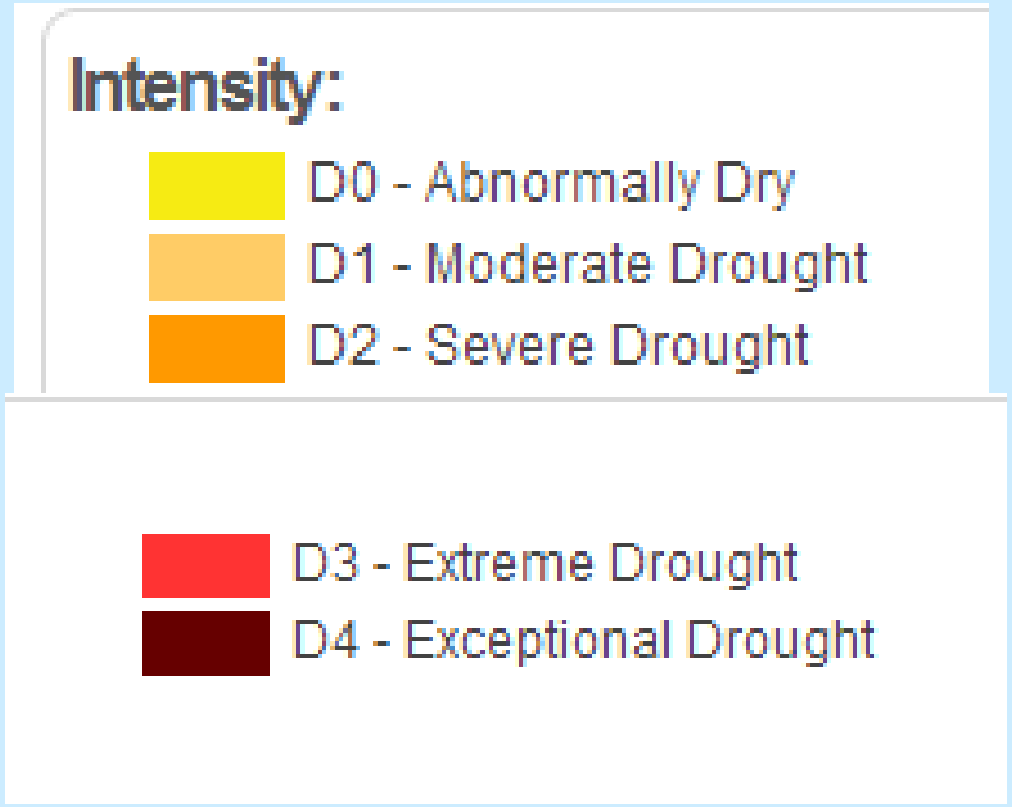
Global Climate Change Impacts in the U.S.

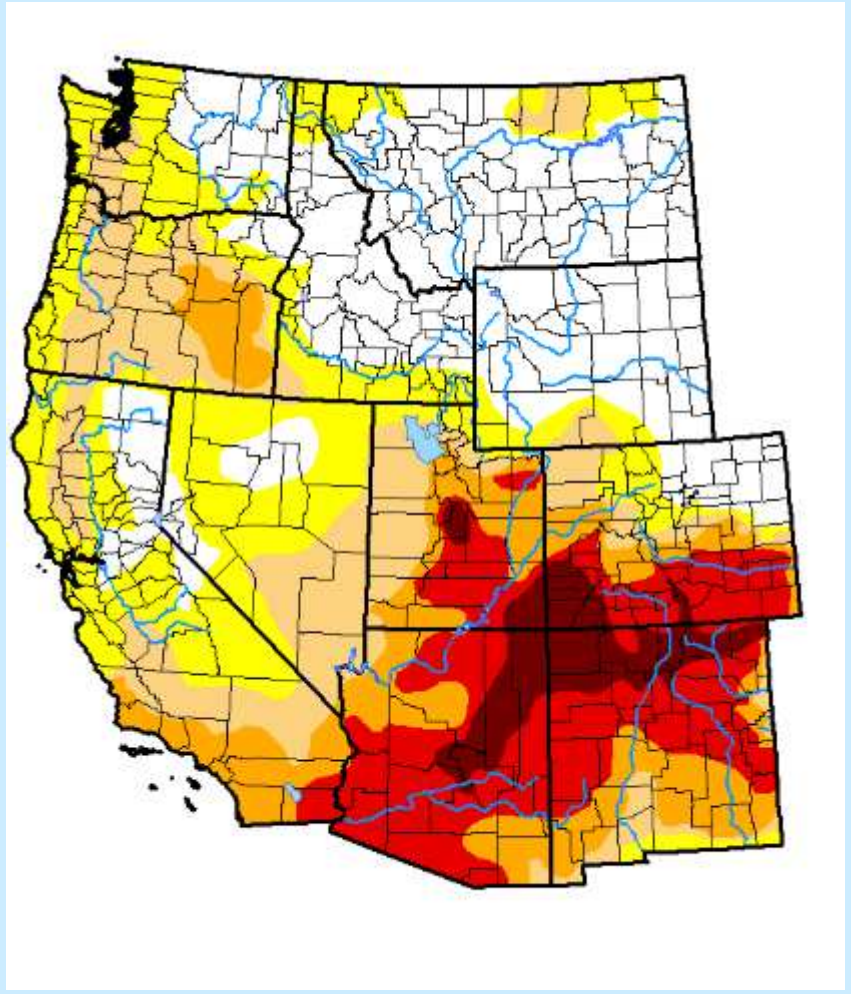
Projected Run-off Timing



Global Climate Change Impacts in the U.S.

July 3rd 2018

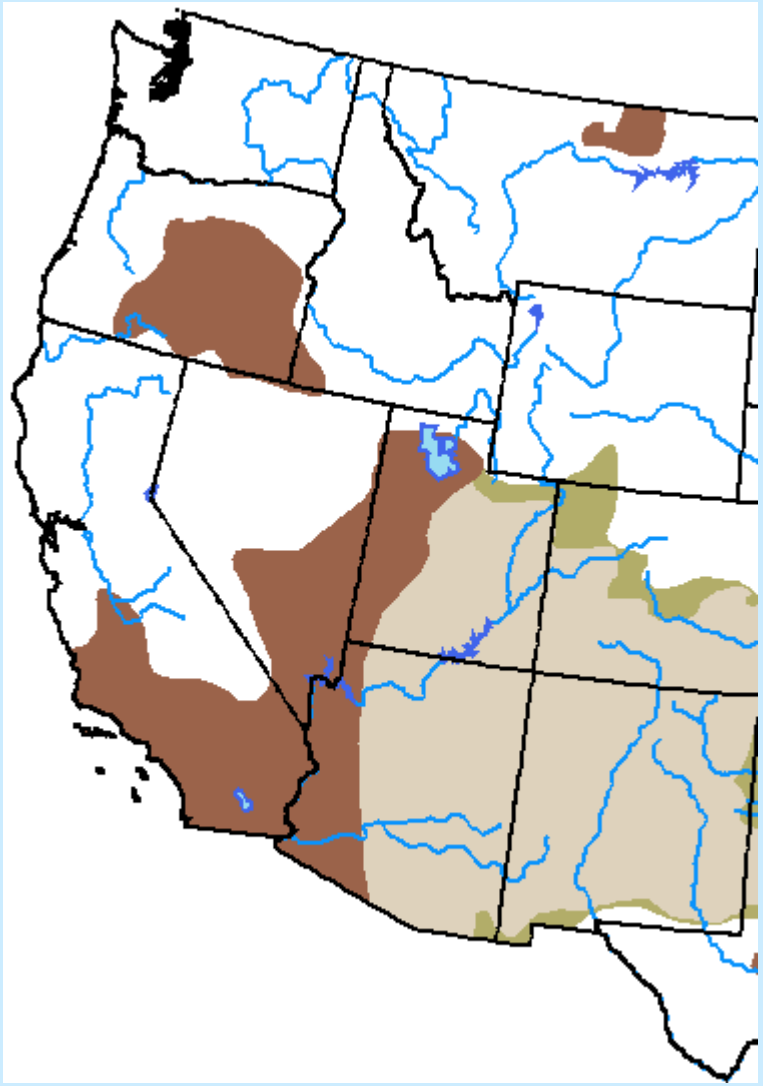


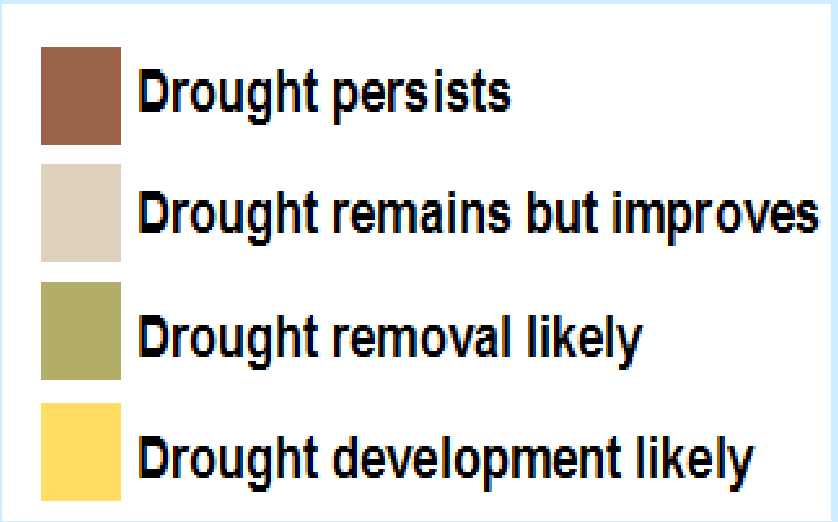


69.68% is D0 or above

http://droughtmonitor.unl.edu/Maps/MapArchive.aspx

The Short-term Future: June 21st – September 30th

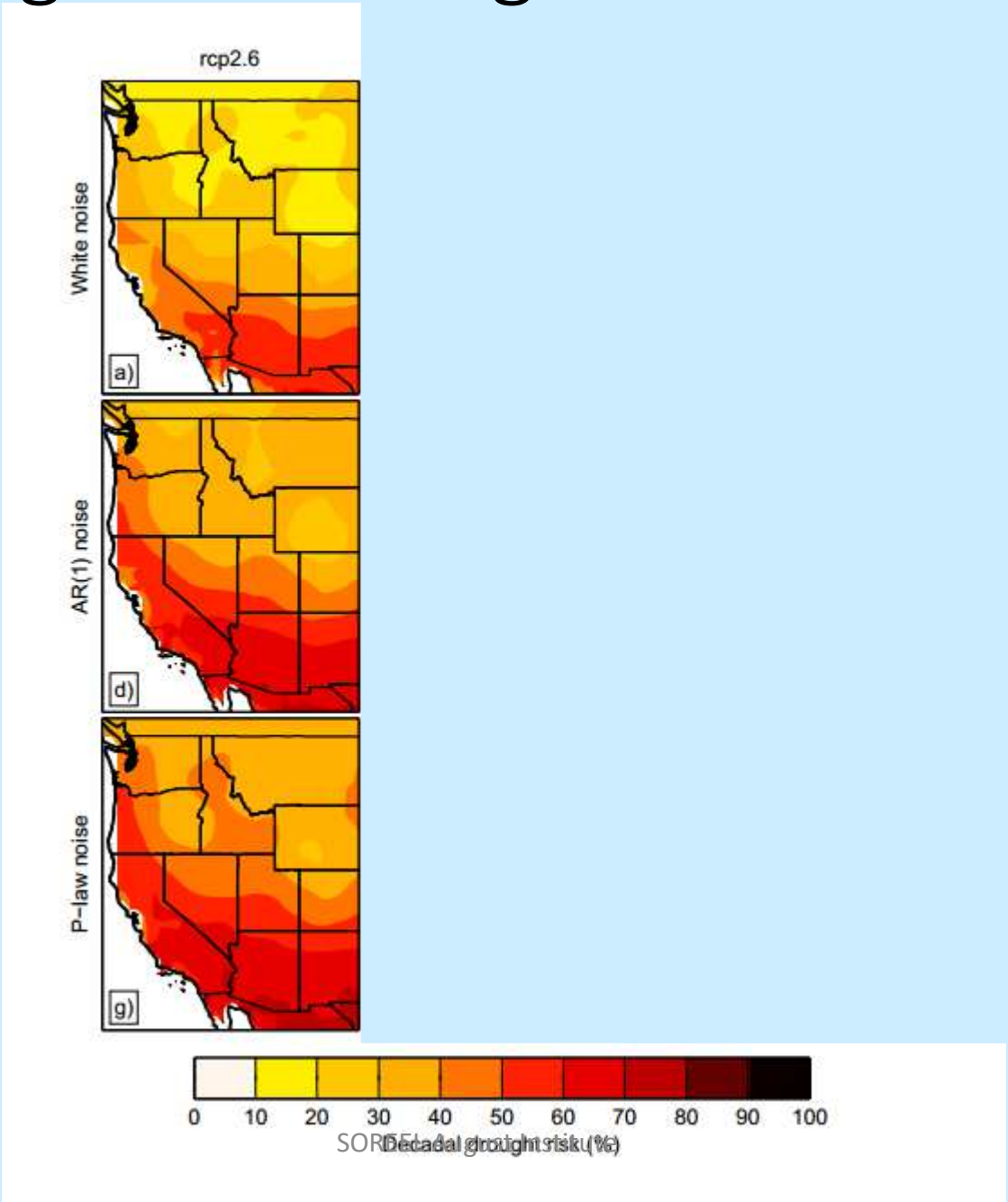




http://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php

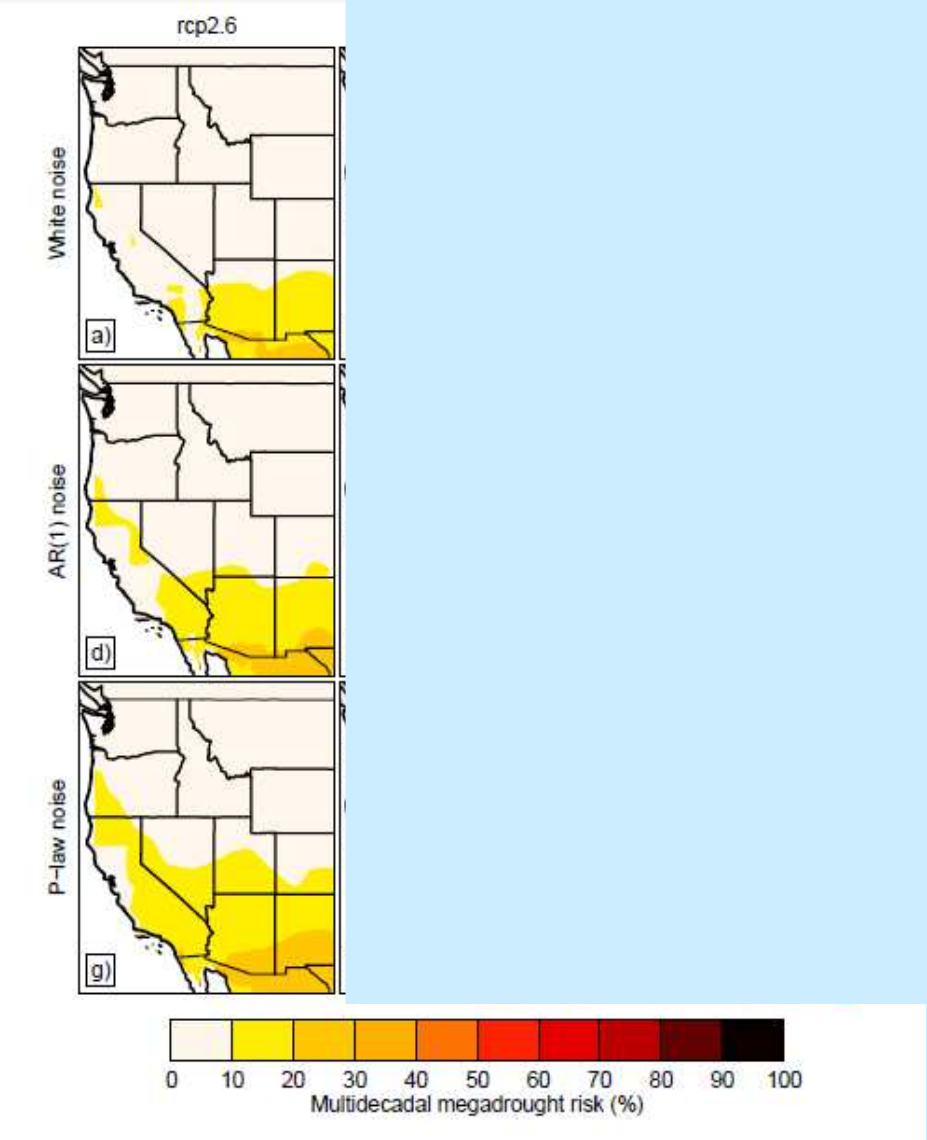
Long Term Drought Risk

> 11 Year Drought Risk



Ault, T. et al 2014 Assessing the risk of persistent drought using climate 1 model simulations and paleoclimate data *Journal of Climate* (AMS) 27: 7529-7549

Megadrought Risk Percentage



Chance of 35 Year Megadrought is 20 – 50%

Ault, T. *et al.* 2014
Assessing the risk of persistent drought using climate 1 model simulations and paleoclimate data
Journal of Climate
(AMS) 27: 7529-7549

What consequences might these trends cause?

- Increasing temperature
- Reduced summer precipitation
- More heavy downpours / fewer light drizzle days
- Reduced snowpack
- Decreasing soil moisture
- Increasing soil evaporative deficit


ANY COMMENTS OR QUESTIONS ????