

climate change in Oregon and why it matters

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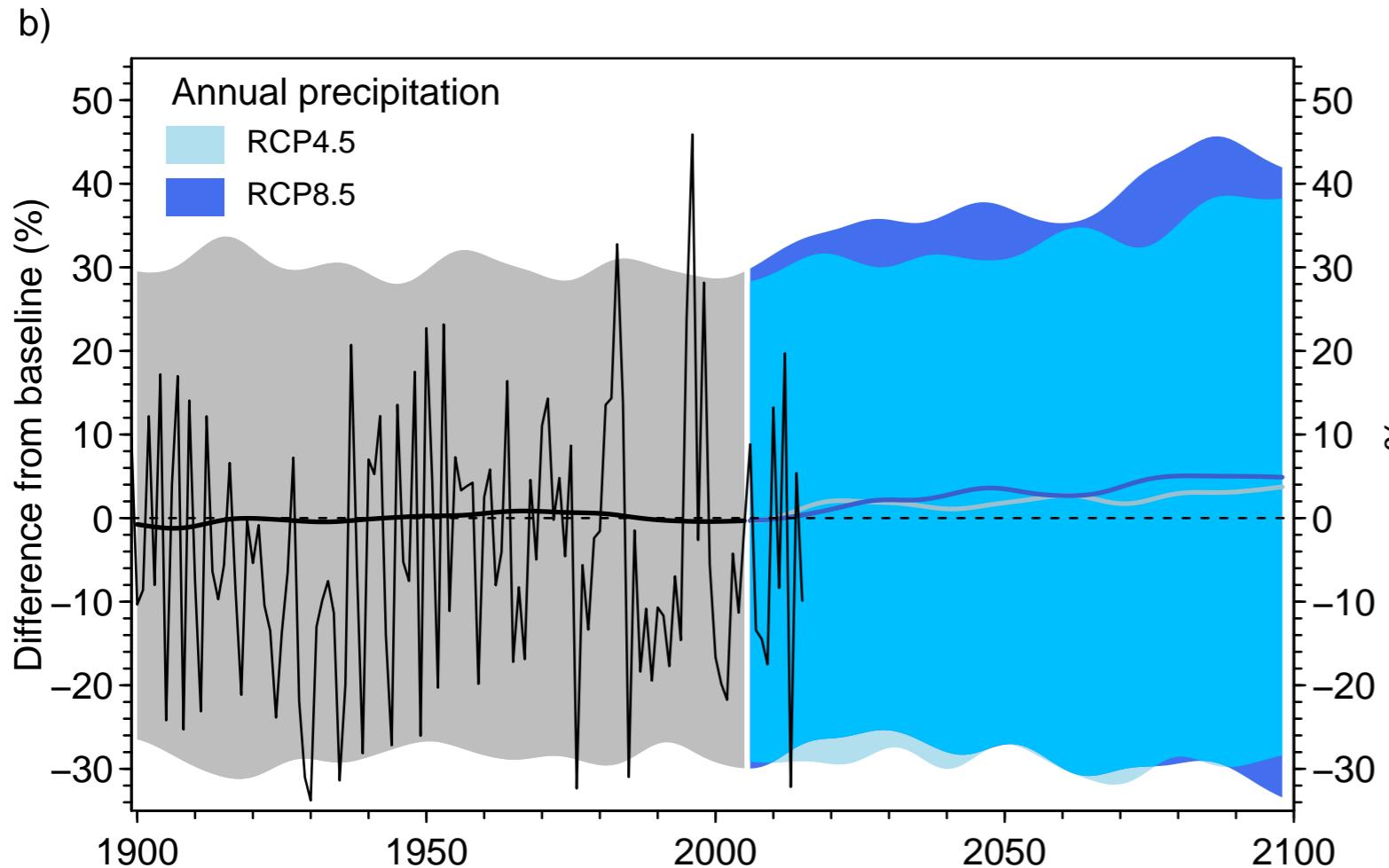
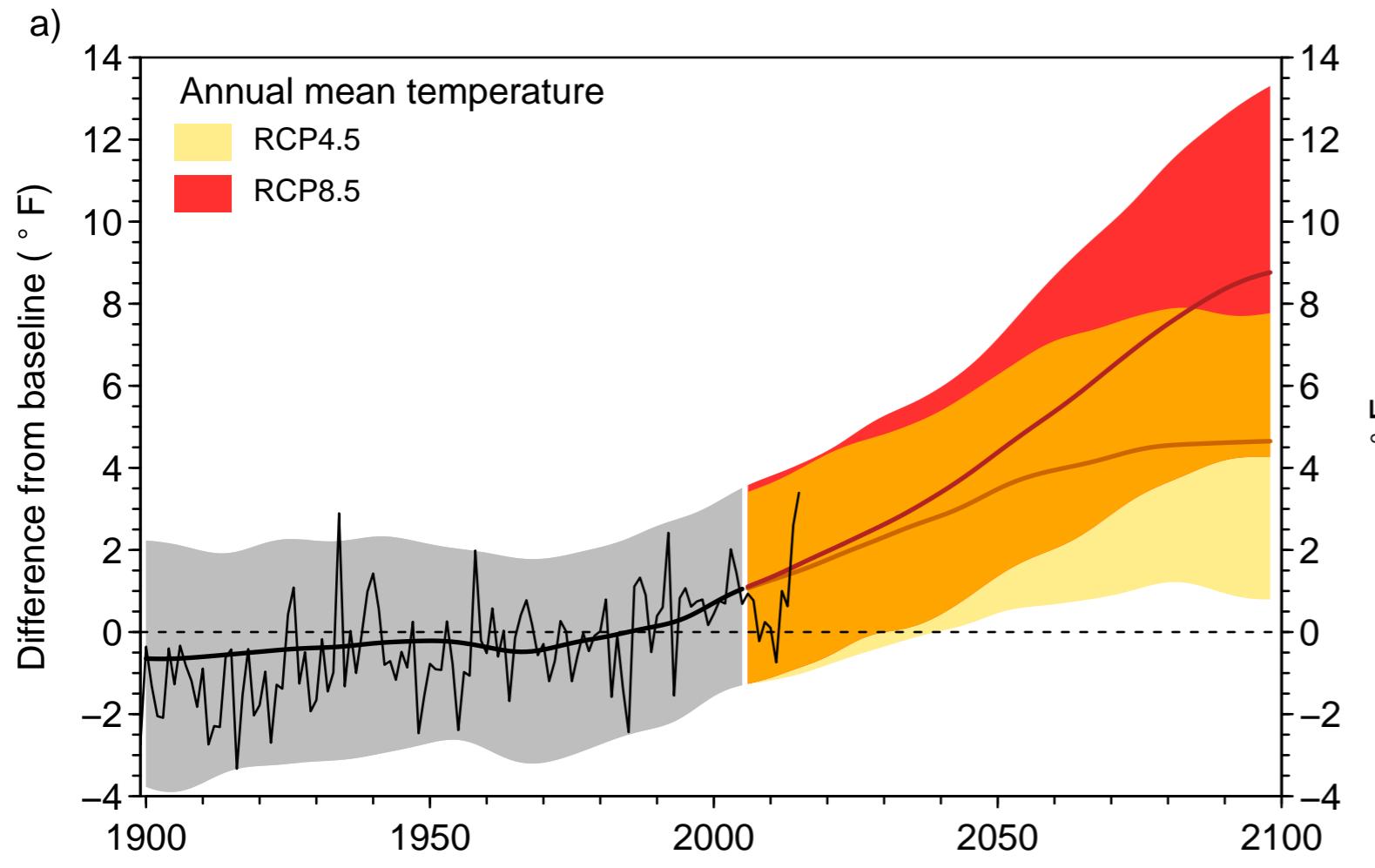
key findings from 2017 report

- climate change will continue to impact the health of Oregonians, especially vulnerable populations,
- Oregon will continue to warm; we can now attribute some regional trends to human activity
- declining mountain snowpack is, and will have significant impacts on water resources
- increased coastal flooding and erosion
- ocean acidification
- shifting climates plus disturbances (fire, insects, diseases) will drive forest change
- short-term gains for agriculture, but long-term dependent on adaptations to heat and water
- recent climate events a practice run for the future

2015 02/23 (Mon) 10:24:25 - Ed Chair top (Northeast view)



from Hoodoo web cam
February 23, 2015



Source: Rupp et al. (2016),
adapted for Oregon;
Integrated Scenarios project

Local Projections: Growing Season
High Future Emissions

springfield, or (44.05° N, 123.02° W)

2000s

ANNUAL (Jan-Dec)



FIRST FREEZE / LAST FREEZE

Nov 12 / Mar 26

LENGTH

231 days

2025s

ANNUAL (Jan-Dec)



FIRST FREEZE / LAST FREEZE

Nov 23 / Feb 28

LENGTH

267 days

2055s

ANNUAL (Jan-Dec)



FIRST FREEZE / LAST FREEZE

Dec 13 / Feb 4

LENGTH

312 days

2085s

ANNUAL (Jan-Dec)



FIRST FREEZE / LAST FREEZE

Dec 20 / Jan 16

LENGTH

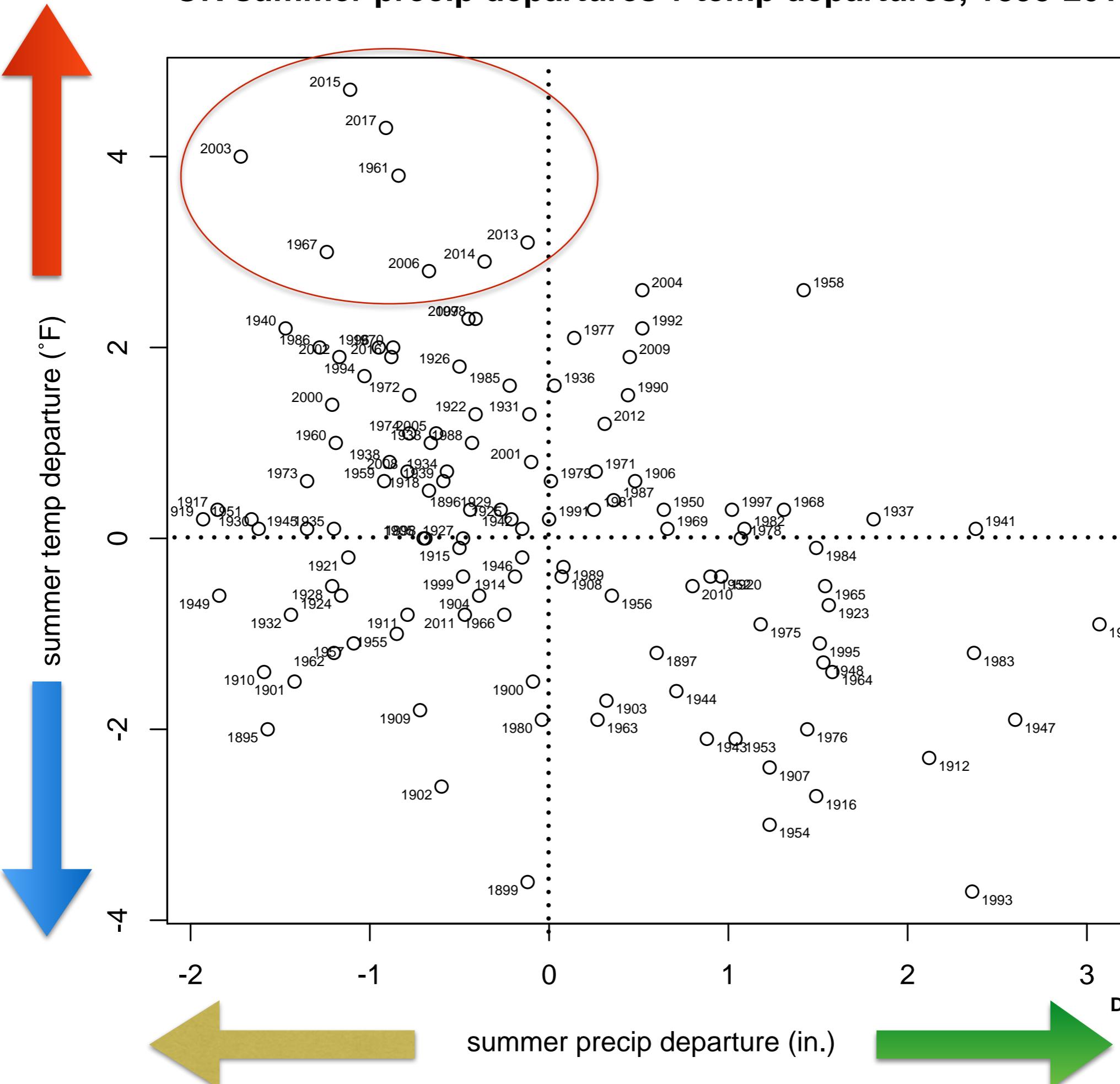
337 days



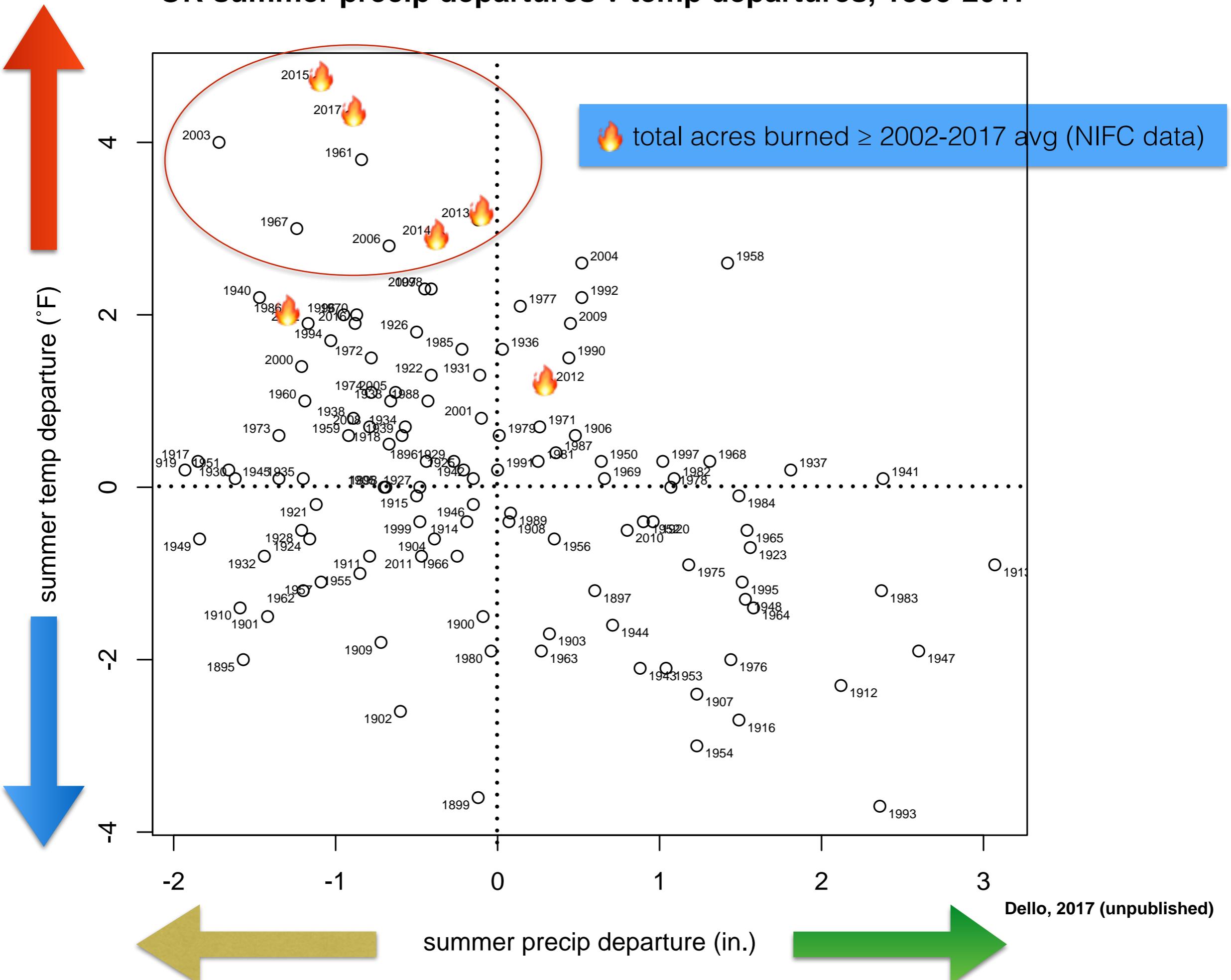
Eagle Creek Fire, September 2017

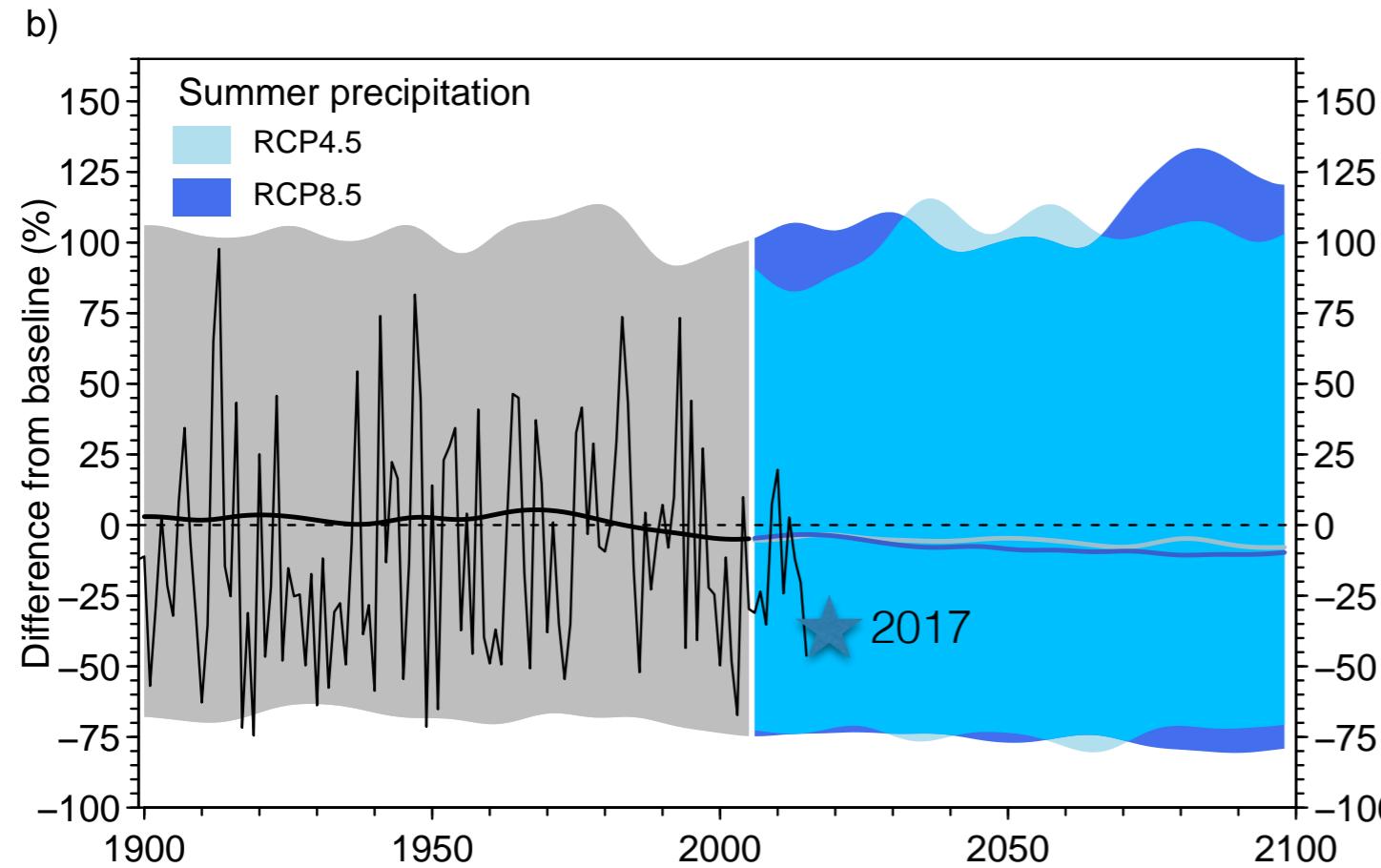
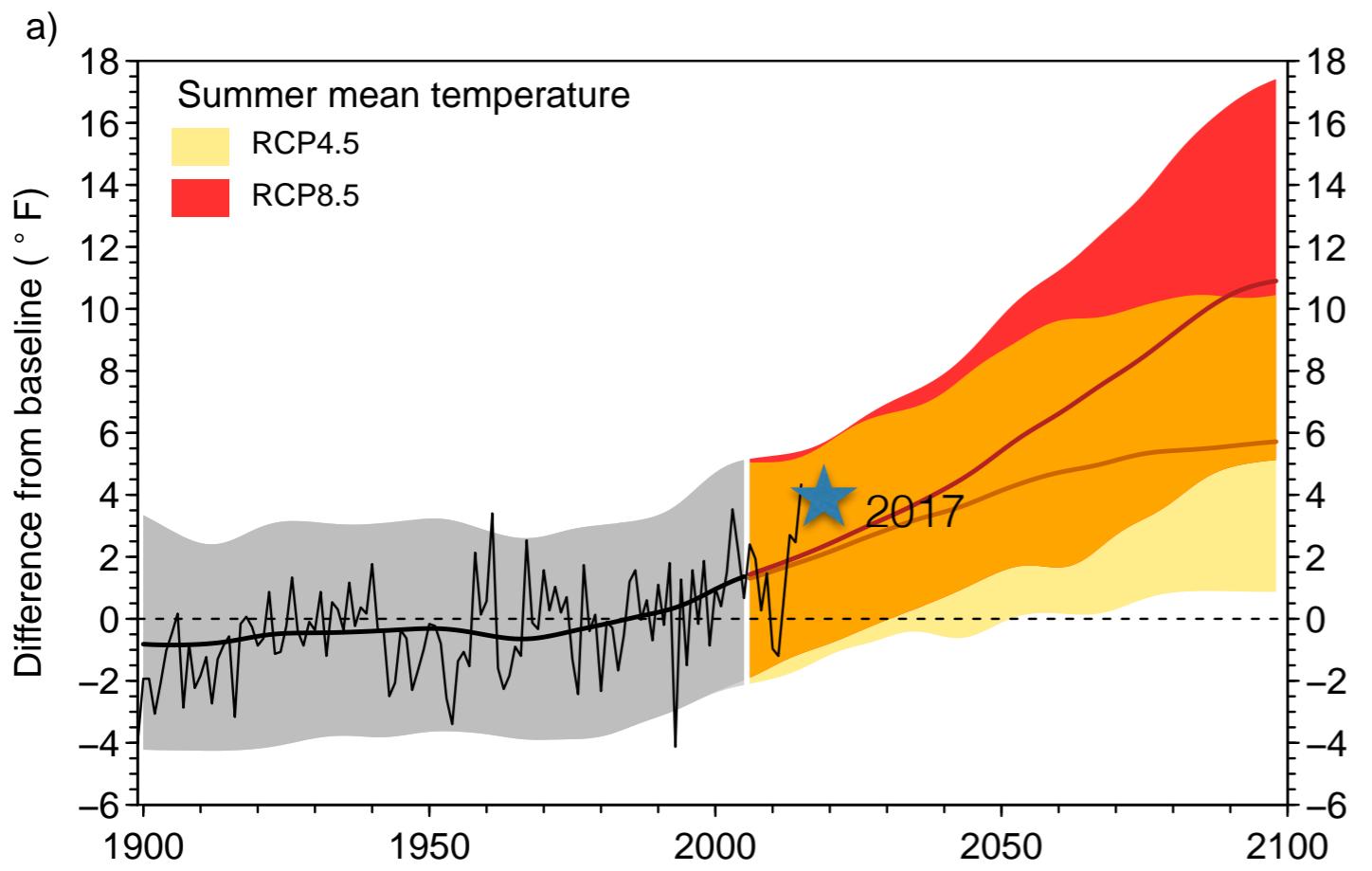
Kathie Dello, photo

OR summer precip departures v temp departures, 1895-2017



OR summer precip departures v temp departures, 1895-2017

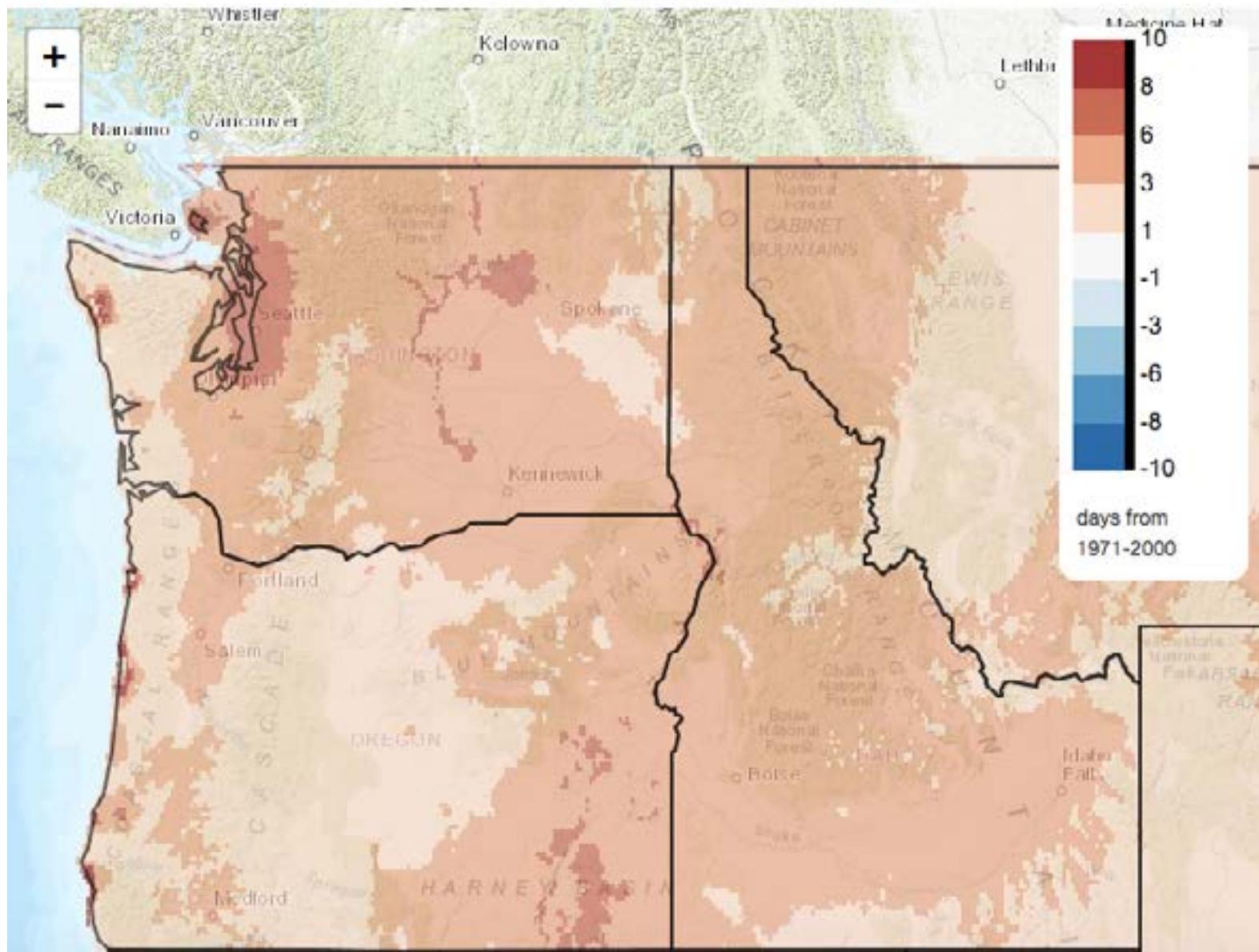




Projected Change in "Extreme Fire" Danger Days (100 Hour Fuel Moisture Below 3 Percentile), Summer (Jun-July-Aug)

RCP8.5 2010-2039 vs. historical simulation 1971-2000, mean change

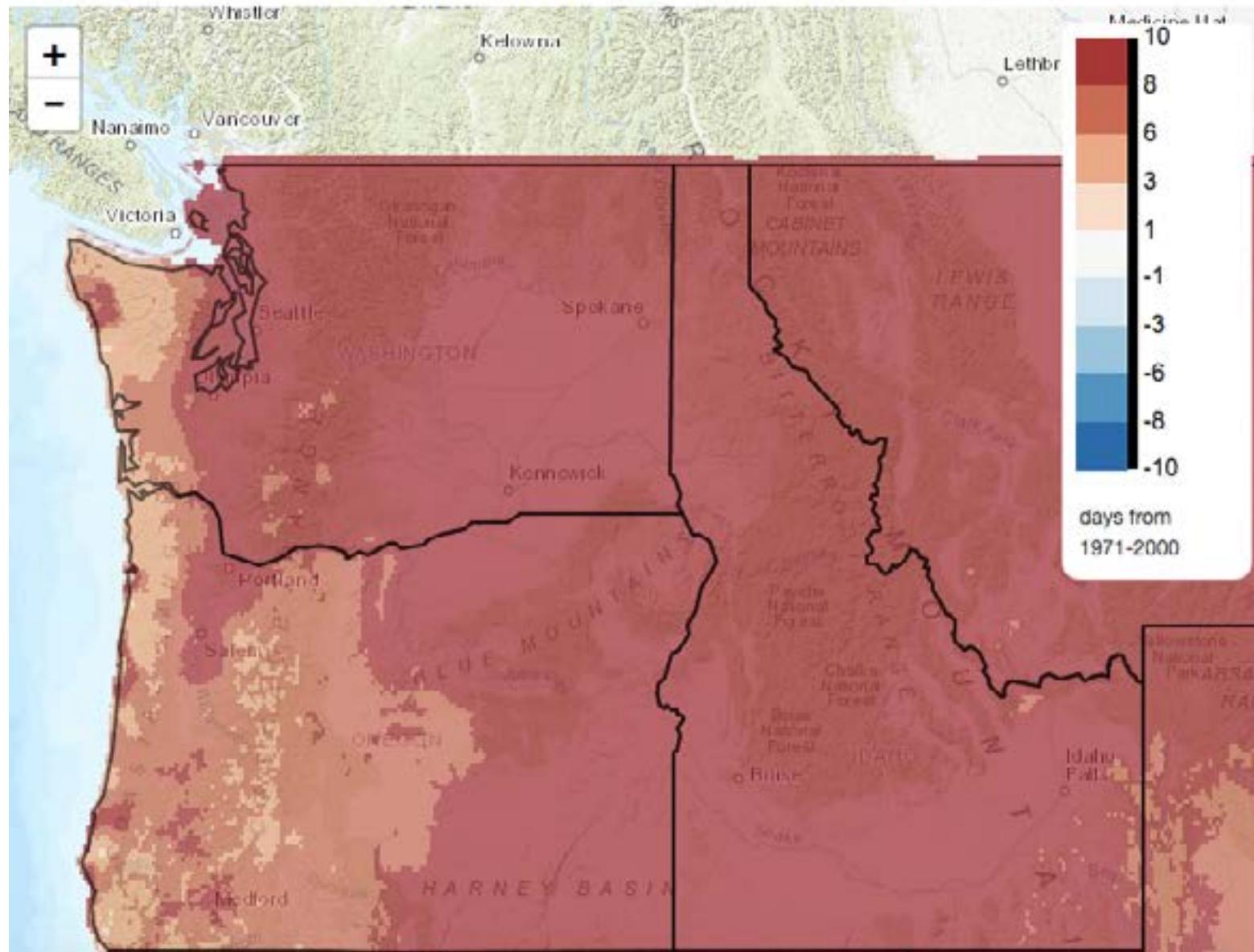
Downscaled multi-model (18 models) mean from CMIP5



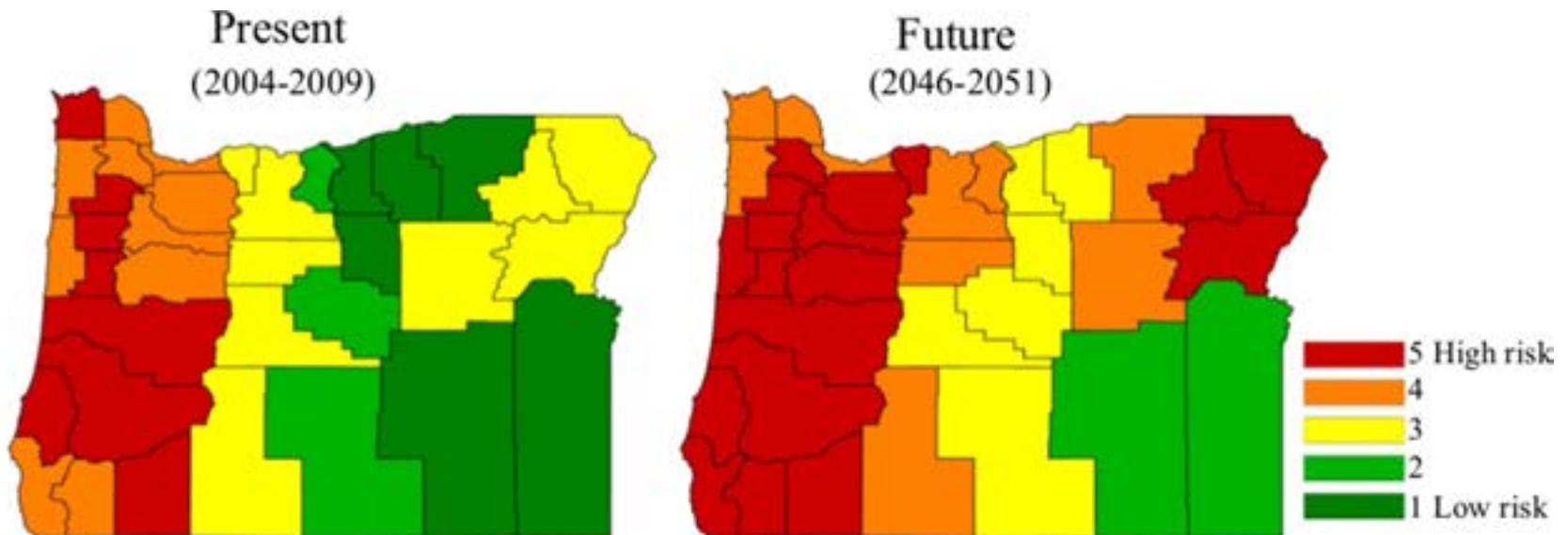
Projected Change in "Extreme Fire" Danger Days (100 Hour Fuel Moisture Below 3 Percentile), Summer (Jun-July-Aug)

RCP8.5 2040-2069 vs. historical simulation 1971-2000, mean change

Downscaled multi-model (18 models) mean from CMIP5



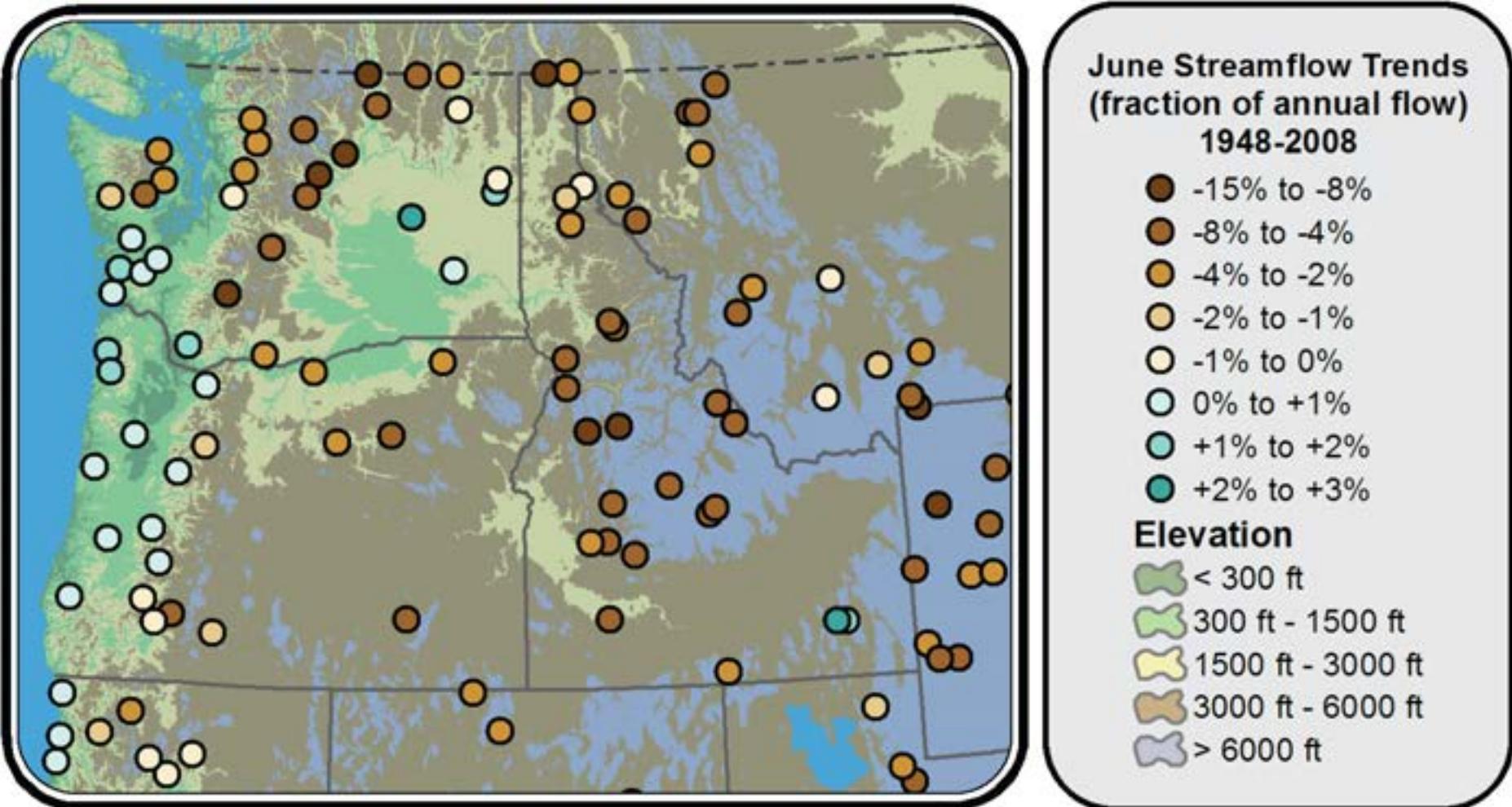
Fire smoke risk for present and mid century



Western US: Fine particulate matter from wildfires to increase 160% by mid-century.

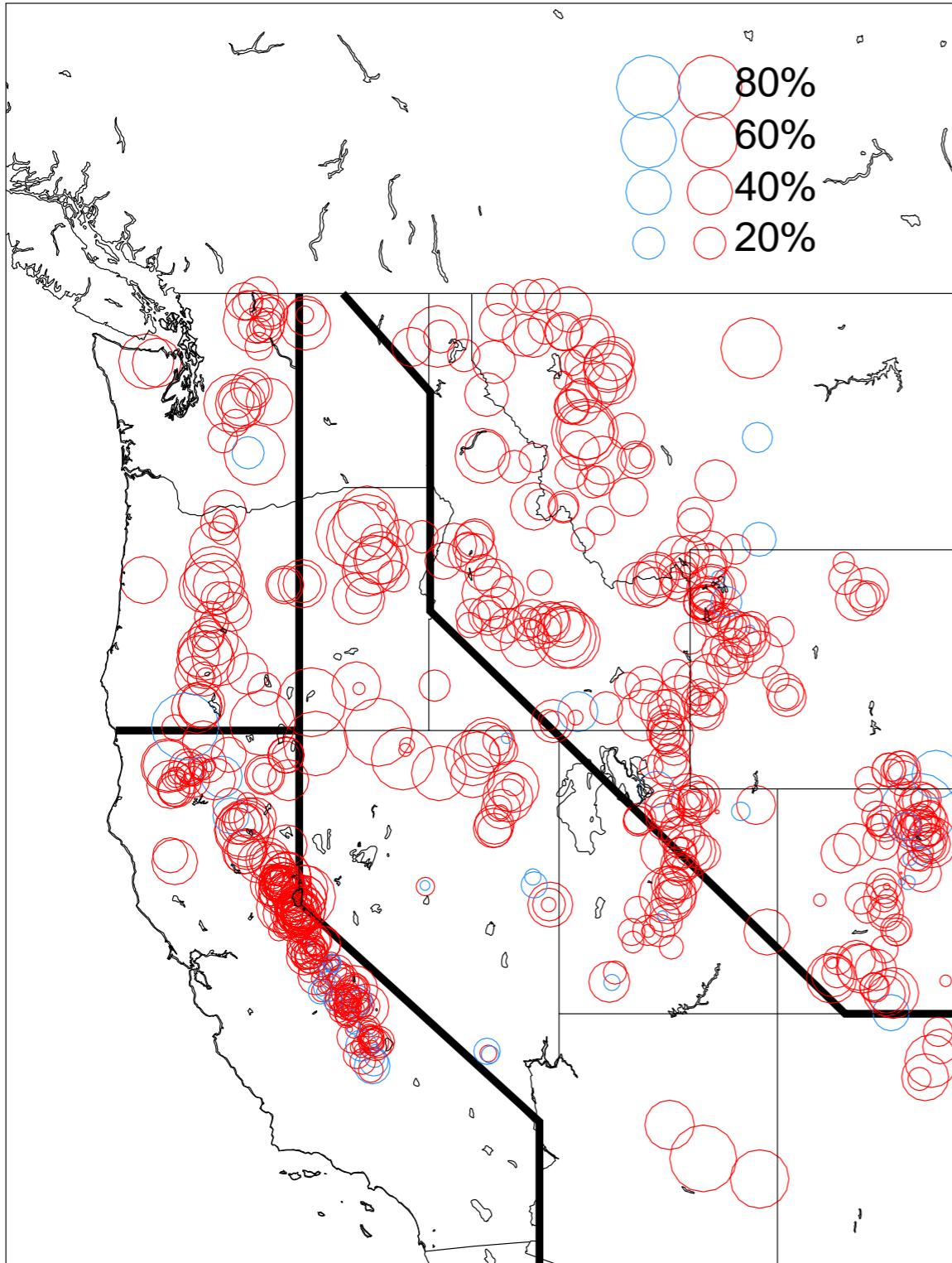
adapted from Liu et al. 2016

Decreasing summer flow in snowmelt watersheds

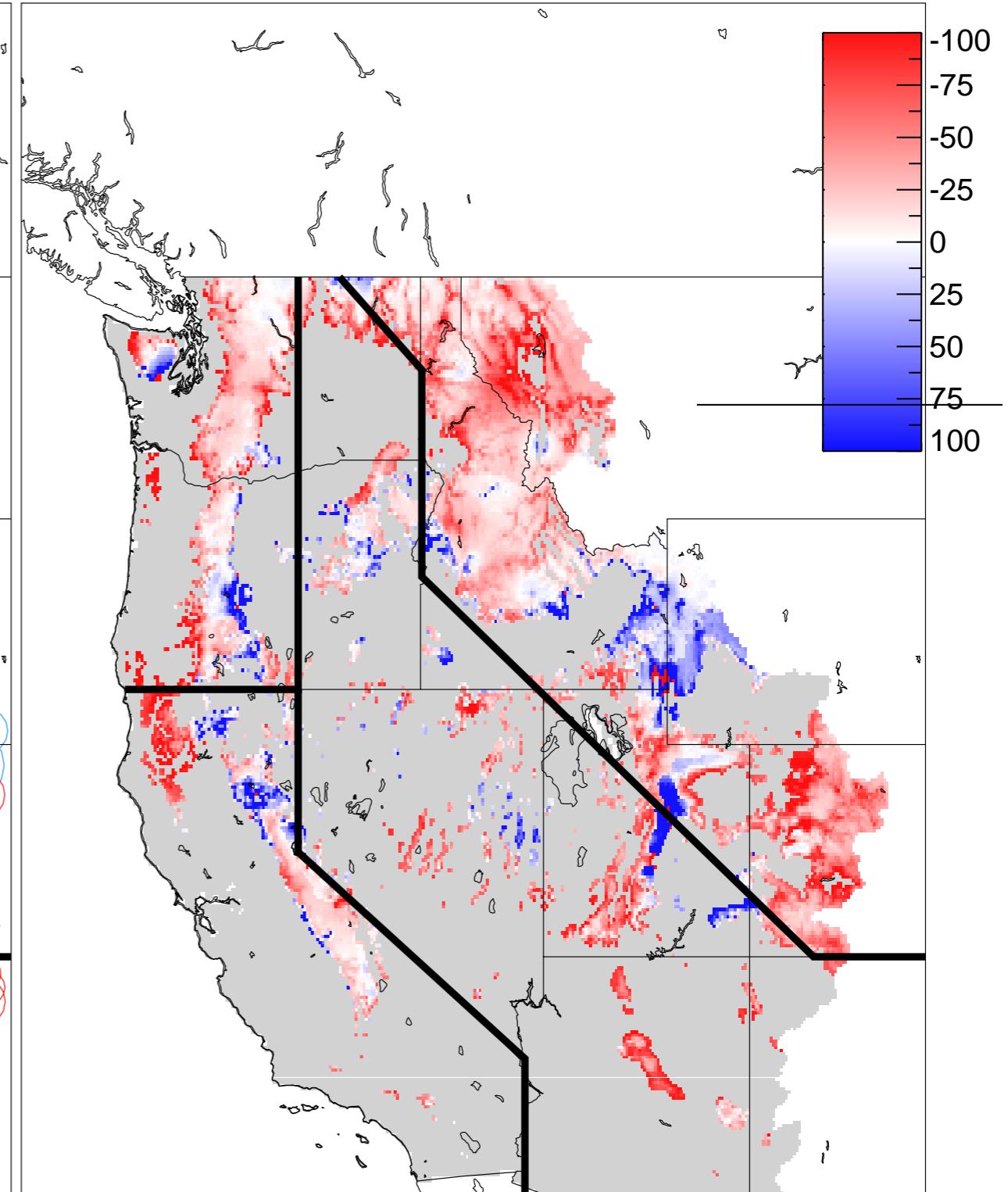


Obs & model: 90% decline

a) April 1 Observed SWE Trends 1955-2016



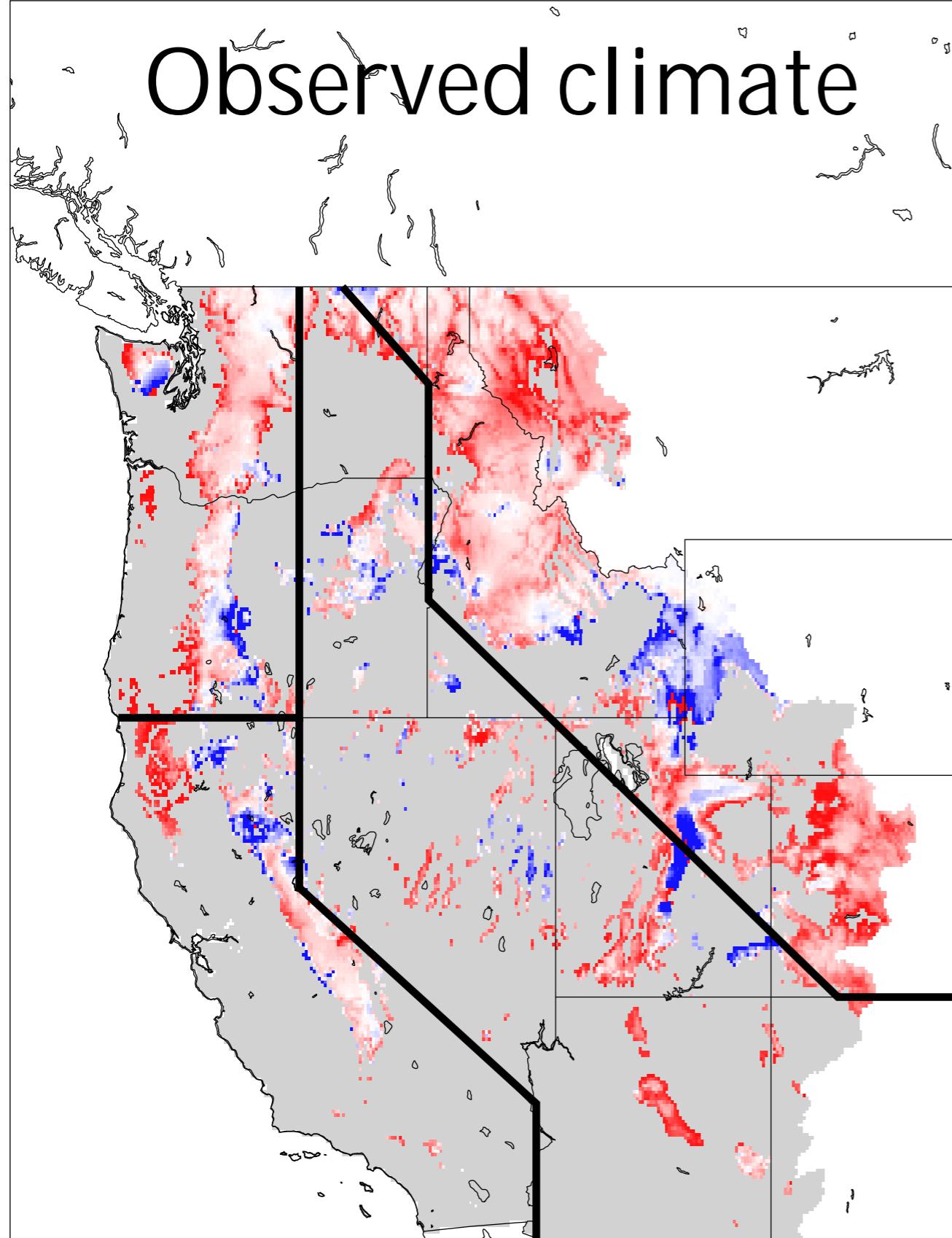
b) April 1 VIC SWE Trend 1955 to 2014



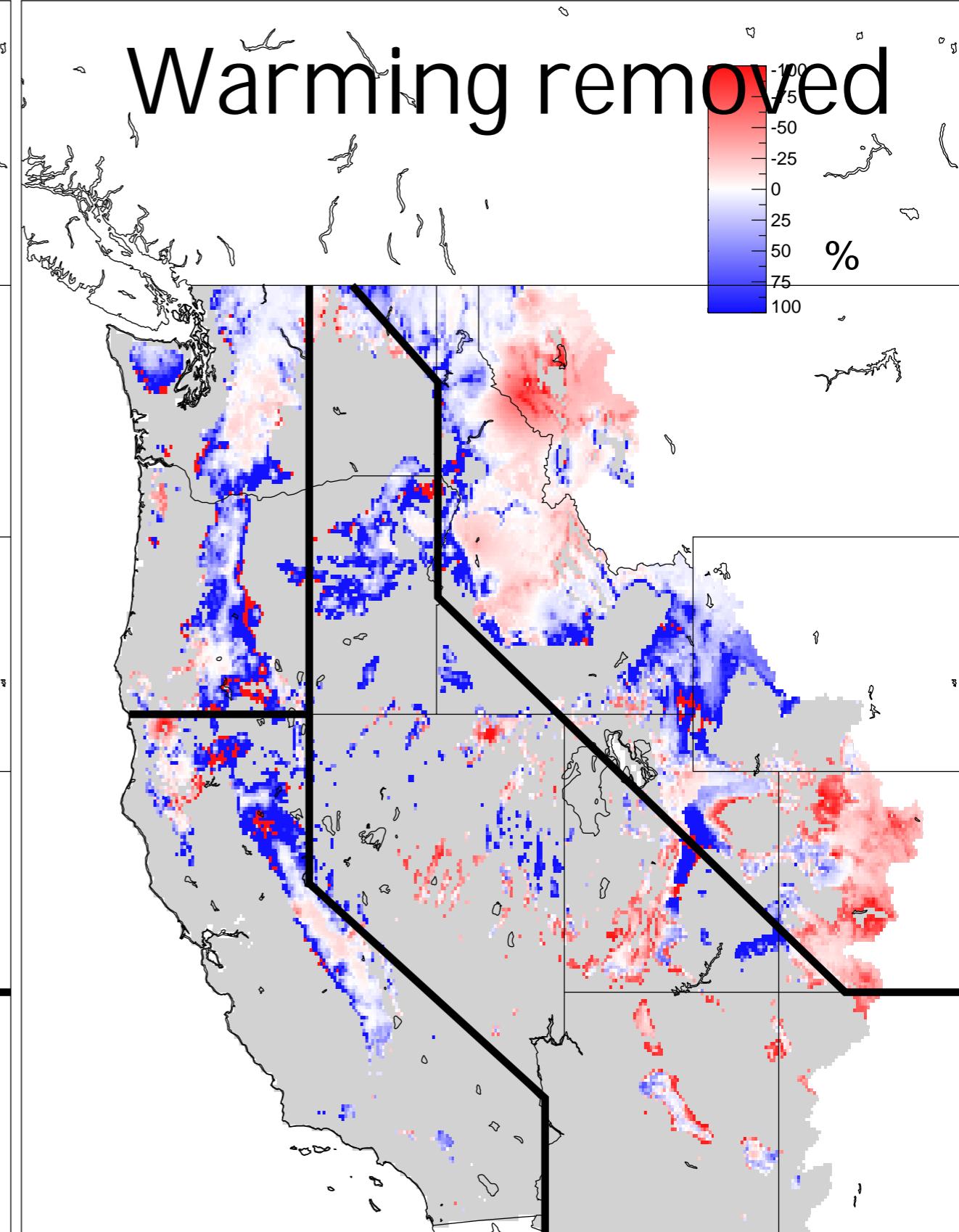
Role of warming

b) April 1 VIC SWE Trend 1955 to 2014 c) April 1 VIC SWE Trend(Detrended) 1955 to 2014

Observed climate



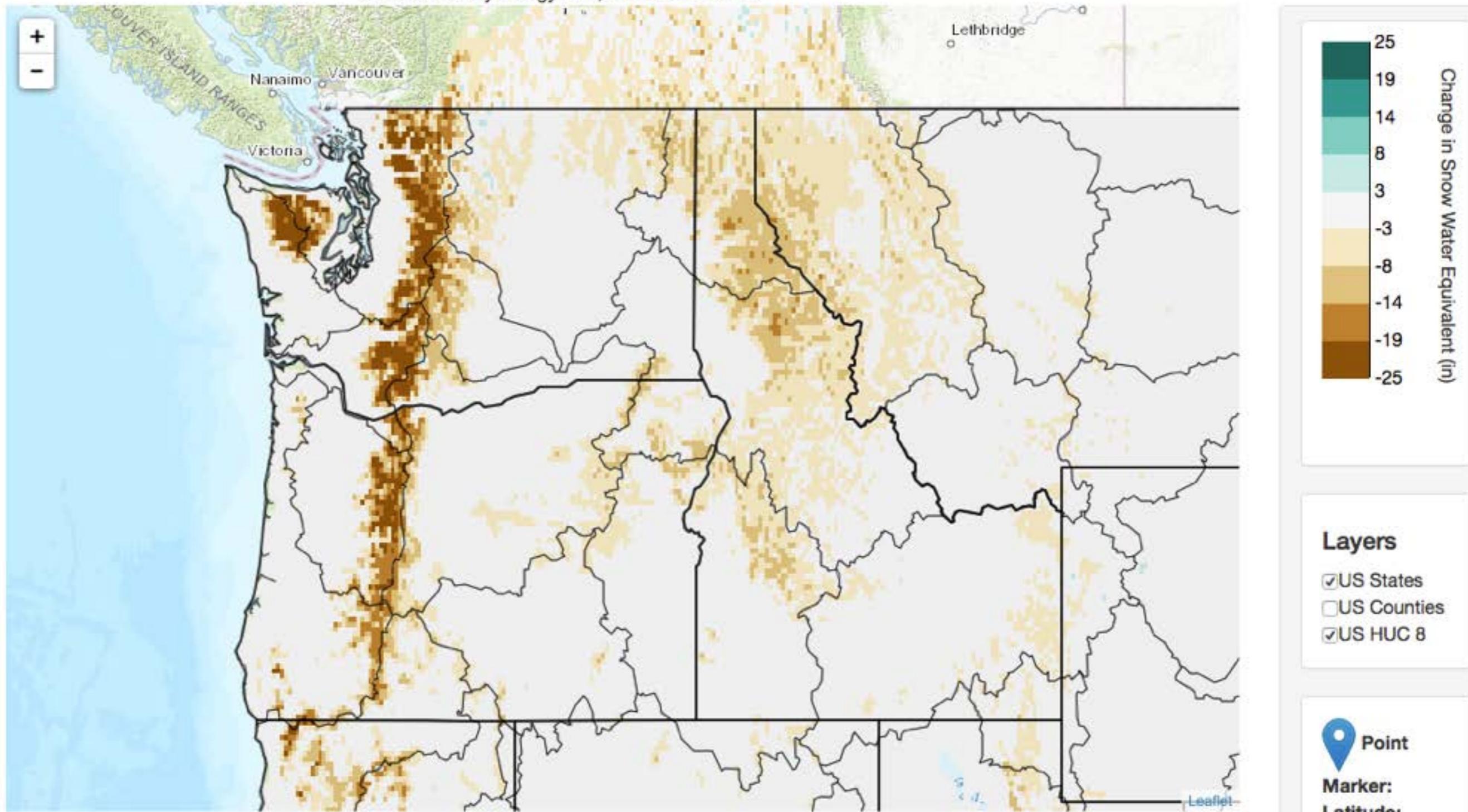
Warming removed



Projected Changes in April 1st Snow Water Equivalent

RCP8.5 2040-2069 vs. 1971-2000

Data Source: Hydrology: VIC, Multi-Model Mean

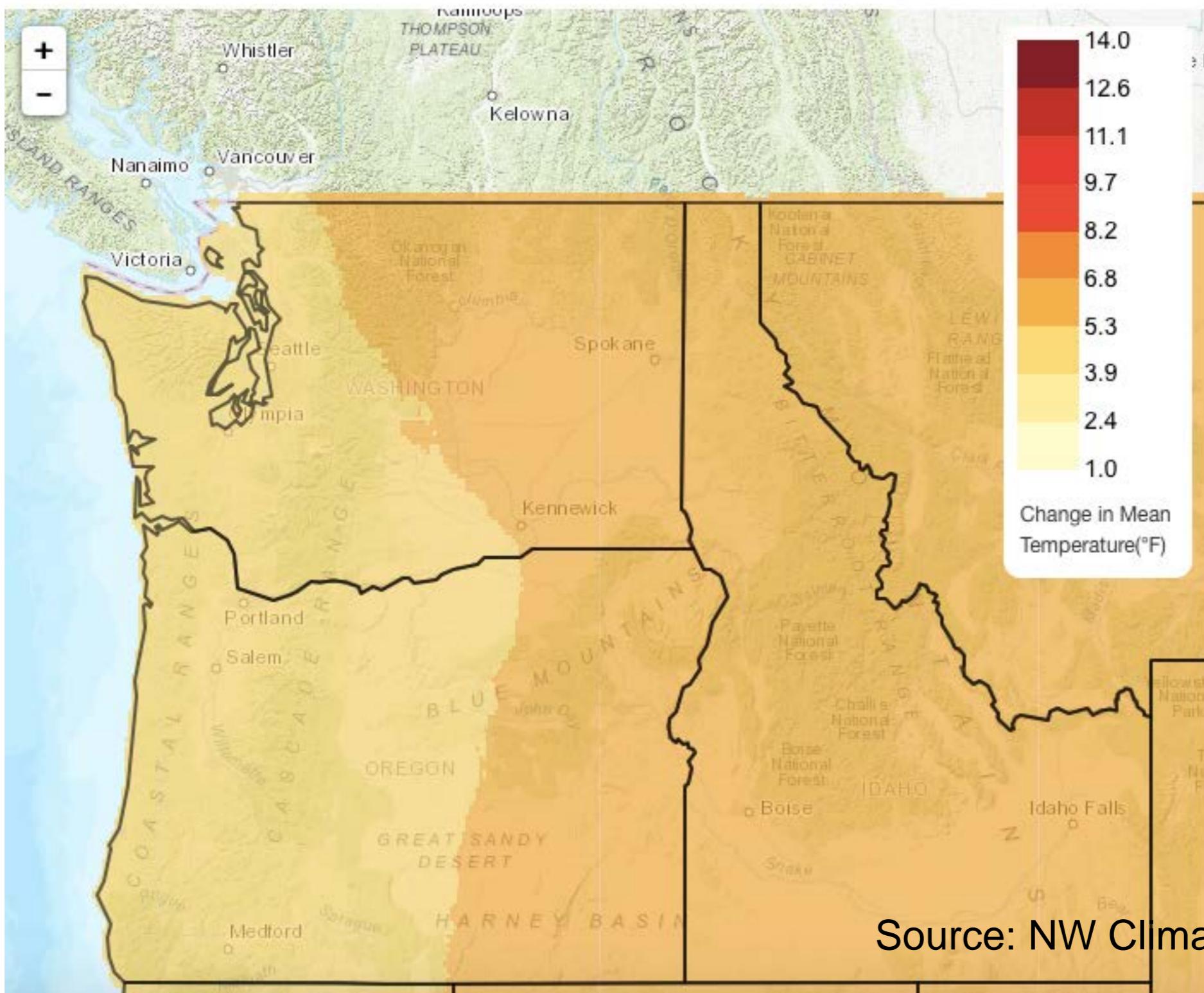


Source: NW Climate Toolbox

Projected Change in Winter (Dec-Jan-Feb) Mean Temperature (°F)

RCP8.5 2040-2069 vs. 1971-2000

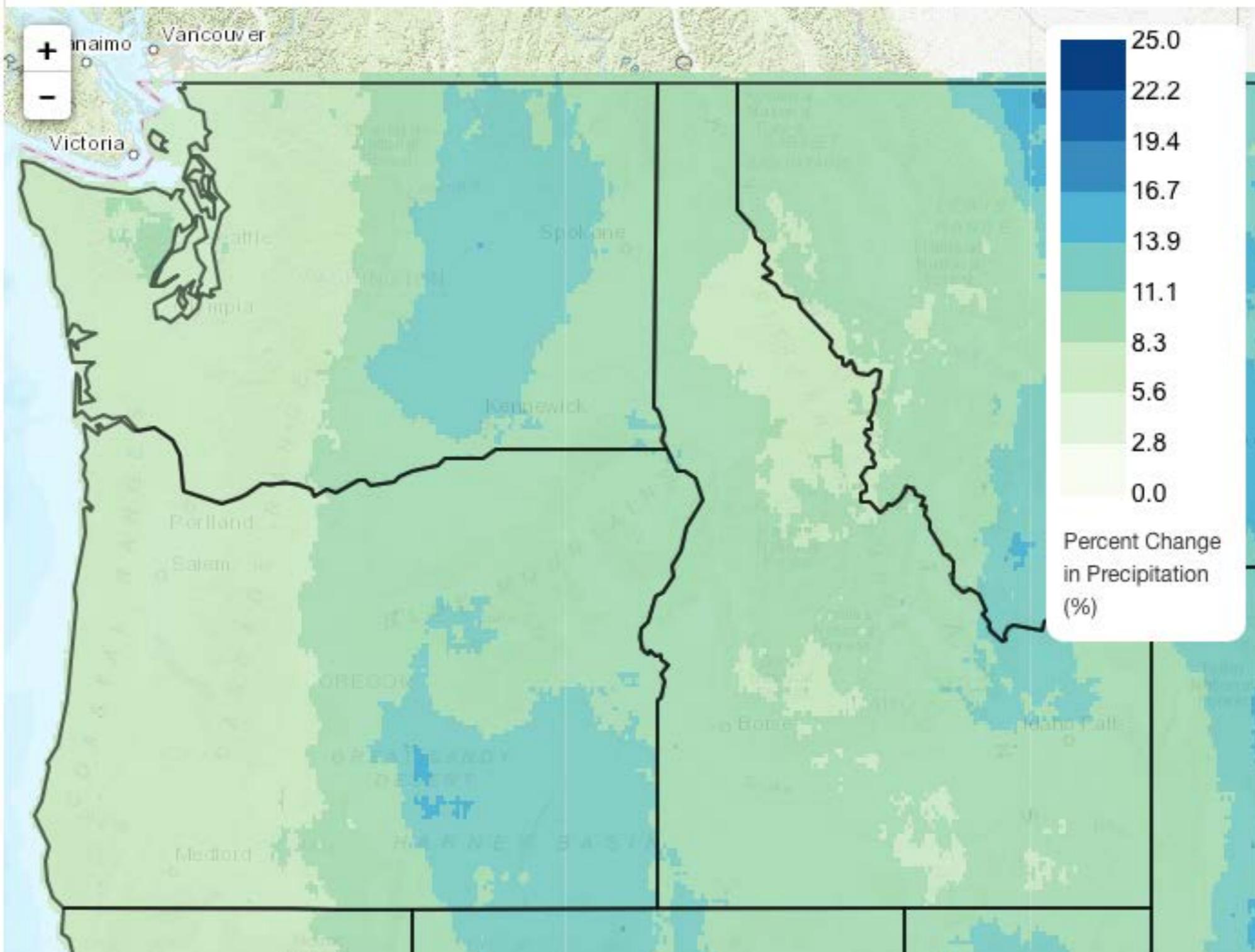
Multi-Model Mean



Projected Change in Winter (Dec-Jan-Feb) Precipitation (% of Normal)

RCP8.5 2040-2069 vs. 1971-2000

Multi-Model Mean



summary

- climate change will continue to effect Oregonians
- Oregon will continue to warm in all seasons, especially summer
 - fire, snow, agriculture - temperature sensitive, cascading social, economic, and ecological effects
 - reducing global emissions will reduce warming
- big fire seasons in past 15 years tend to be hot, dry summers
- coastal impacts with global sea level rise and coastal flooding, crucial infrastructure at risk
- frame questions to “did climate change make this event/season more likely”



photo: Philip Mote