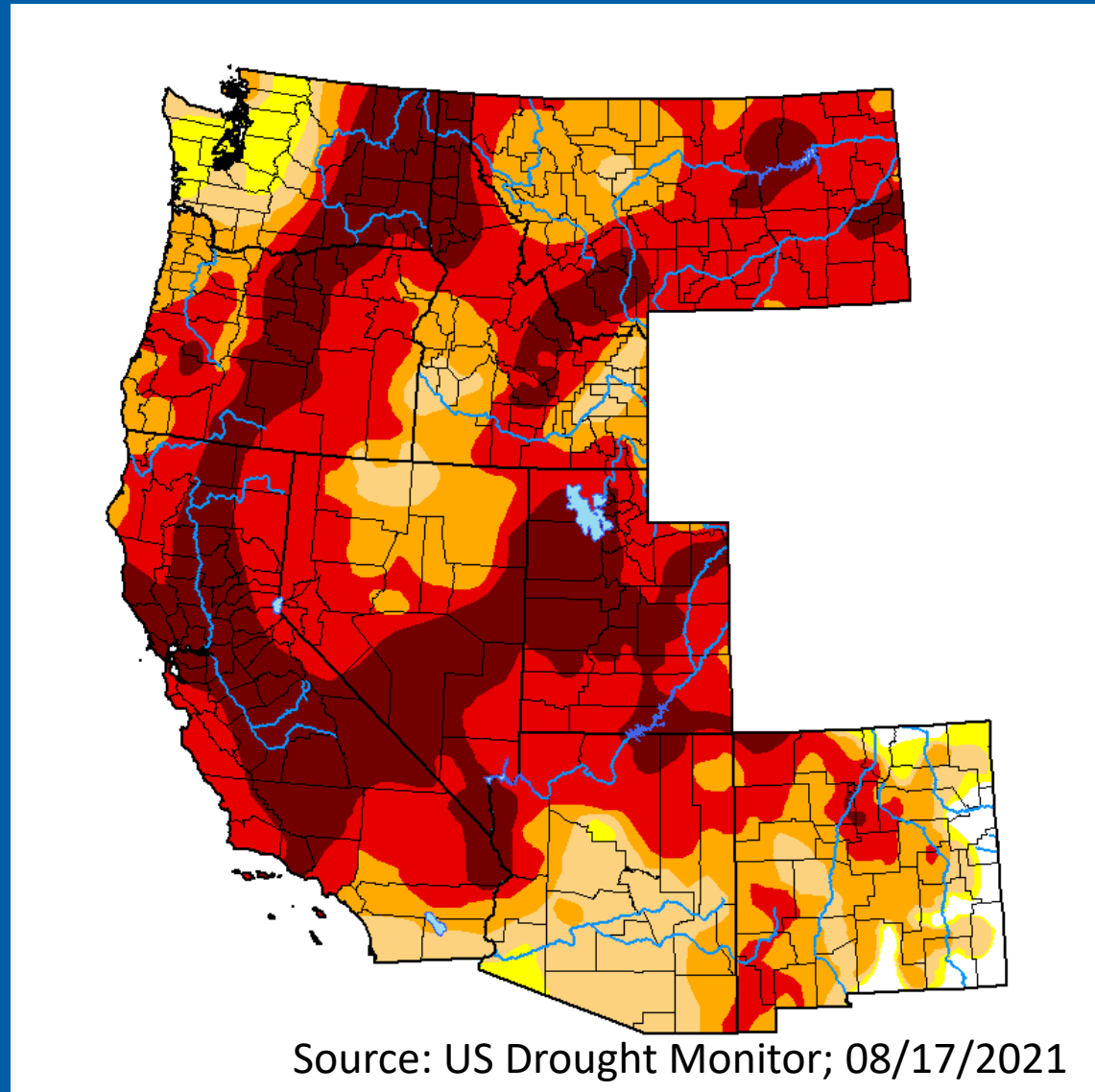


Drought Status Update



Ryan Andrews, Bryn Hudson, Racquel Rancier, Rachel LovellFord
Oregon Water Resources Department
Larry O'Neill, State Climatologist, Oregon State University

Purpose



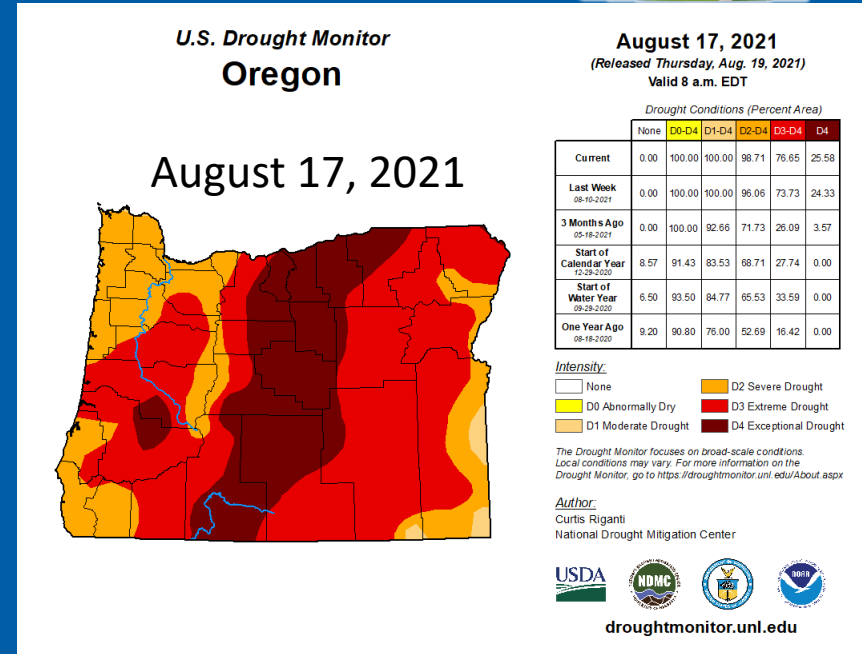
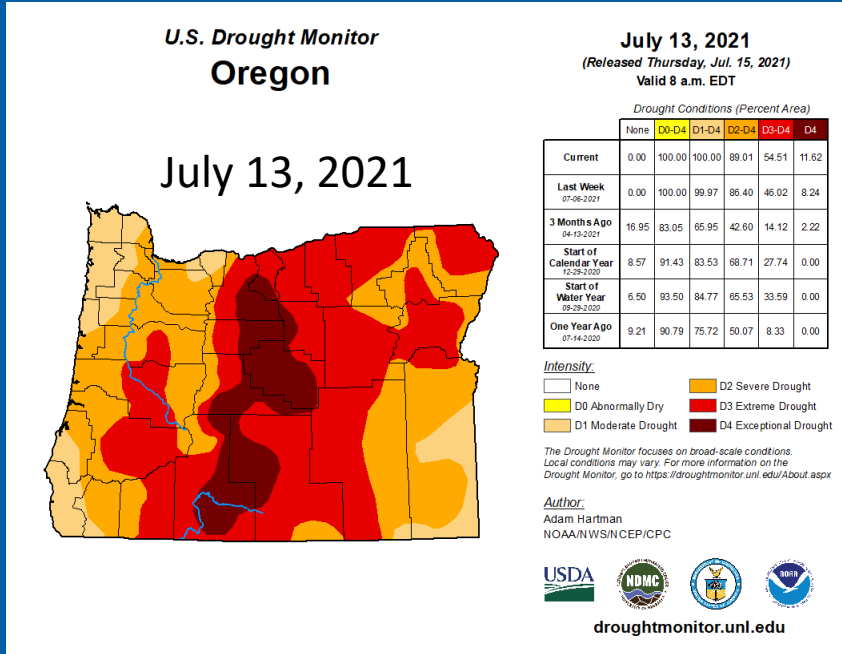
1. Provide update on drought declarations and conditions summary update
2. Discuss drought impacts from various agencies
3. Discuss some of the response efforts

Overview of Conditions



- Second year of multi-year drought event
 - Impacts and severity arrived earlier
 - Conditions likely to persist
- Record low streamflows
 - Reduced water supply for instream and out-of-stream uses
- Historically dry soils
 - Poor vegetative conditions, crop yield and quality
 - Further exacerbating drought conditions

USDM categorical changes over the past month:

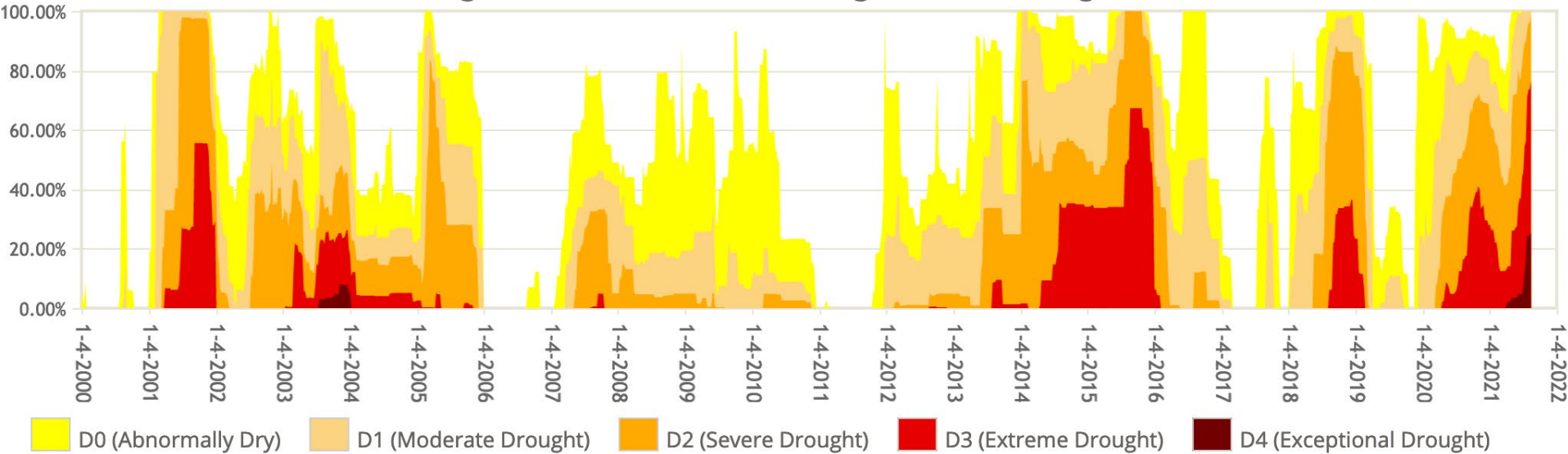


- Notable contributing meteorological events to trends in the USDM drought depiction:
1. Unprecedented late June heat wave
 2. Record warm summer across the state
 3. Abnormally dry summer monsoon season

	July 13, 2021	August 17, 2021	Change
D1-D4	100%	100%	0.0%
D2-D4	89.0%	98.7%	+9.7%
D3-D4	54.5%	73.7%	+19.2%
D4	11.6%	24.3%	+12.7%

Oregon USDM Time Series

Oregon Percent Area in U.S. Drought Monitor Categories



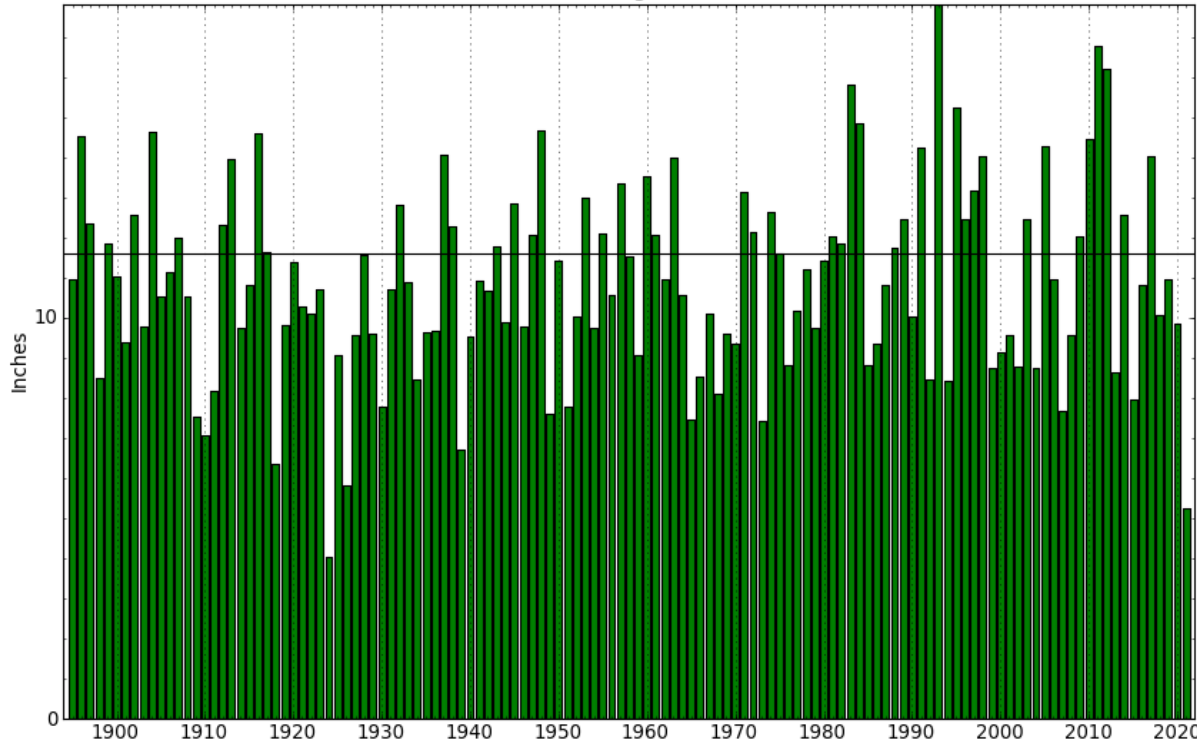
1. US Drought Monitor began ~2000
2. Oregon now has most extensive D3 and D4 coverage since the start of the USDM (these are the two worst drought categories)
3. Approximately 51% of Oregon is in D3 extreme drought, and another 25% is in D4 exceptional drought

Statewide Precipitation Ranking March-July 2021 (5 months)



A significant component of this year's drought is the historically dry spring and summer, which now ranks as second driest on record statewide (out of 126-year data record)

Precipitation, 5-Months Ending in July
Oregon



— Normal Period: 1981-2010

Data Source: WRCC/UI, Created: 8-20-2021

2021 ranks as Second driest
March-July period of record
(Average=11.59")

(1) 1924: 4.05" (34.9%)

(2) 2021: 5.24" (45.2%)

(3) 1926: 5.81" (50.1%)

(4) 1918: 6.37"

(5) 1939: 6.72"

(6) 1910: 7.07"

(7) 1973: 7.41"

(8) 1965: 7.46"

(9) 1909: 7.52"

(10) 1949: 7.61"

(11) 2007: 7.68"

(14) 2015: 7.97"

(17) 1994: 8.43"

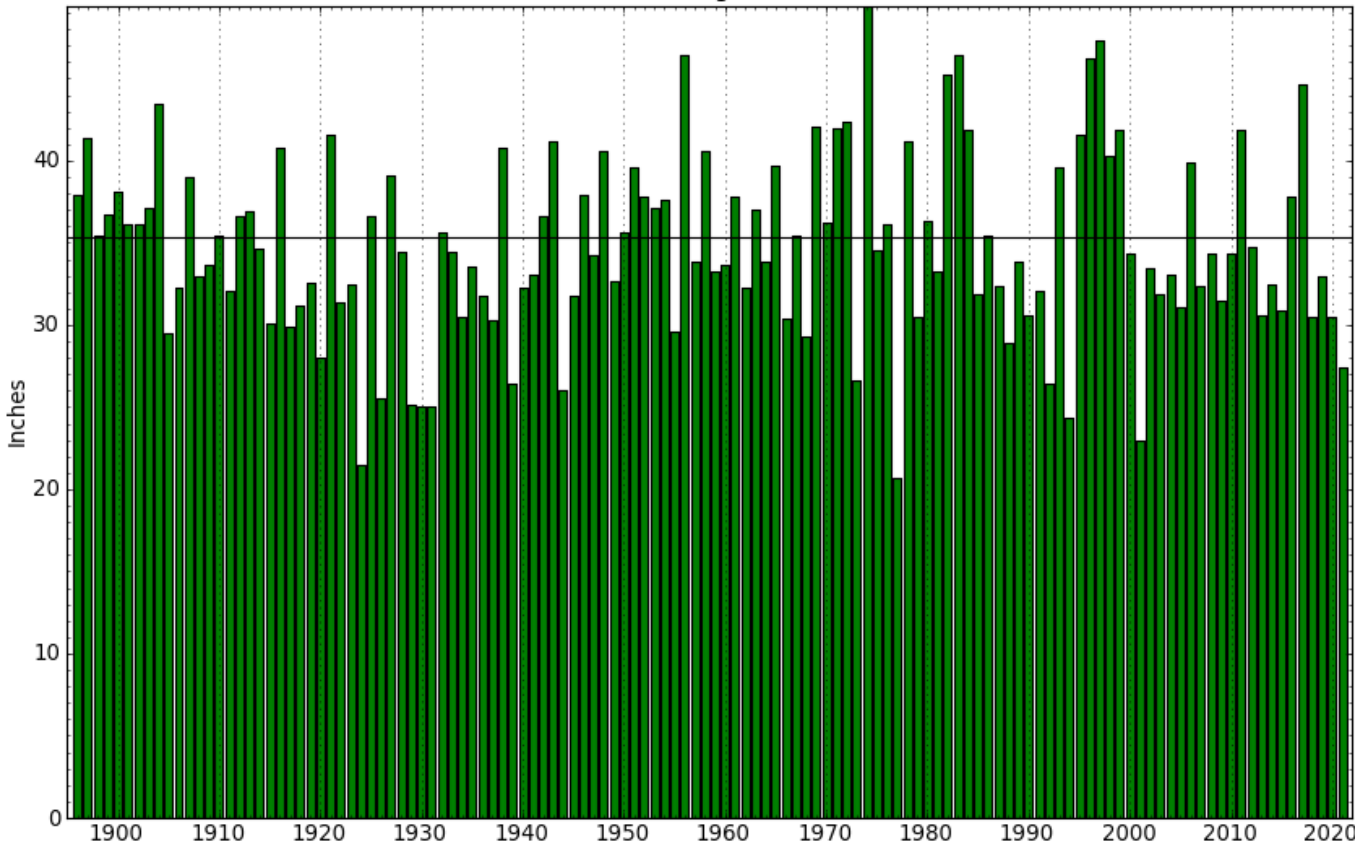
(19) 1992: 8.48"

(22) 2013: 8.63"

Statewide precipitation ranking for the last 12 months



Precipitation, 12-Months Ending in July
Oregon



This is the fourth year in a row with below average precipitation statewide

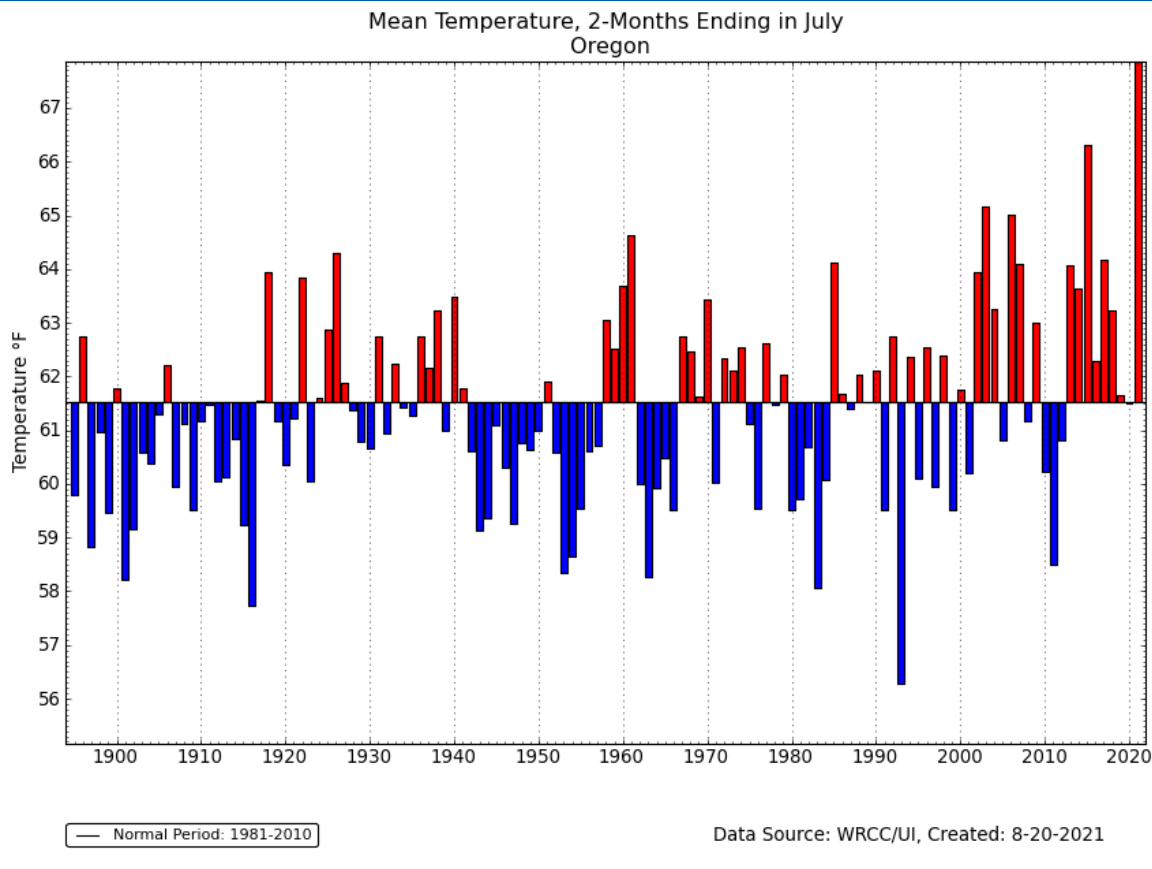
Last 12 months (August 2020-July 2021) is the 13th driest 12-month period on record

Oregon has recorded below average precipitation in 17 out of the last 21 years

— Normal Period: 1981-2010

Data Source: WRCC/UI, Created: 8-20-2021

Oregon Summer Temperatures



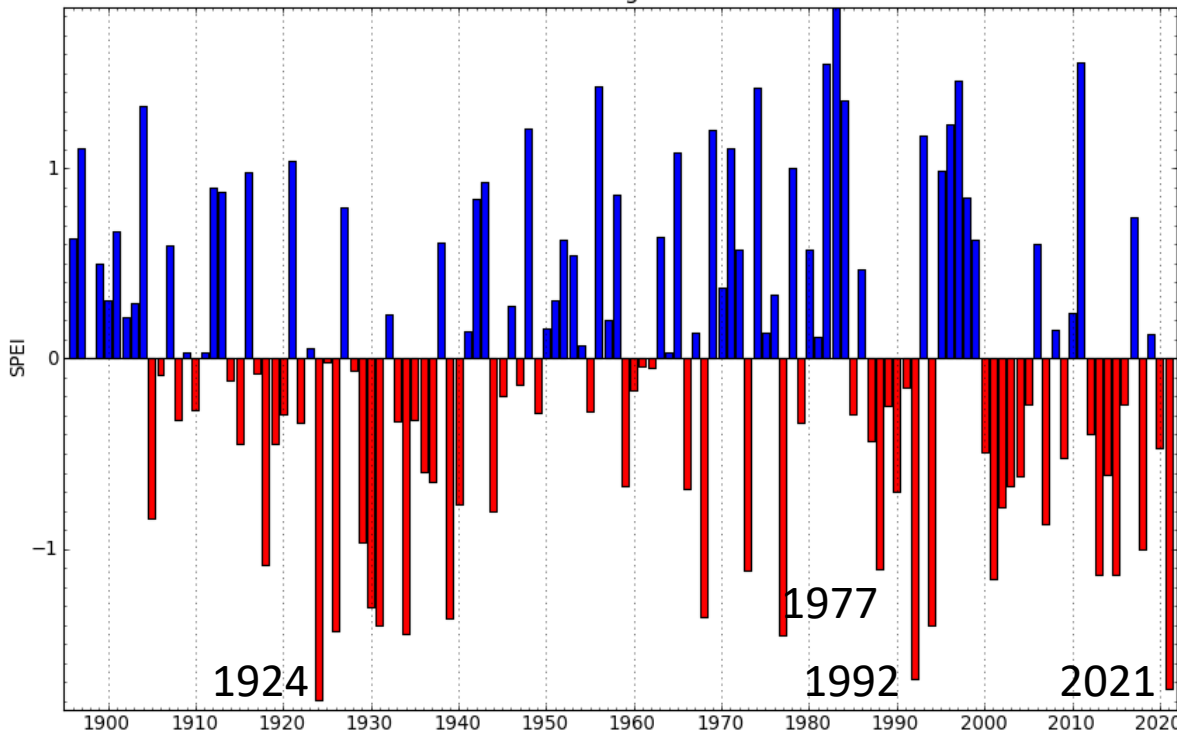
June-July 2021 is the warmest
June-July on record
(1) 2021: 67.9°F (+6.4°F above avg)
(2) 2015: 66.3°F (+4.8°F above avg)

The record hot summer increased
evaporation of surface water from
the landscape well above normal,
decreasing the potential available
surface water supply

Accounting for evaporative demand in total water availability



Standardized Precipitation-Evapotranspiration Index, 12-Months Ending in July
Oregon



Data Source: WRCC/UI, Created: 8-20-2021

The SPEI is a key drought indicator which accounts for precipitation and evaporation in total net surface water availability

By this metric, the past 12 months rank as the second driest on record statewide (driest is 1923-1924)

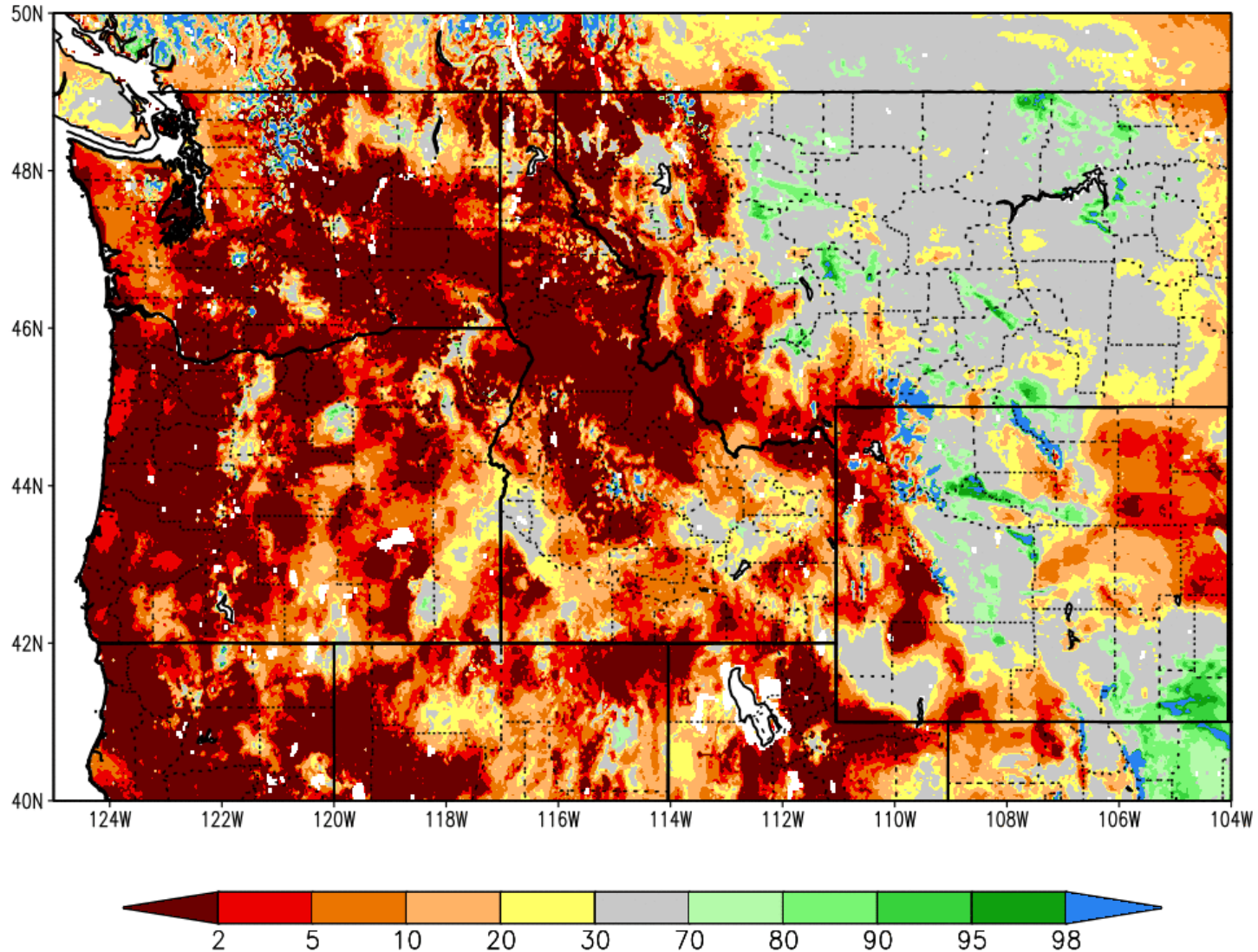
8 out of the last 10 years have been at least abnormally dry by this metric, so the current drought is caused in part by water deficits accumulated over the last decade.

Soil Moisture

Persistent, dry soil moisture conditions



SPoRT-LIS 0-10 cm Soil Moisture percentile valid 15 May 2021



July % of Average Streamflow - WY 2021

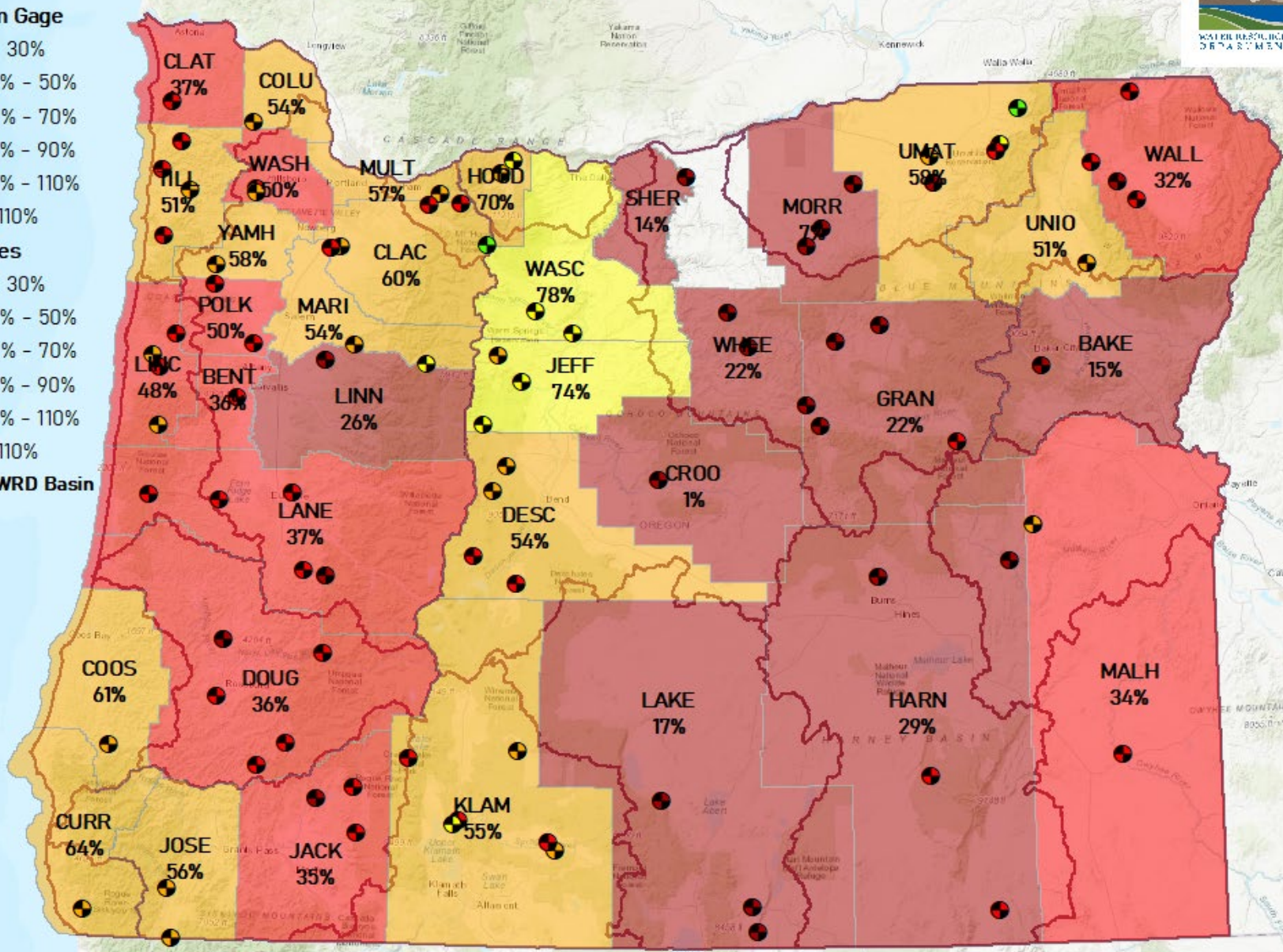


Stream Gage

- <= 30%
- 31% - 50%
- 51% - 70%
- 71% - 90%
- 91% - 110%
- > 110%

Counties

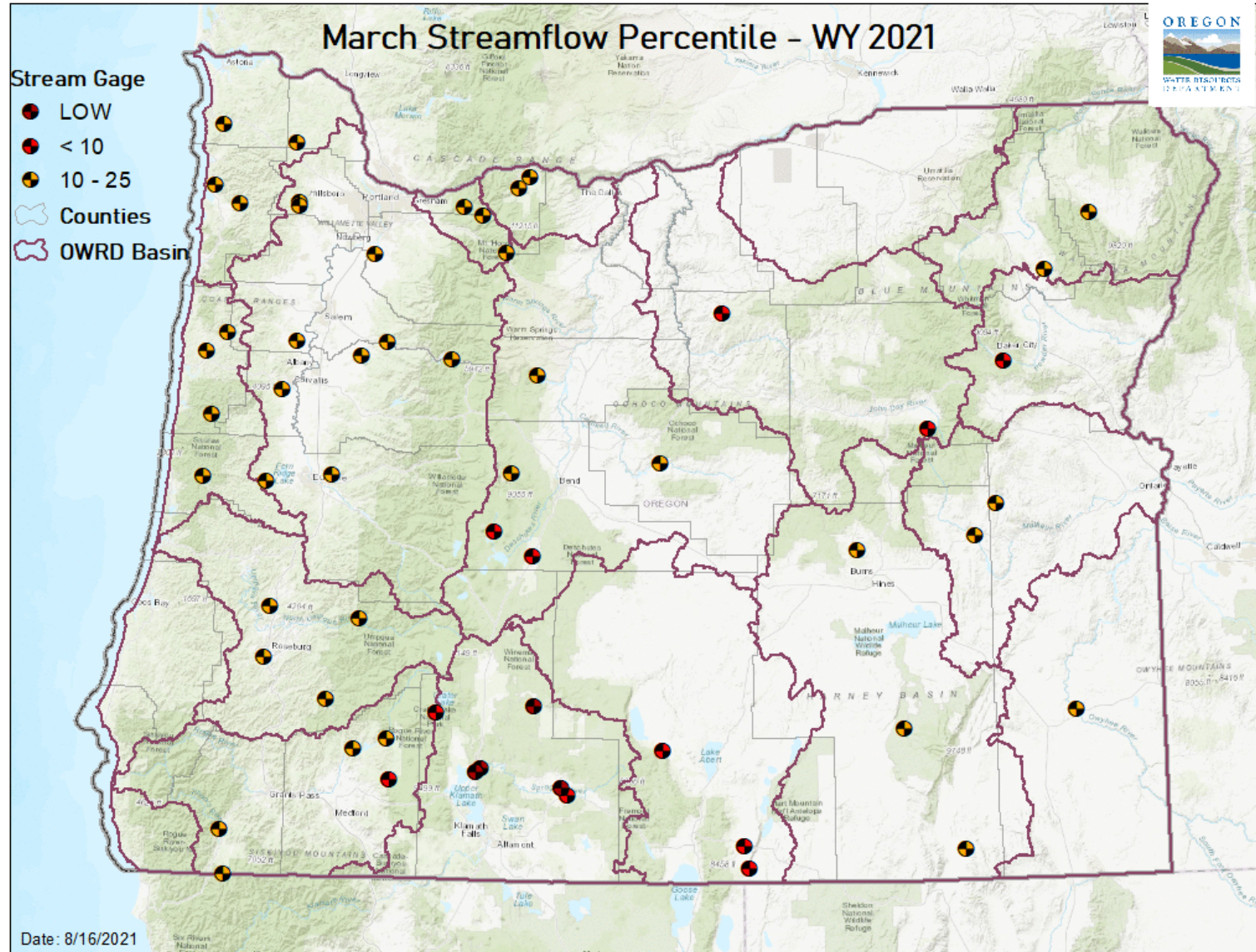
- <= 30%
- 31% - 50%
- 51% - 70%
- 71% - 90%
- 91% - 110%
- > 110%
- OWRD Basin



Date: 8/9/2021

Streamflow Percentiles

Relative ranking of monthly streamflow averages compared to entire gaged period of record (LOW = lowest ranking)

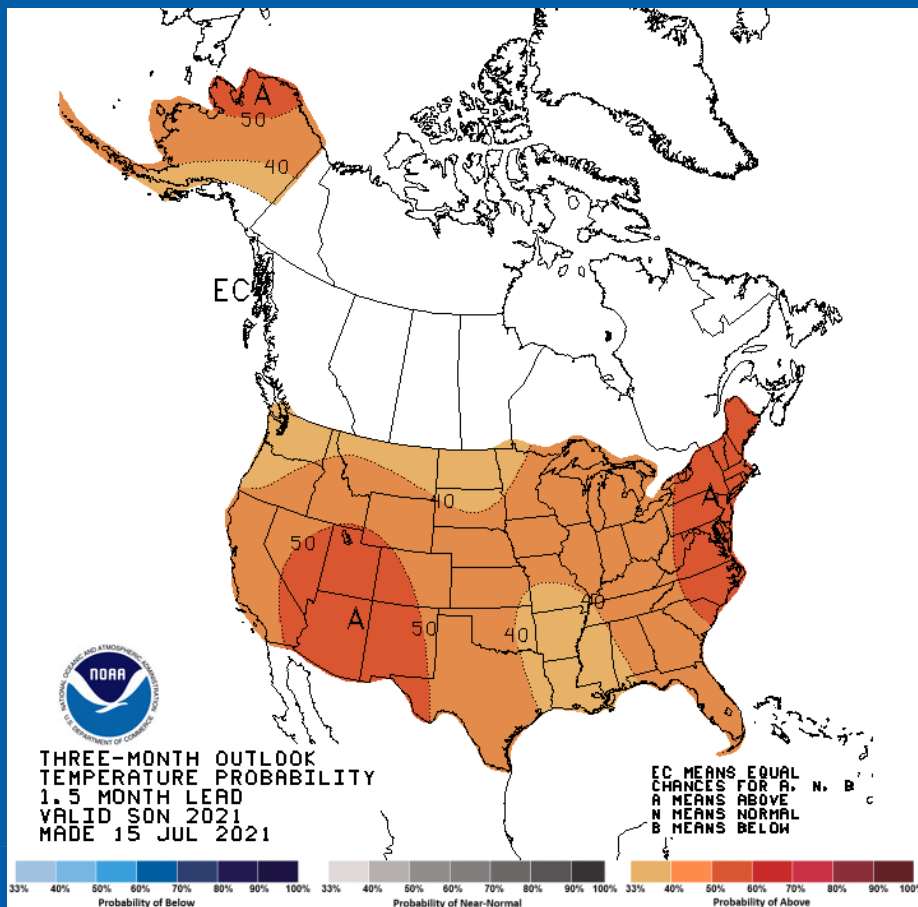


Climate Outlook

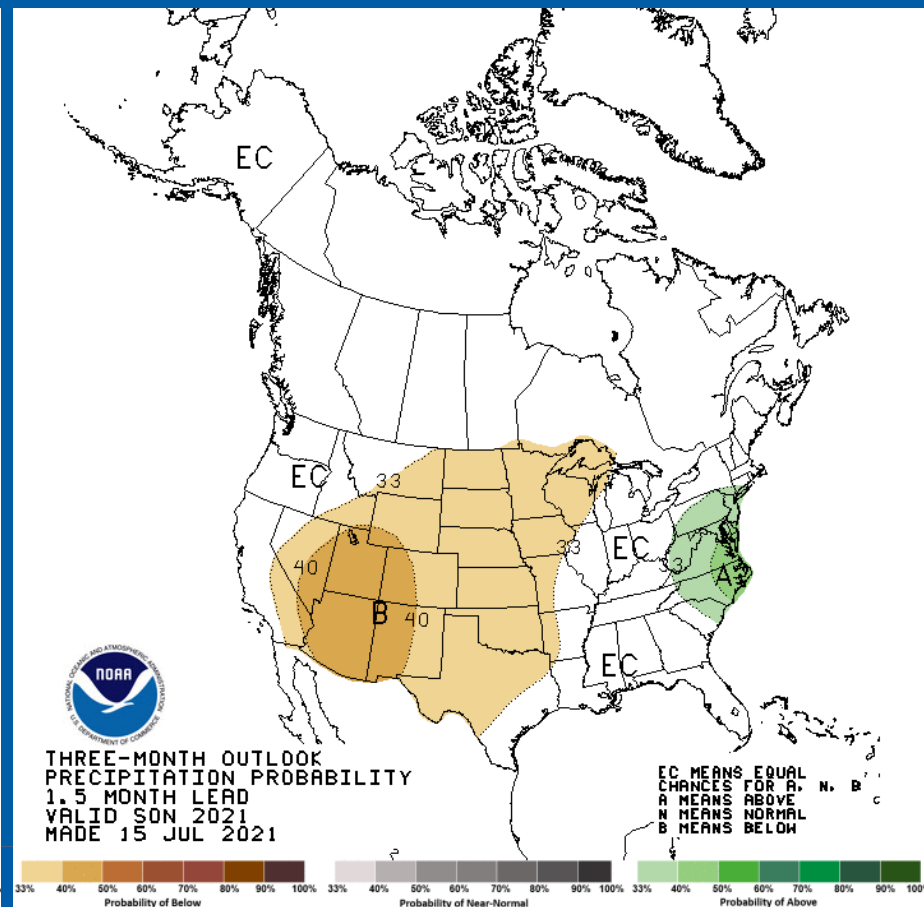
September – October - November



Temperature



Precipitation

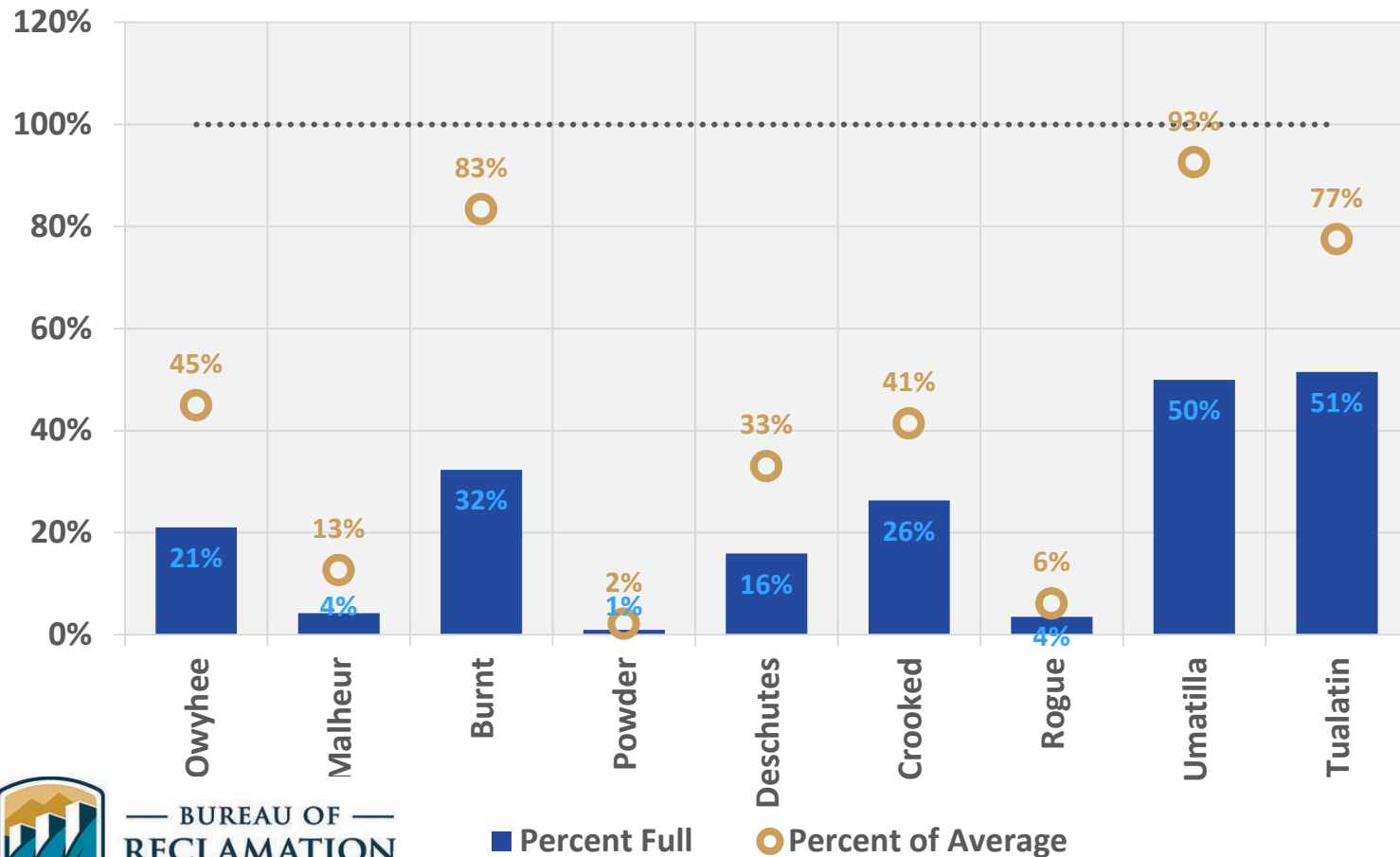


Reservoir Storage

Below average storage conditions in BOR and USACE systems
Klamath Basin systems also well below average



August 15 Reservoir Storage

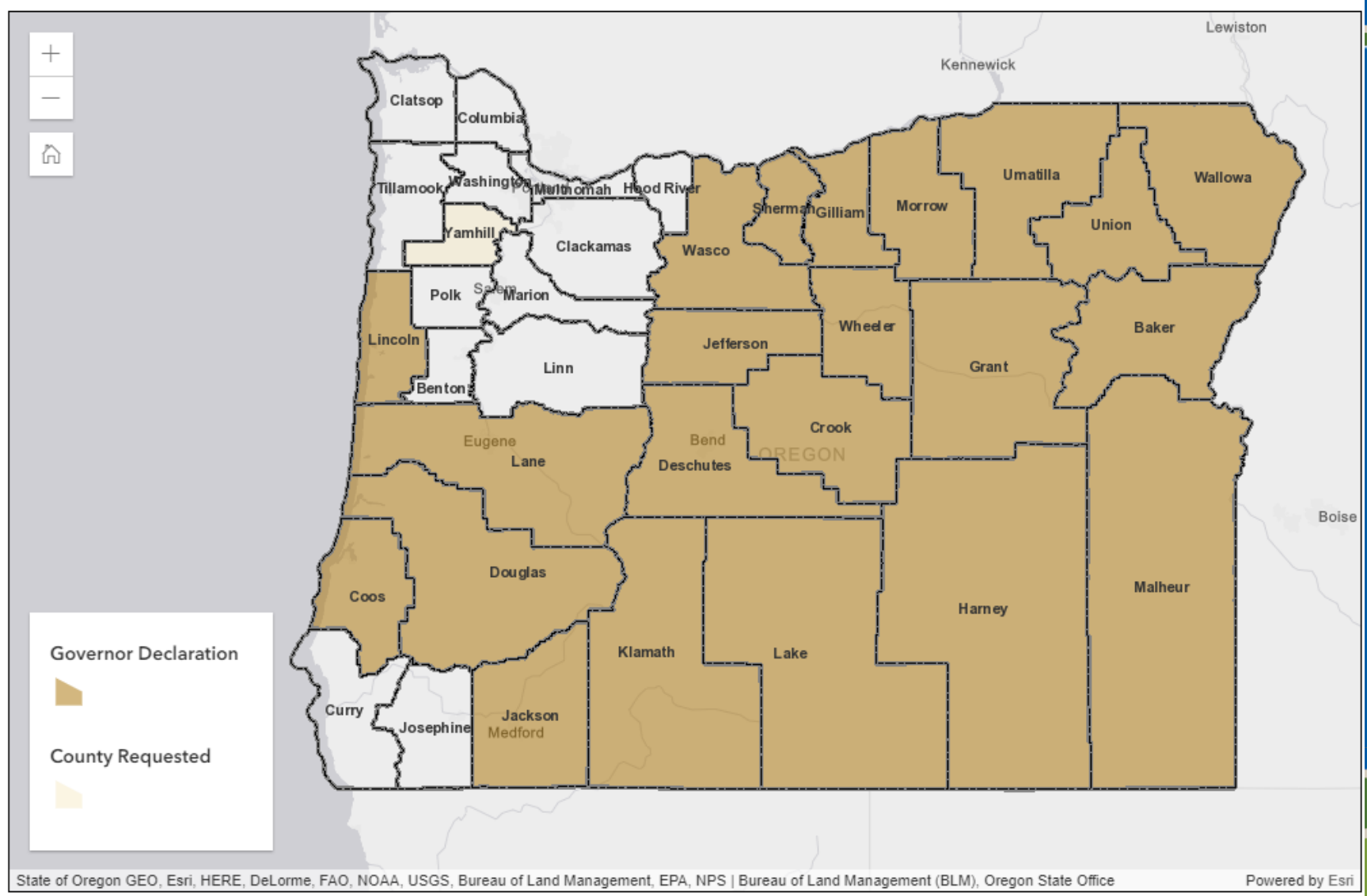


BUREAU OF RECLAMATION

■ Percent Full

● Percent of Average

ORS 536 - Drought Declaration Status Map



Fish & Wildlife



- Fish die-offs documented following June heat event
 - Willamette, North Coast, Grande Ronde, John Day
- Temporary regulations enacted 7/1 – 9/30
 - “Hoot owl” regulations – end fishing before water temperatures peak during day
 - Full closures in portions of Nehalem and Rogue Rivers
 - Angling closures near mouths of tributaries
- Reduced waterfowl habitat and breeding success

Agriculture



- North Unit Irrigation District received lowest amount of water on record
 - High value crops not likely to be irrigated
- Significant damage to berry crop following June heat event
- Large livestock sell-off due to poor rangeland and pasture conditions

Reservoirs



- Reduced irrigation allotments and early shut-down due to low storage contents
- No authorized surface water deliveries from Upper Klamath Lake to upper project irrigators
 - First time in history
- USACE not sustaining mainstem Willamette flow targets
 - Strategic releases during high-temperature events to support fish habitat

Drinking Water Challenges



- Low streamflows and/or low groundwater recharge/increased pumping contributing to supply challenges
- Community of Crescent / Dry Domestic Wells (Klamath County)
- Domestic Wells near La Pine (Deschutes County)
- Sodaville (Linn County)
- Prairie City (Grant County)
- City of Yamhill (Yamhill County)
- London Water Cooperative (Lane County)

Drought Coordination and Response



- Chair Water Supply Availability Committee and Drought Readiness Council
- Develop Water Conditions Report and provide input on federal agency reports
- Drought declaration requests, permits and transfers
- Held state and federal interagency drought briefing and coordination meeting
 - Coordination on impacts and resources
- Held briefing in July for tribal and county emergency managers, partners, and stakeholders

Drought Coordination and Response



- Field distribution and complaints
- Individual drought briefings
- Responding to media requests
- Governor' Executive Order 21-20
- Klamath domestic dry wells
- Dry well reports
- Responding to requests for assistance
- Developing guidance in coordination with Office of Emergency Management

Questions?

OREGON



WATER RESOURCES
DEPARTMENT