climate change, agriculture, and water resources in the PNW

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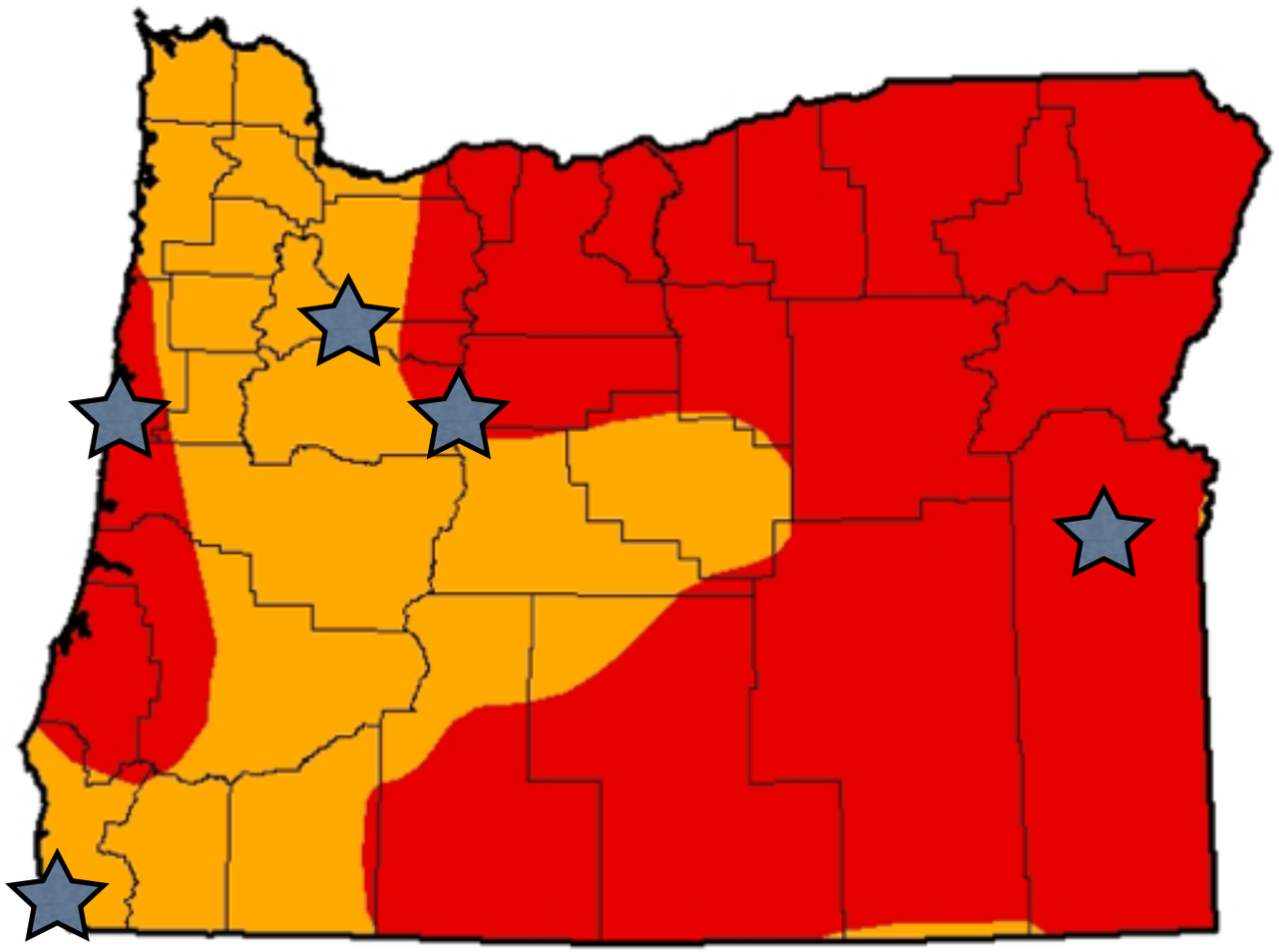
UCAR annual members meeting | 14 October 2015 | Boulder, CO

Photo: Brent Drinkut, Statesman Journal

U.S. Drought Monitor

Oregon



September 22, 2015

(Released Thursday, Sep. 24, 2015)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	100.00	67.28	0.00
Last Week *9/15/2015*	0.00	100.00	100.00	100.00	67.28	0.00
3 Months Ago *6/23/2015*	0.00	100.00	98.60	81.72	34.09	0.00
Start of Calendar Year *12/30/2014*	13.61	86.39	80.70	49.29	34.11	0.00
Start of Water Year *9/30/2014*	1.56	98.44	76.61	56.26	35.30	0.00
One Year Ago *9/23/2014*	1.69	98.31	76.61	57.30	35.30	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

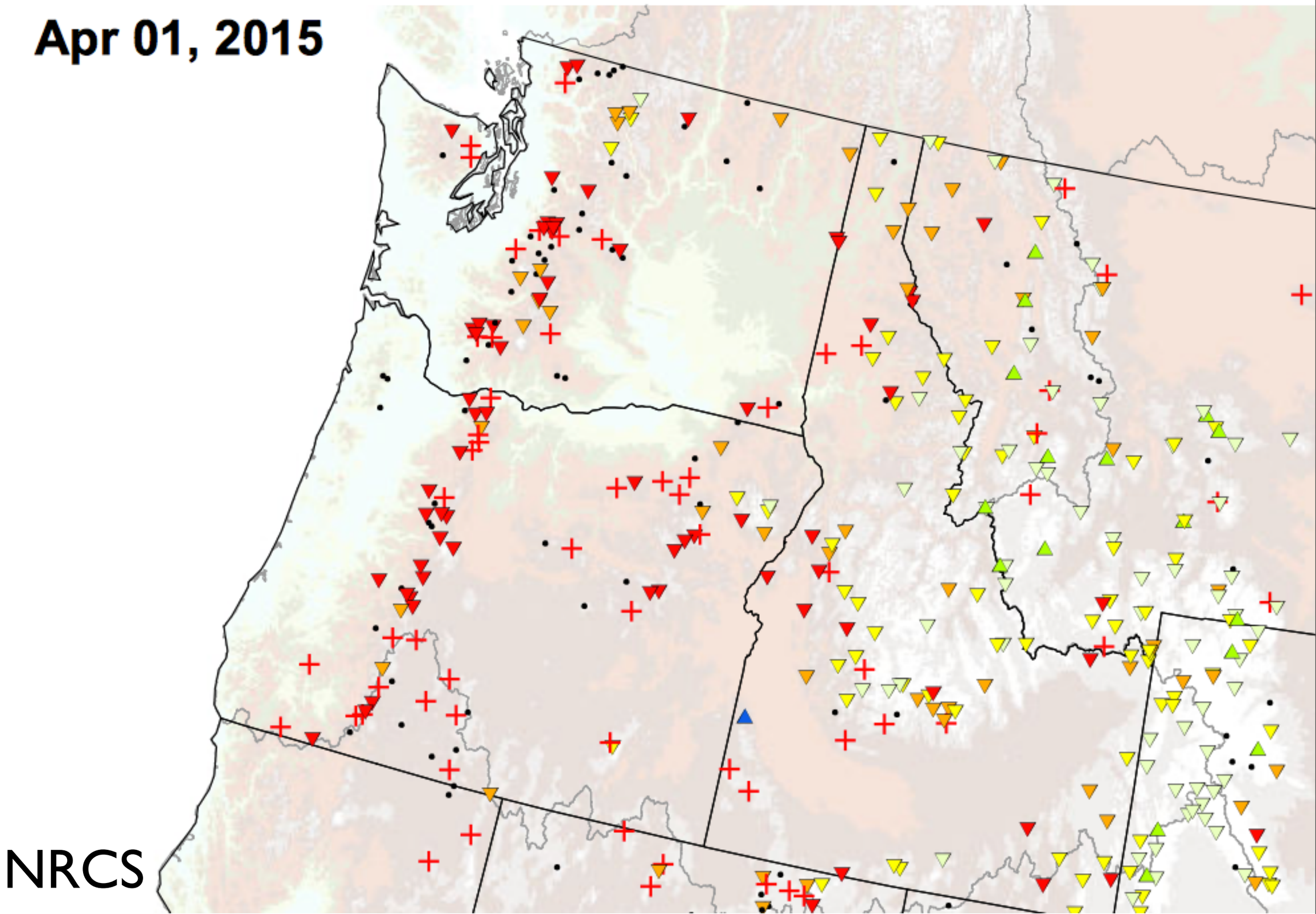
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Eric Luebehusen
U.S. Department of Agriculture

http://droughtmonitor.unl.edu/

SNOTEL Current Snow Water Equivalent (SWE) Percent

Apr 01, 2015



NRCS

2015 is a practice run for the future

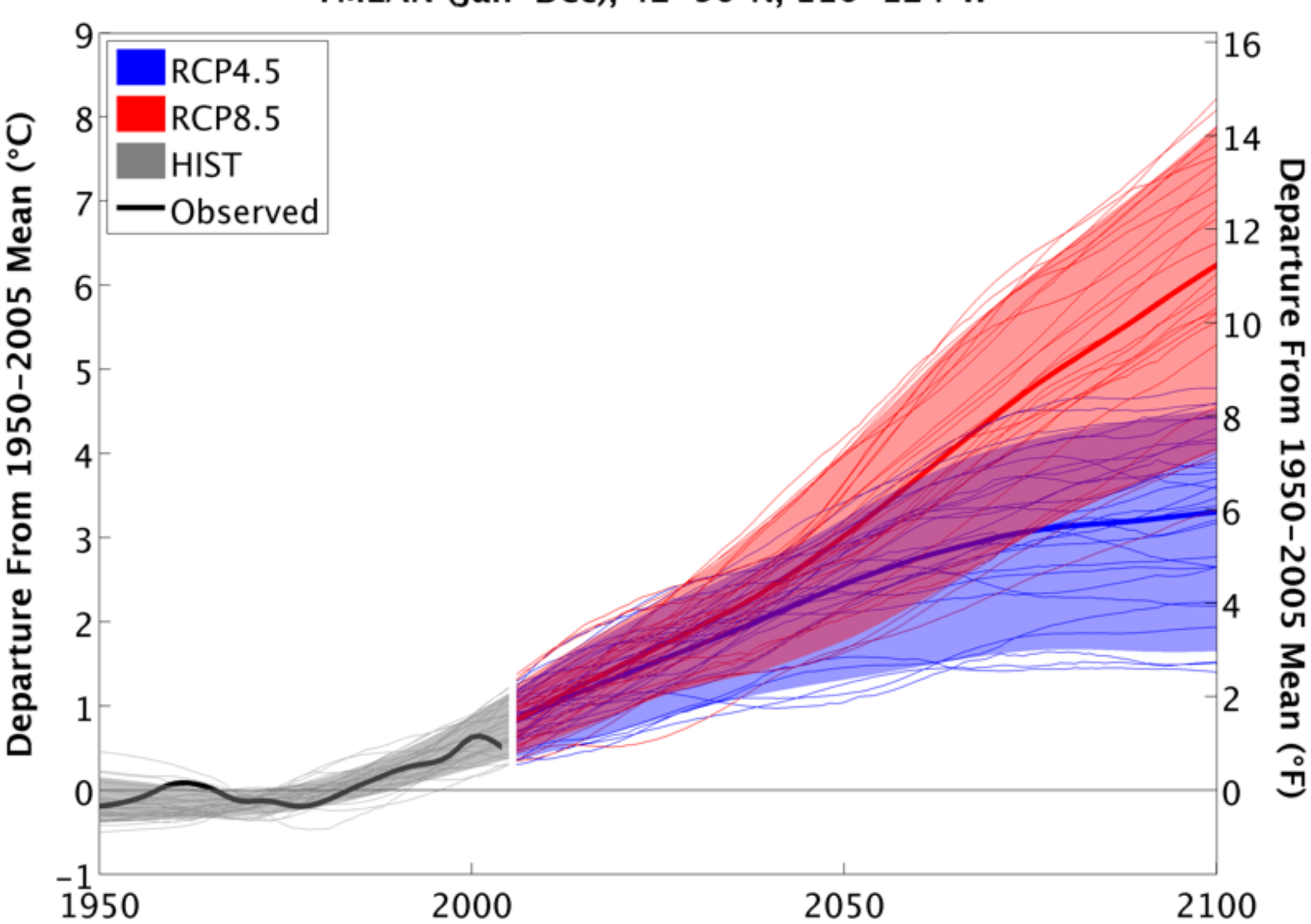
winter 2014-15 **2nd** warmest on record (+7˚F)

spring 2015 **3rd** warmest on record (+4˚F)

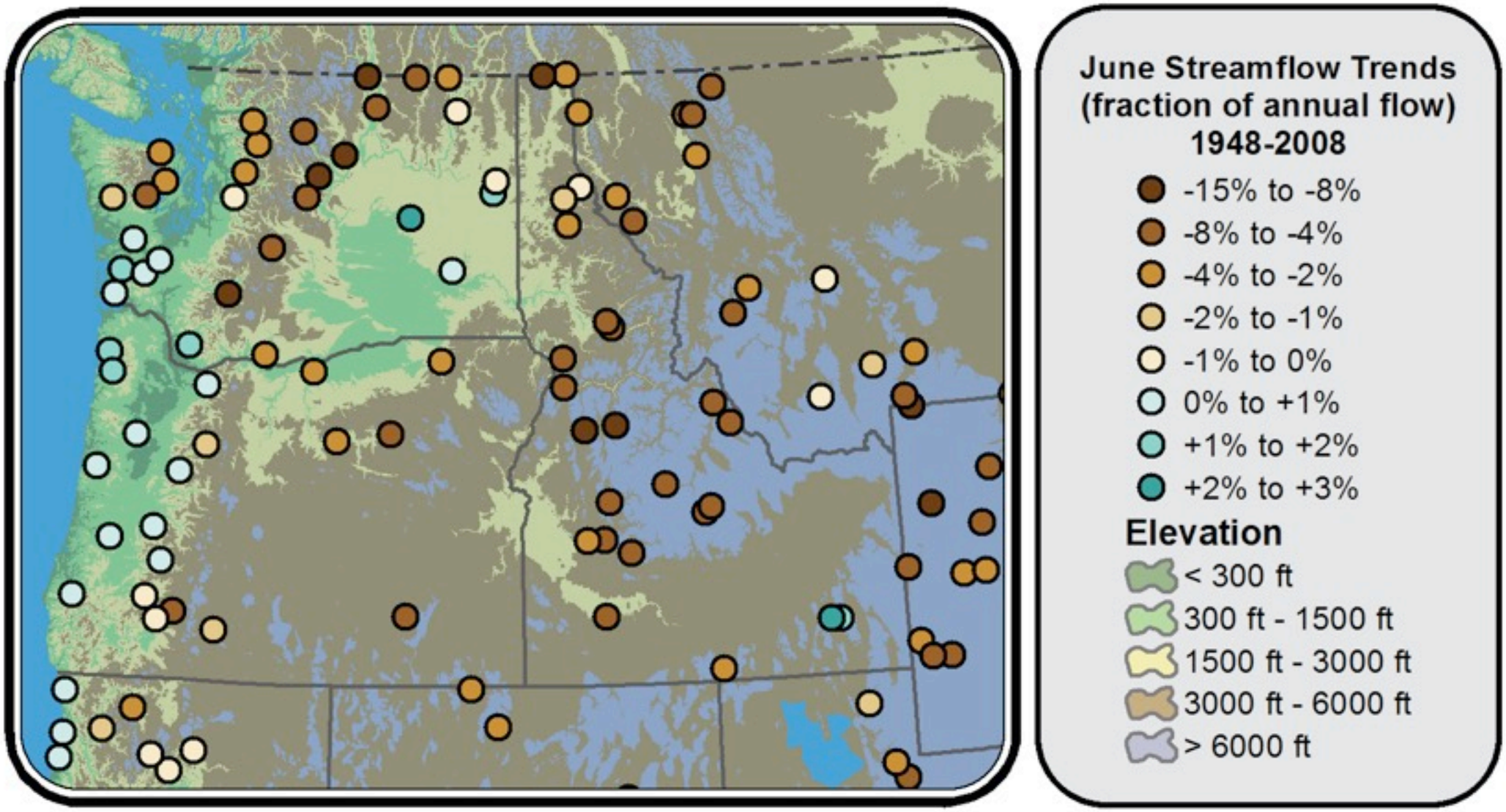
summer 2015 **warmest** on record (+5˚F)

on pace for the **warmest** calendar year on record

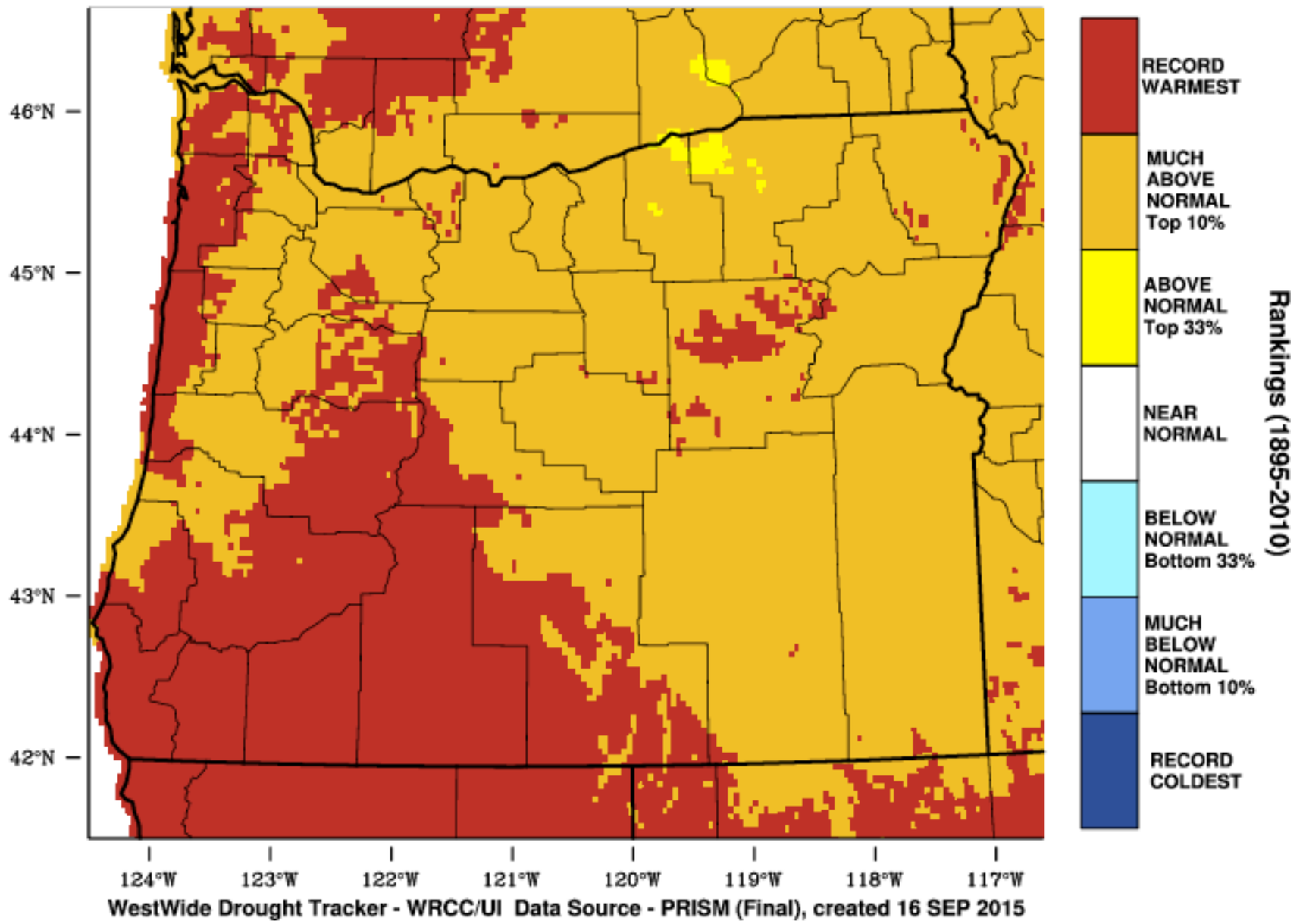
observational records back to 1895


TMEAN (Jan–Dec), 42–50°N, 110–124°W
RCP4.5
RCP8.5
HIST
Observed
Departure From 1950–2005 Mean (°C)
Departure From 1950–2005 Mean (°F)
9
8
7
6
5
4
3
2
1
0
−1
16
14
12
10
8
6
4
2
0
1950
2000
2050
2100

Changes in the timing of streamflow related to changing snowmelt have occurred and will continue

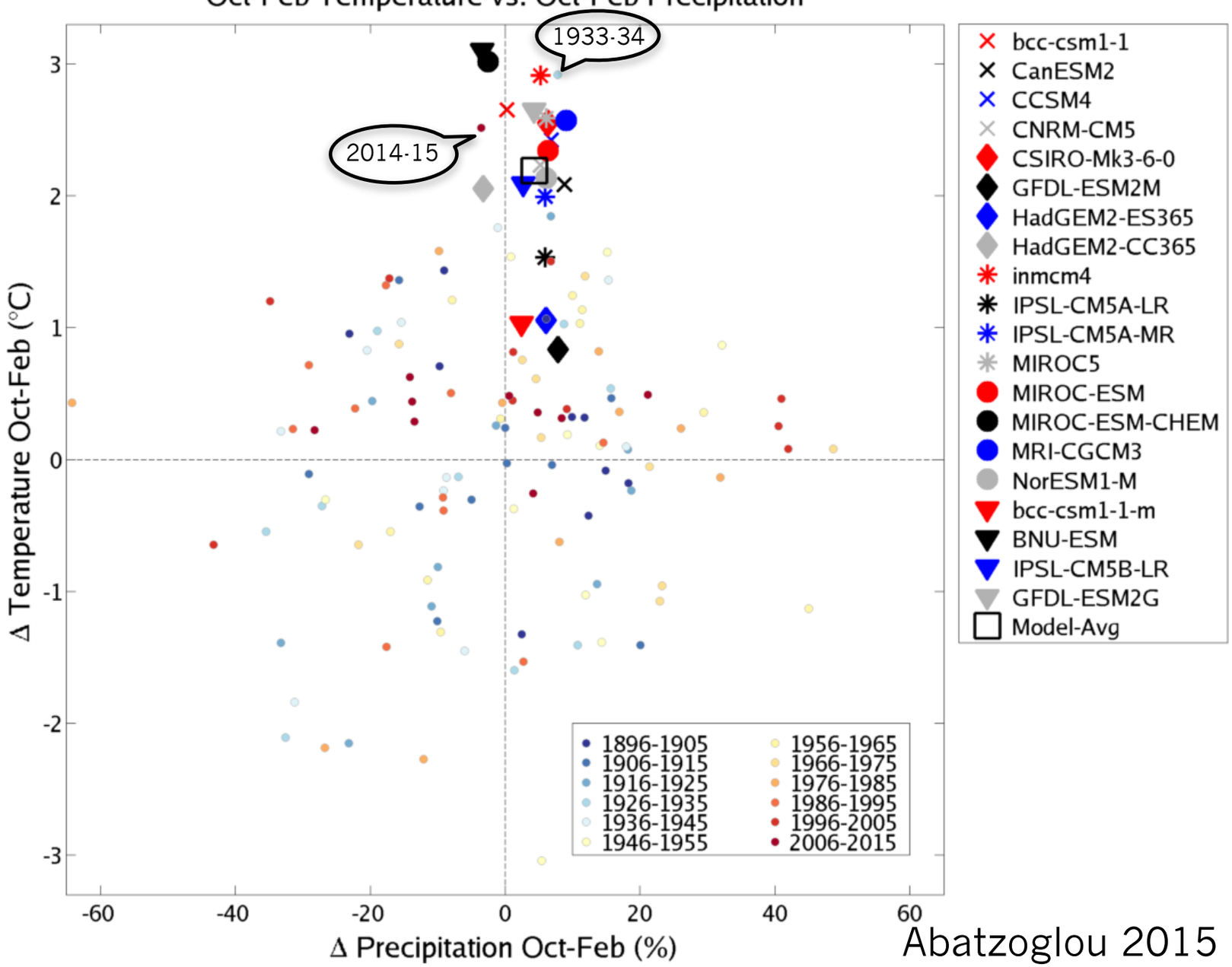


Dalton et al. 2013



Future water supply mostly vulnerable to changes in temperature, there will be continued spatial and seasonal variation in precipitation

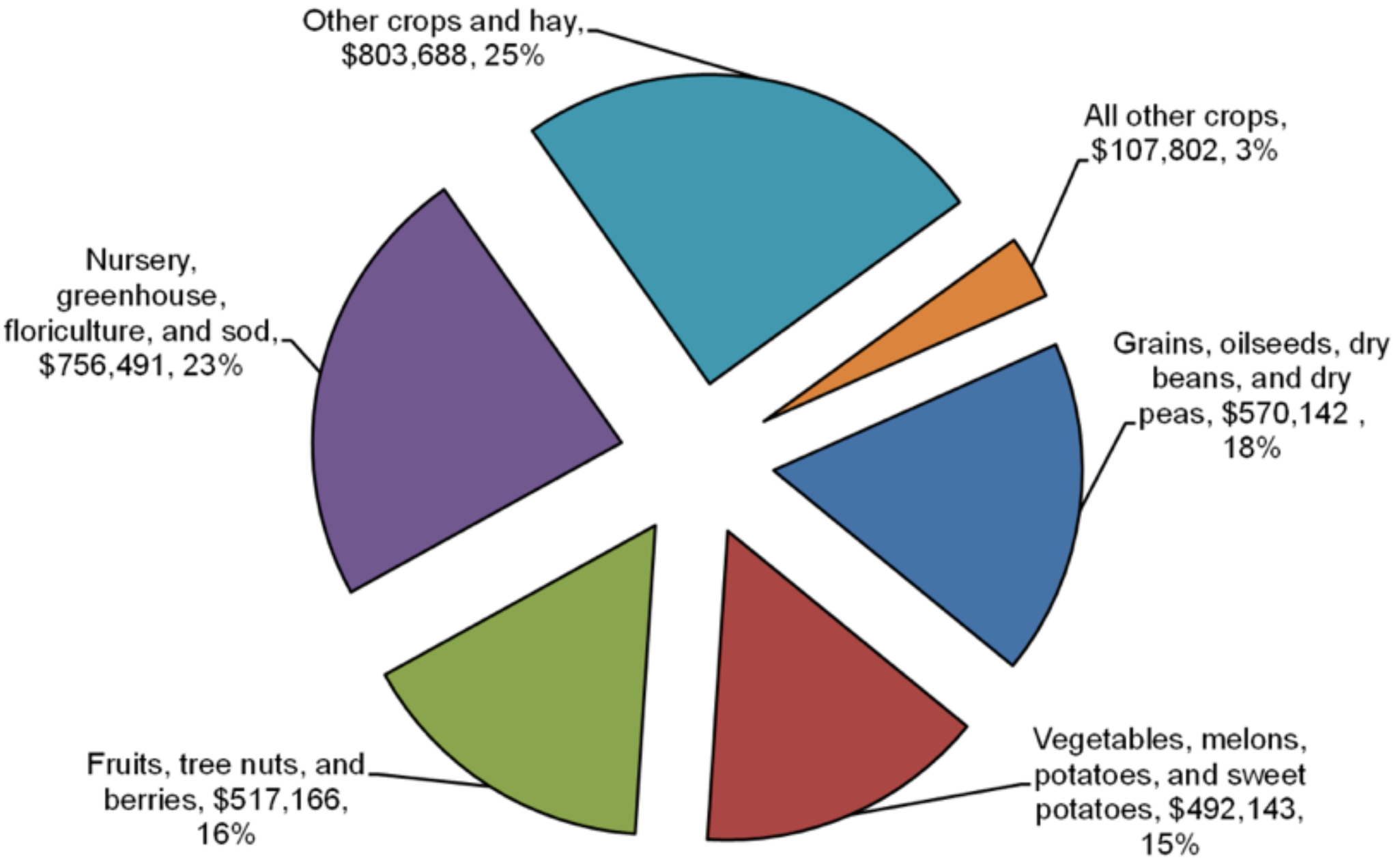
NWCAR



Abatzoglou 2015

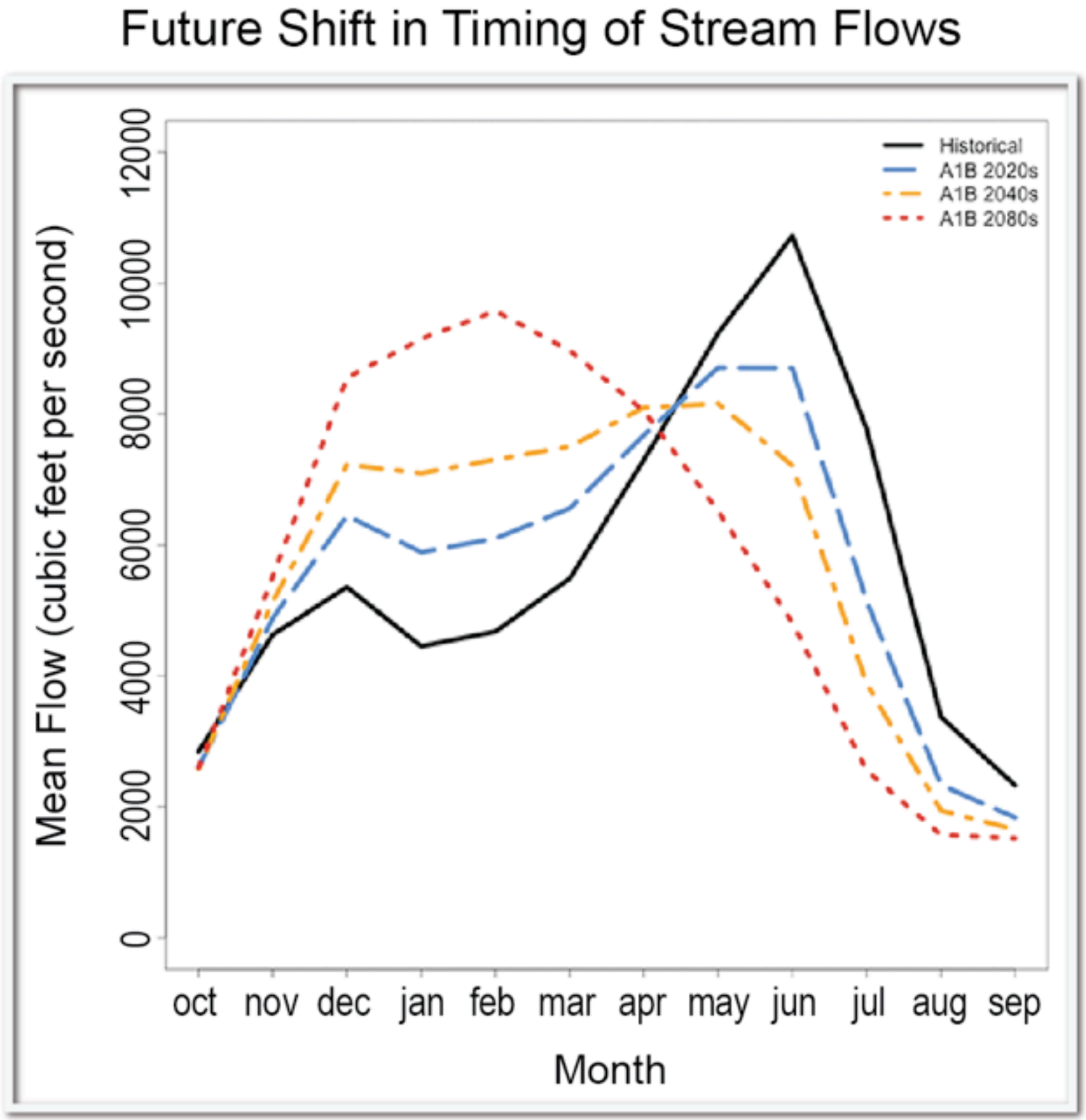

2015 02/23 (Mon) 10:24:25 - Ed Chair top (Northeast view)
30% less area will be snow-covered in US West by 2050 (rain/snow transition)
from Hoodoo web cam
February 23, 2015
Klos et al 2014; photo, Hoodoo, 2015

2012 Value ($1,000) of Crops Including Nursery and Greenhouse



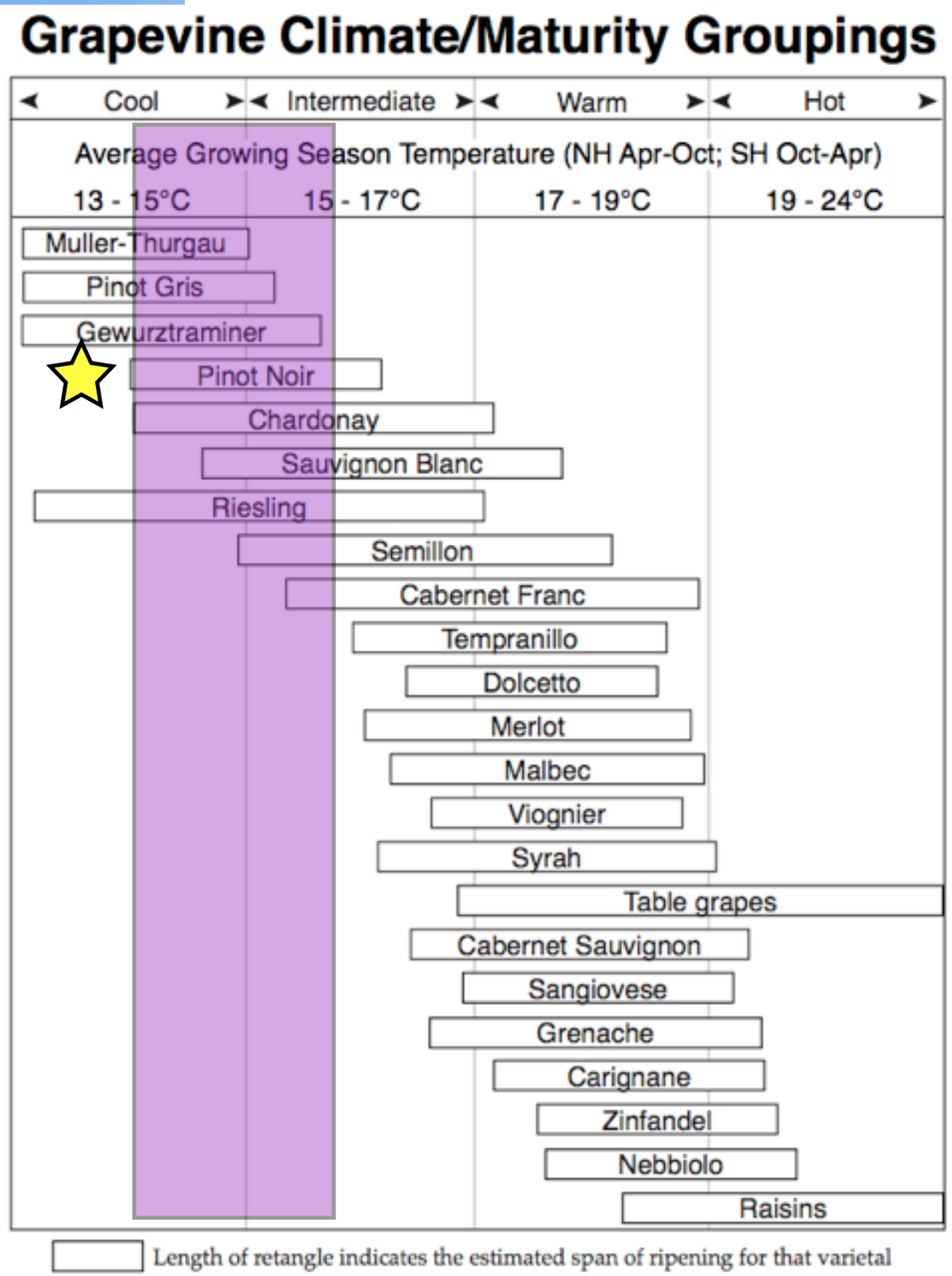
Oregon Employment Department, 2013

Agriculture vulnerable to change



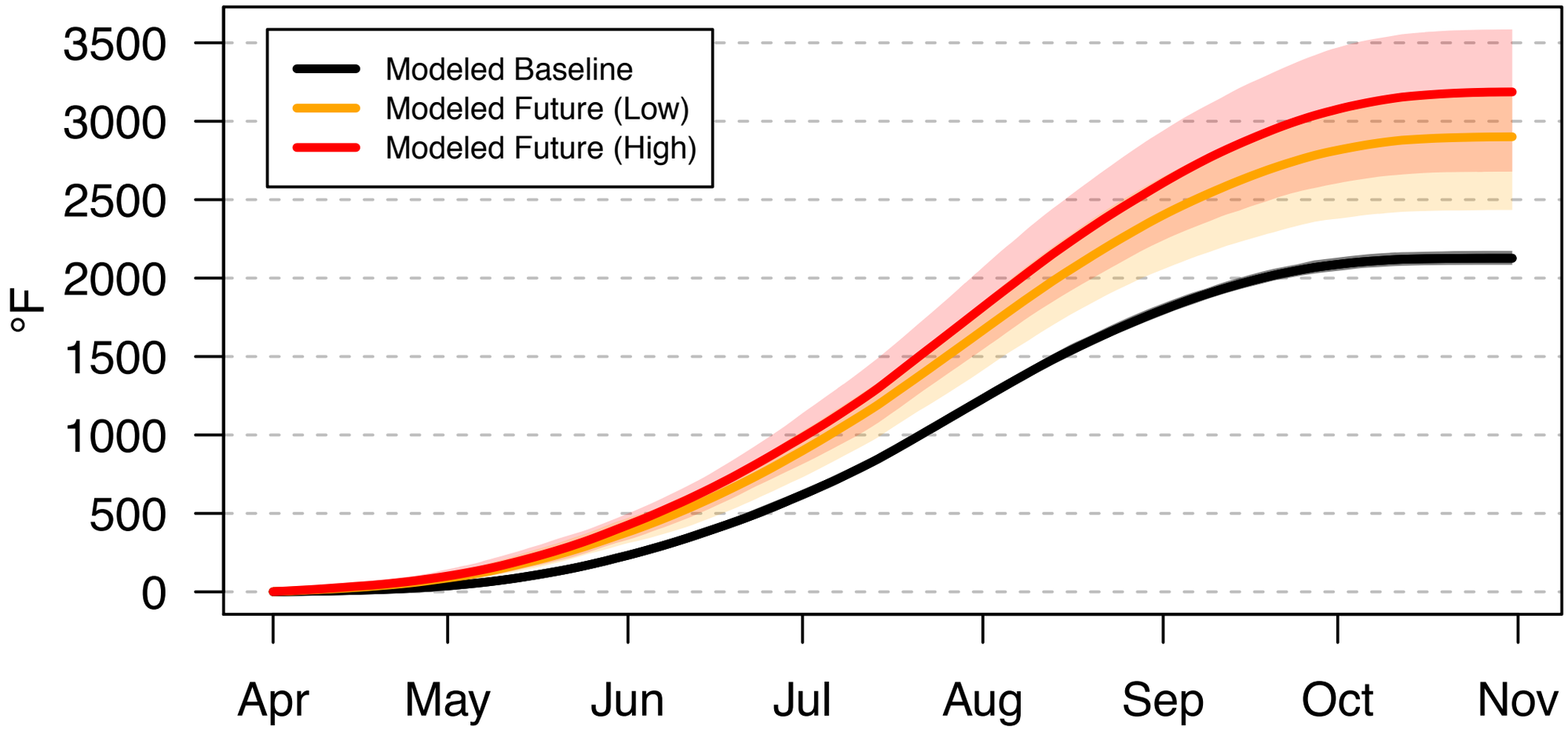
NWCAR

no crop better illustrates sensitivity and risk to climate change than the pinot noir, Oregon's marquee winegrape



Jones 2004; Coakley et al 2010

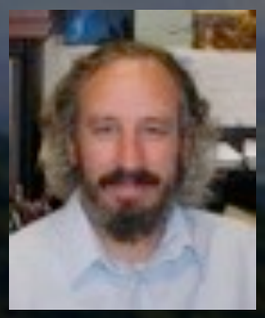
Projected Accumulated Growing Degree Days (Base 50°F)
Wenatchee



Modeled baseline is averaged over 1970–1999.
Modeled future is averaged over 2040–2069 for a high and low emissions scenario.
Solid line shows the average and shading shows the 5–95th percentile range of 20 climate models.

Dalton, unpublished

John Bolte



WW2100 Modeling Framework (Envision)

Climate Change

Population Growth

Water Supply

Snow Dynamics

Hydrology

Stream Temperature

Water Allocation

Reservoir Operations

Water Rights

Water Demand

Urban

Land Use Transitions

Land Rent

Agriculture

Irrigation and Crop Decisions

Urban Expansion

Forests

Forest State & Transition

Fire & Harvest Disturbance

Fish

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Eastern Oregon farmers adapt to deal with years of drought

10

Sean Ellis
Capital Press

Published:
October 1, 2015 8:17AM

Sean Ellis/Capital Press A potato field is harvested near Ontario, Ore., on Aug. 25. A lingering drought has caused farmers in Eastern Oregon who depend on the Owyhee Reservoir for their irrigation water to alter their farming practices. That has included planting more crops that require less water to save their water for cash crops, such as potatoes and onions.
Buy this photo

1 of 7

Four years of drought conditions have caused growers in Eastern Oregon who get their irrigation water from the Owyhee Project to alter their farming practices.

ONTARIO, Ore. — Growers along the Oregon-Idaho border who depend on water from the Owyhee Reservoir to irrigate their crops have had to change the way they farm.

They have no choice. The annual water allotment for the 1,800 farms that depend on the reservoir has been slashed by about two-thirds during the past three years as a drought grips the region.

Capital Press October 7, 2015

OCCRI

- Oregon's climate knowledge network established in 2007 by state legislature (science, adaptation)
  - Two Federal climate centers
  - connect research in OR and PNW universities
  - regular assessments of climate science

thank you!

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