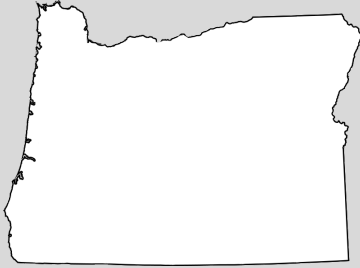
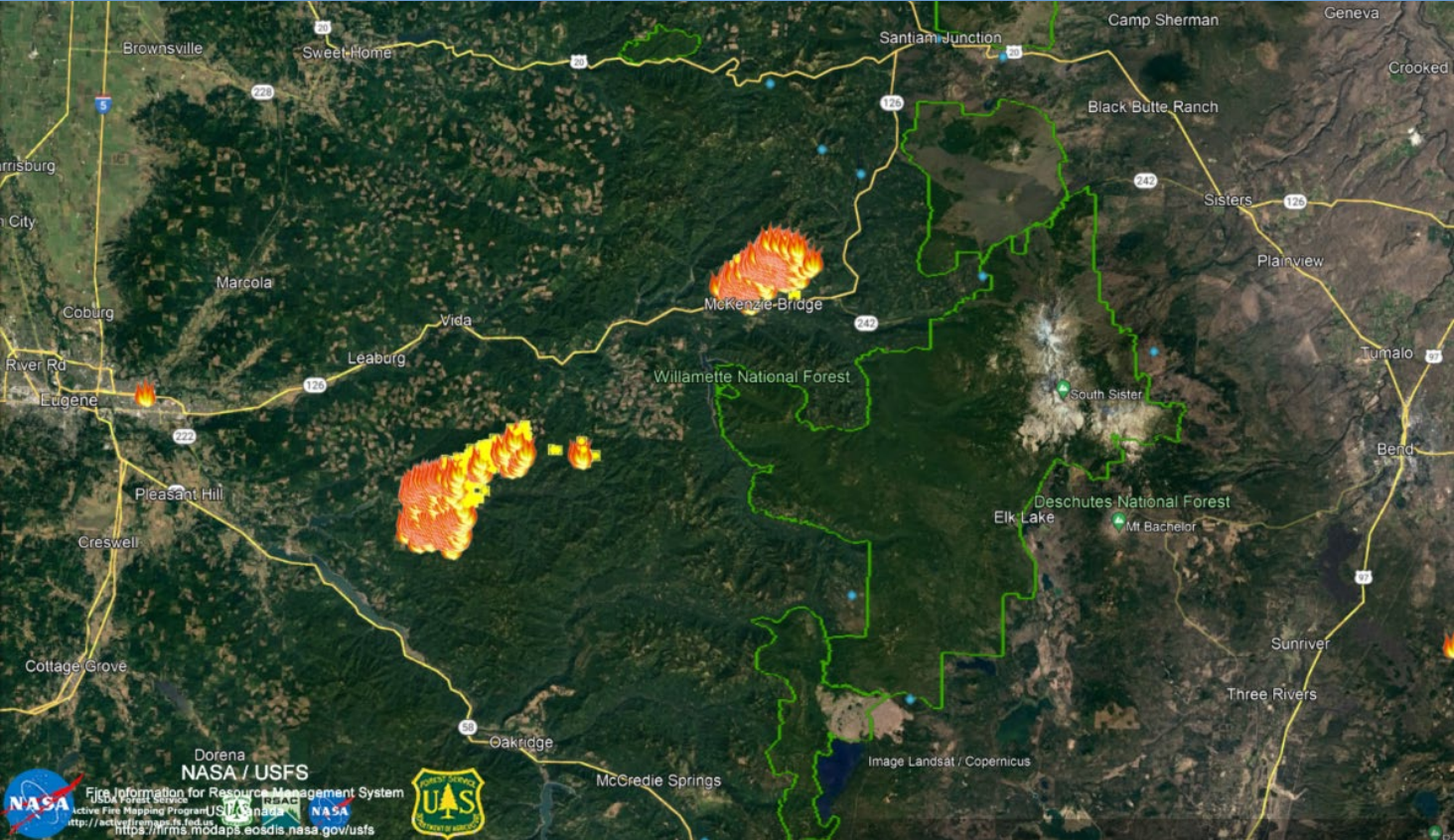




Oregon Snow Survey

Snow Survey and Water Supply Forecasting Program



Oregon Water Supply Availability Committee

August 16, 2023

Matt Warbritton
Leaf Hydrologist (Acting)
USDA NRCS SSWSF
Portland Data Collection Office
matt.warbritton@usda.gov
503-307-2829

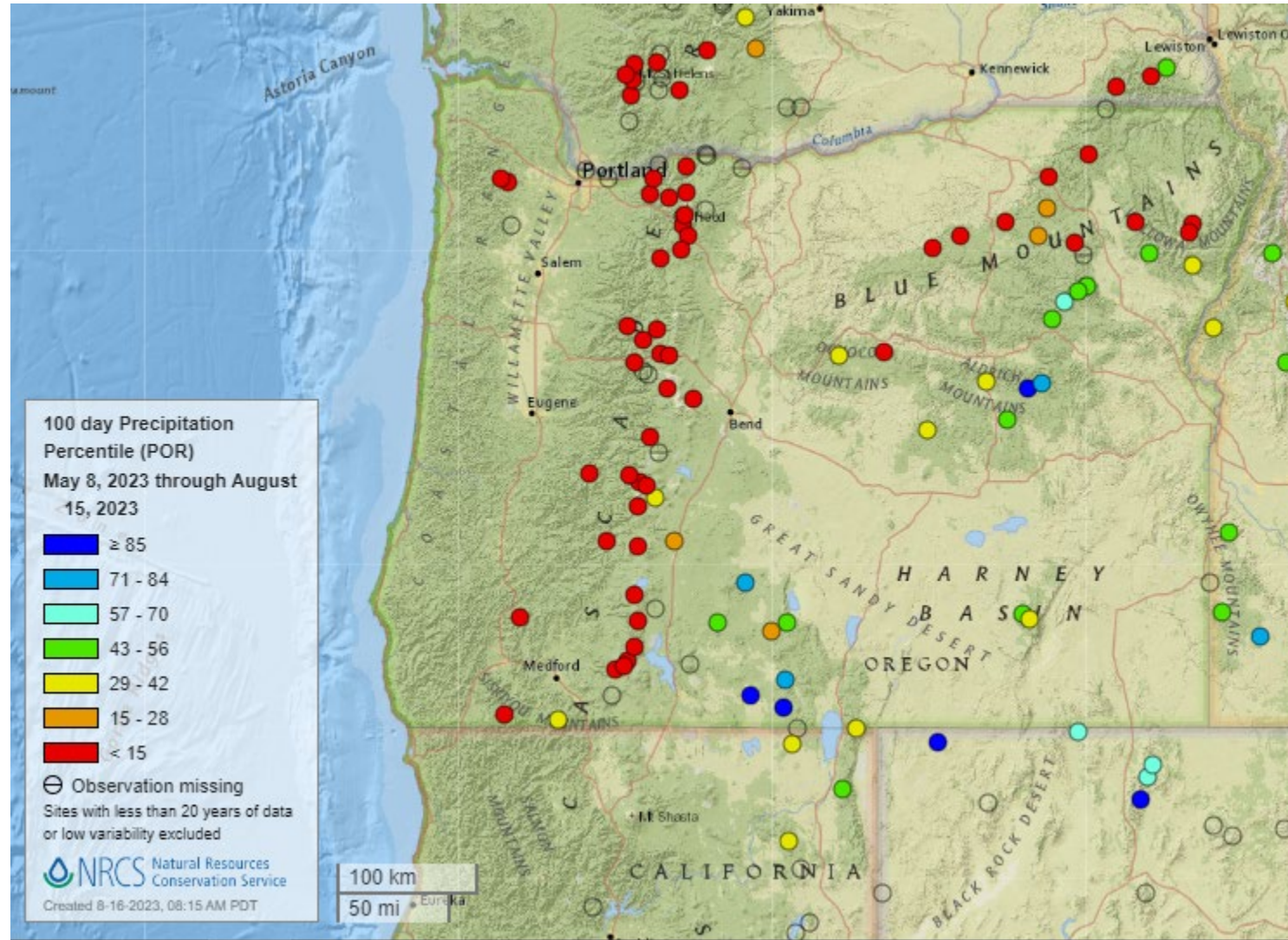




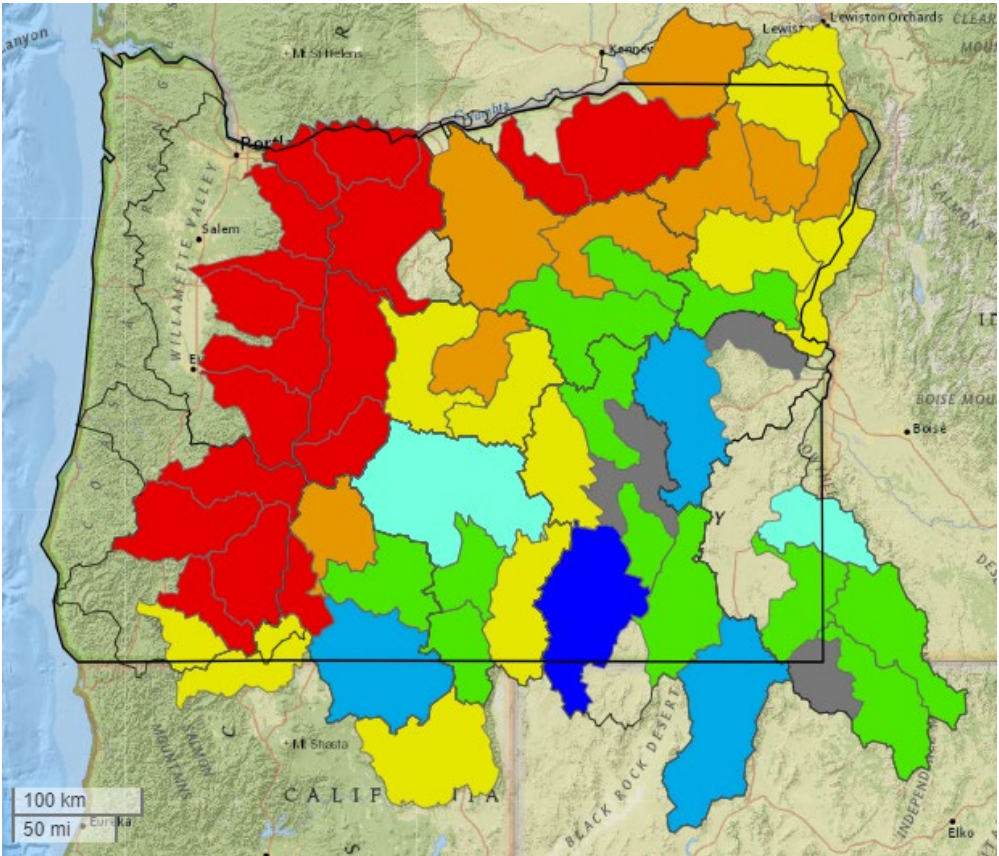
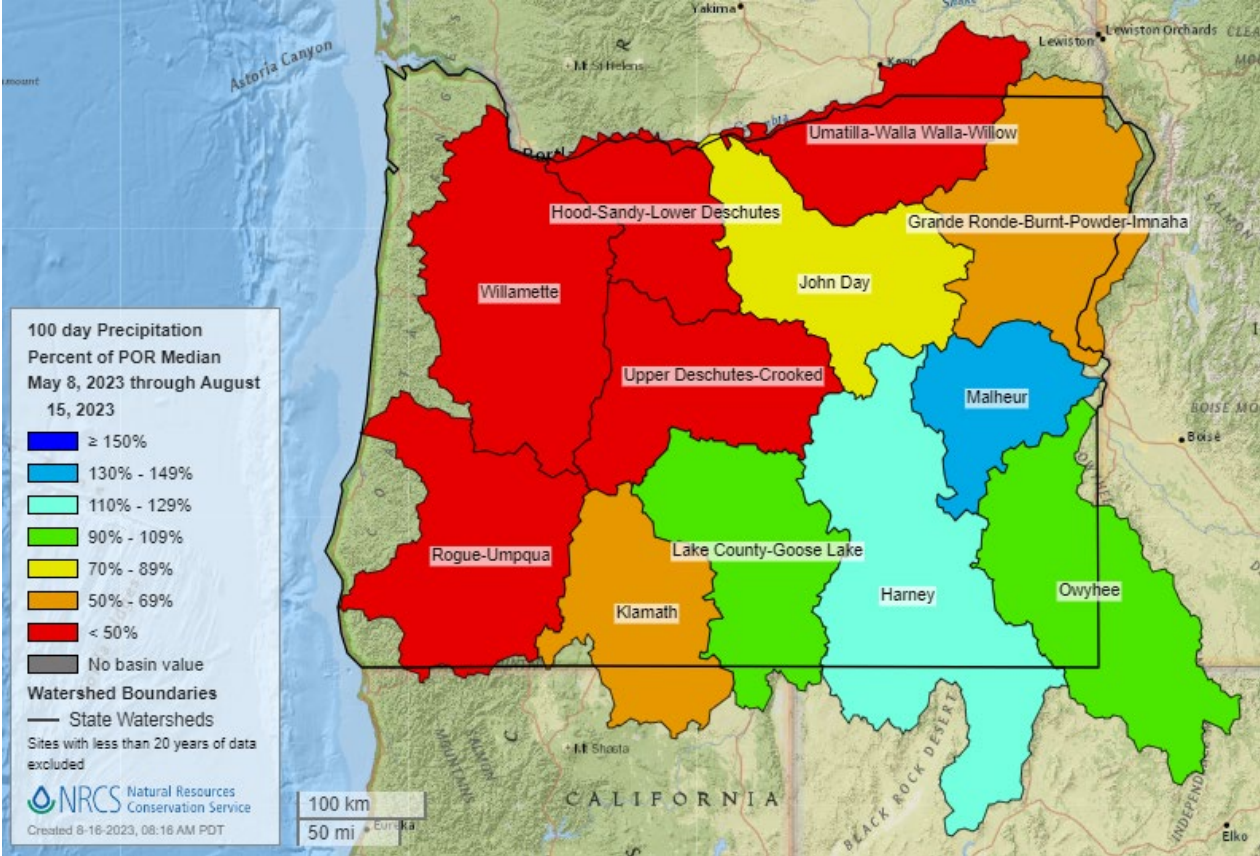
Precipitation Conditions

Precipitation Percentiles

May 8 to Present

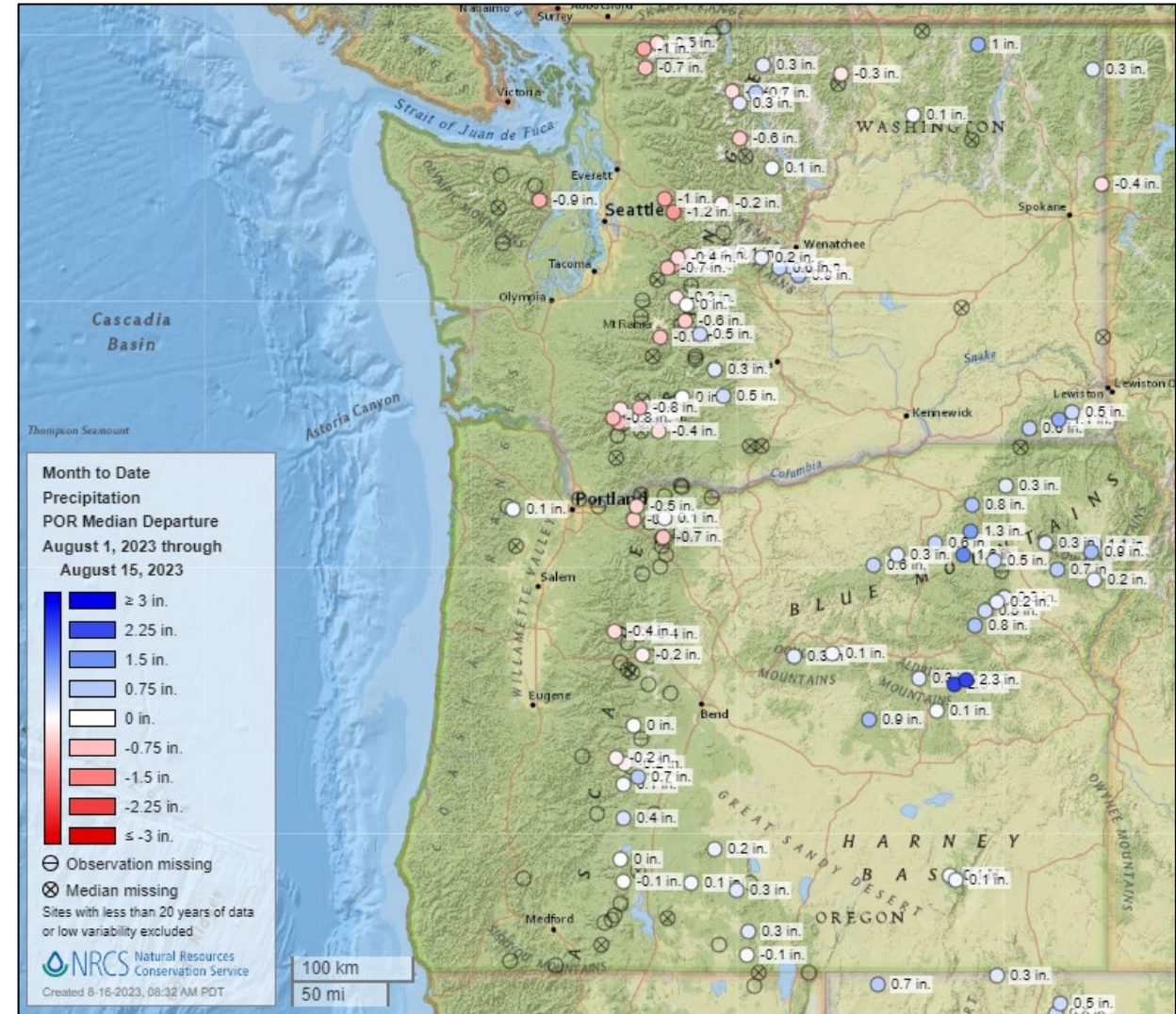
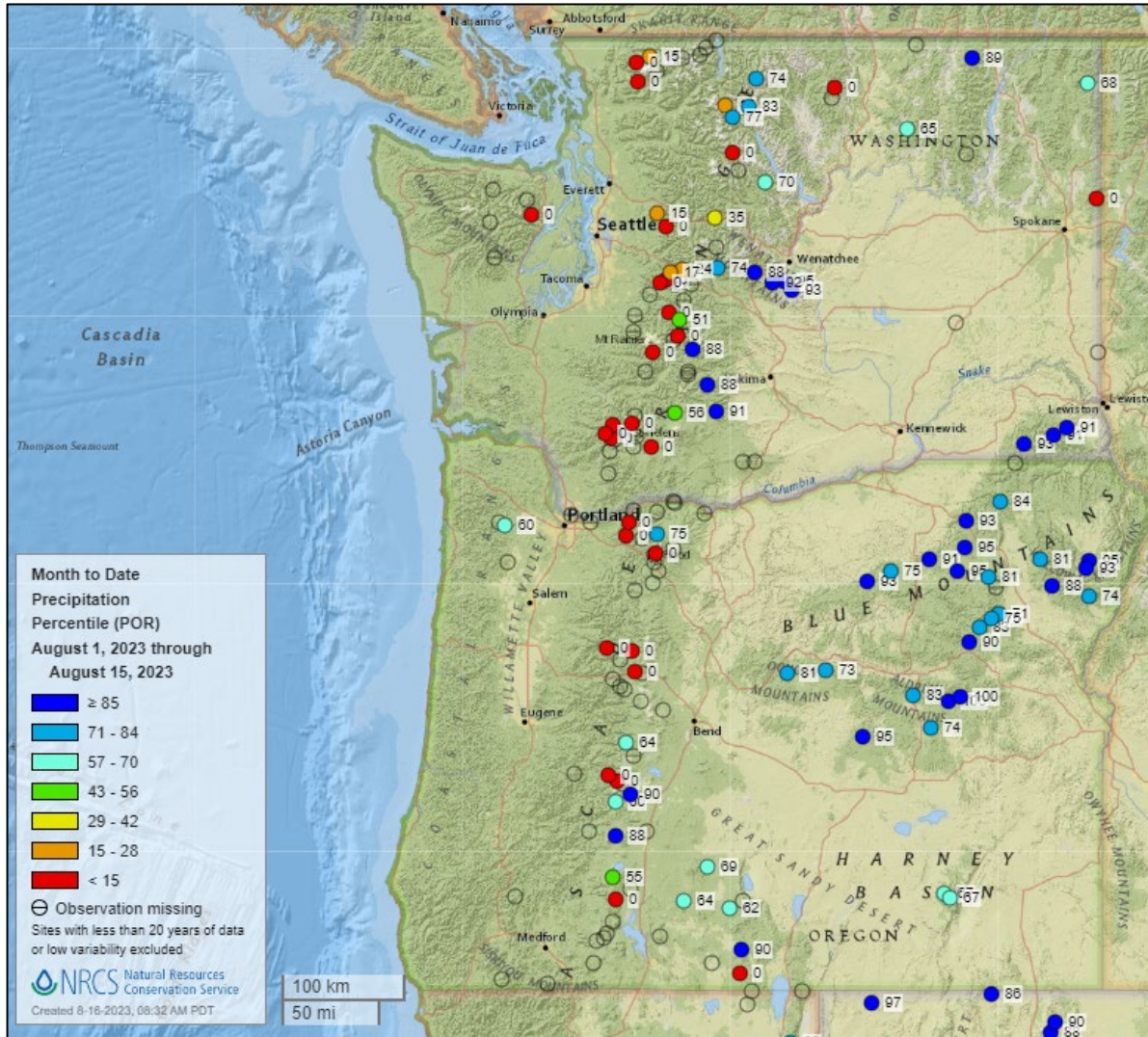


Precipitation Basin Map



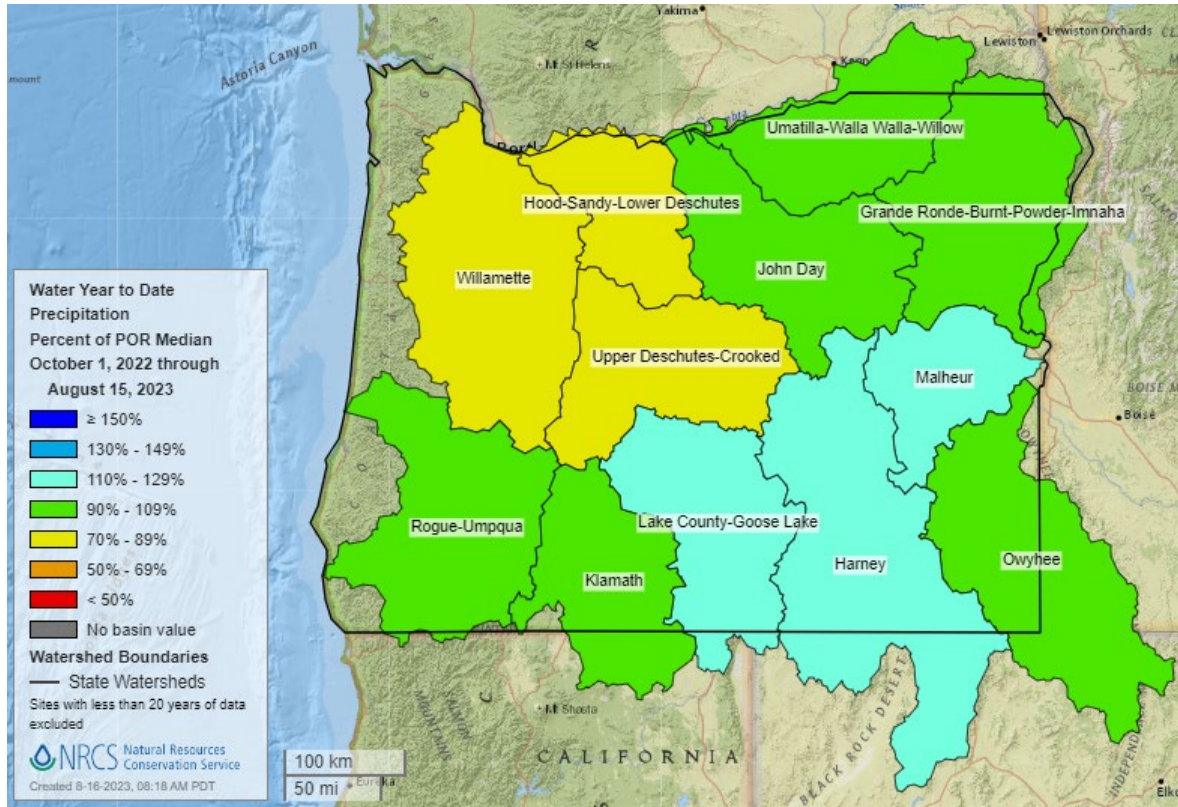
Precipitation

Monthly Map

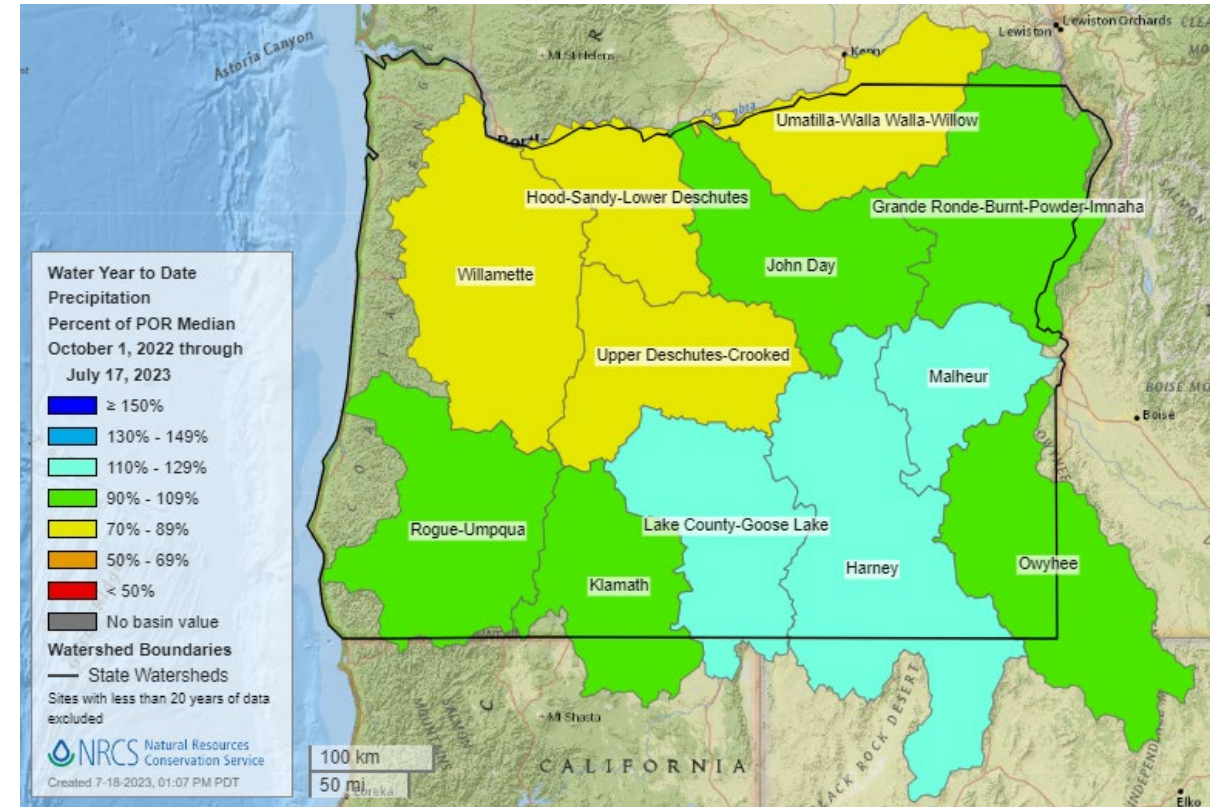


Precipitation Basin Map

Aug. 15



Jul. 17

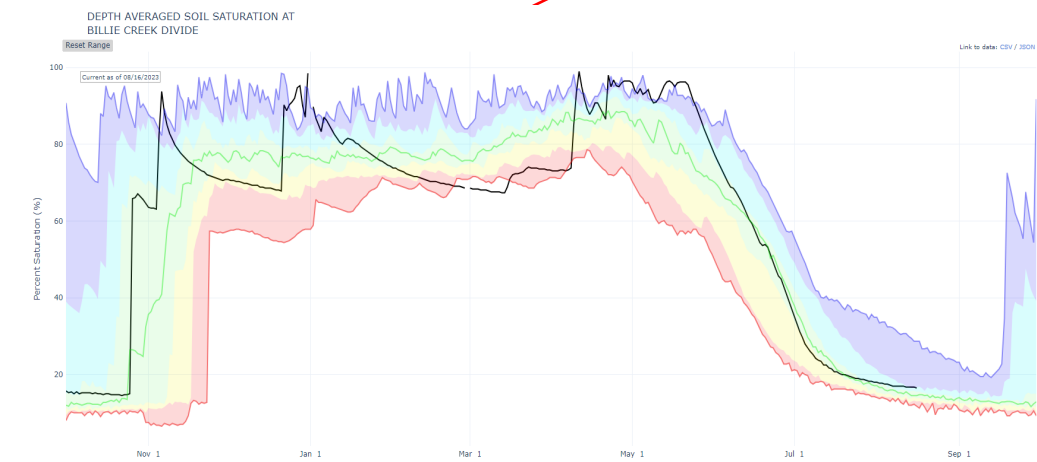
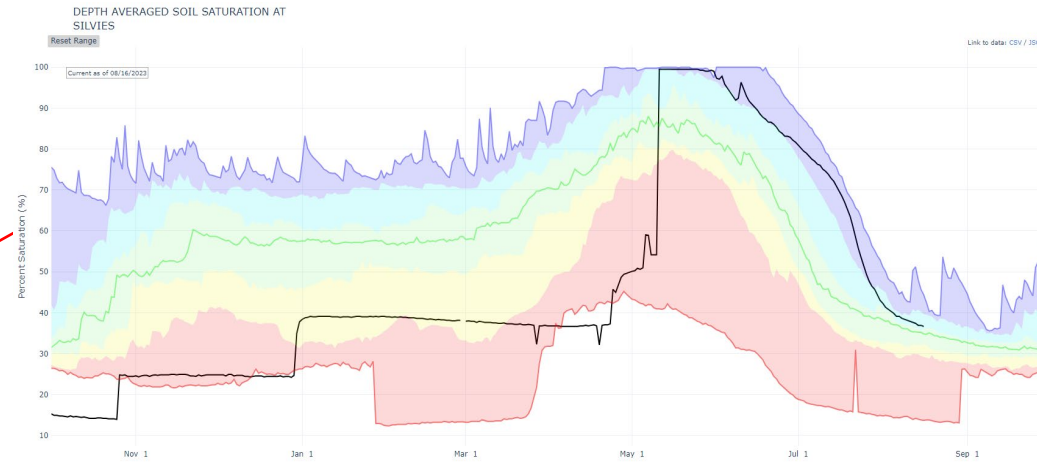
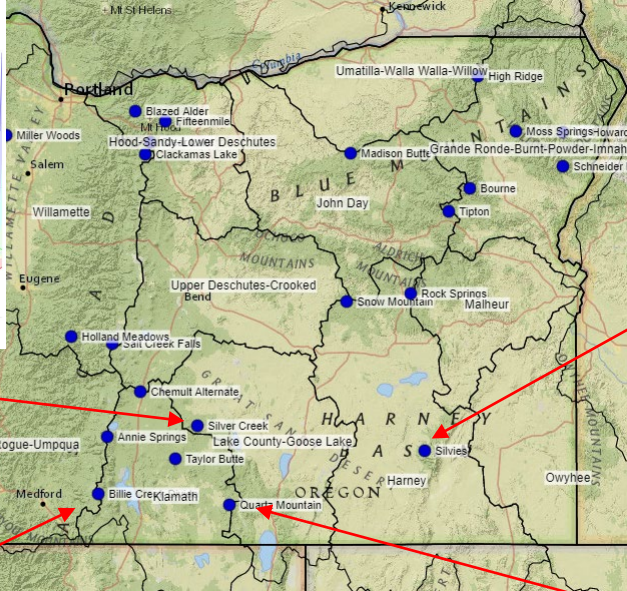
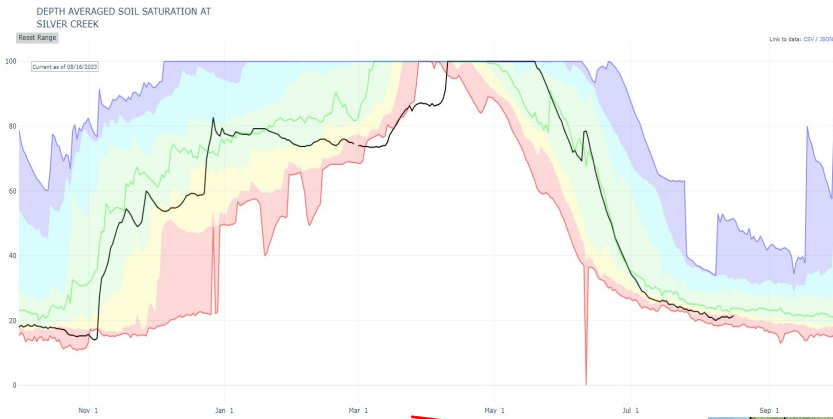




Soil Moisture Conditions

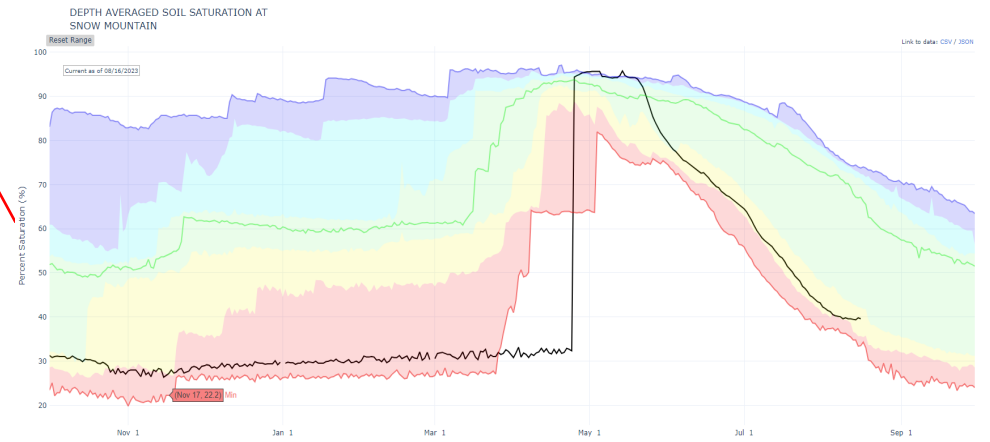
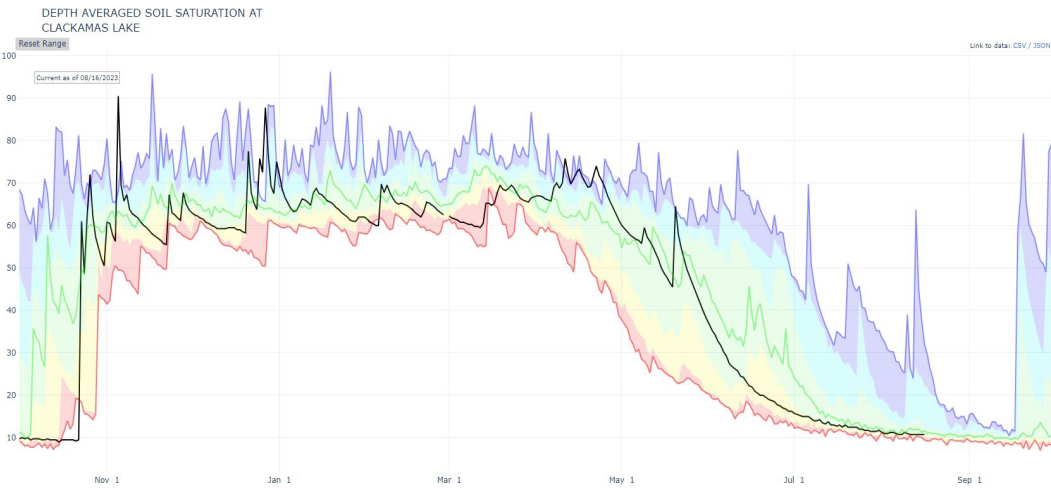
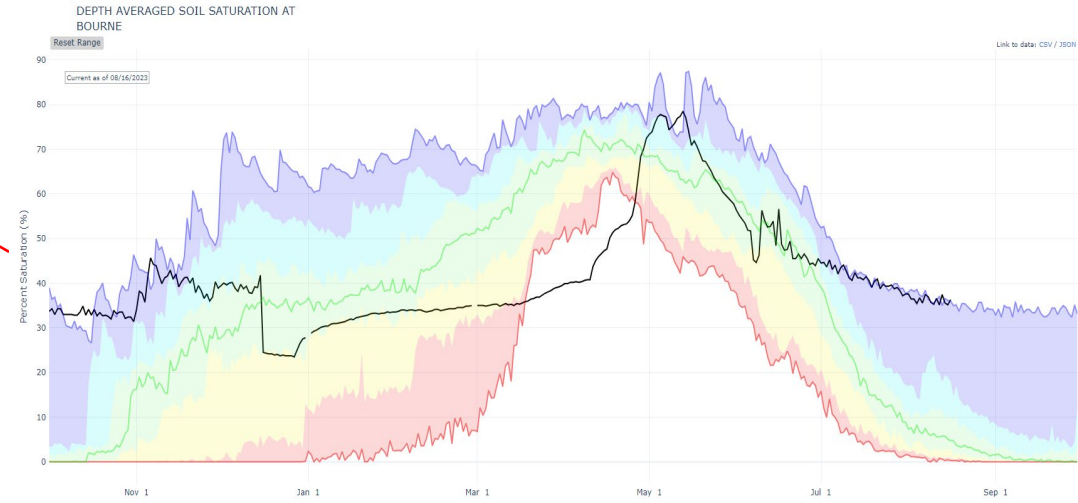
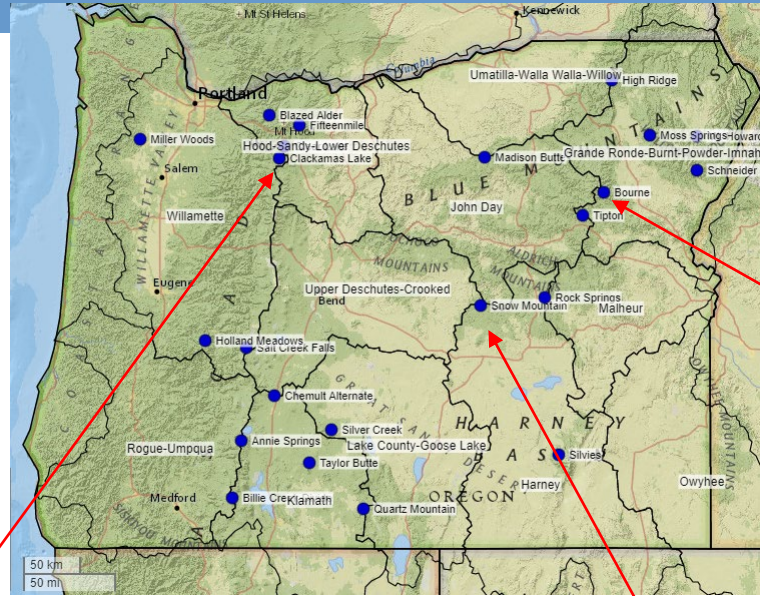
Soil Moisture

WY 2023 – Select Site Charts



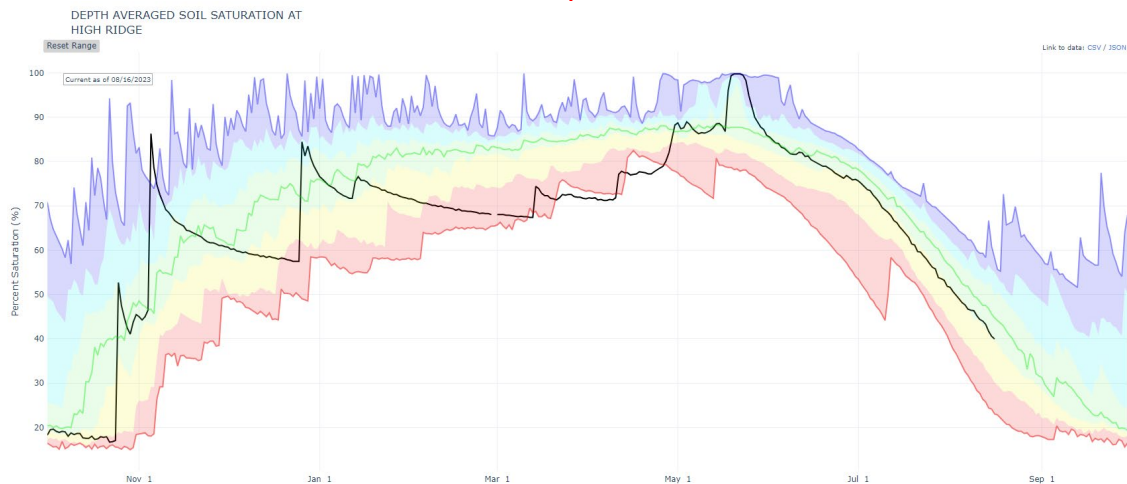
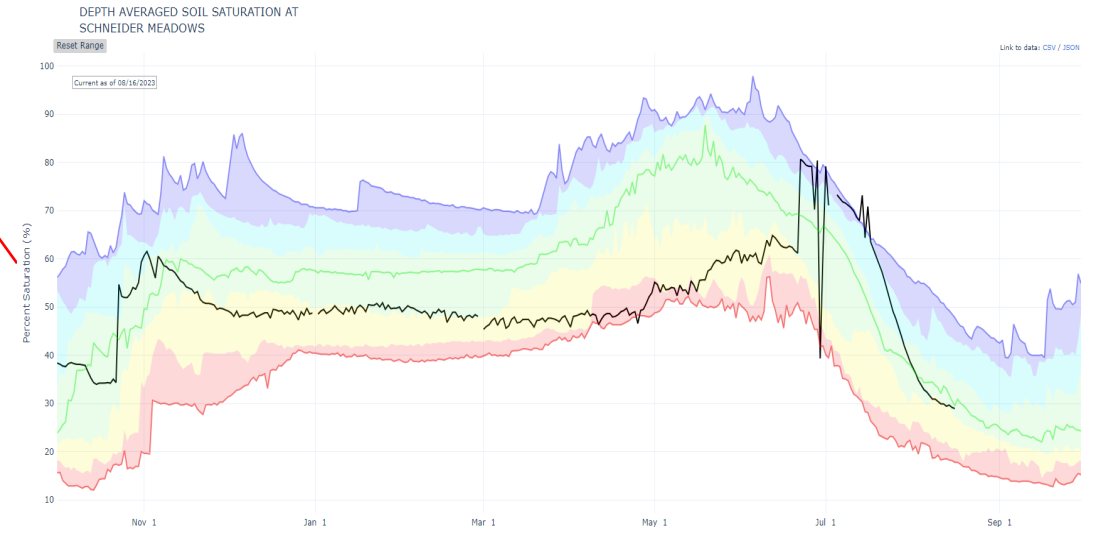
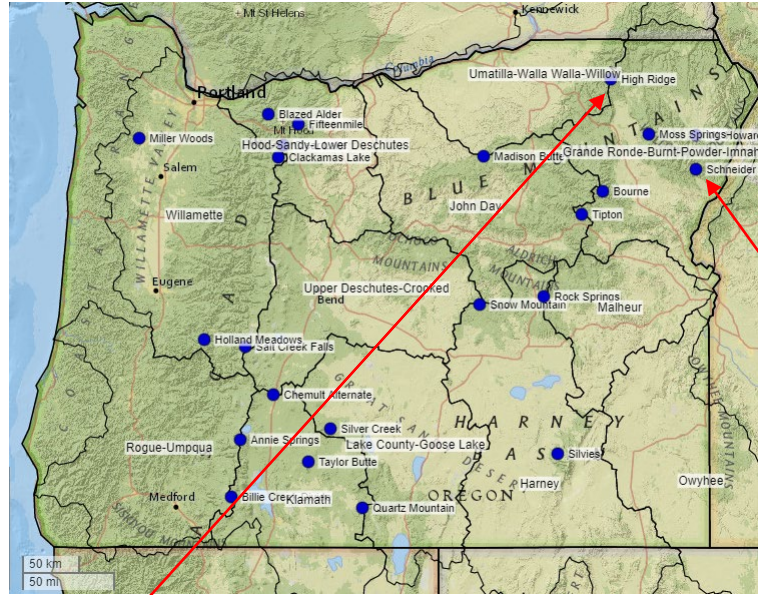
Soil Moisture

WY 2023 – Select Site Charts



Soil Moisture

WY 2023 – Select Site Charts



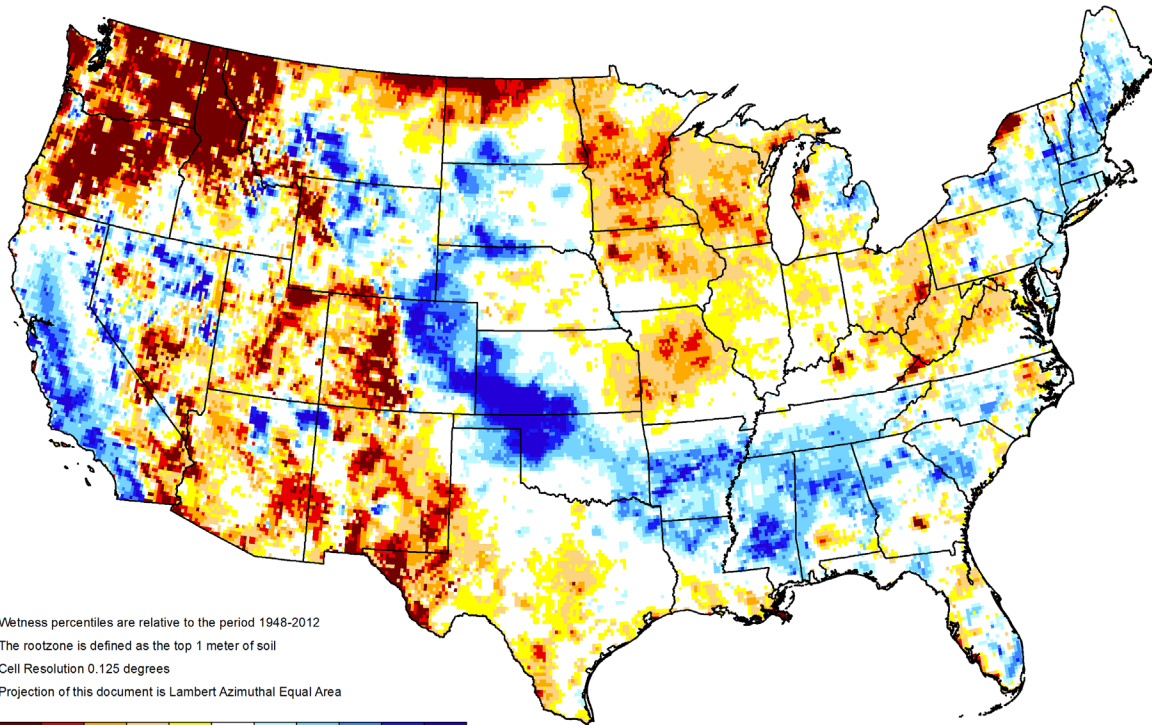
Soil Moisture

WY 2023 – Select Site Charts



GRACE-Based Root Zone Soil Moisture Drought Indicator

July 17, 2023



Wetness percentiles are relative to the period 1948-2012
The rootzone is defined as the top 1 meter of soil
Cell Resolution 0.125 degrees
Projection of this document is Lambert Azimuthal Equal Area

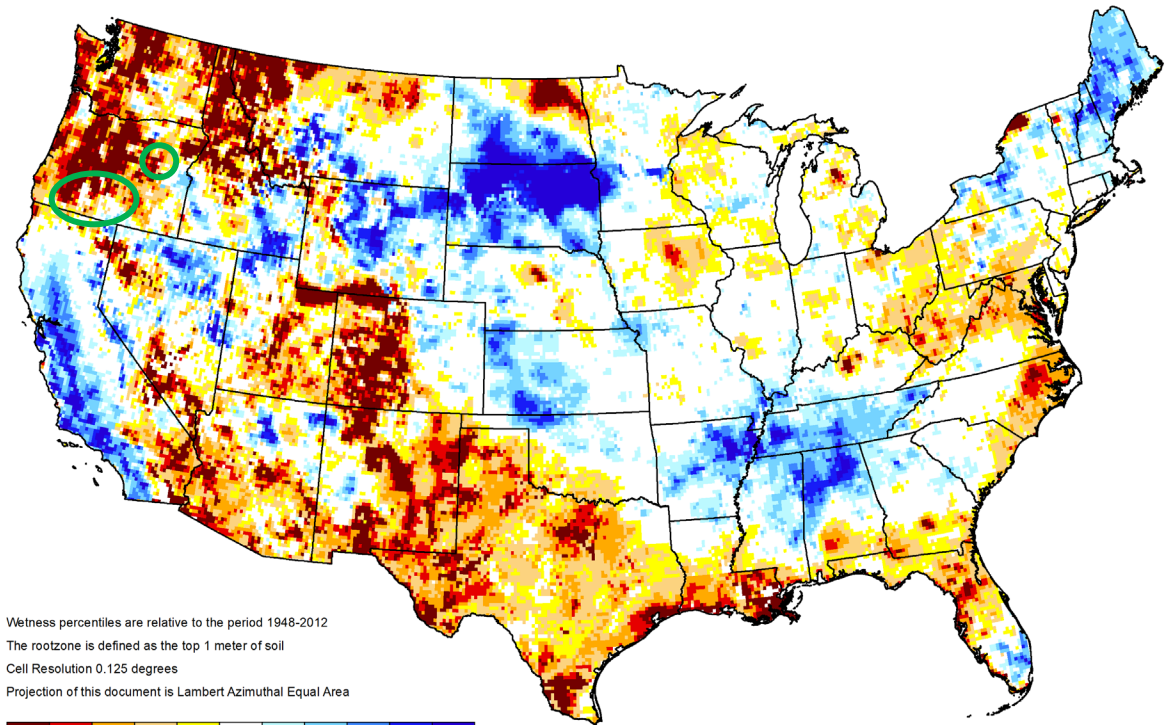


<https://nasagrace.unl.edu>

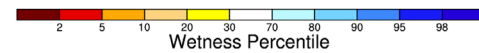


GRACE-Based Root Zone Soil Moisture Drought Indicator

August 14, 2023



Wetness percentiles are relative to the period 1948-2012
The rootzone is defined as the top 1 meter of soil
Cell Resolution 0.125 degrees
Projection of this document is Lambert Azimuthal Equal Area



<https://nasagrace.unl.edu>



Thank you!

Matt Warbritton
Lead Hydrologist (Acting)
USDA NRCS SSWSF
Portland Data Collection Office
matt.warbritton@usda.gov
503-307-2829

[Oregon Snow Survey Website](#)

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at How to File a Program Discrimination Complaint and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.



August 2023 Update for Precipitation & Temperatures

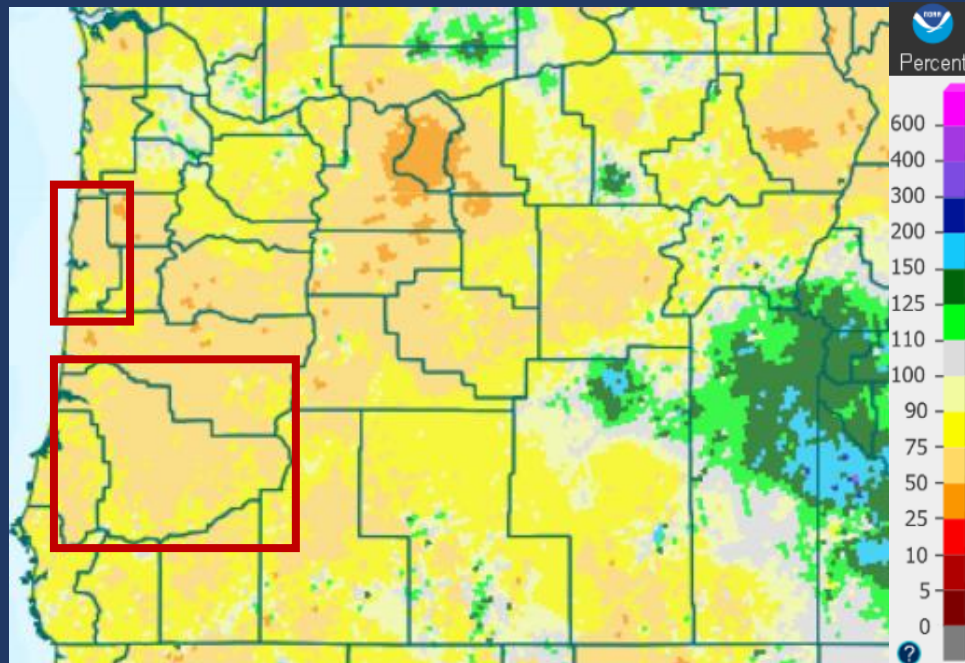
NOAA National Weather Service - Portland, Oregon



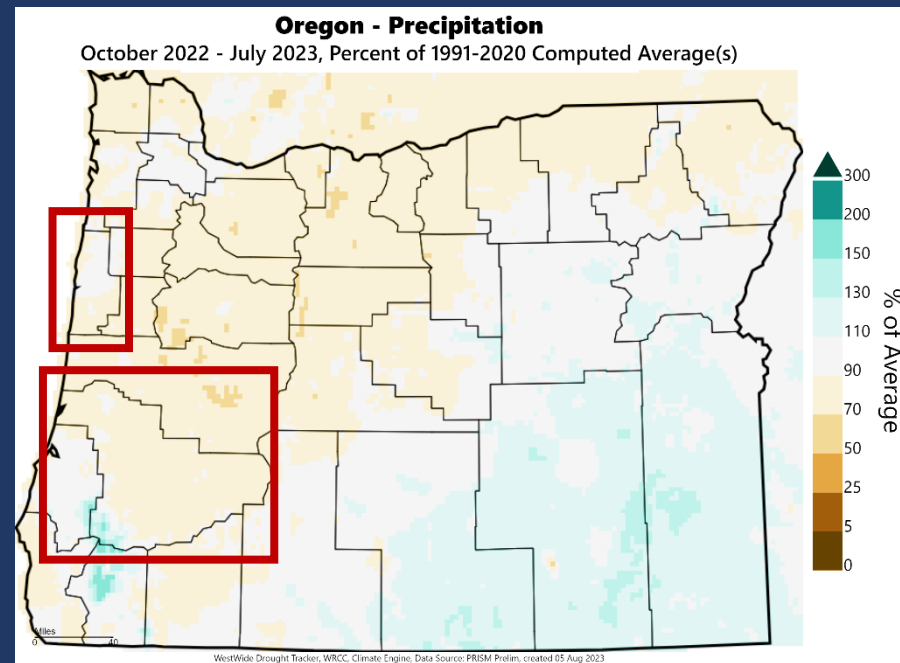
Water Year Precipitation

NWS AHPS & WRCC Comparison

AHPS % Normal



WRCC % Normal



water.weather.gov/precip/index.php

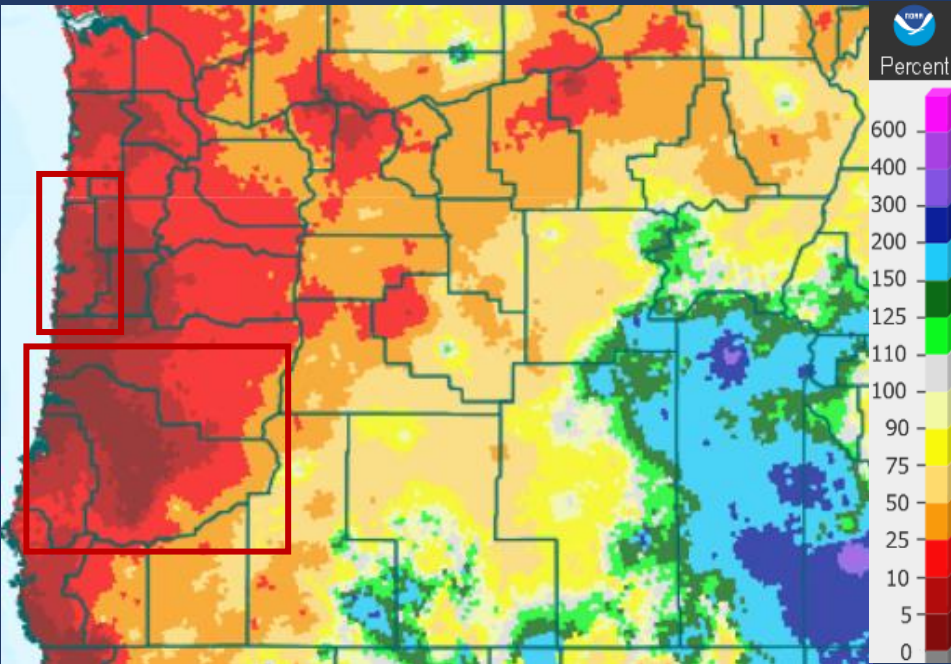
wrcc.dri.edu/my/wwdt

Precipitation Data as of August 15, 2023

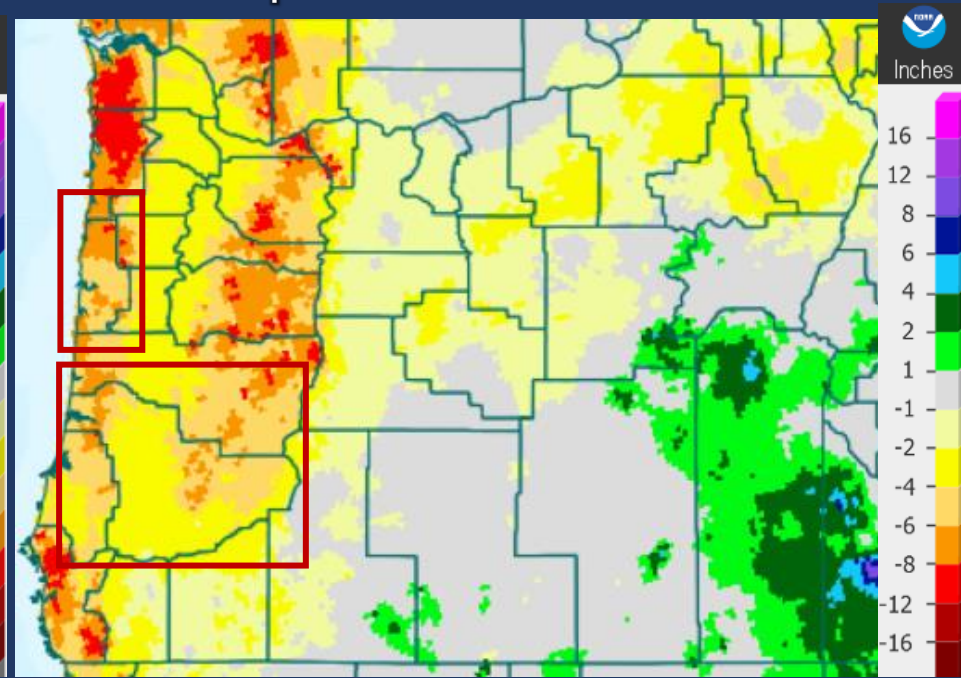


Precipitation – Past 90 Days

% Normal



Departure from Normal



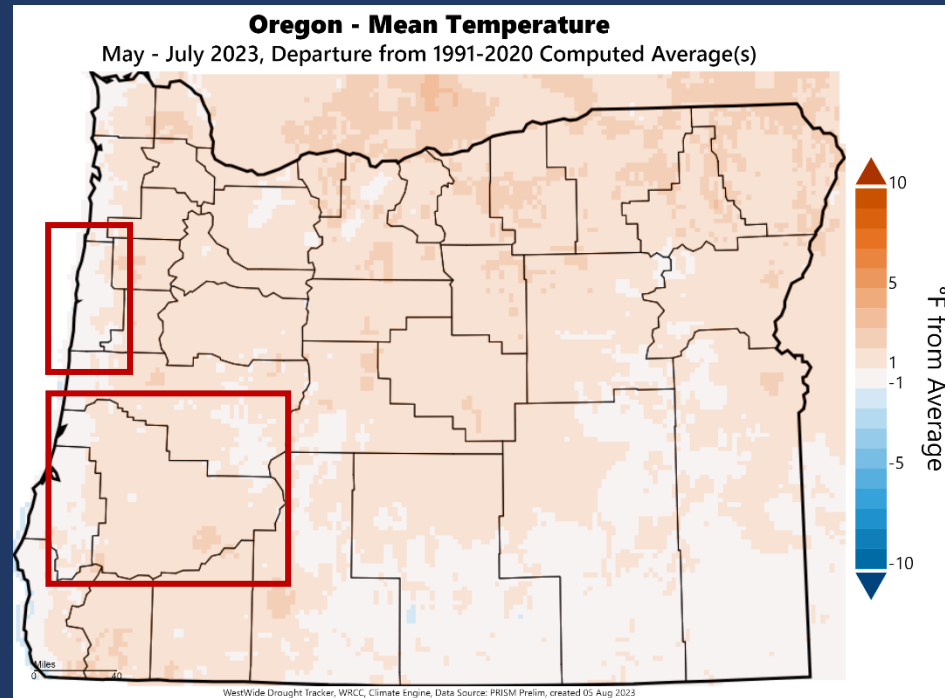
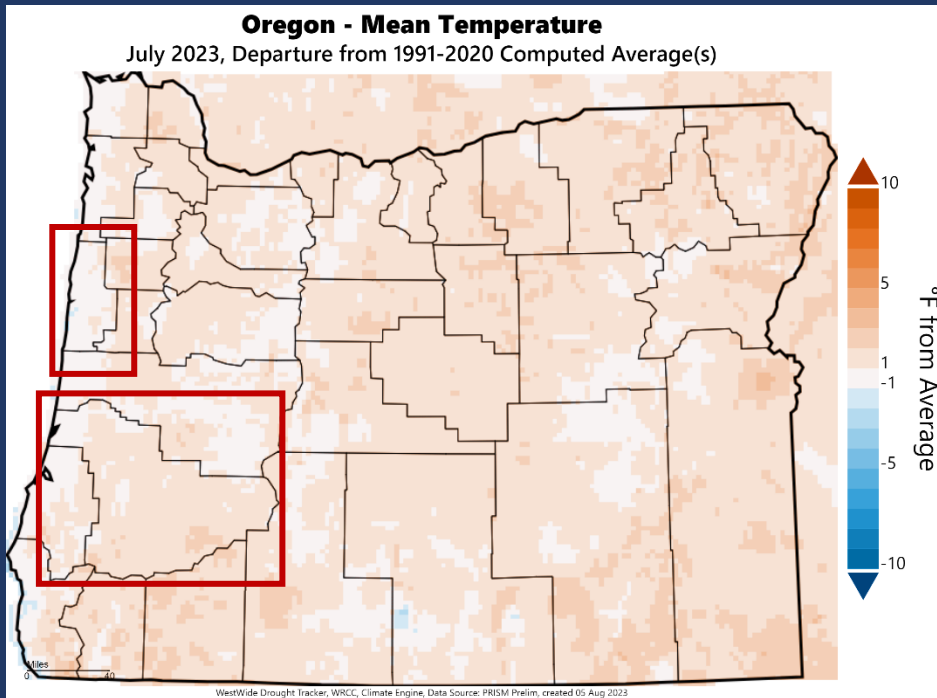
Precipitation Data as of August 15, 2023

water.weather.gov/precip/index.php

Temperatures

July Departure from Normal

May-July Departure from Norm



<https://wrcc.dri.edu/wwdt/index.php?region=pnw>

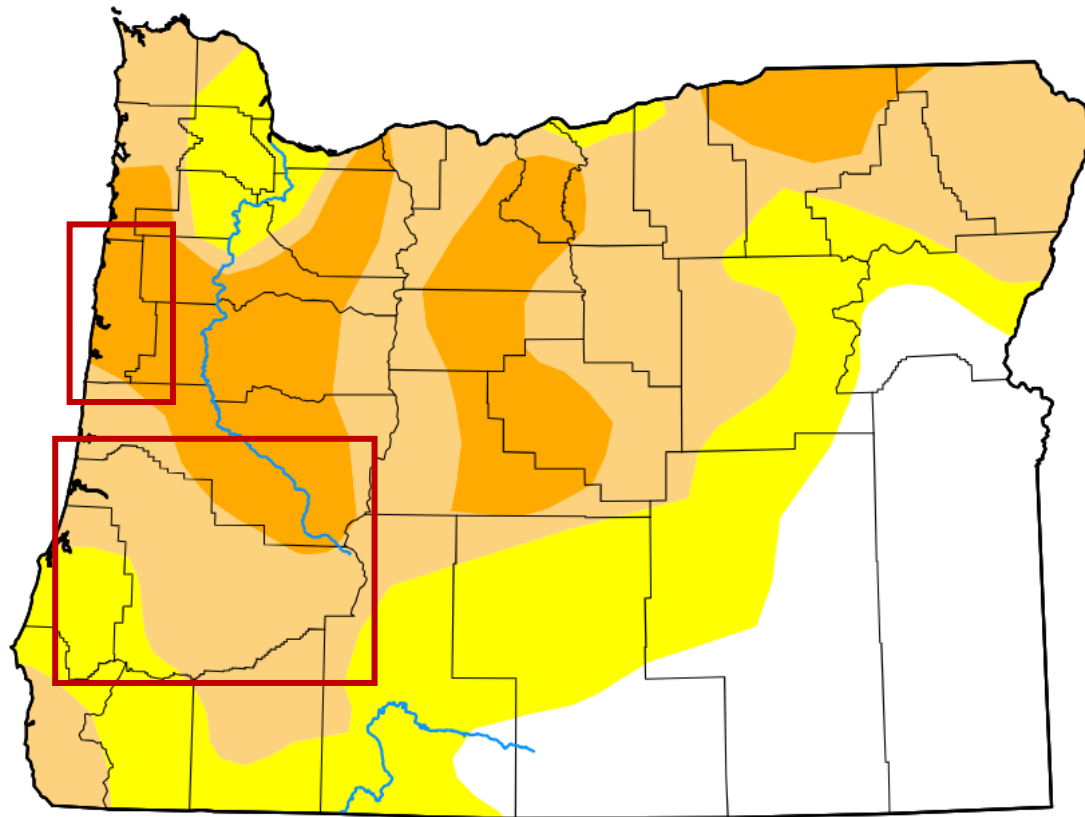


Drought Monitor

U.S. Drought Monitor Oregon

Map released: Thurs. August 10, 2023

Data valid: August 8, 2023 at 8 a.m. EDT



Intensity

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

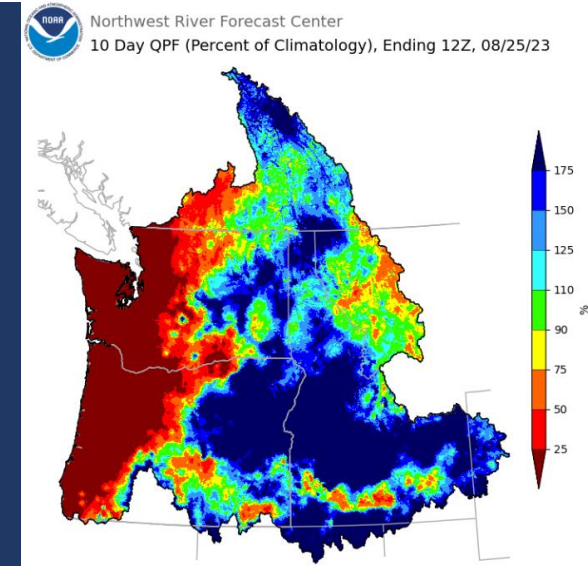
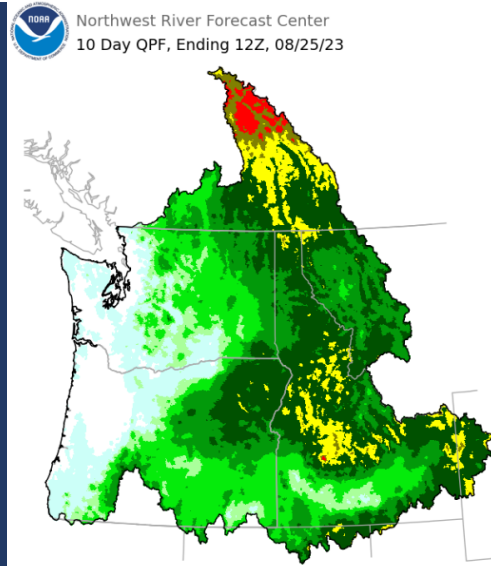


droughtmonitor.unl.edu

Mid June Outlook

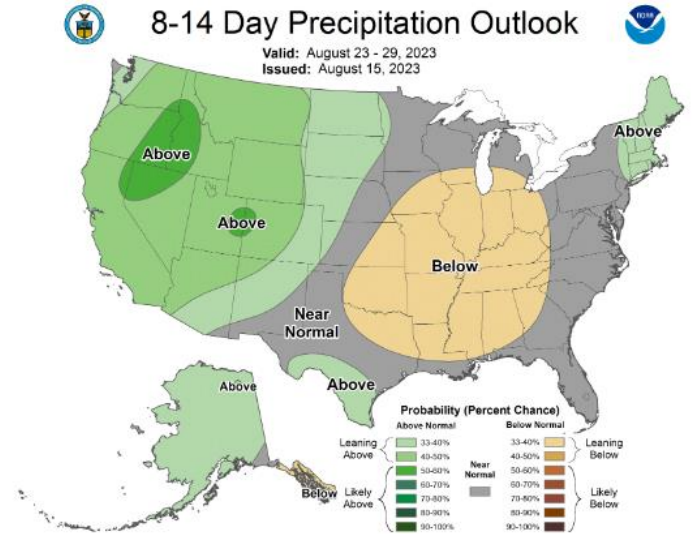
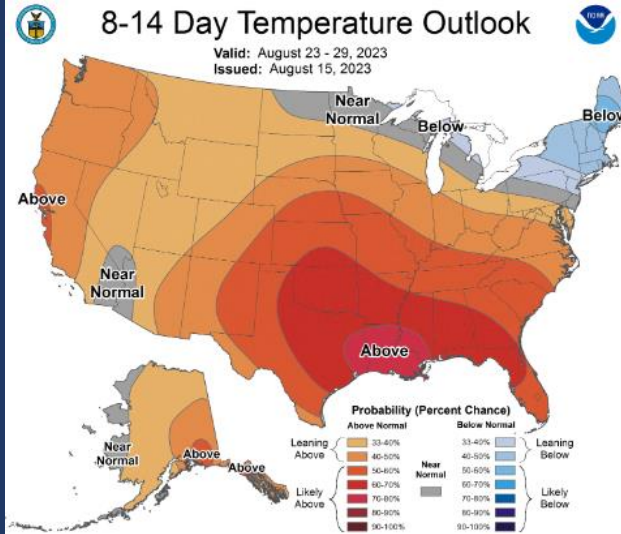
NWRFC 10-DAY PRECIPITATION FORECAST as of 8/15/2023

www.nwrfc.noaa.gov/water_supply/wy_summary/wy_summary.php



CPC 8 - 14 DAY OUTLOOK

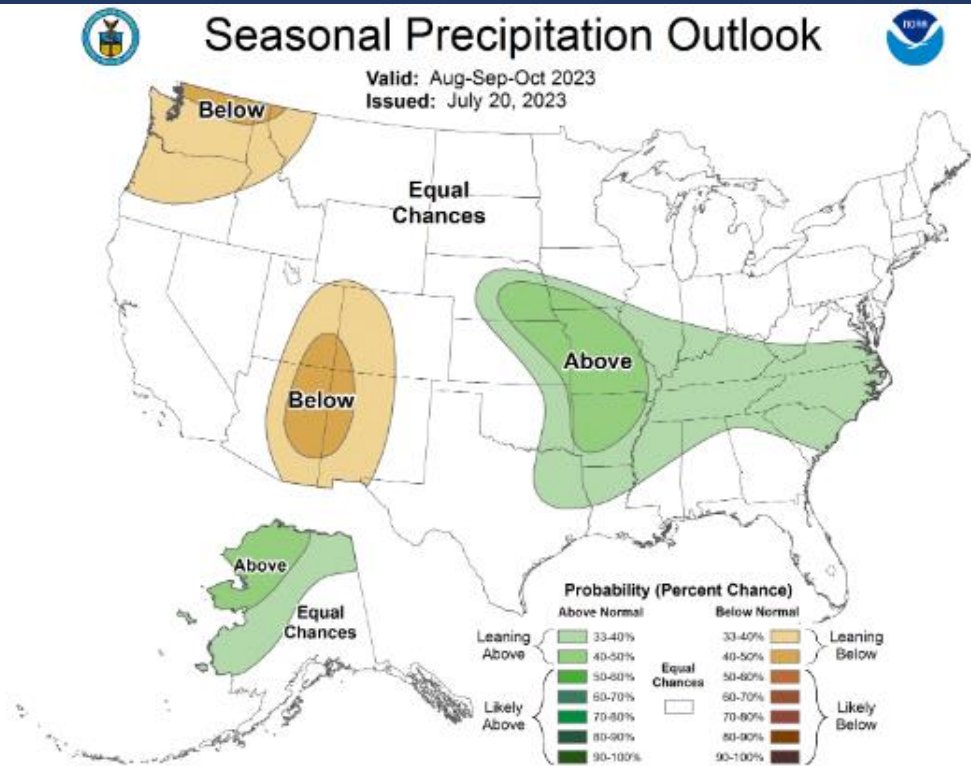
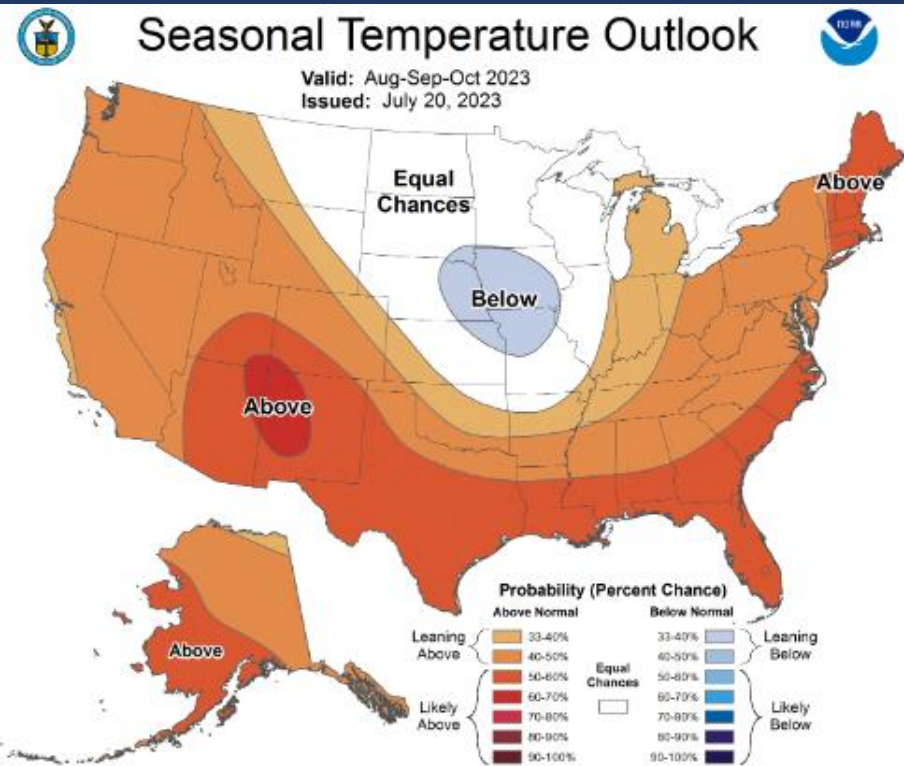
www.cpc.ncep.noaa.gov



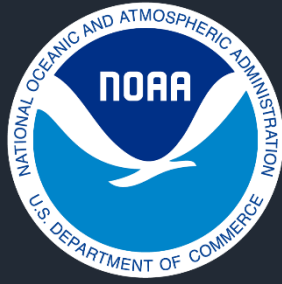
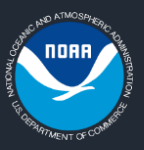


Climate Prediction Center Outlook

August – October 2023



www.cpc.ncep.noaa.gov



August 2023 Update for River Forecasts

NOAA National Weather Service



Natural Volume Forecast

Siletz River at Siletz (Lincoln County)

SILETZ - AT SILETZ (SILO3) Forecasts for Water Year 2023

Natural Forecast

ESP with 10 Days QPF Ensemble: 2023-08-15 Issued: 2023-08-15

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	222	223	107	232	208
APR-JUL	215	215	113	215	191
JAN-SEP	584	586	87	595	676
JAN-JUL	578	578	88	578	659
OCT-SEP	873	874	83	883	1047

Experimental

HEFS with 15 days EQPF Ensemble: 2023-08-15 Issued: 2023-08-15

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	222	223	107	233	208
APR-JUL	215	215	113	215	191
JAN-SEP	584	586	87	595	676
JAN-JUL	578	578	88	578	659
OCT-SEP	873	874	83	884	1047

Reference

ESP with 0 Days QPF Ensemble: 2023-08-15 Issued: 2023-08-15

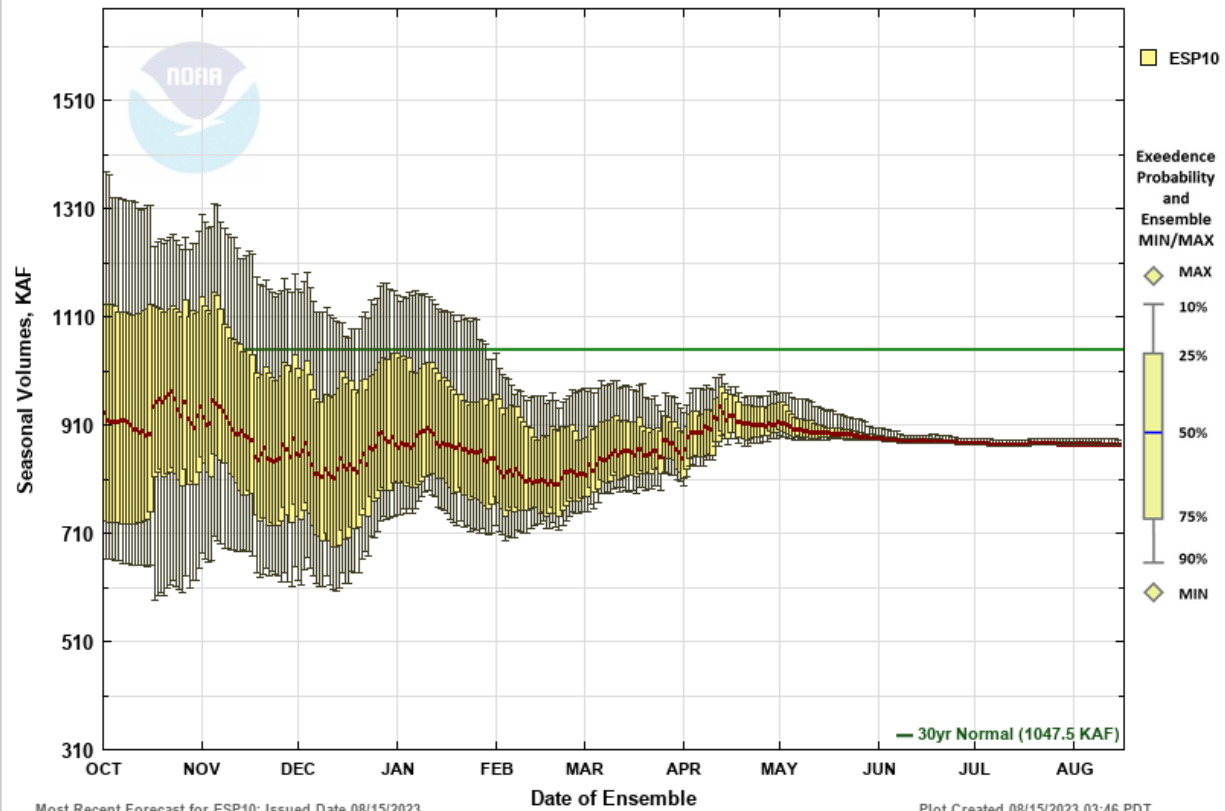
Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	222	224	108	233	208
APR-JUL	215	215	113	215	191
JAN-SEP	584	586	87	595	676
JAN-JUL	578	578	88	578	659
OCT-SEP	873	875	84	884	1047

Move the mouse over the desired "Forecast Period" to display a graph.

Natural Volume Forecasts

SILETZ - AT SILETZ

Period OCT to SEP -- Water Year 2023

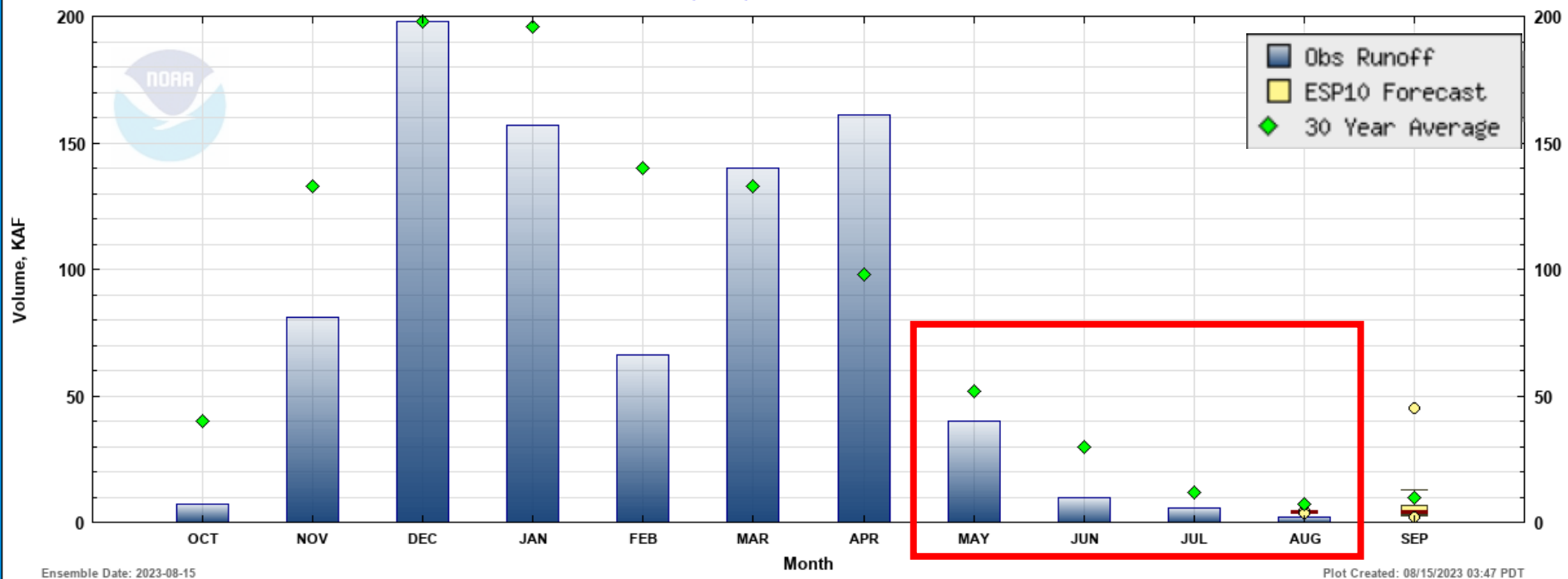


https://www.nwrfc.noaa.gov/natural/plot/nat_forecasts.php?id=SILO3



Monthly Natural Volumes Siletz River at Siletz (Lincoln County)

Natural Volume Monthly Forecasts (ESP10) for Water Year 2023
(SILO3) SILETZ - AT SILETZ

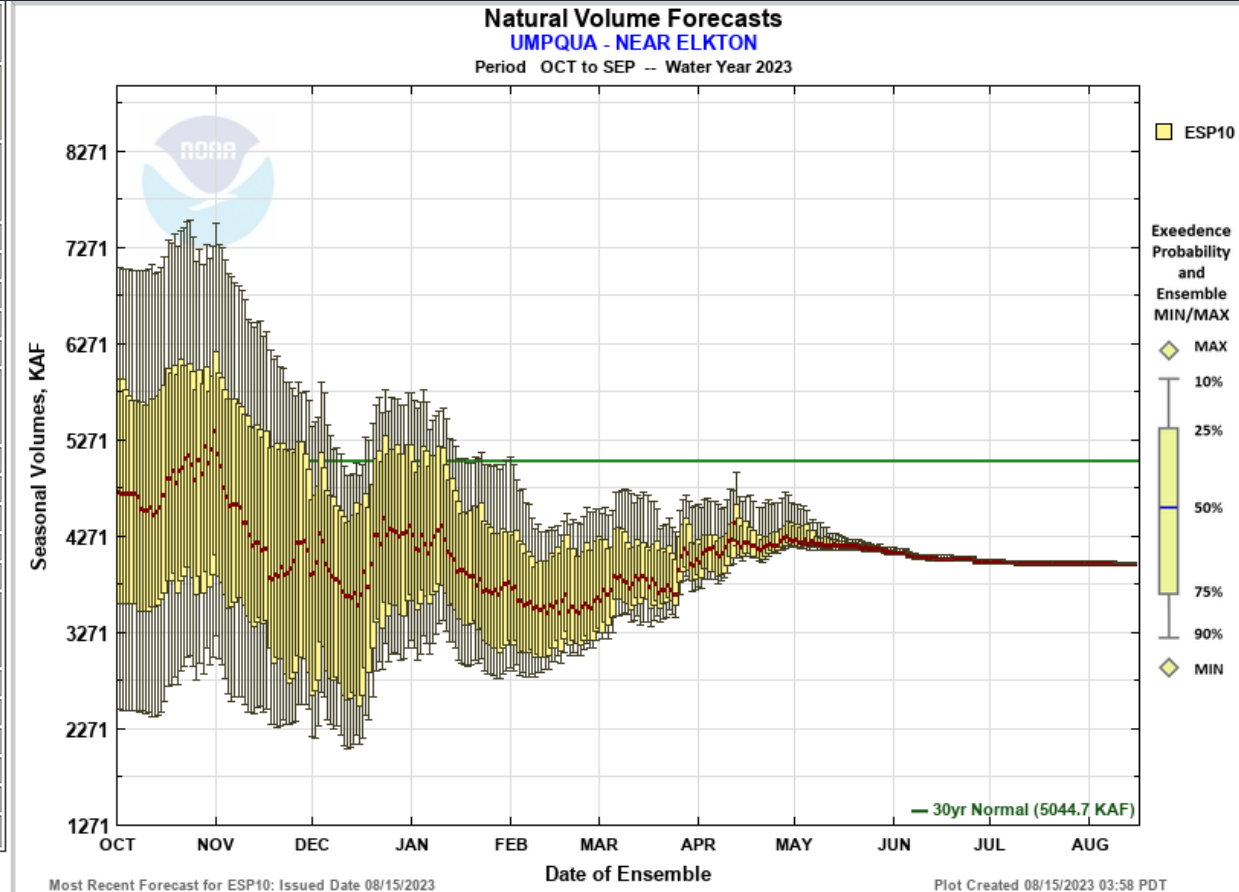


https://www.nwrfc.noaa.gov/natural/plot/nat_forecasts.php?id=SILO3



Monthly Natural Volumes Umpqua R near Elkton (Douglas County)

UMPQUA - NEAR ELKTON (EKTO3) Forecasts for Water Year 2023					
Natural Forecast					
ESP with 10 Days QPF Ensemble: 2023-08-15 Issued: 2023-08-15					
Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	1589	1595	111	1612	1435
APR-JUL	1487	1487	115	1487	1291
JAN-SEP	3154	3159	83	3177	3786
JAN-JUL	3052	3052	84	3052	3643
OCT-SEP	3980	3986	79	4003	5045
Experimental					
HEFS with 15 days EQPF Ensemble: 2023-08-15 Issued: 2023-08-15					
APR-SEP	1588	1593	111	1614	1435
APR-JUL	1487	1487	115	1487	1291
JAN-SEP	3153	3158	83	3179	3786
JAN-JUL	3052	3052	84	3052	3643
OCT-SEP	3980	3985	79	4005	5045
Reference					
ESP with 0 Days QPF Ensemble: 2023-08-15 Issued: 2023-08-15					
APR-SEP	1588	1594	111	1617	1435
APR-JUL	1487	1487	115	1487	1291
JAN-SEP	3153	3158	83	3182	3786
JAN-JUL	3052	3052	84	3052	3643
OCT-SEP	3980	3985	79	4008	5045
Move the mouse over the desired "Forecast Period" to display a graph.					

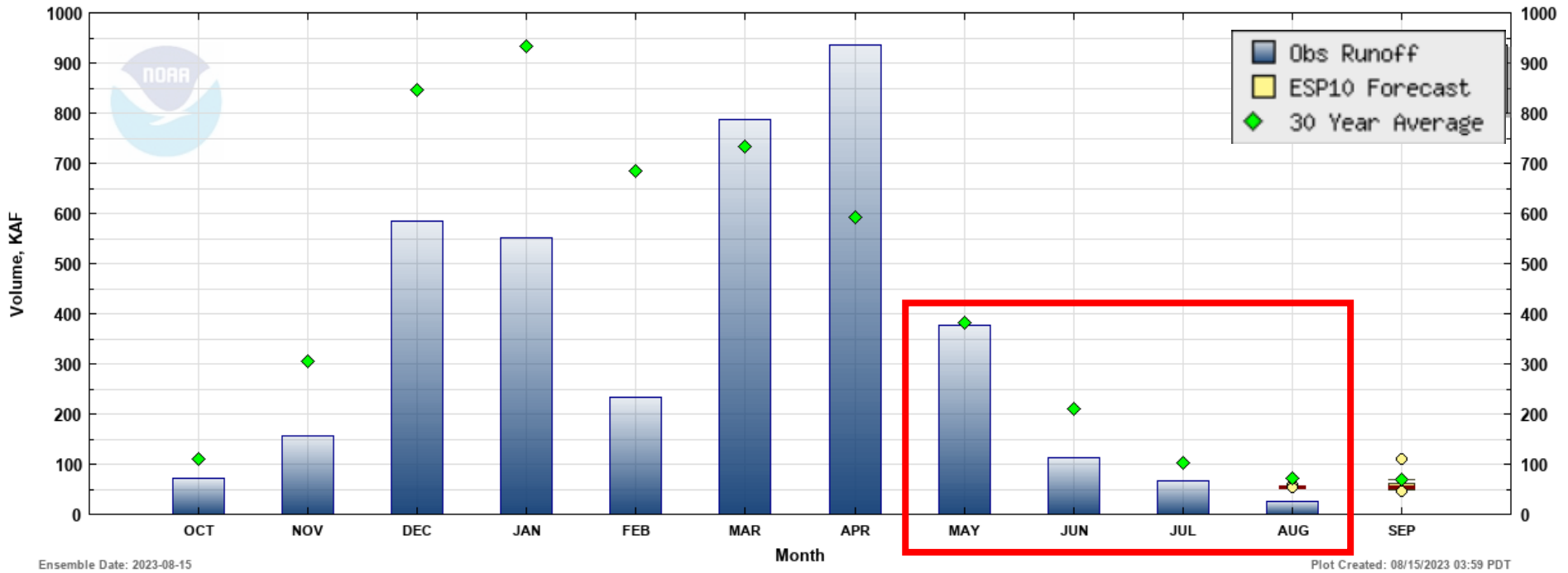


https://www.nwrfc.noaa.gov/natural/plot/nat_forecasts.php?id=RYGO3



Monthly Natural Volumes Umatilla R near Umatilla

Natural Volume Monthly Forecasts (ESP10) for Water Year 2023
(EKTO3) UMPQUA - NEAR ELKTON



https://www.nwrfc.noaa.gov/natural/plot/nat_forecasts.php?id=UMA03

Forecast

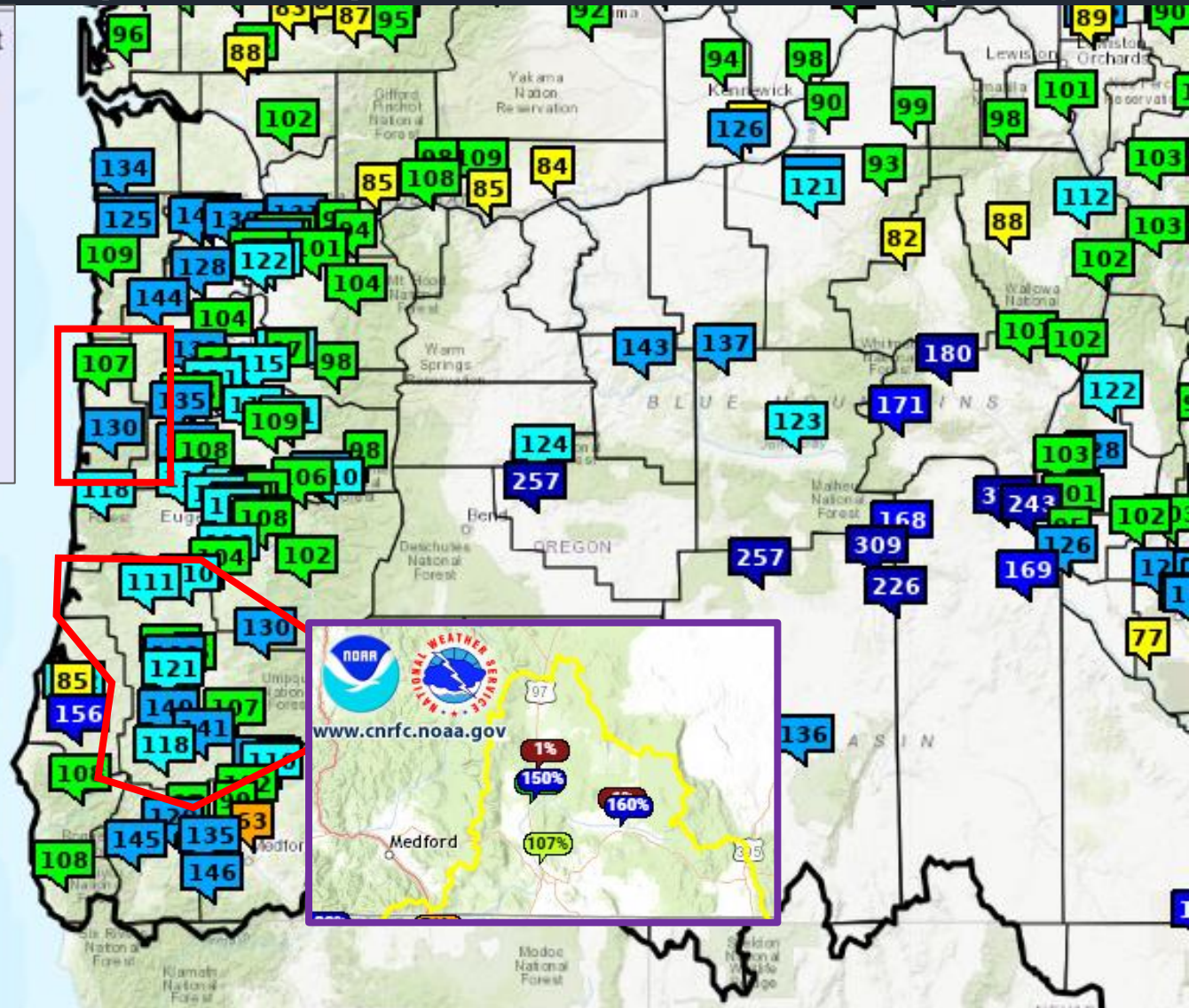
April – September % of Average

ESP Natural Forecast

Period: APR-SEP

Forecast (% Normal)

- No Normal, No Data
- < 25
- 25-50
- 50-75
- 75-90
- 90-110
- 110-125
- 125-150
- 150-175
- > 175



Oregon WSAC/DRC Climate Update and Drought Status August 2023

Larry O'Neill
CEOAS/Oregon State University
Oregon Climate Service
Oregon Climate Change Research Institute
larry.oneill@oregonstate.edu



Oregon State University
College of Earth, Ocean,
and Atmospheric Sciences

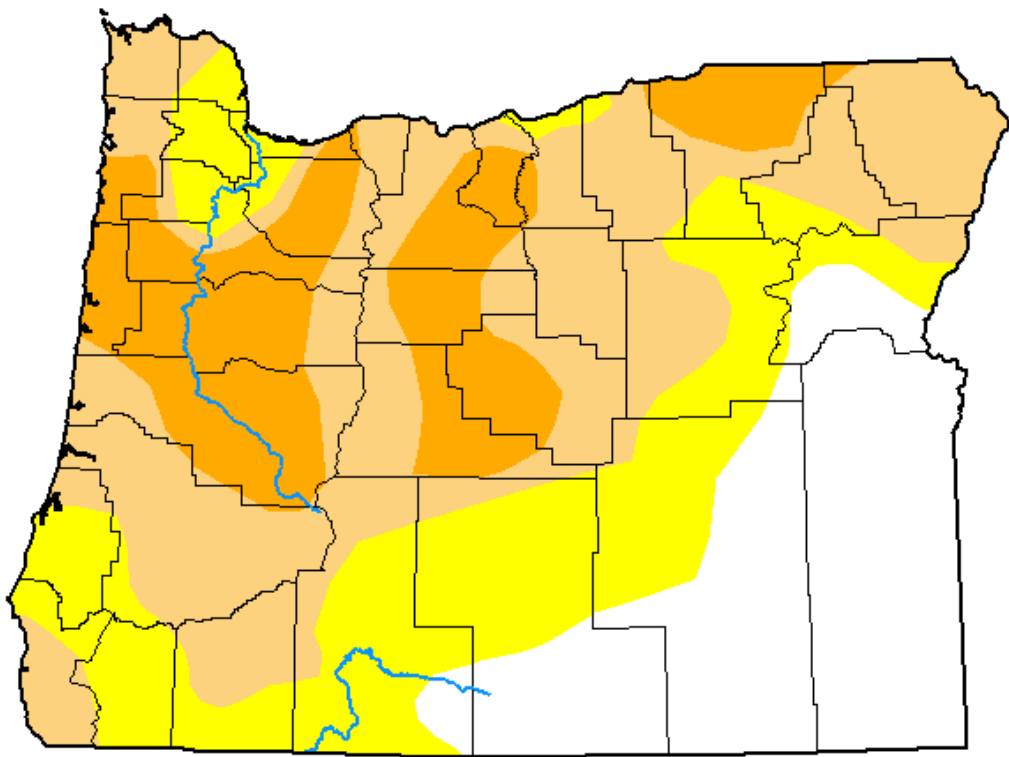


Wednesday, August 16, 2023

U.S. Drought Monitor

Oregon

August 8, 2023
 (Released Thursday, Aug. 10, 2023)
 Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	23.27	76.73	52.09	17.68	0.00	0.00
Last Week <i>08-01-2023</i>	23.38	76.62	52.19	17.68	0.00	0.00
3 Months Ago <i>05-09-2023</i>	24.77	75.23	51.86	14.85	3.24	0.00
Start of Calendar Year <i>01-03-2023</i>	13.46	86.54	59.75	46.03	26.18	1.40
Start of Water Year <i>09-27-2022</i>	0.42	99.58	68.05	52.42	30.73	1.40
One Year Ago <i>08-09-2022</i>	25.01	74.99	65.60	52.55	30.73	1.40

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

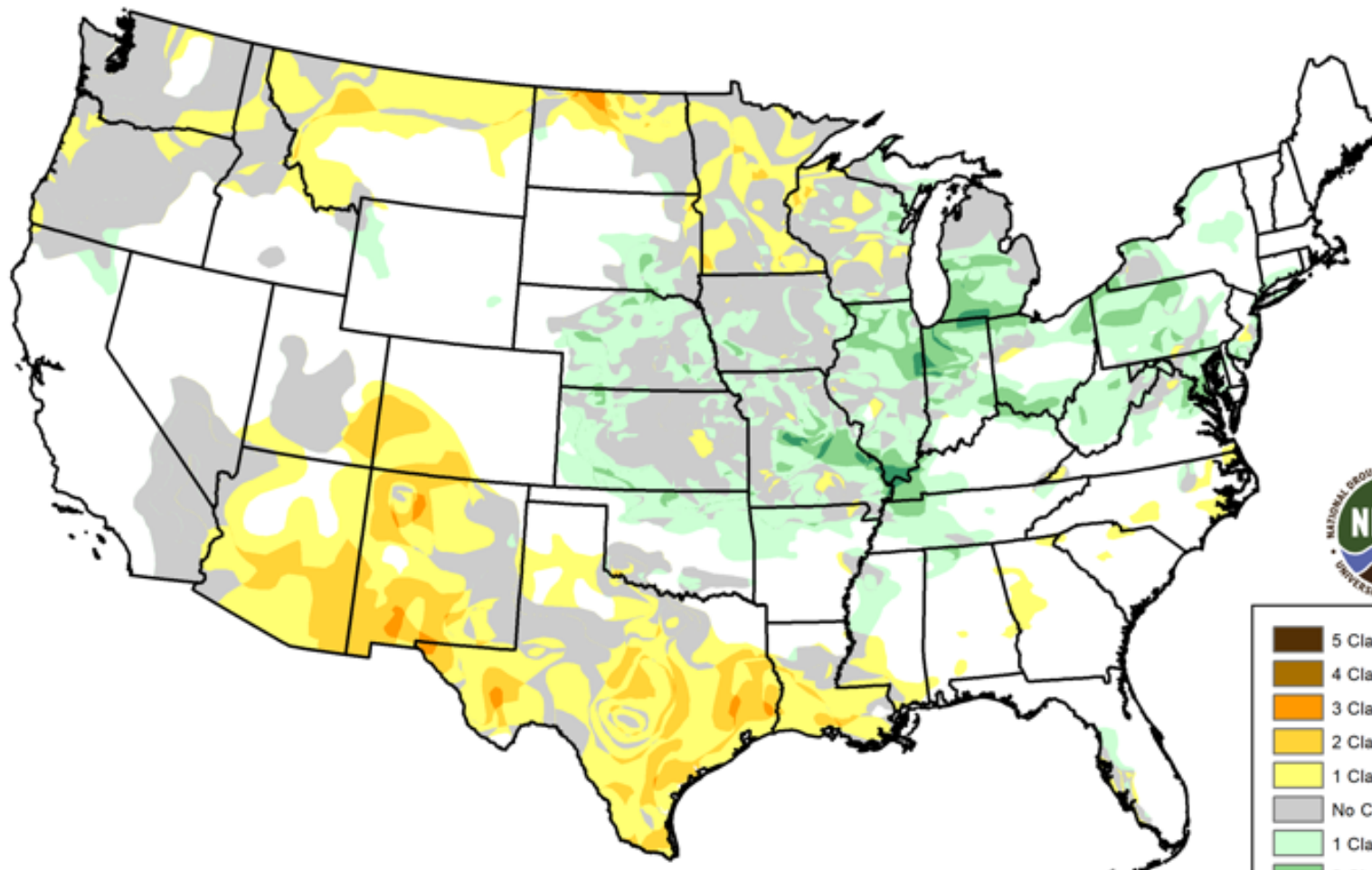
Author:

Brad Pugh
 CPC/NOAA



U.S. Drought Monitor Class Change - CONUS

4 Week



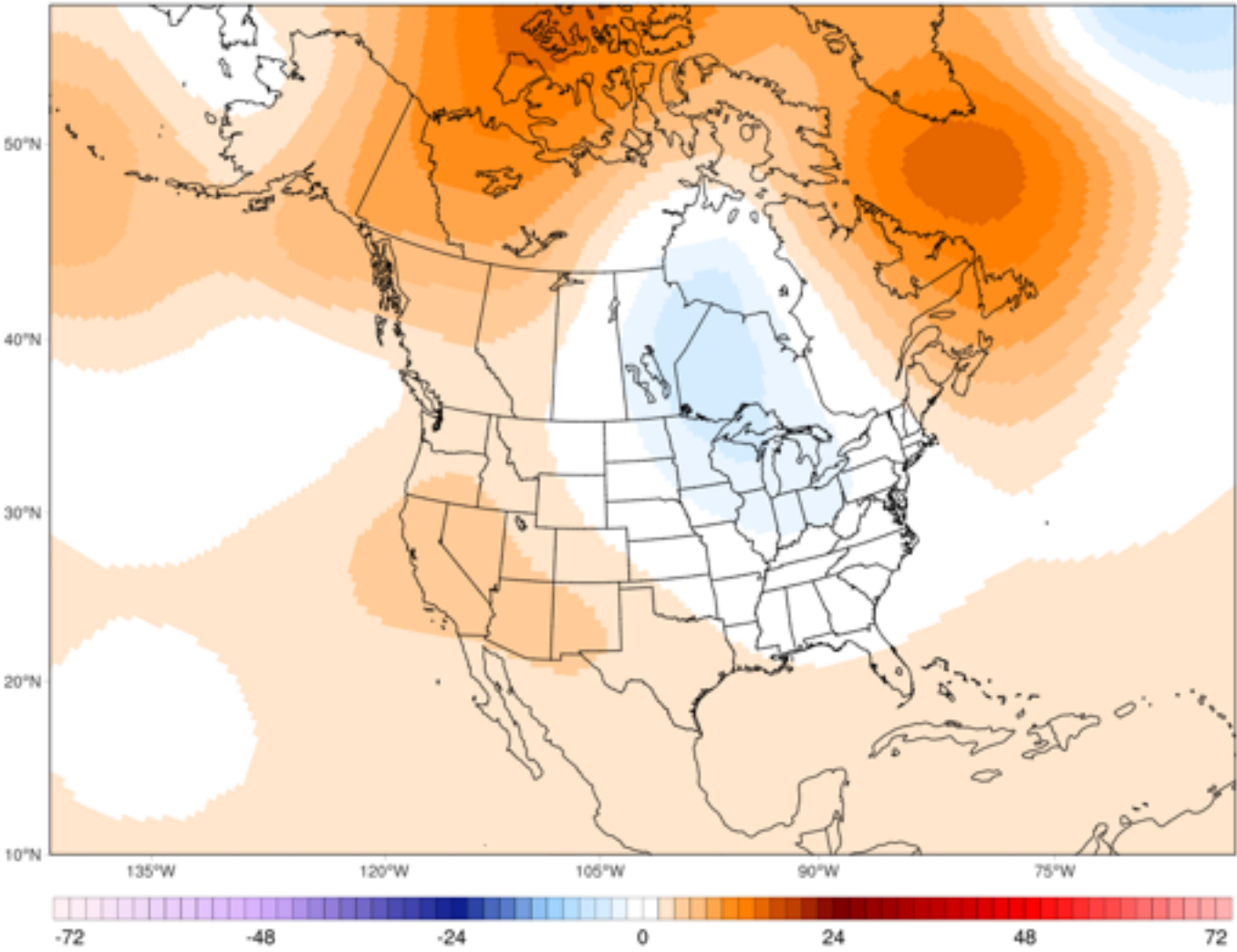
- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

August 8, 2023
compared to
July 11, 2023

droughtmonitor.unl.edu

Geopot Hgt 500hPa Anomaly (dam)
July 2023 - 1979-2000

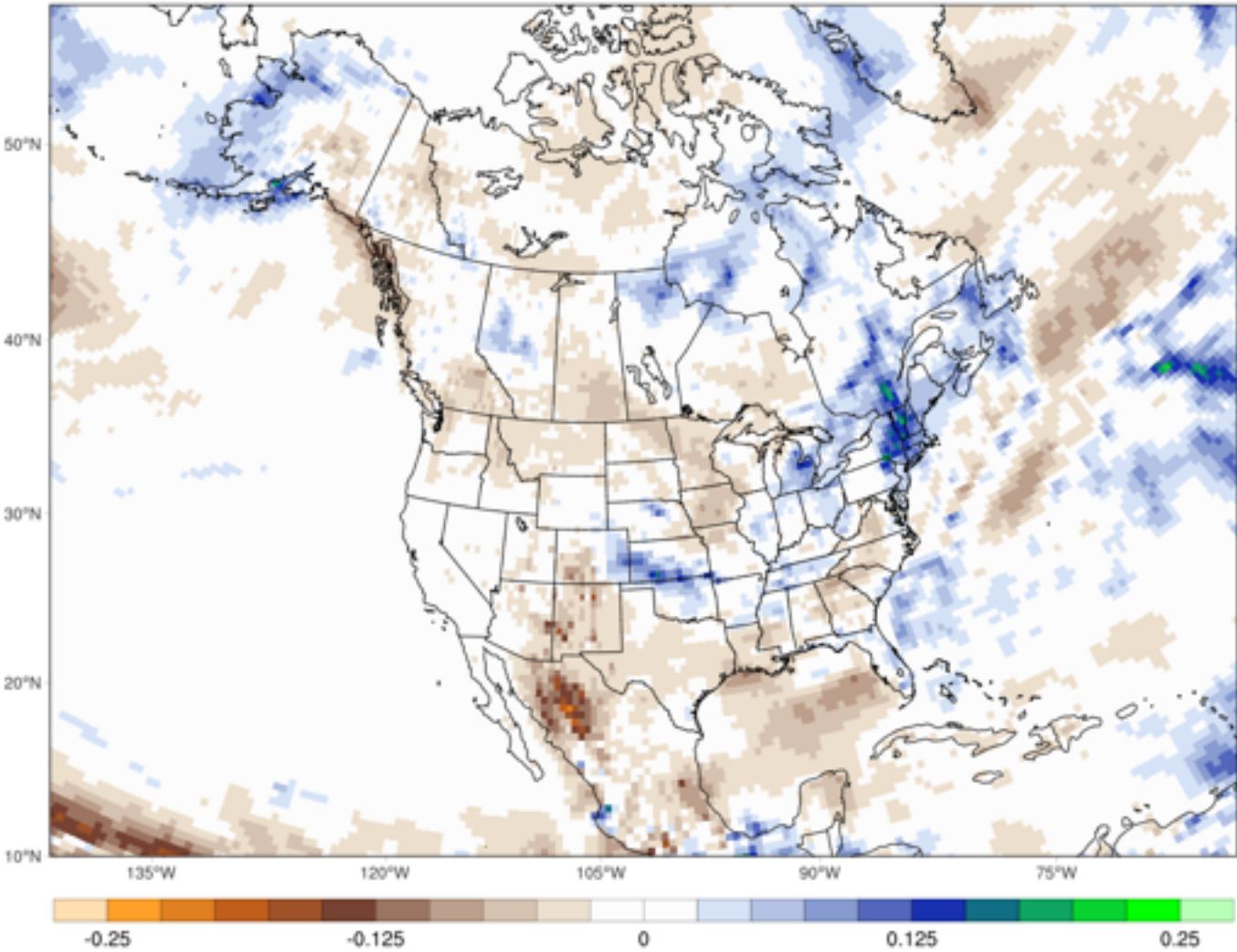
ECMWF ERA5 (0.5x0.5 deg)



West Aug 16 16:12:08 UTC 2023

Acc. Precipitation Anomaly (m)
July 2023 - 1979-2000

ECMWF ERA5 (0.5x0.5 deg)

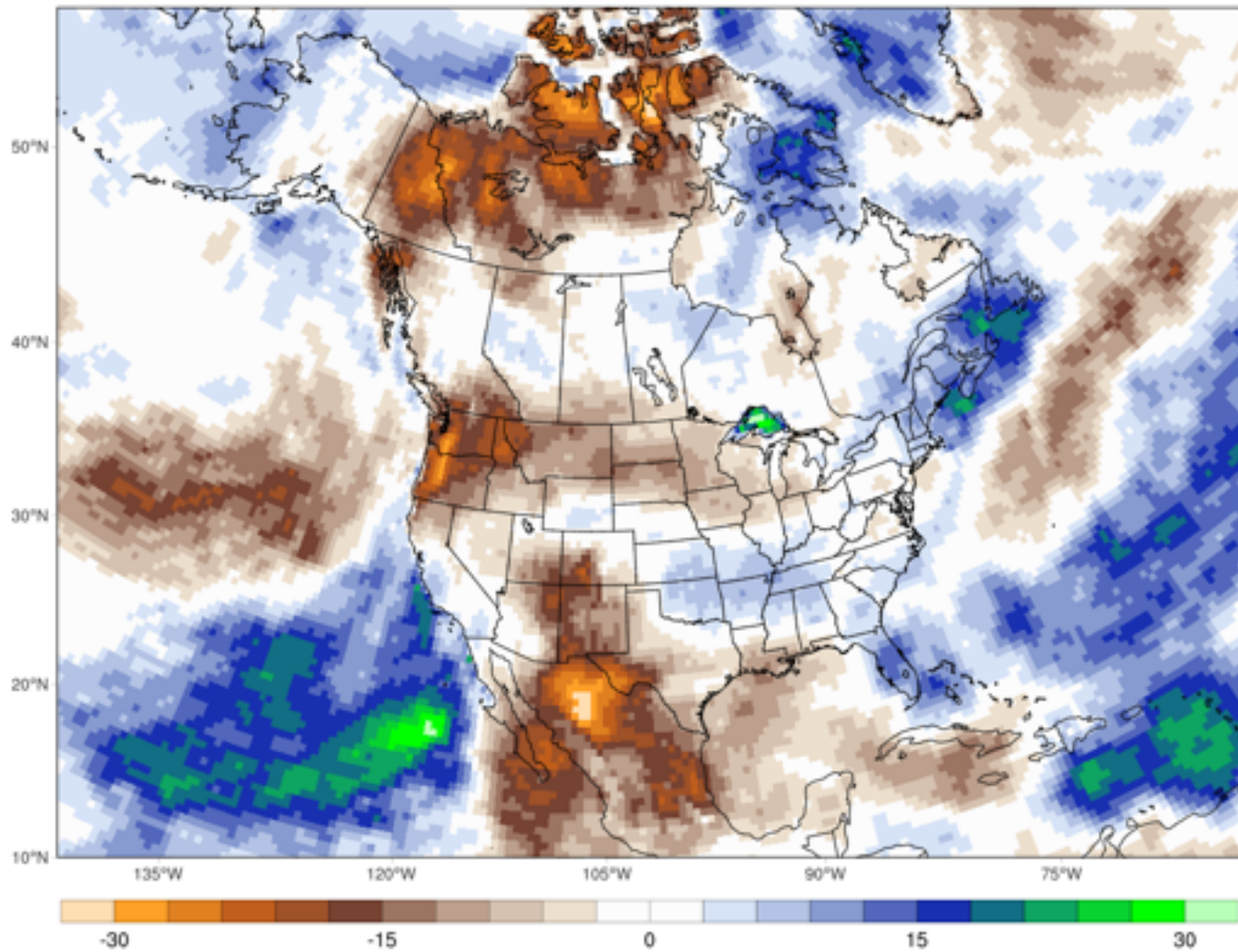


Wed Aug 16 16:16:38 UTC 2023

ClimateReanalyzer.org | Climate Change Institute | University of Maine

Total Cloud Cover Anomaly (%)
July 2023 - 1979-2000

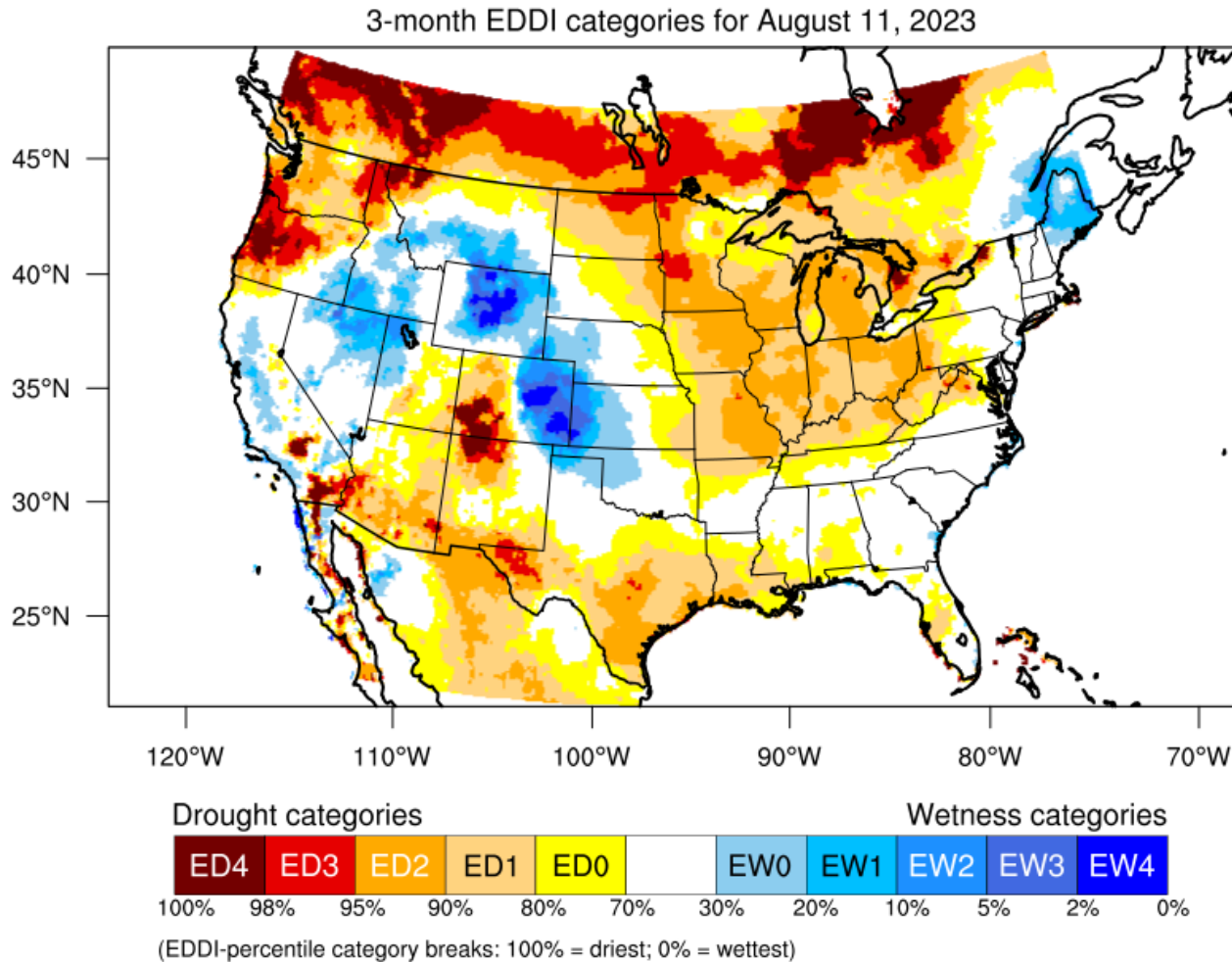
ECMWF ERA5 (0.5x0.5 deg)



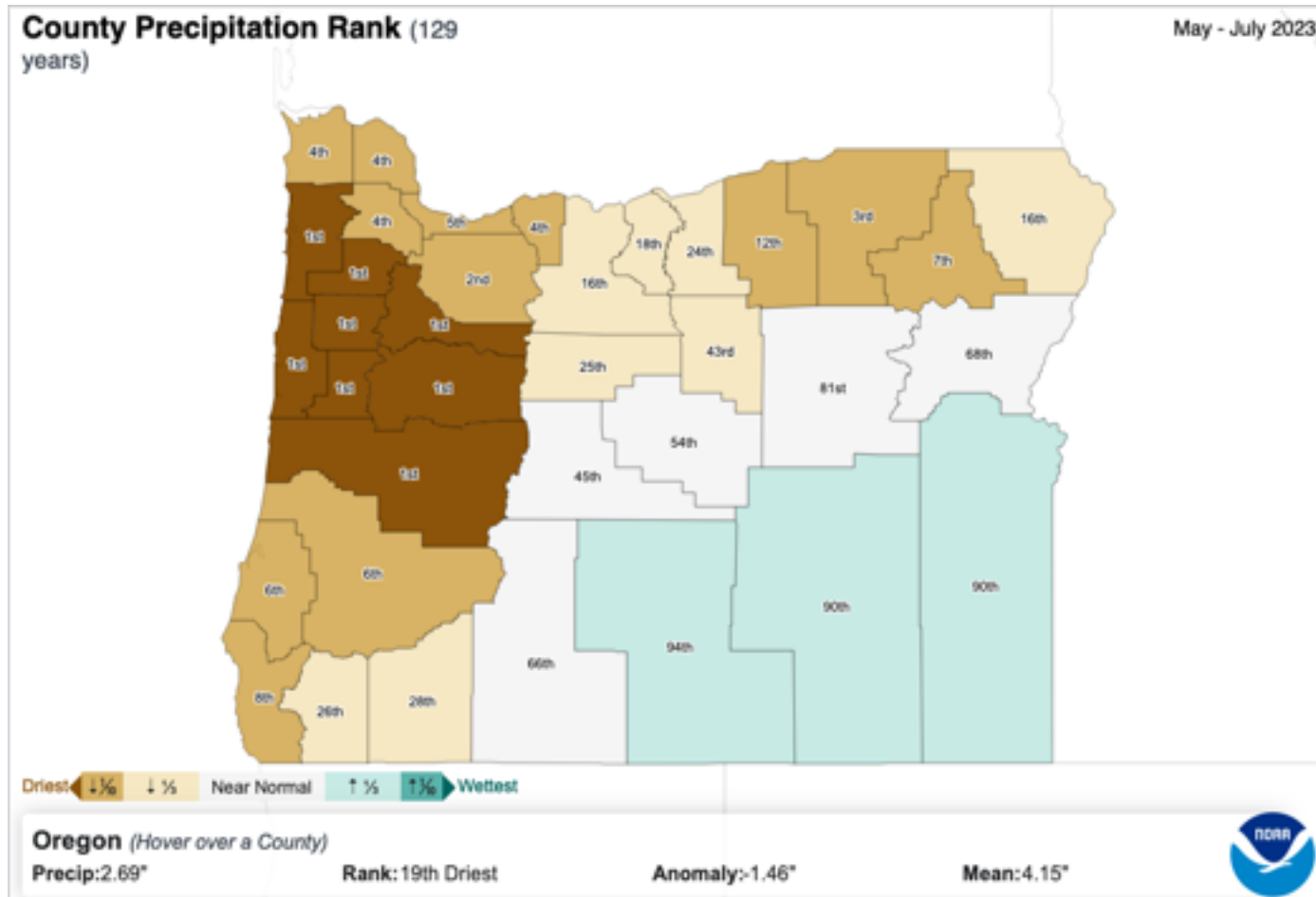
Wed Aug 16 16:17:33 UTC 2023

ClimateReanalyzer.org | Climate Change Institute | University of Maine

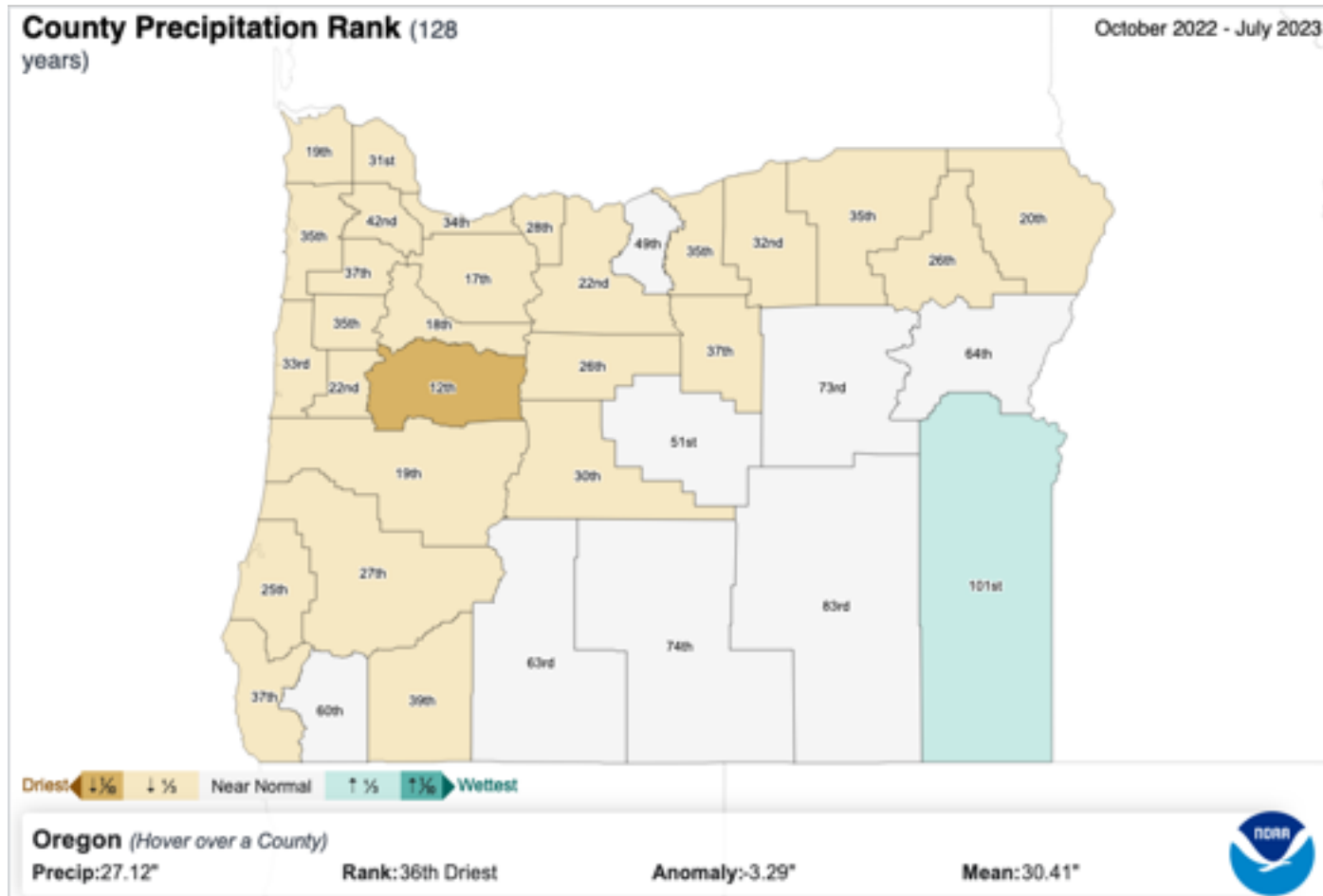
3-month Evaporative Demand Drought Index (EDDI)



May-July 2023 Precipitation Ranking

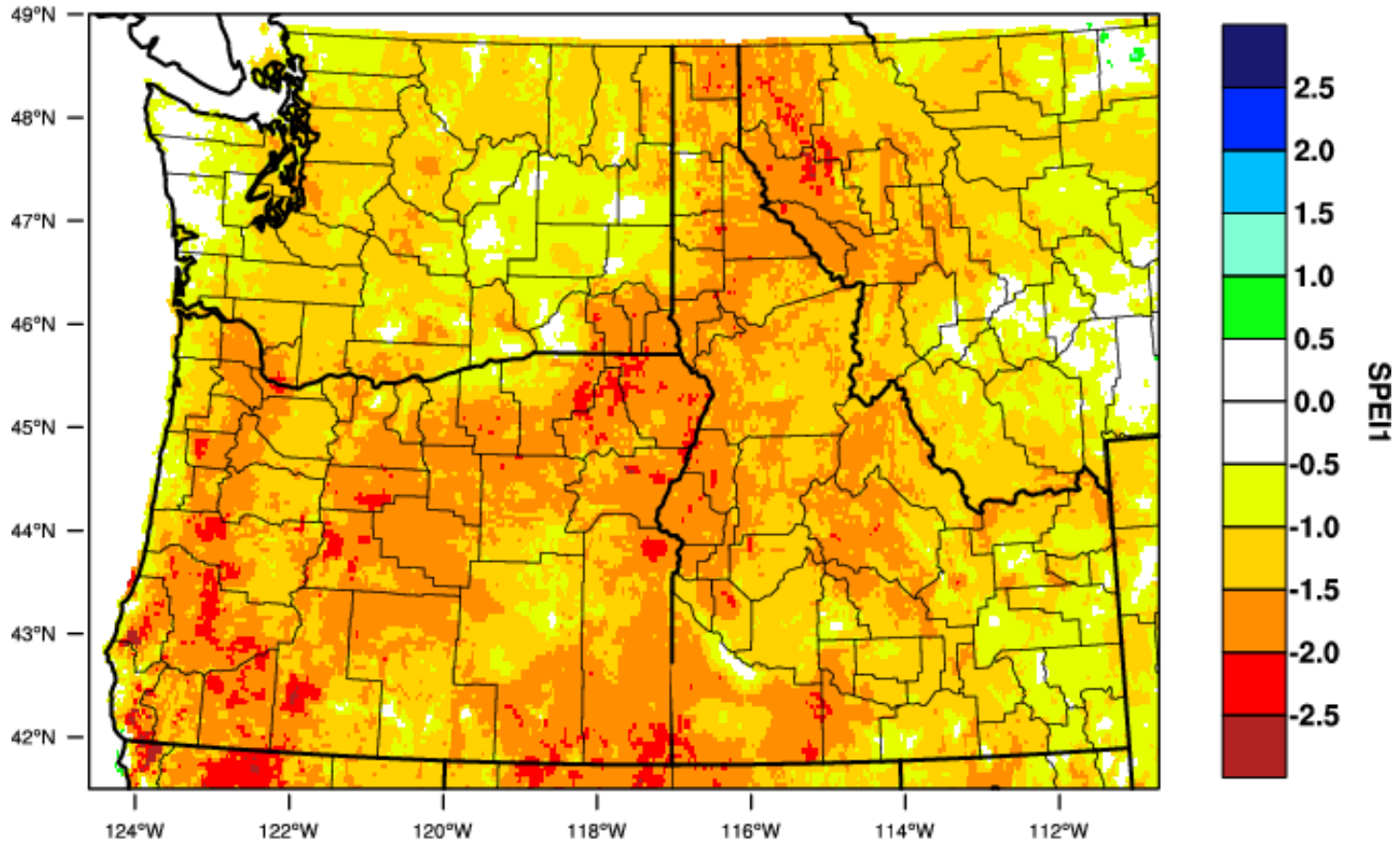


Water Year Precipitation Ranking



July 2023 1-month SPEI

Pacific Northwest - 1 month SPEI
July 2023

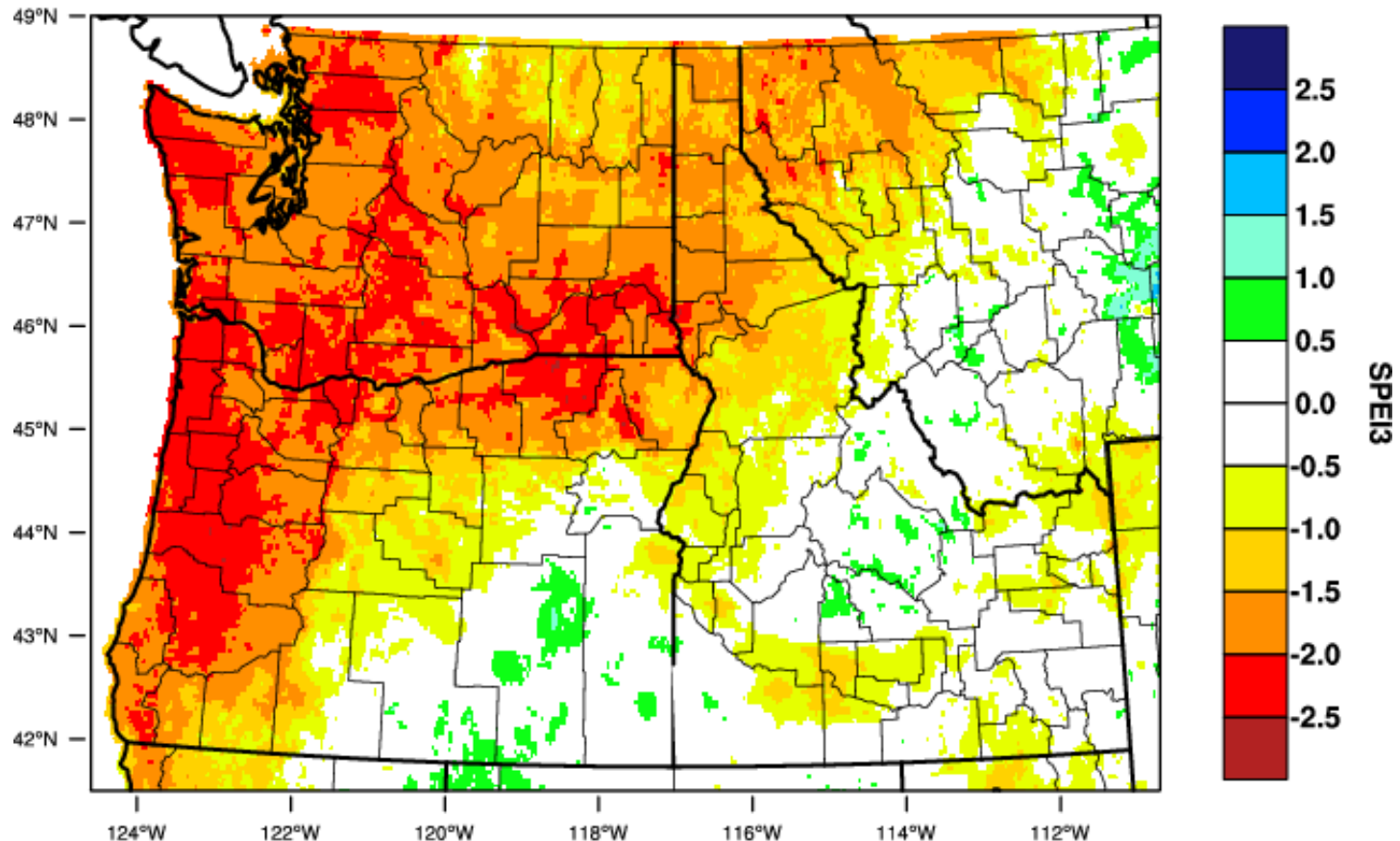


WestWide Drought Tracker - U Idaho/WRCC Data Source - PRISM (Prelim), created 11 AUG 2023

May-July 3-month SPEI

Pacific Northwest - 3 month SPEI

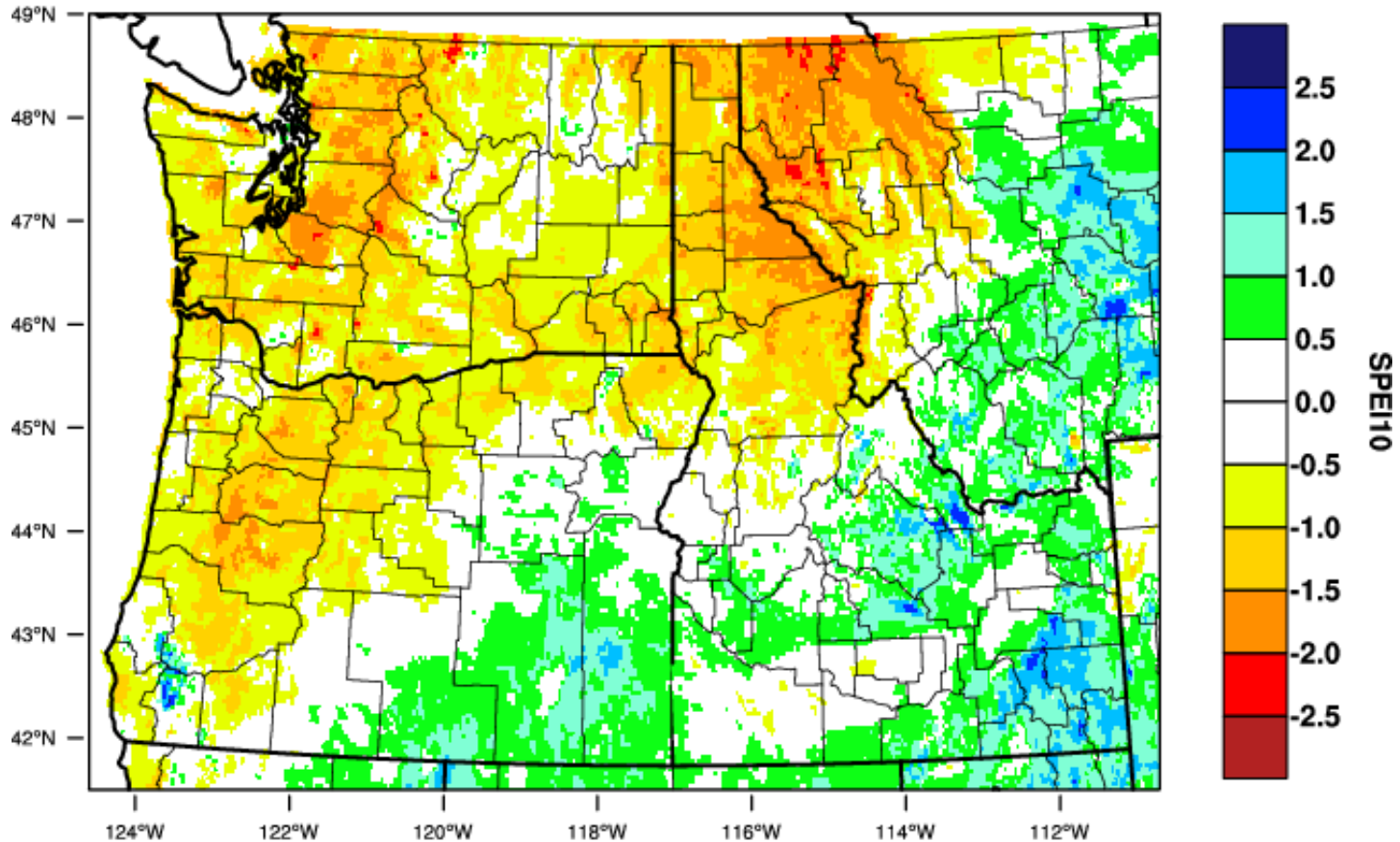
July 2023



WestWide Drought Tracker - U Idaho/WRCC Data Source - PRISM (Prelim), created 11 AUG 2023

Water Year SPEI

Pacific Northwest - 10 month SPEI
July 2023

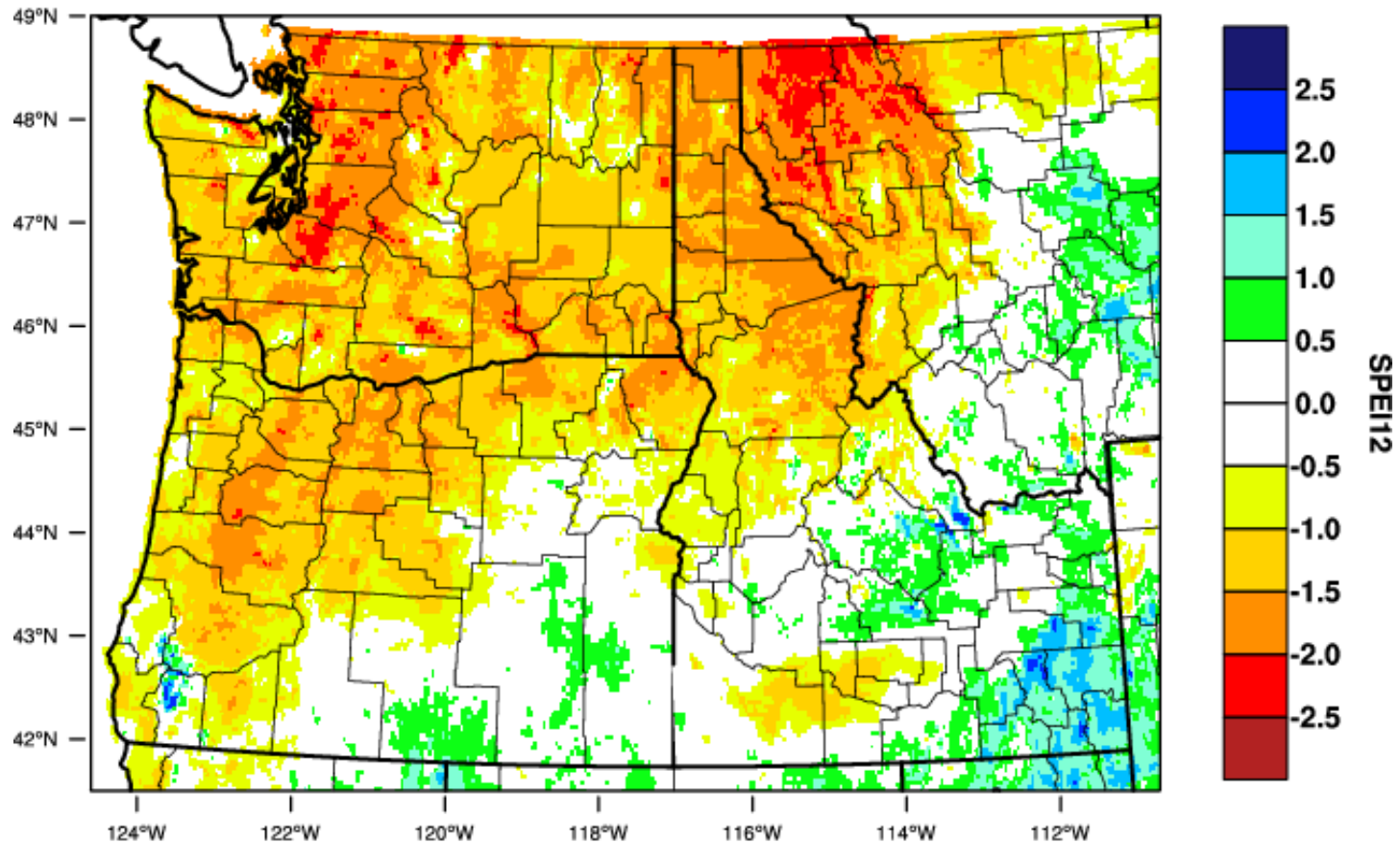


WestWide Drought Tracker - U Idaho/WRCC Data Source - PRISM (Prelim), created 11 AUG 2023

12-month SPEI

Pacific Northwest - 12 month SPEI

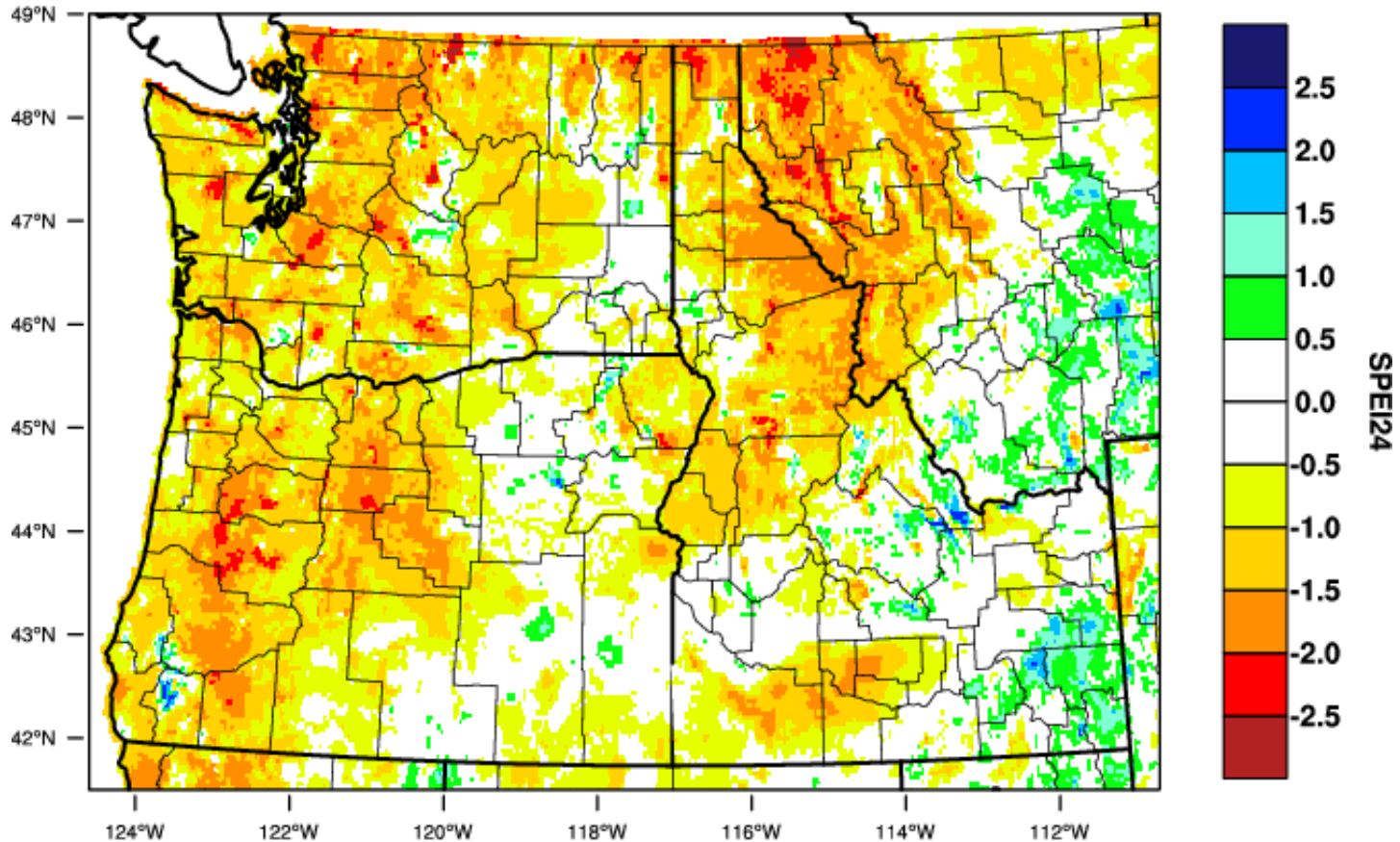
July 2023



WestWide Drought Tracker - U Idaho/WRCC Data Source - PRISM (Prelim), created 11 AUG 2023

24-month SPEI

Pacific Northwest - 24 month SPEI
July 2023

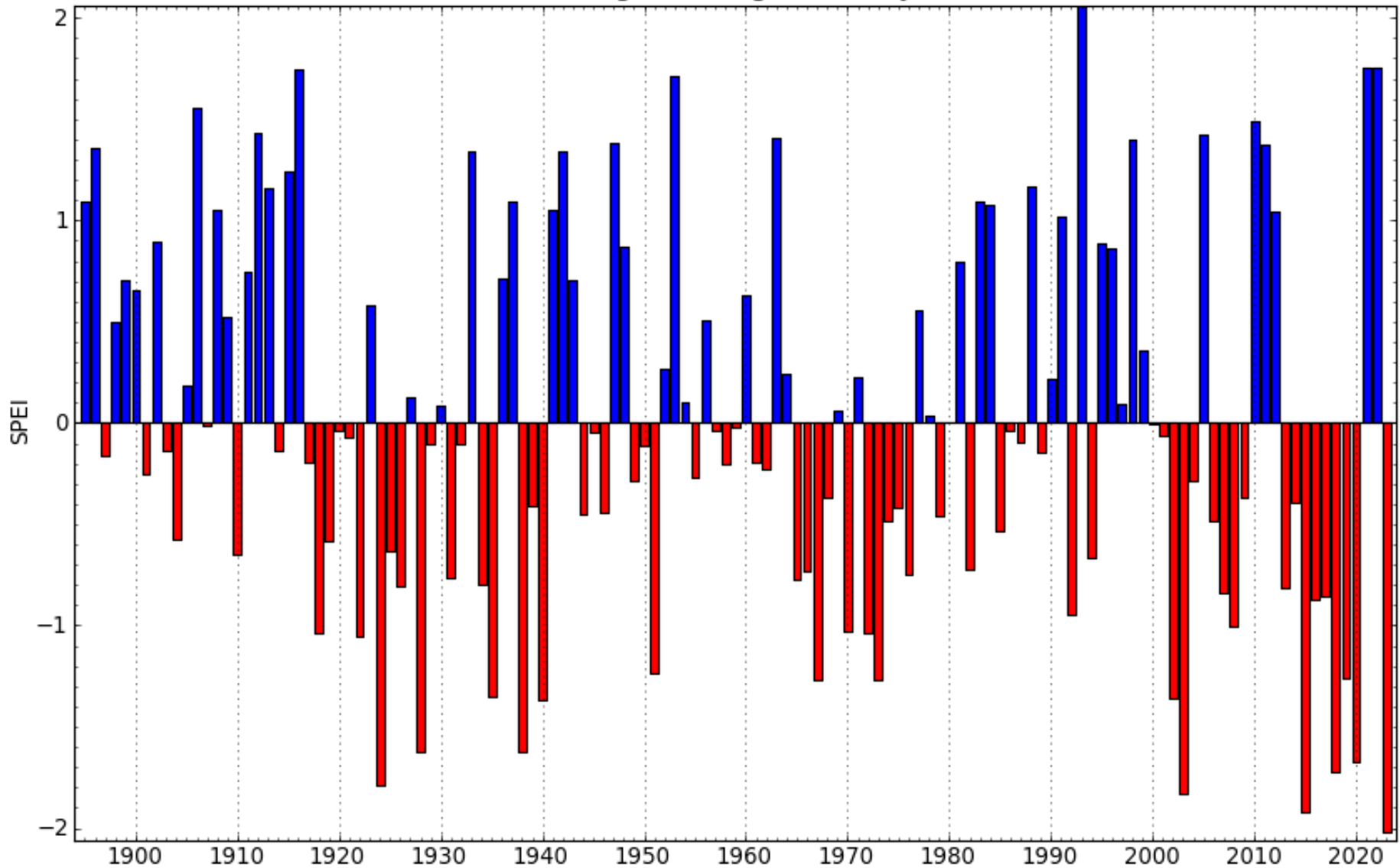


WestWide Drought Tracker - U Idaho/WRCC Data Source - PRISM (Prelim), created 11 AUG 2023

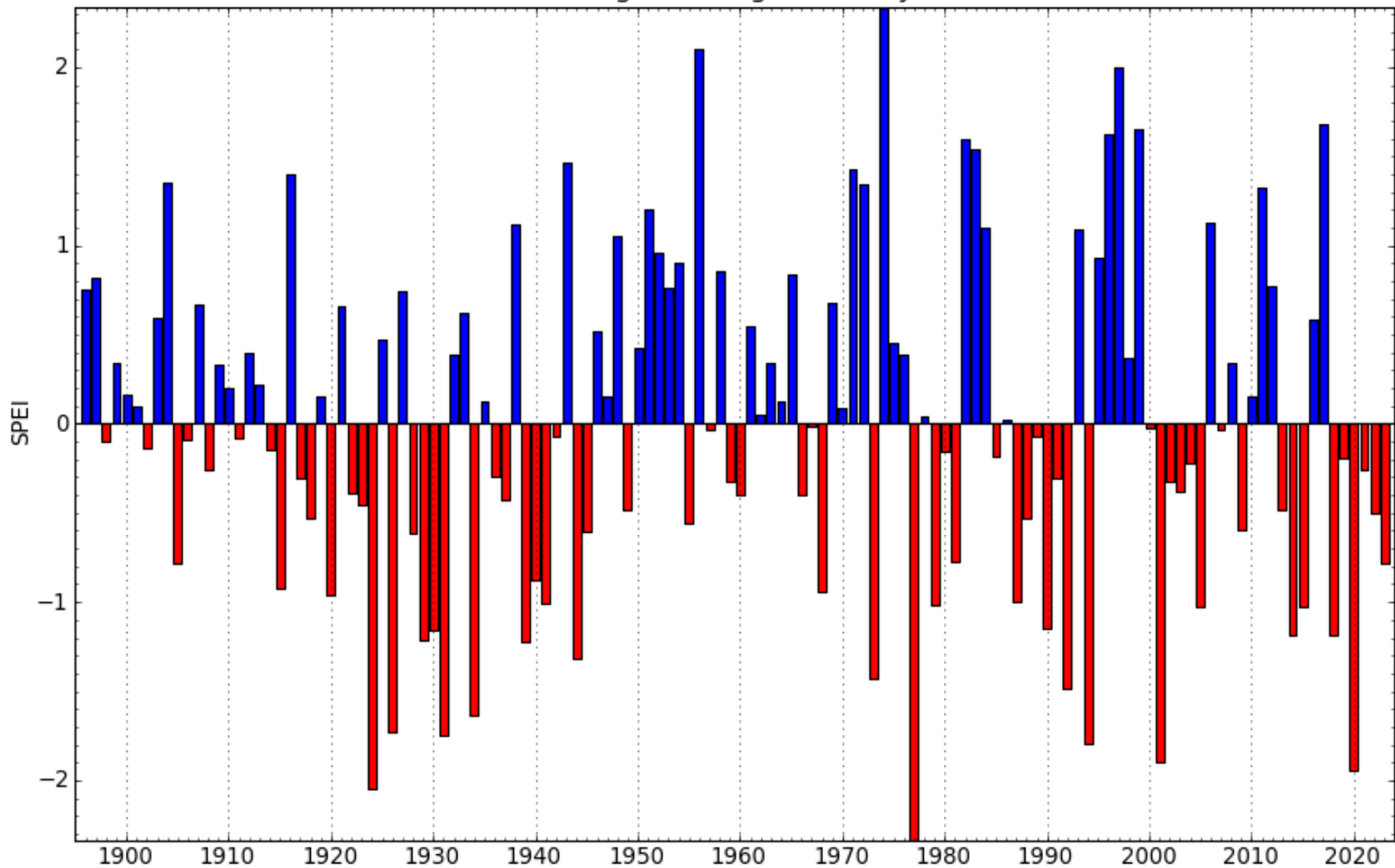
Douglas County

- Drought signal on short time scale (3-month) and long time scales (12+ months)
- Water year SPEI shows only moderate drought

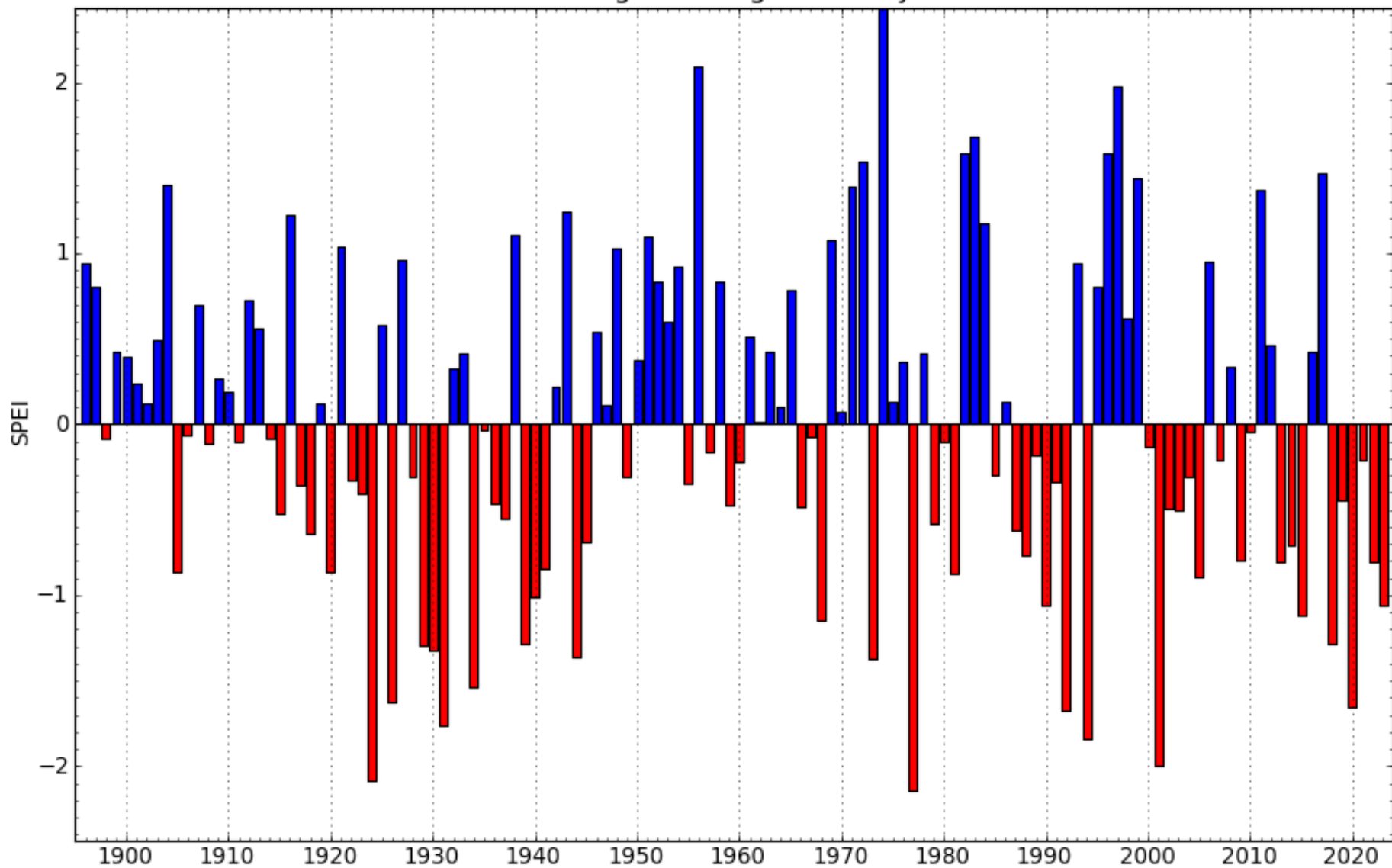
Standardized Precipitation-Evapotranspiration Index, 3-Months Ending in July Oregon - Douglas County



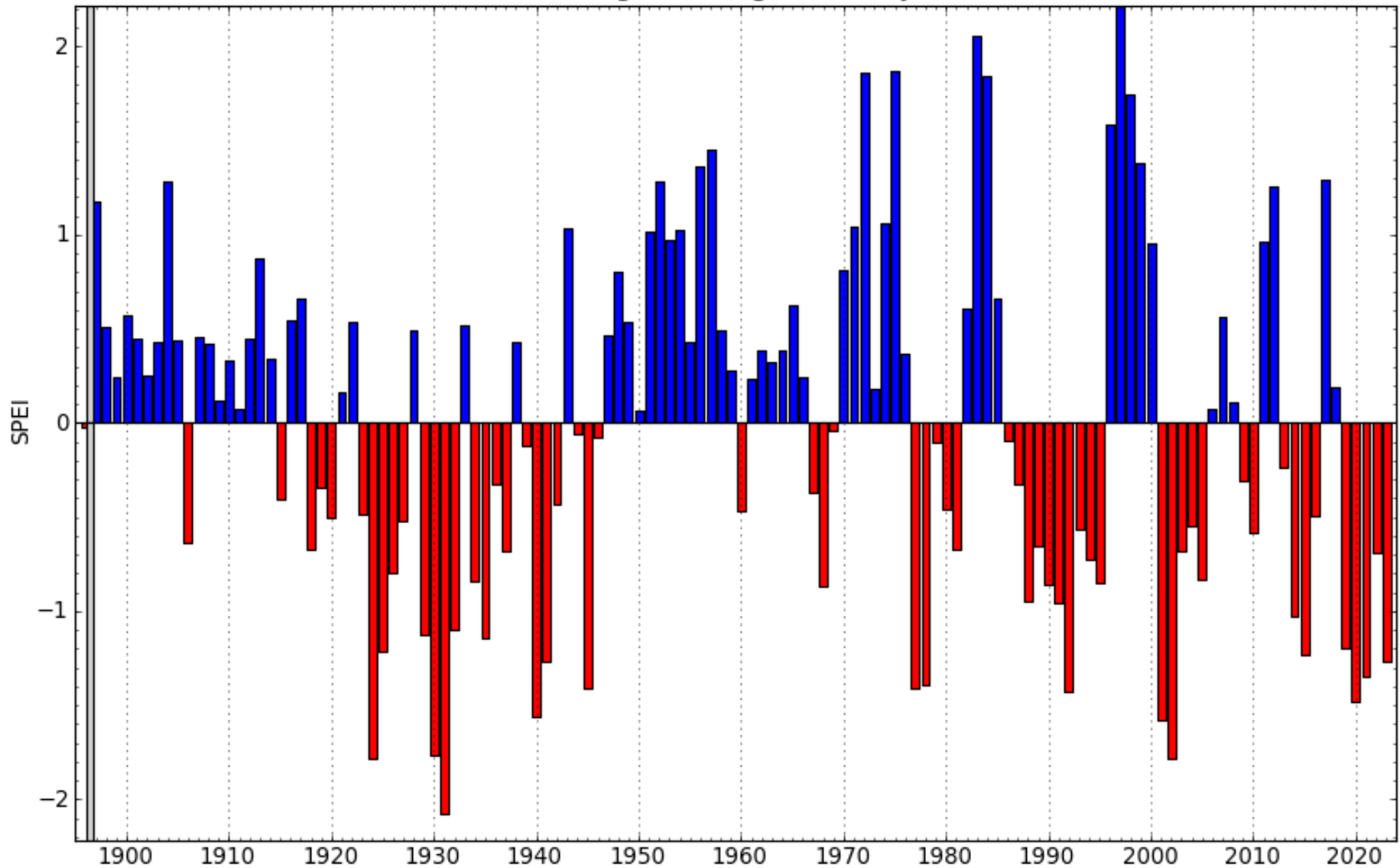
Standardized Precipitation-Evapotranspiration Index, 10-Months Ending in July Oregon - Douglas County



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



Standardized Precipitation-Evapotranspiration Index, 24-Months Ending in July Oregon - Douglas County



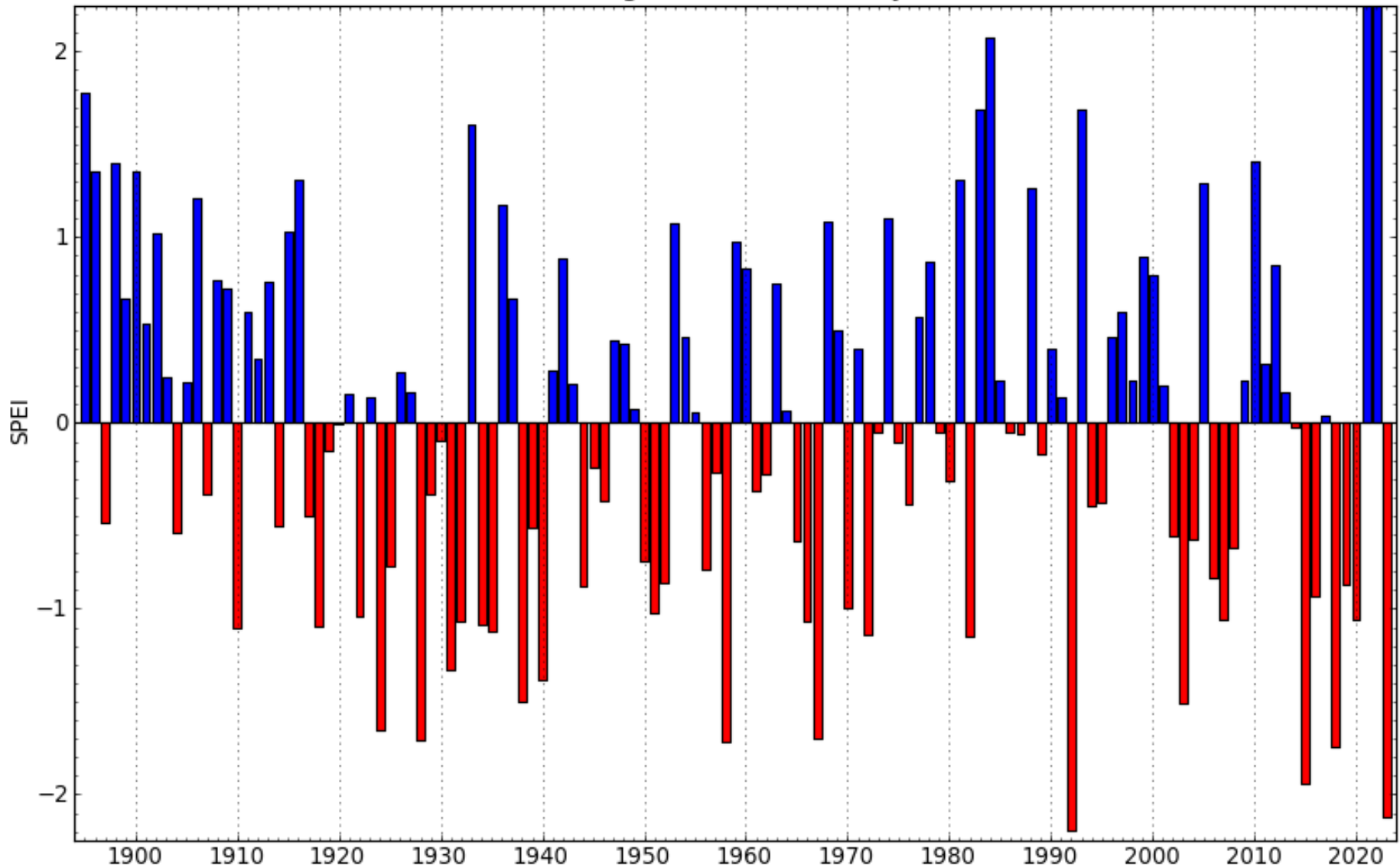
No Record

Data Source: WRCC/UI, Created: 8-16-2023

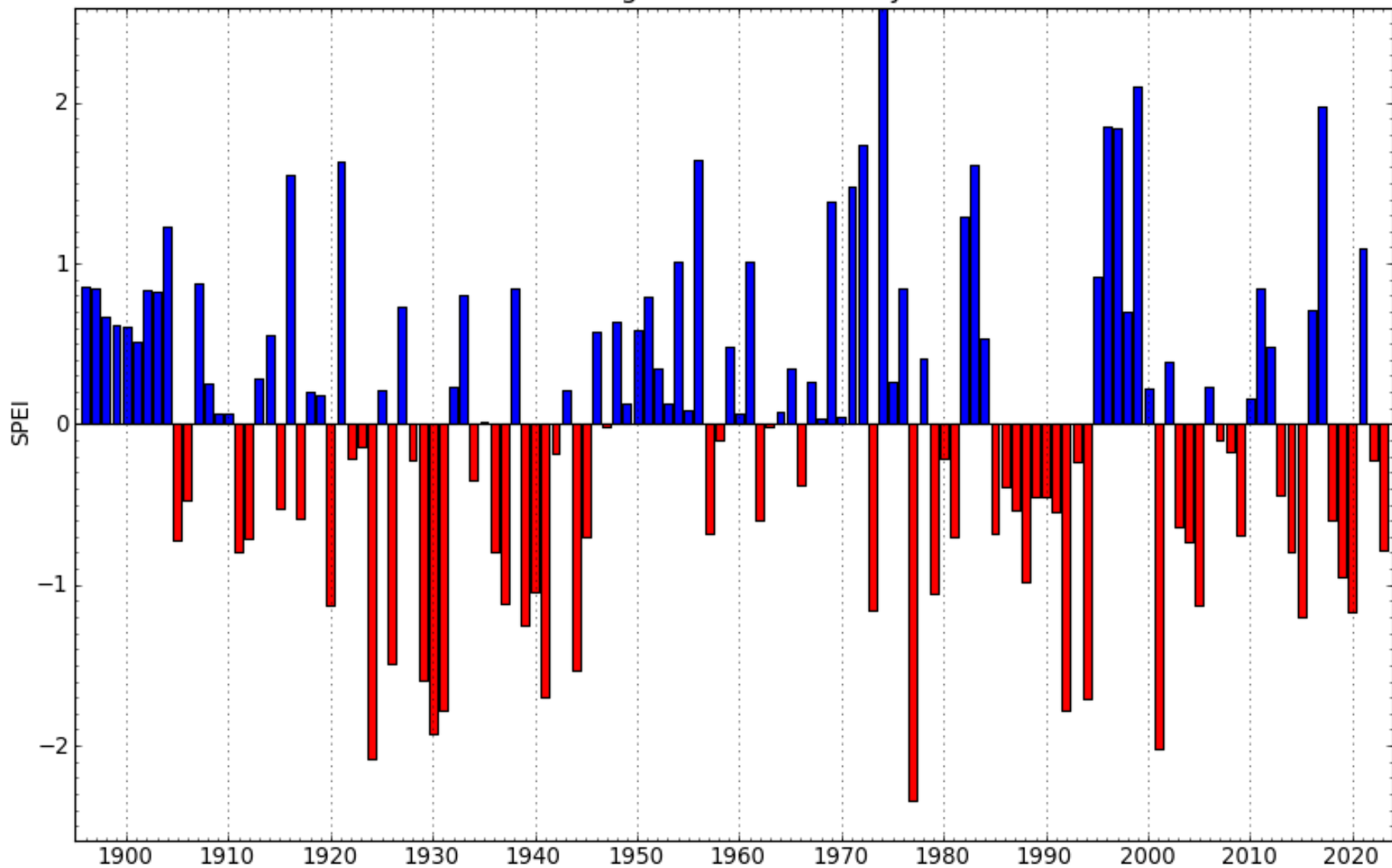
Lincoln County

- Drought signal mainly on 3-month time scale, with exceptional drought (D4) has developed
- Longer time scales are either neutral or abnormally dry (D0)

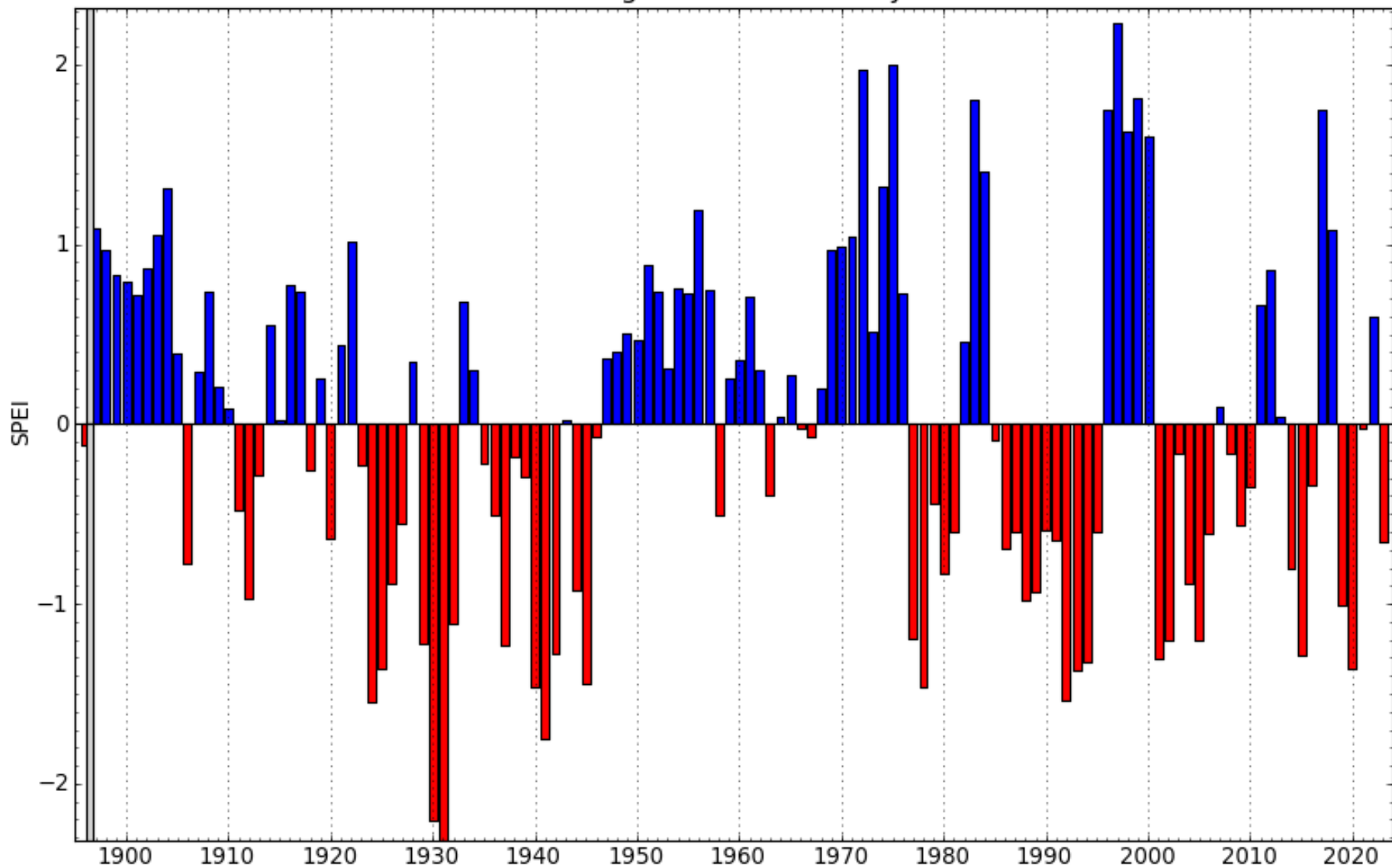
Standardized Precipitation-Evapotranspiration Index, 3-Months Ending in July Oregon - Lincoln County



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



Standardized Precipitation-Evapotranspiration Index, 24-Months Ending in July Oregon - Lincoln County



No Record

Data Source: WRCC/UI, Created: 8-16-2023





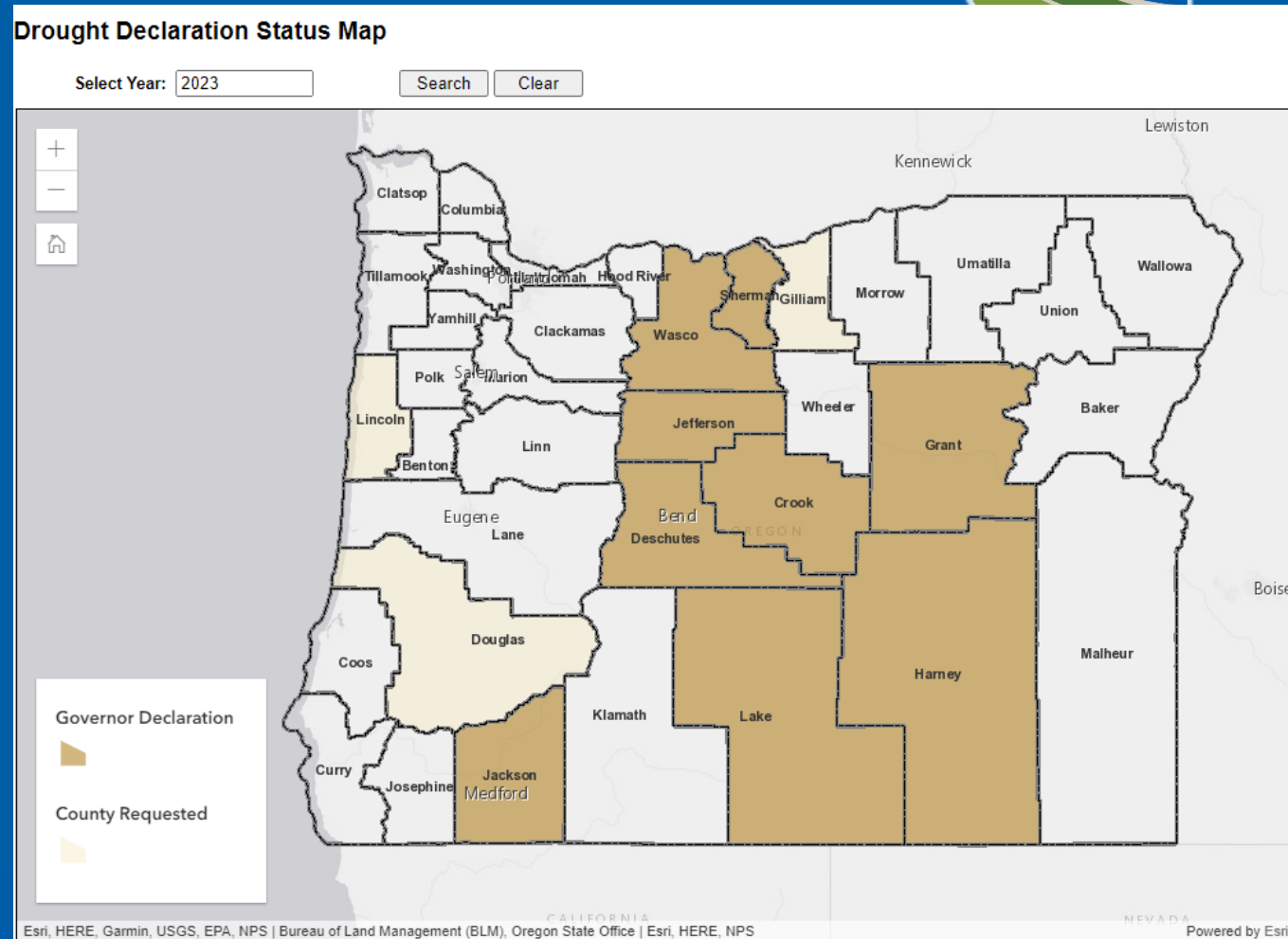
Water Supply Availability
Committee
Oregon Water Resources
Department

Ryan Andrews
August 16th, 2023

Drought Declarations



- Nine counties with Executive Orders for drought declarations under ORS 536
- Lincoln and Douglas Counties requesting



July % of Average Streamflow - WY 2023

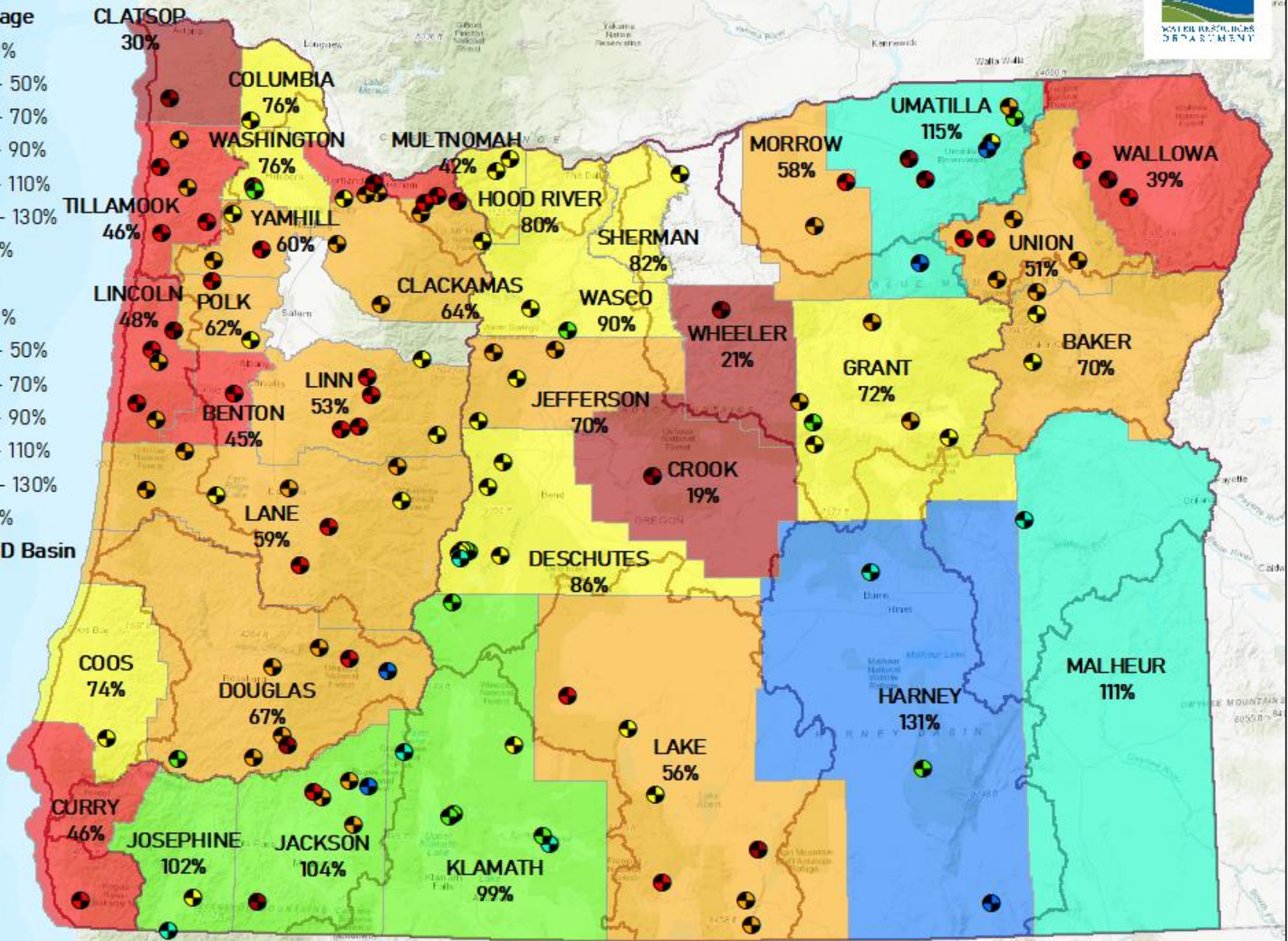


Stream Gage

- ≤ 30%
- 31% - 50%
- 51% - 70%
- 71% - 90%
- 91% - 110%
- 111% - 130%
- > 130%

Counties

- 🔗 ≤ 30%
- 🔗 31% - 50%
- 🔗 51% - 70%
- 🔗 71% - 90%
- 🔗 91% - 110%
- 🔗 111% - 130%
- 🔗 > 130%
- 🔗 OWRD Basin



Date: 8/14/2023

Water Year To Date % of Average Streamflow - August 13, 2023



Stream Gage

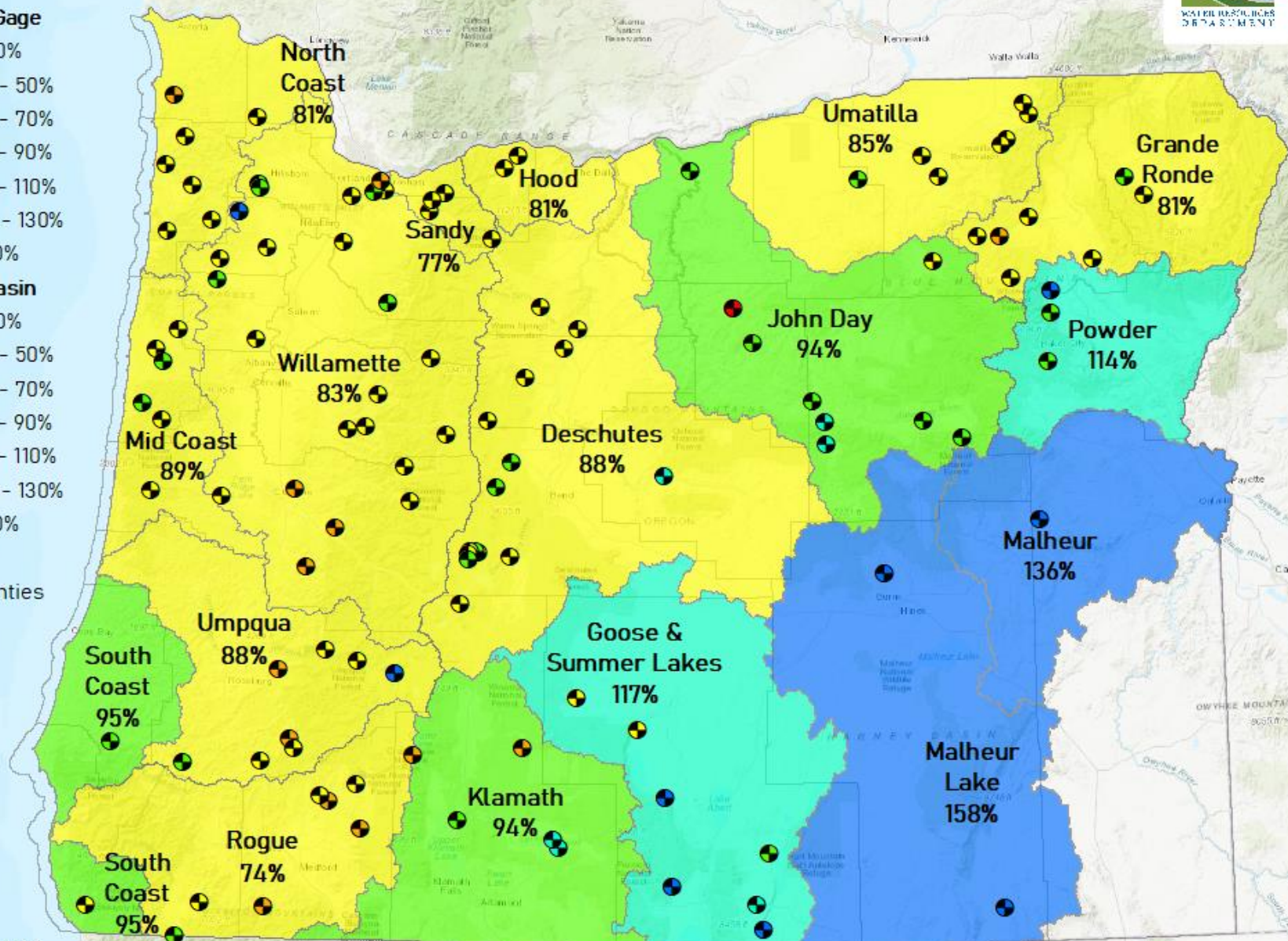
- <= 30%
- 31% - 50%
- 51% - 70%
- 71% - 90%
- 91% - 110%
- 111% - 130%
- > 130%

OWRD Basin

- <= 30%
- 31% - 50%
- 51% - 70%
- 71% - 90%
- 91% - 110%
- 111% - 130%
- > 130%

Counties

- Counties



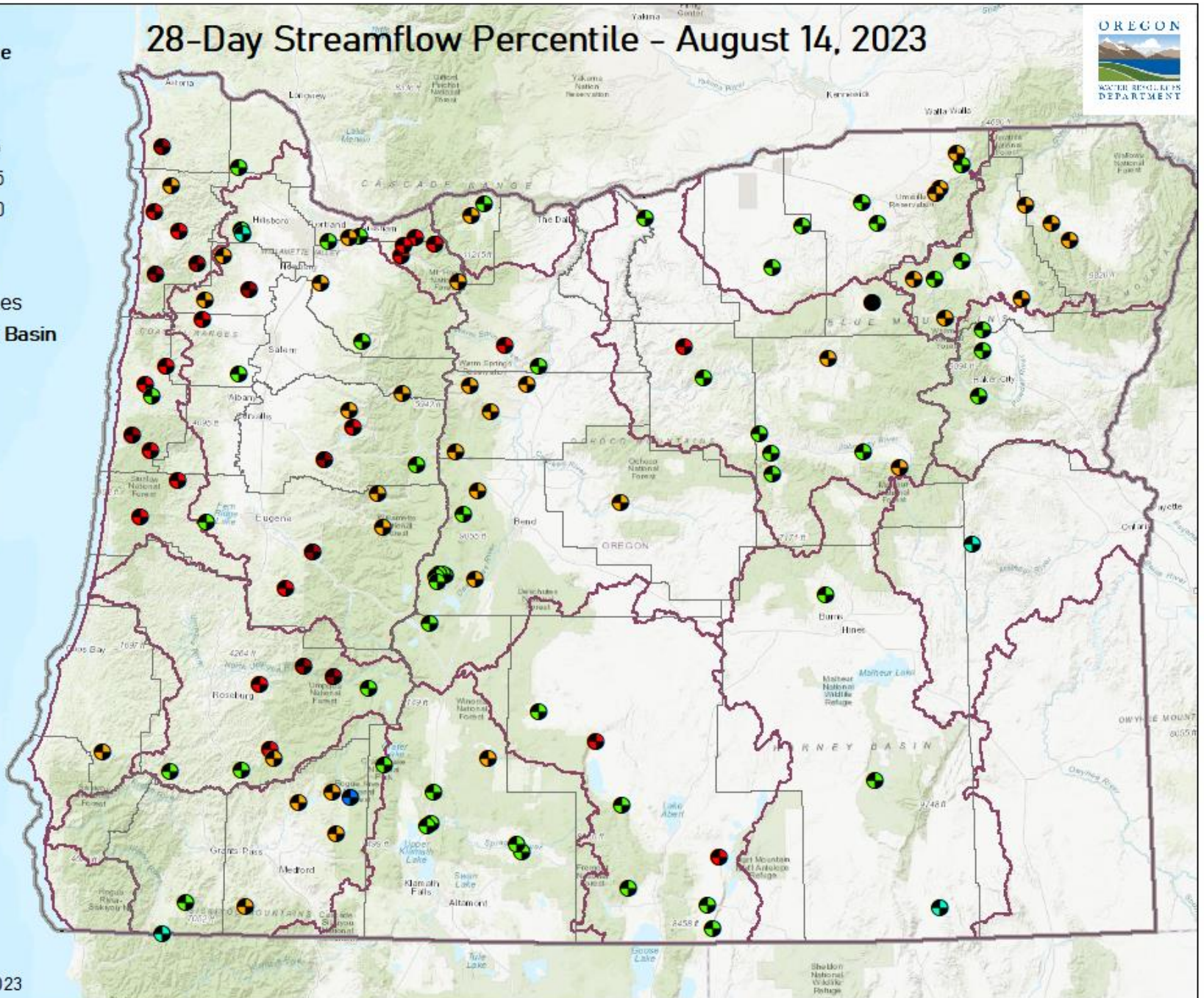
Date: 8/14/2023

28-Day Streamflow Percentile - August 14, 2023



Stream Gage

- LOW
- < 10
- 10 - 25
- 25 - 75
- 75 - 90
- > 90
- HIGH
- 🗺️ Counties
- 🗺️ OWRD Basin



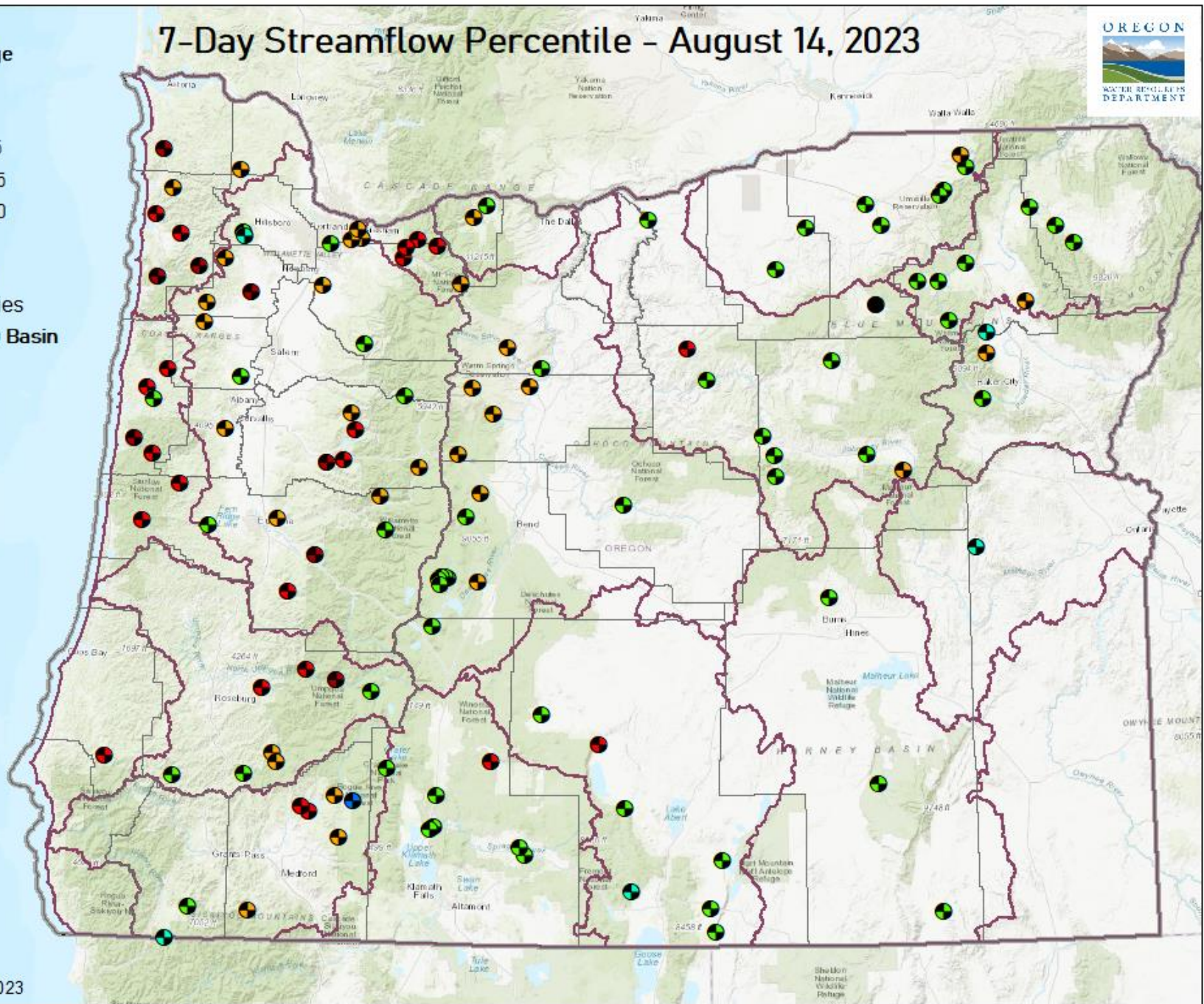
Date: 8/16/2023

7-Day Streamflow Percentile - August 14, 2023



Stream Gage

- LOW
- < 10
- 10 - 25
- 25 - 75
- 75 - 90
- > 90
- HIGH
- 🗺 Counties
- 🗺 OWRD Basin



Date: 8/16/2023

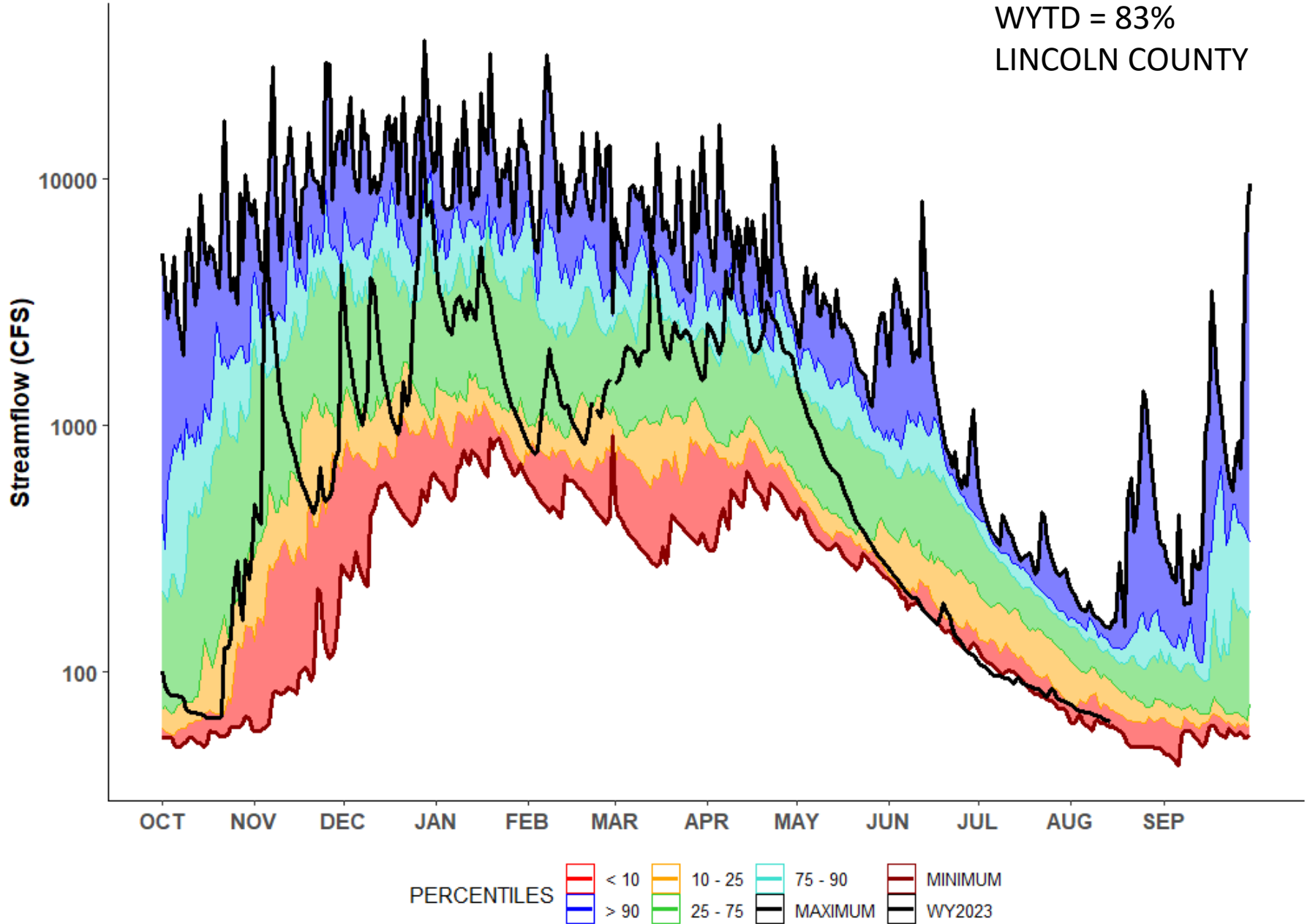
14305500 - SILETZ R AT SILETZ, OR

MID COAST BASIN

POR: 1991-2020

WYTD = 83%

LINCOLN COUNTY



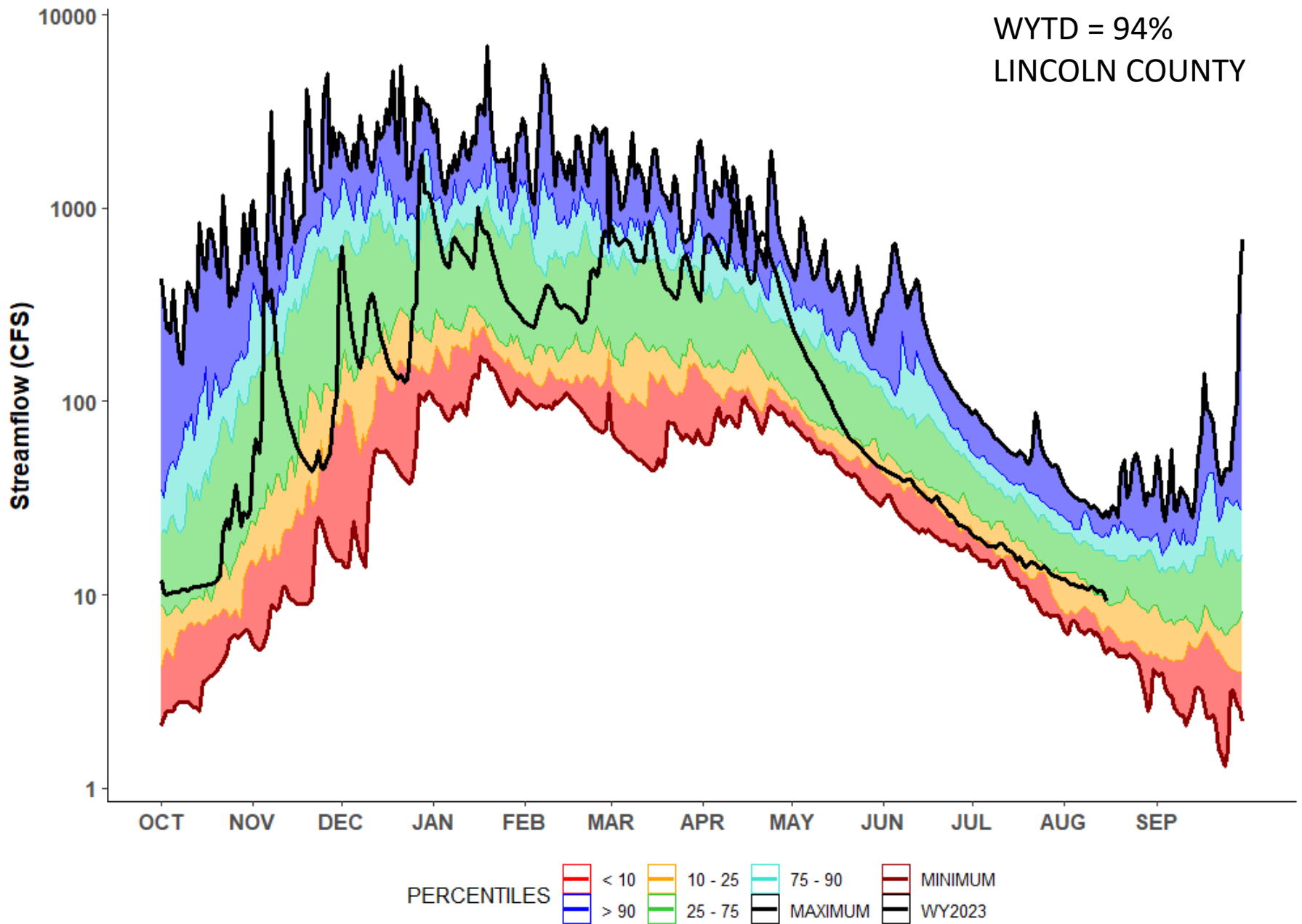
14306030 - YAQUINA R NR CHITWOOD, OR

MID COAST BASIN

POR: 1991-2020

WYTD = 94%

LINCOLN COUNTY



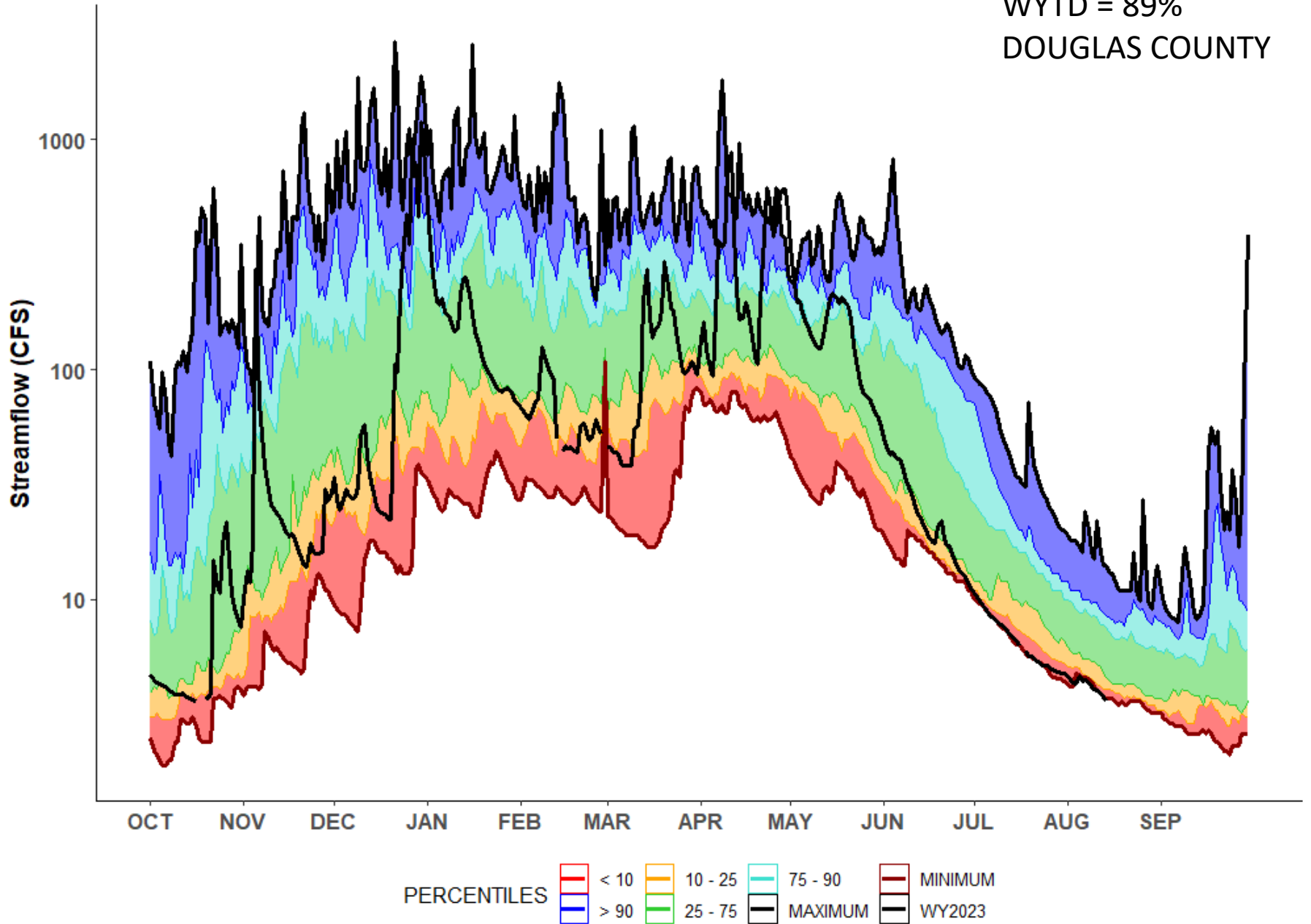
14316495 - BOULDER CR NR TOKETEE FALLS, OR

UMPQUA BASIN

POR: 1991-2020

WYTD = 89%

DOUGLAS COUNTY



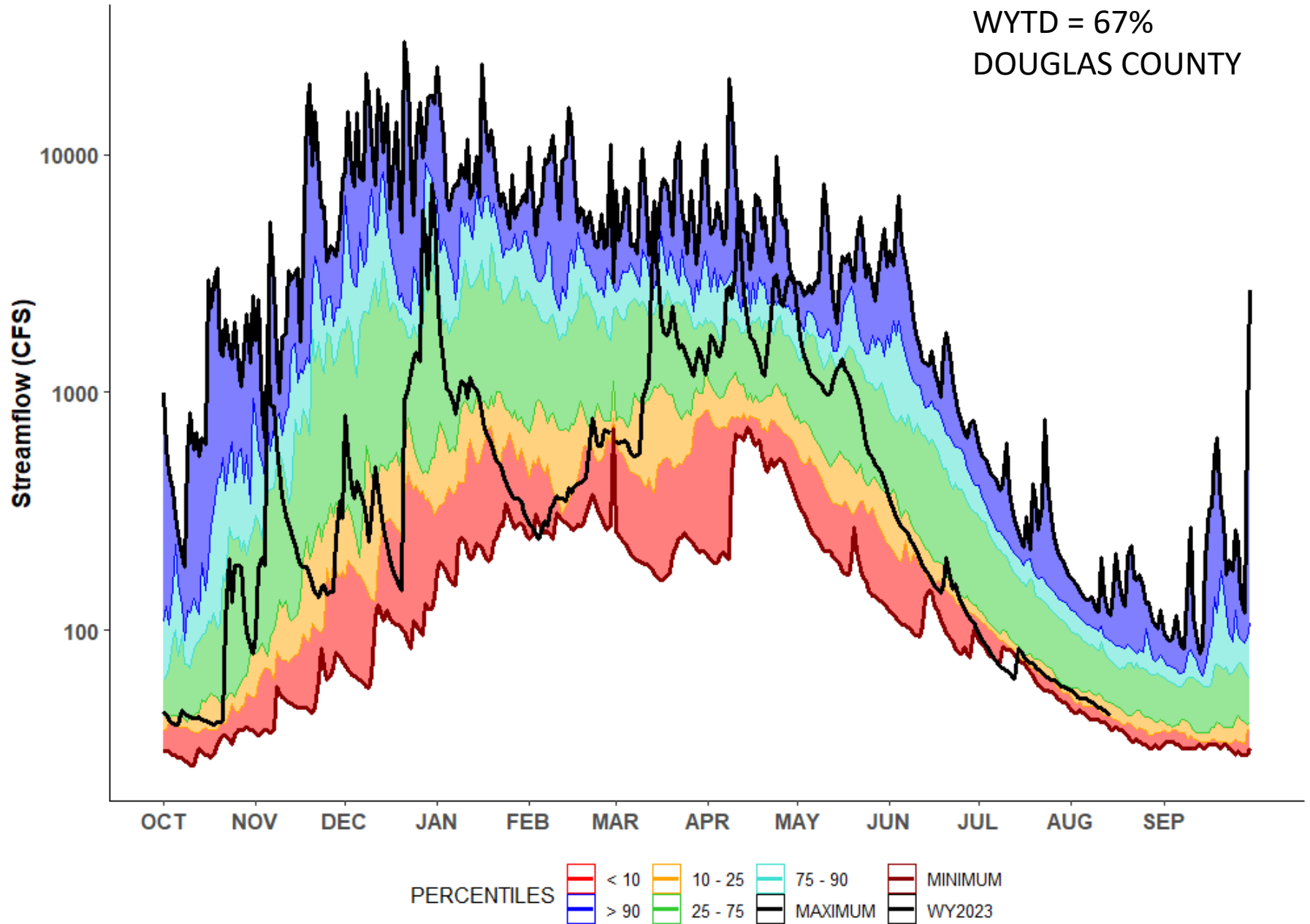
14308000 - S UMPQUA R AT TILLER, OR

UMPQUA BASIN

POR: 1991-2020

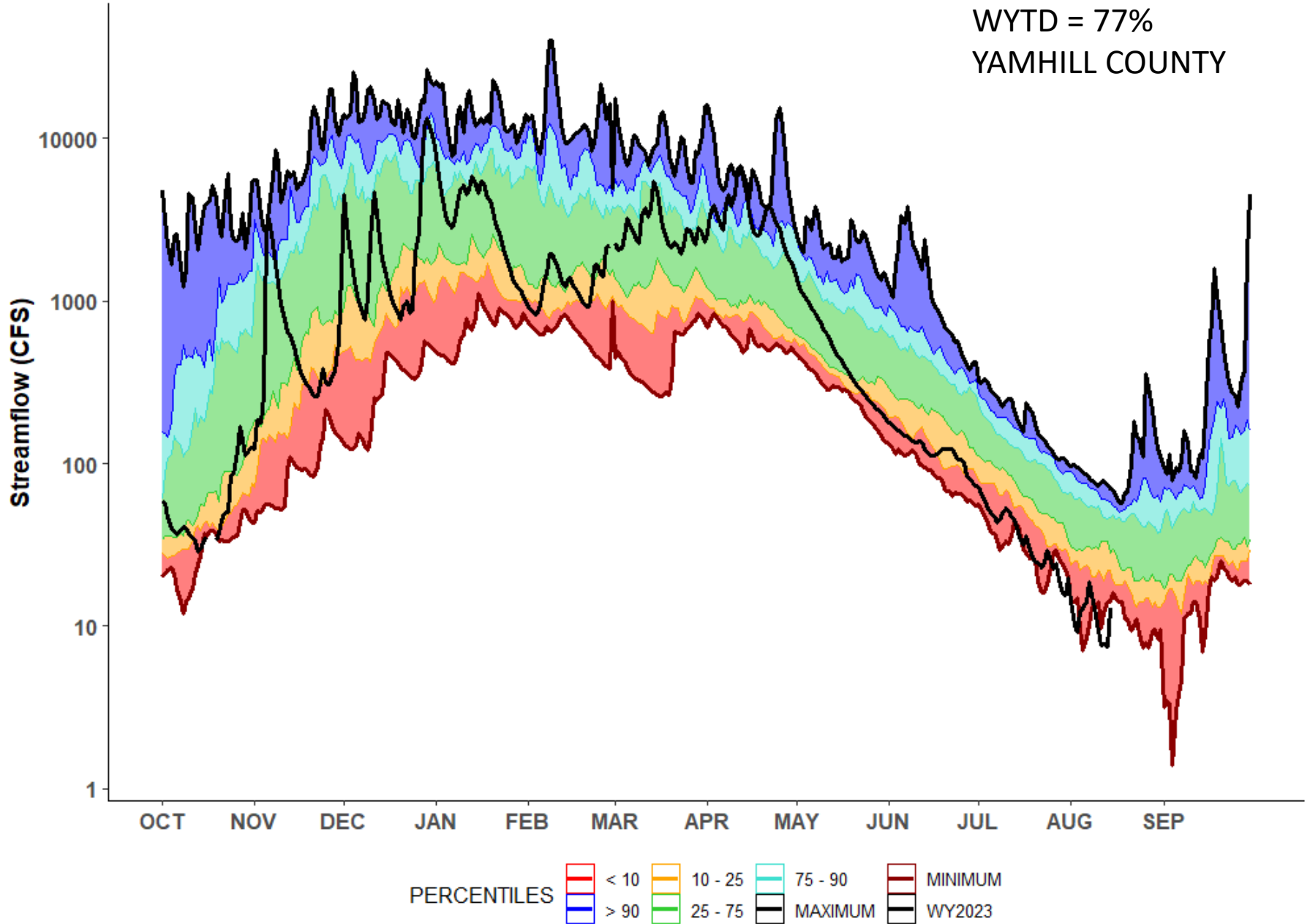
WYTD = 67%

DOUGLAS COUNTY



14194150 - S YAMHILL R AT MCMINNVILLE, OR
WILLAMETTE BASIN
POR: 1991-2020

WYTD = 77%
YAMHILL COUNTY



Summary



- Douglas and Lincoln Counties requesting drought declarations under ORS 536
 - Gilliam County request forwarded to Governor's Office

- Record low streamflows scattered about Willamette Valley and along coast

OREGON



WATER RESOURCES
DEPARTMENT

QUESTIONS?



— BUREAU OF —
RECLAMATION

Reclamation Storage Update

Oregon Water Supply Availability Committee
Meeting

August 16, 2023

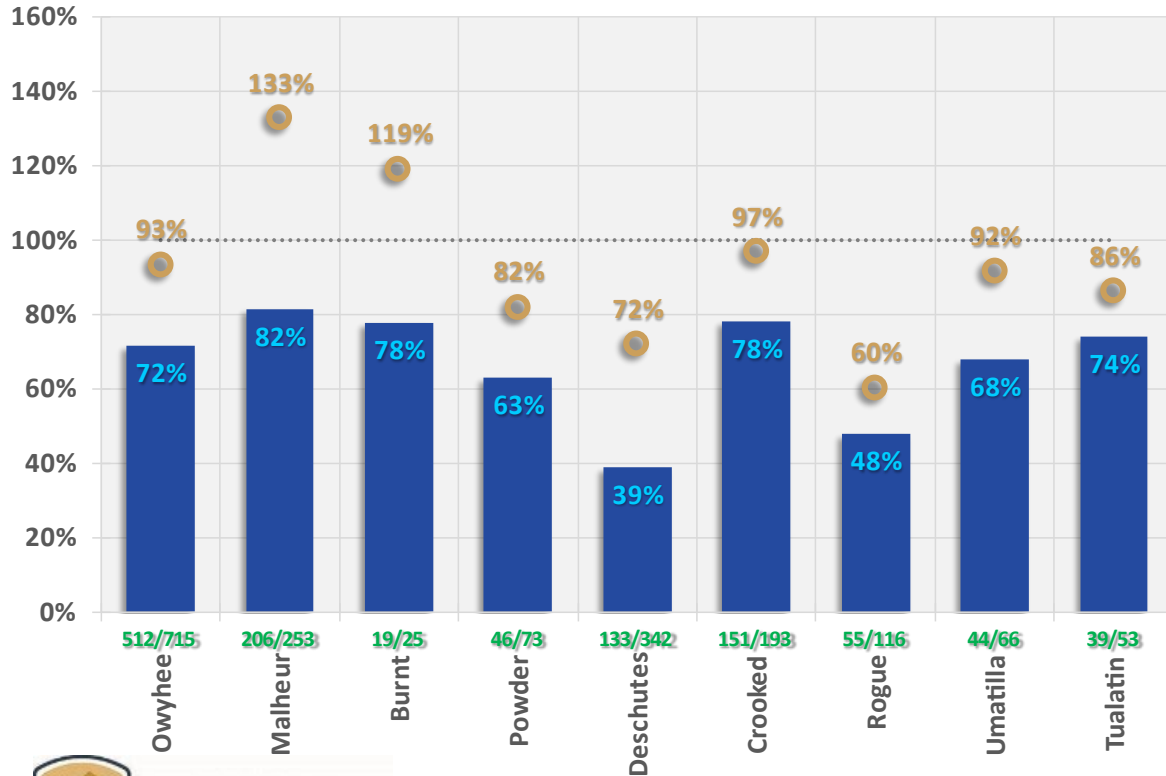
Basin Operations Summary

- **Operations Activities:**
 - Facilities are releasing to meet irrigation demands
- **Water Supply Notes**
 - Storage water supply looks quite good, particularly compared to recent years
 - Many facilities in or near the historical interquartile “normal” range
 - Malheur and Burnt are at upper end of normal
 - Deschutes and Rogue are catching up with the lower end of normal
 - Scoggins is below normal
 - Reservoirs have been drafting at near normal pace with exception of Malheur which has had a slower than normal draft with higher than normal inflow/lower demand
 - Carryover into next year will be normal to above normal for most facilities



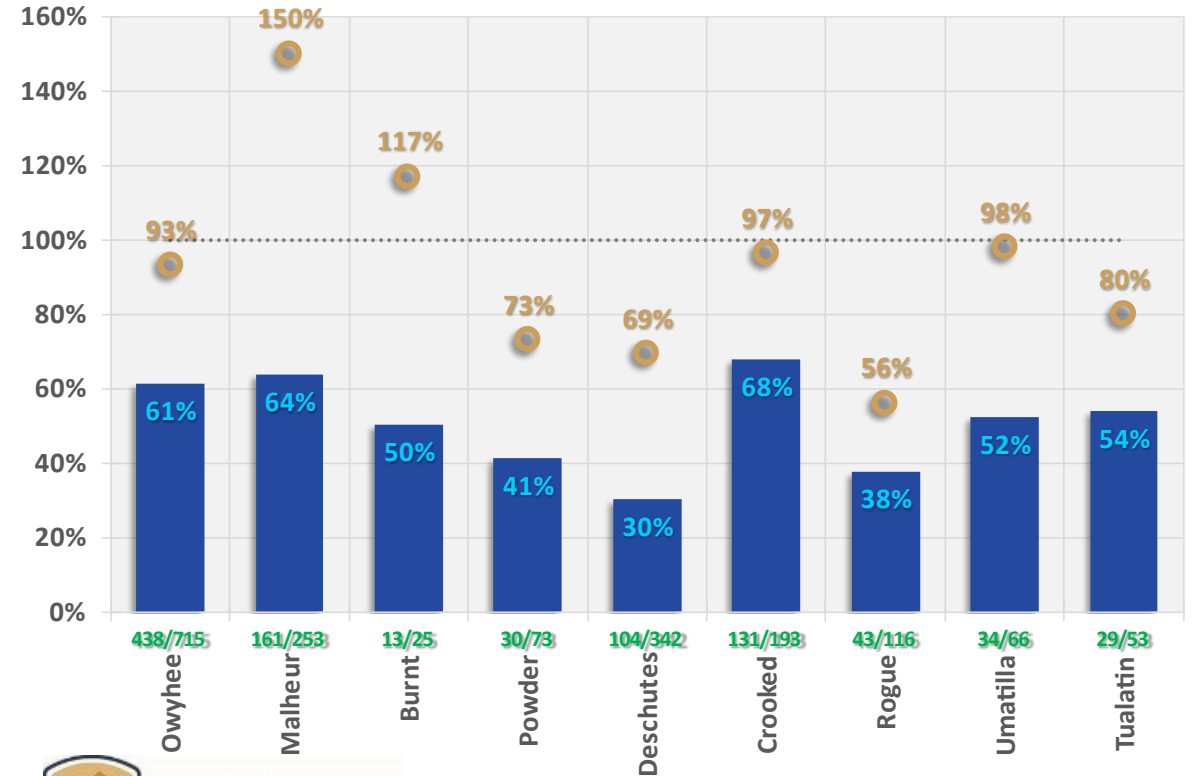
Storage Conditions

Oregon Reservoir Storage (Jul 18 2023)



■ Percent Full (Active Storage)
 ● POR Percent of Median
 Current/Full Storage (KAF)

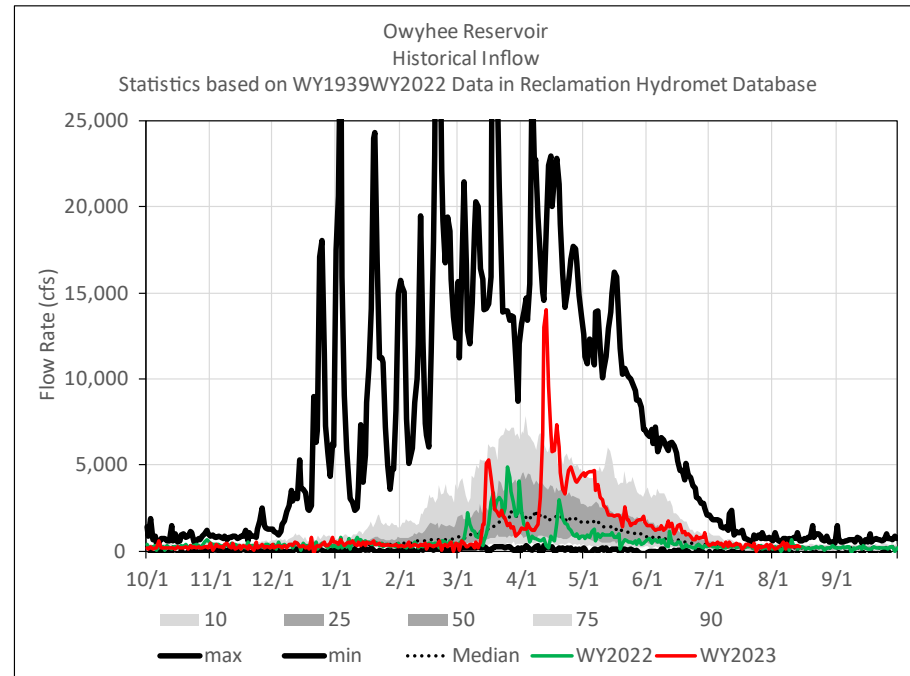
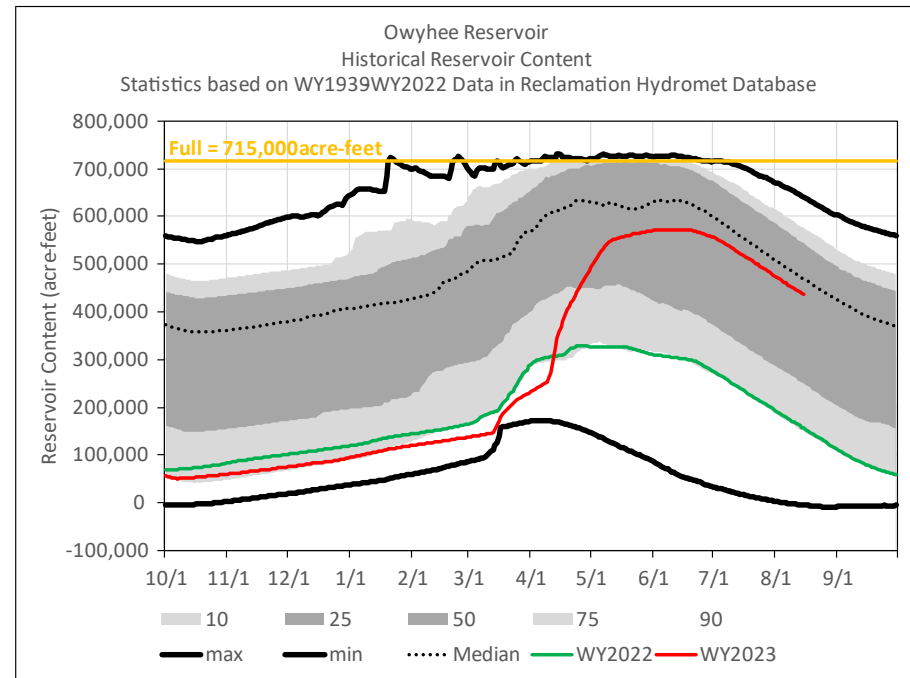
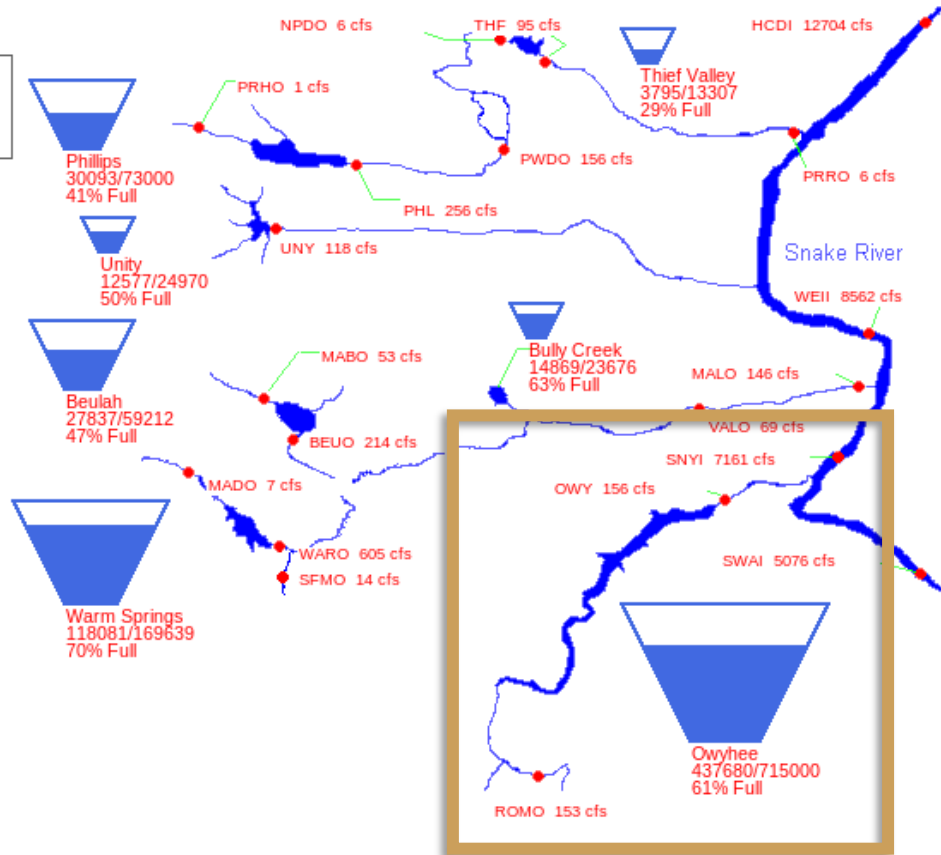
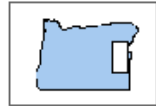
Oregon Reservoir Storage (Aug 15 2023)



■ Percent Full (Active Storage)
 ● POR Percent of Median
 Current/Full Storage (KAF)

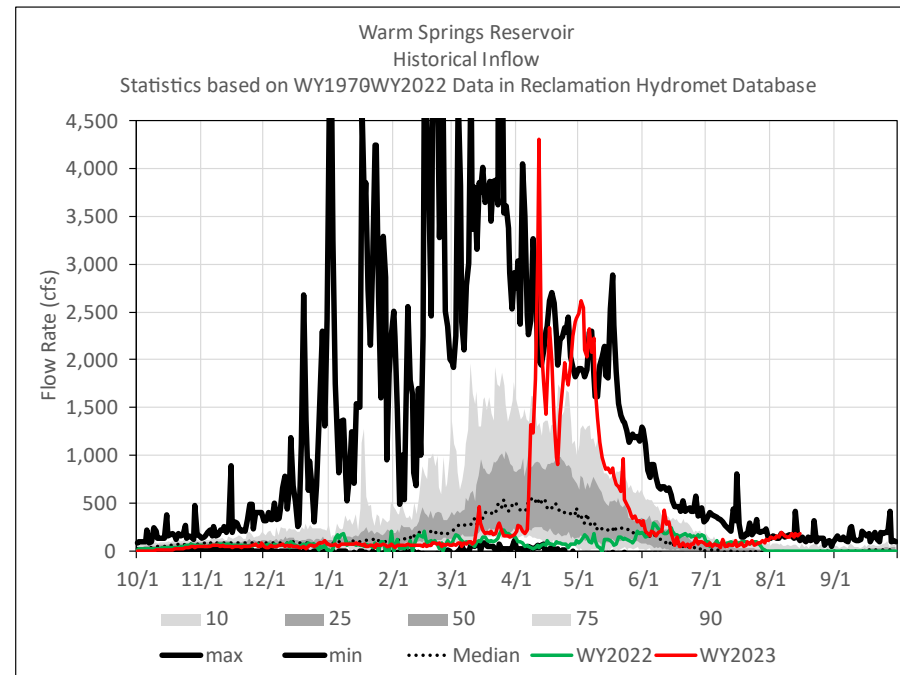
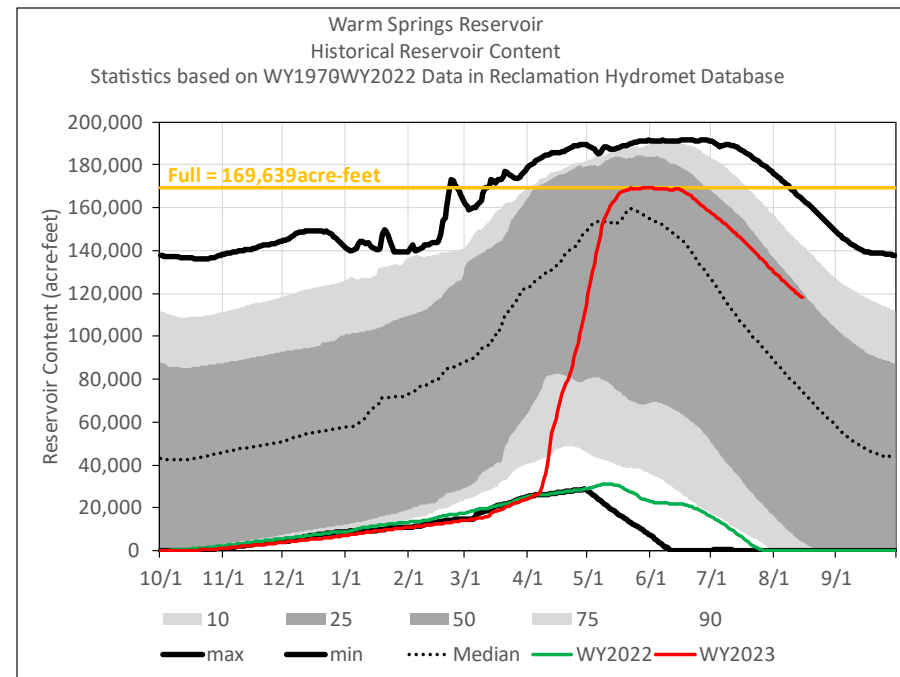
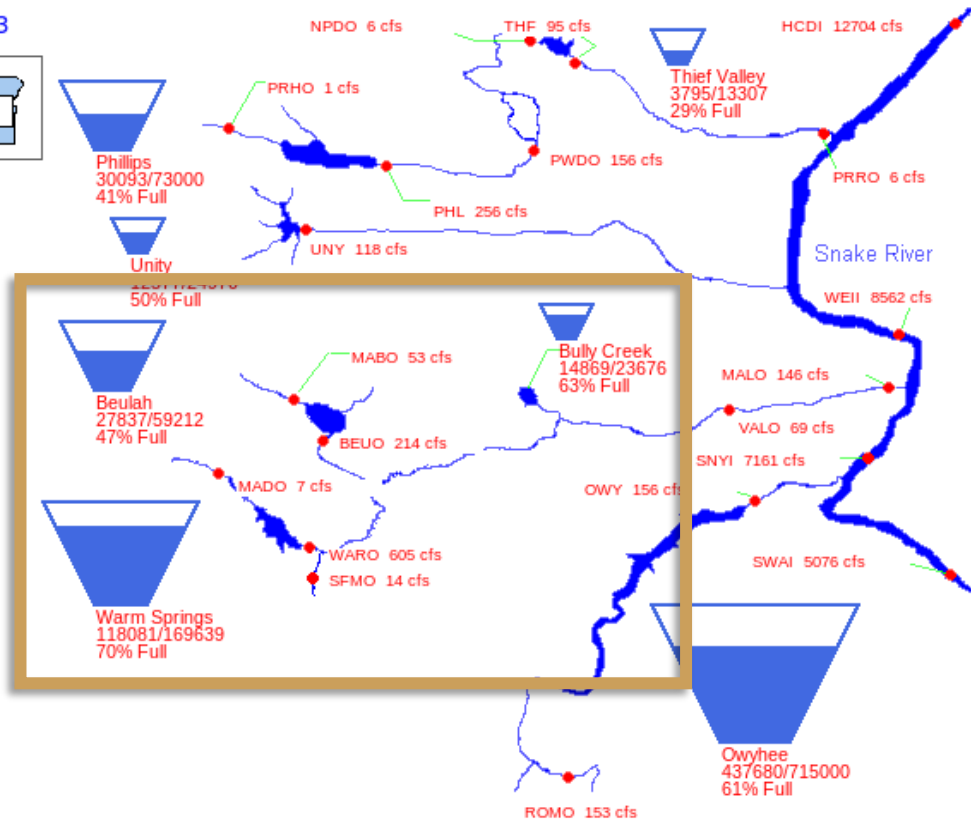
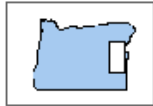
Owyhee River Basin

08/15/2023



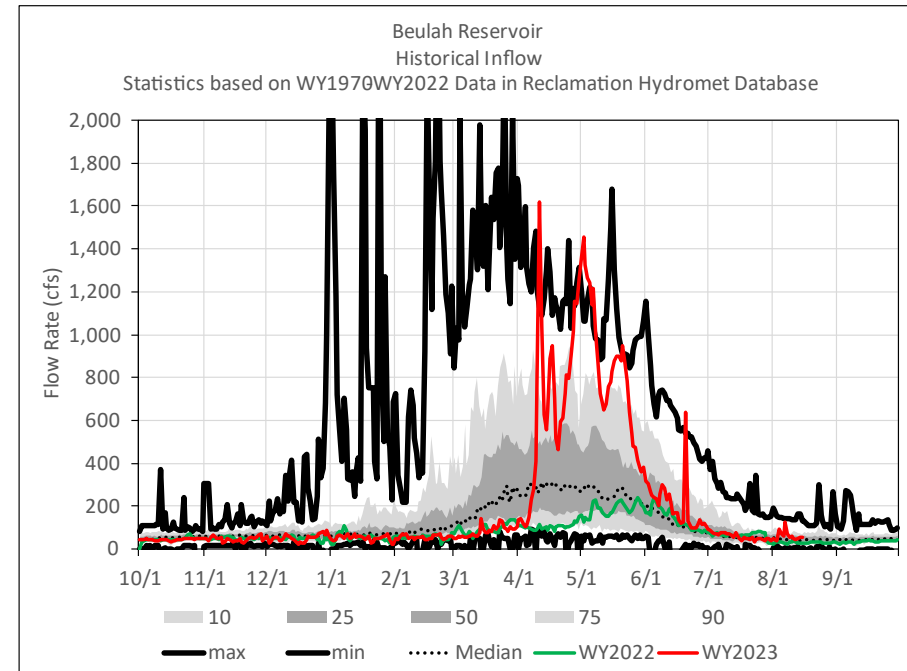
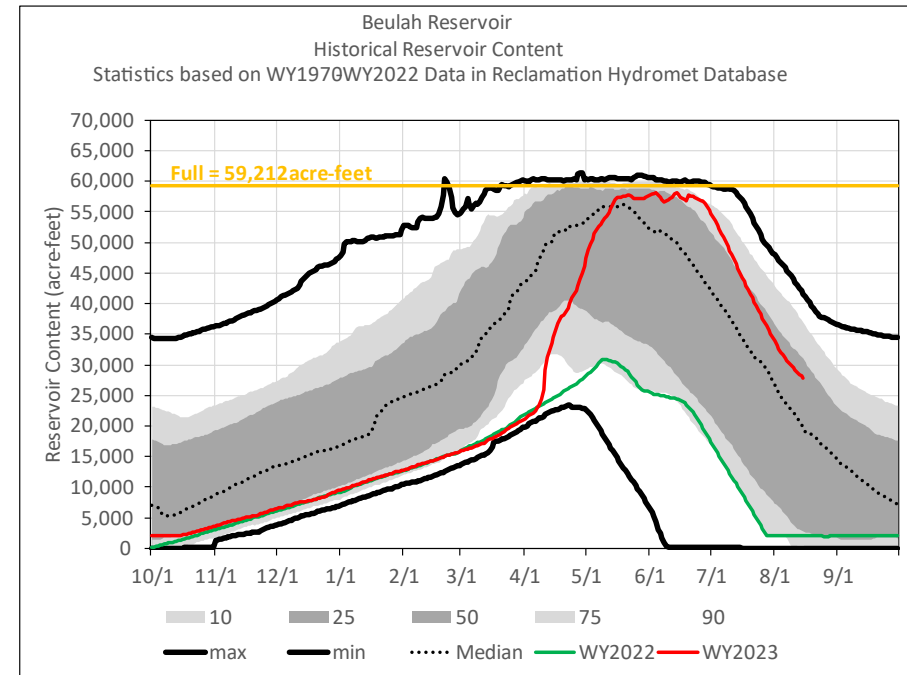
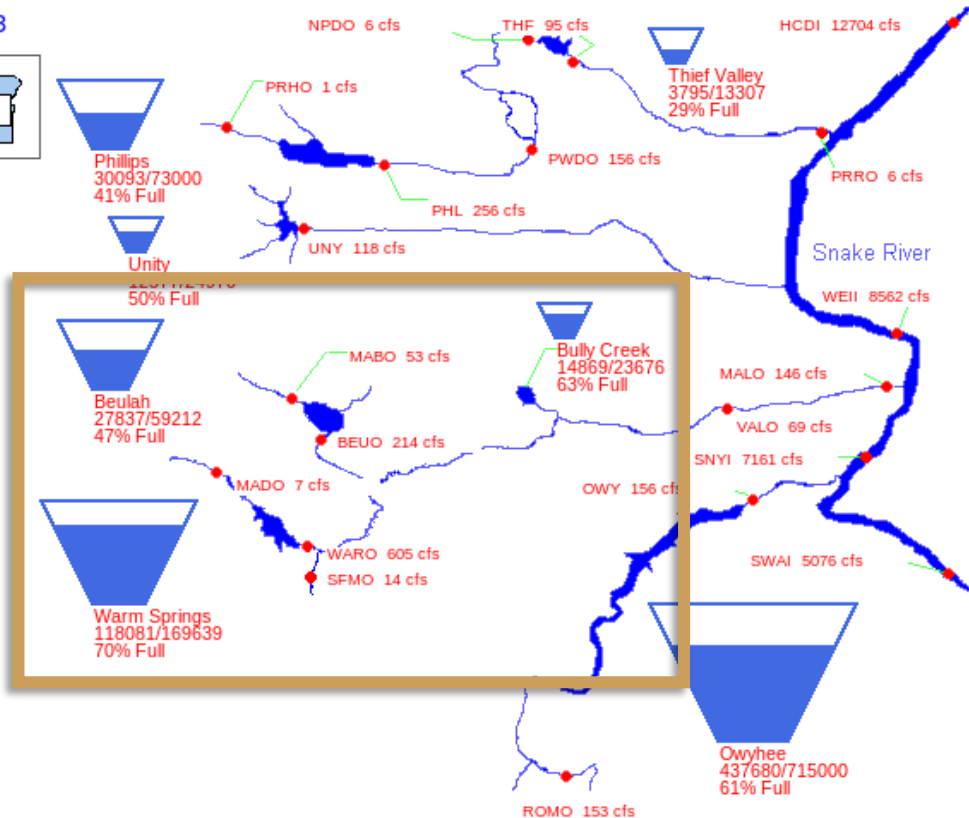
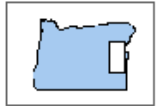
Malheur River Basin

08/15/2023



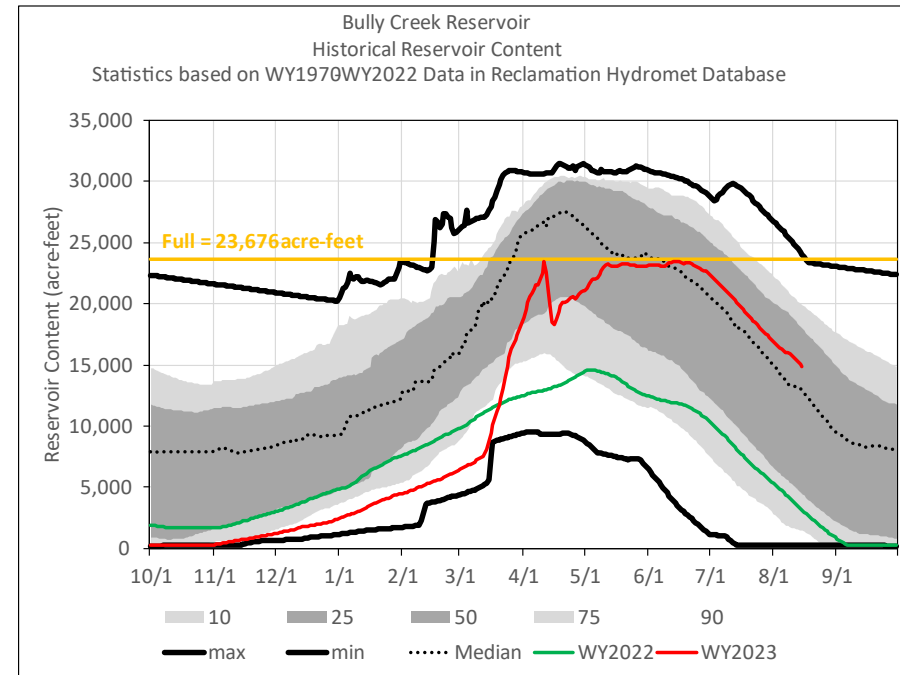
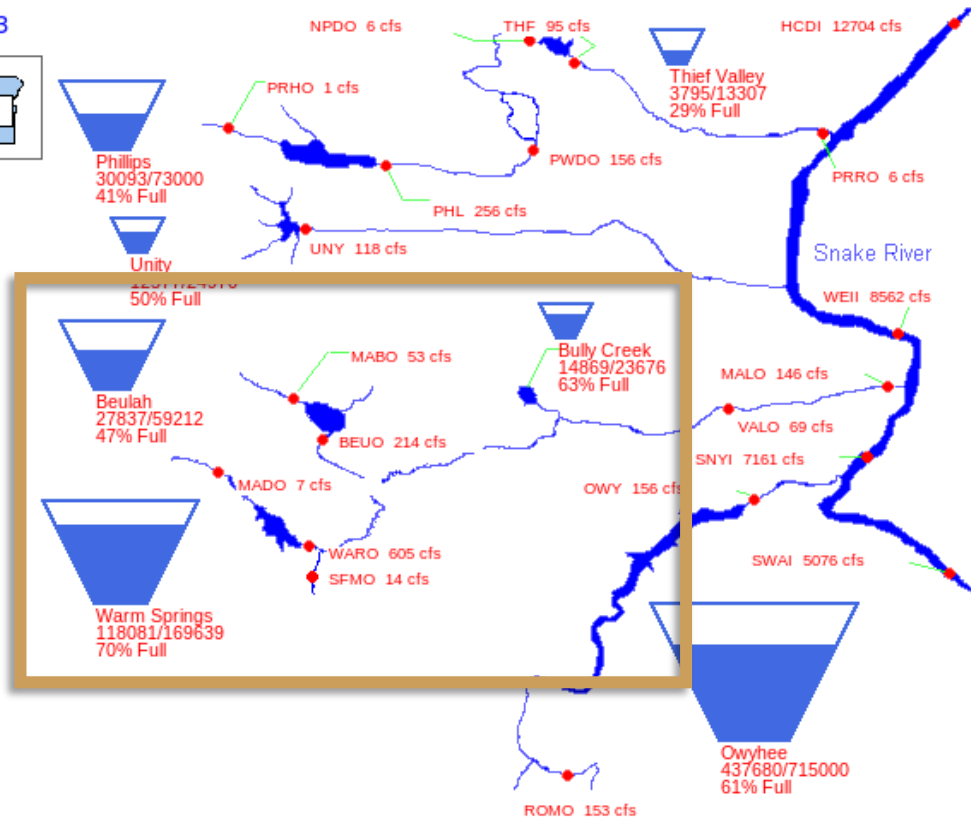
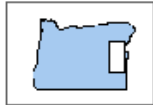
Malheur River Basin

08/15/2023



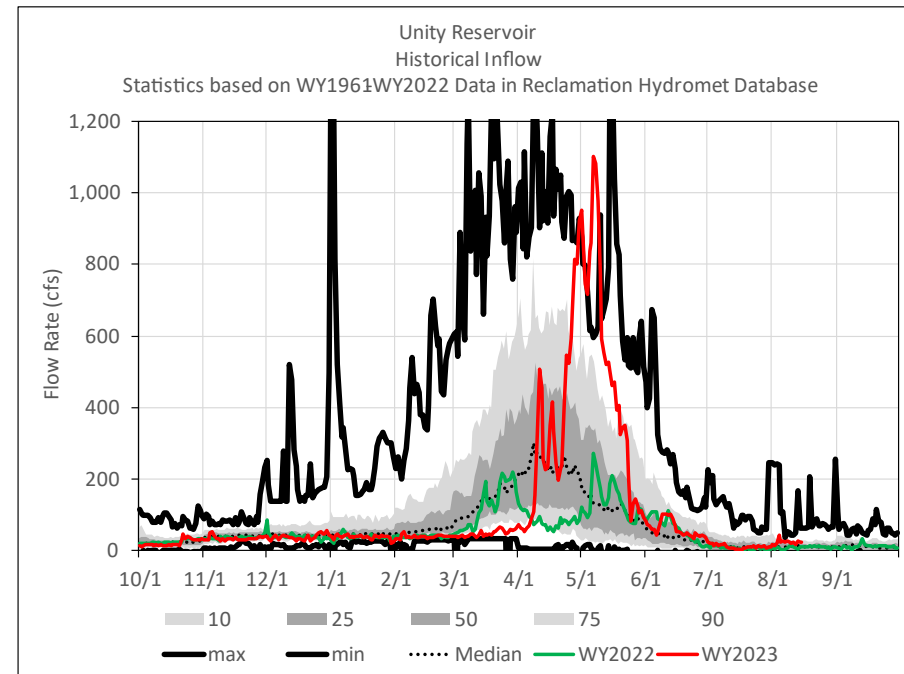
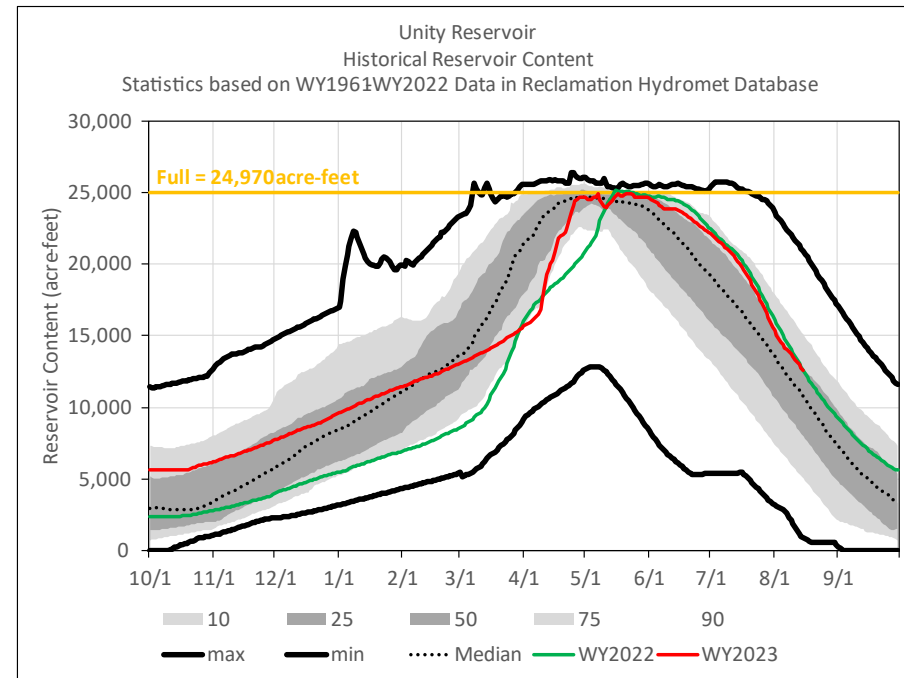
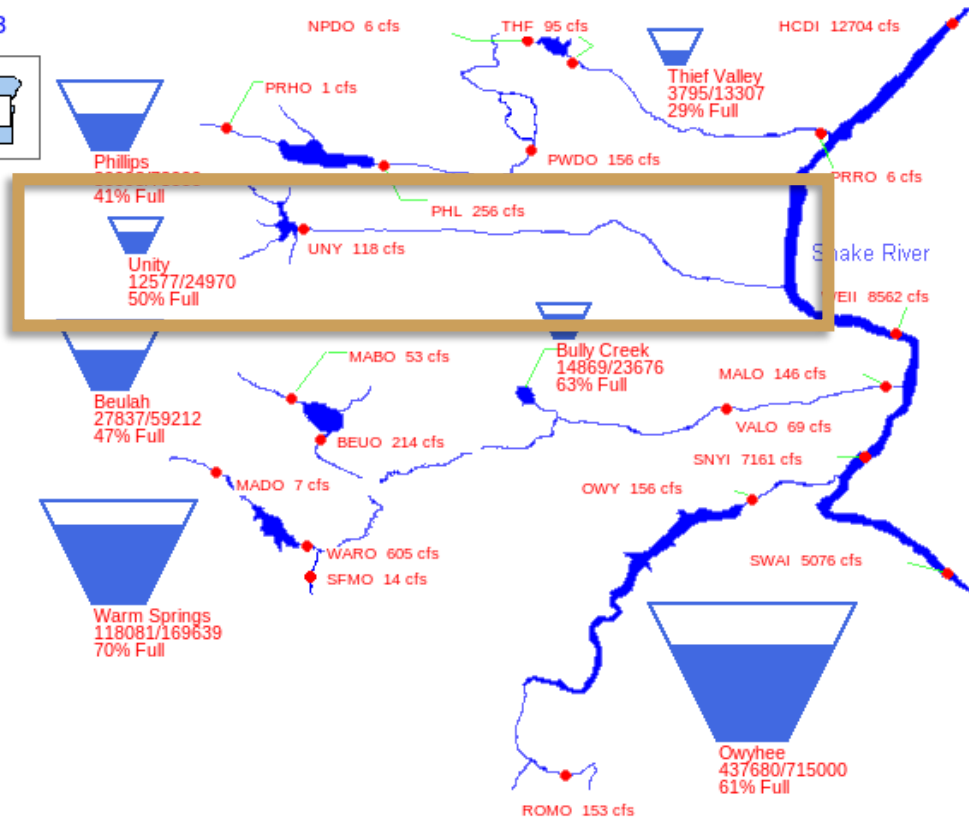
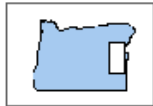
Malheur River Basin

08/15/2023



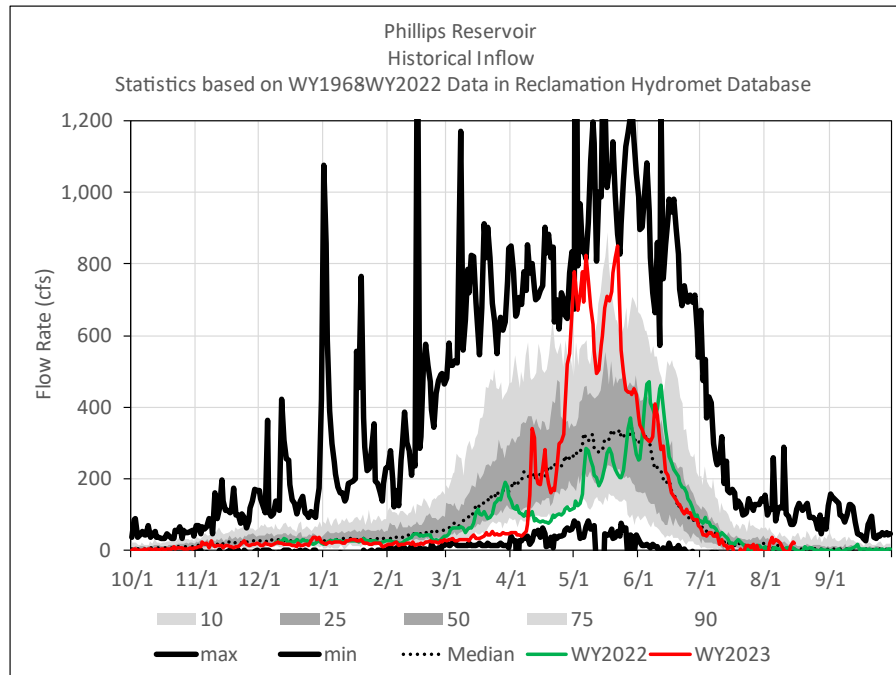
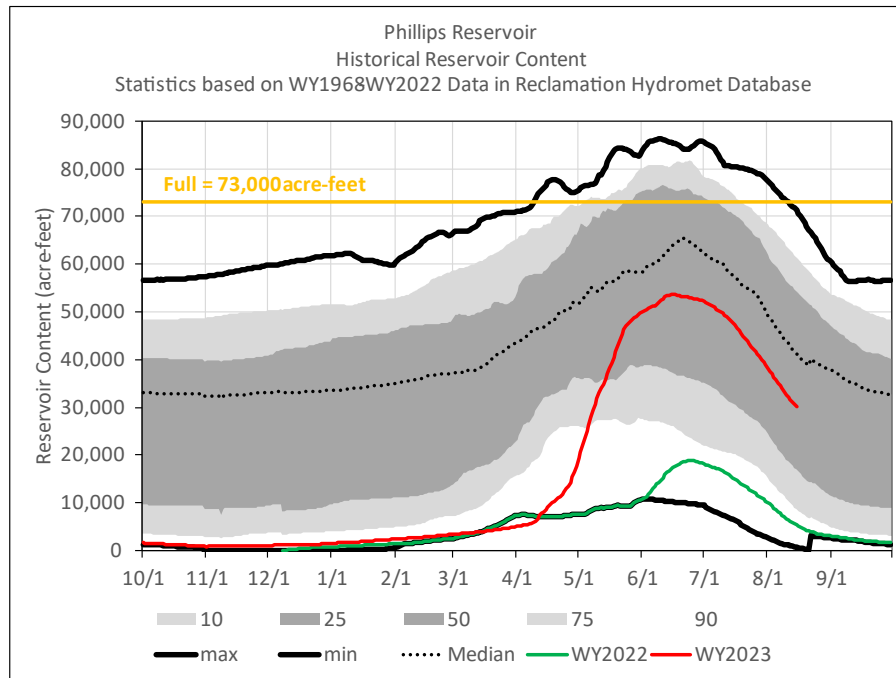
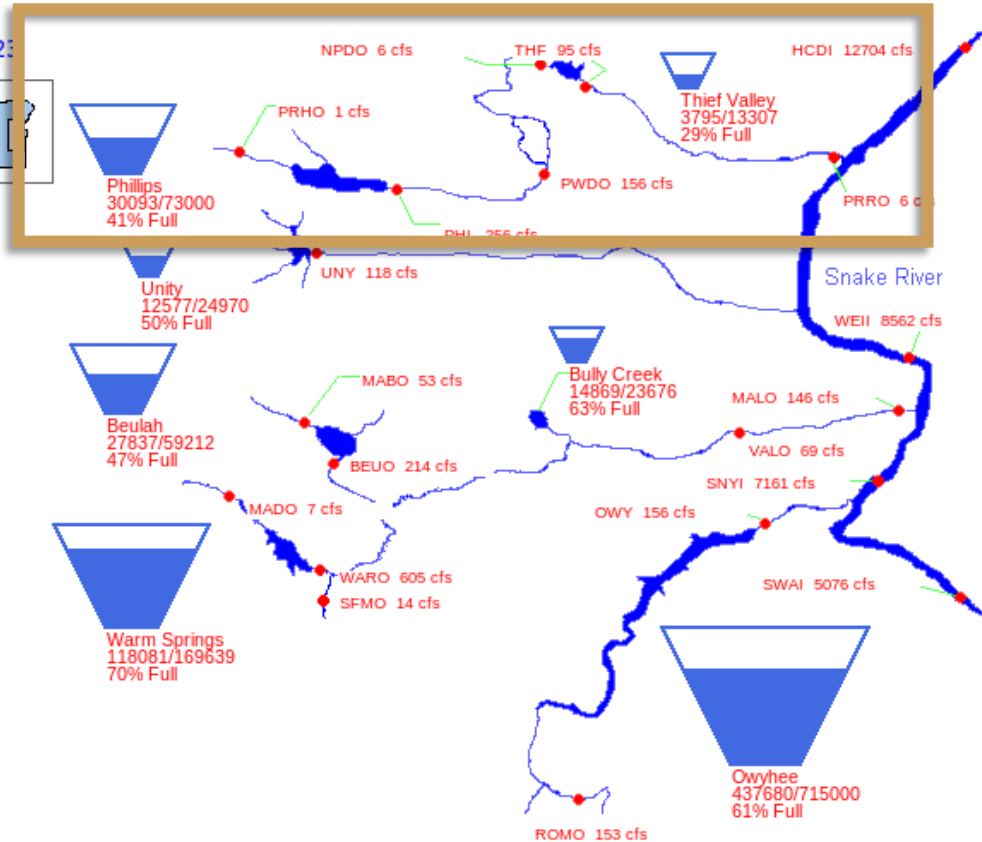
Burnt River Basin

08/15/2023



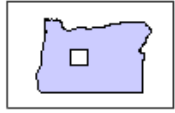
Powder River Basin

08/15/2023

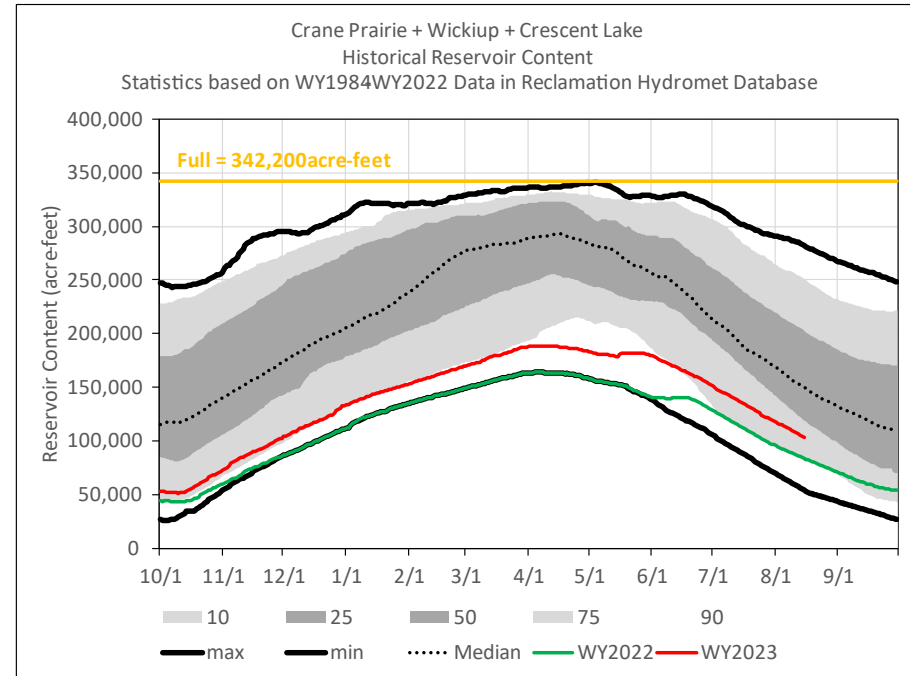
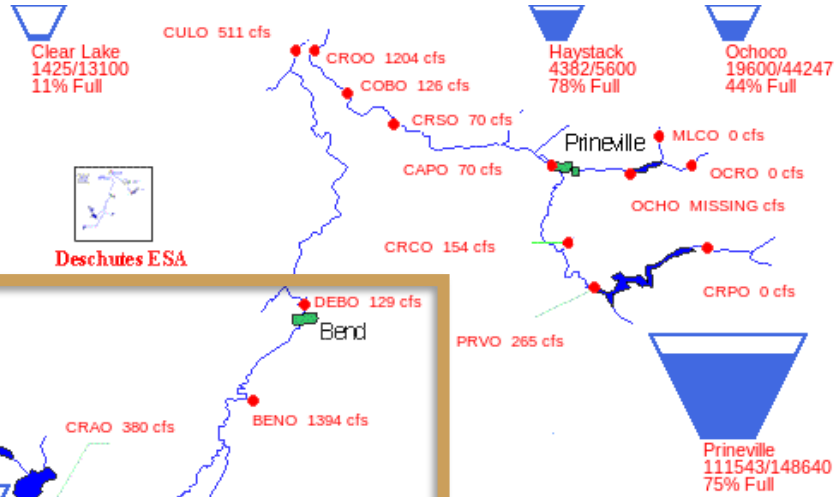
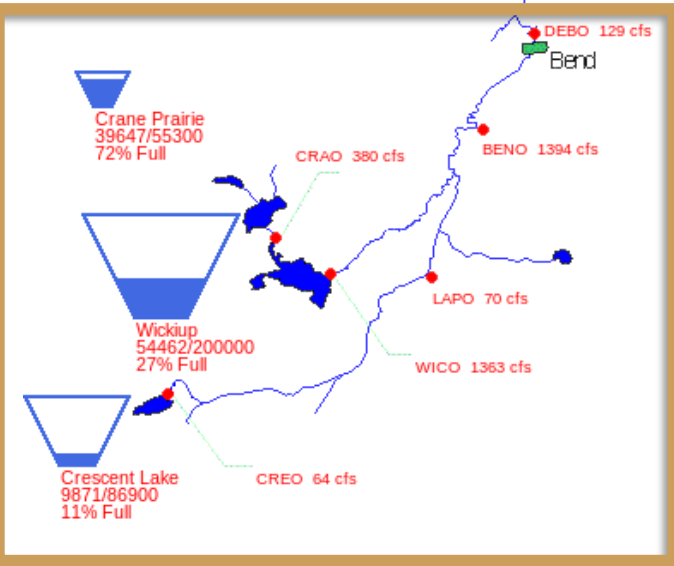


Deschutes River Basin

08/15/2023

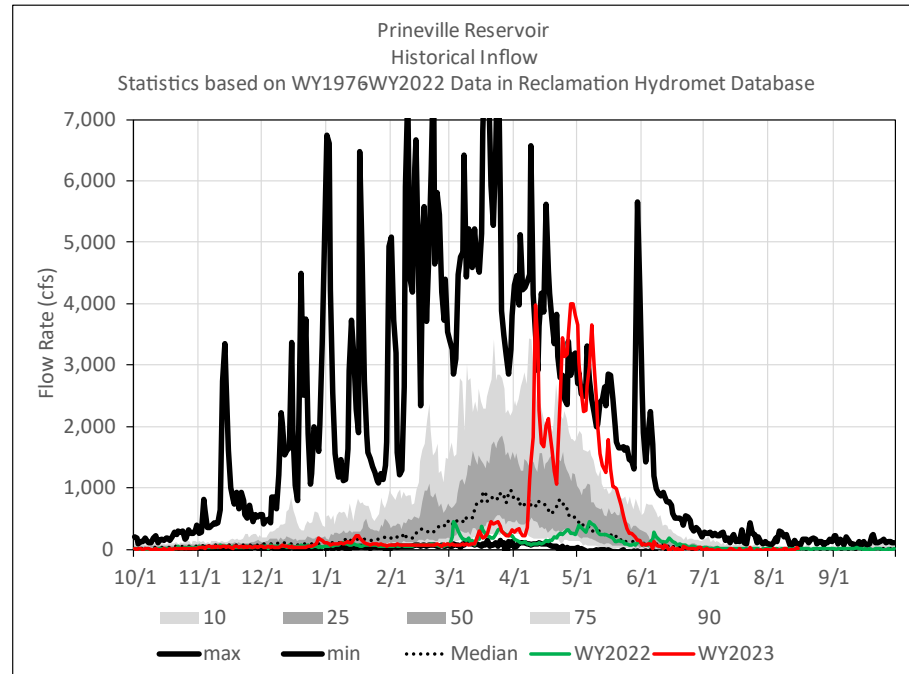
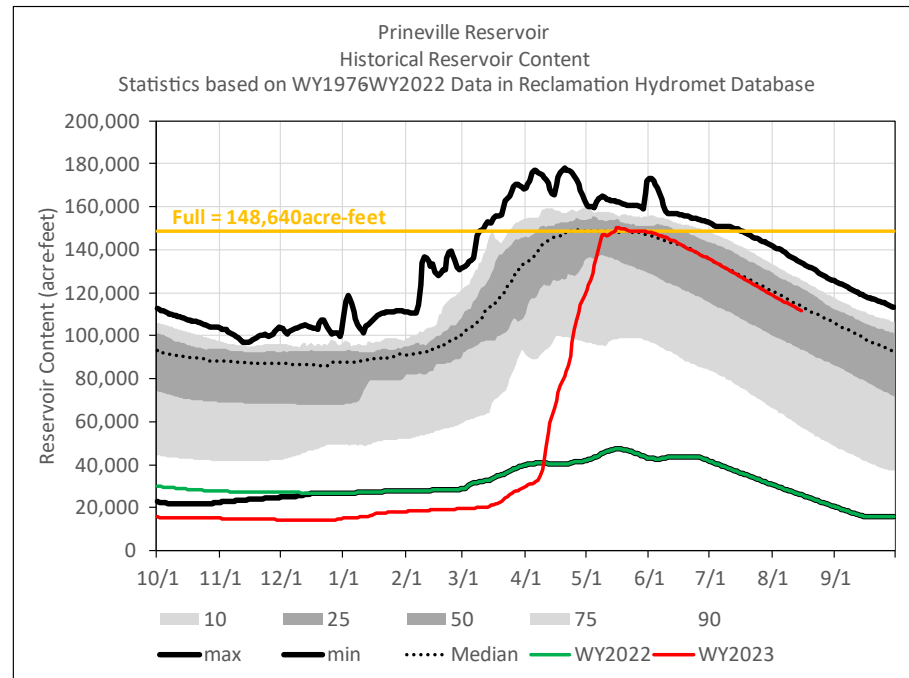
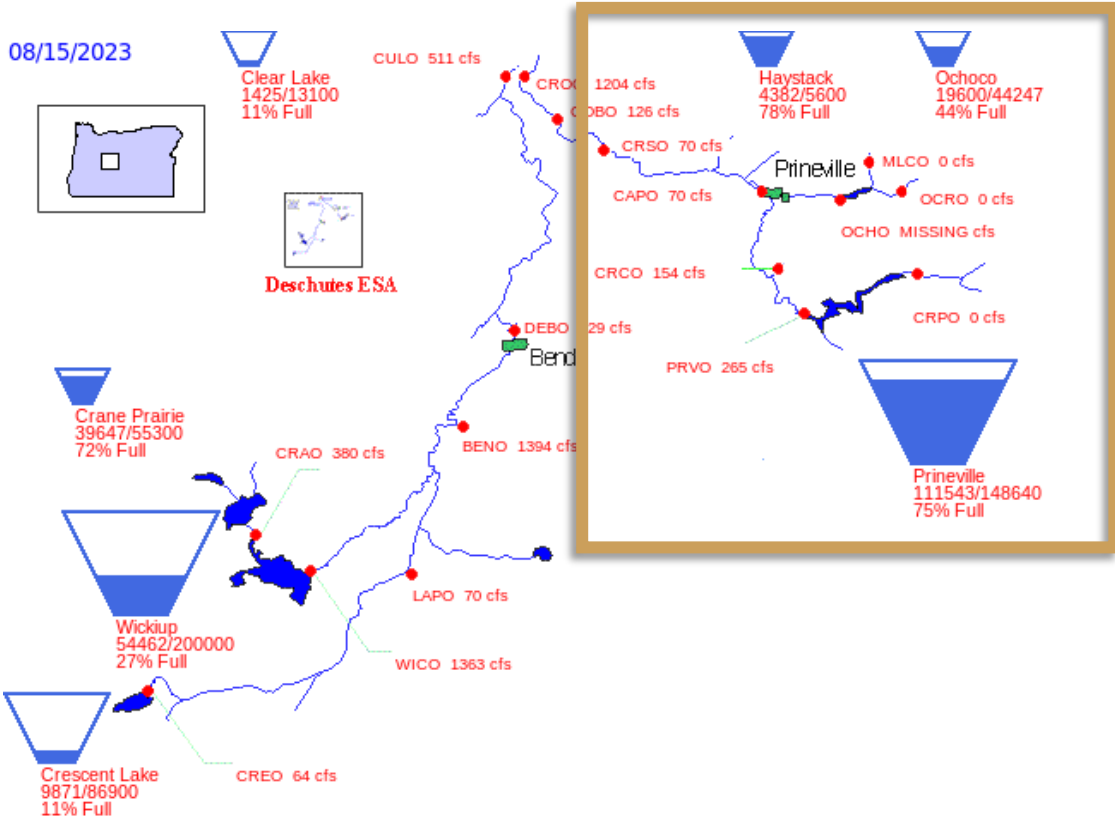


Deschutes ESA



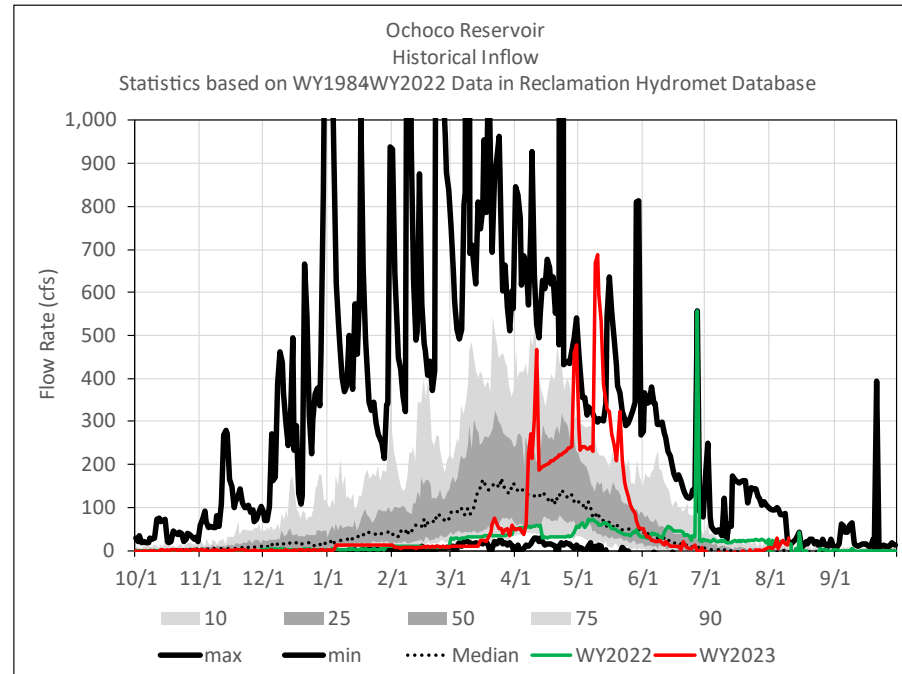
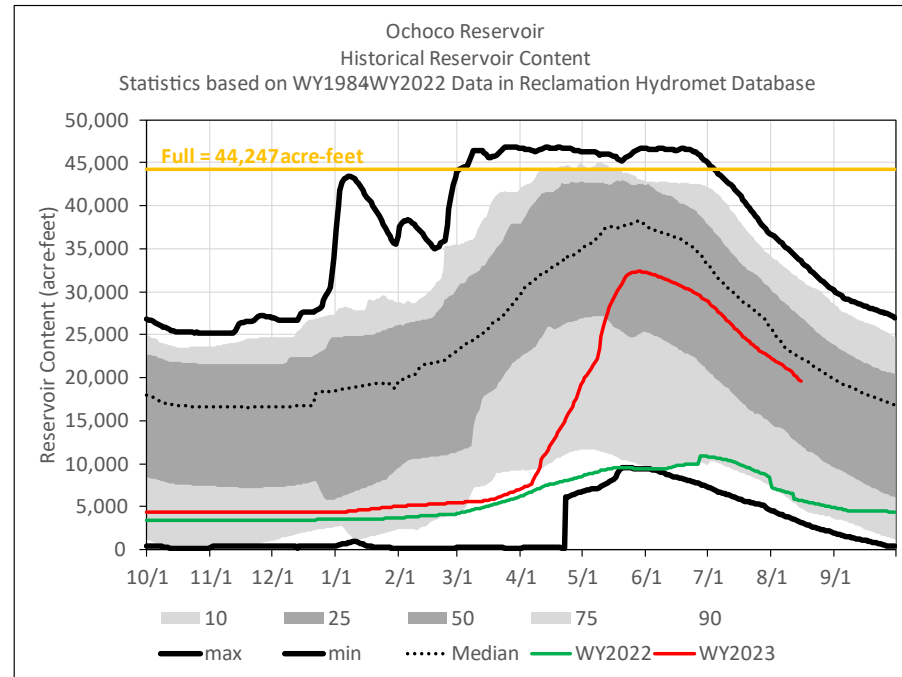
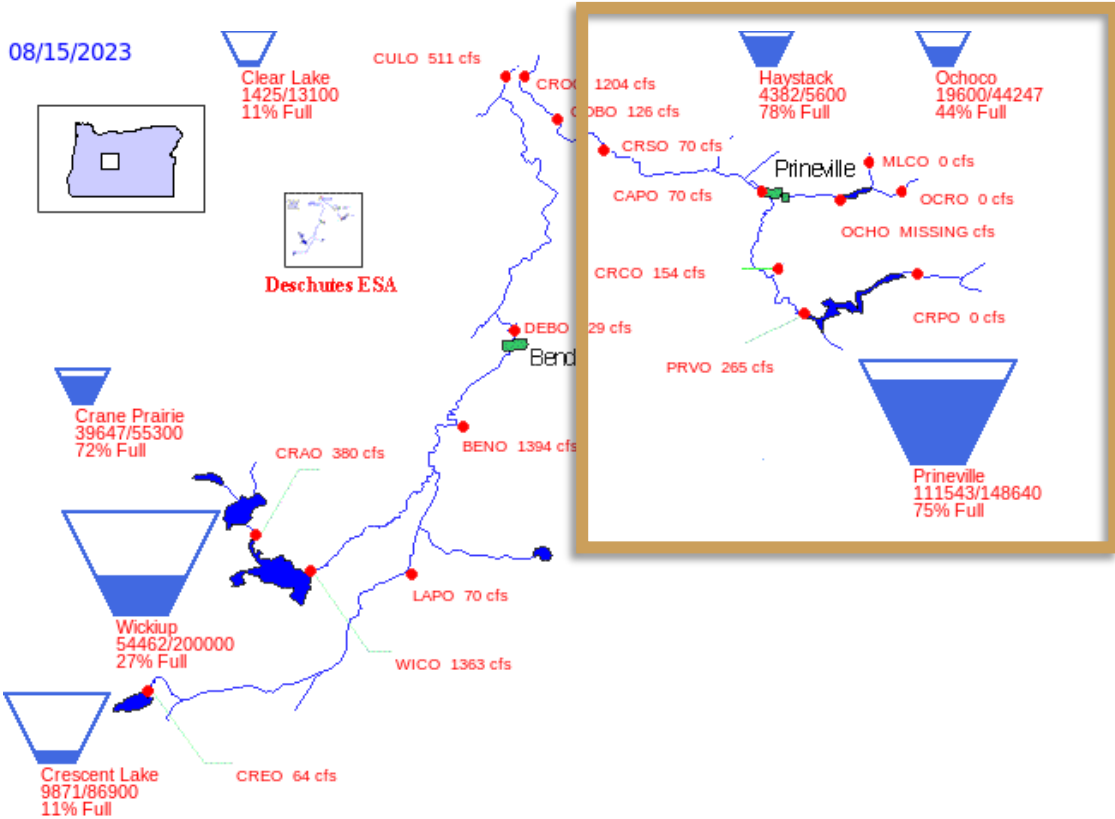
Crooked River Basin

08/15/2023



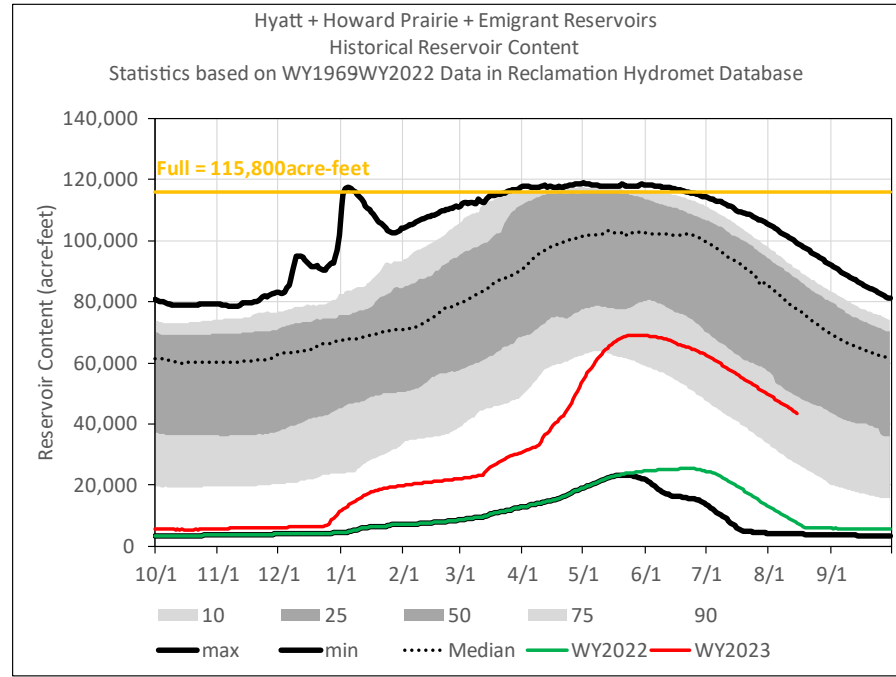
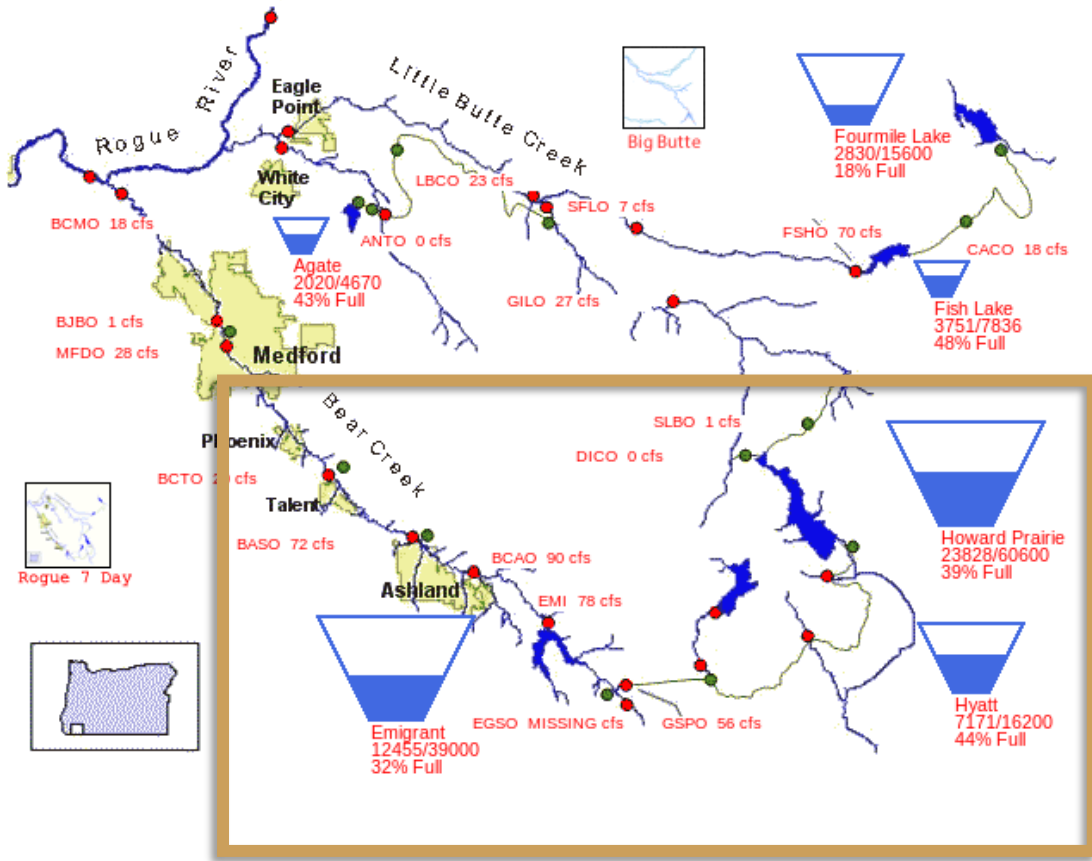
Crooked River Basin

08/15/2023



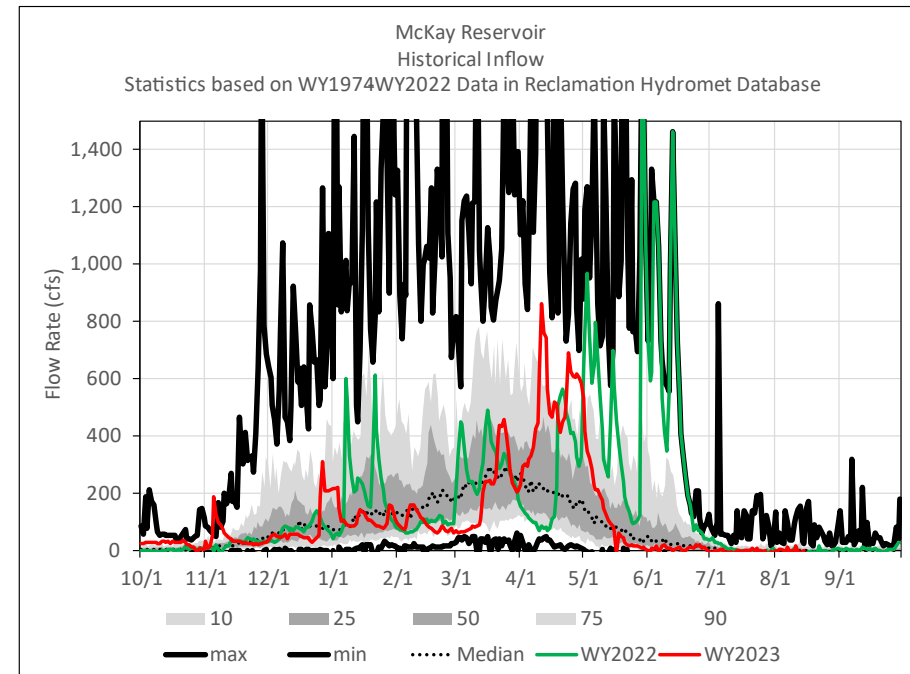
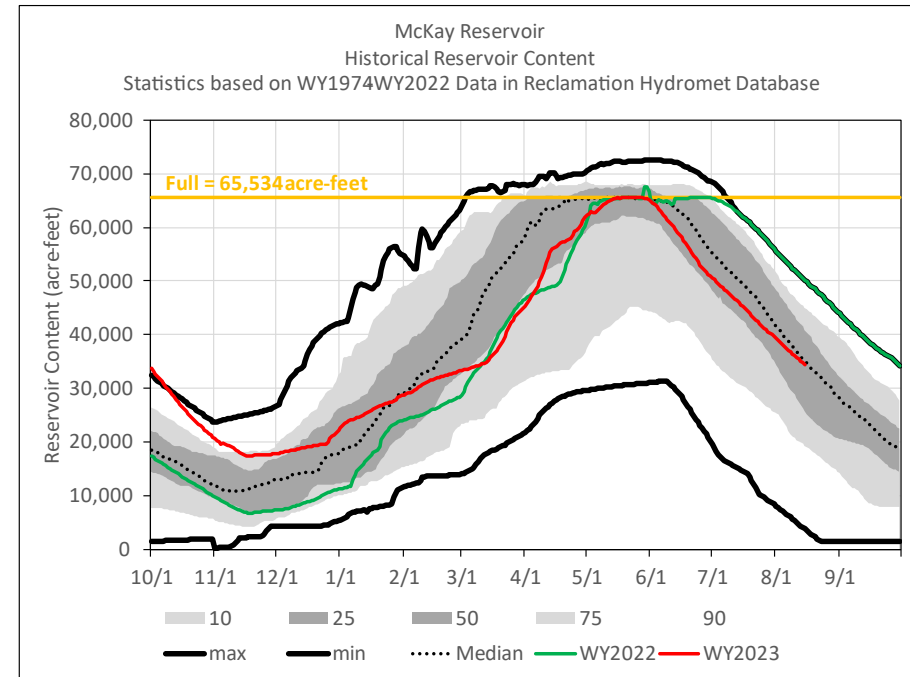
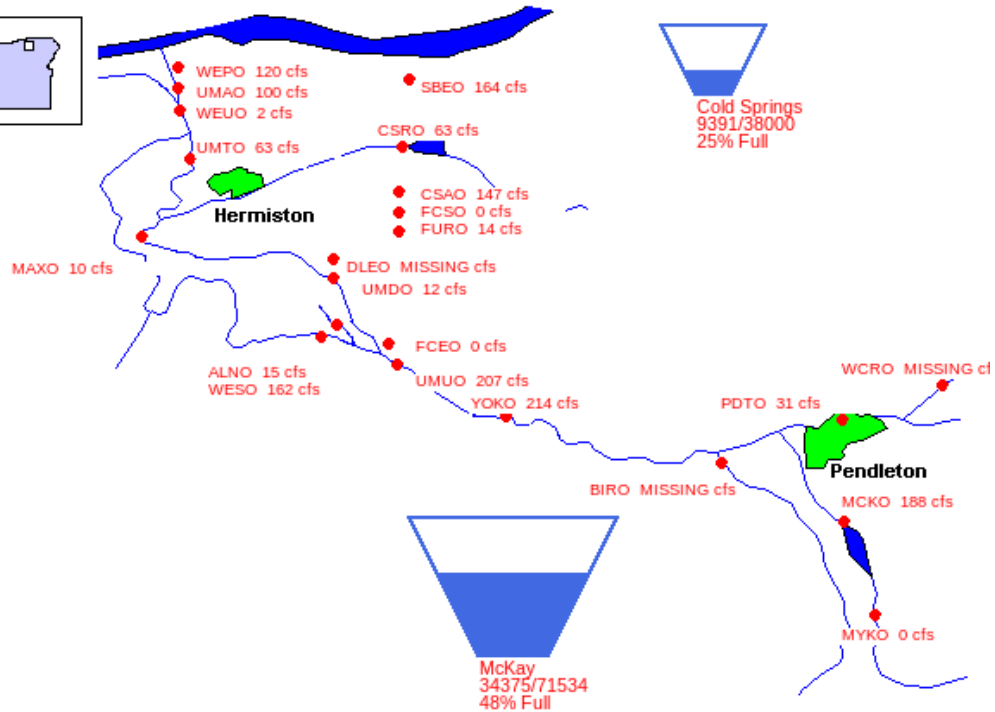
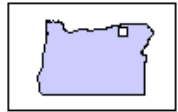
Rogue River Basin

08/15/2023



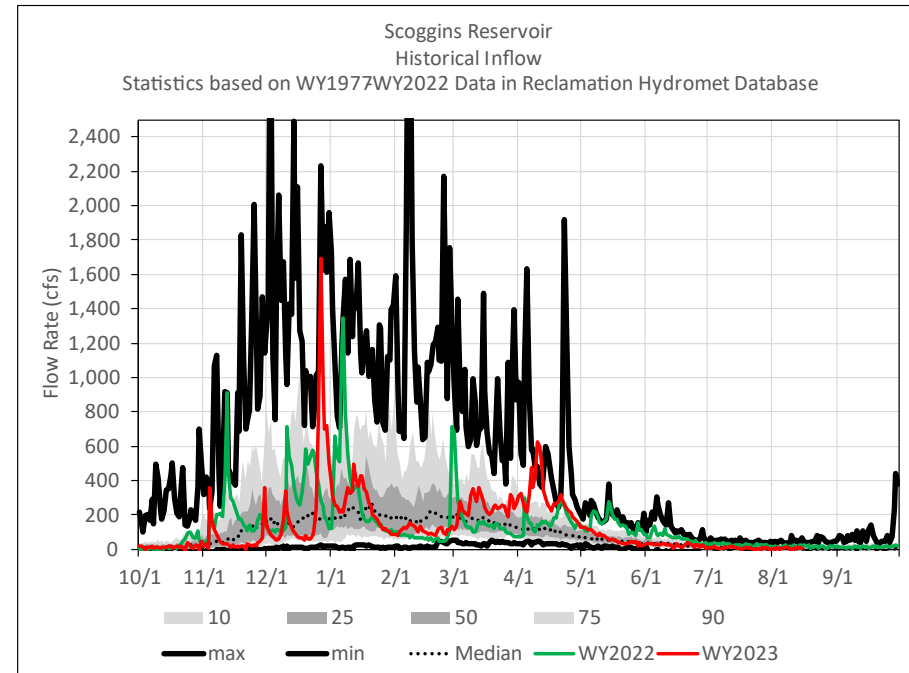
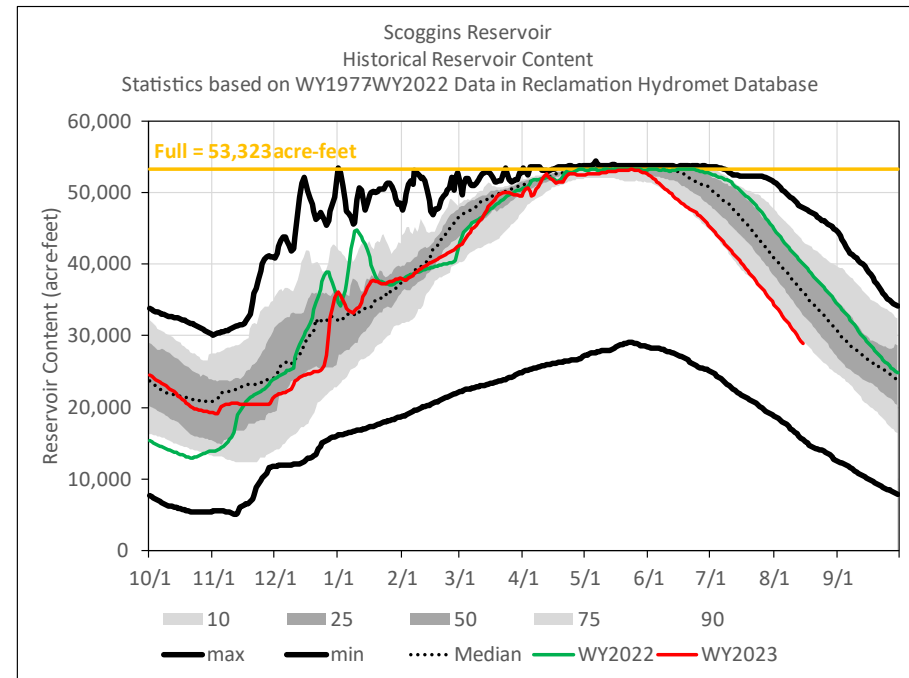
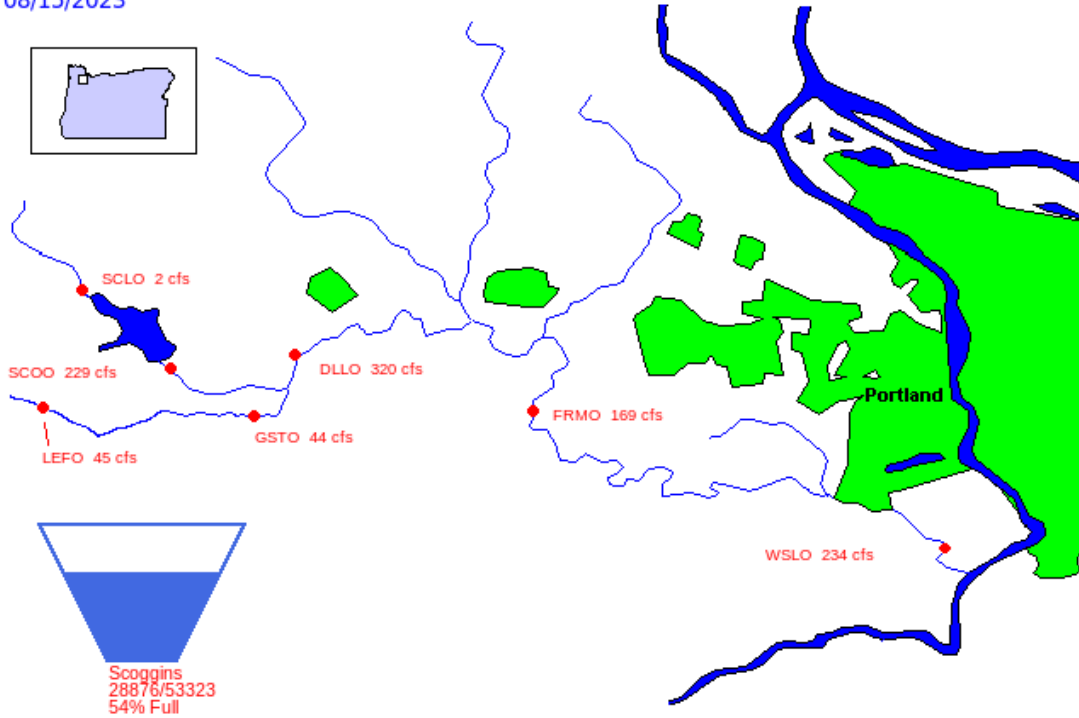
Umatilla River Basin

08/15/2023



Tualatin River Basin

08/15/2023



Peter Cooper – Columbia Pacific Northwest Regional Office

pcooper@usbr.gov

208.378.5037



— BUREAU OF —
RECLAMATION