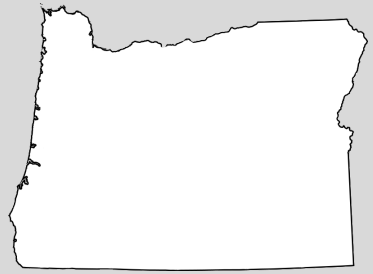
United States Department of Agriculture

Natural Resources Conservation Service

Oregon Snow Survey

Snow Survey and Water Supply Forecasting Program



Oregon
Water Supply Availability Committee

December 15, 2022

Matt Warbritton
Hydrologist
USDA NRCS Oregon Snow Survey
matt.warbritton@usda.gov
503-307-2829

USDA United States Department of Agriculture

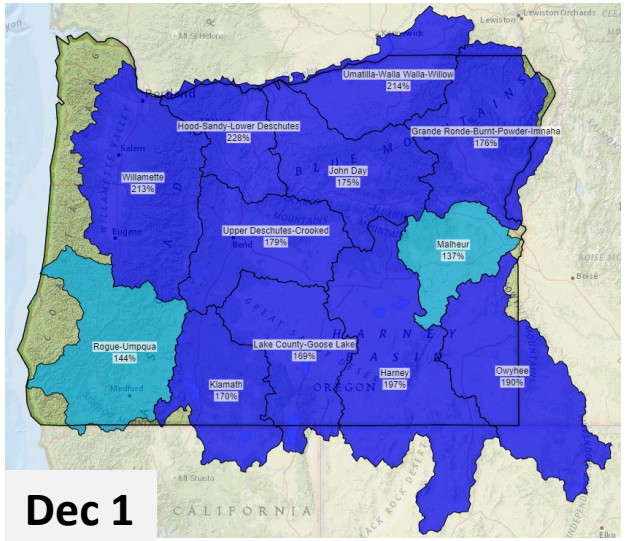
Natural Resources Conservation Service

Snowpack Conditions

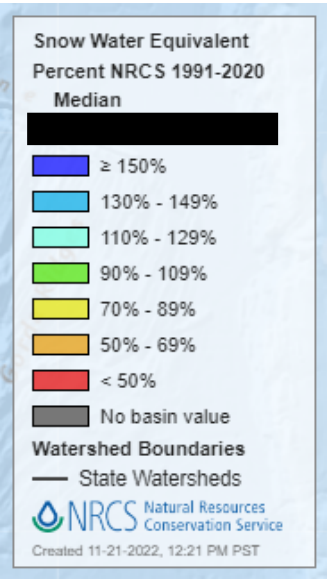
Snow Water Equivalent

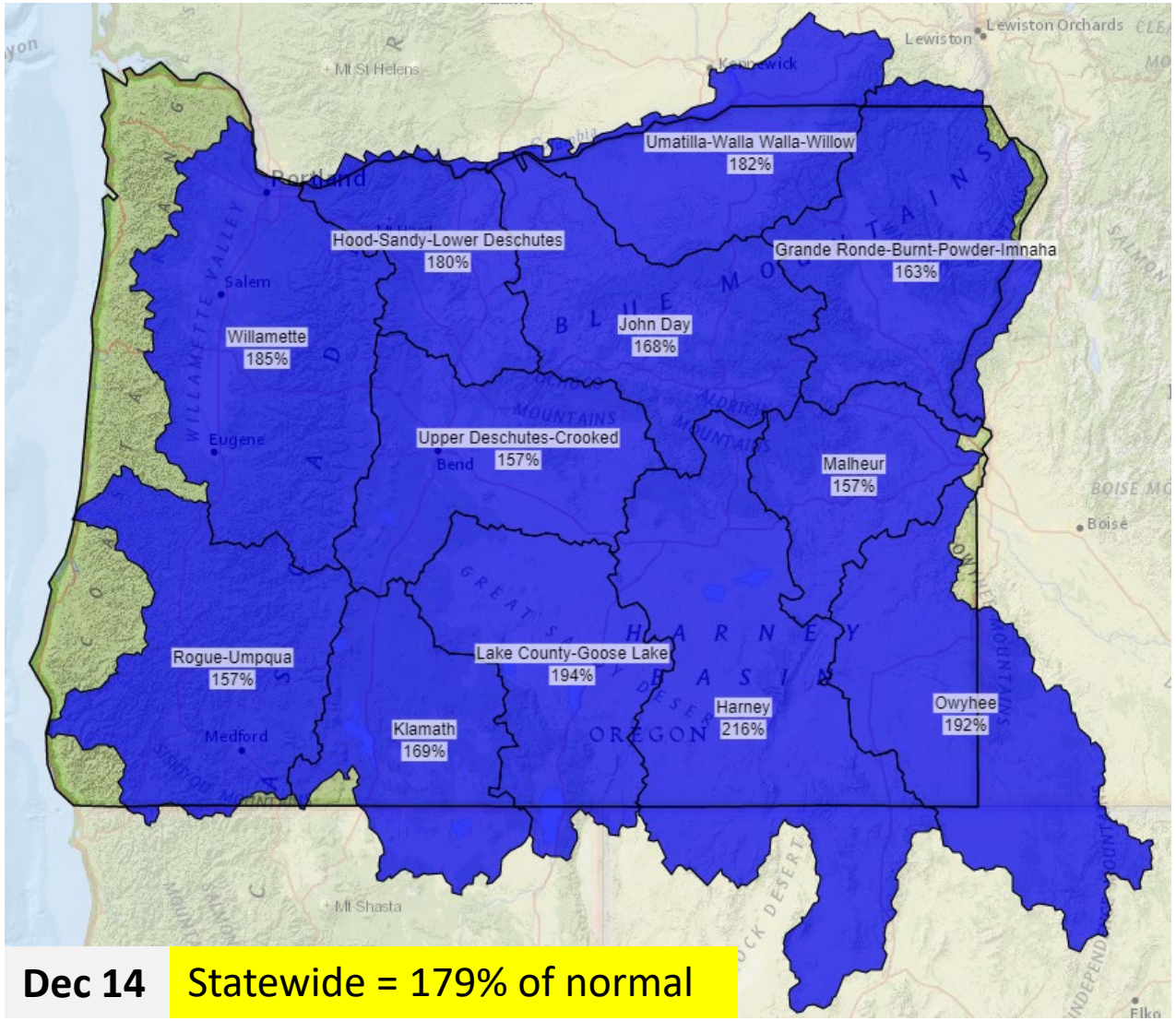
Basin Map

United States Department of Agriculture
Natural Resources Conservation Service



Dec 1



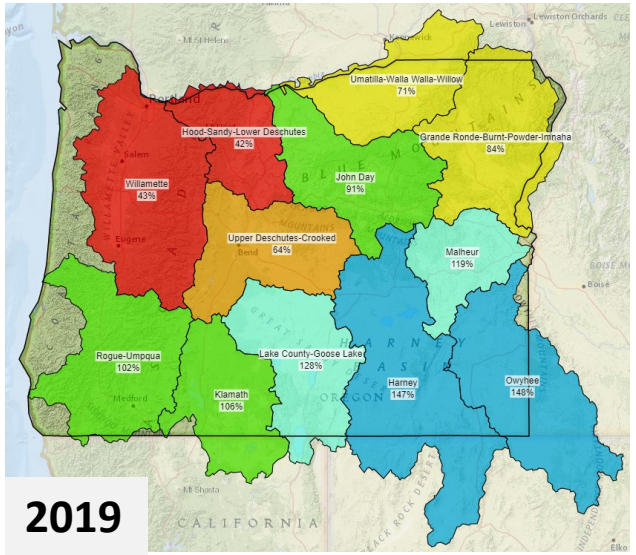


Dec 14 Statewide = 179% of normal

Snow Water Equivalent

2019 to 2022 – Basin Maps

USDA United States Department of Agriculture
Natural Resources Conservation Service



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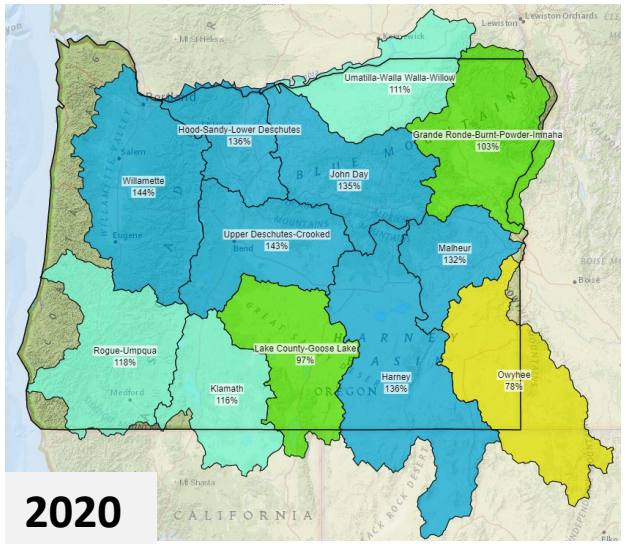

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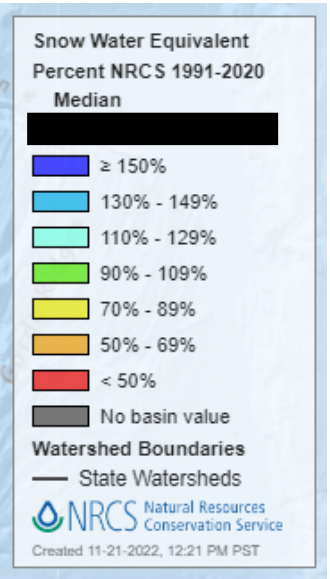

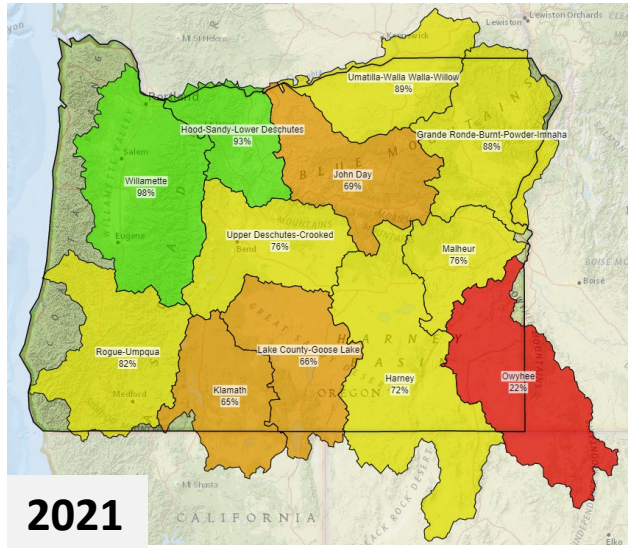

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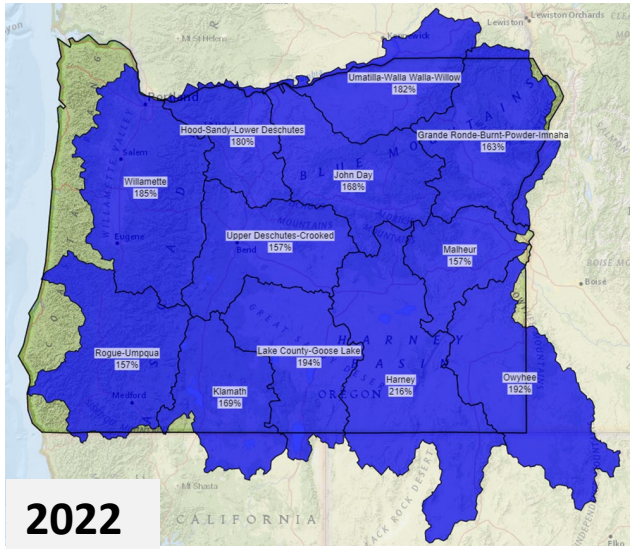
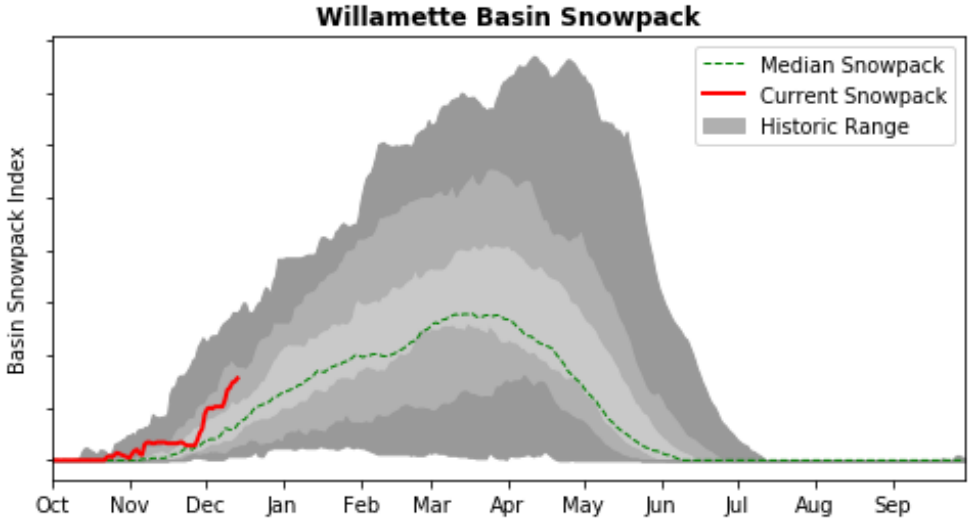


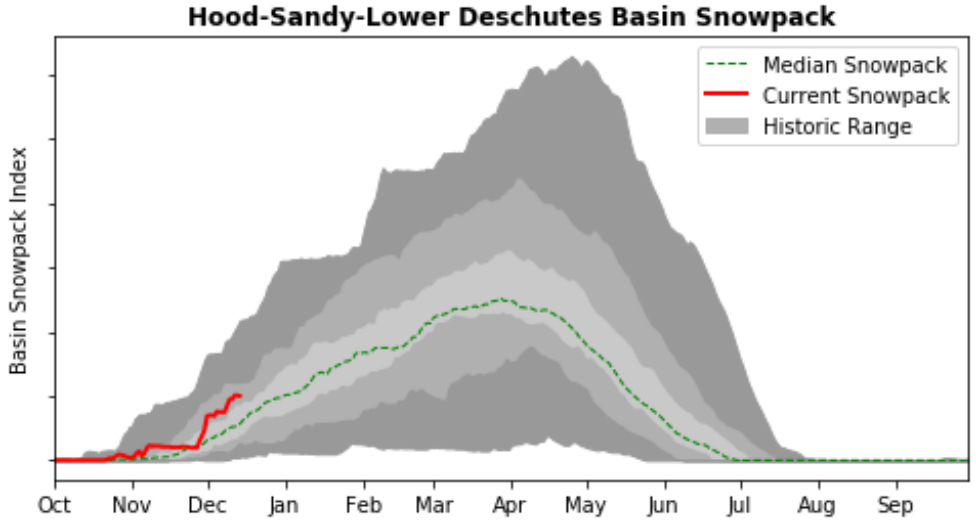
2022

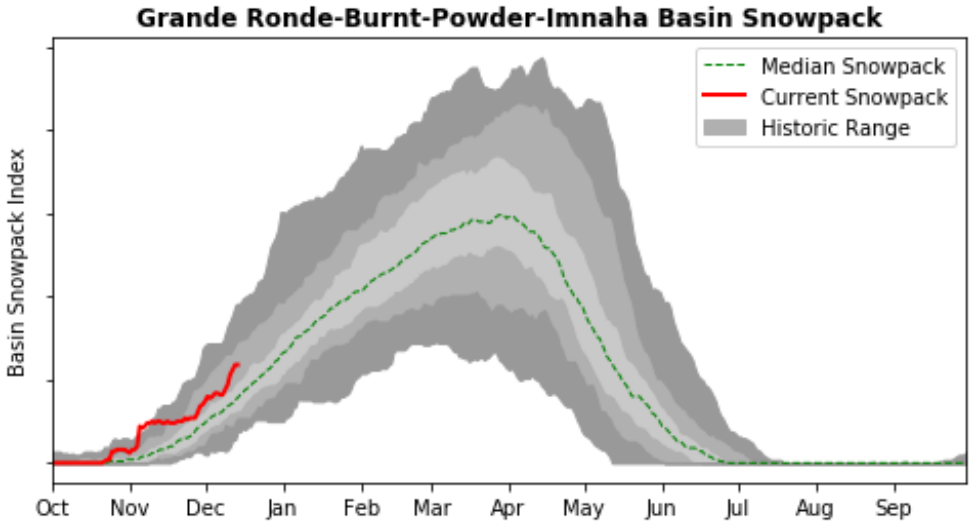
Snow Water Equivalent

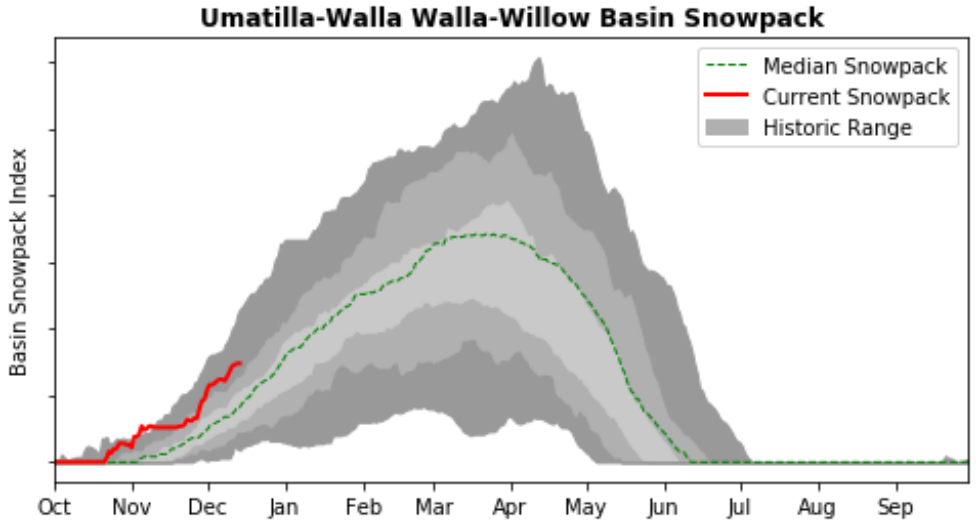
WY 2023 Basin Charts

United States Department of Agriculture
Natural Resources Conservation Service





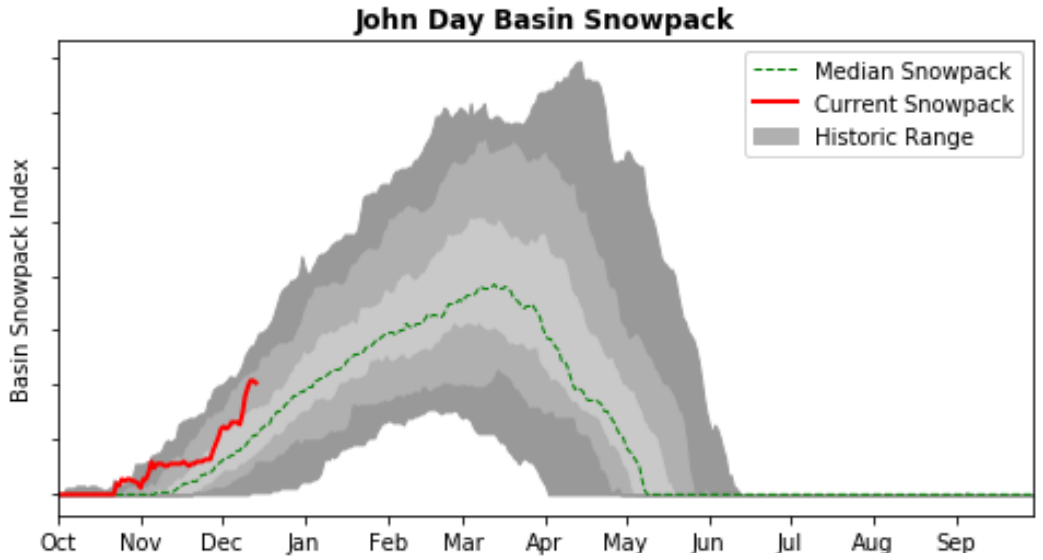


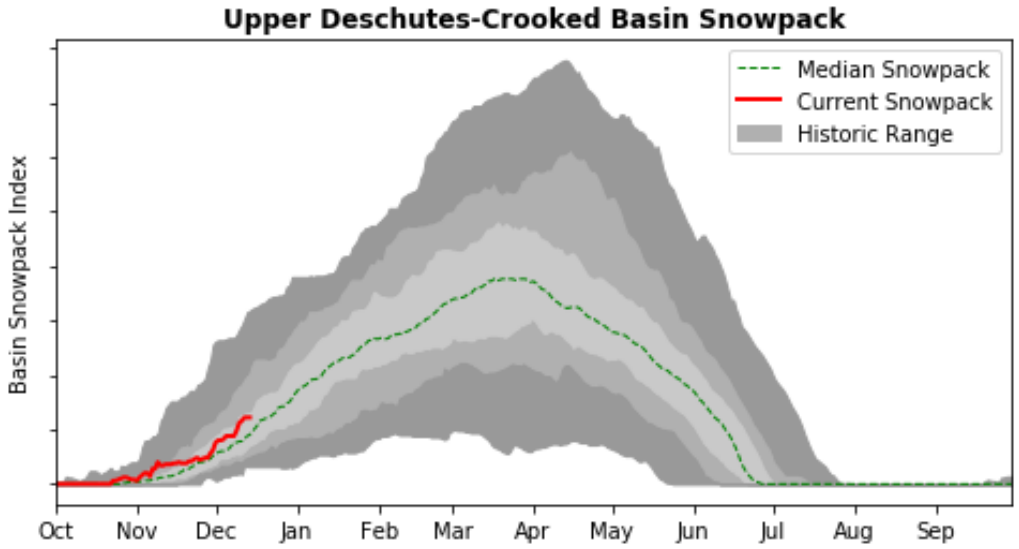


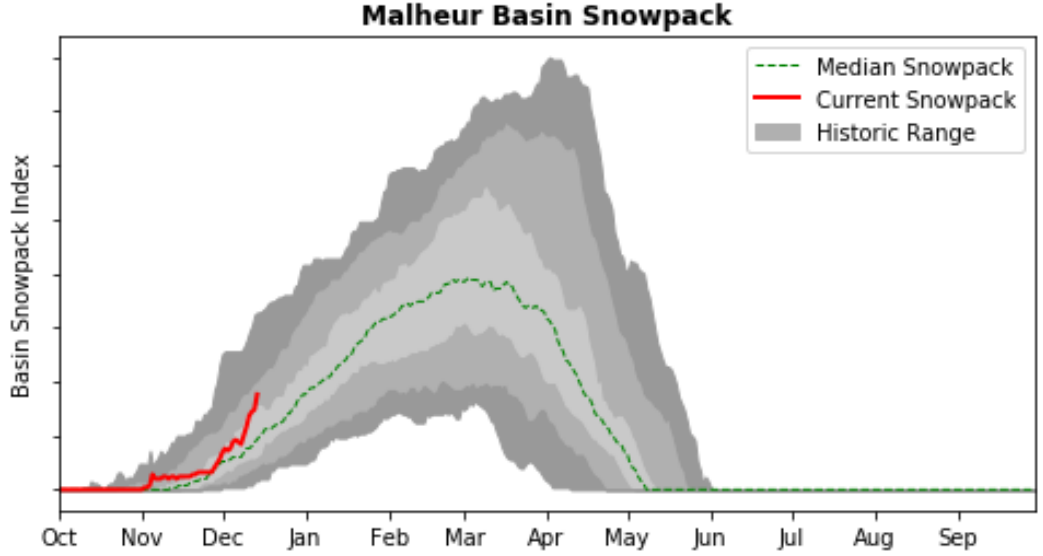
Snow Water Equivalent

WY 2023 Basin Charts

United States Department of Agriculture
Natural Resources Conservation Service



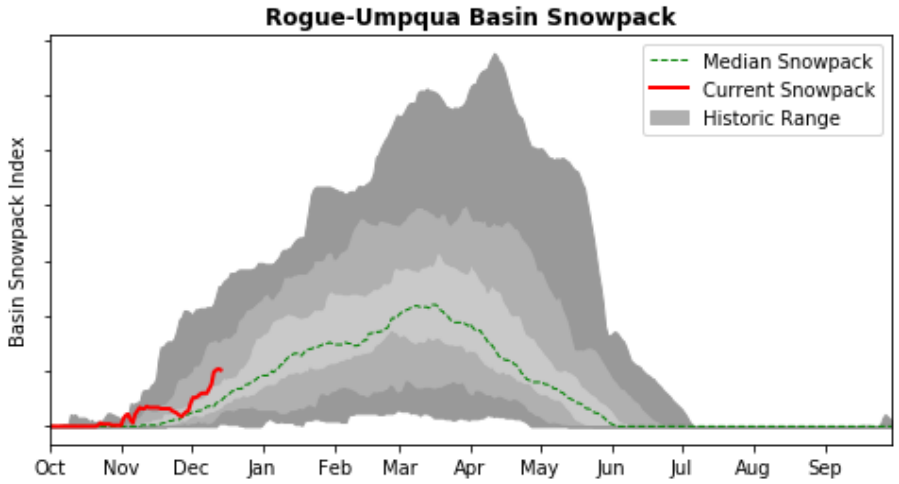


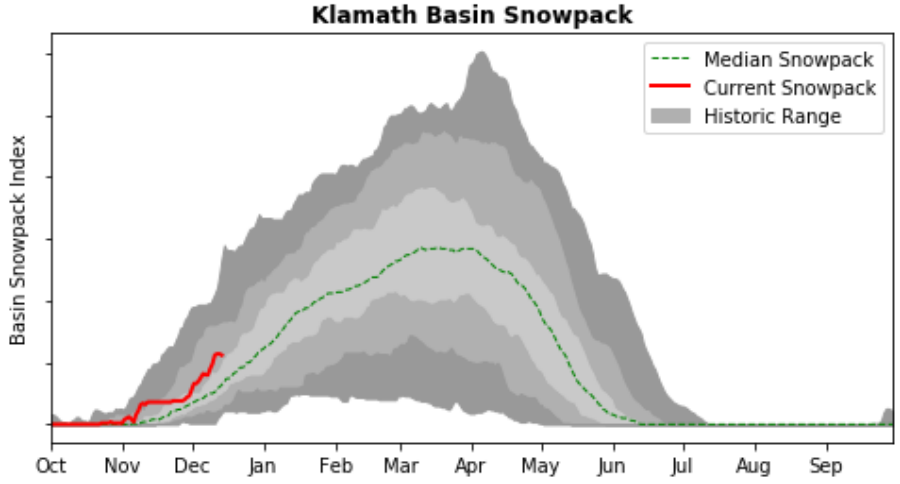


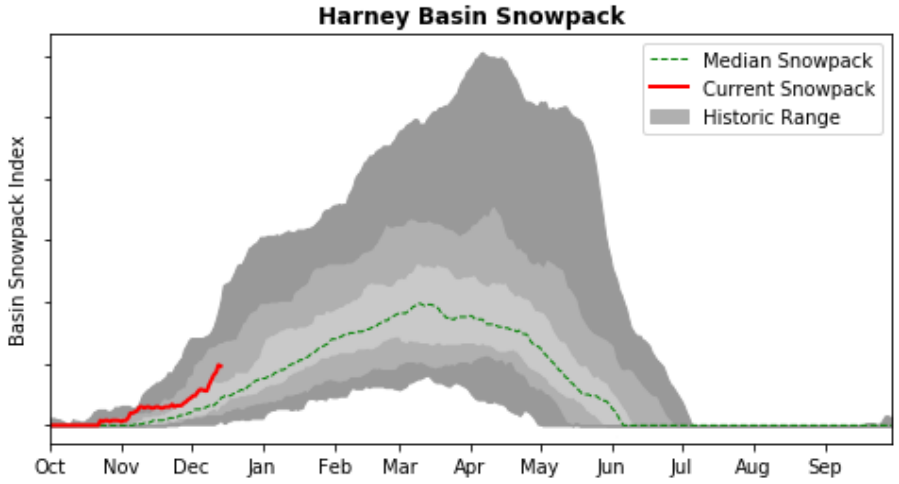
Snow Water Equivalent

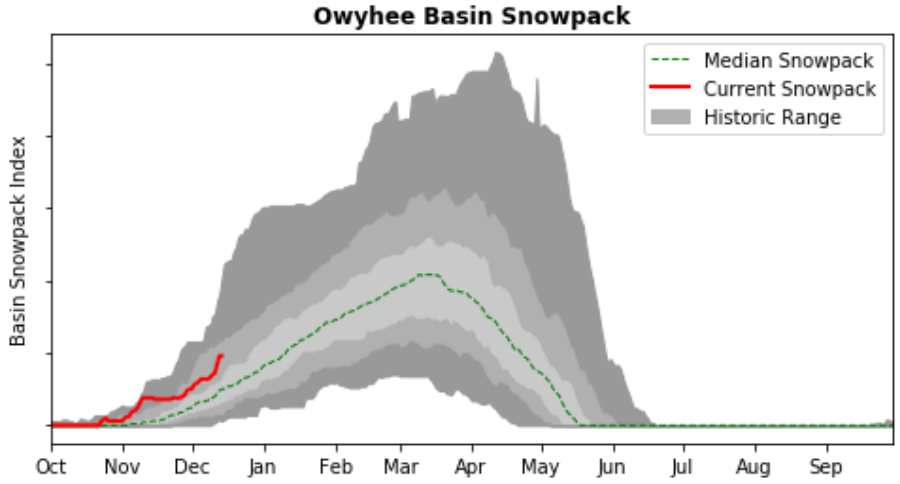
WY 2023 Basin Charts

United States Department of Agriculture
Natural Resources Conservation Service









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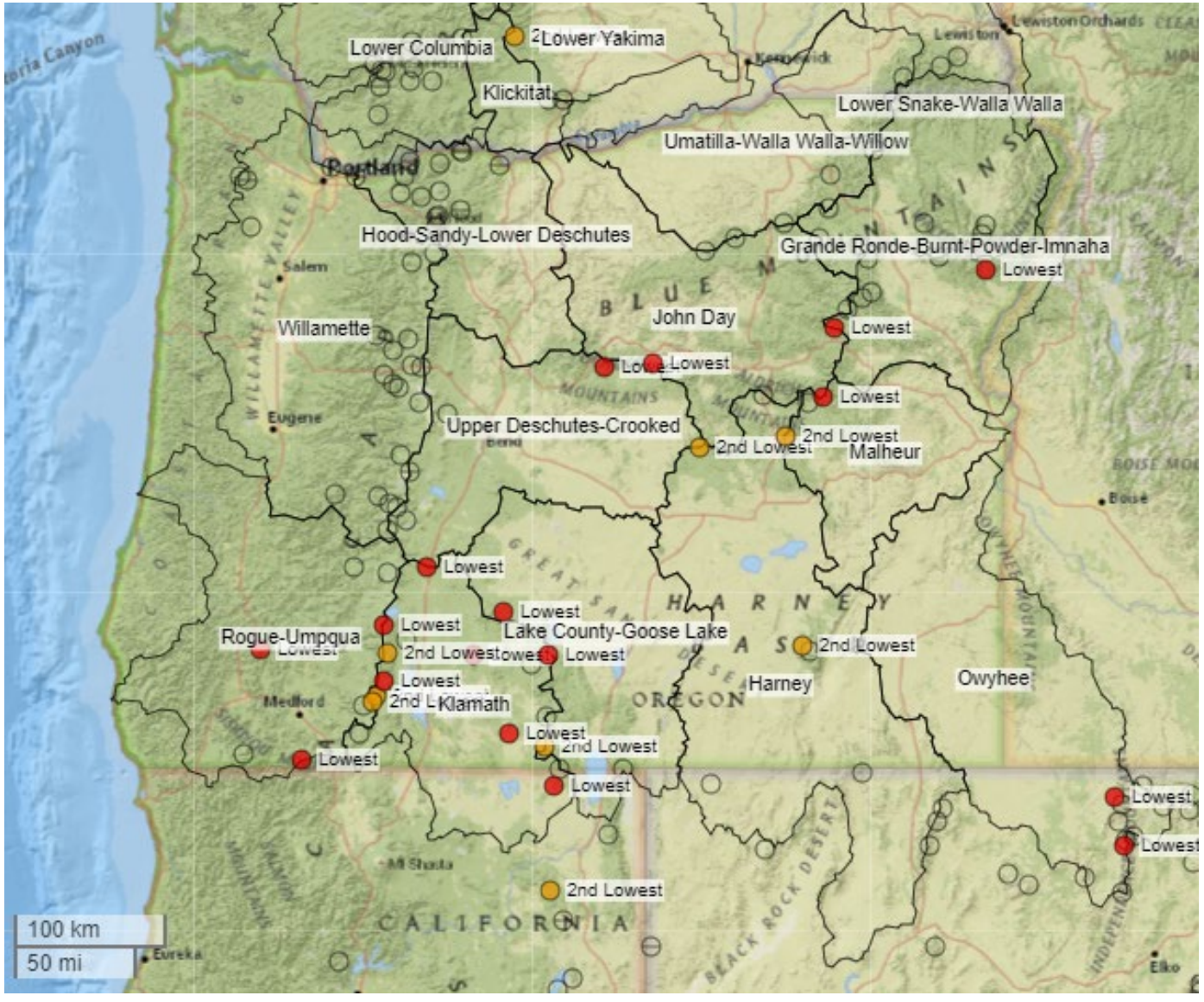
Precipitation Conditions

Precipitation

WY 2022 – Basin Map

USDA United States Department of Agriculture
Natural Resources Conservation Service

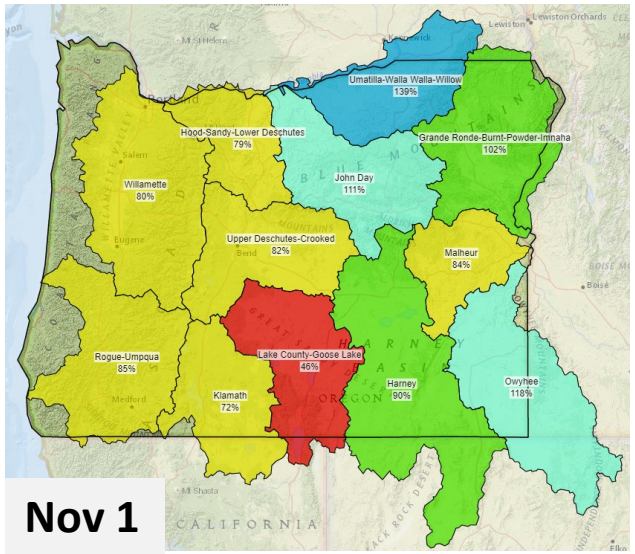
23% of SNOTEL sites in Oregon at or near record low precipitation for the period 11/1/2019 to 12/14/2022



Snow Water Equivalent

December to June 2022 – Monthly Basin Map

USDA United States Department of Agriculture
Natural Resources Conservation Service



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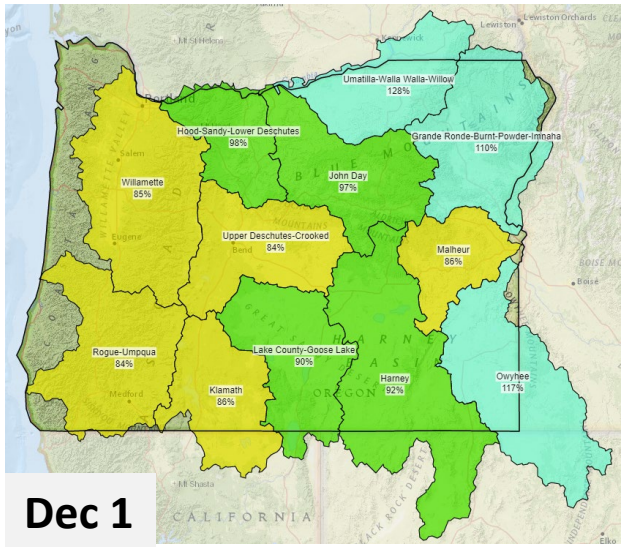

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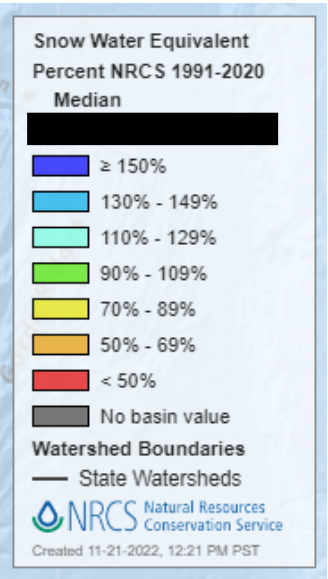
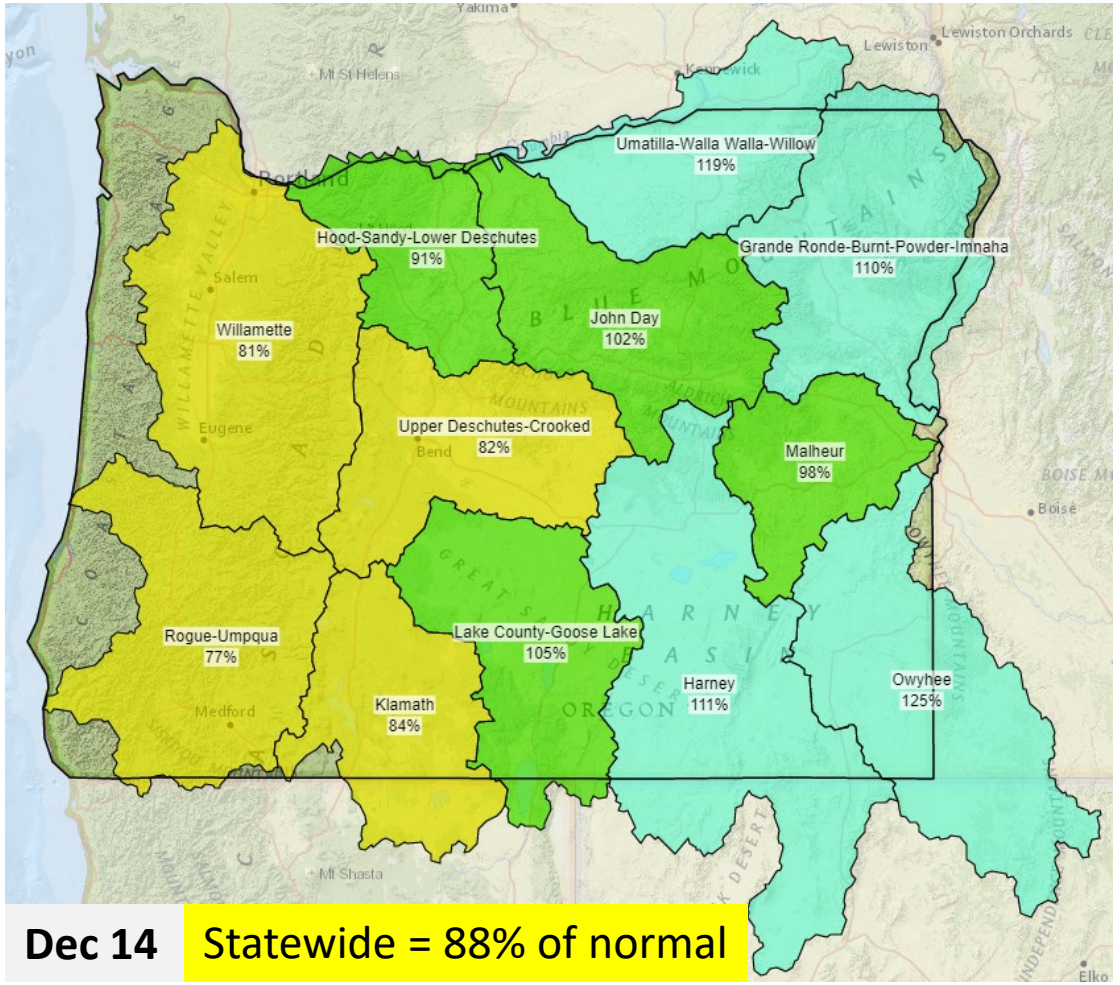




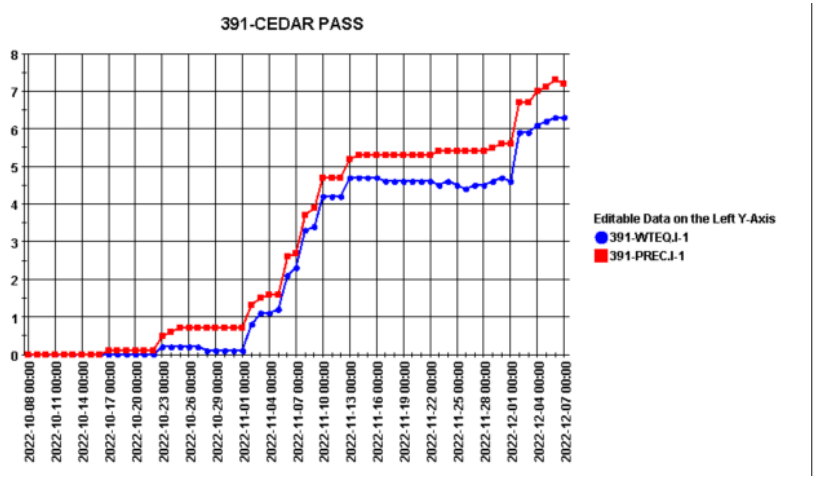
Dec 14

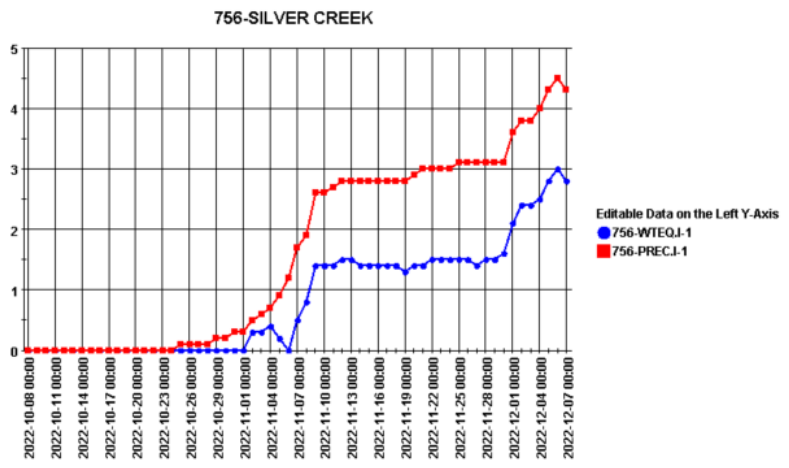
Statewide = 88% of normal

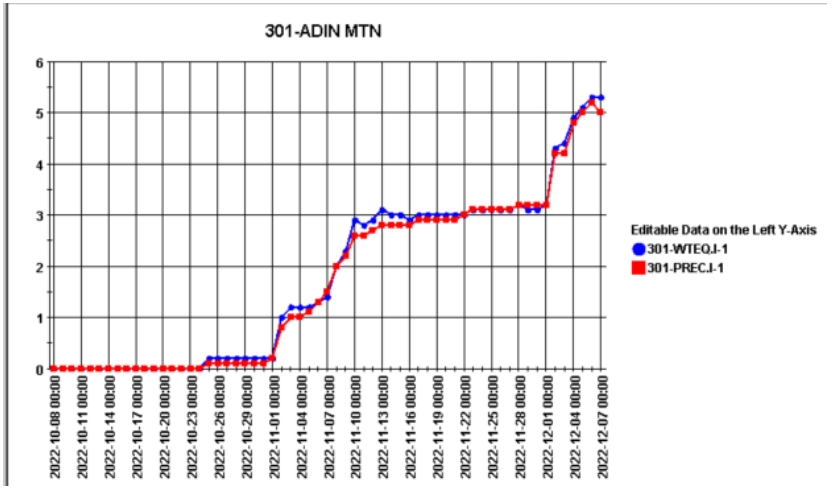
Early Season Precipitation and SWE

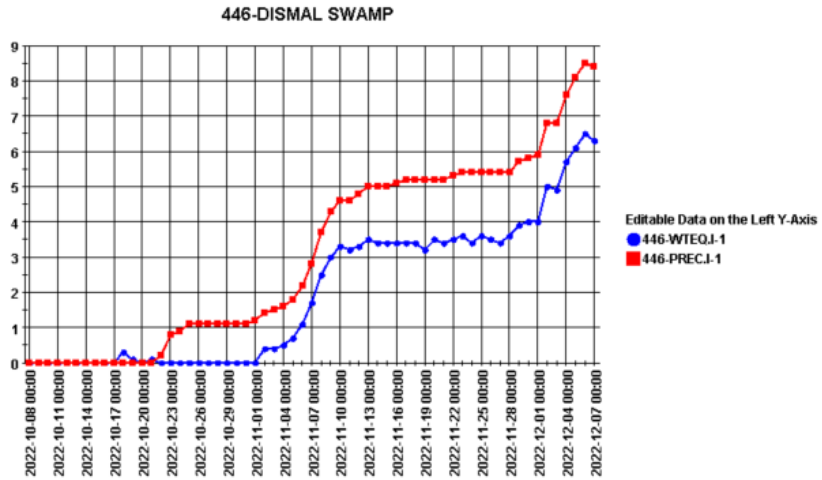
WY 2022 – Select Basin Charts

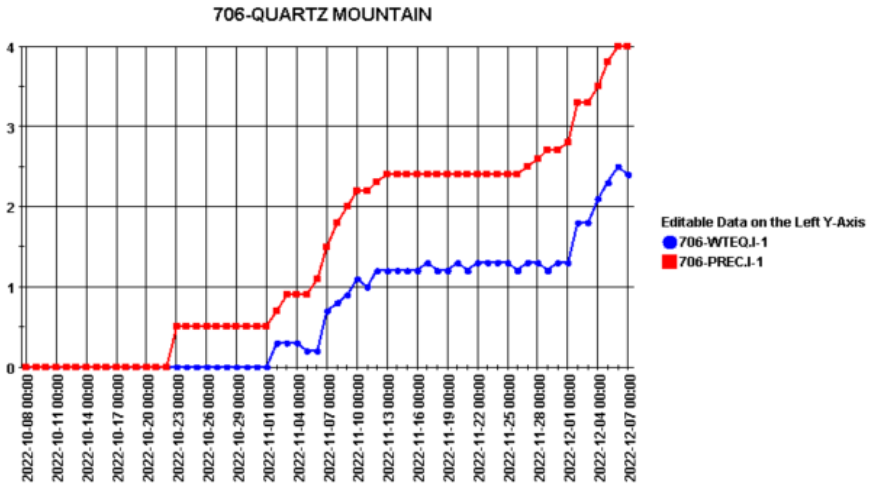
United States Department of Agriculture
Natural Resources Conservation Service

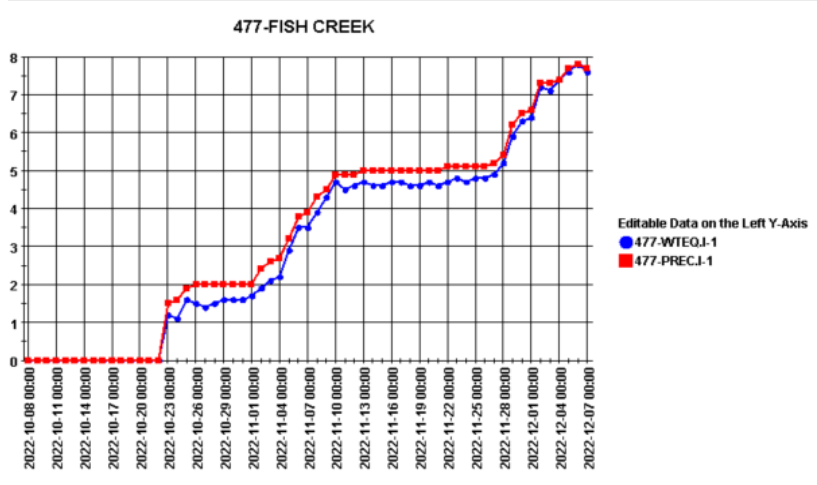












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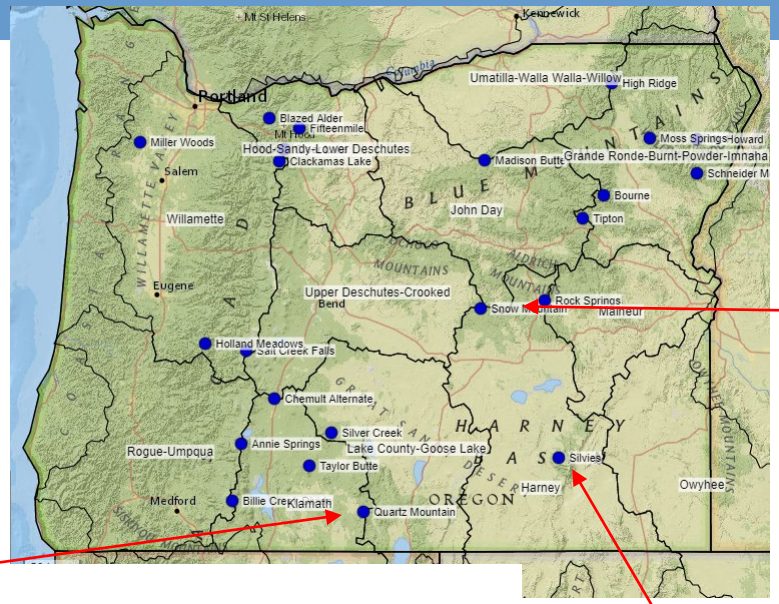
Natural Resources Conservation Service

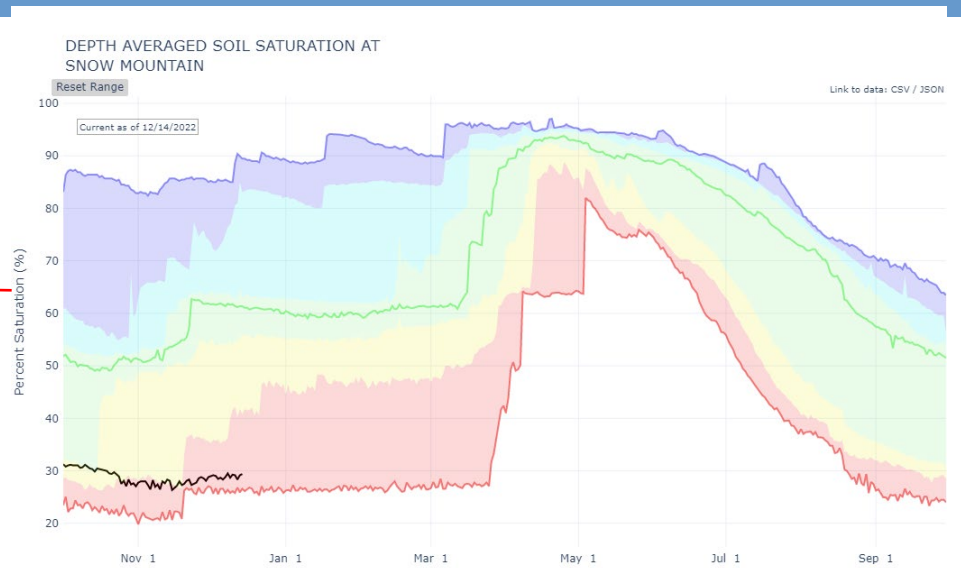
Soil Moisture Conditions

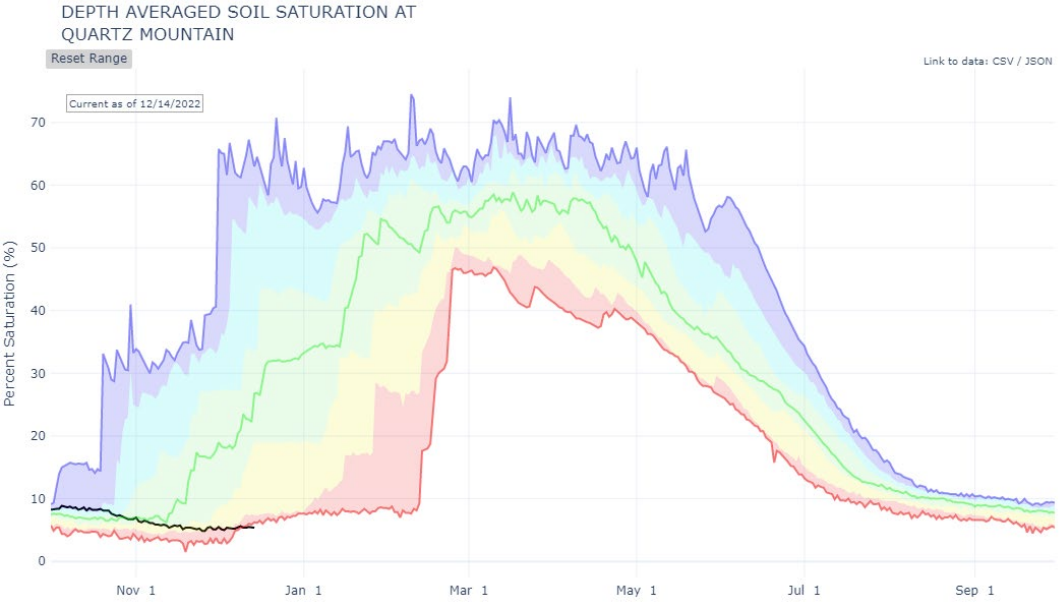
Soil Moisture

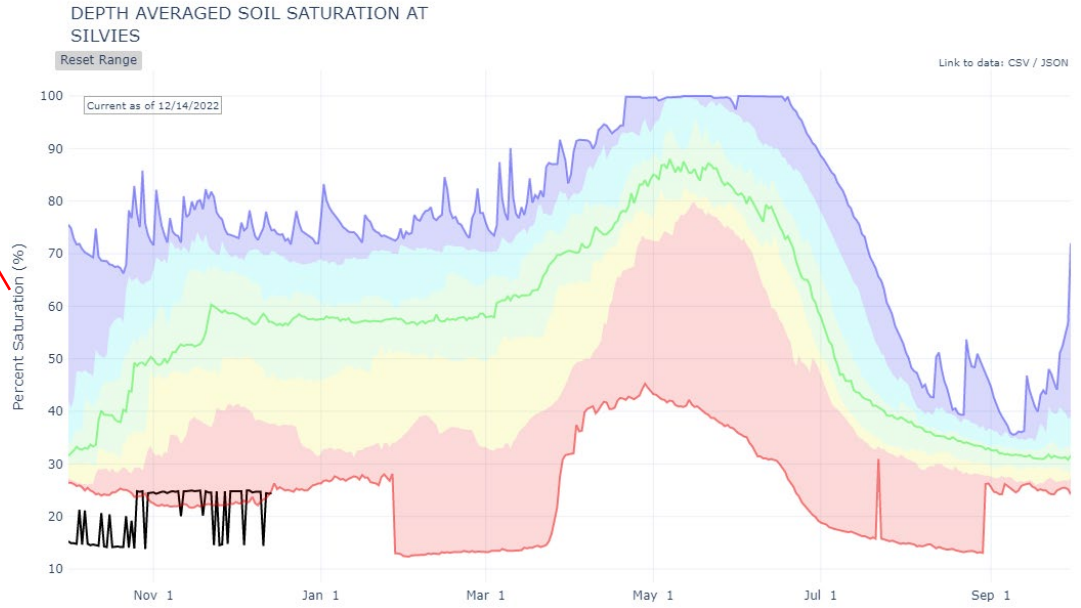
WY 2023 – Select Site Charts

United States Department of Agriculture
Natural Resources Conservation Service





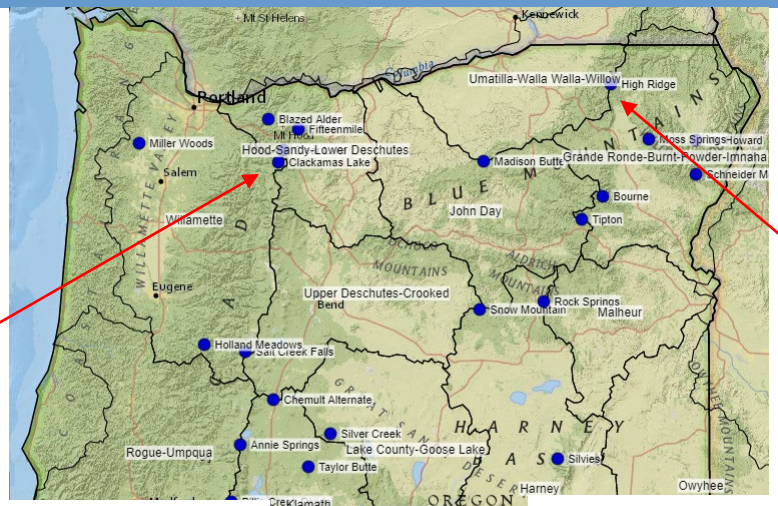


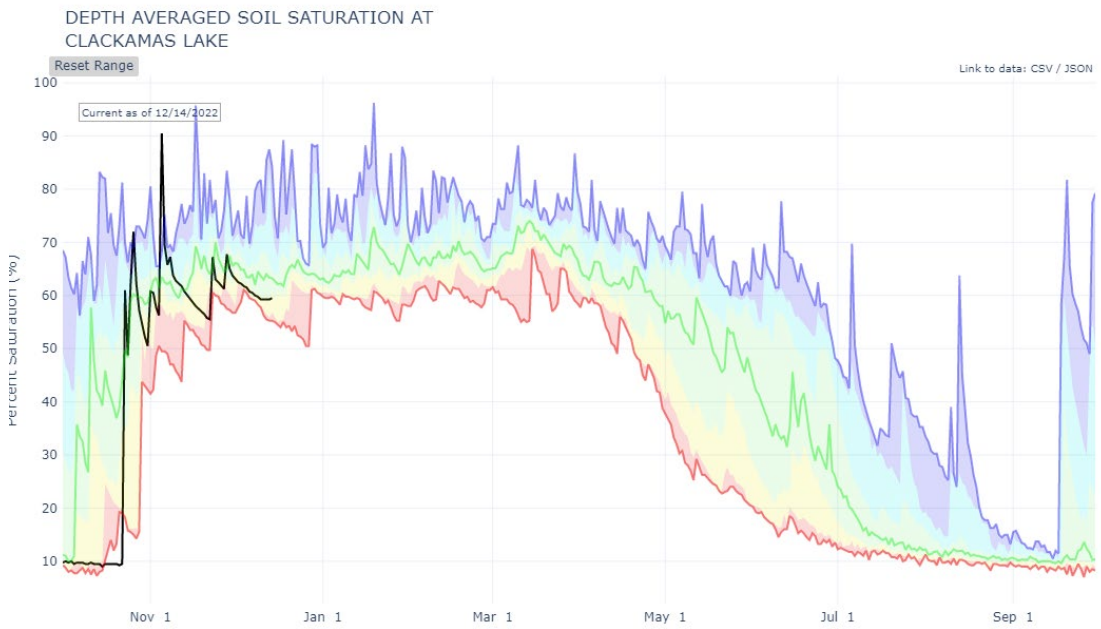


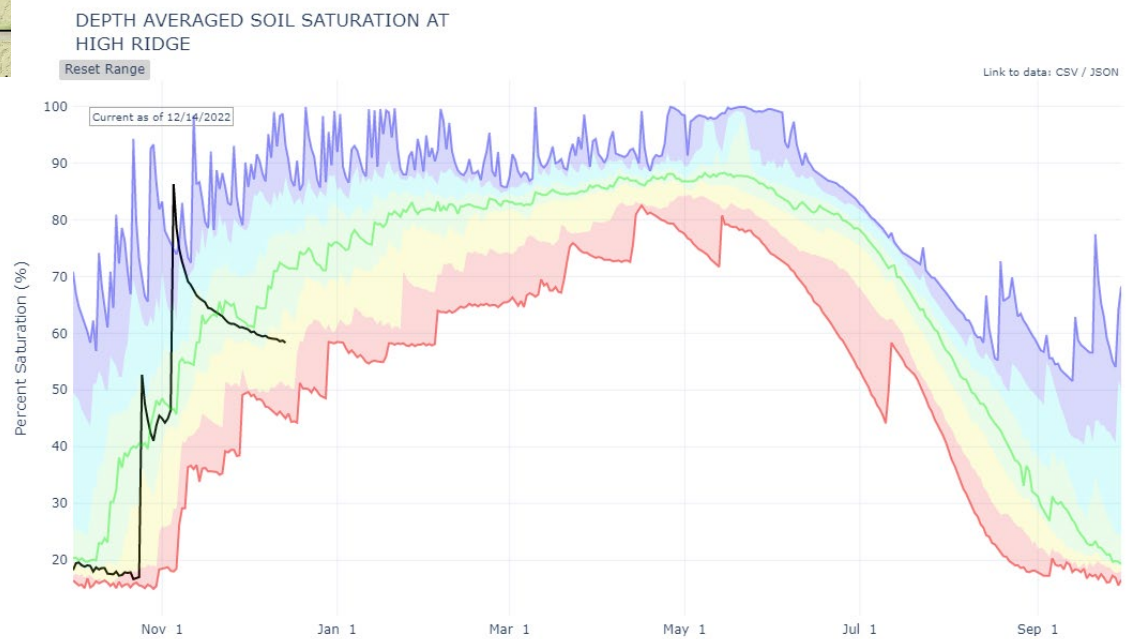
Soil Moisture

WY 2023 – Select Site Charts

United States Department of Agriculture
Natural Resources Conservation Service







USDA United States Department of Agriculture

Natural Resources Conservation Service

Thank you!

Matt Warbritton
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503-307-2829

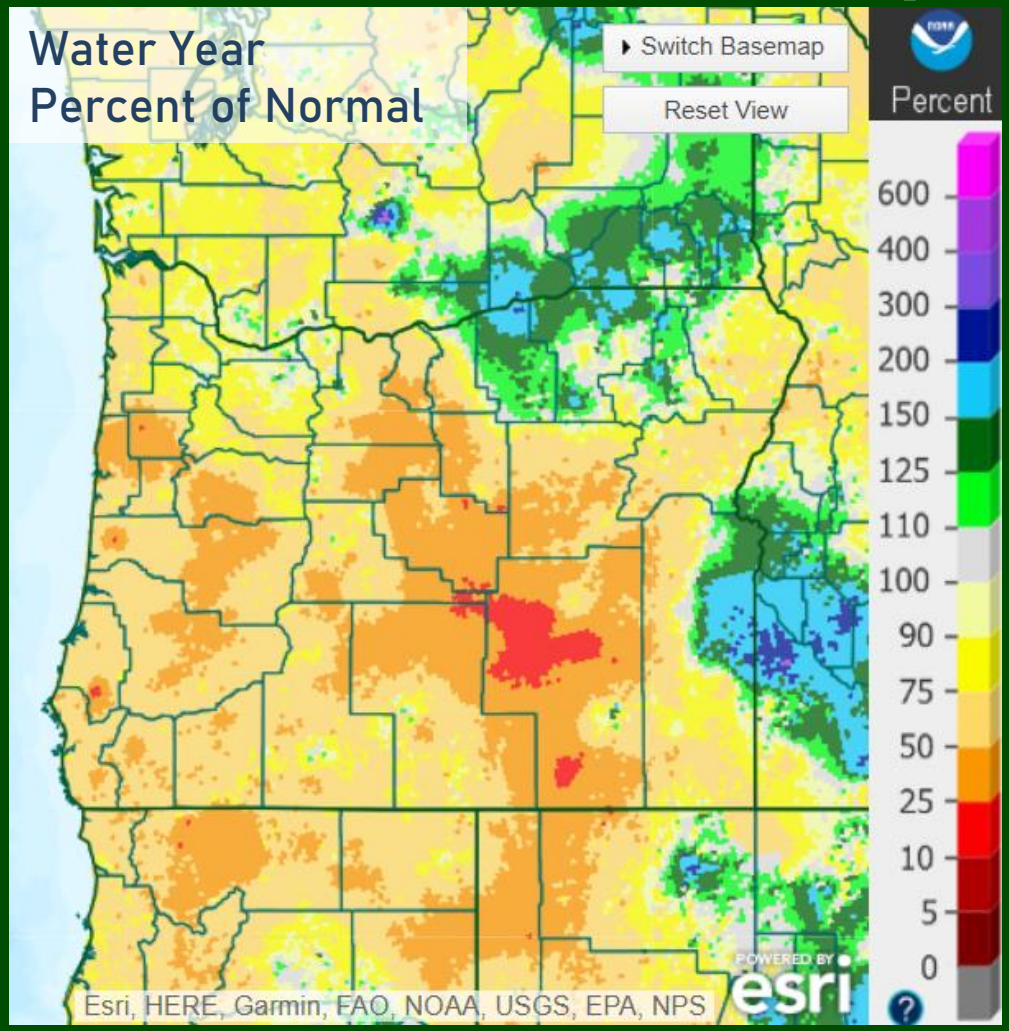
Oregon Snow Survey Website

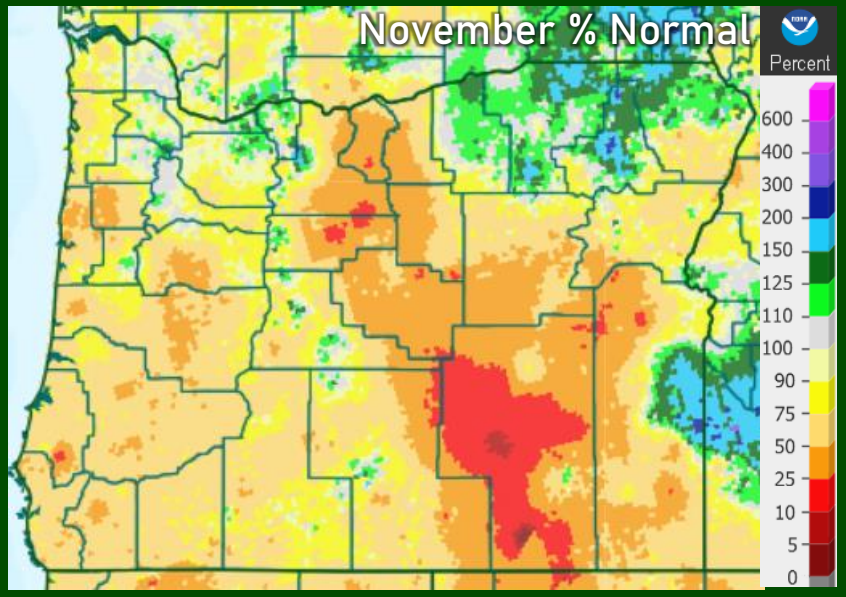
December 2022 Update for Precipitation & Temperatures

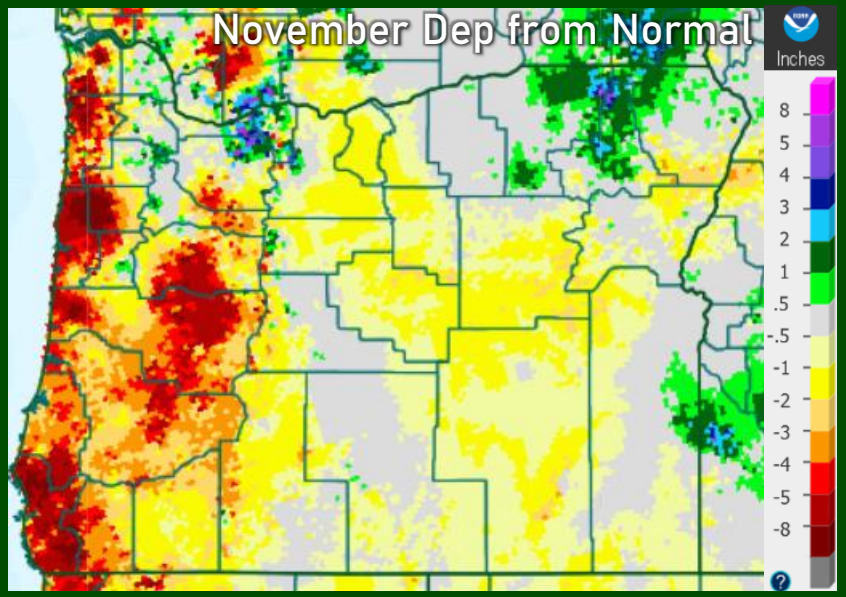
NOAA National Weather Service

Hood River (photo by NWS employee)

Precipitation





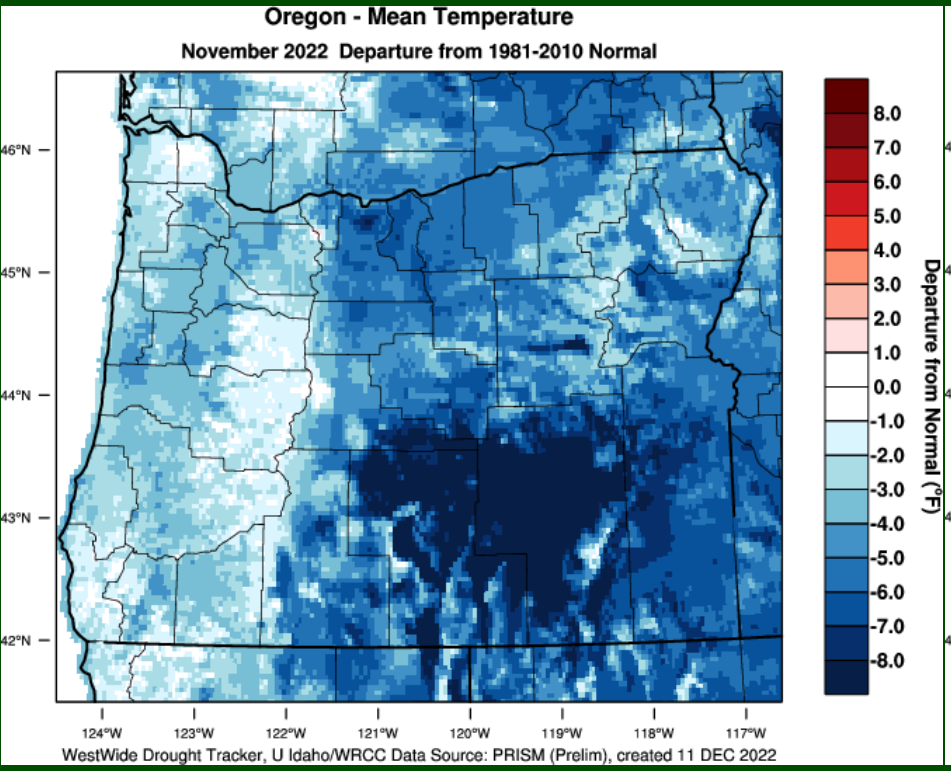


Precipitation Data as of December 12, 2022

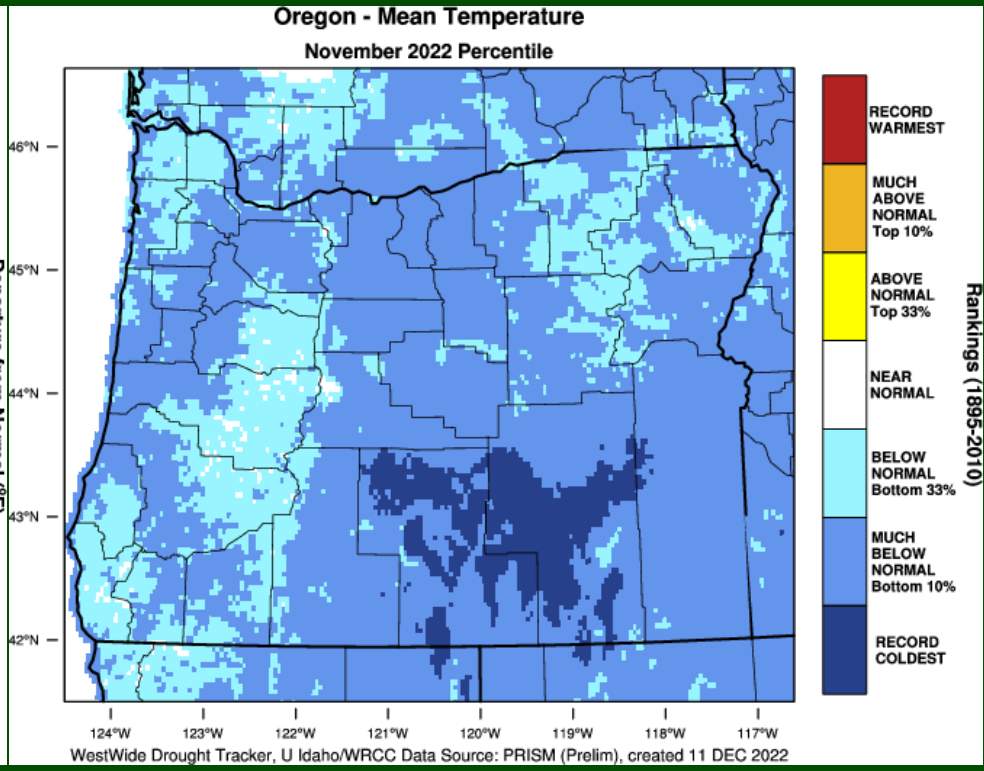
water.weather.gov/precip/index.php

November Temperatures

Departure from Normal

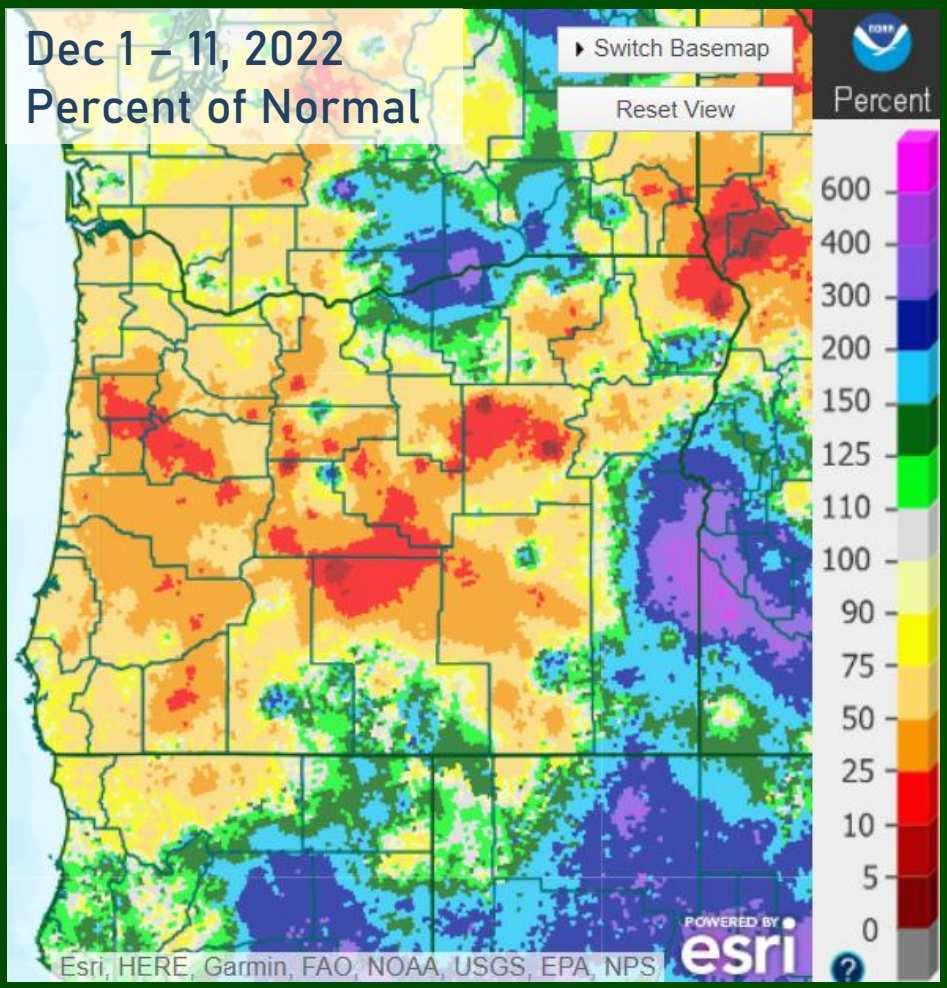


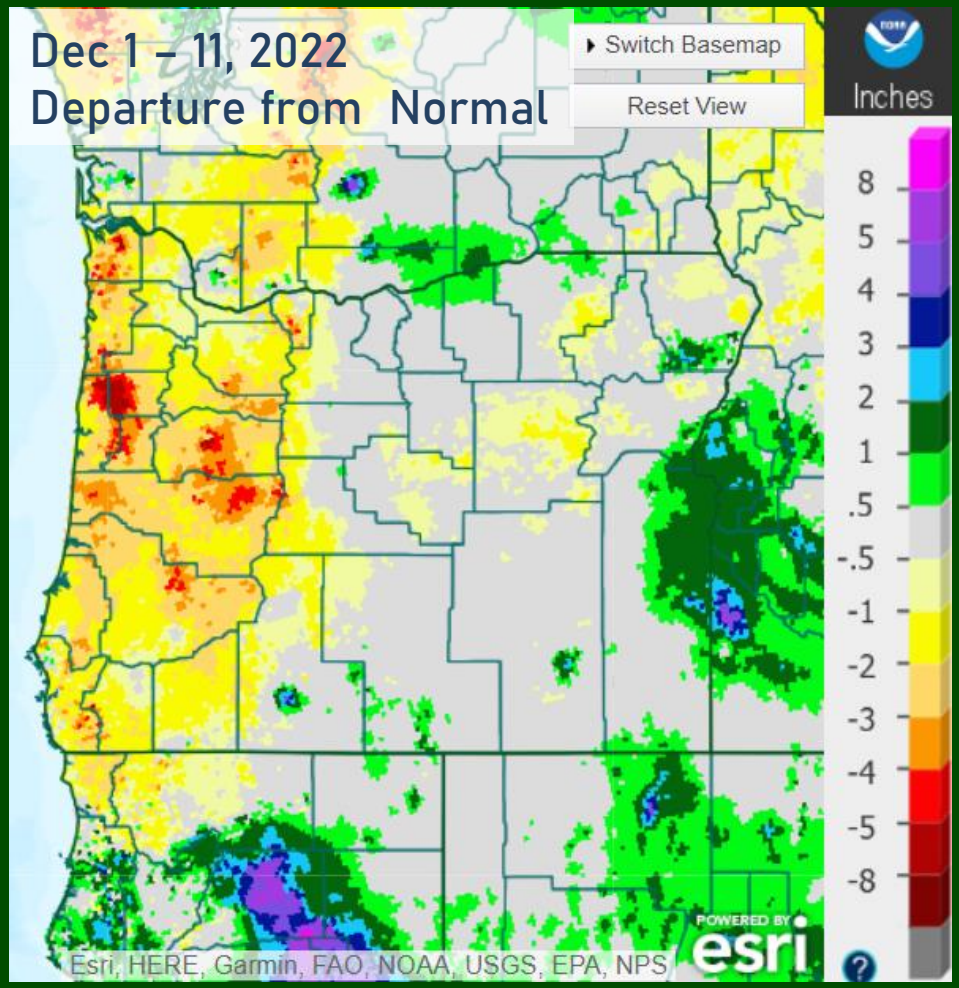
Percentile



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

Precipitation – December thus far

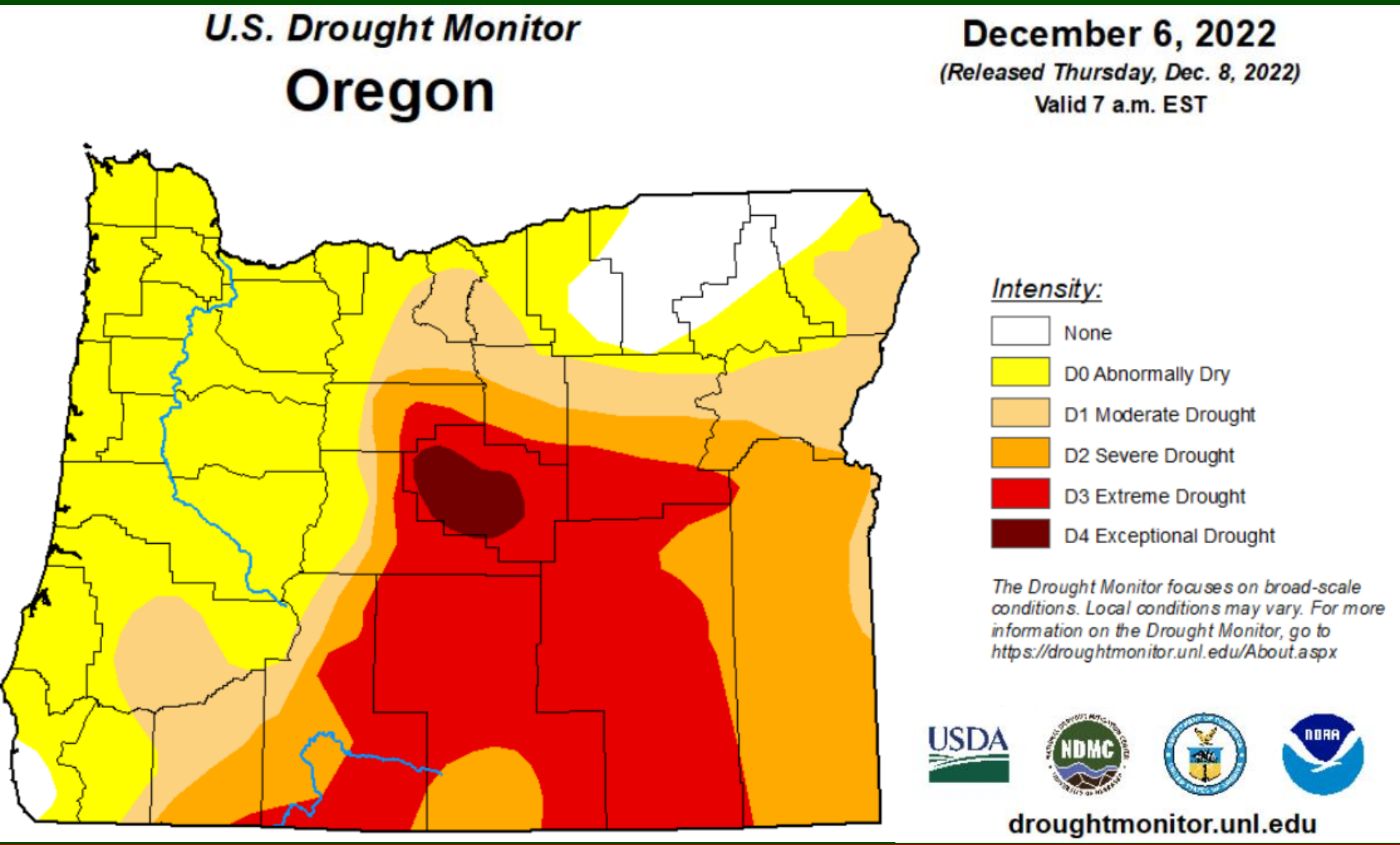




Precipitation Data as of December 12, 2022

water.weather.gov/precip/index.php

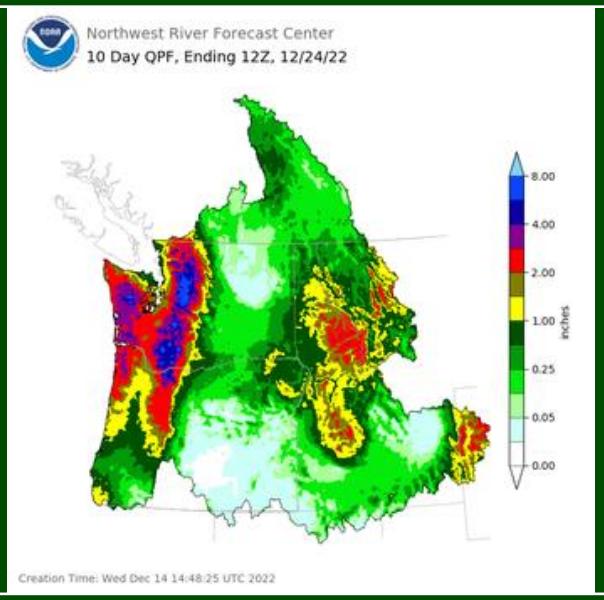
Drought Monitor

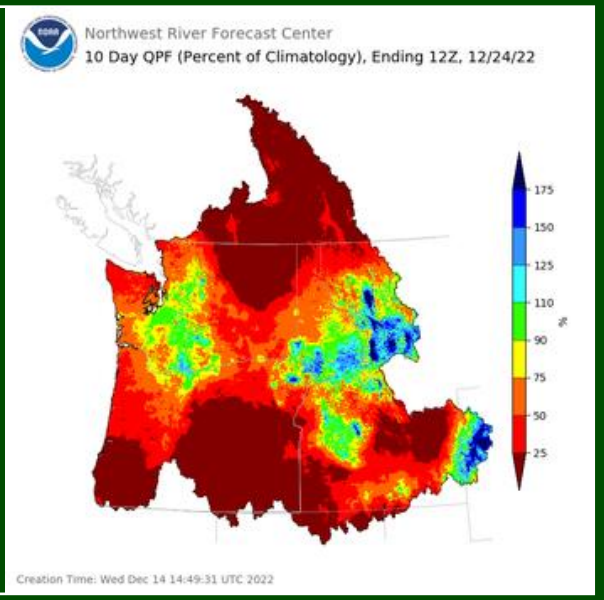


Mid December Outlook

NWRFC
10-DAY
PRECIPITATION
FORECAST

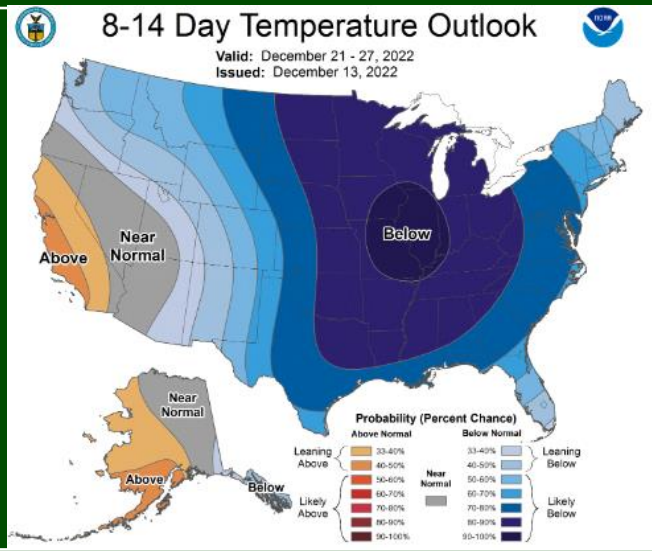
www.nwrfc.noaa.gov/water_supply/wy_summary/wy_summary.php

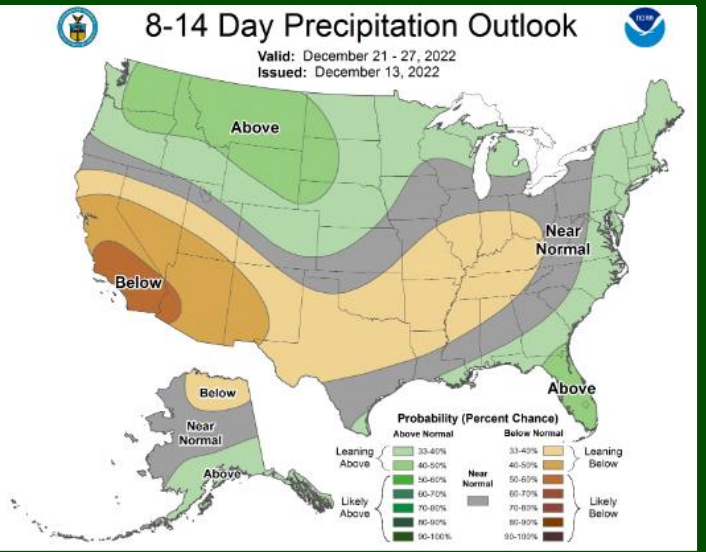




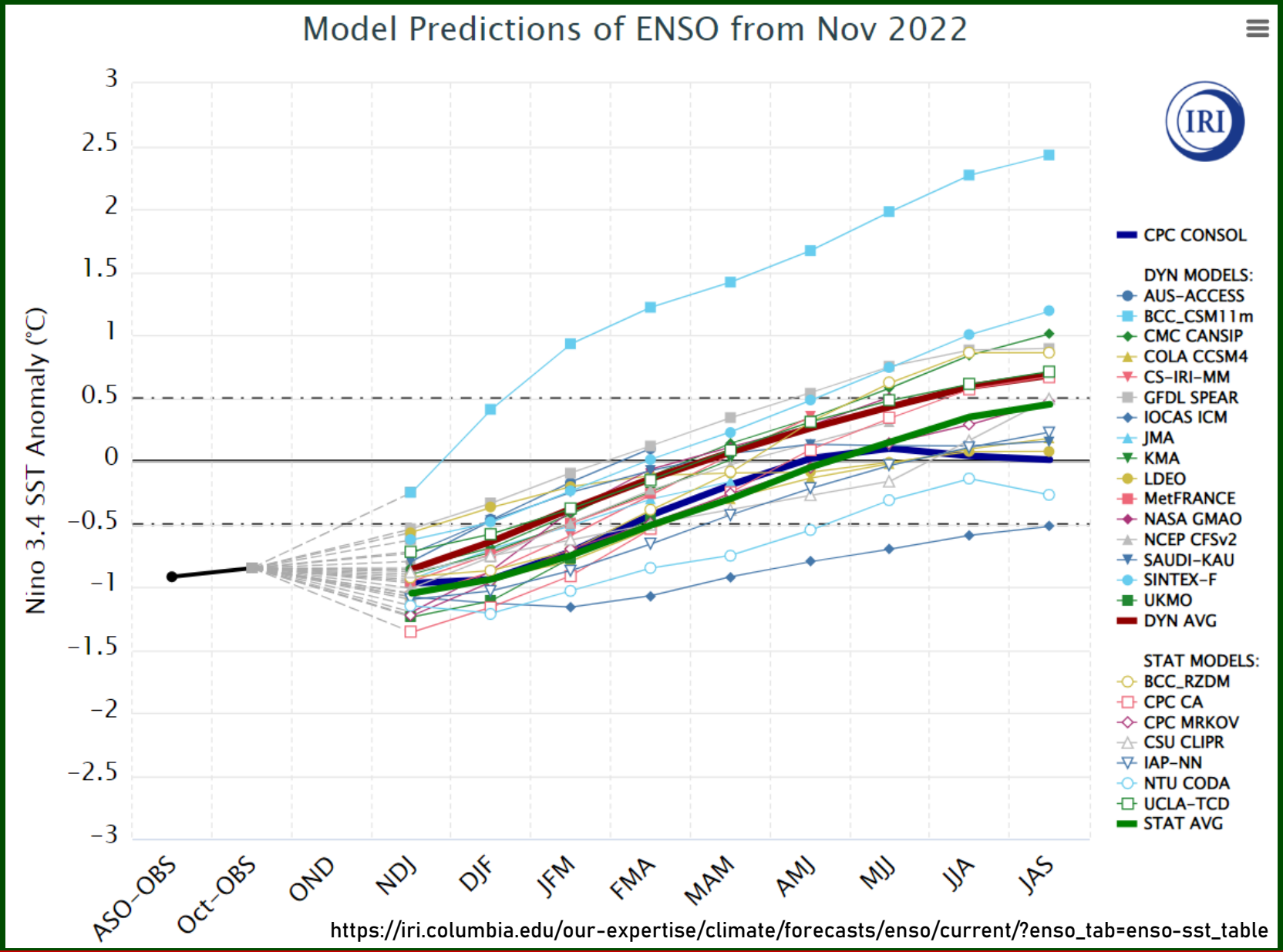
CPC
8 – 14 DAY
OUTLOOK

www.cpc.ncep.noaa.gov



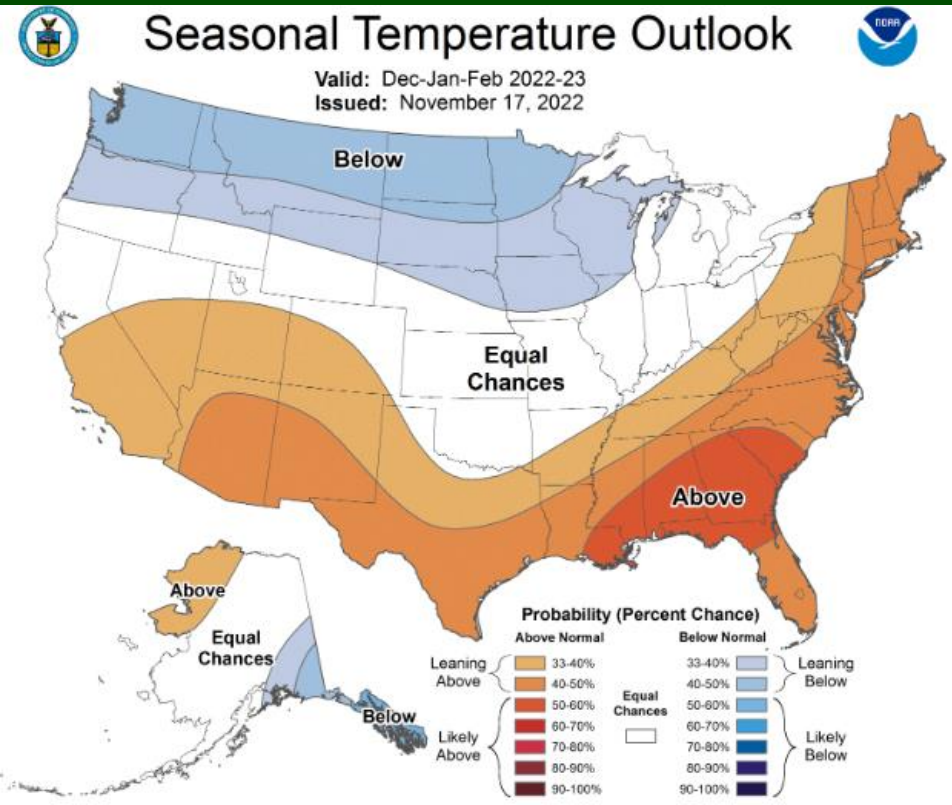


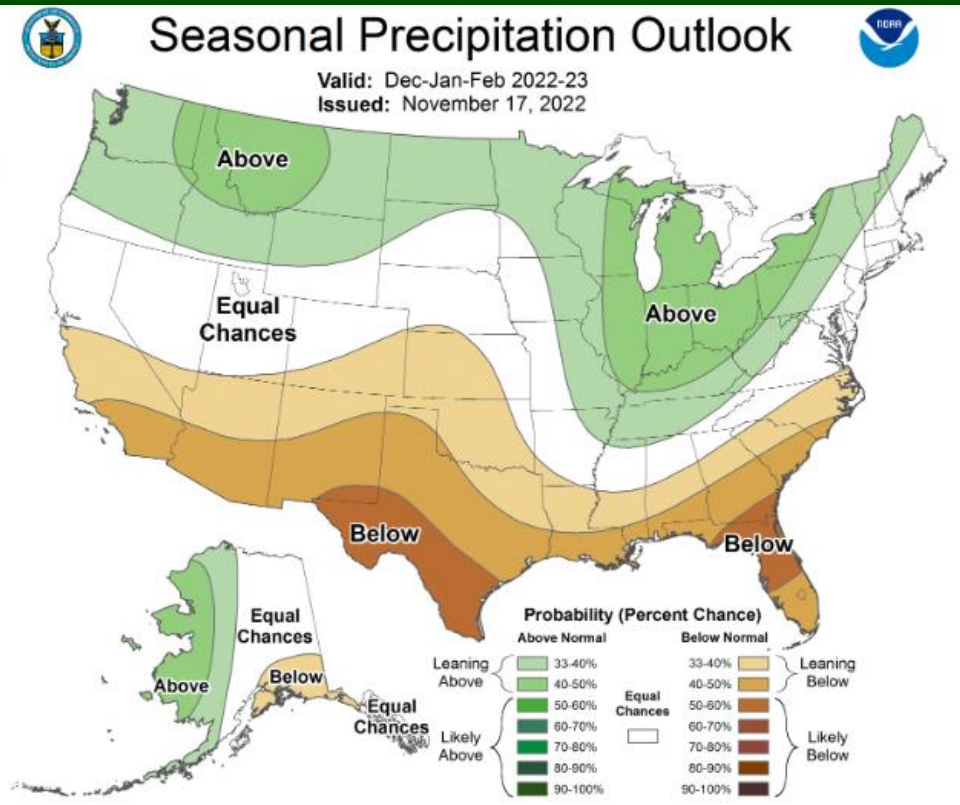
ENSO Status & Prediction



Climate Prediction Center Outlook

December 2022 – February 2023

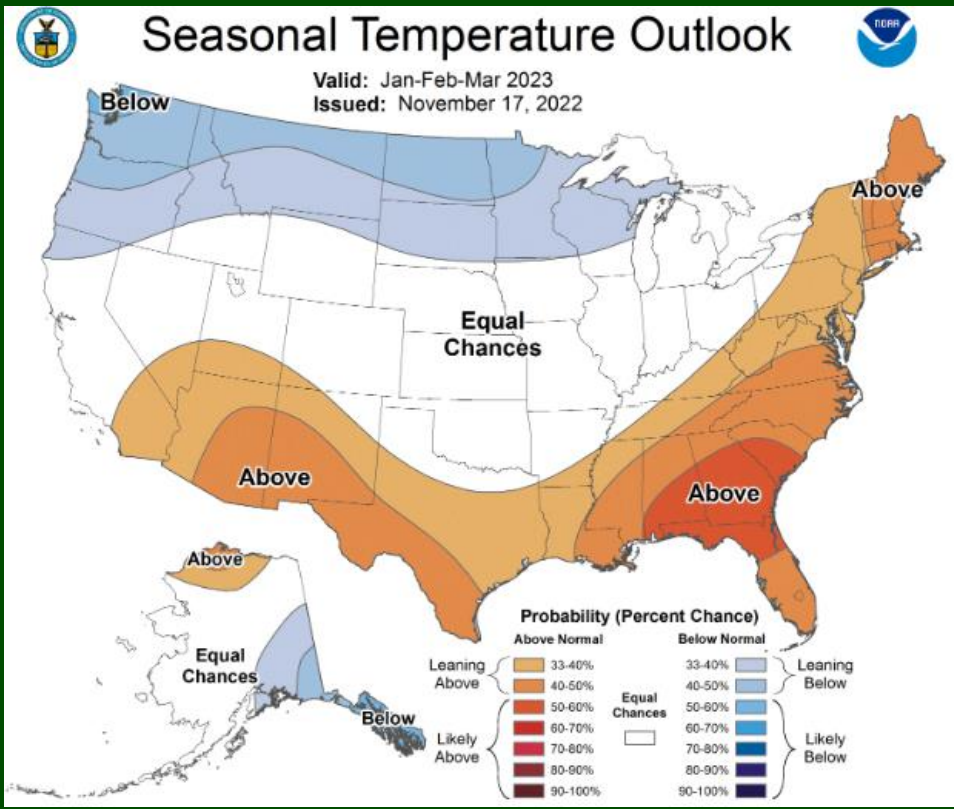


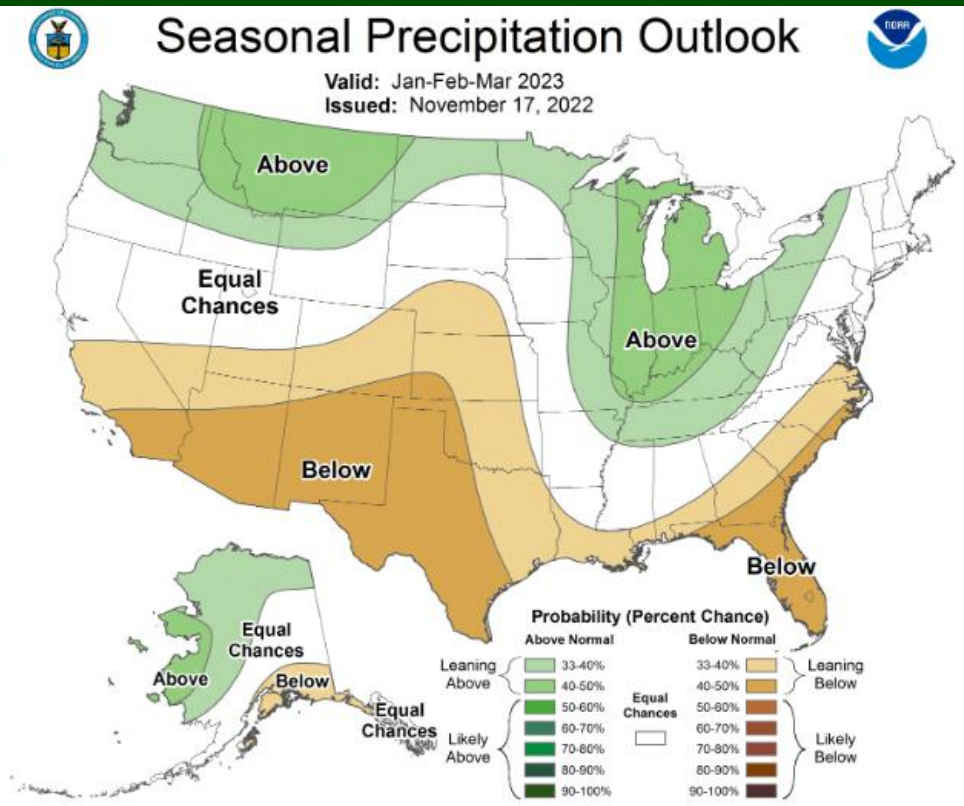


www.cpc.ncep.noaa.gov

Climate Prediction Center Outlook

January – March 2023

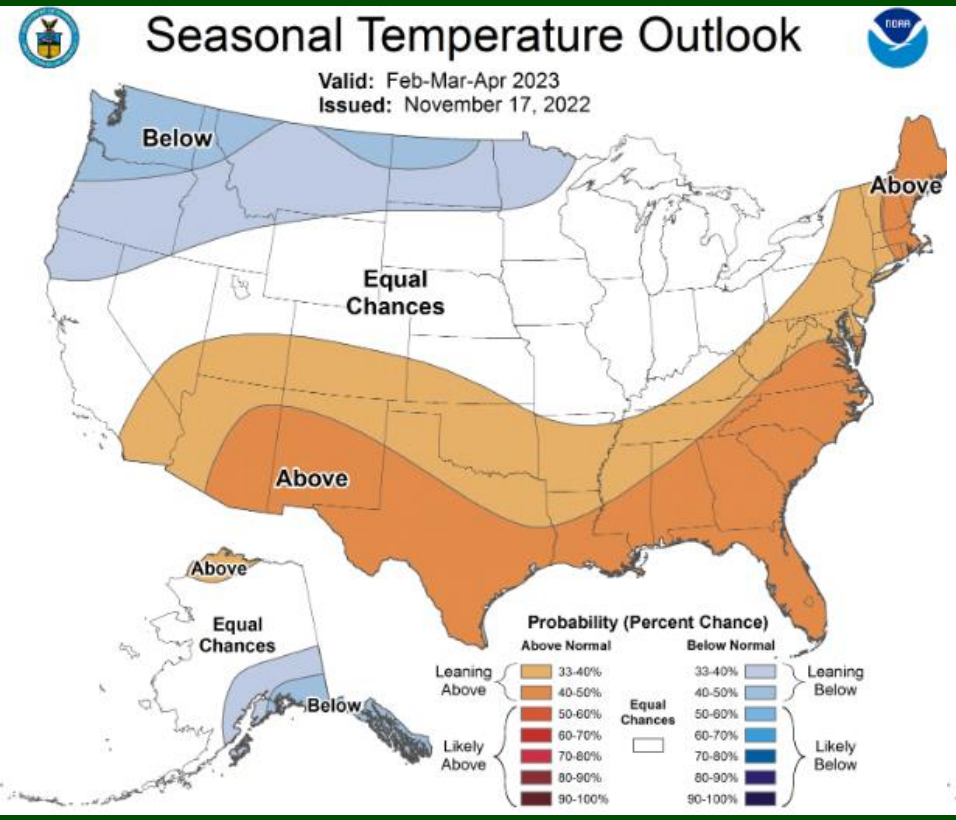


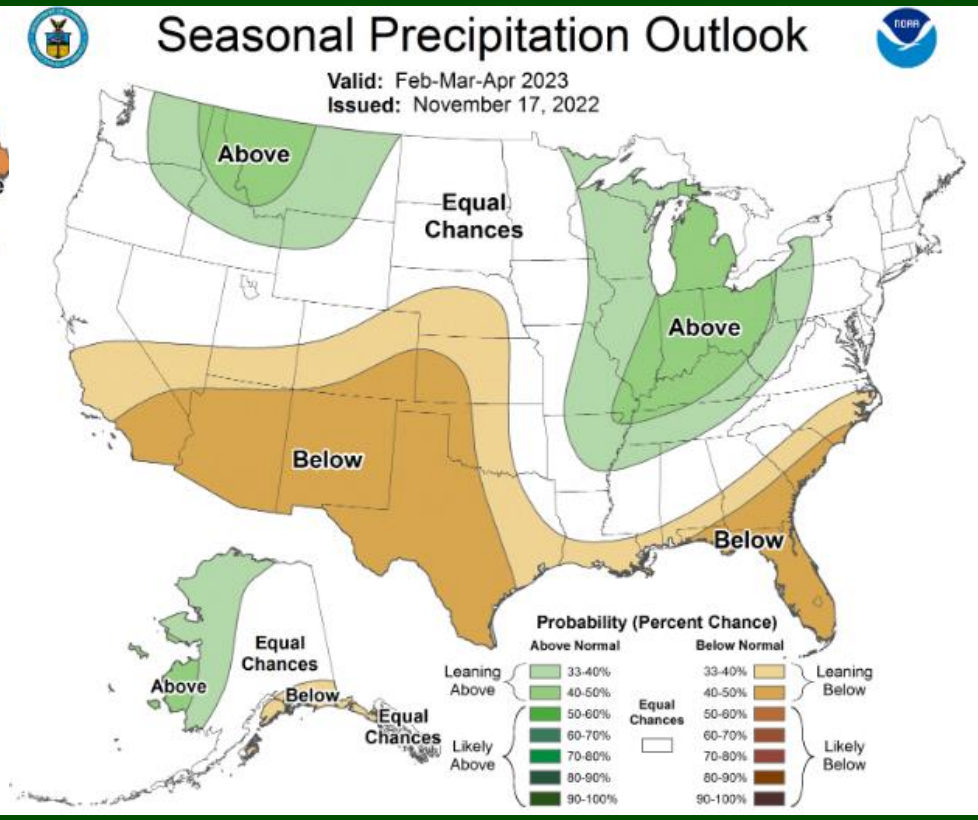


www.cpc.ncep.noaa.gov

Climate Prediction Center Outlook

February – April 2023

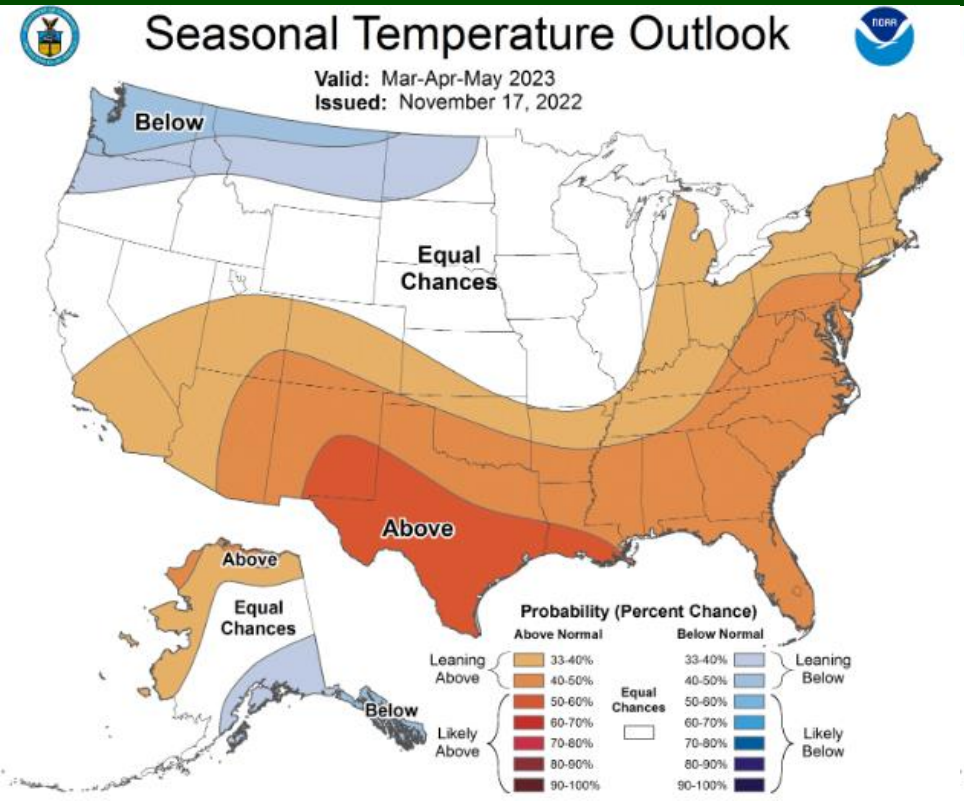


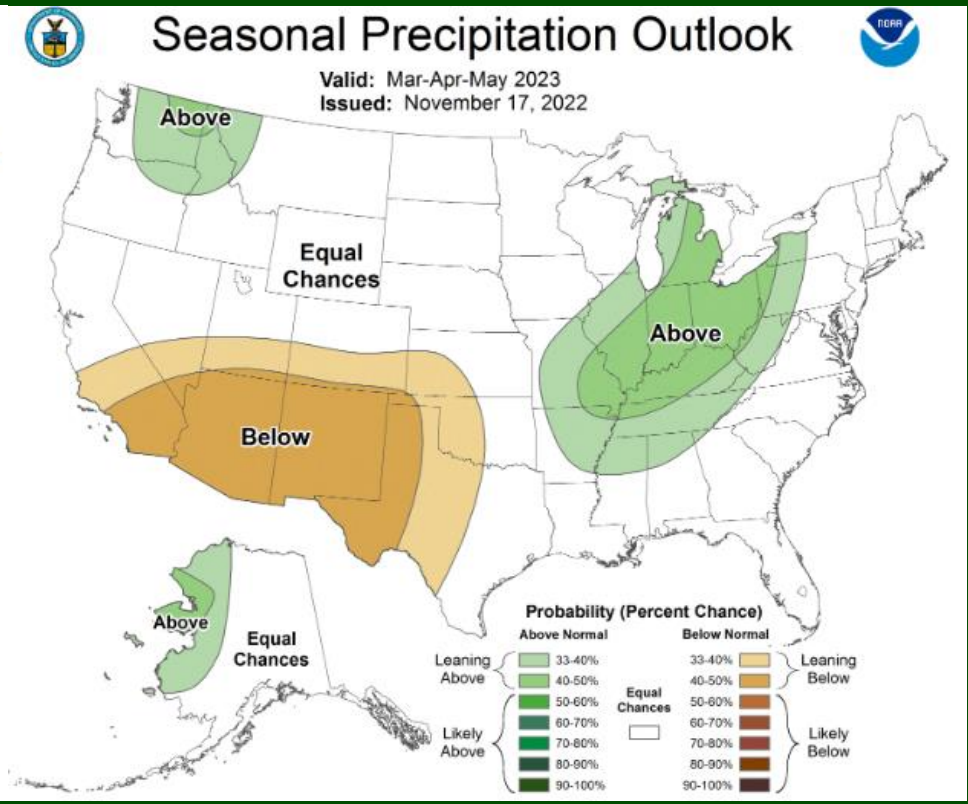


www.cpc.ncep.noaa.gov

Climate Prediction Center Outlook

March – May 2023





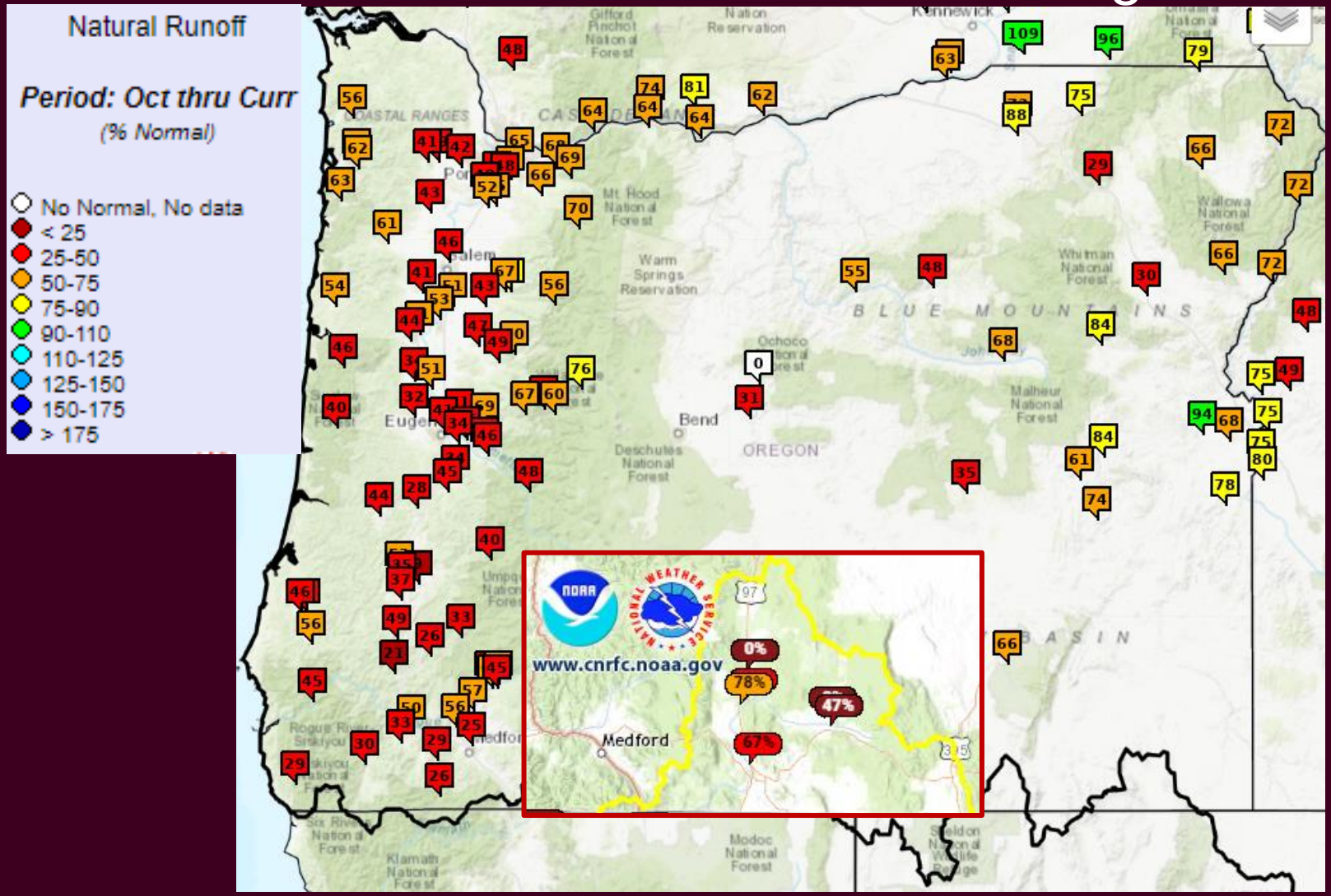
www.cpc.ncep.noaa.gov

December 2022 NWRFC Update

NOAA National Weather Service

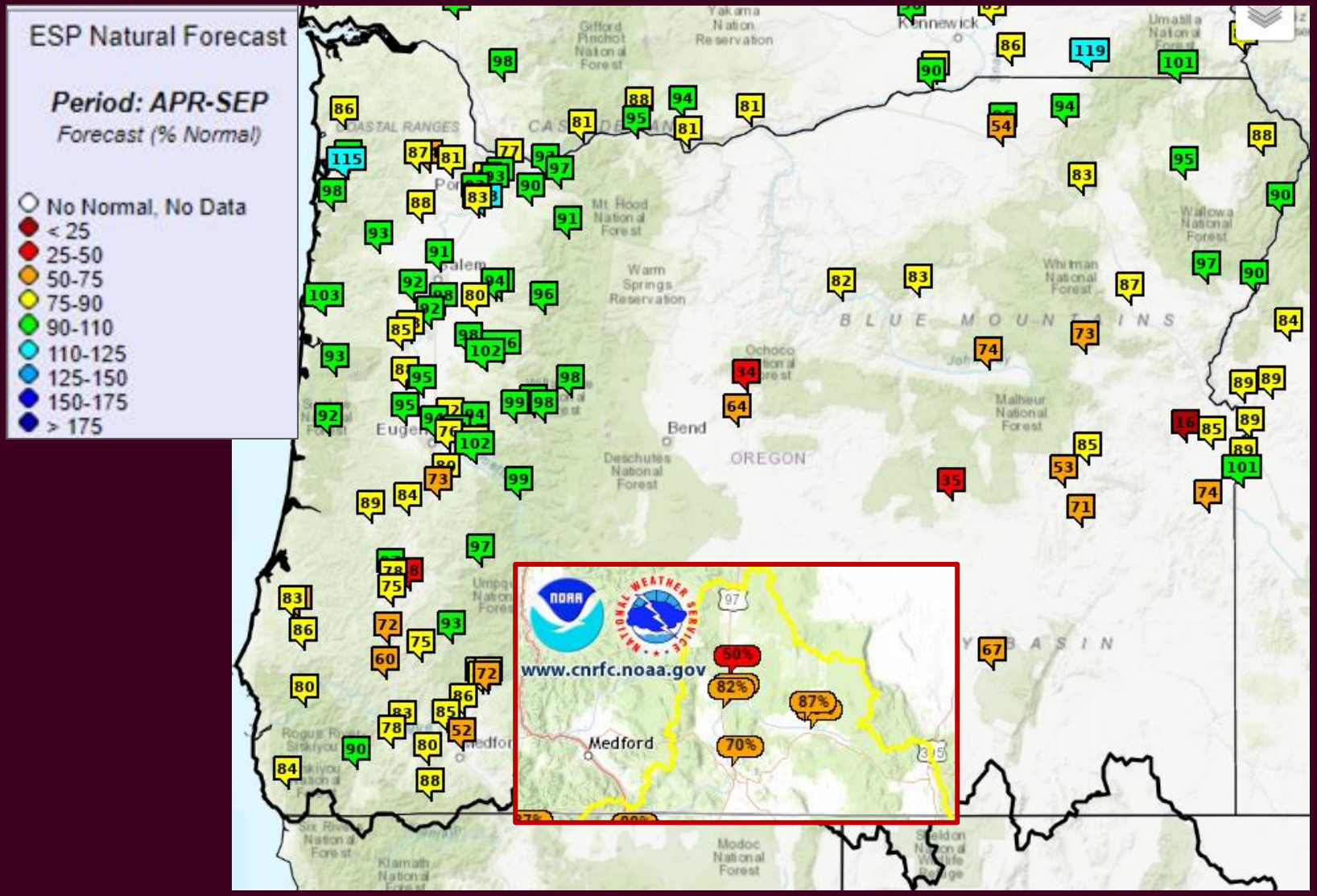
Runoff Volume

October – Present % of Average



Forecast Seasonal Volume

April – September % of Average



Natural Volume Forecast
Willamette R at Salem

WILLAMETTE - AT SALEM (SLMO3)
Forecasts for Water Year 2023

Natural Forecast

ESP with 10 Days QPF ***Ensemble:*** 2022-12-13 ***Issued:*** 2022-12-13

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	3093	4592	91	6243	5067
APR-JUL	2747	4125	91	5666	4509
JAN-SEP	6694	10358	85	13393	12139
JAN-JUL	6225	9865	85	12891	11581
OCT-SEP	8470	12051	73	15902	16497

Experimental

HEFS with 15 days EQPF ***Ensemble:*** 2022-12-13 ***Issued:*** 2022-12-13

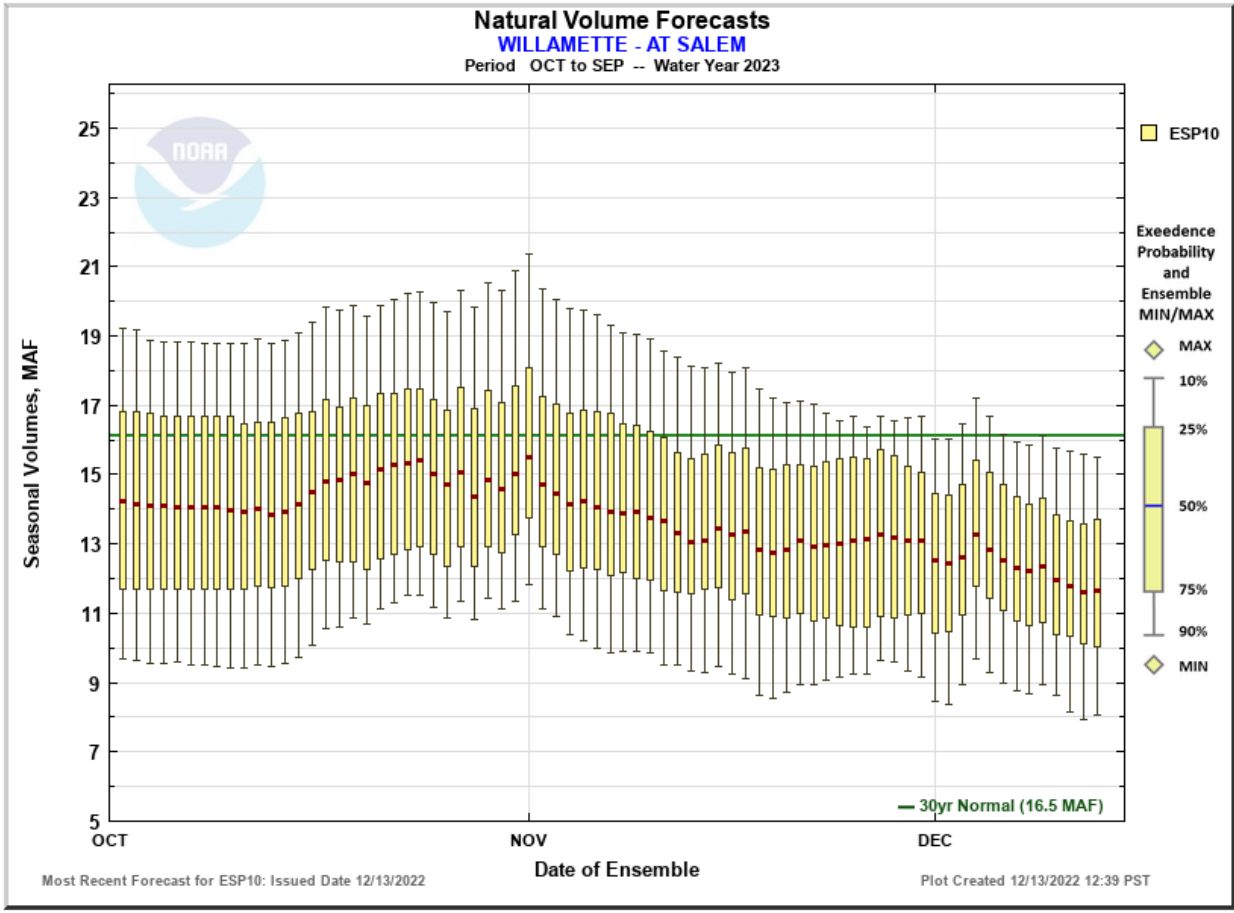
APR-SEP	3170	4578	90	6252	5067
APR-JUL	2817	4124	91	5673	4509
JAN-SEP	7000	10485	86	13542	12139
JAN-JUL	6569	9926	86	12951	11581
OCT-SEP	9066	12375	75	16527	16497

Reference

ESP with 0 Days QPF ***Ensemble:*** 2022-12-13 ***Issued:*** 2022-12-13

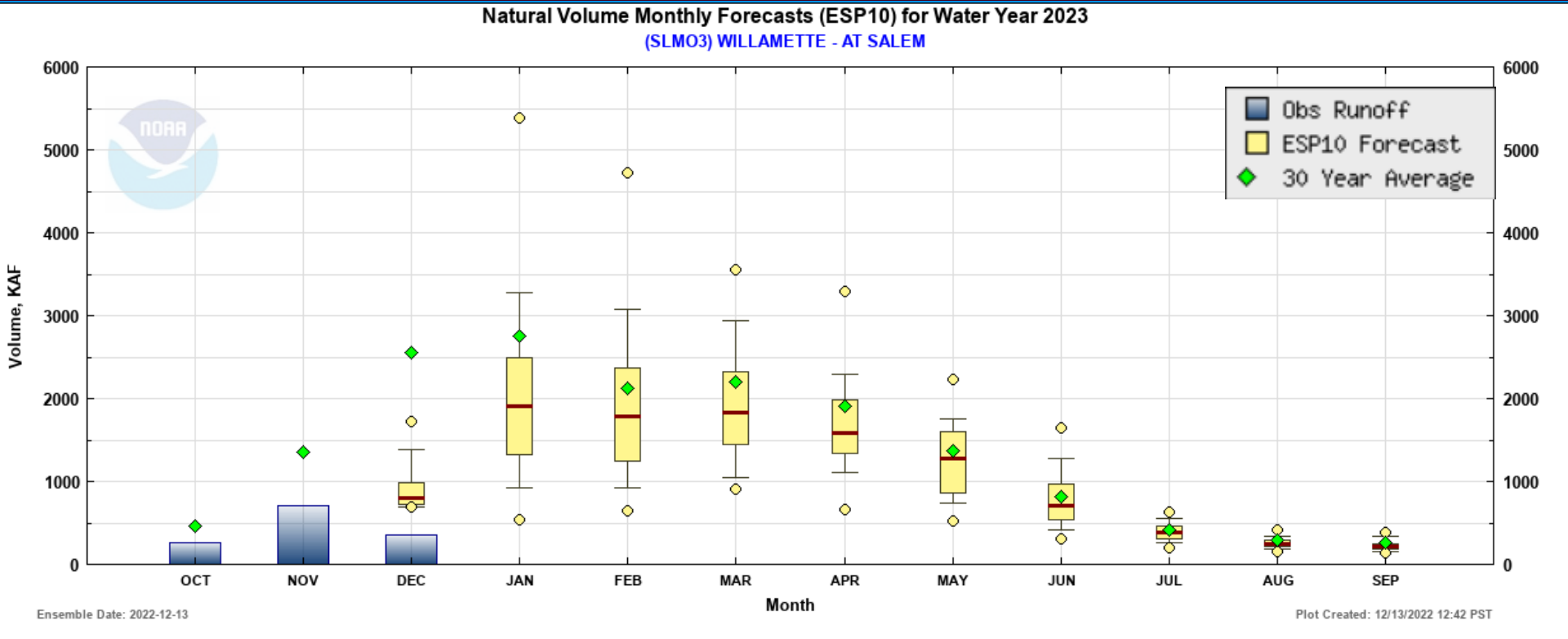
APR-SEP	3326	4682	92	6321	5067
APR-JUL	2970	4249	94	5733	4509
JAN-SEP	7330	10708	88	13828	12139
JAN-JUL	6975	10198	88	13368	11581
OCT-SEP	9307	13013	79	16864	16497

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



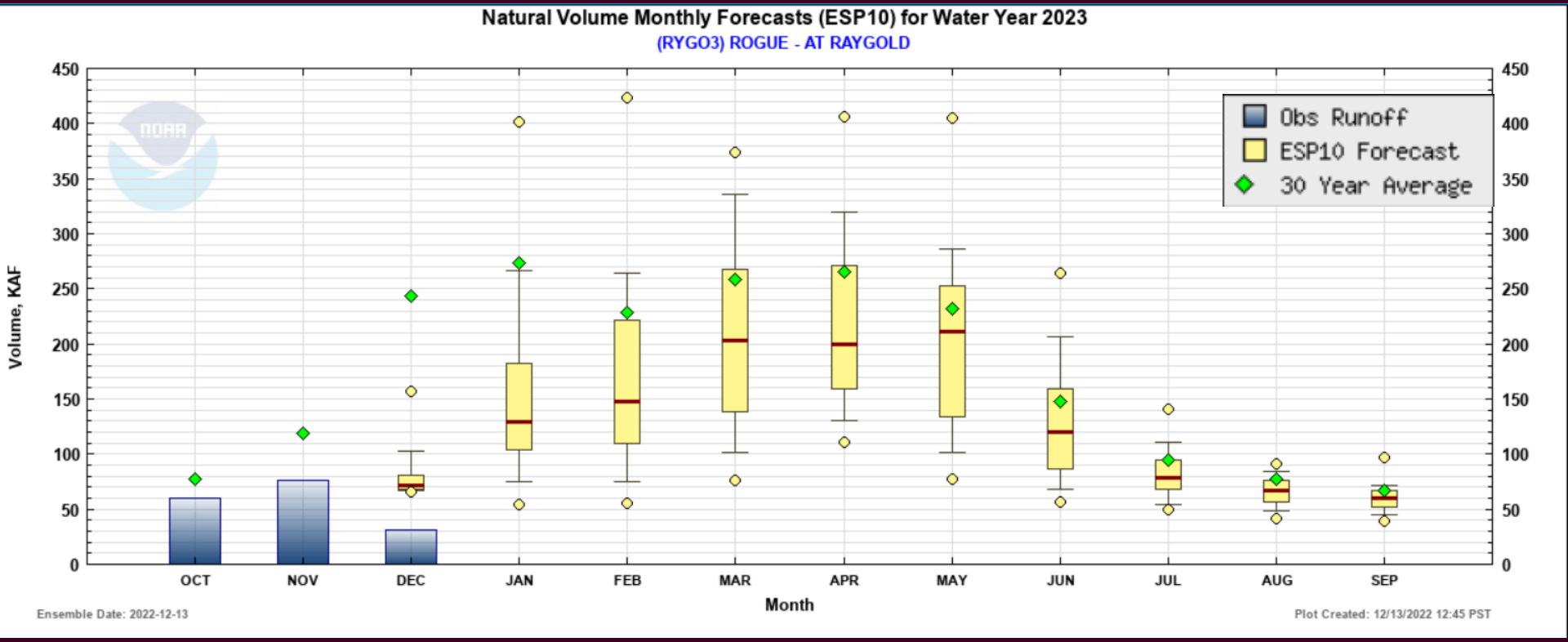
https://www.nwrfc.noaa.gov/natural/plot/nat_forecasts.php?id=SLMO3

Monthly Natural Volumes
Willamette R at Salem

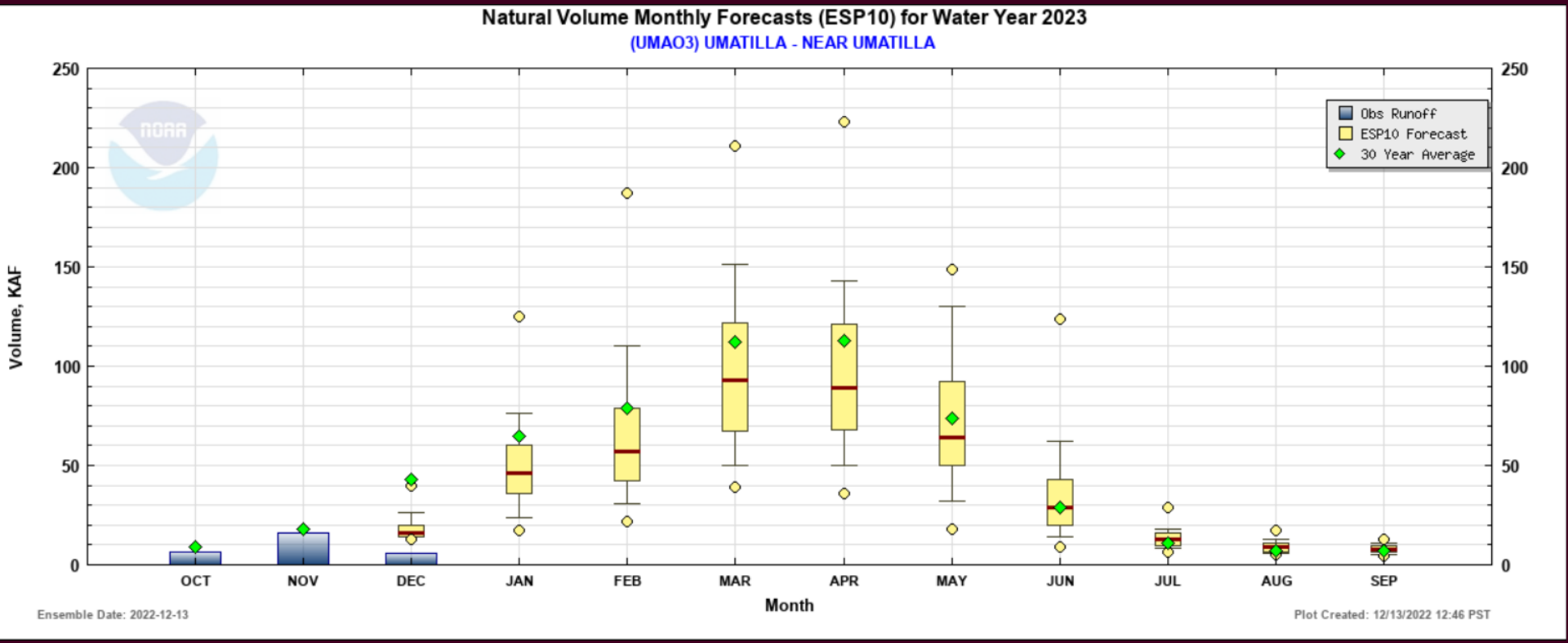


https://www.nwrfc.noaa.gov/natural/plot/nat_forecasts.php?id=SLMO3

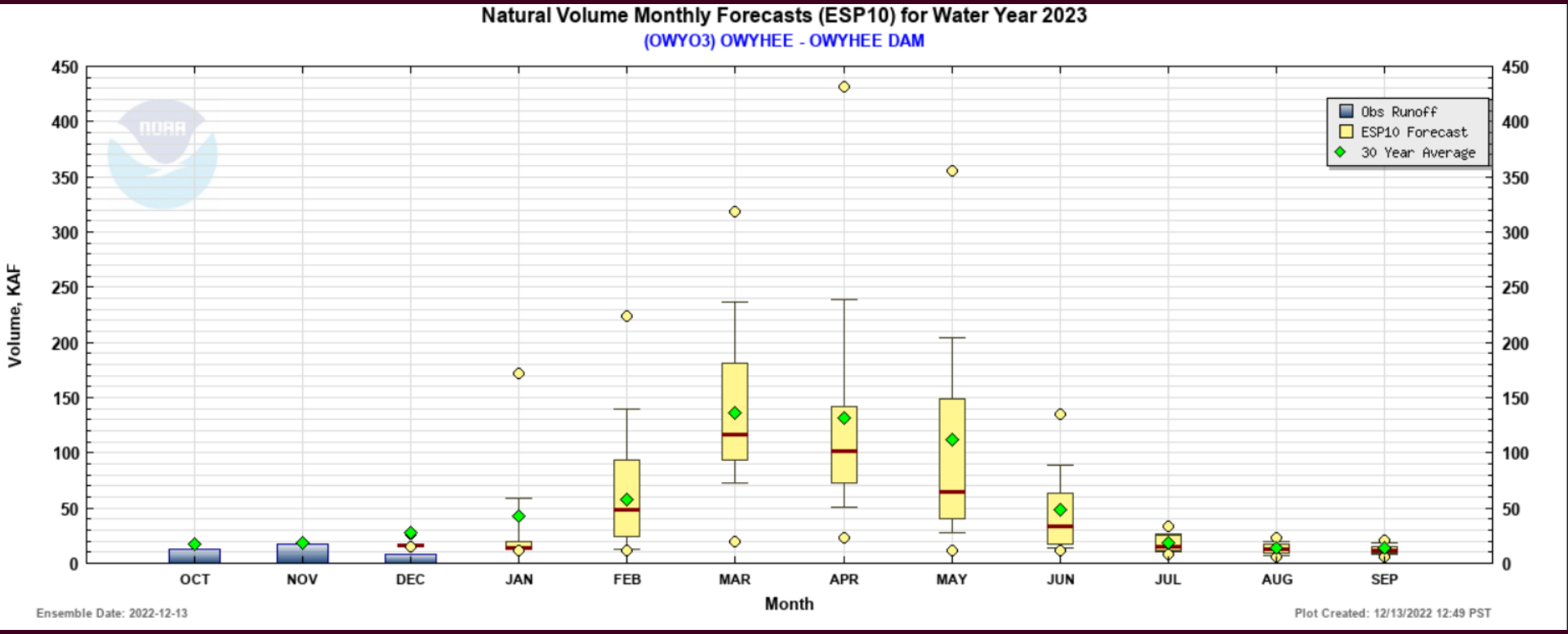
Monthly Natural Volumes
Rogue R near Raygold



Monthly Natural Volumes
Umatilla R near Umatilla



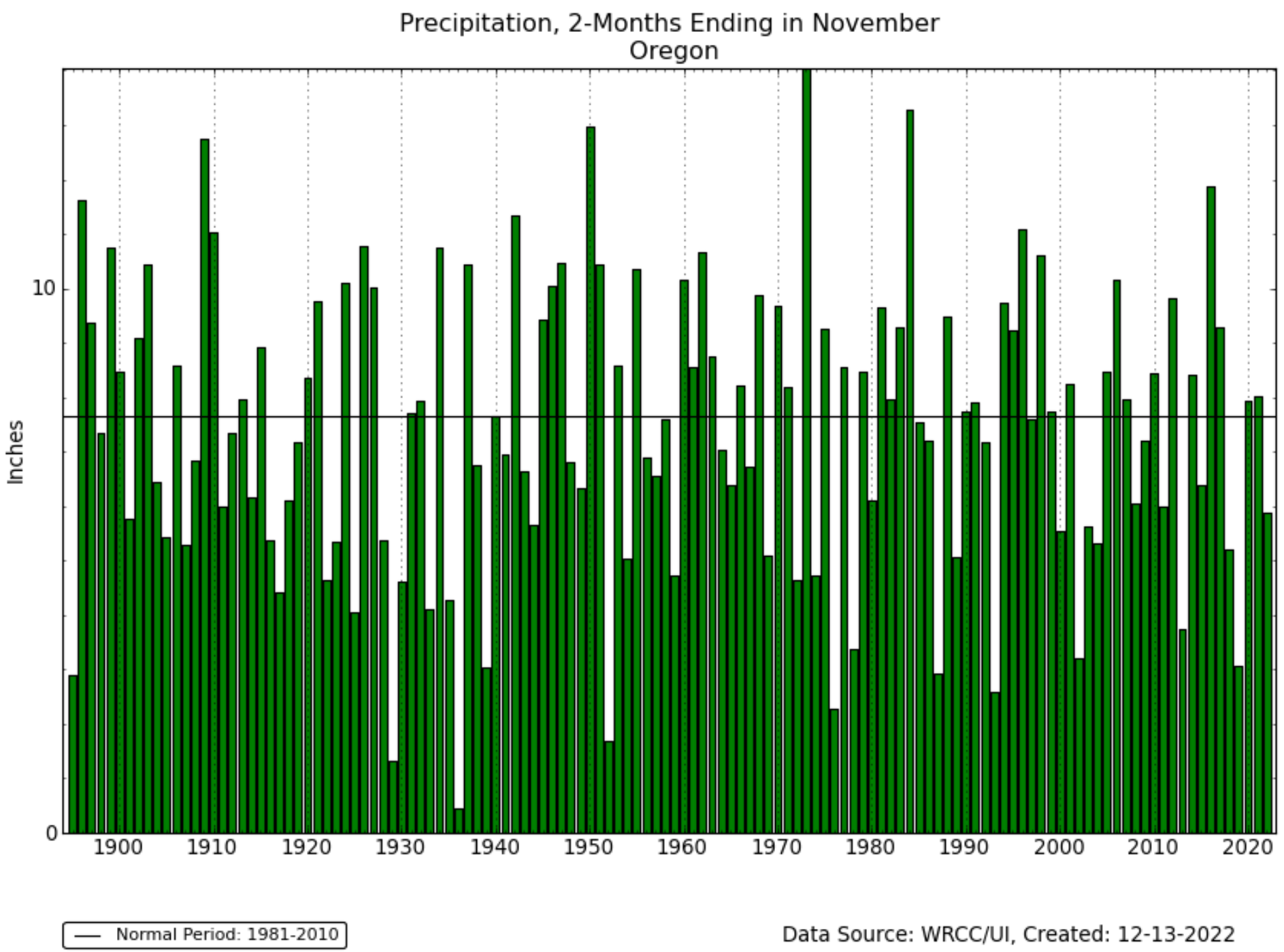
Monthly Natural Volumes
Owyhee R at Owyhee Dam



Monthly Natural Volumes
Owyhee R at Owyhee Dam

2023 Schedule for *Live* Water Supply Briefings					
Jan	Feb	Mar	Apr	May	Jun
5	2	2	6	4	TBD
All presentations held at 10:00am PDT/PST, unless noted otherwise					
Click here for Registration Information					

Info: https://www.nwrfc.noaa.gov/water_supply/ws_schd.cgi?version=20190204v1
Webinar Registration: https://register.gotowebinar.com/rt/9001532798339394573



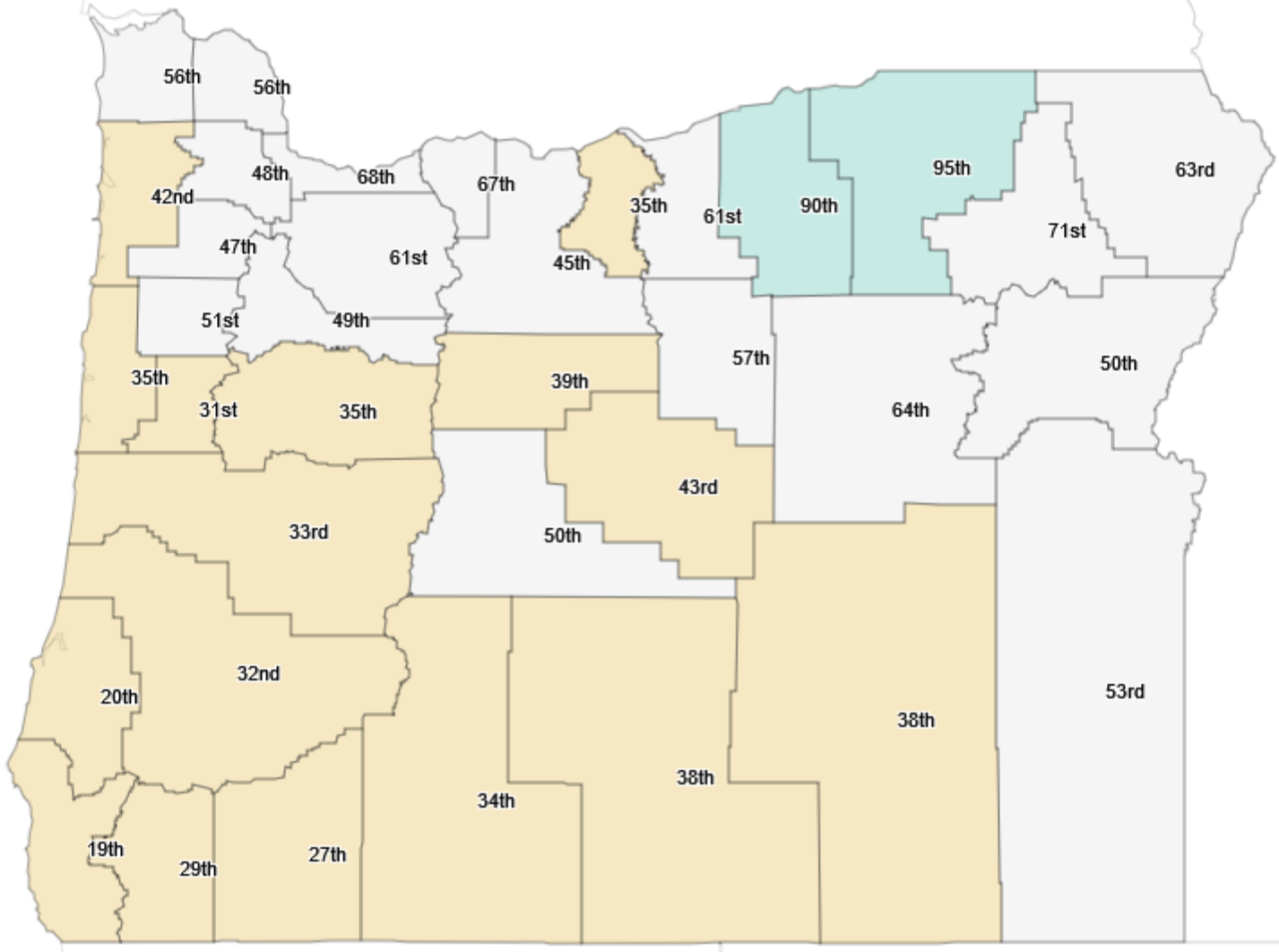
37th driest start to the water year statewide

Oct-Nov 2022: 5.56”

This is 1.42” less than the 1981-2010 average of 6.98” (equivalent to 79.7% of average)

County Precipitation Rank (128 years)

October - November 2022



Driest ↓1/10 ↓ 1/3 Near Normal ↑ 1/3 ↑1/10 Wettest

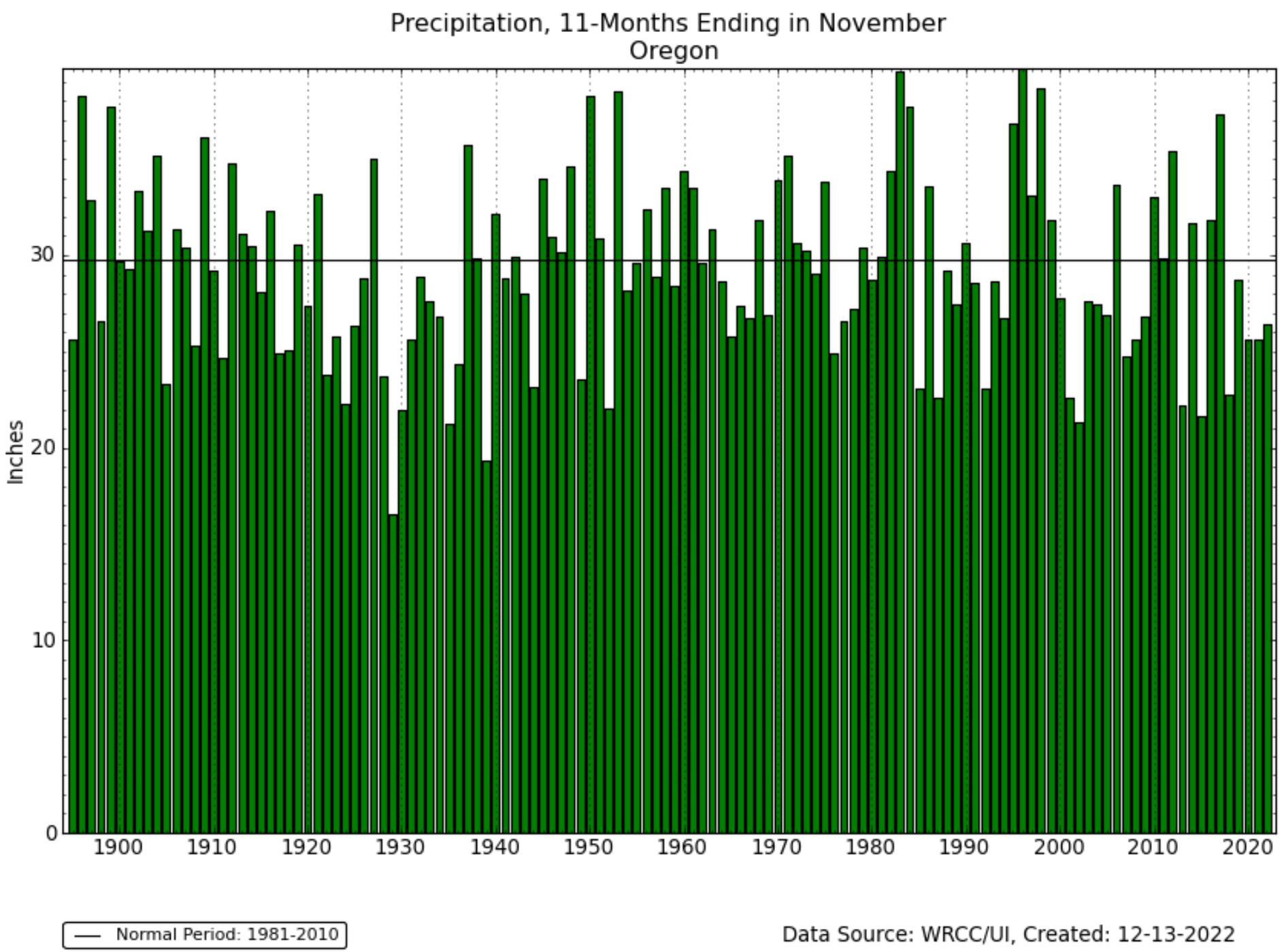
Oregon *(Hover over a county)*

Precip:5.56" 37th **Anomaly:**-1.42" **Mean:**6.98"

Rank: Driest

Historically dry start to the water year

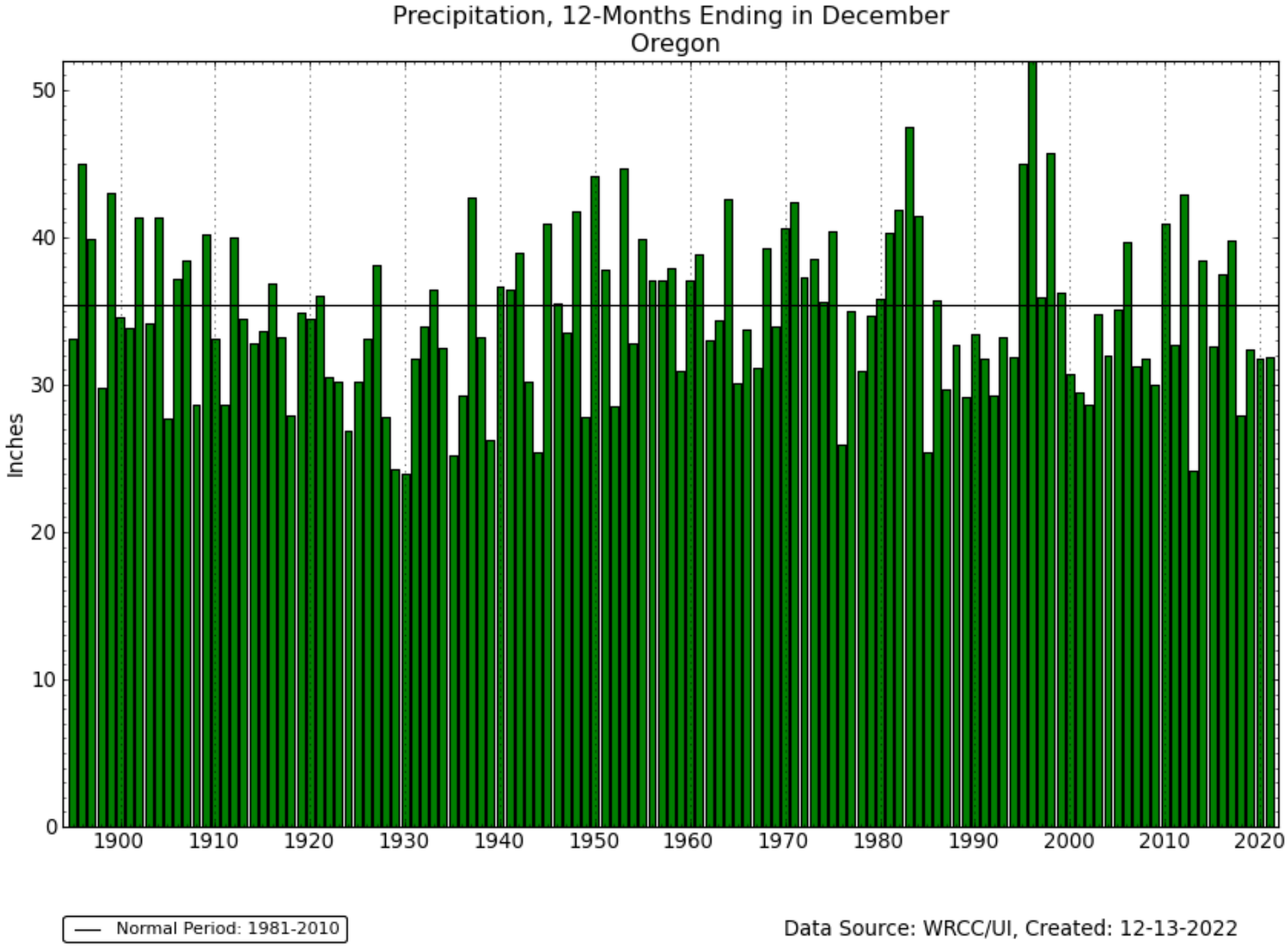
- Eugene and Salem
  - No measurable precipitation from Oct 1 to Oct 21, which was the second longest dry start to the water year (1987 was the other) since at least 1940
  - Salem had similar dry starts in their data record during 1895, 1901, 1907, and 1917
- Portland
  - No measurable precipitation from Oct 1 to Oct 20 , which was the second longest dry start to the water year (1987 was the other) since at least 1938



32nd driest Jan-Nov since 1895

Jan-Nov 2022: 26.41”

This is 88.8% of the 1981-2010 average

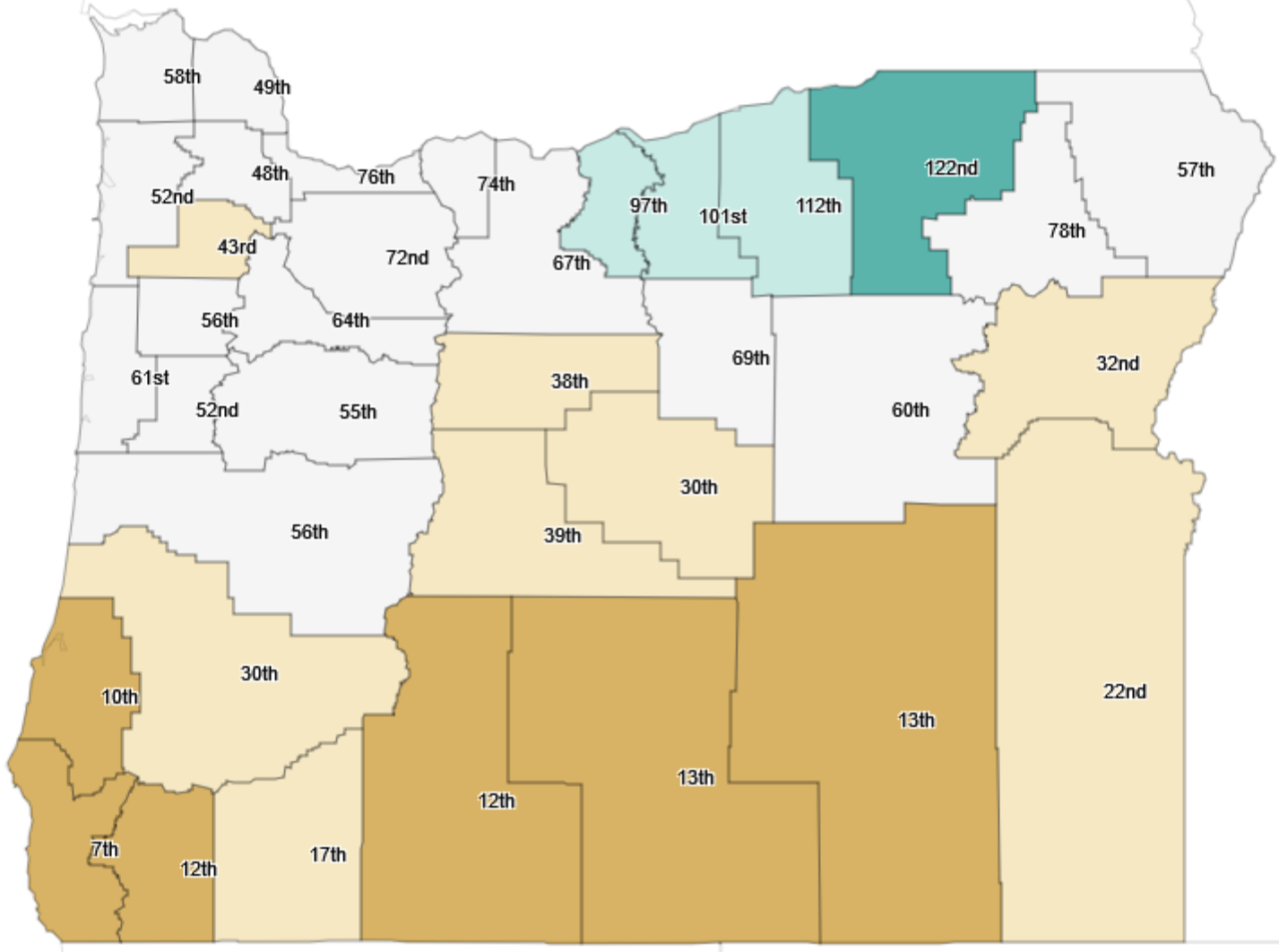


Calendar year accumulated precipitation

2022 is on track to be the 5th consecutive calendar year of below average precipitation statewide

County Precipitation Rank (128 years)

January - November 2022

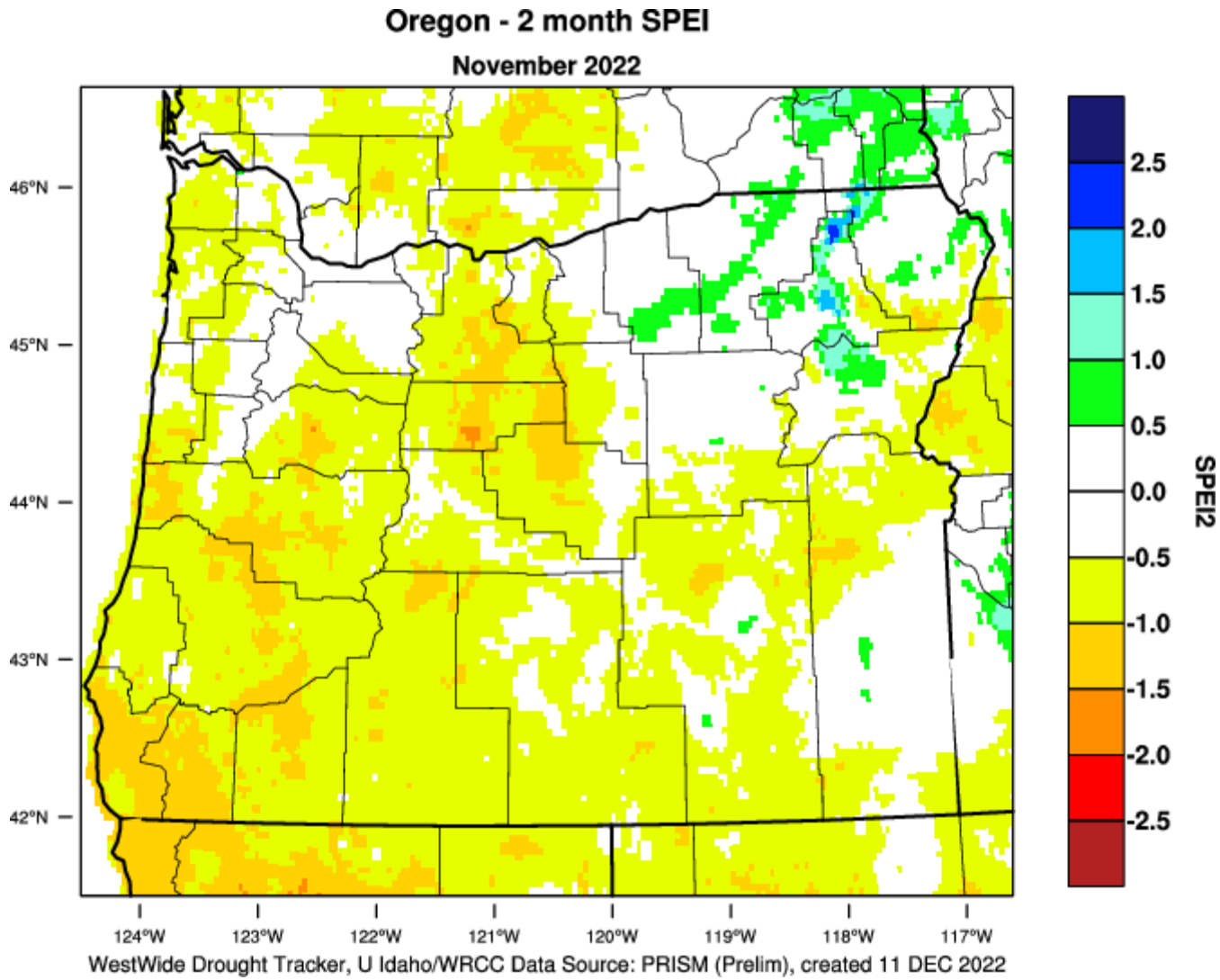


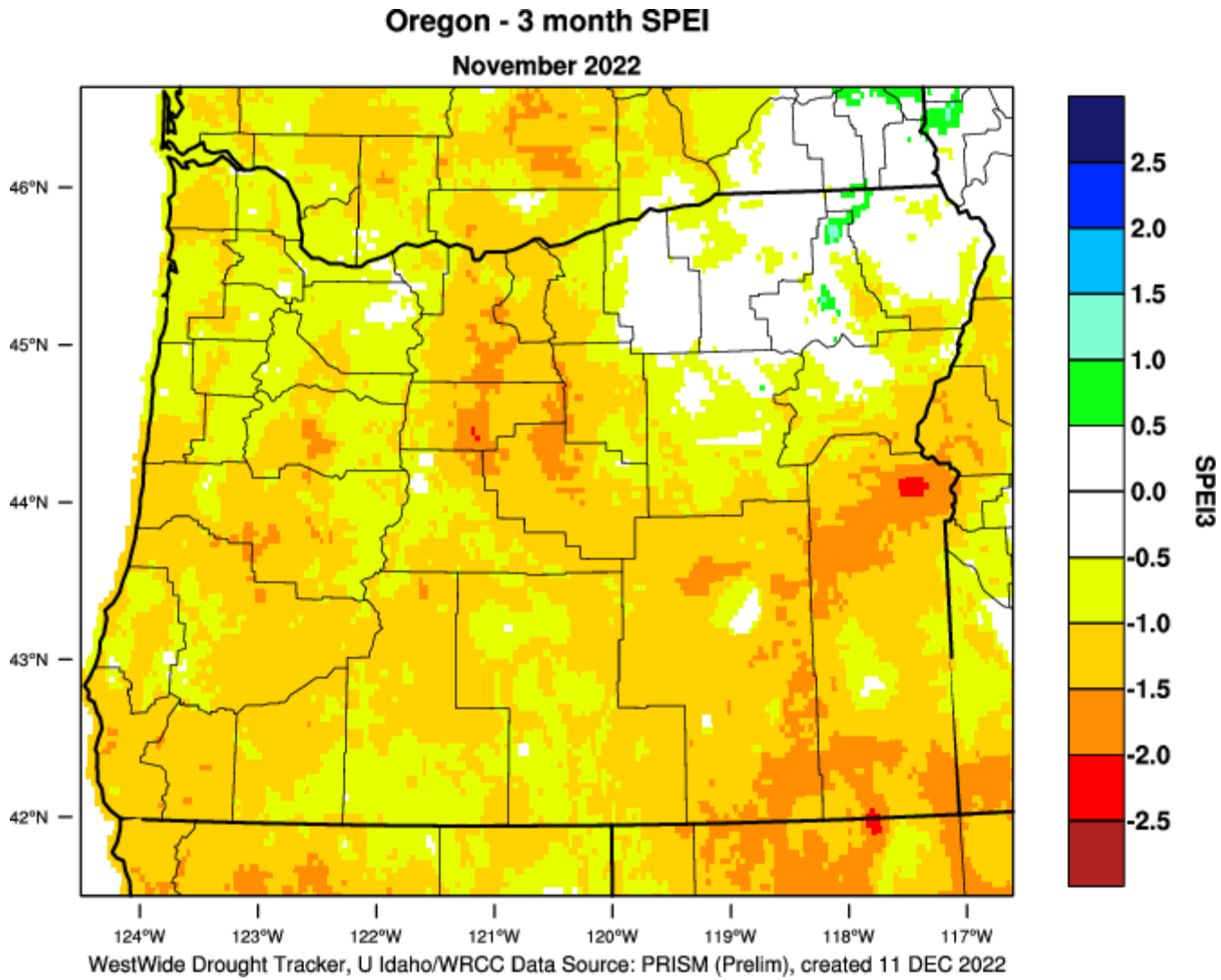
Driest ↓1/10 ↓ 1/3 Near Normal ↑ 1/3 ↑1/10 Wettest

Oregon *(Hover over a county)*

Precip:23.85" 32nd **Anomaly:**-3.53" **Mean:**27.38"

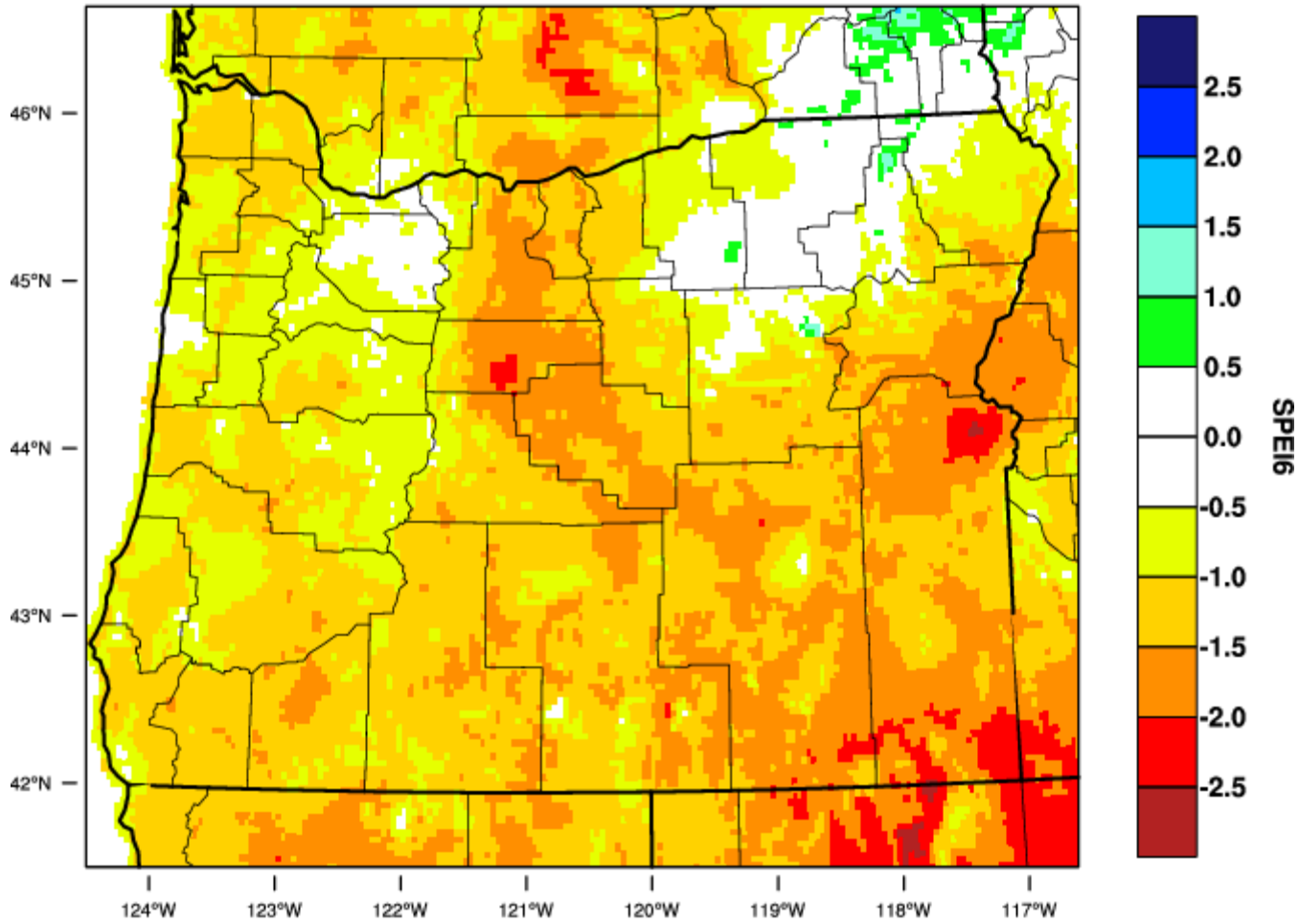
Rank: Driest


Oregon - 2 month SPEI
November 2022
46°N
45°N
44°N
43°N
42°N
124°W
123°W
122°W
121°W
120°W
119°W
118°W
117°W
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
SPEI2
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 11 DEC 2022

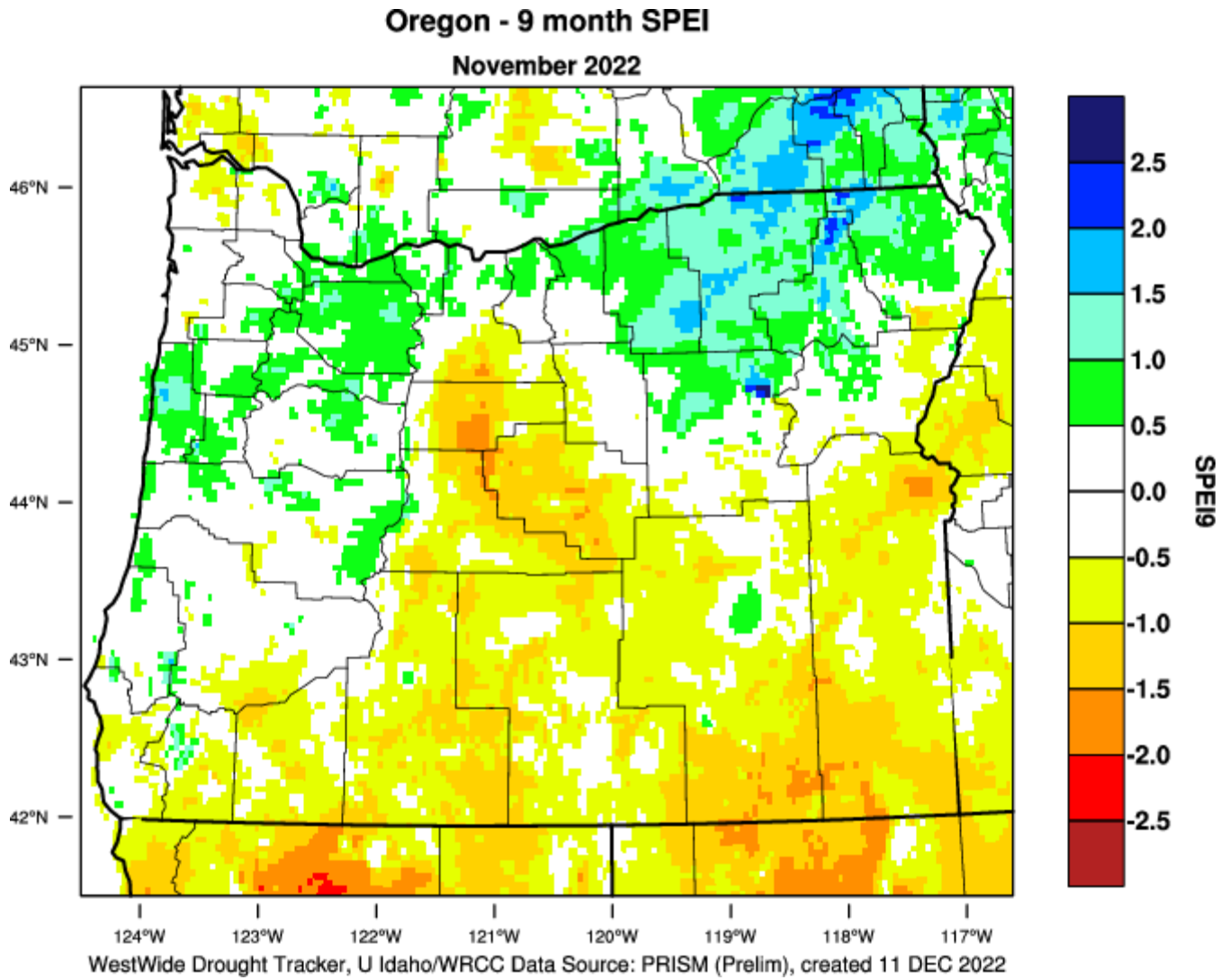

Oregon - 3 month SPEI
November 2022
46°N
45°N
44°N
43°N
42°N
124°W
123°W
122°W
121°W
120°W
119°W
118°W
117°W
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
SPEI3
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 11 DEC 2022

Oregon - 6 month SPEI

November 2022



WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 11 DEC 2022


Oregon - 9 month SPEI
November 2022
46°N
45°N
44°N
43°N
42°N
124°W
123°W
122°W
121°W
120°W
119°W
118°W
117°W
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
SPEI9
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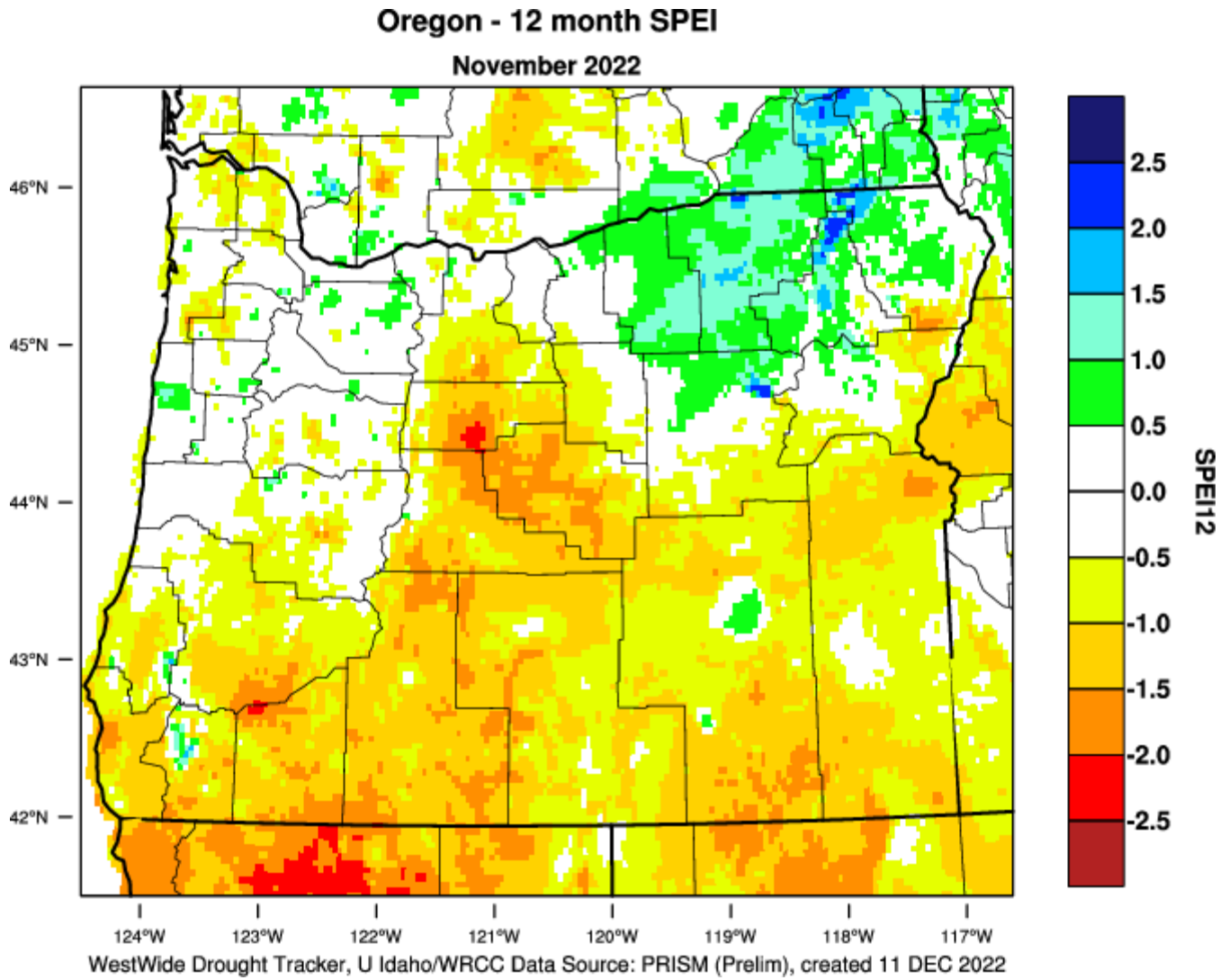
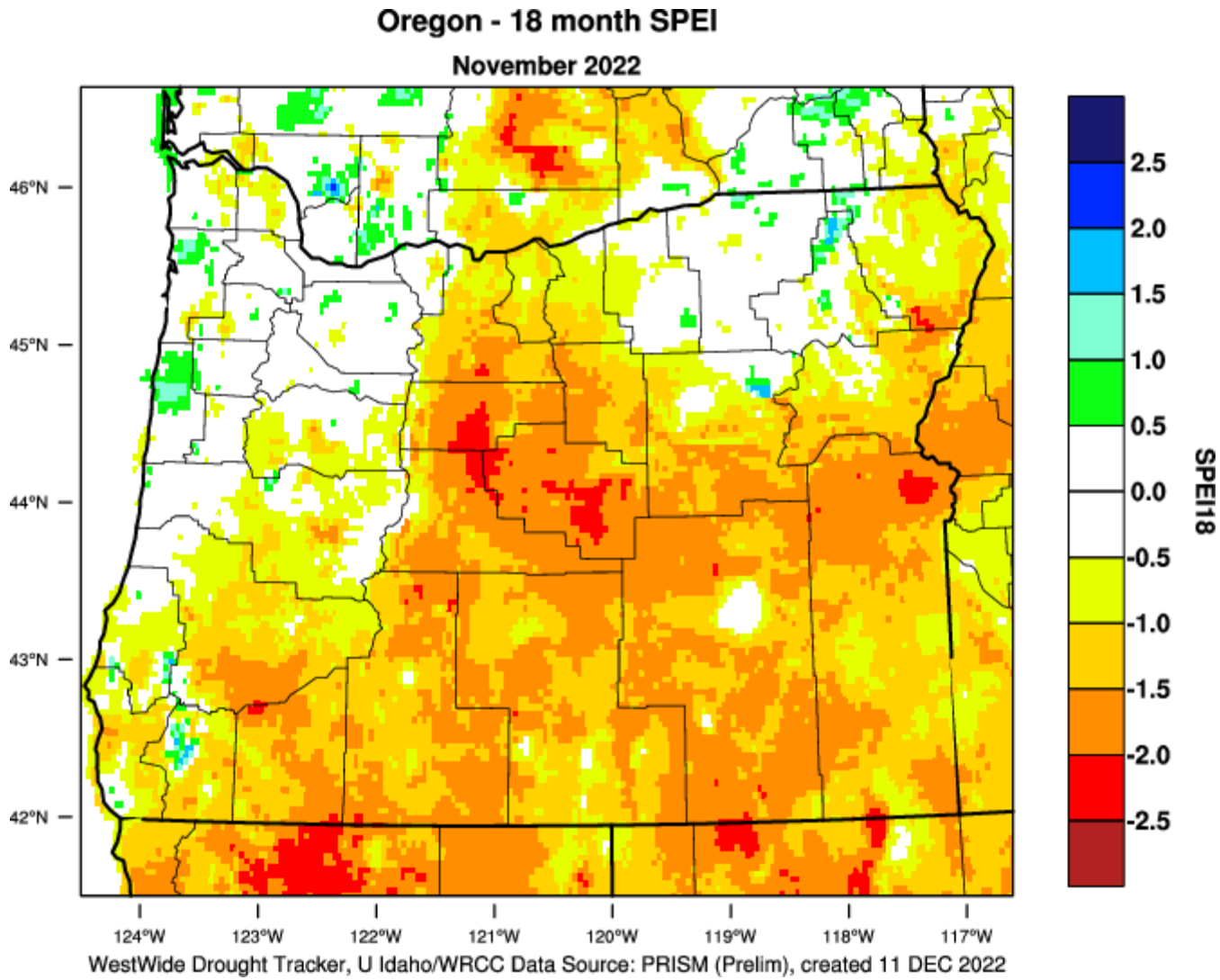
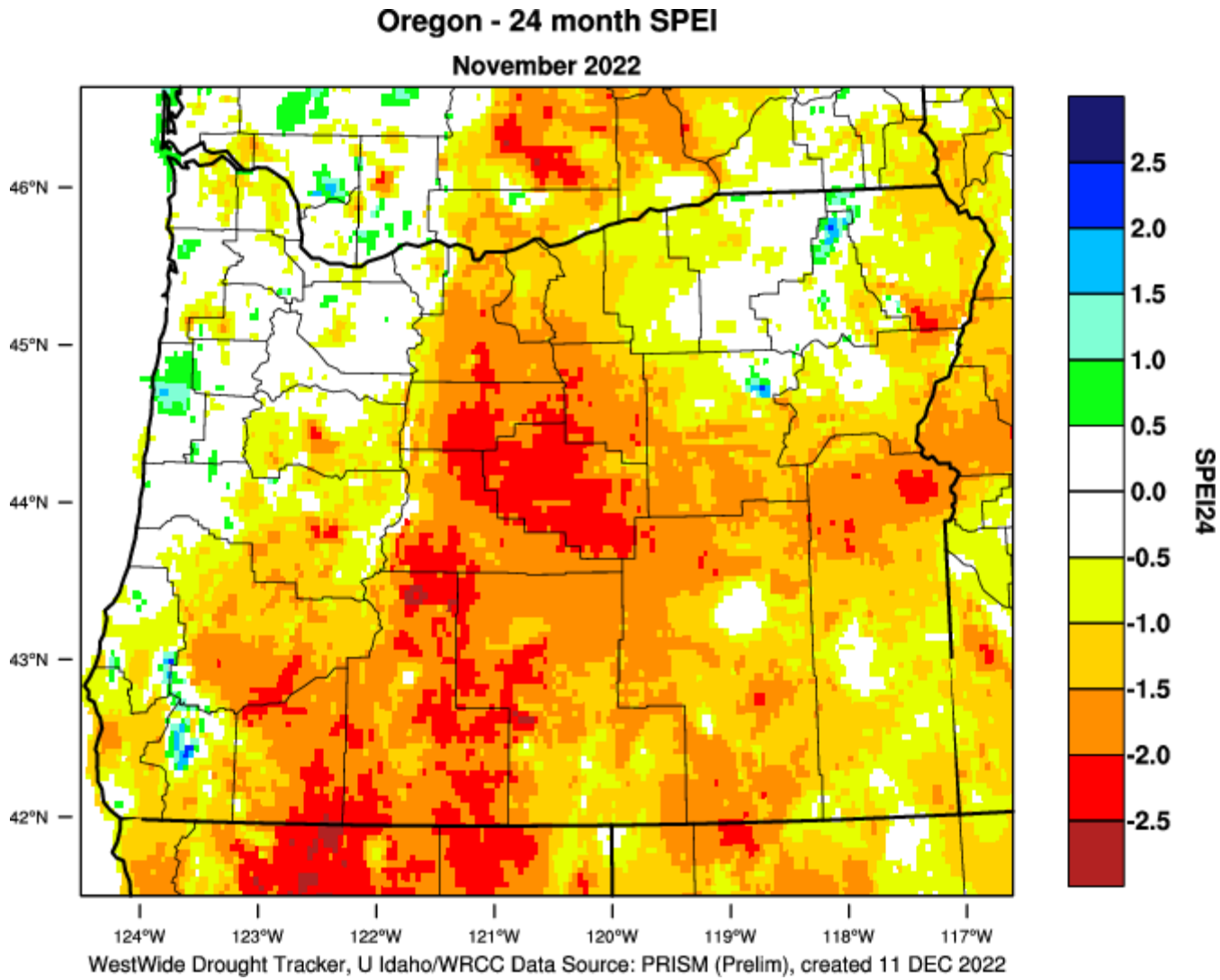
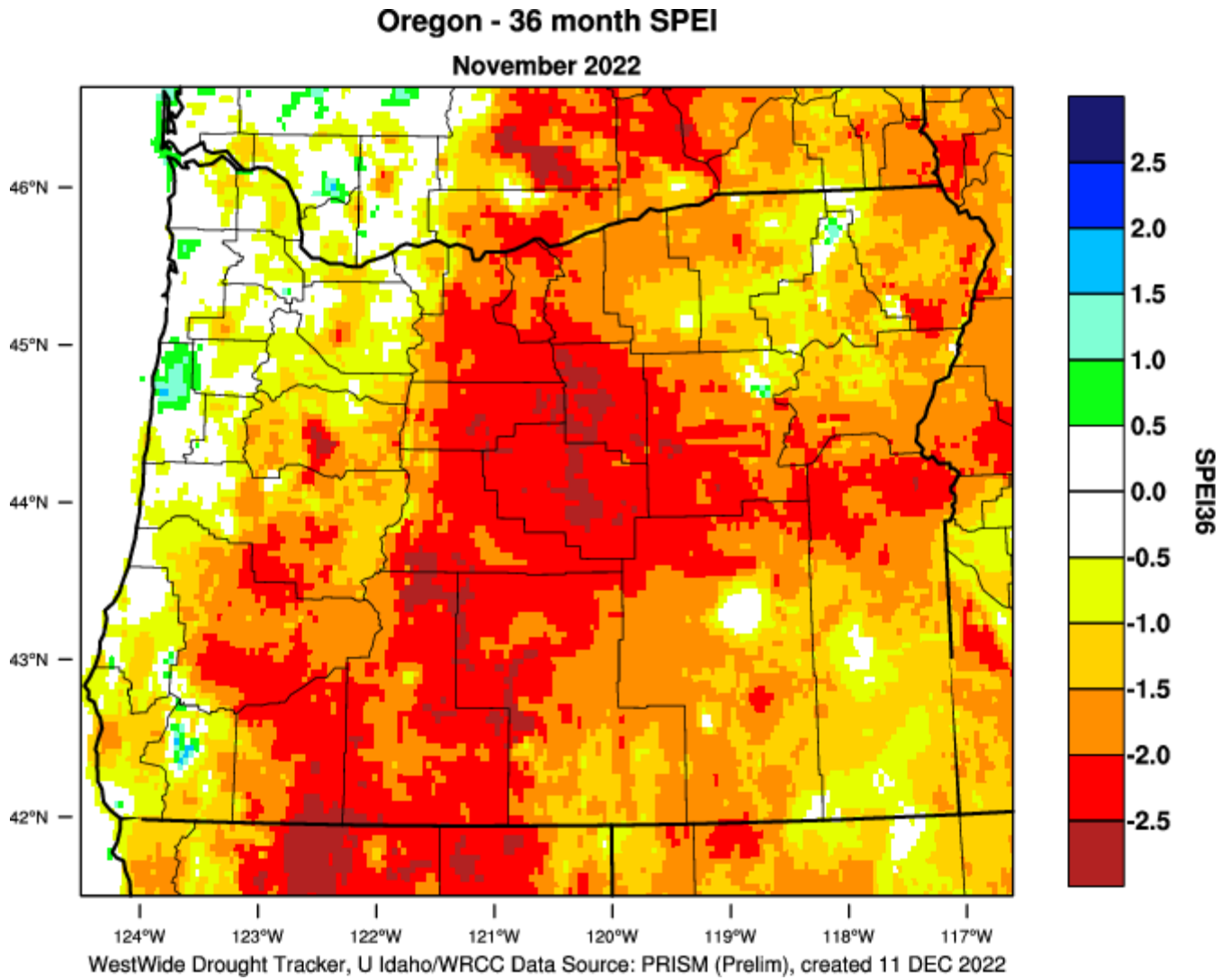
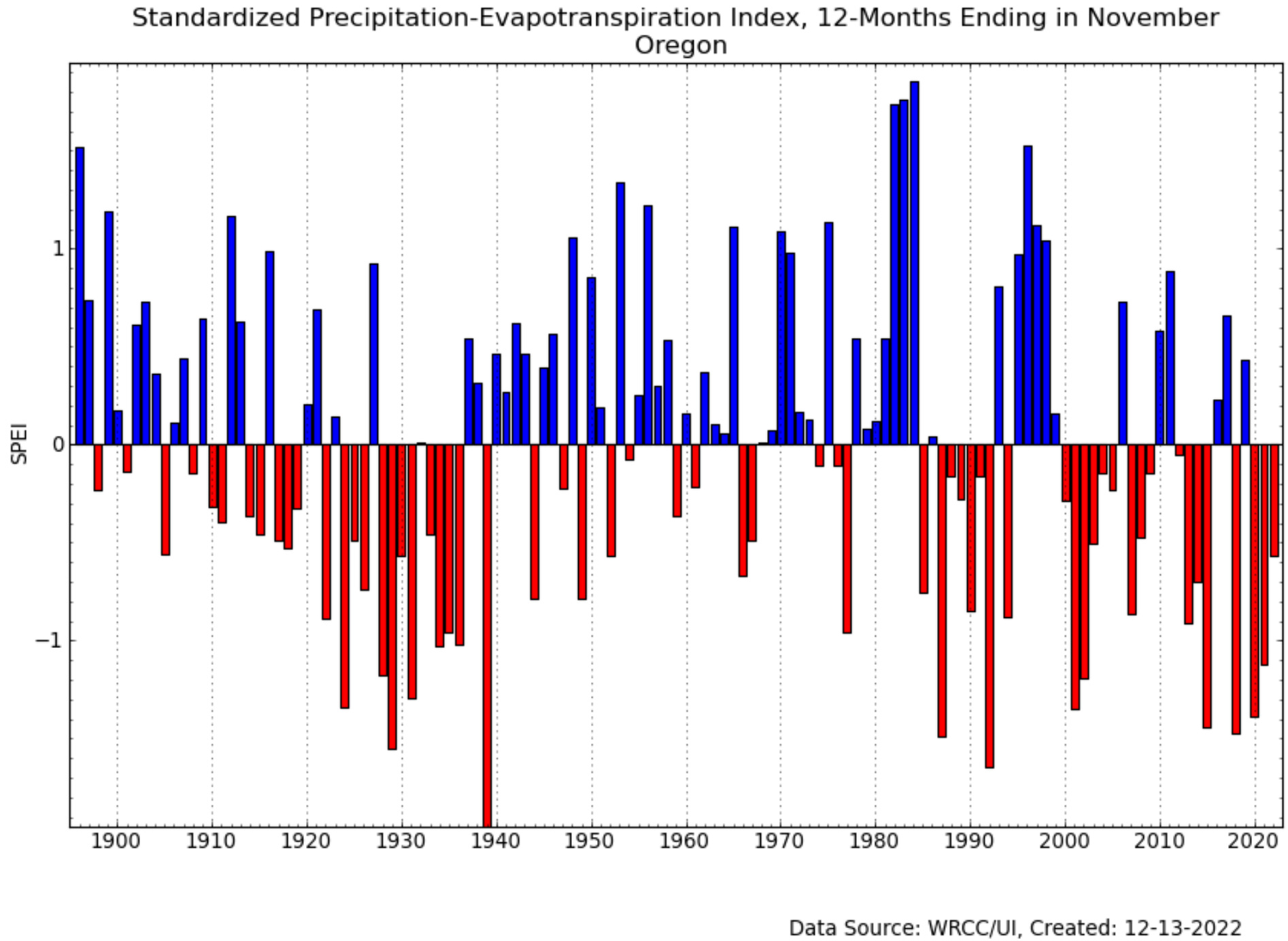
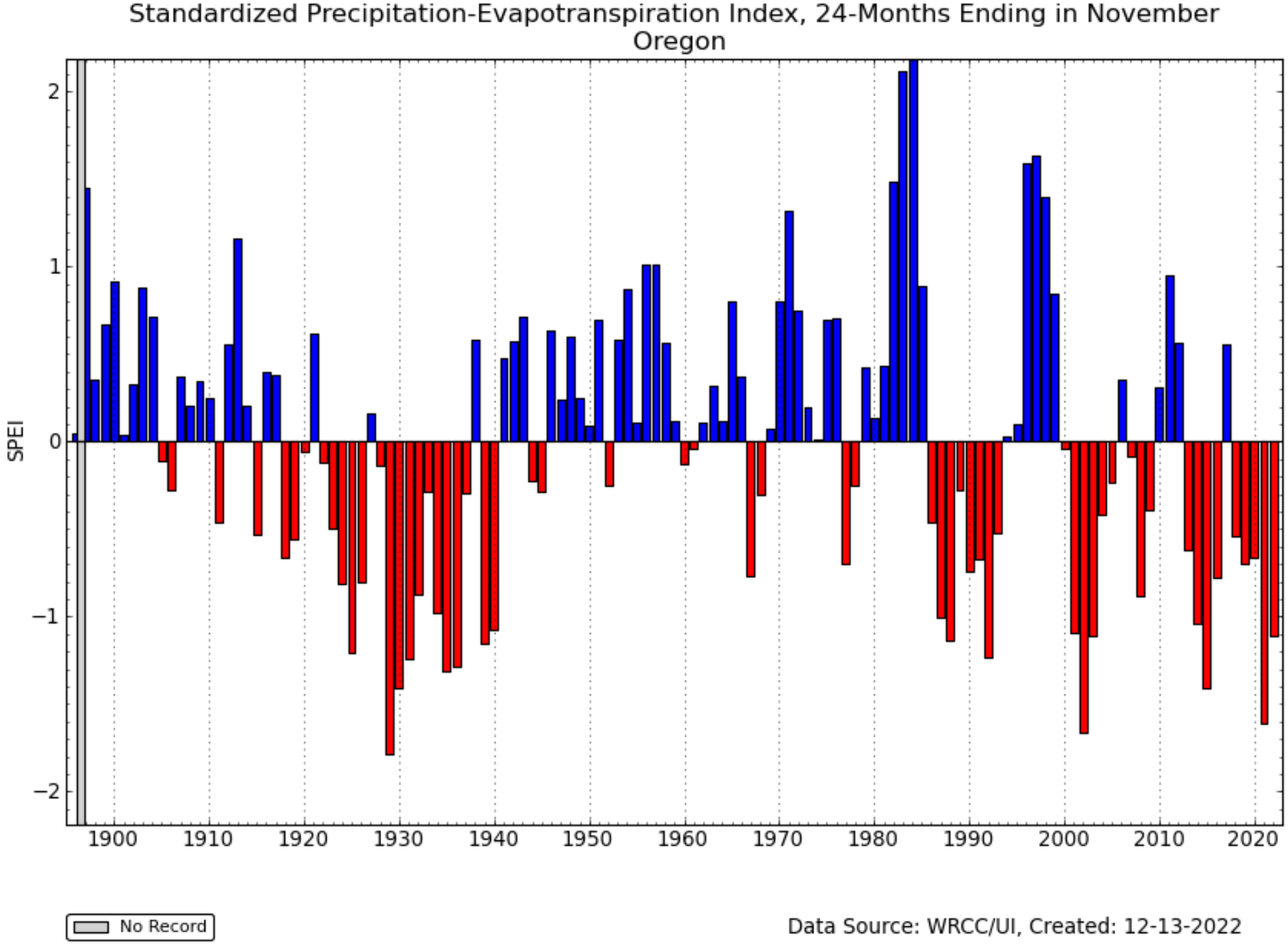

Oregon - 12 month SPEI
November 2022
46°N
45°N
44°N
43°N
42°N
124°W
123°W
122°W
121°W
120°W
119°W
118°W
117°W
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
SPEI12
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 11 DEC 2022


Oregon - 18 month SPEI
November 2022
46°N
45°N
44°N
43°N
42°N
124°W
123°W
122°W
121°W
120°W
119°W
118°W
117°W
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
SPEI18
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 11 DEC 2022


Oregon - 24 month SPEI
November 2022
46°N
45°N
44°N
43°N
42°N
124°W
123°W
122°W
121°W
120°W
119°W
118°W
117°W
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
SPEI24
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 11 DEC 2022


Oregon - 36 month SPEI
November 2022
46°N
45°N
44°N
43°N
42°N
124°W
123°W
122°W
121°W
120°W
119°W
118°W
117°W
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
SPEI36
WestWide Drought Tracker, U Idaho/WRCC Data Source: PRISM (Prelim), created 11 DEC 2022


Standardized Precipitation-Evapotranspiration Index, 12-Months Ending in November
Oregon
SPEI
1
0
−1
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
Data Source: WRCC/UI, Created: 12-13-2022


Standardized Precipitation-Evapotranspiration Index, 24-Months Ending in November
Oregon
SPEI
2
1
0
−1
−2
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
No Record
Data Source: WRCC/UI, Created: 12-13-2022

Oregon Water Supply Availability Meeting

December 2022

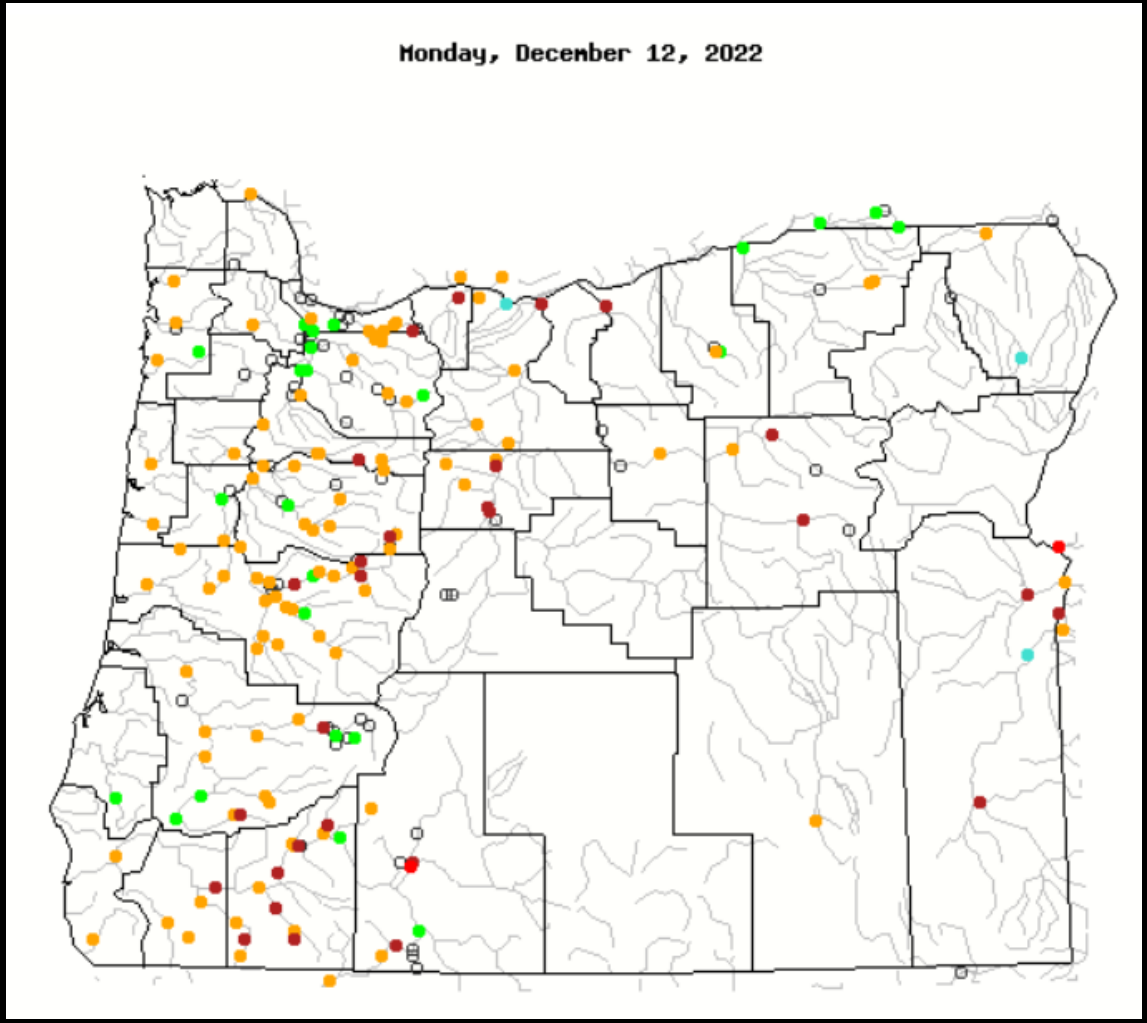
U.S. Department of the Interior
U.S. Geological Survey

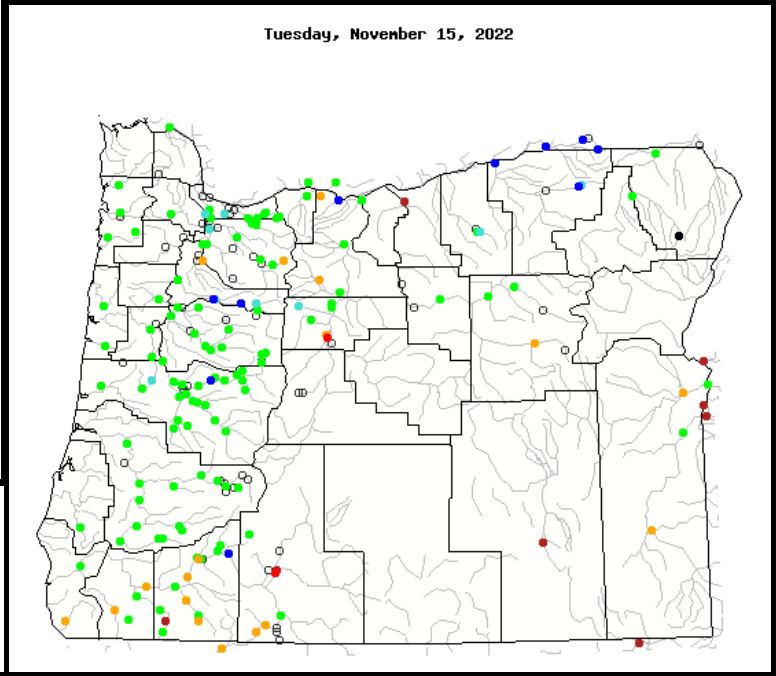
USGS Update on Surface Water Conditions

Carrie Boudreau & Marc Stewart
Oregon Water Science Center

Streamflow Conditions

28-day Average Streamflow (as compared to Historical Record)



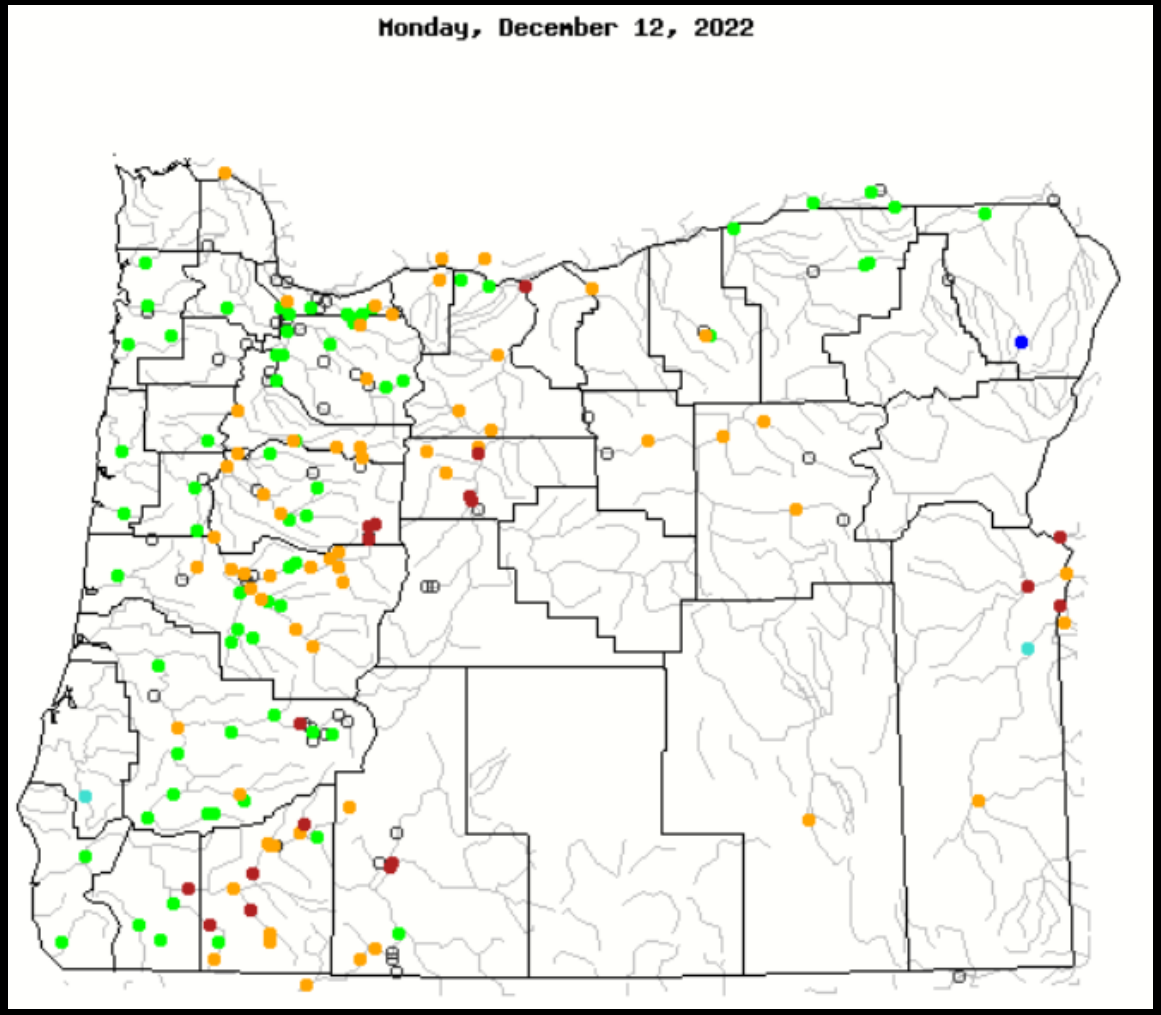


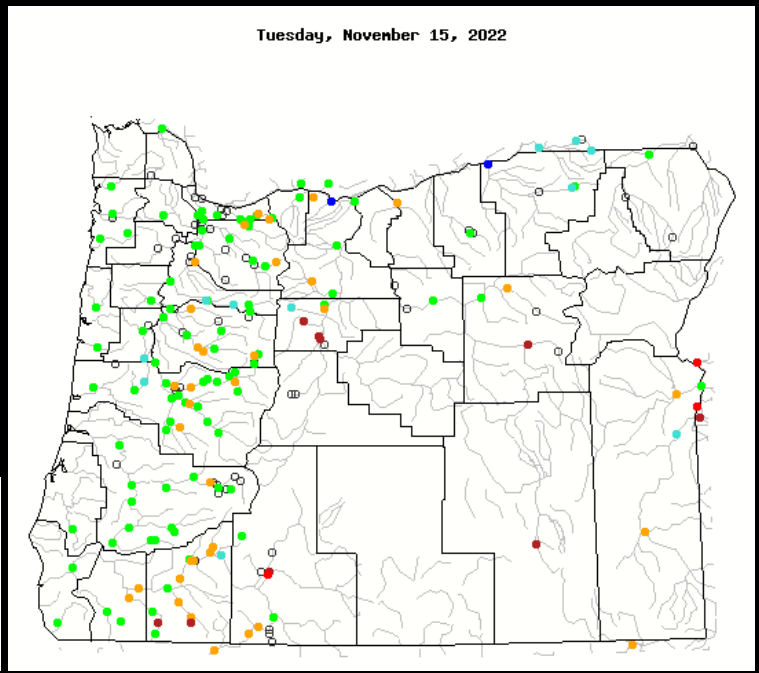
USGS

Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

Streamflow Conditions

7-day Average Streamflow (as compared to Historical Record)

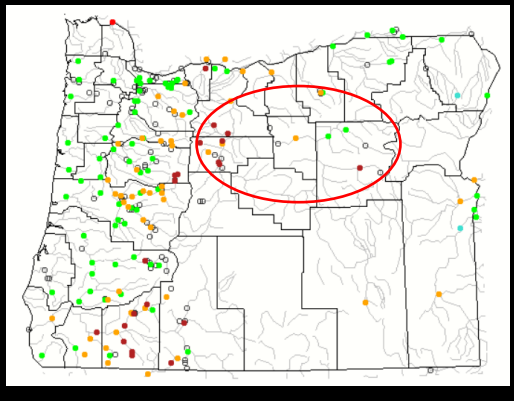


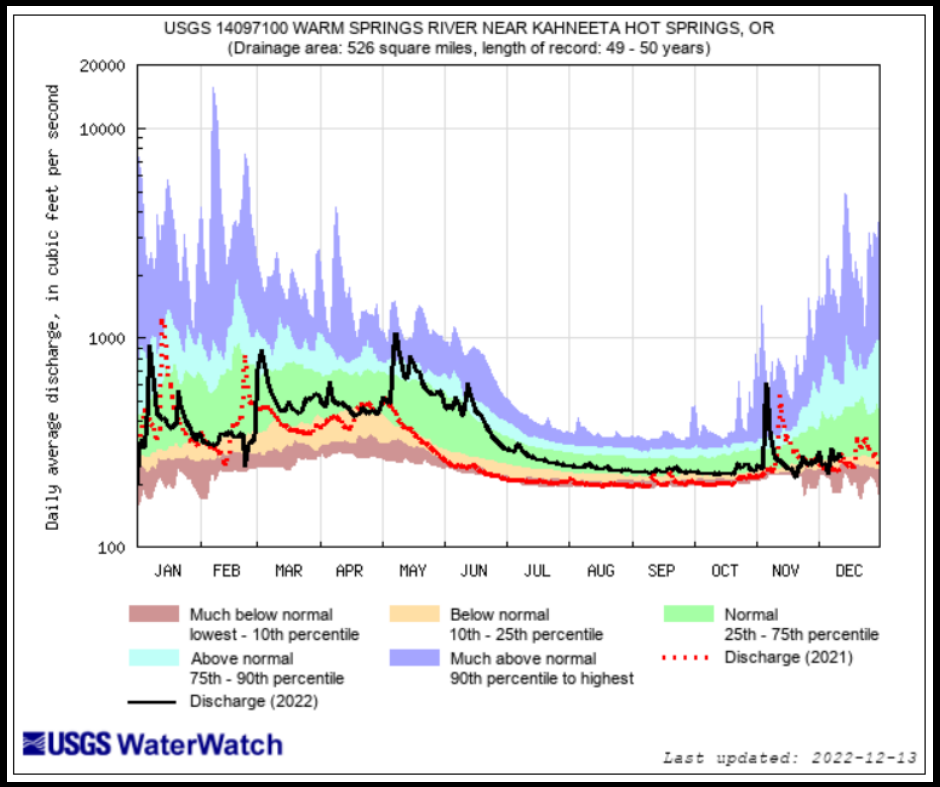


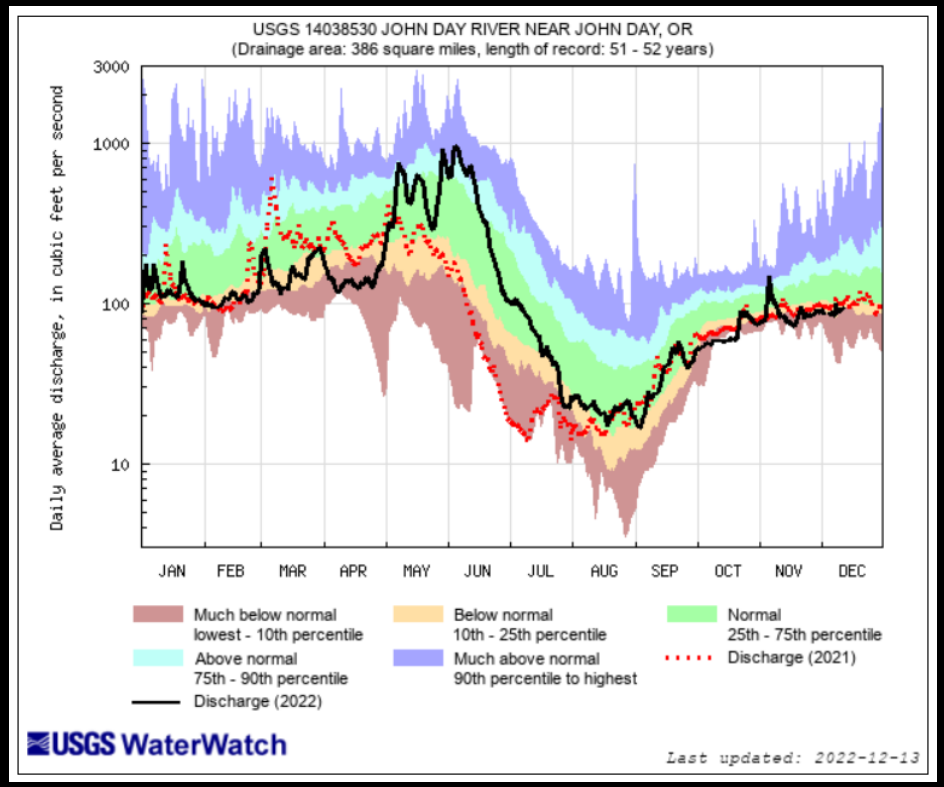
USGS

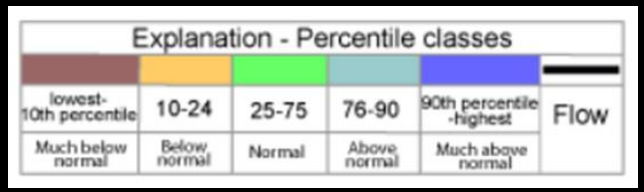
Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

Northeastern OR



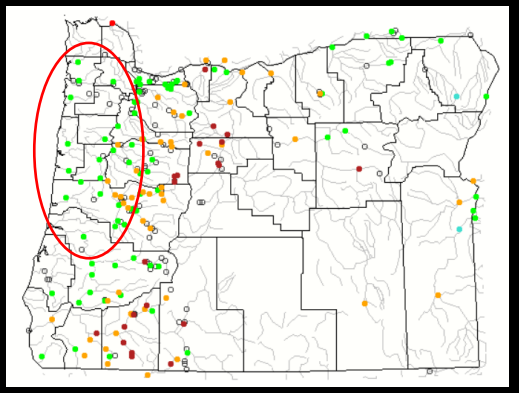


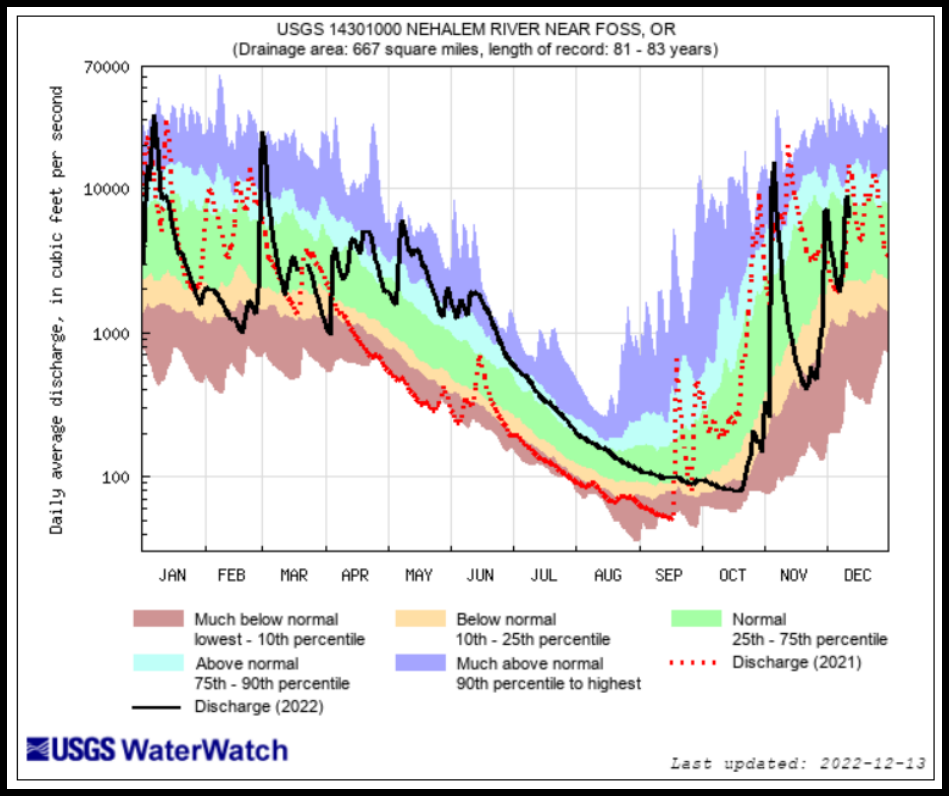


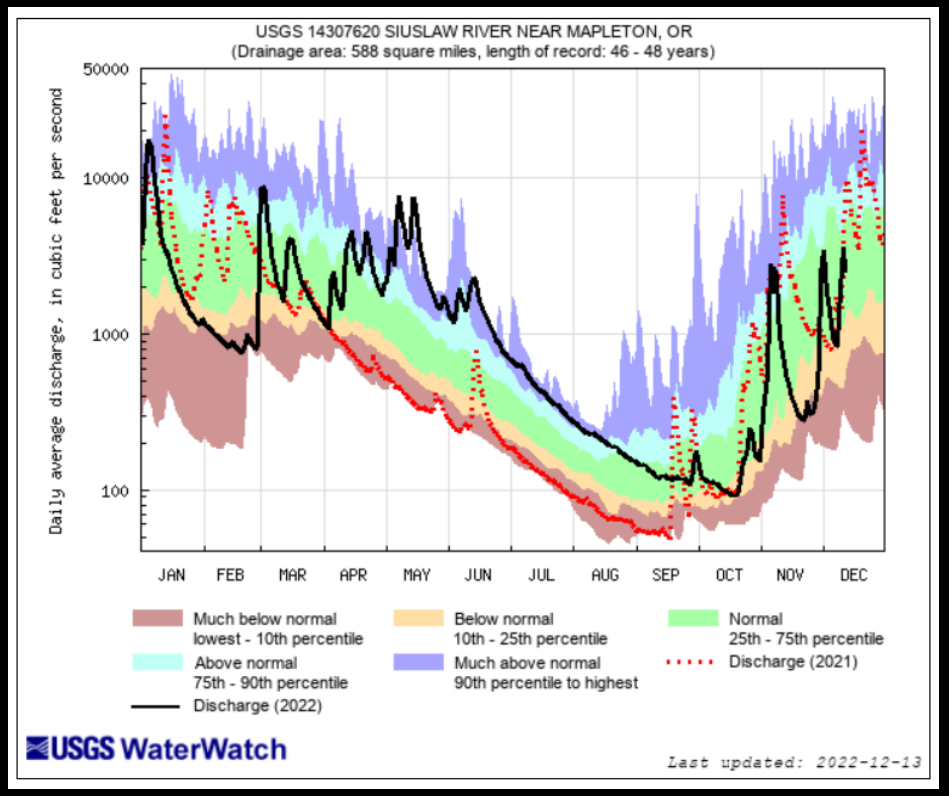


USGS

Northwestern OR



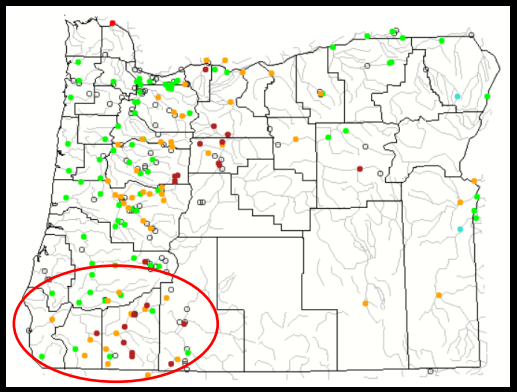


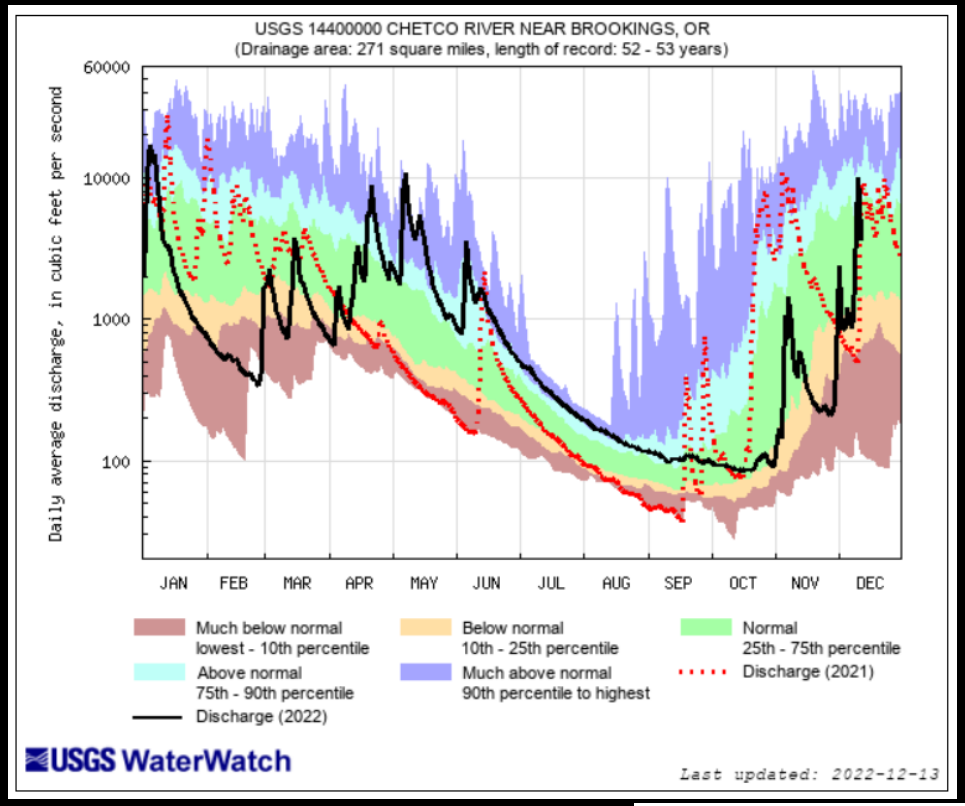


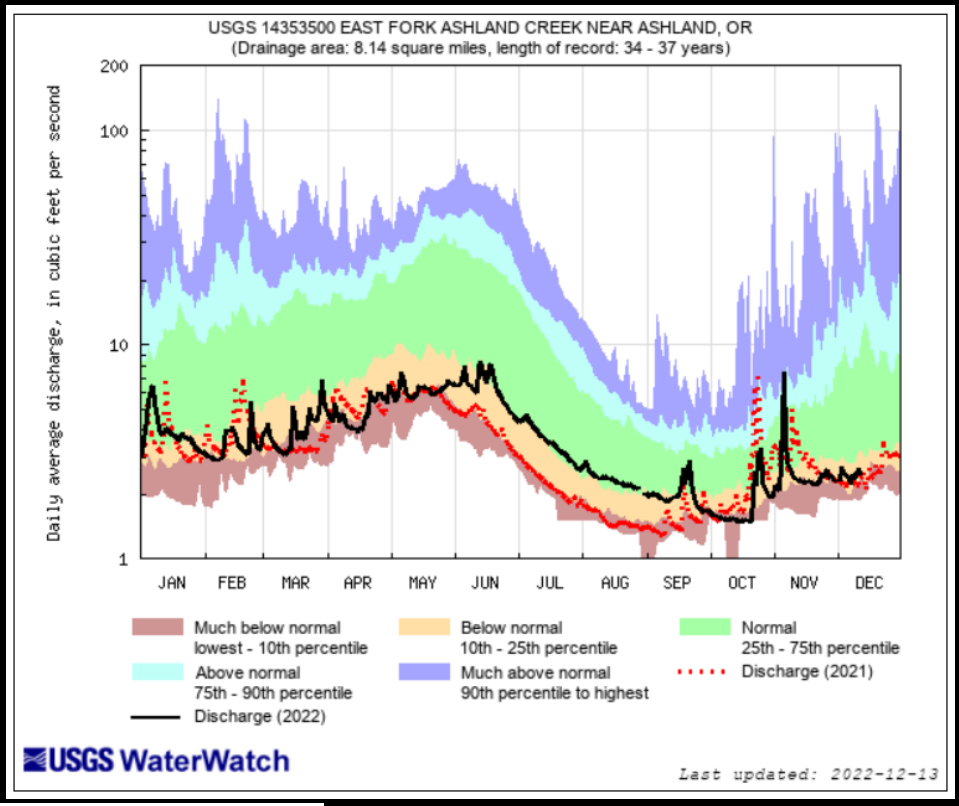
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile -highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

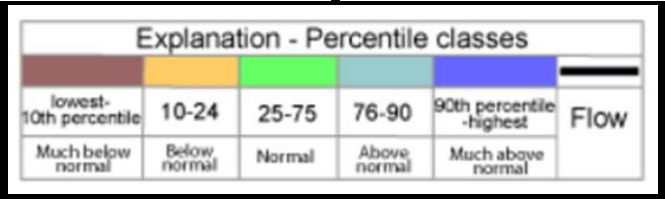
USGS

Southwestern OR



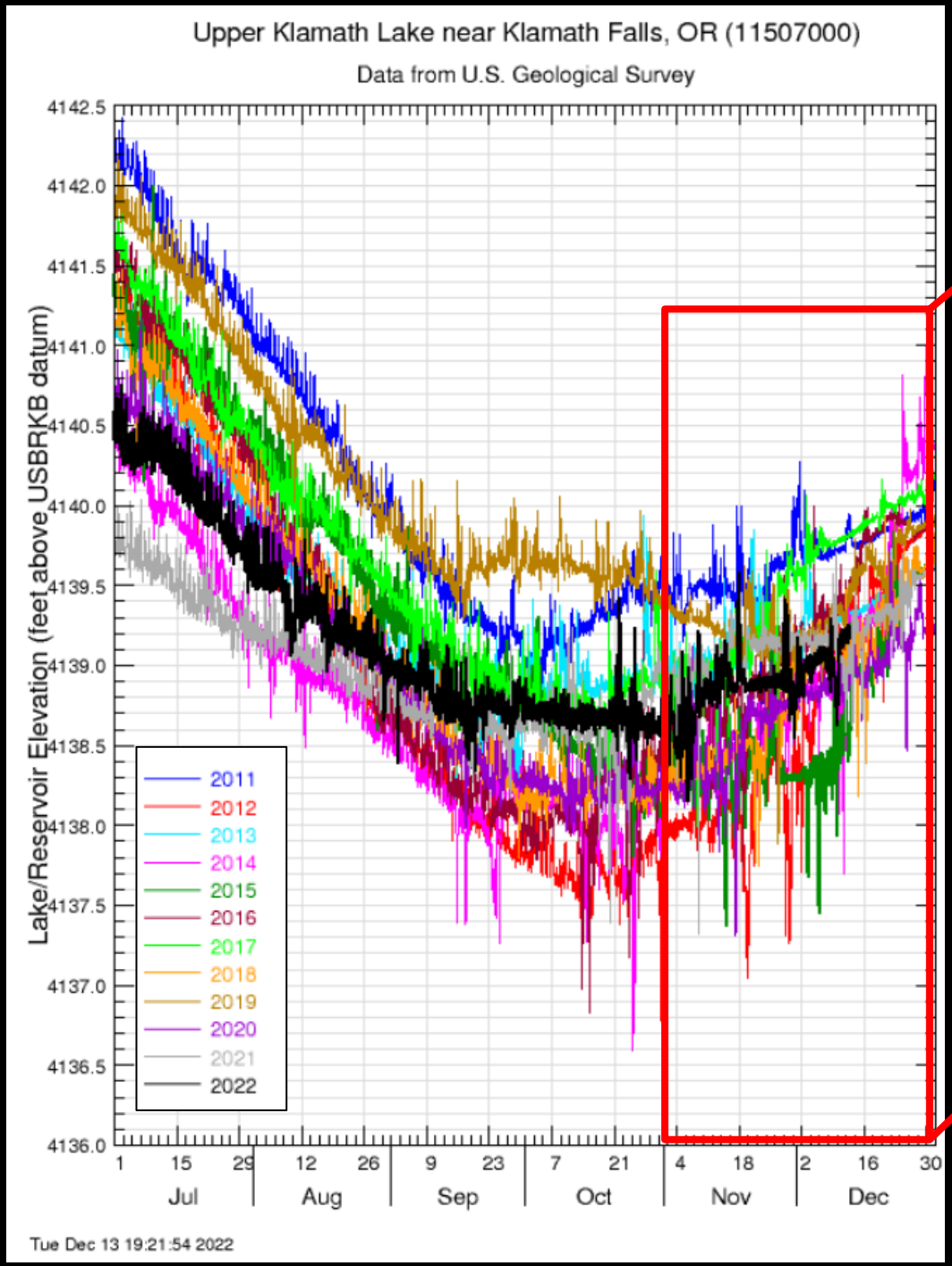


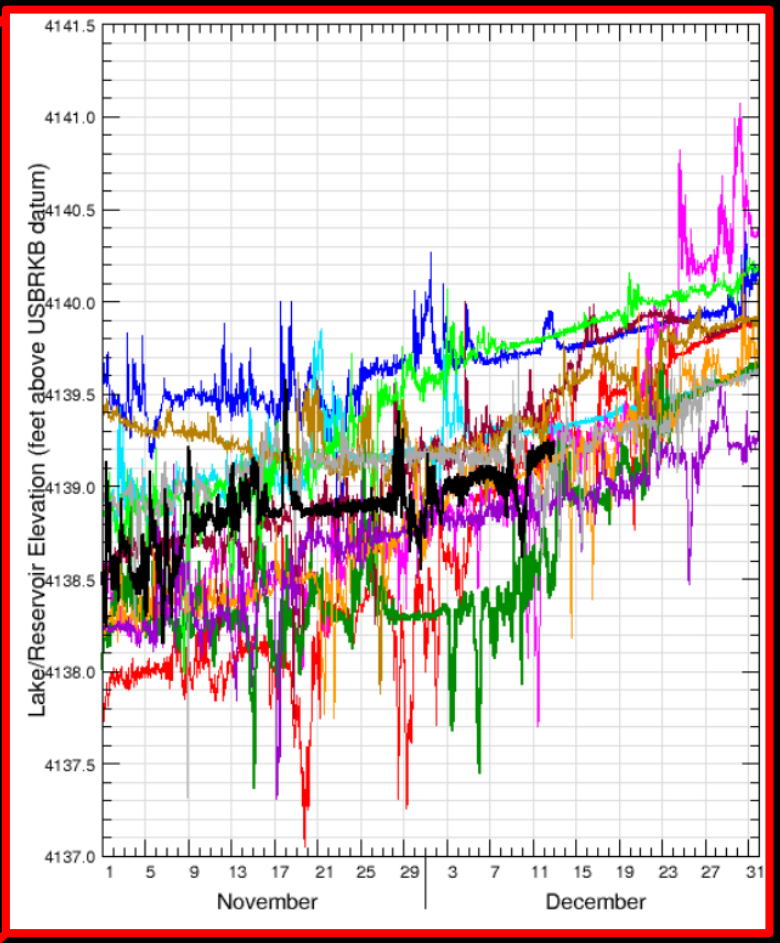




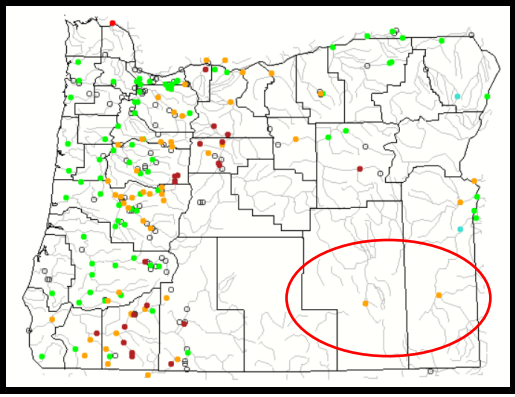
USGS

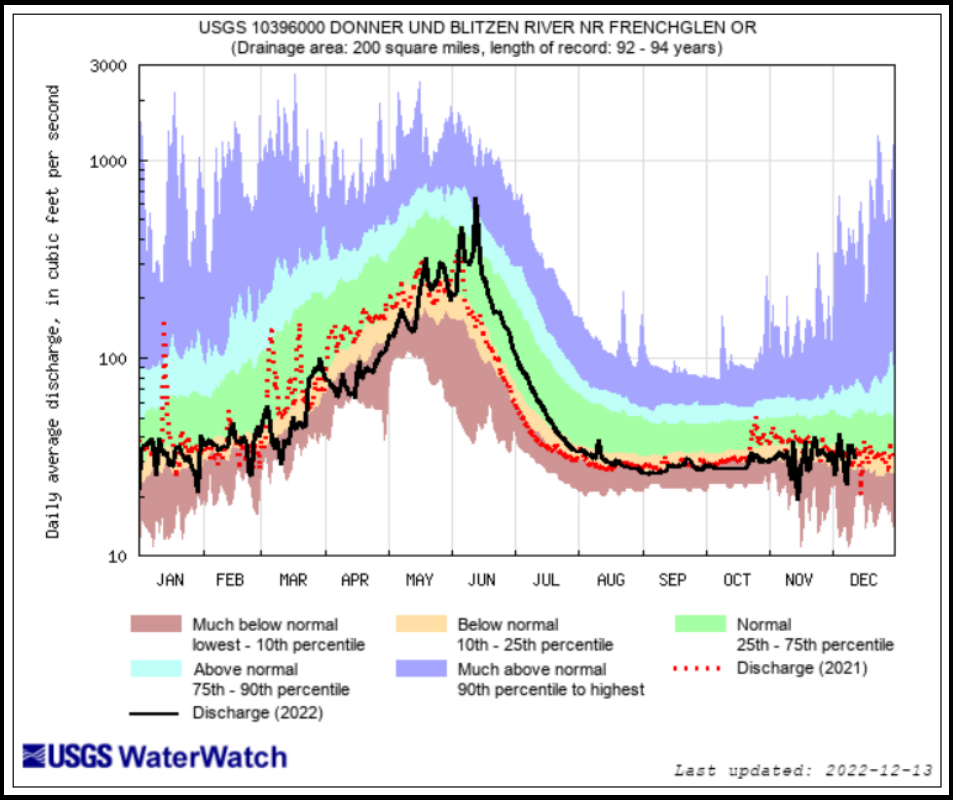
Klamath Lake

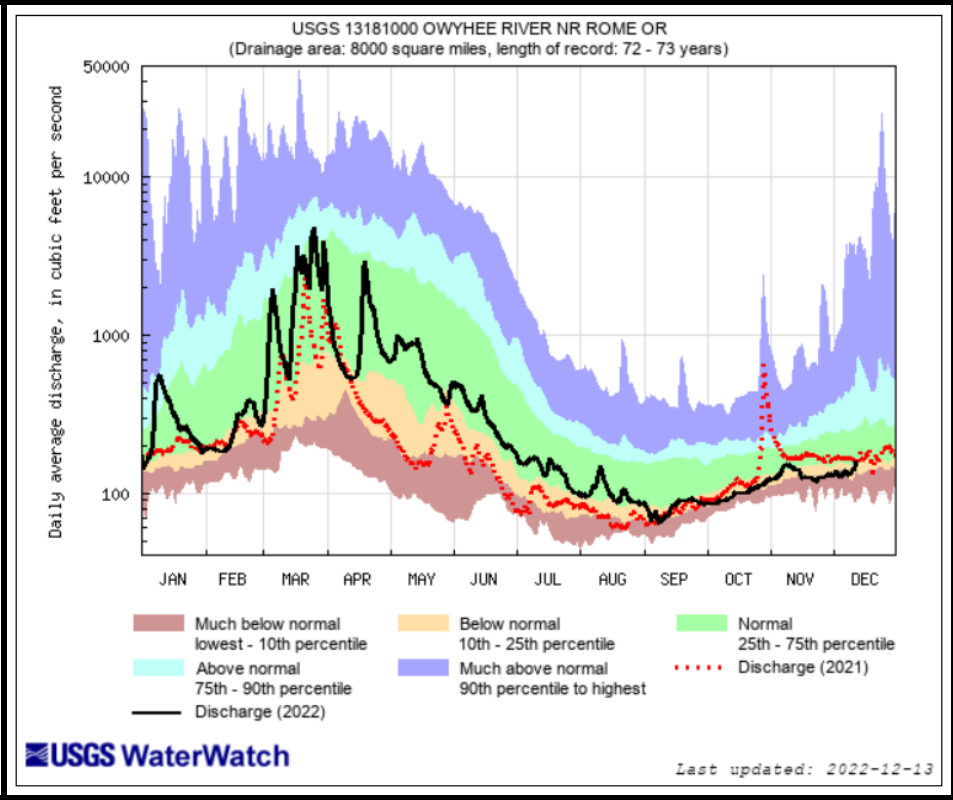


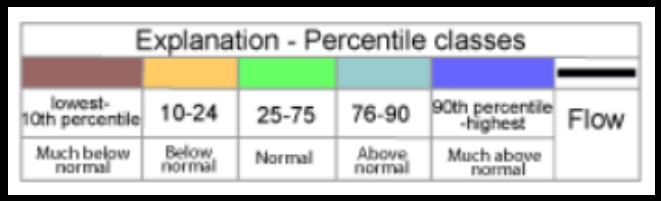


Southeastern OR









USGS

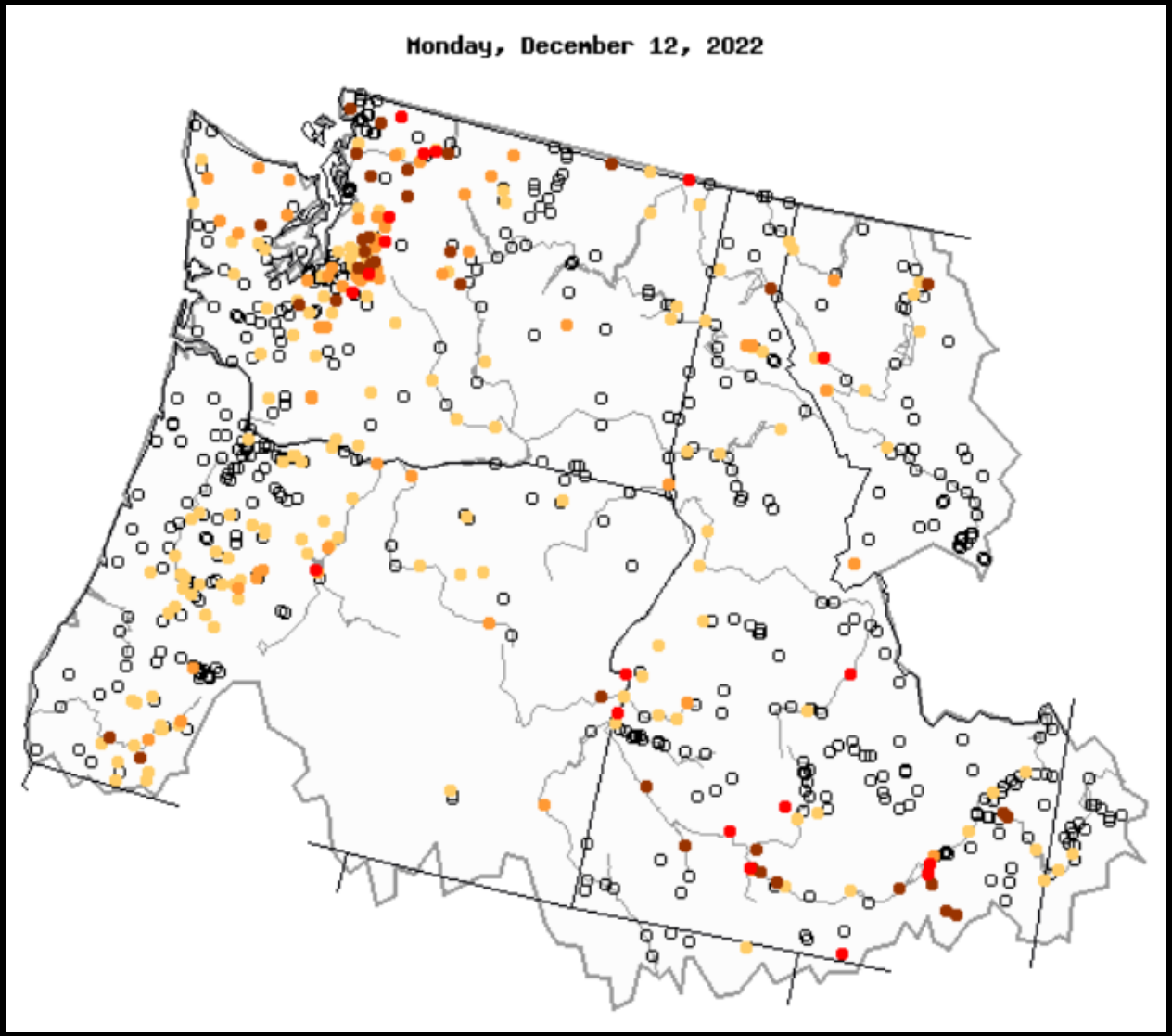
US GEOLOGICAL SURVEY, OREGON WATER SCIENCE CENTER
WATER AVAILABILITY REPORT FOR NOVEMBER 2022

Station	NRCS SWSI Basin	Monthly mean discharge: Cubic feet per second	Monthly mean discharge: Percent of average	Change in discharge from previous month (percent)	Accumulated Runoff For the Period Oct. to Nov.: Percent of average
Donner Und Blitzen nr Frenchglen	Harney	32	74	10	73
(*)Deep Creek above Adel	Lake County	10	34	25	37
(*)Chewaucan River near Paisley	Lake County	33	77	14	79
Williamson River near Chiloquin	Klamath	521	83	5	85
Owyhee River near Rome	Owyhee	132	77	32	75
(*)NF Malheur River near Beulah	Malheur	47	87	4	88
Grande Ronde R at Troy	Grande Ronde Powder/Burnt	1,110	98	67	93
Umatilla River nr Gibbon	Umatilla Lower John Day	119	103	143	99
John Day River at Service Crk	Upper John Day	349	71	85	65
(*)Little Deschutes River nr LaPine	Upper Deschutes	53	56	51	52
Hood River nr Hood River	Lower Deschutes Mt.Hood	748	77	119	74
Willamette River at Salem	Willamette	17,600	68	43	78
Wilson River near Tillamook	North Coast	1,290	64	1,454	53
Umpqua River near Elkton	Rogue/Umpqua	2,610	51	129	54
Rogue River near Agness	Rogue/Umpqua	1,900	54	24	63
SF Coquille River at Powers	South Coast	267	33	1,013	30
Chetco River near Brookings	South Coast	404	16	334	16

All data should be considered provisional and subject to revision.
Percent of average computed using 30-year base period, water years 1991-2020.
(*) provided by Oregon Water Resources Department

12/05/2022

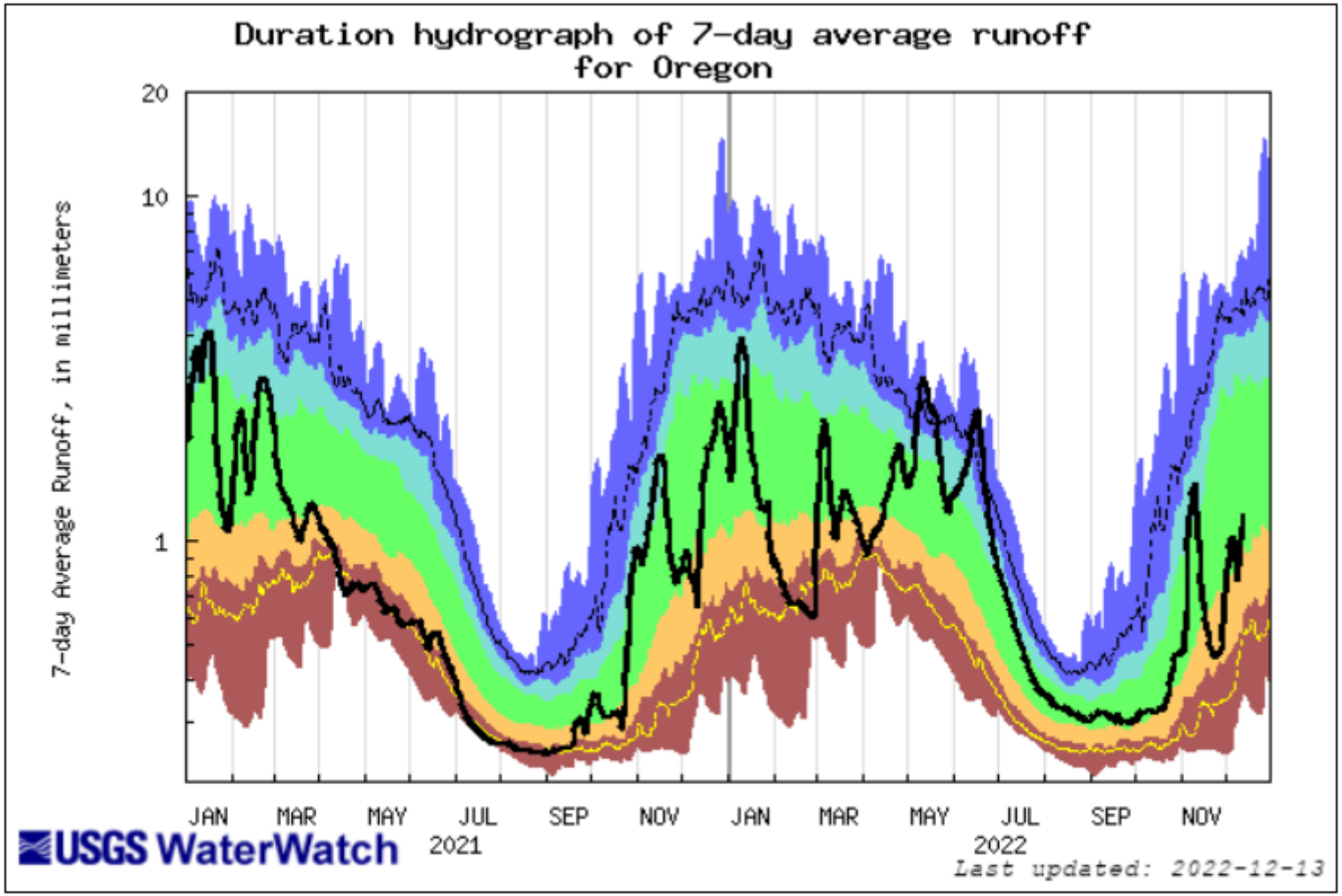
USGS



Map of below normal 14-day average streamflow compared to historical streamflow for the day of year

Explanation - Percentile classes				
New low	<=5	6-9	10-24	Not ranked
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

USGS



Explanation - Percentile classes							
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile -highest	Runoff
Much below Normal		Below normal	Normal	Above normal	Much above normal		

USGS

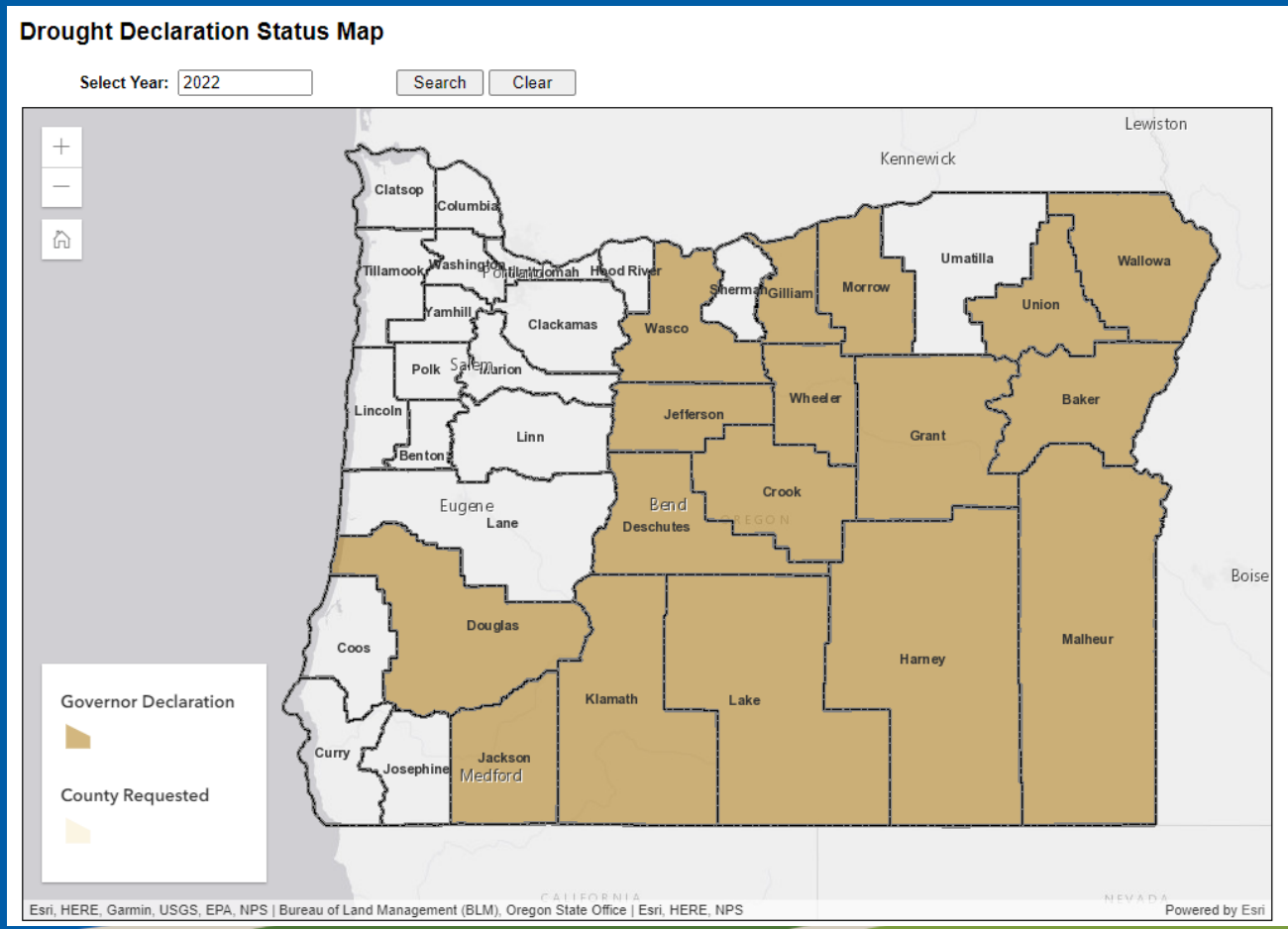
Water Supply Availability Committee
Oregon Water Resources Department

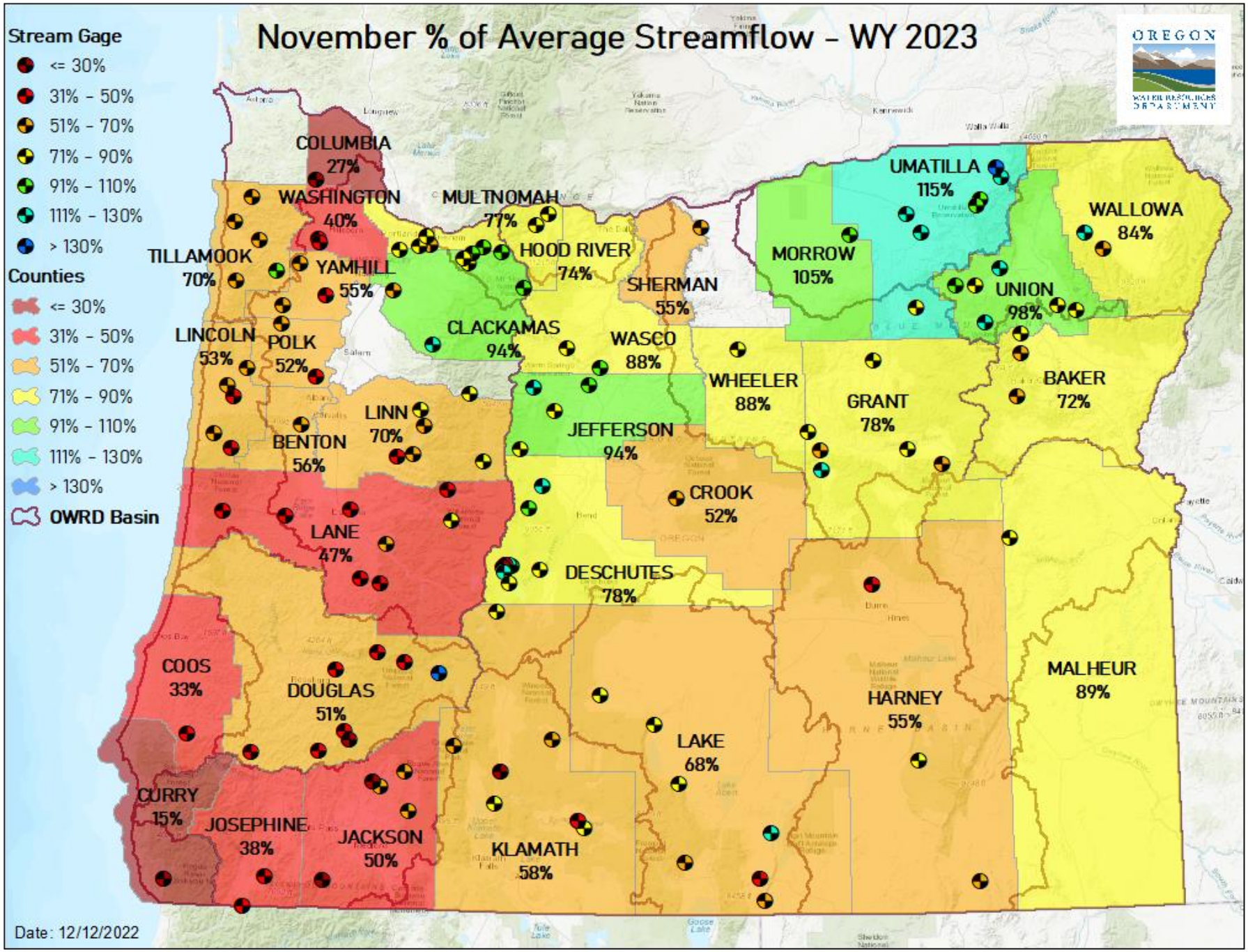
Ryan Andrews

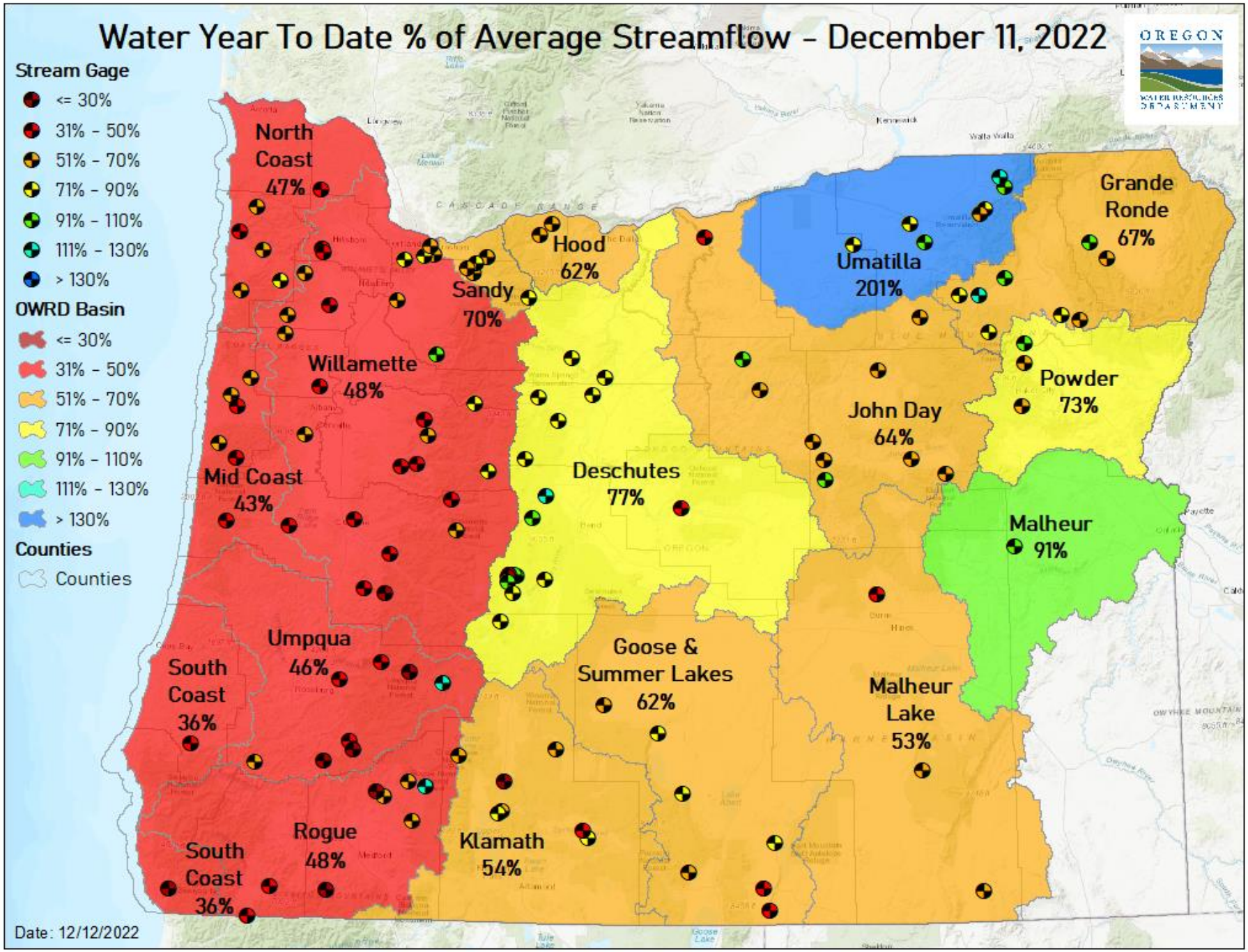
December 14th, 2022

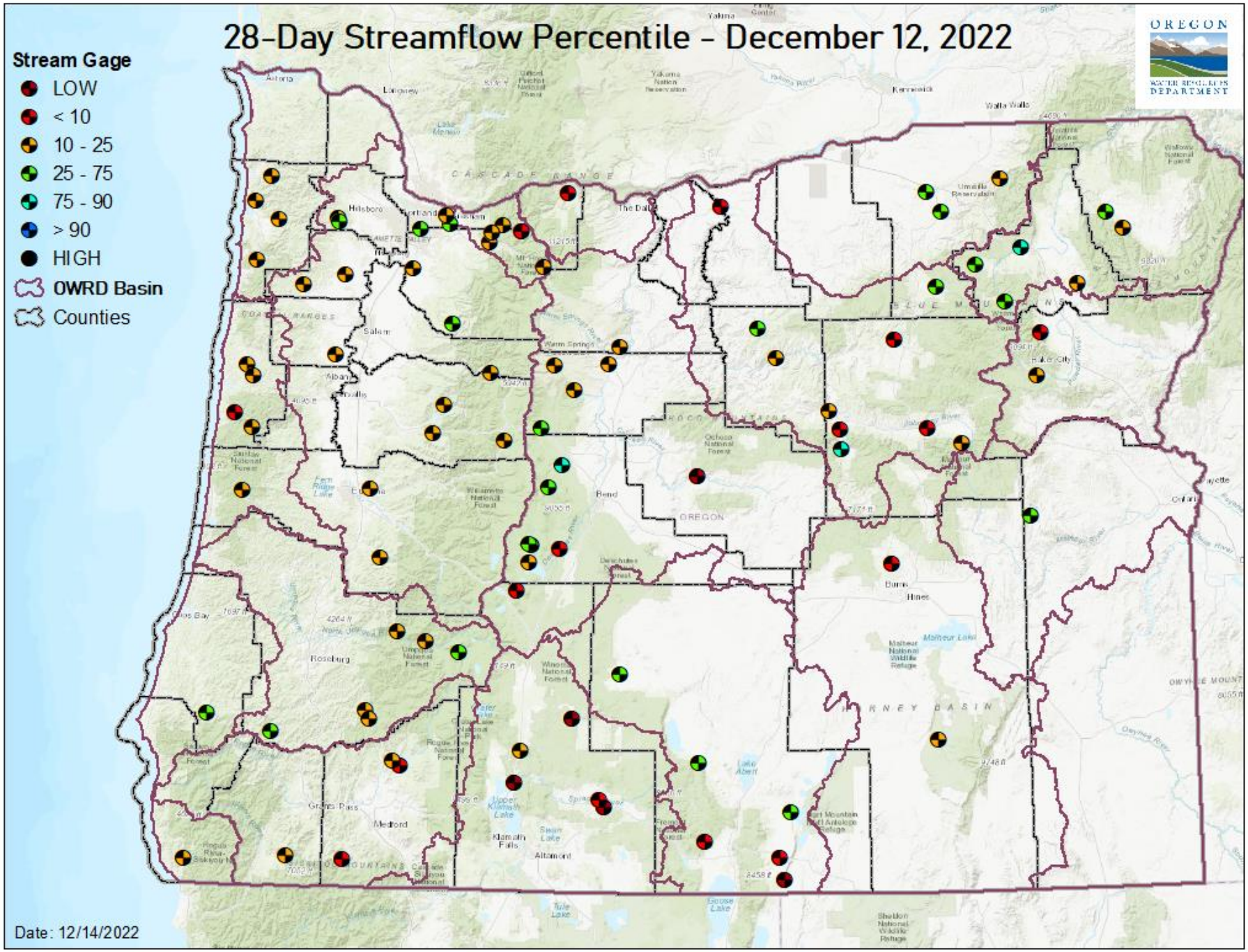
Drought Declarations

- 17 counties with ORS 536 declarations
- 29 counties with USDA crop disaster designations due to drought
- Expire end of calendar year

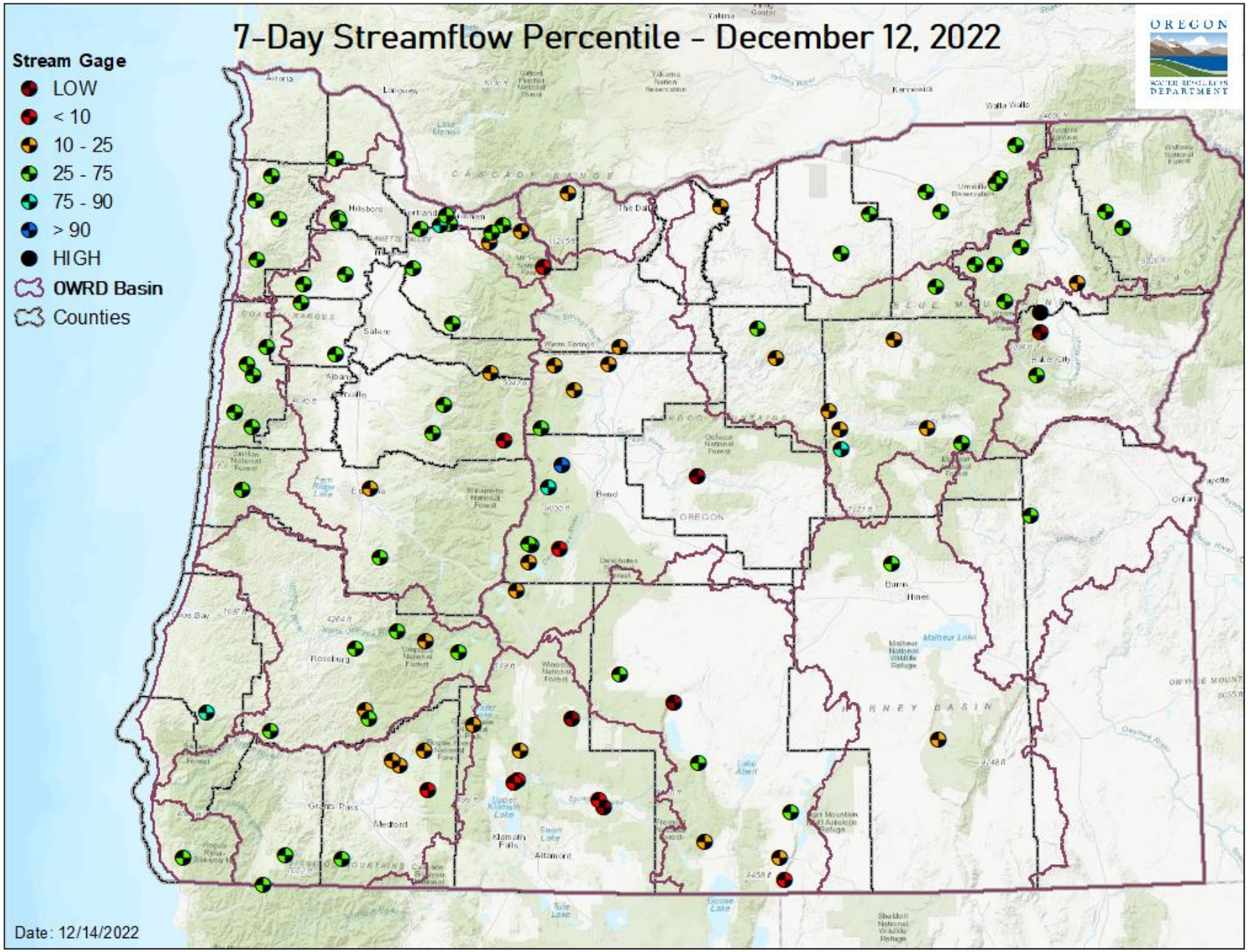


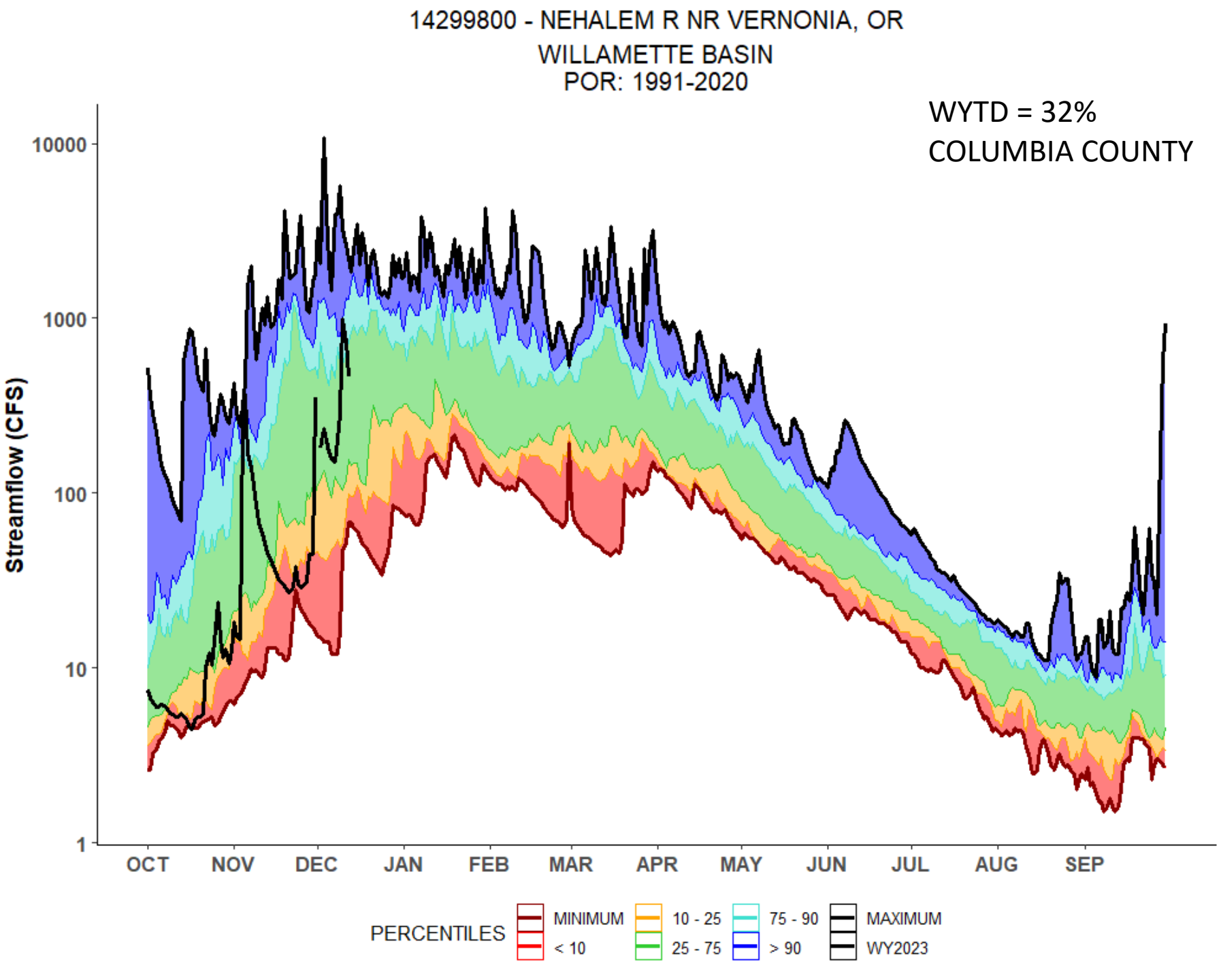

November % of Average Streamflow - WY 2023
Stream Gage
<= 30%
31% - 50%
51% - 70%
71% - 90%
91% - 110%
111% - 130%
> 130%
Counties
<= 30%
31% - 50%
51% - 70%
71% - 90%
91% - 110%
111% - 130%
> 130%
OWRD Basin
COLUMBIA 27%
WASHINGTON 40%
MULTNOMAH 77%
HOOD RIVER 74%
TILLAMOOK 70%
YAMHILL 55%
SHERMAN 55%
MORROW 105%
UMATILLA 115%
WALLOWA 84%
UNION 98%
CLACKAMAS 94%
WASCO 88%
LINCOLN 53%
POLK 52%
WHEELER 88%
GRANT 78%
BAKER 72%
LINN 70%
BENTON 56%
JEFFERSON 94%
CROOK 52%
LANE 47%
DESCHUTES 78%
COOS 33%
DOUGLAS 51%
HARNEY 55%
MALHEUR 89%
LAKE 68%
CURRY 15%
JOSEPHINE 38%
JACKSON 50%
KLAMATH 58%
Date: 12/12/2022

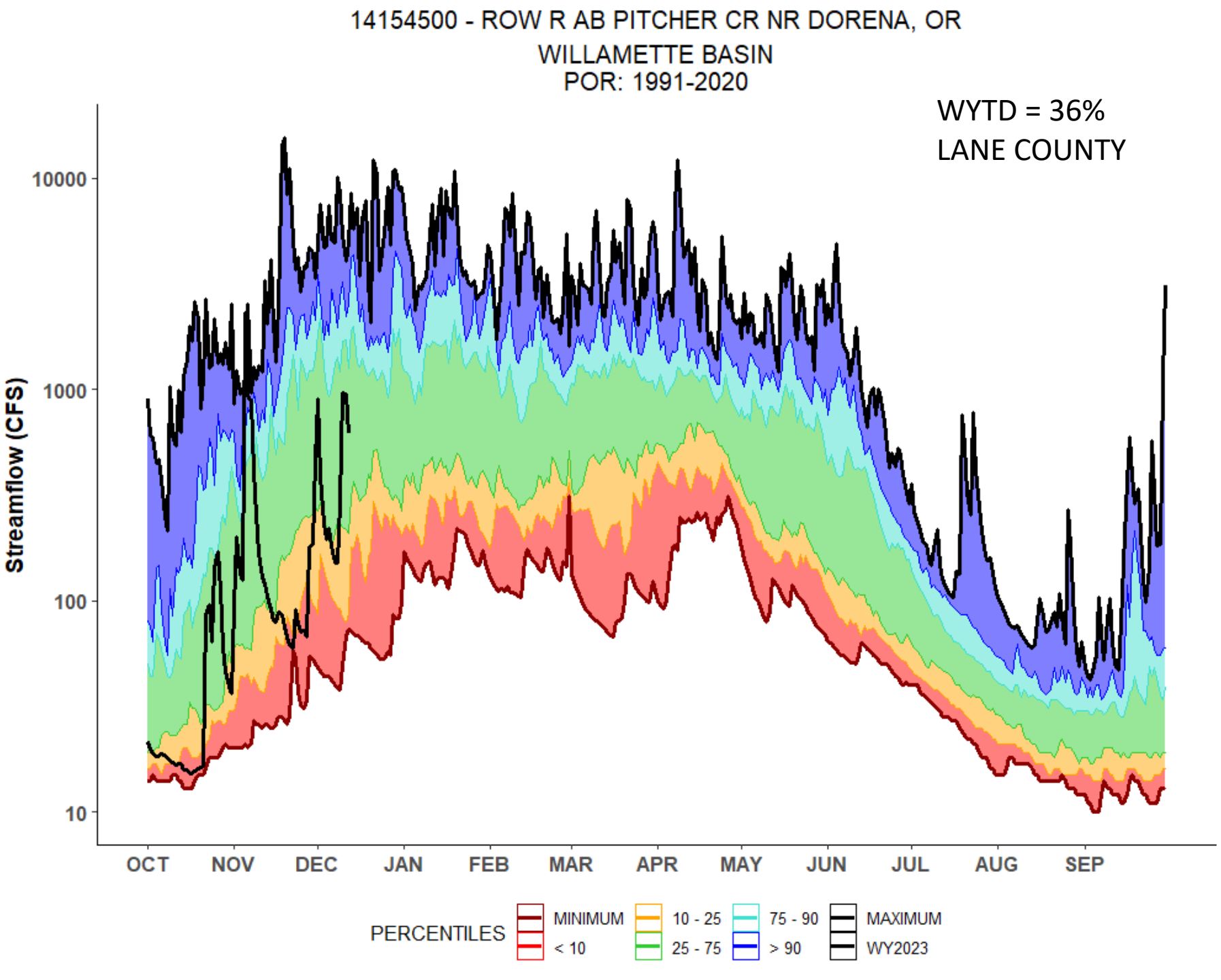

Water Year To Date % of Average Streamflow - December 11, 2022
OREGON
WATER RESOURCES DEPARTMENT
Stream Gage
<= 30%
31% - 50%
51% - 70%
71% - 90%
91% - 110%
111% - 130%
> 130%
OWRD Basin
<= 30%
31% - 50%
51% - 70%
71% - 90%
91% - 110%
111% - 130%
> 130%
Counties
Counties
North Coast 47%
Hood 62%
Sandy 70%
Willamette 48%
Mid Coast 43%
Umatilla 201%
Grande Ronde 67%
Powder 73%
John Day 64%
Deschutes 77%
Malheur 91%
Umpqua 46%
South Coast 36%
Goose & Summer Lakes 62%
Malheur Lake 53%
Rogue 48%
South Coast 36%
Klamath 54%
Date: 12/12/2022

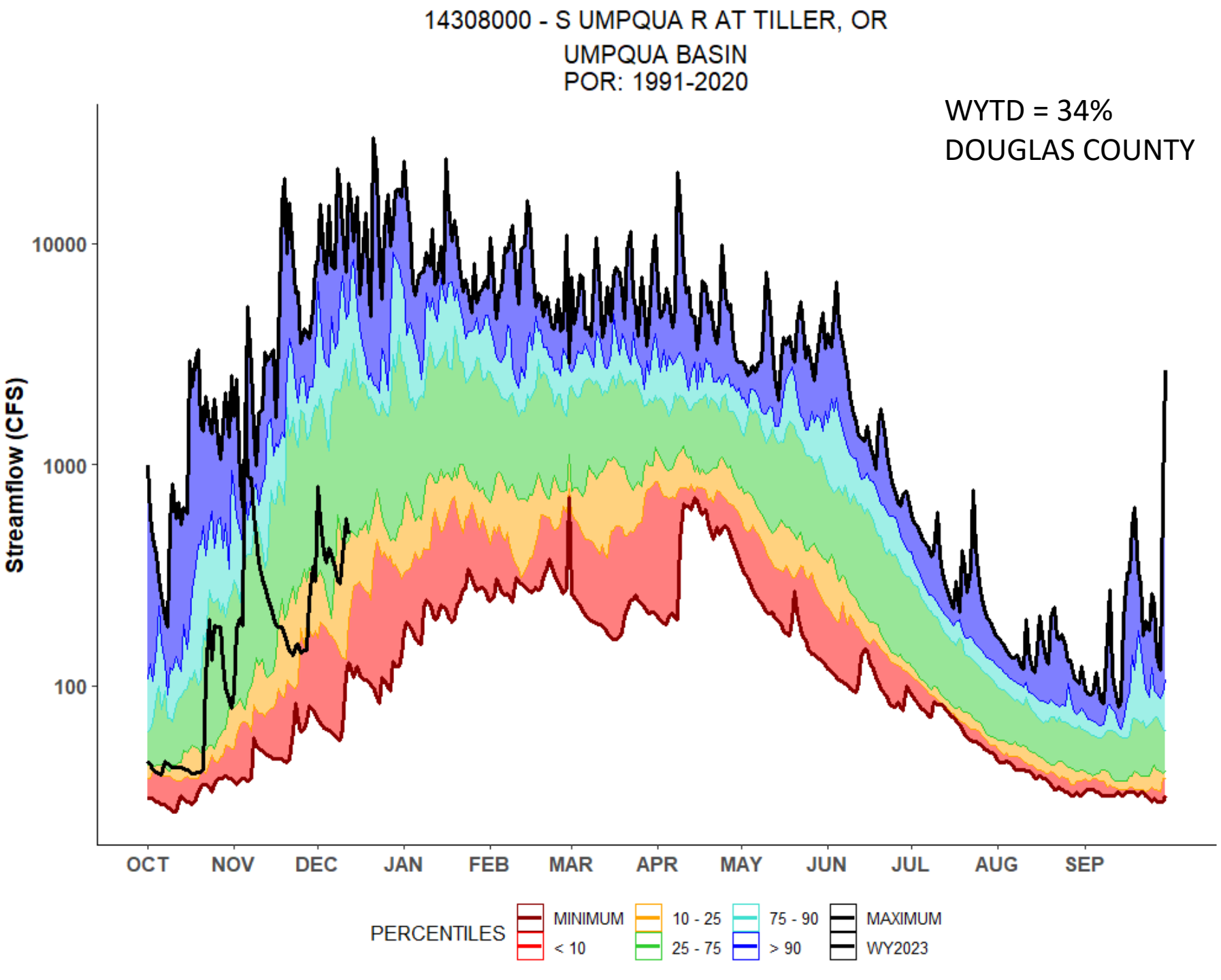

28-Day Streamflow Percentile - December 12, 2022
OREGON
WATER RESOURCES DEPARTMENT
Stream Gage
LOW
< 10
10 - 25
25 - 75
75 - 90
> 90
HIGH
OWRD Basin
Counties
Date: 12/14/2022

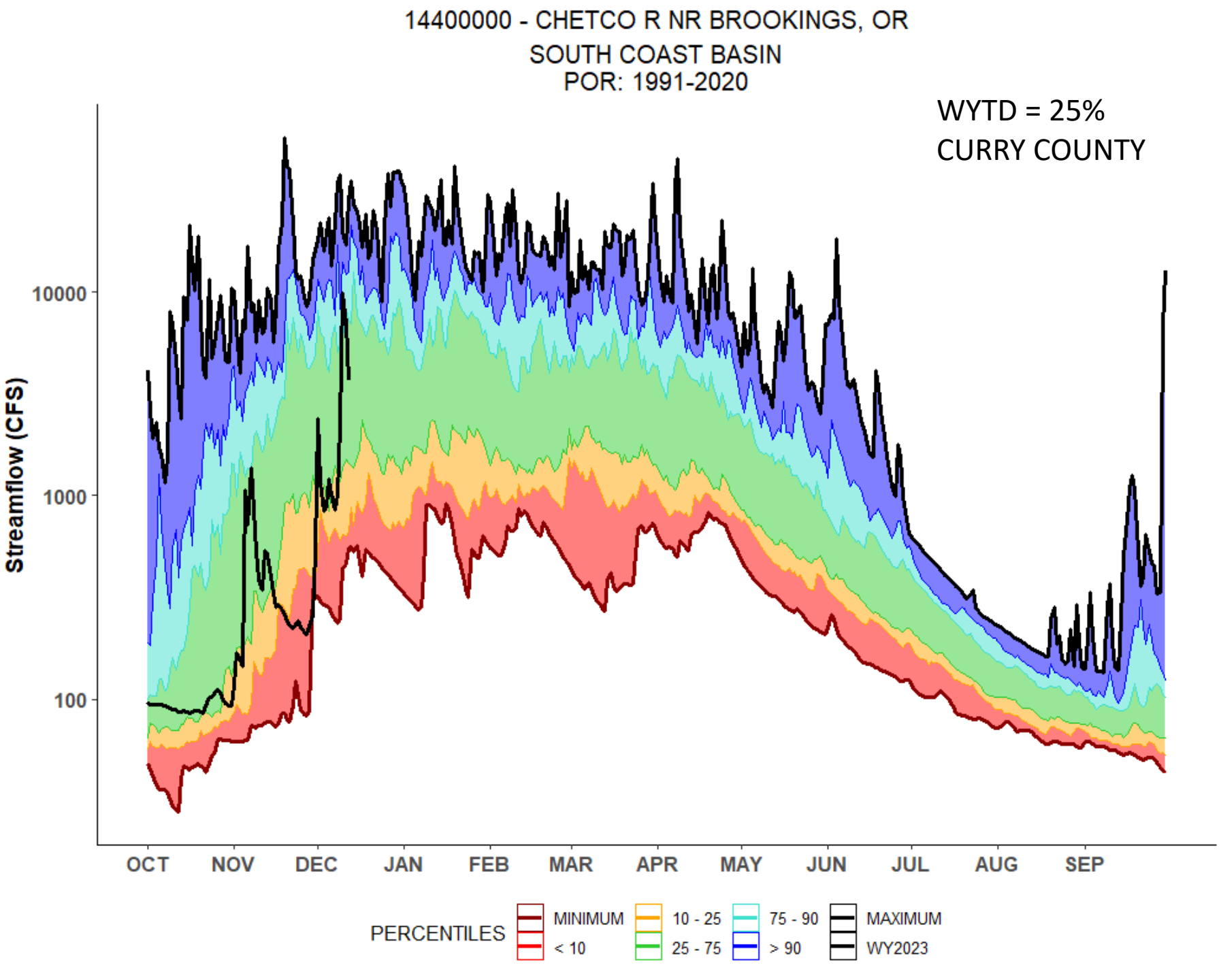
7-Day Streamflow Percentile - December 12, 2022




14299800 - NEHALEM R NR VERNONIA, OR
WILLAMETTE BASIN
POR: 1991-2020
WYTD = 32%
COLUMBIA COUNTY
Streamflow (CFS)
10000
1000
100
10
1
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
PERCENTILES
MINIMUM
< 10
10 - 25
25 - 75
75 - 90
> 90
MAXIMUM
WY2023


14154500 - ROW R AB PITCHER CR NR DORENA, OR
WILLAMETTE BASIN
POR: 1991-2020
WYTD = 36%
LANE COUNTY
Streamflow (CFS)
10000
1000
100
10
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
PERCENTILES
MINIMUM
< 10
10 - 25
25 - 75
75 - 90
> 90
MAXIMUM
WY2023


14308000 - S UMPQUA R AT TILLER, OR
UMPQUA BASIN
POR: 1991-2020
WYTD = 34%
DOUGLAS COUNTY
Streamflow (CFS)
10000
1000
100
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
PERCENTILES
MINIMUM
< 10
10 - 25
25 - 75
75 - 90
> 90
MAXIMUM
WY2023


14400000 - CHETCO R NR BROOKINGS, OR
SOUTH COAST BASIN
POR: 1991-2020
WYTD = 25%
CURRY COUNTY
Streamflow (CFS)
10000
1000
100
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
PERCENTILES
MINIMUM
< 10
10 - 25
25 - 75
75 - 90
> 90
MAXIMUM
WY2023

Summary

- Very low streamflows outside of Umatilla Basin
  - Combined effect of below average precipitation, cold temperatures, and above average snowpack

- Drought declarations to expire at start of new calendar year

OREGON

WATER RESOURCES DEPARTMENT

QUESTIONS?

BUREAU OF RECLAMATION

Beulah Reservoir
June 22, 2005
52,420 acre-feet (89% full)

Reclamation Storage Update

Oregon Water Supply Availability Committee Meeting

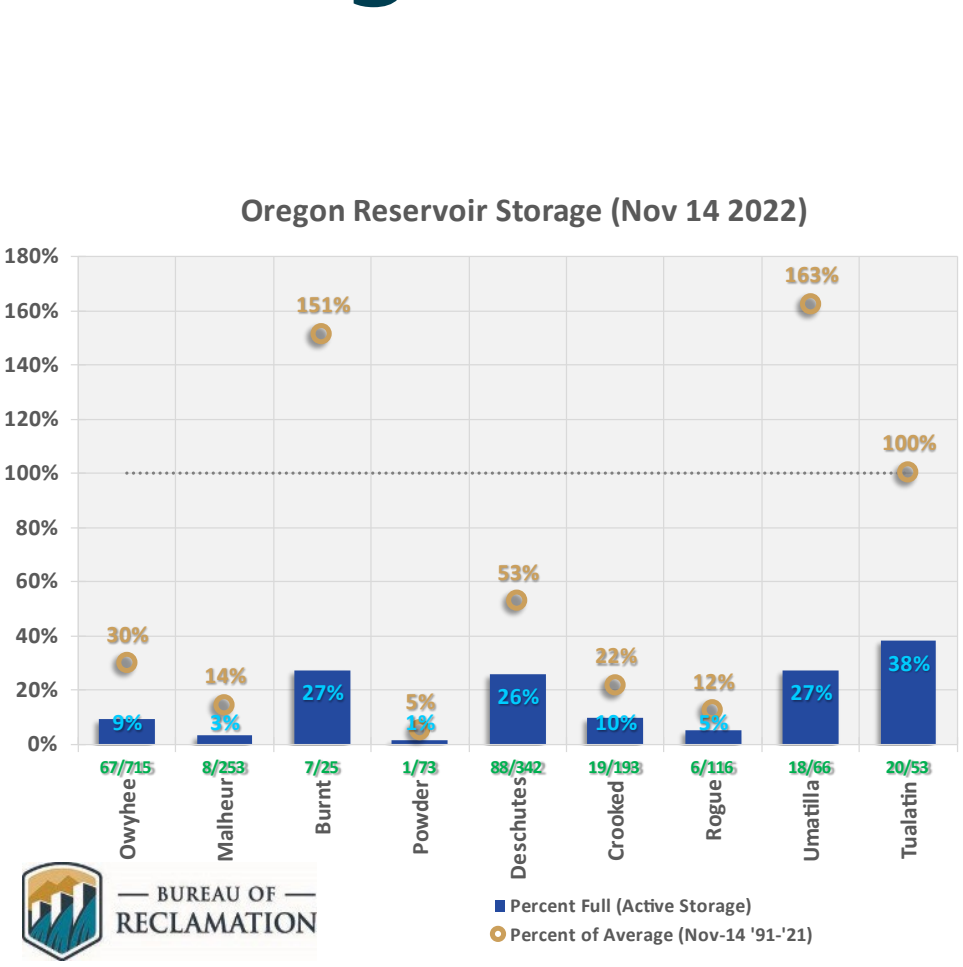
December 14, 2022

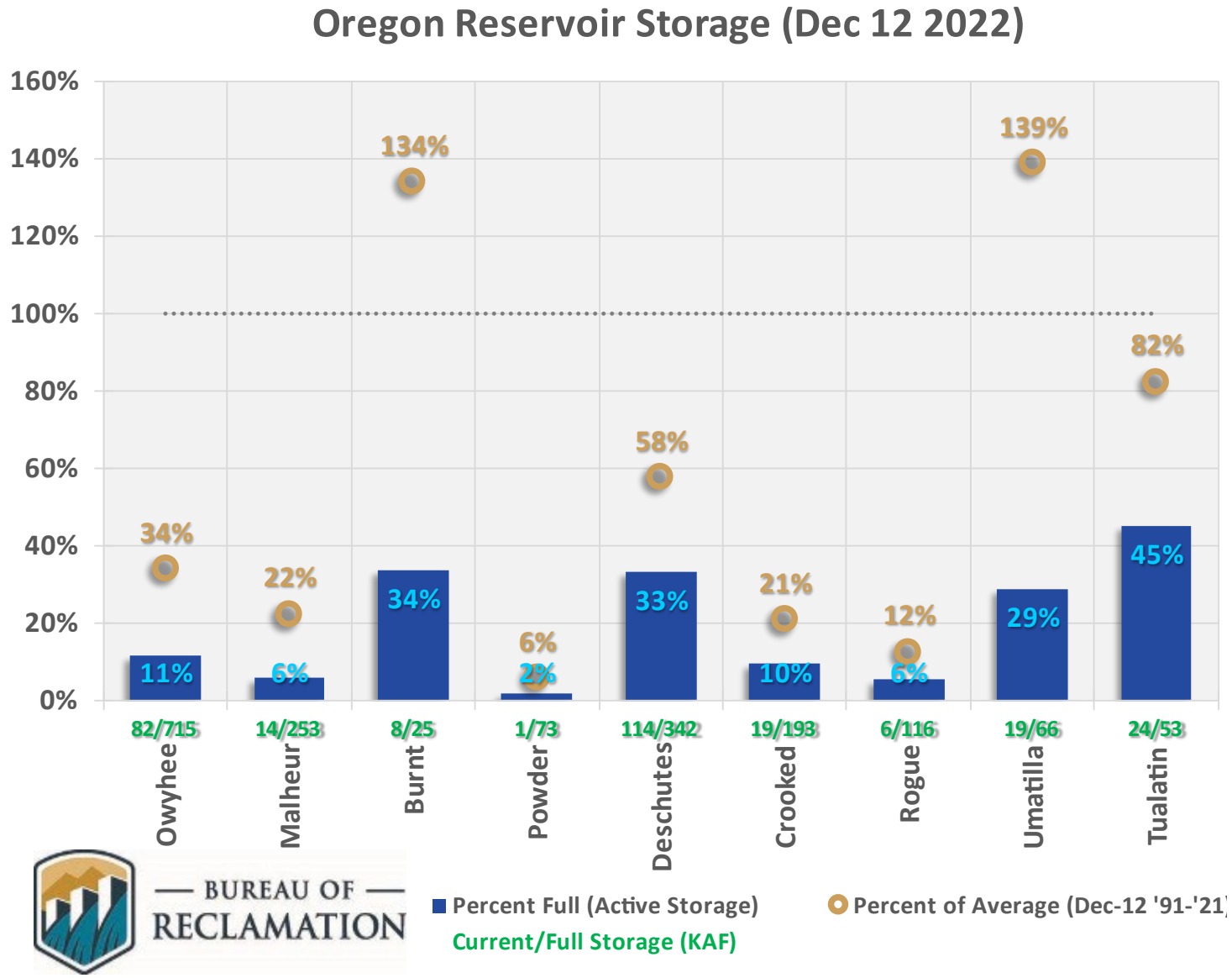
Basin Operations Summary

- Operations Activities:
  - Reservoirs are releasing winter minimums to continue filling
  - No FRM operations

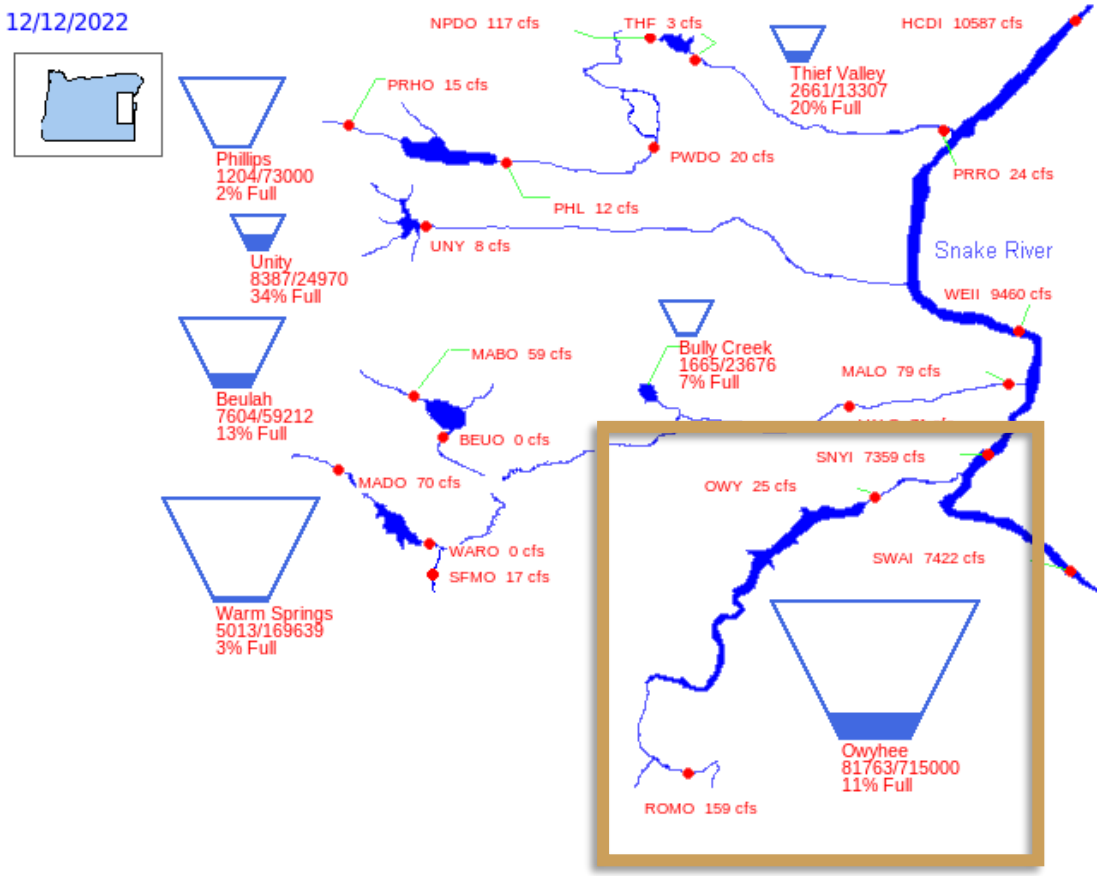
- Water Supply Notes
  - Below Normal Inflows
  - Much below normal storage content in the southern, central and southeastern basins (Rogue, Deschutes, Crooked, Malheur, Powder, Owyhee) => similar to WY2022
  - Below normal storage content at Scoggins but will catch up to normal quickly if we get some storms
  - Above normal and higher storage content than WY2022 in the northern basins (Unity, McKay)

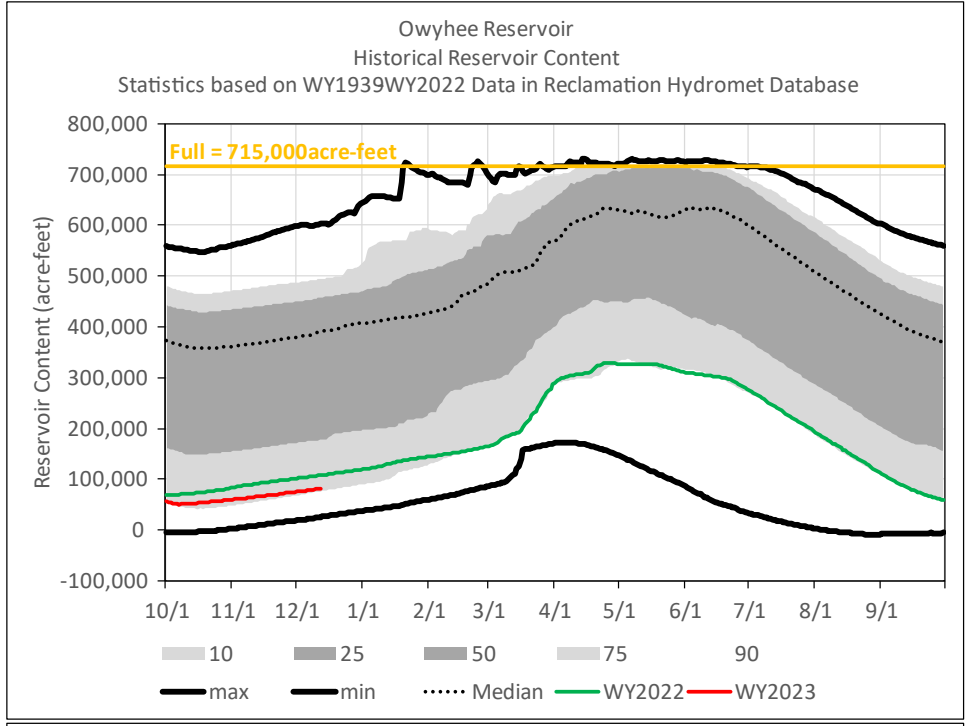
Storage Conditions

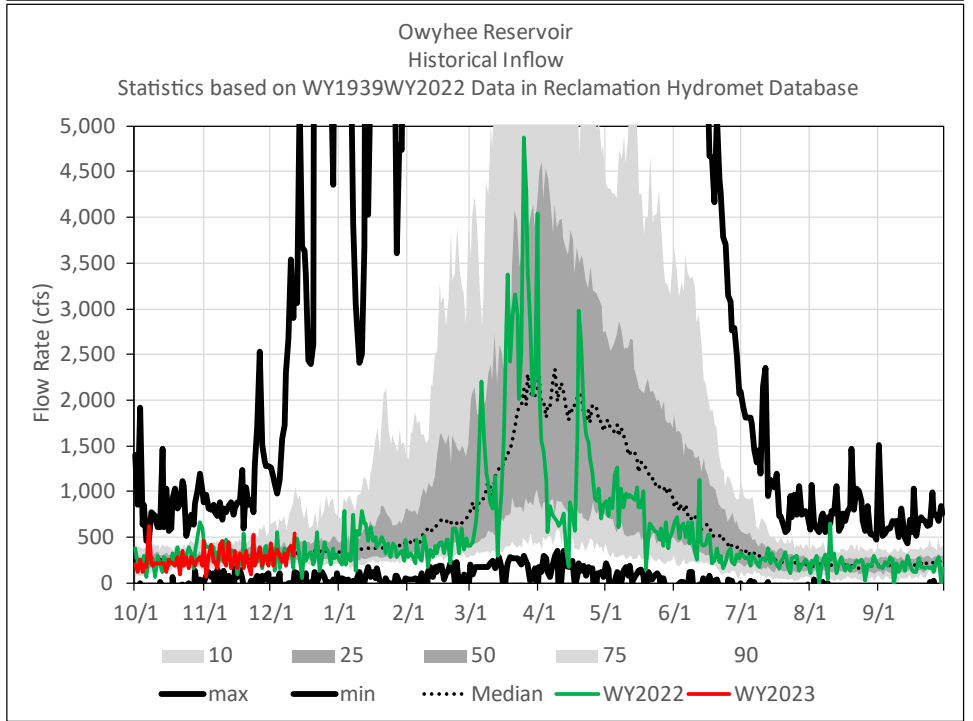




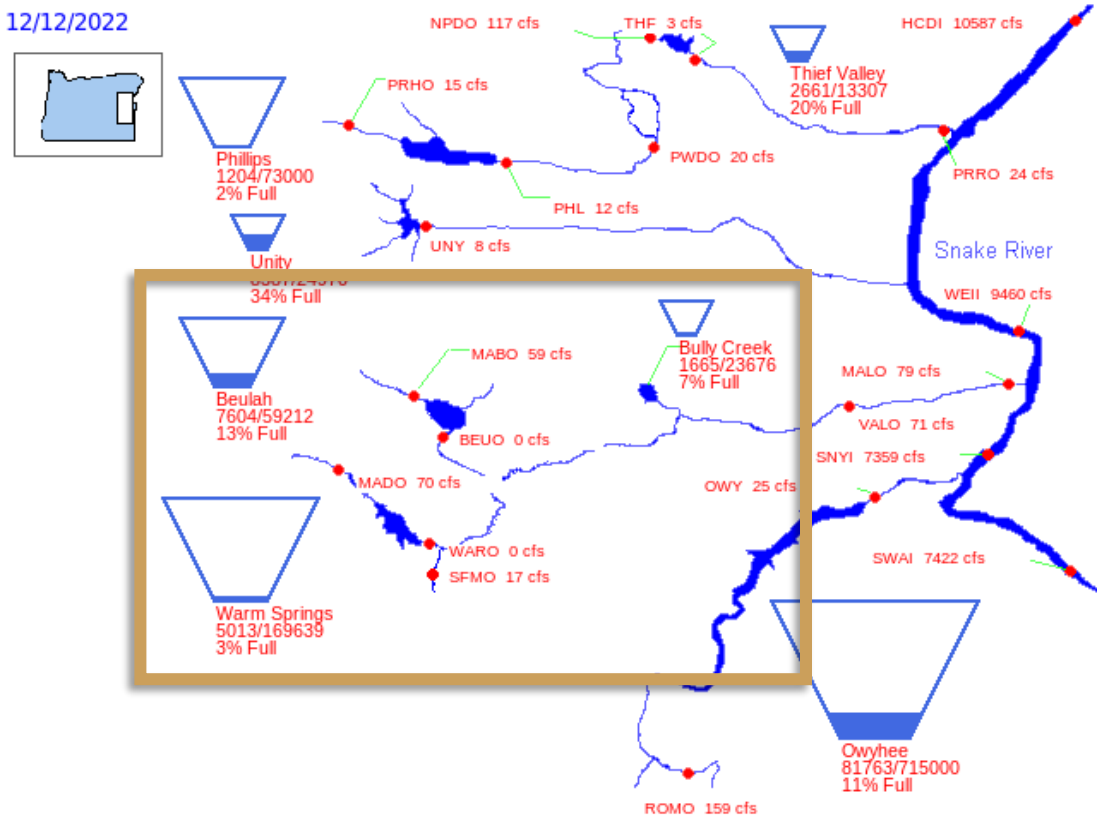
Owyhee River Basin

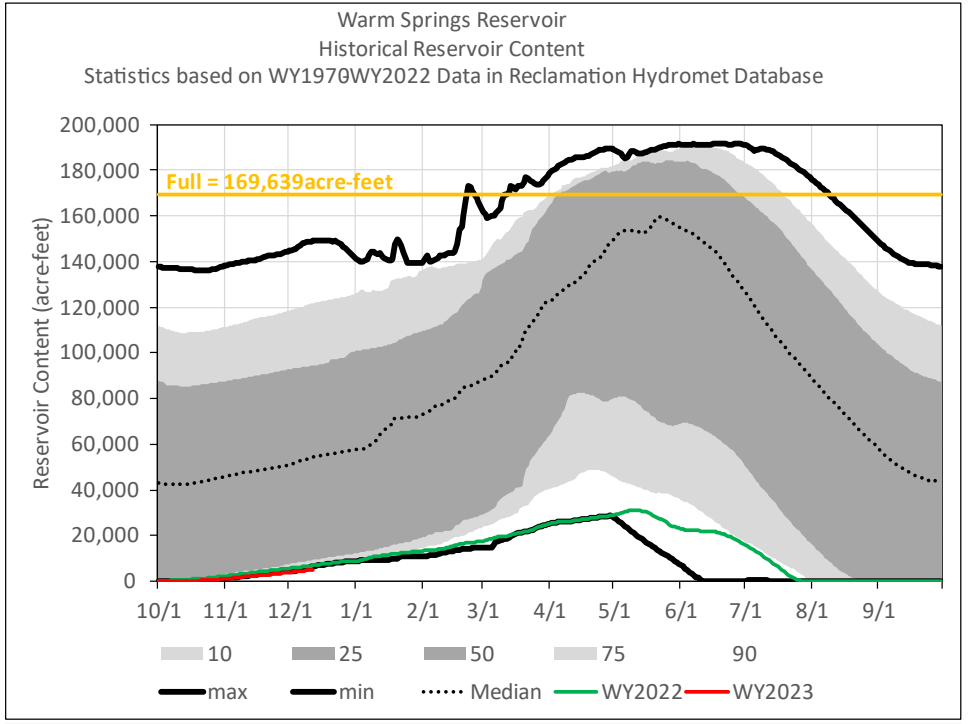


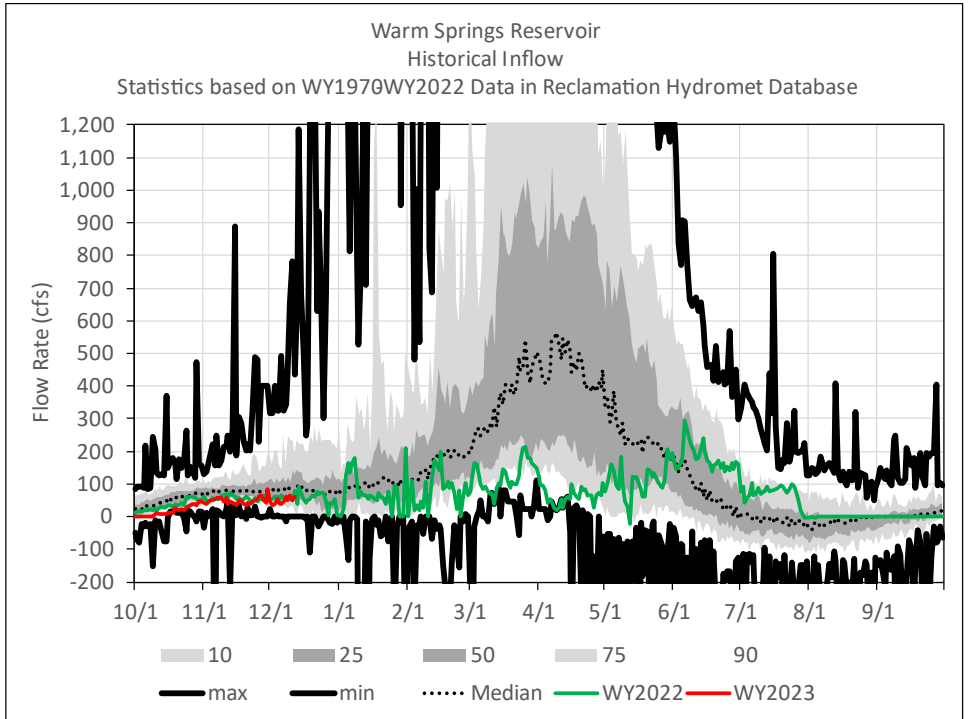




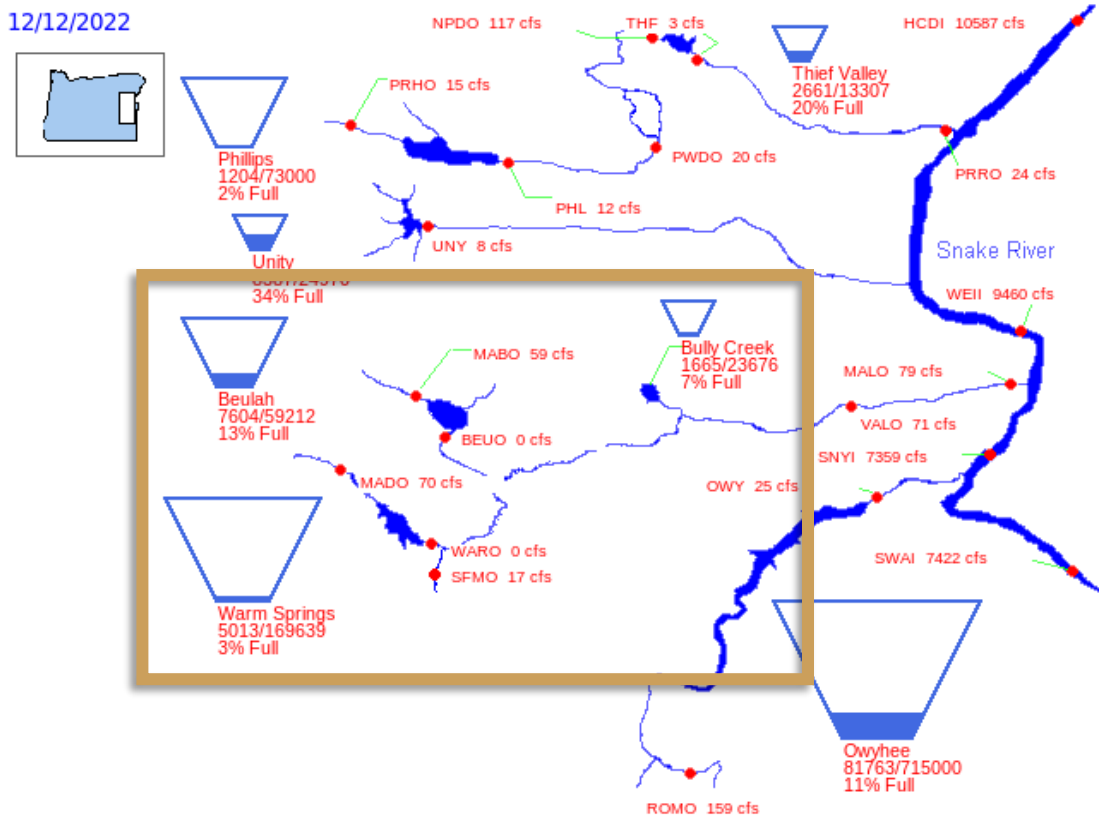
Malheur River Basin

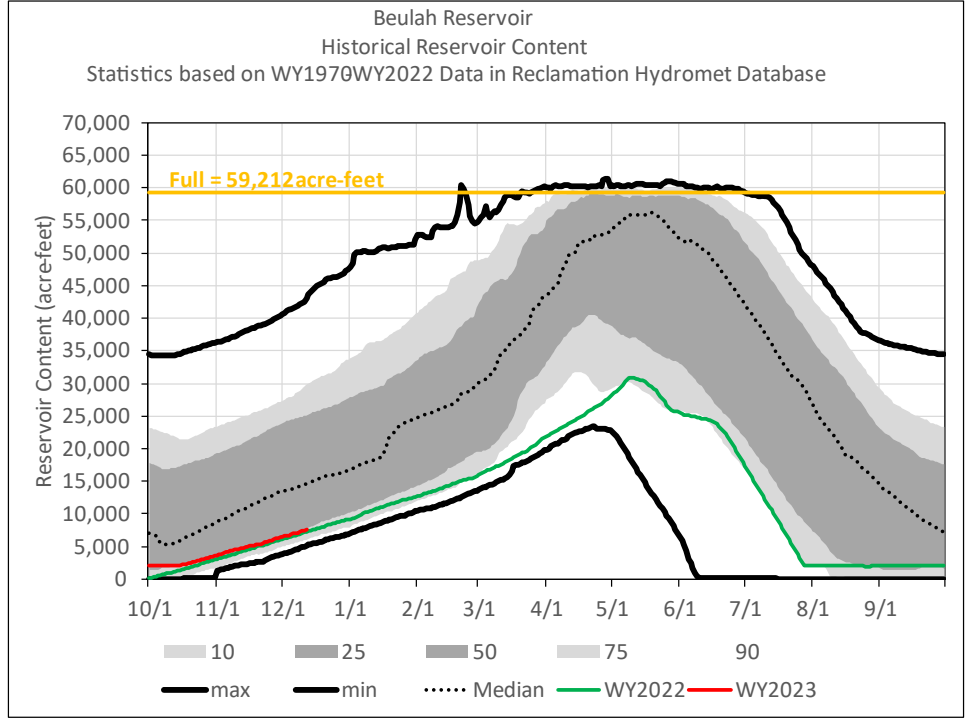


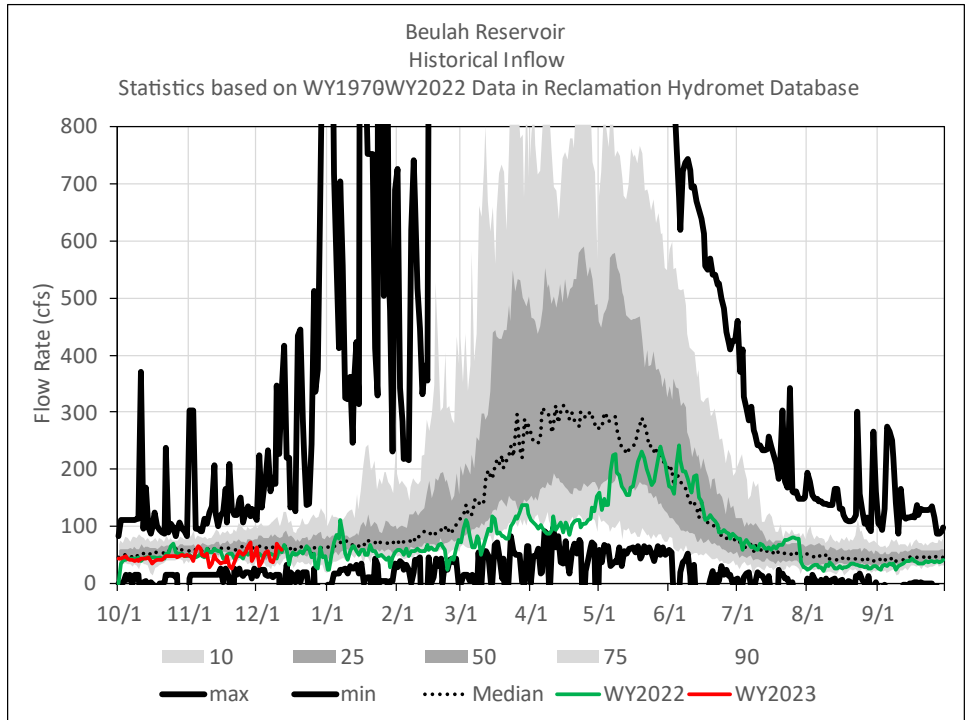




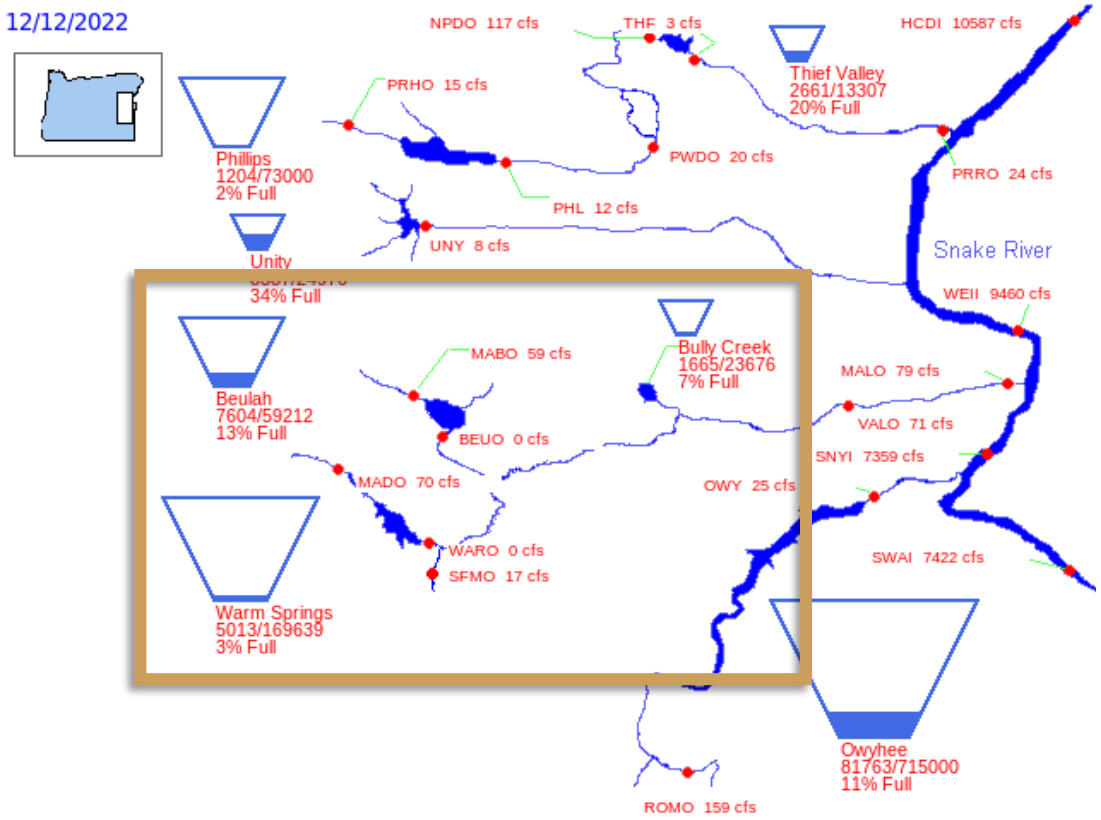
Malheur River Basin

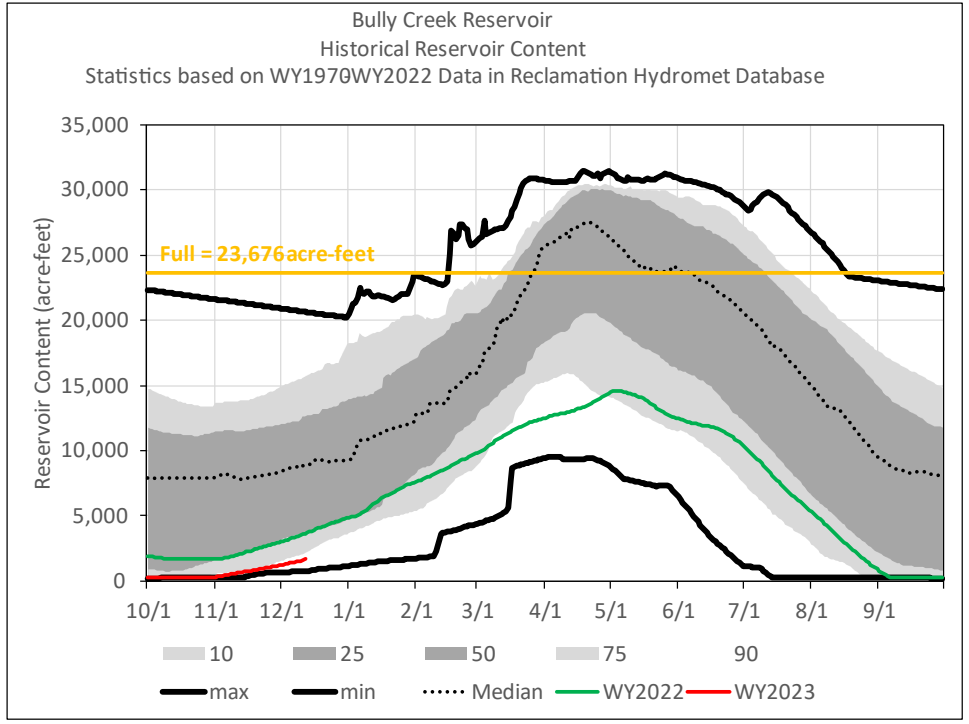




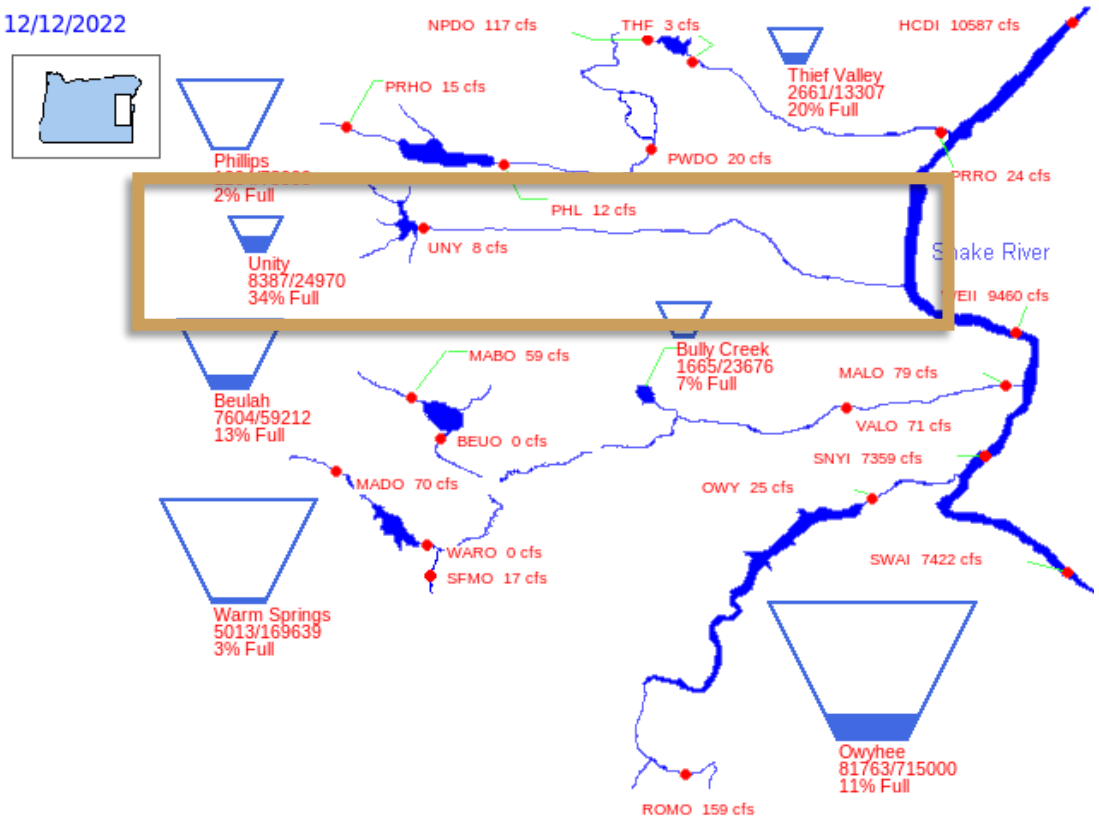


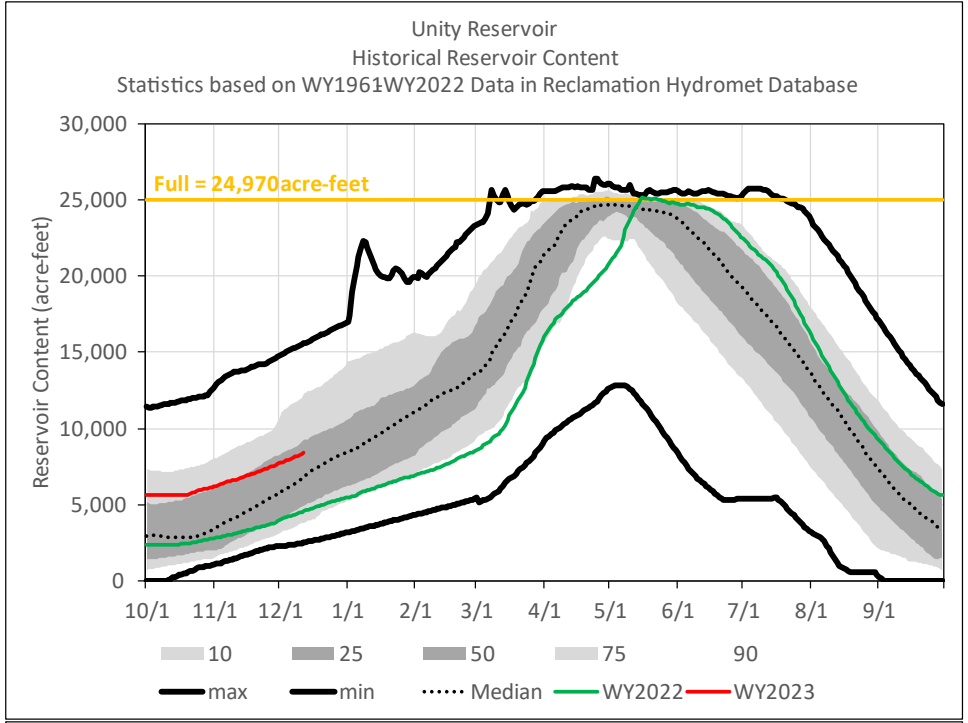
Malheur River Basin

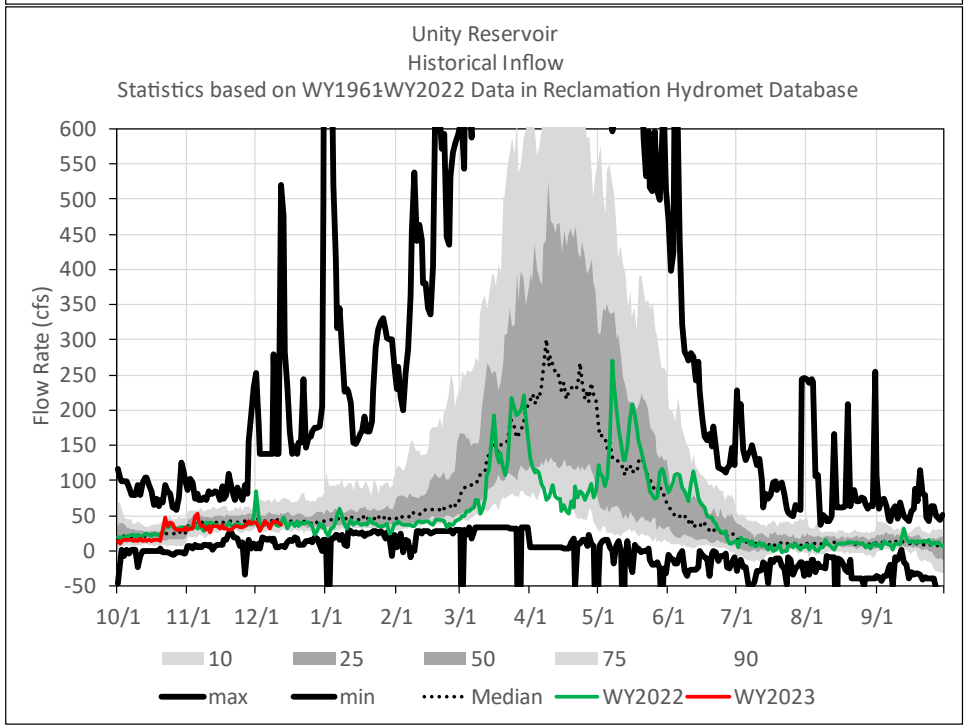




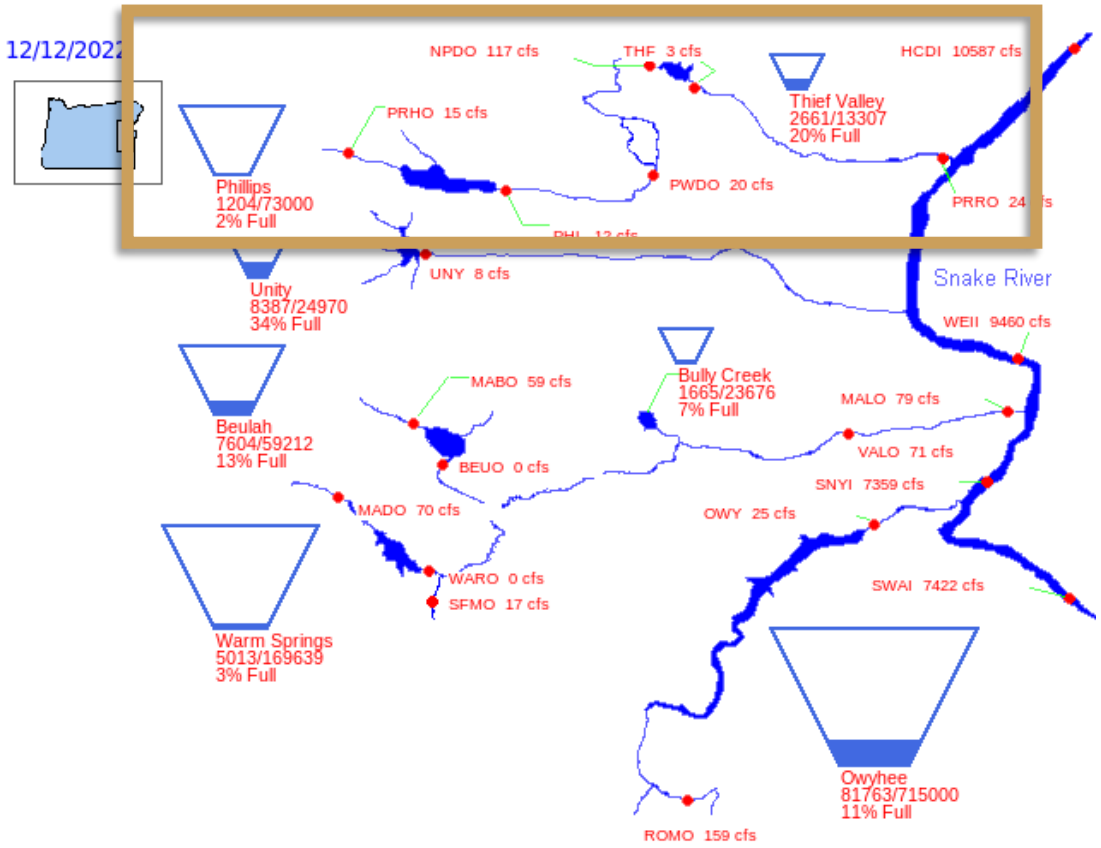
Burnt River Basin

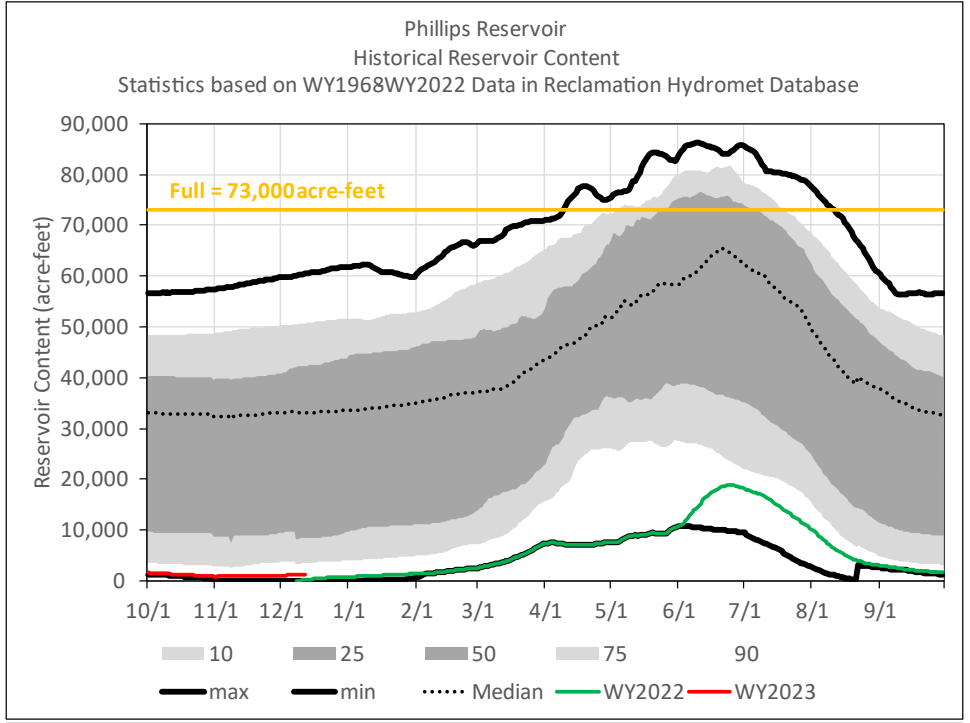


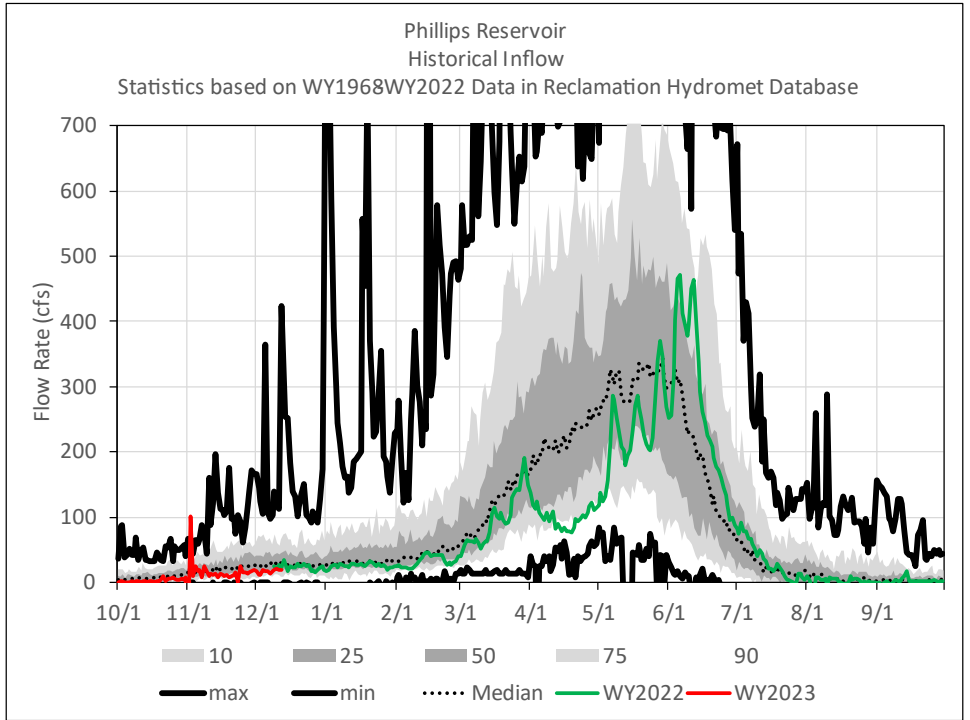




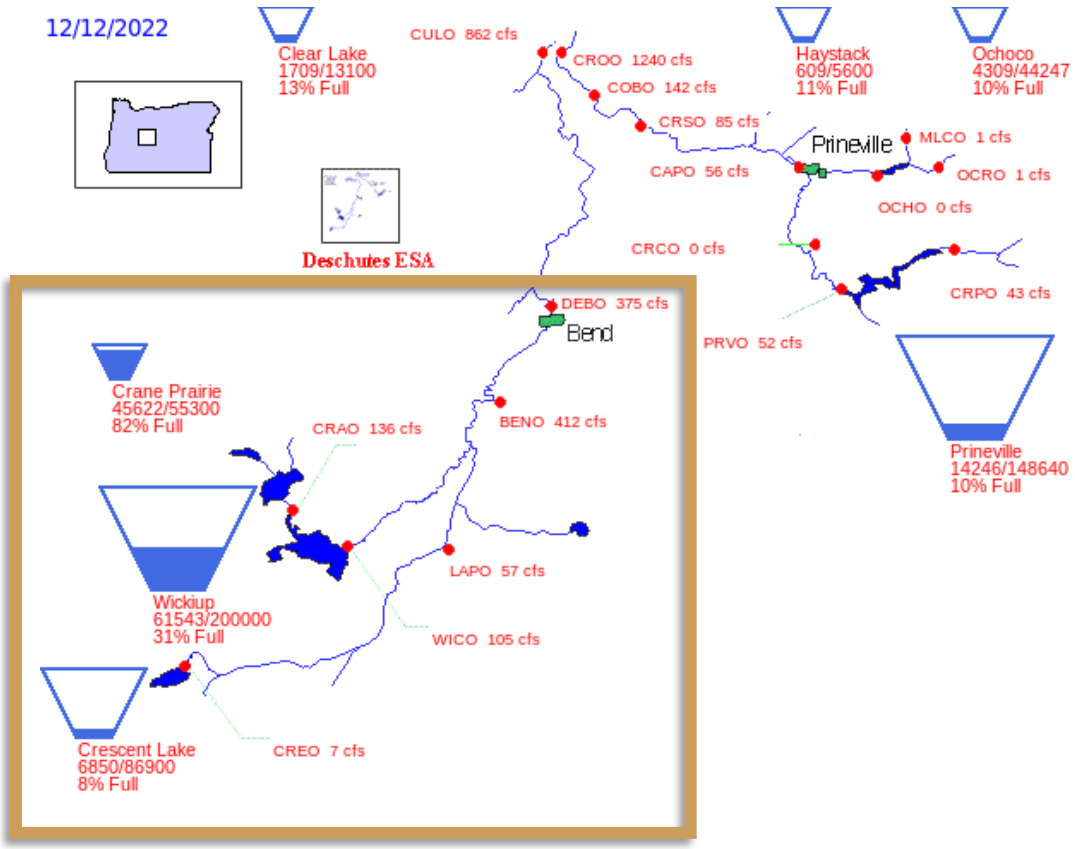
Powder River Basin

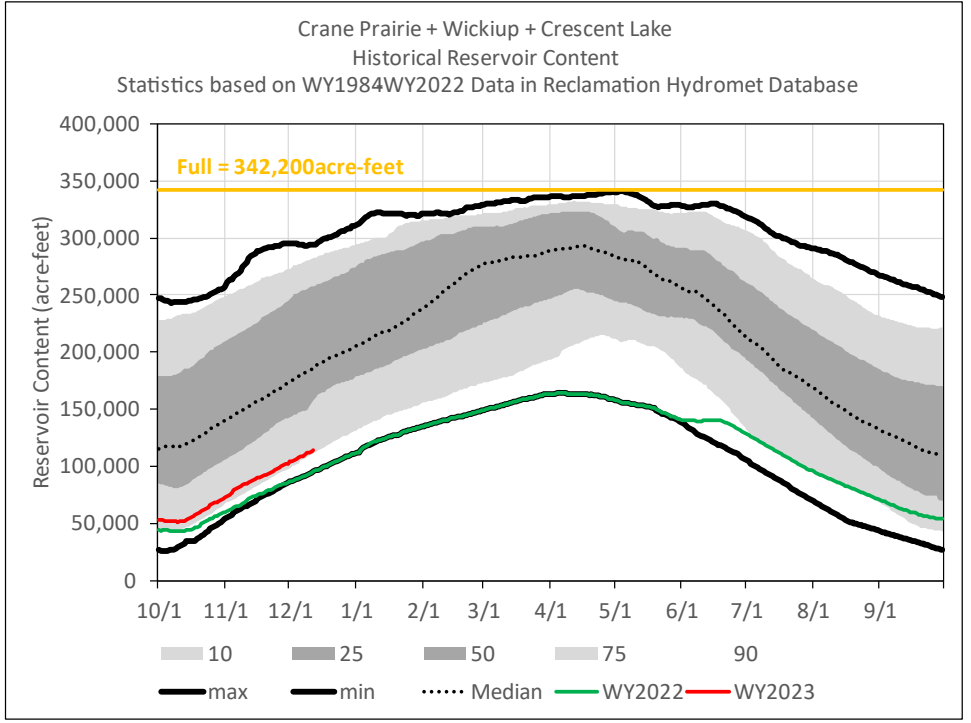




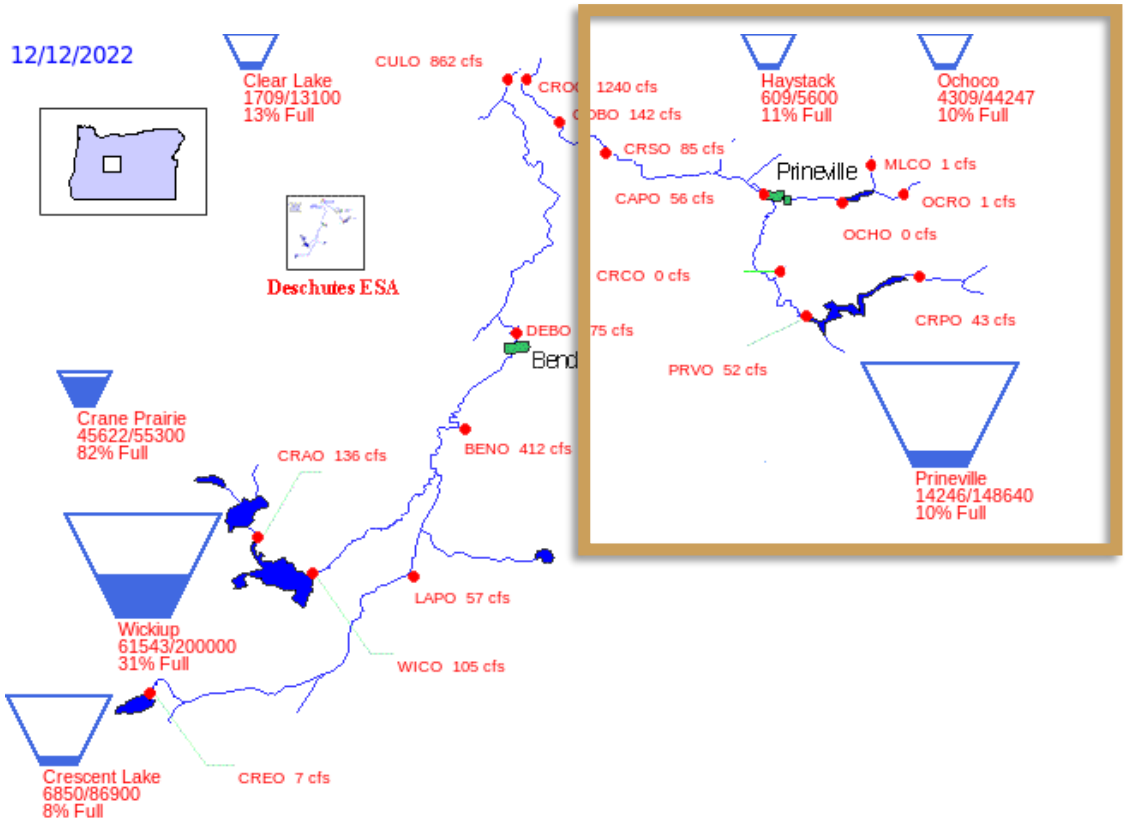


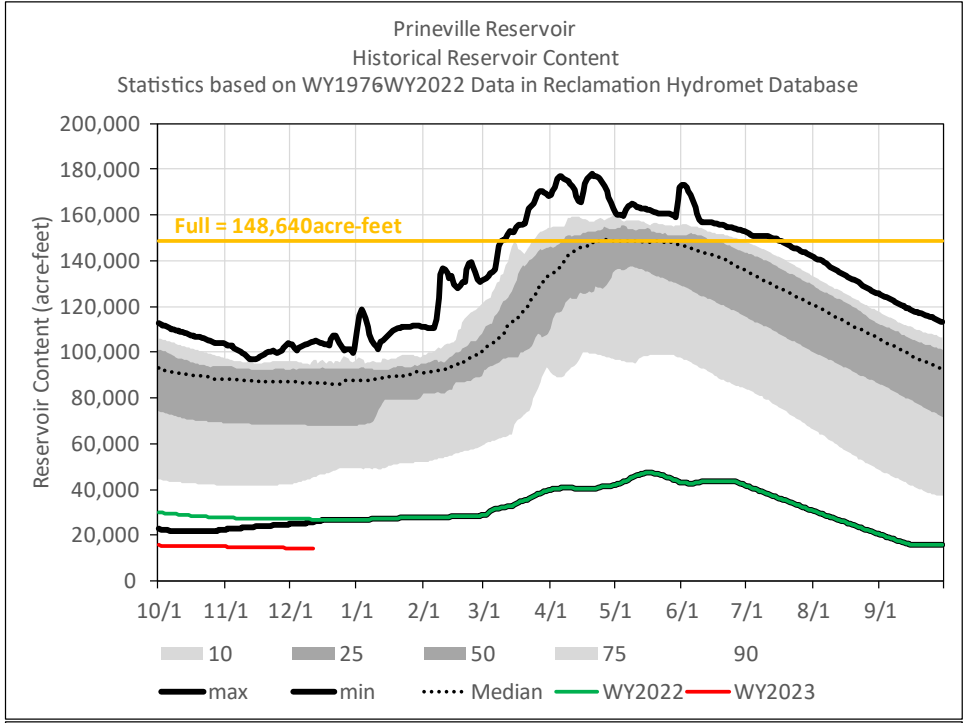
Deschutes River Basin

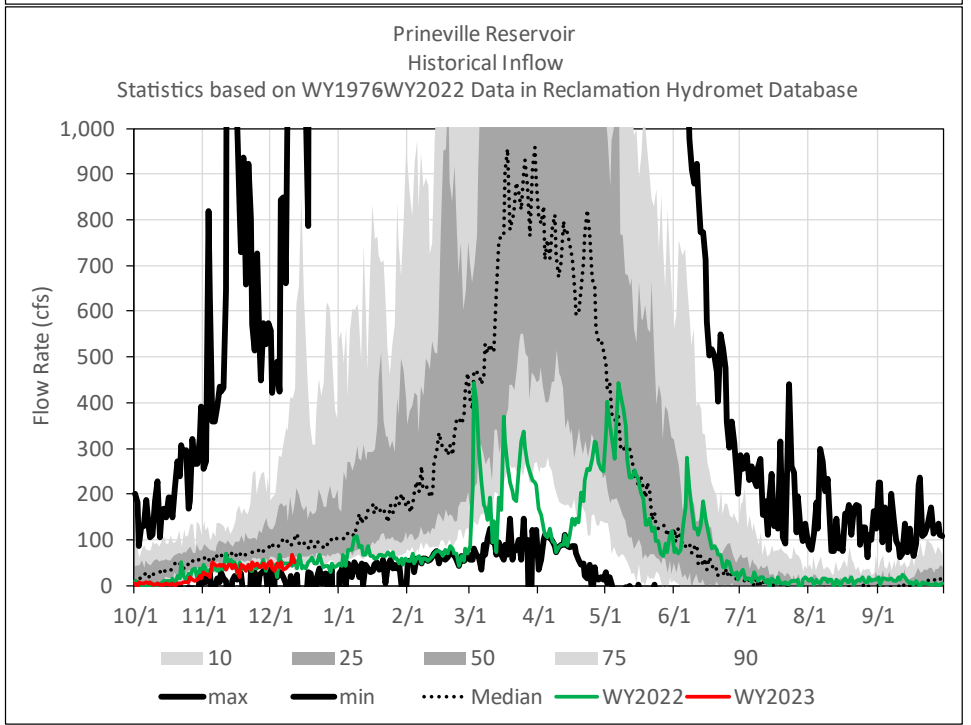




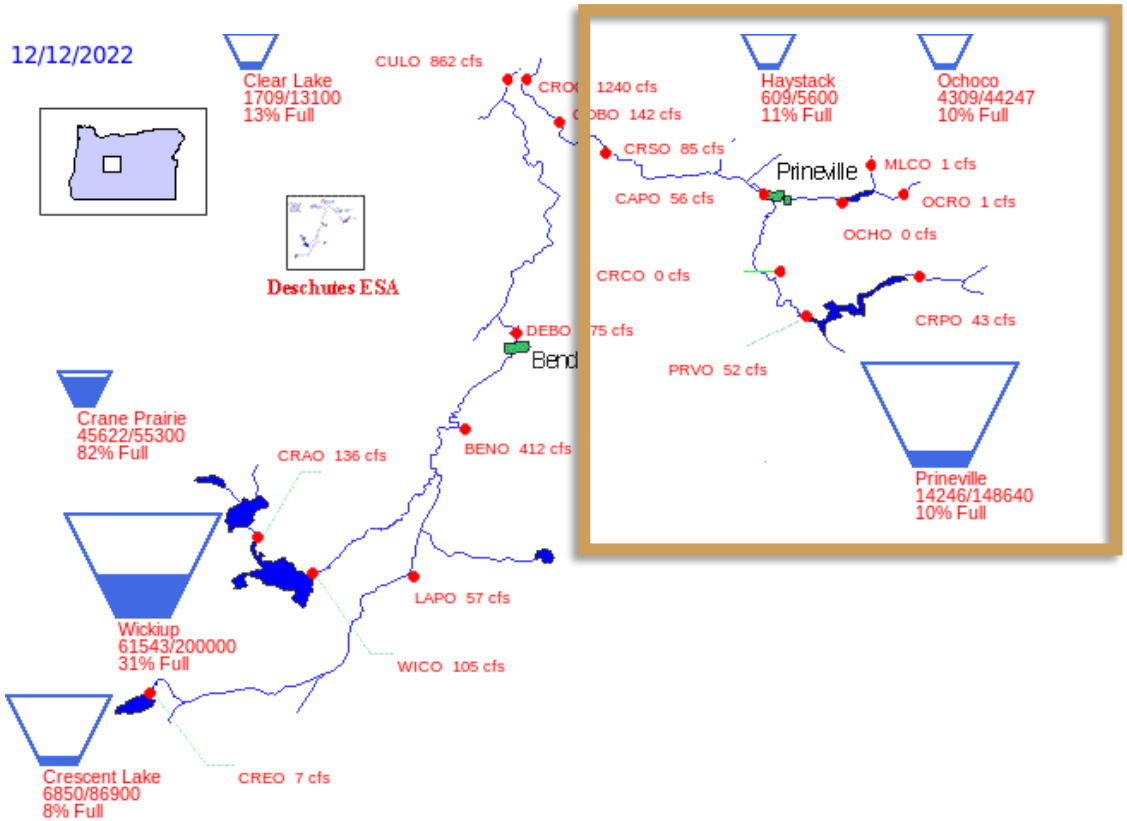
Crooked River Basin

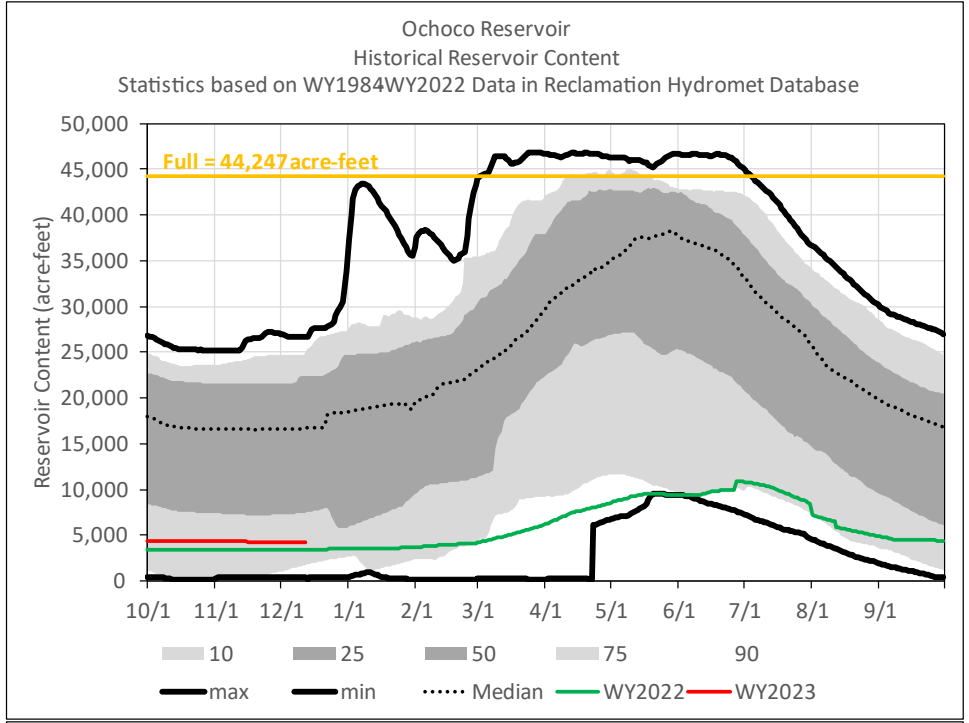


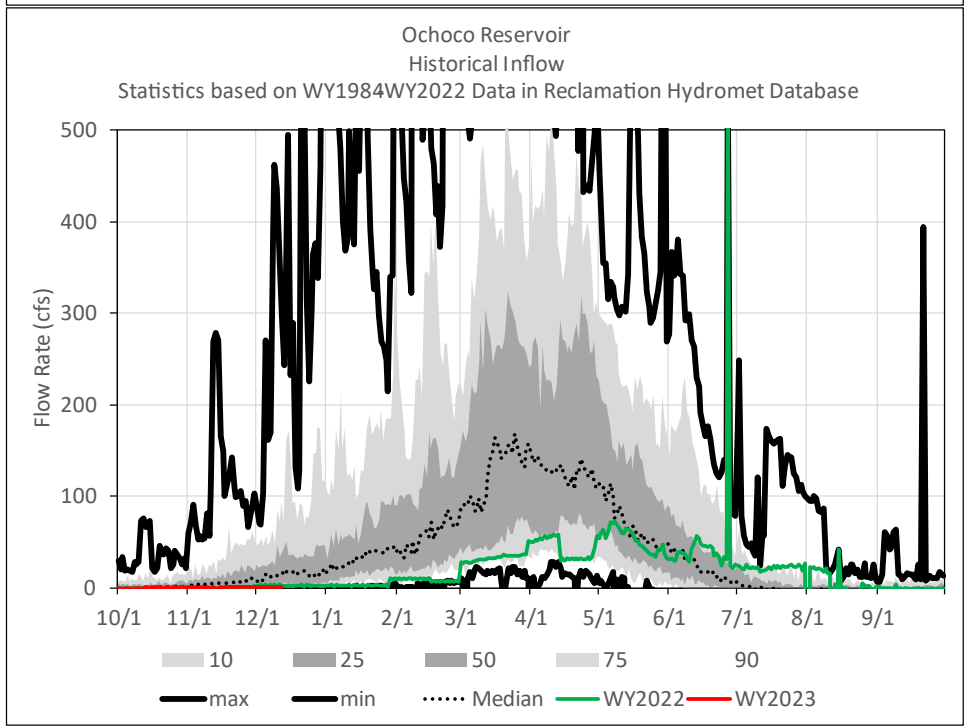




Crooked River Basin

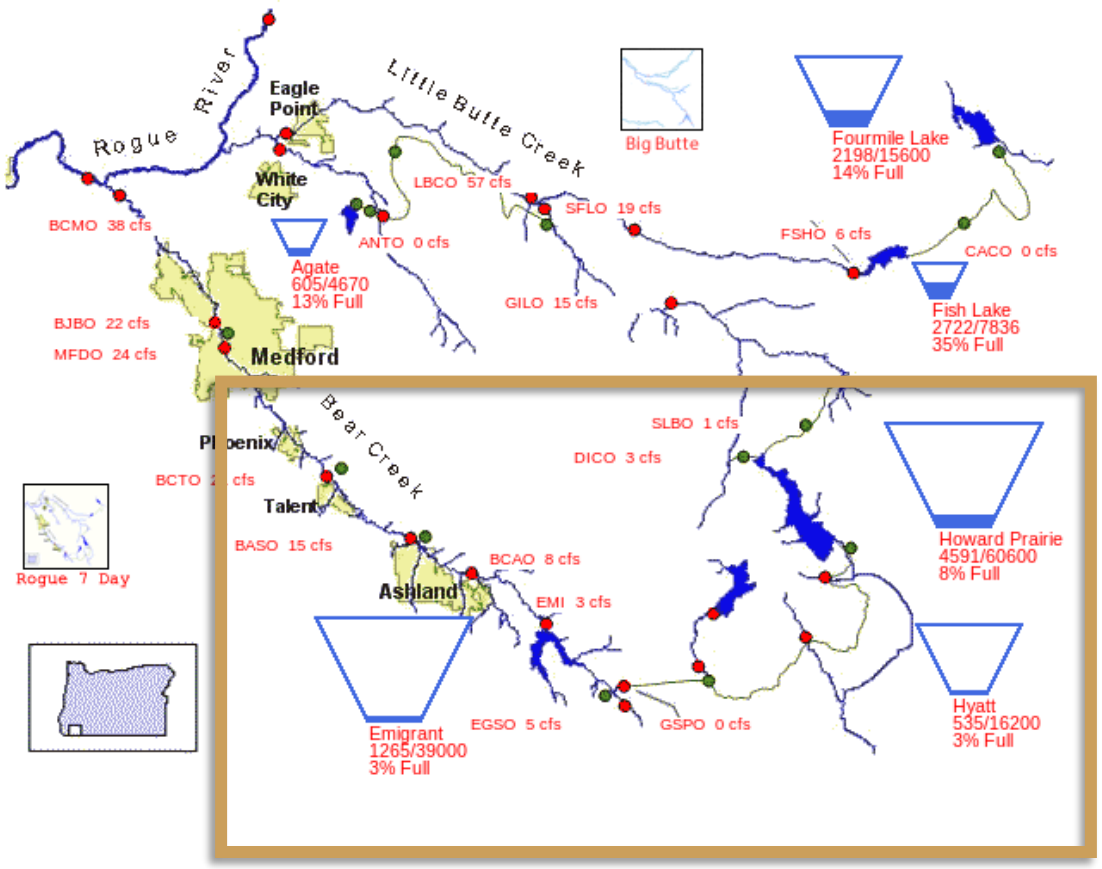


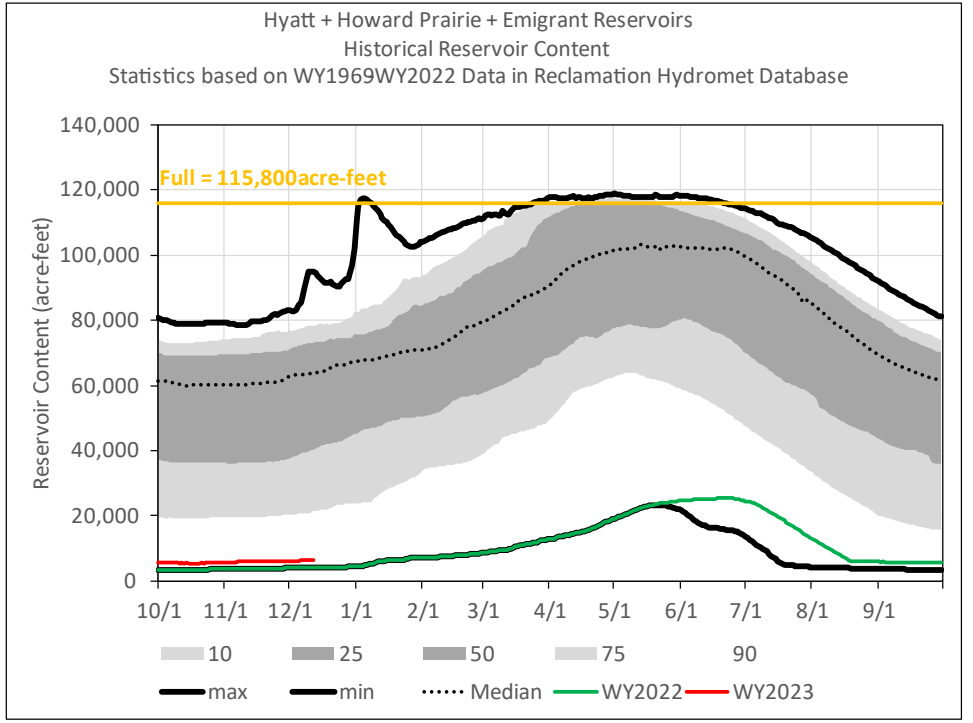




Rogue River Basin

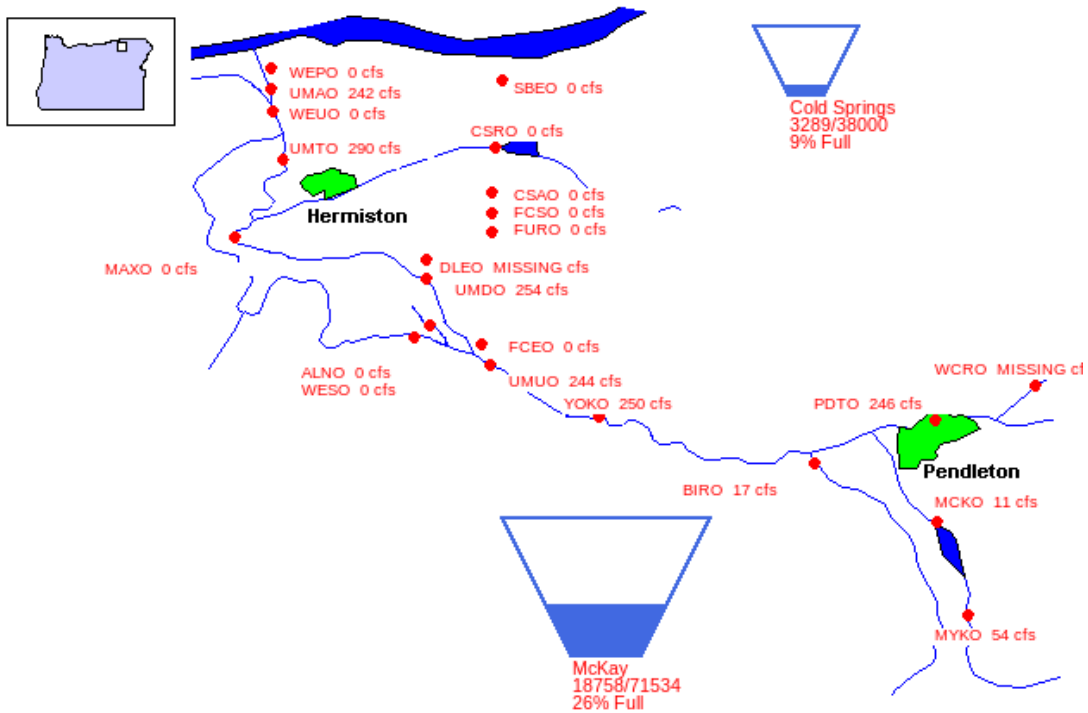
12/12/2022

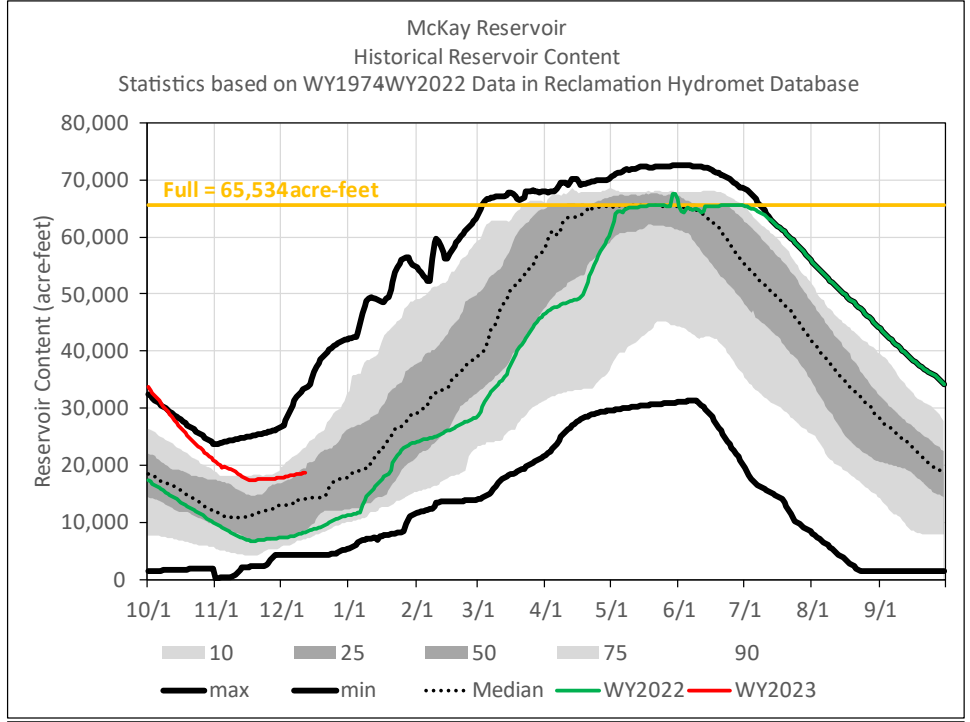


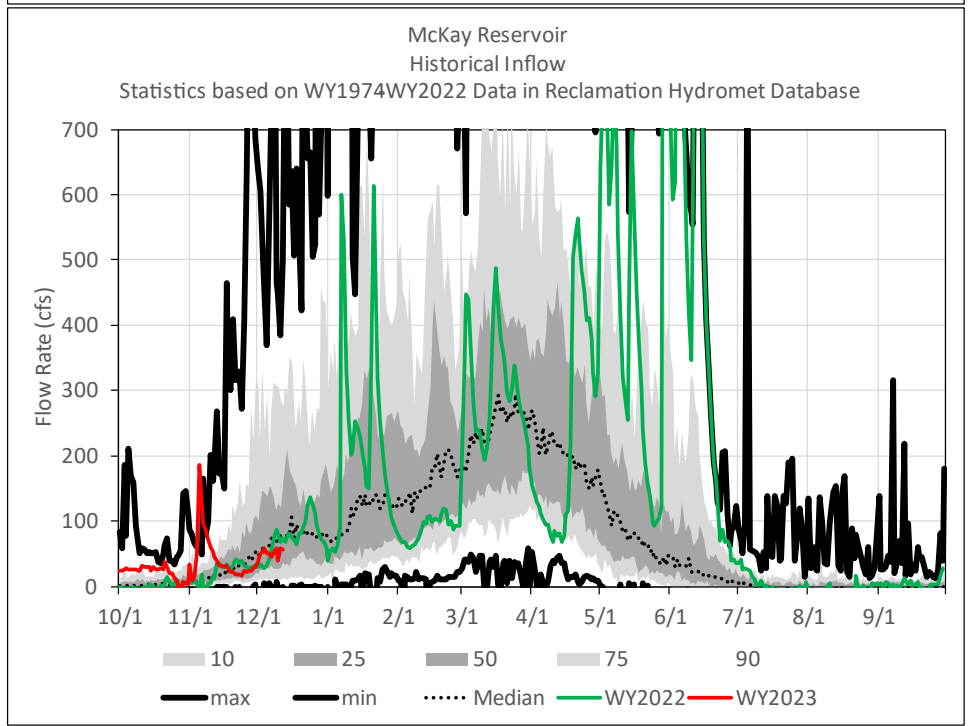


Umatilla River Basin

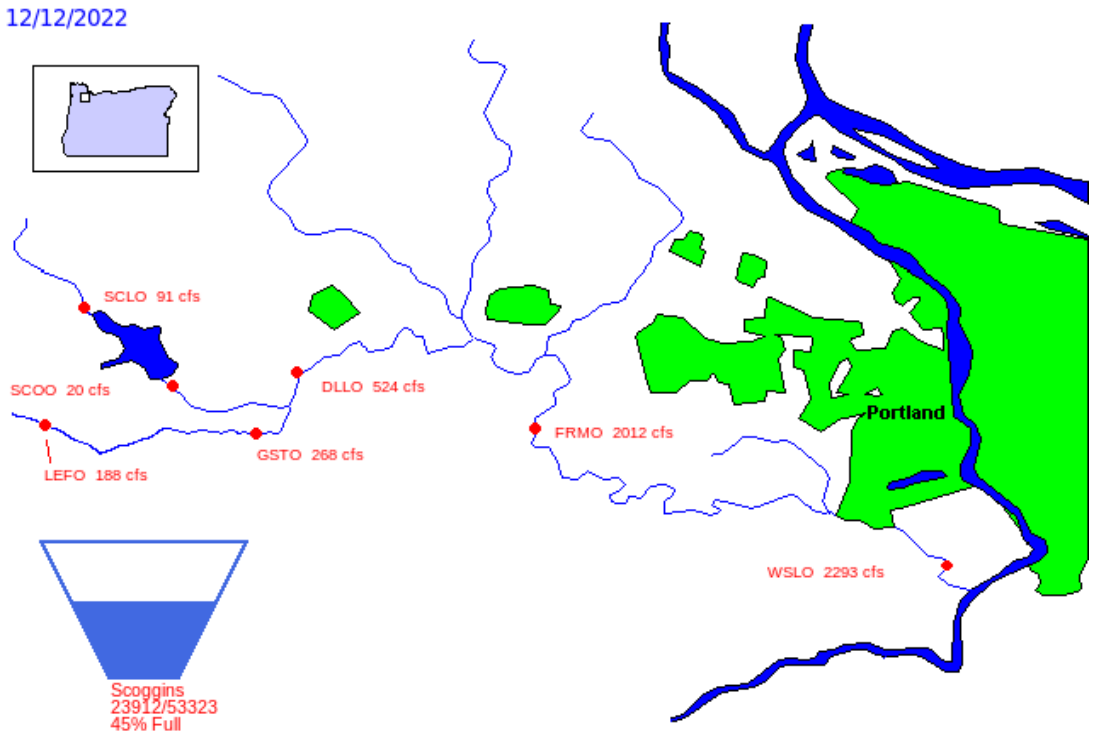
12/12/2022

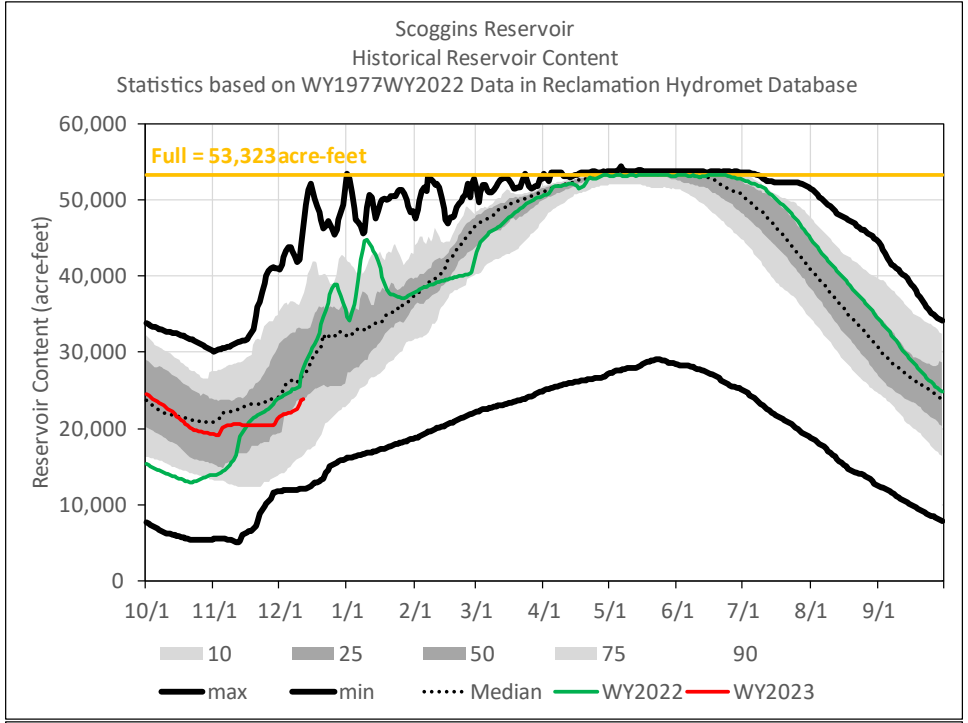


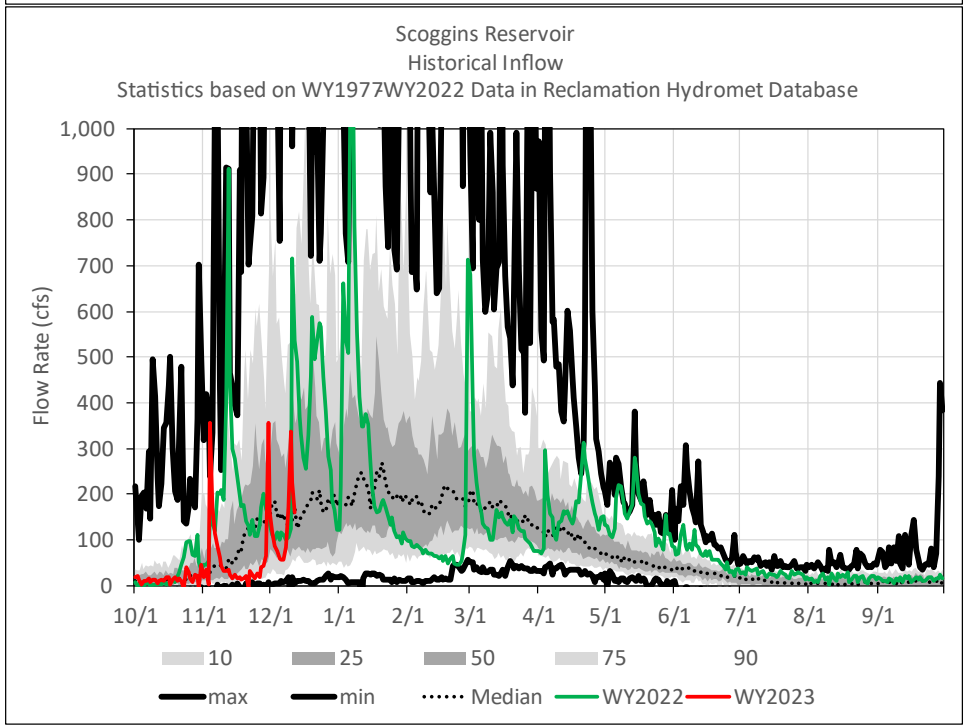




Tualatin River Basin







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Warm Springs Reservoir
June 22, 2005
99,010 acre-feet (58% full)

BUREAU OF RECLAMATION