Oregon Water Supply Availability Committee
December 11, 2018

Red Hill SNOTEL Site, Hood River County – December 2017

H. Scott Oviatt
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USDA NRCS Snow Survey and Water Supply Forecasting Program
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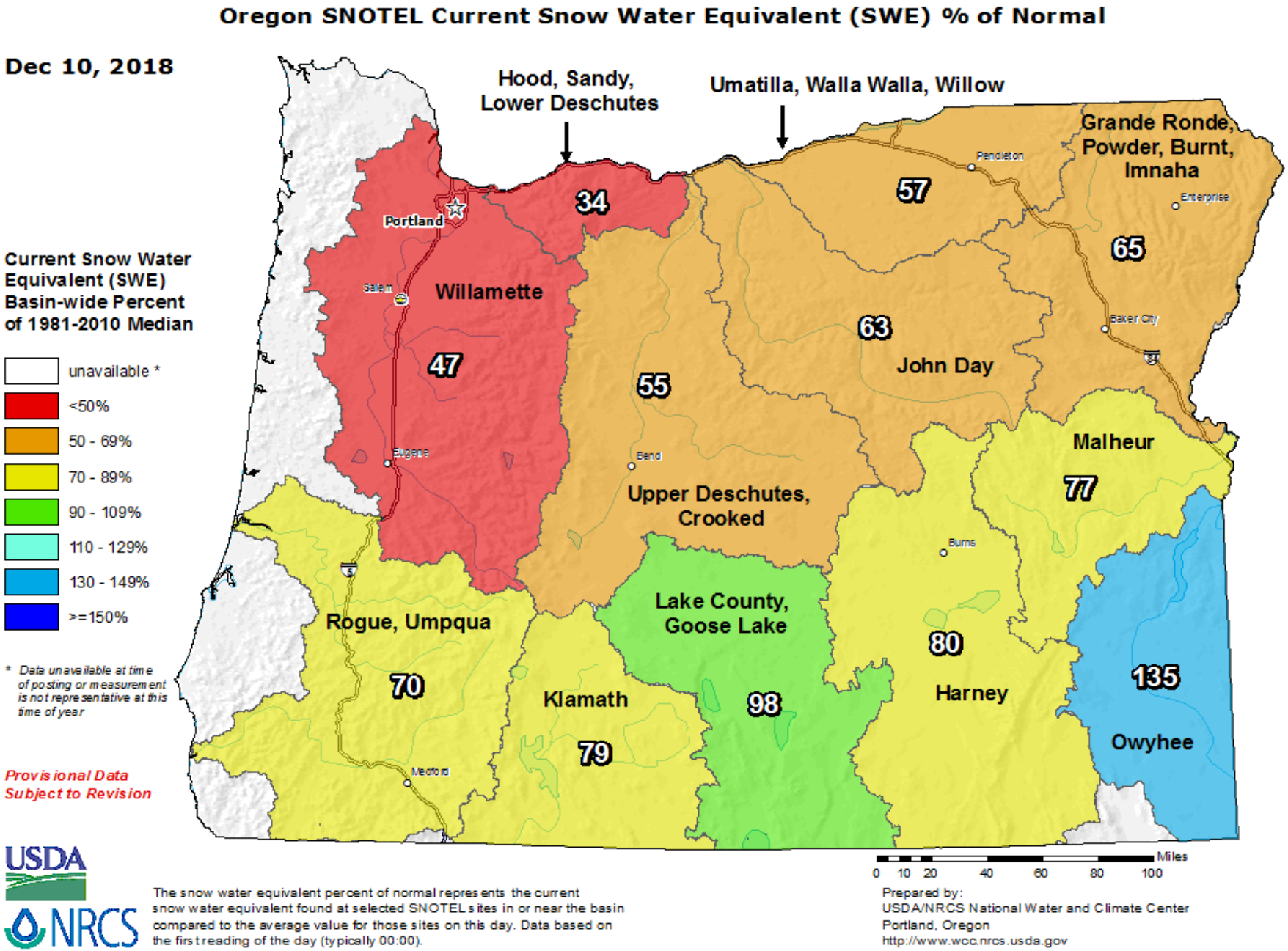
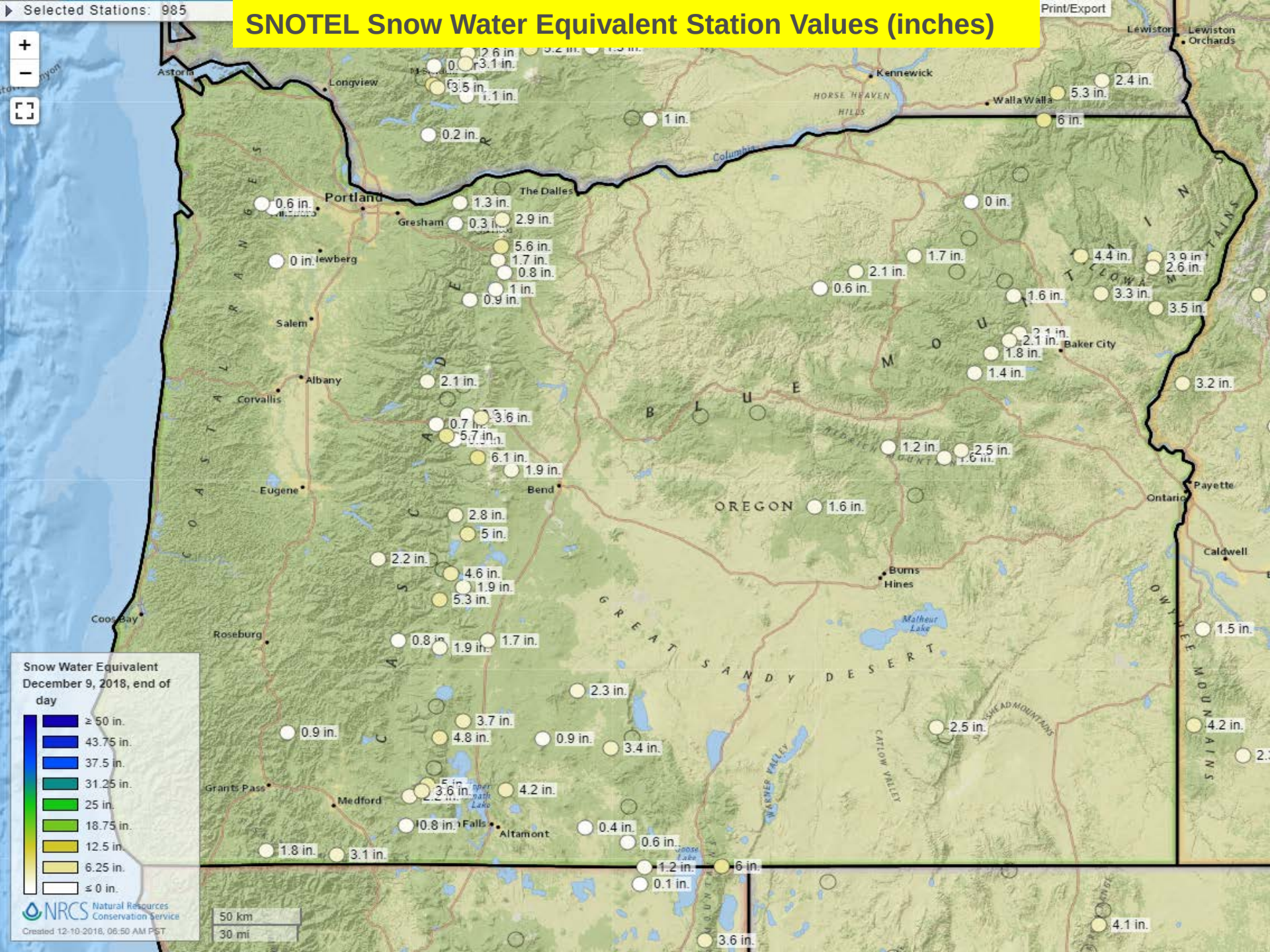
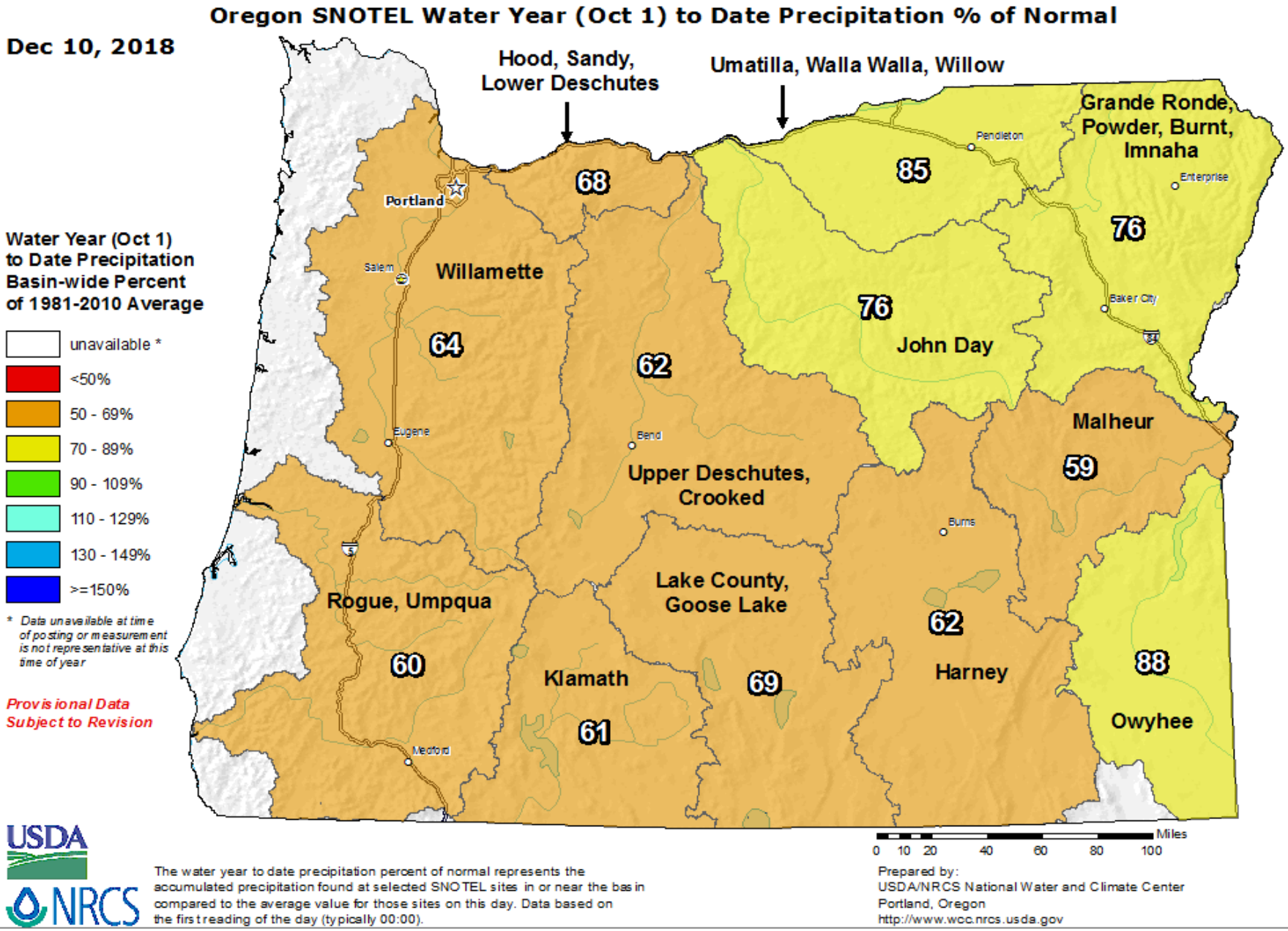
503-414-3271
http://www.nrcs.usda.gov/wps/portal/nrcs/main/or/snow/

Statewide SNOTEL Snow Water Equivalent is 57% of normal




Selected Stations: 985
Print/Export
SNOTEL Snow Water Equivalent Station Values (inches)
Snow Water Equivalent
December 9, 2018, end of day
≥ 50 in.
43.75 in.
37.5 in.
31.25 in.
25 in.
18.75 in.
12.5 in.
6.25 in.
≤ 0 in.
NRCS Natural Resources Conservation Service
Created 12-10-2018, 06:50 AM PST
50 km
30 mi
Portland
Salem
Eugene
Albany
Corvallis
Bend
Roseburg
Coos Bay
Medford
Grants Pass
Ashland
Klamath Falls
Altamont
Lakeview
The Dalles
Gresham
Longview
Astoria
Kennewick
Walla Walla
Lewiston
Lewiston Orchards
Baker City
Ontario
Payette
Caldwell
Burns
Hines
OREGON
Columbia
Malheur Lake
Goose Lake
Warner Valley
Catlow Valley
Steens Mountains
Owyhee Mountains
Great Sandy Desert
Blue Mountains
Cascade Range
Coastal Range
Horse Heaven Hills
Idaho
Wyoming
Montana
0.6 in.
0 in.
1.3 in.
0.3 in.
2.9 in.
5.6 in.
1.7 in.
0.8 in.
1 in.
0.9 in.
2.1 in.
3.6 in.
5.7 in.
6.1 in.
1.9 in.
2.8 in.
5 in.
2.2 in.
4.6 in.
1.9 in.
5.3 in.
0.8 in.
1.9 in.
1.7 in.
0.9 in.
3.7 in.
4.8 in.
0.9 in.
3.4 in.
2.3 in.
3.6 in.
4.2 in.
0.8 in.
1.8 in.
3.1 in.
0.4 in.
0.6 in.
1.2 in.
6 in.
0.1 in.
3.6 in.
4.1 in.
2.5 in.
1.5 in.
4.2 in.
1.6 in.
1.2 in.
2.5 in.
1.4 in.
3.2 in.
1.8 in.
2.1 in.
3.3 in.
3.5 in.
1.6 in.
0.6 in.
1.7 in.
2.1 in.
4.4 in.
3.9 in.
2.6 in.
0 in.
1 in.
0.2 in.
3.1 in.
3.5 in.
1.1 in.
5.3 in.
2.4 in.
6 in.

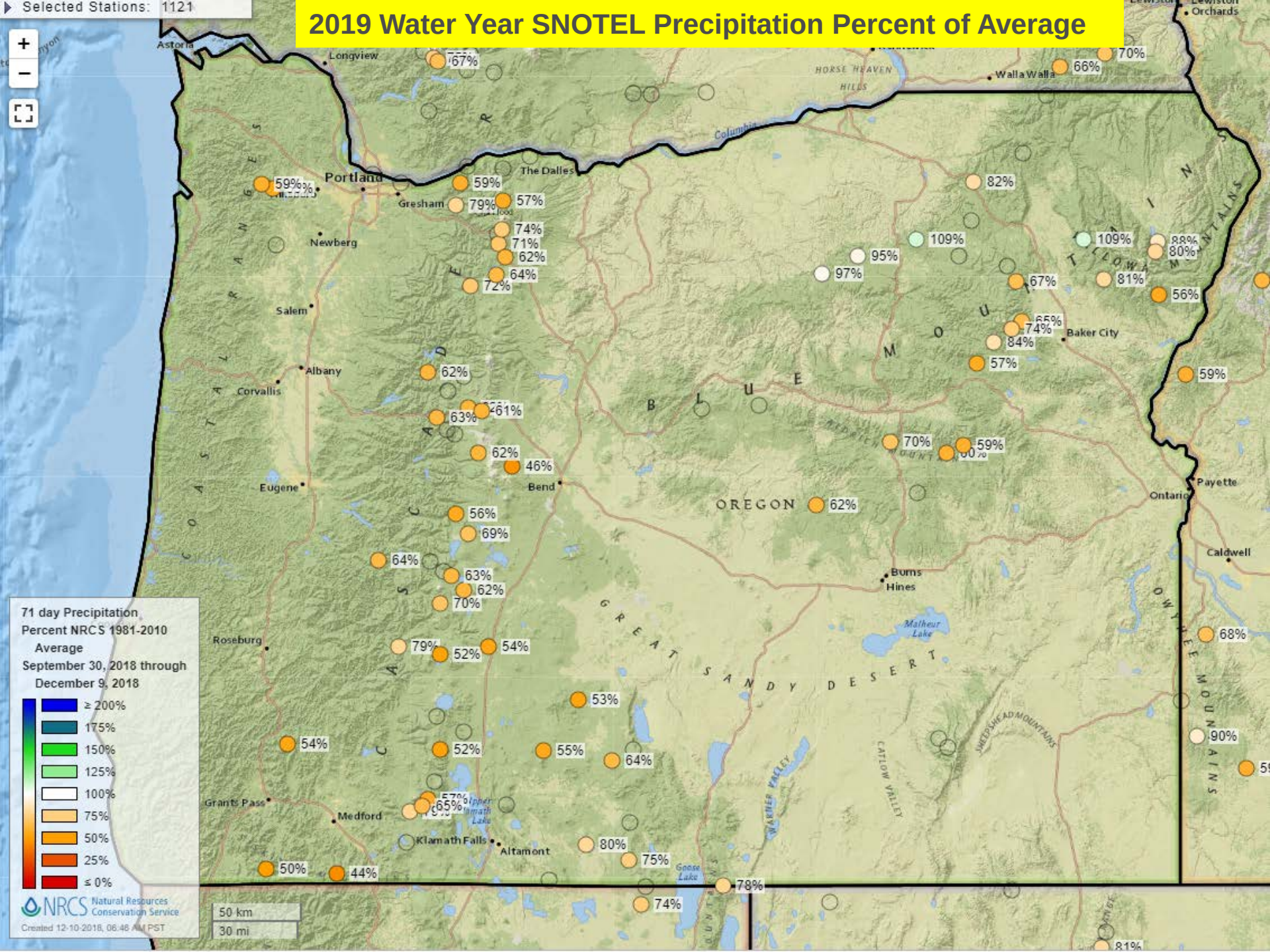
Statewide SNOTEL Precipitation is 66% of normal

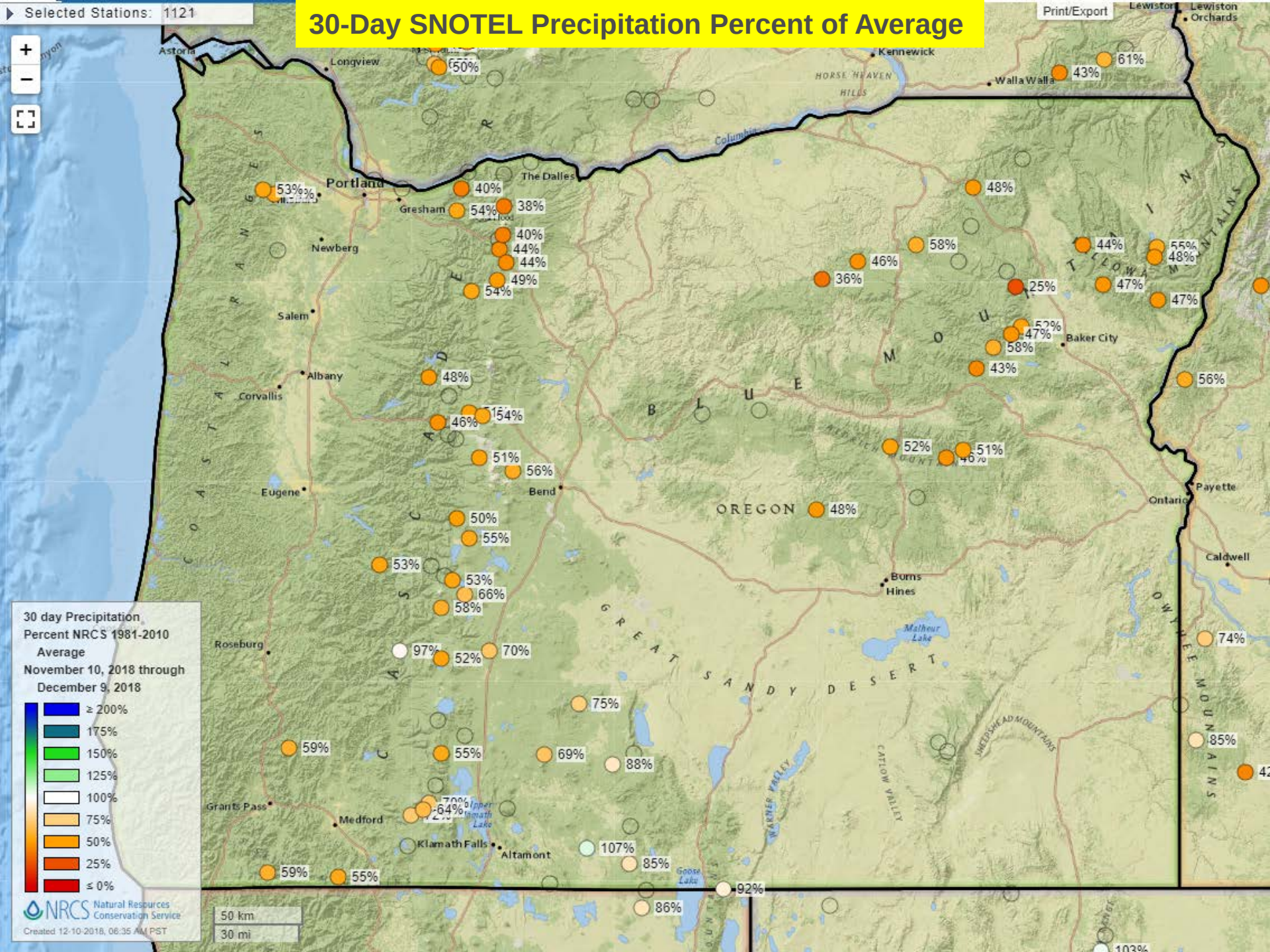


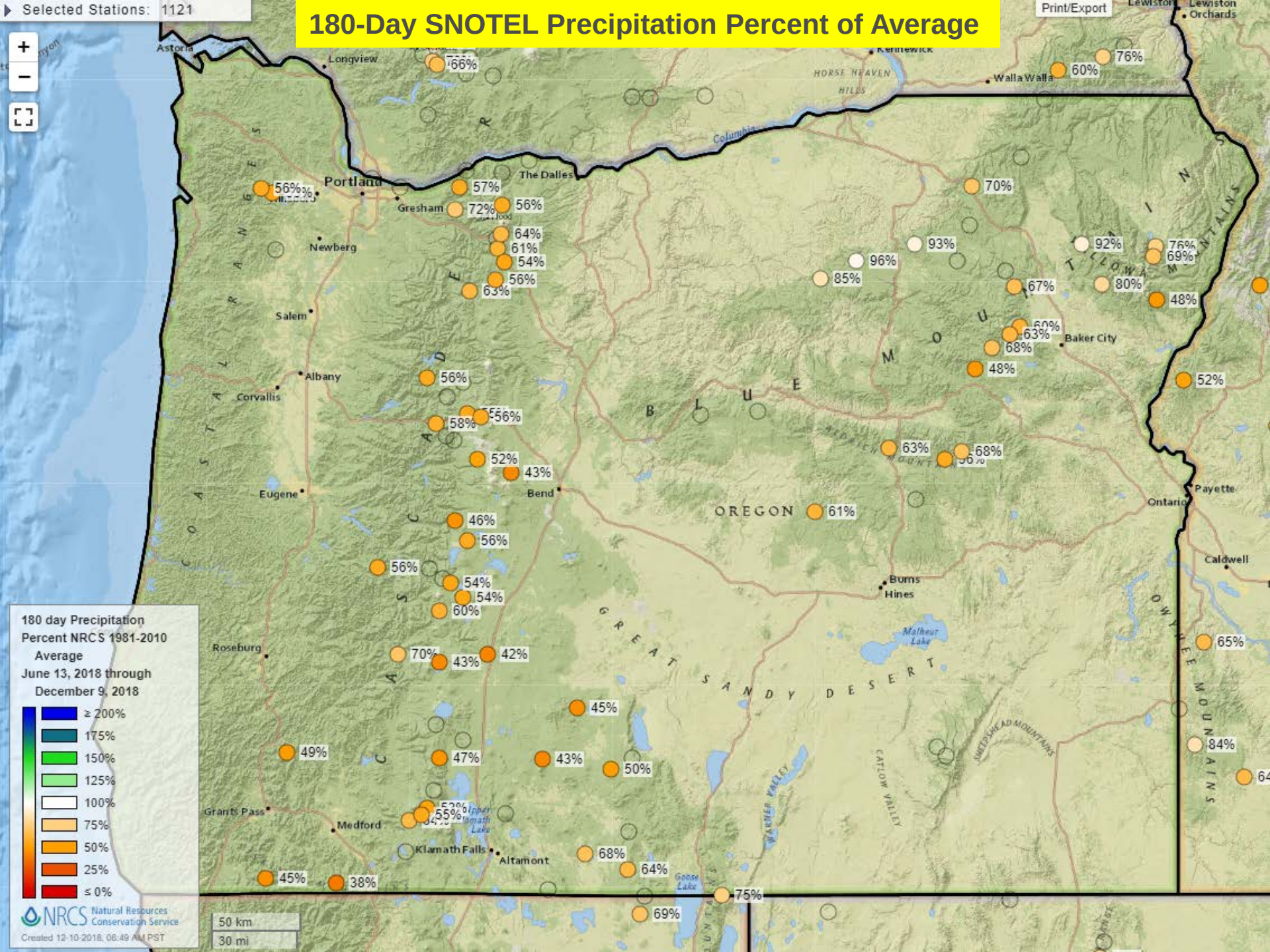
The water year to date precipitation percent of normal represents the accumulated precipitation found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
http://www.wcc.nrcs.usda.gov

2019 Water Year SNOTEL Precipitation Percent of Average




30-Day SNOTEL Precipitation Percent of Average
Selected Stations: 1121
Print/Export
30 day Precipitation
Percent NRCS 1981-2010 Average
November 10, 2018 through December 9, 2018
≥ 200%
175%
150%
125%
100%
75%
50%
25%
≤ 0%
NRCS Natural Resources Conservation Service
Created 12-10-2018, 06:35 AM PST
50 km
30 mi
OREGON
Portland
Salem
Eugene
Albany
Corvallis
Newberg
Gresham
The Dalles
Longview
Astoria
Kennewick
Walla Walla
Lewiston
Orchards
Baker City
Bend
Roseburg
Medford
Grants Pass
Klamath Falls
Altamont
Burns
Hines
Ontario
Payette
Caldwell
Malheur Lake
Upper Klamath Lake
Goose Lake
GREAT SANDY DESERT
BLUE MOUNTAINS
COAST RANGE
CASCADE
HORSE HEAVEN HILLS
WARNER VALLEY
CATLOW VALLEY
SWEETHEAD MOUNTAINS
OWYHEE MOUNTAINS
Columbia
53%
50%
40%
54%
38%
44%
49%
48%
46%
51%
56%
55%
66%
58%
97%
52%
70%
75%
59%
69%
88%
64%
107%
85%
92%
86%
61%
43%
58%
36%
25%
47%
55%
74%


Selected Stations: 1121
180-Day SNOTEL Precipitation Percent of Average
Print/Export
180 day Precipitation
Percent NRCS 1981-2010
Average
June 13, 2018 through
December 9, 2018
≥ 200%
175%
150%
125%
100%
75%
50%
25%
≤ 0%
NRCS Natural Resources Conservation Service
Created 12-10-2018, 06:49 AM PST
50 km
30 mi
OREGON
Portland
Salem
Eugene
Albany
Corvallis
Newberg
Gresham
The Dalles
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Kennewick
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Columbia
Malheur Lake
Goose Lake
Upper Klamath Lake
Warner Valley
Catlow Valley
Great Sandy Desert
Coastal Range
Cascade
Blue Mountains
Owyhee Mountains
Horse Heaven Hills
Steens Mountain
Meadow Mountain
Snowshoe Mountains
56%
66%
60%
76%
57%
72%
56%
64%
61%
54%
56%
63%
70%
96%
85%
93%
92%
76%
69%
67%
80%
48%
63%
68%
48%
52%
56%
58%
56%
52%
43%
63%
68%
61%
46%
56%
56%
54%
54%
60%
70%
43%
42%
45%
49%
47%
43%
50%
55%
68%
64%
45%
38%
75%
69%
65%
84%

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Thank you

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Oregon Water Supply Availability

December 11, 2018

National Weather Service Update

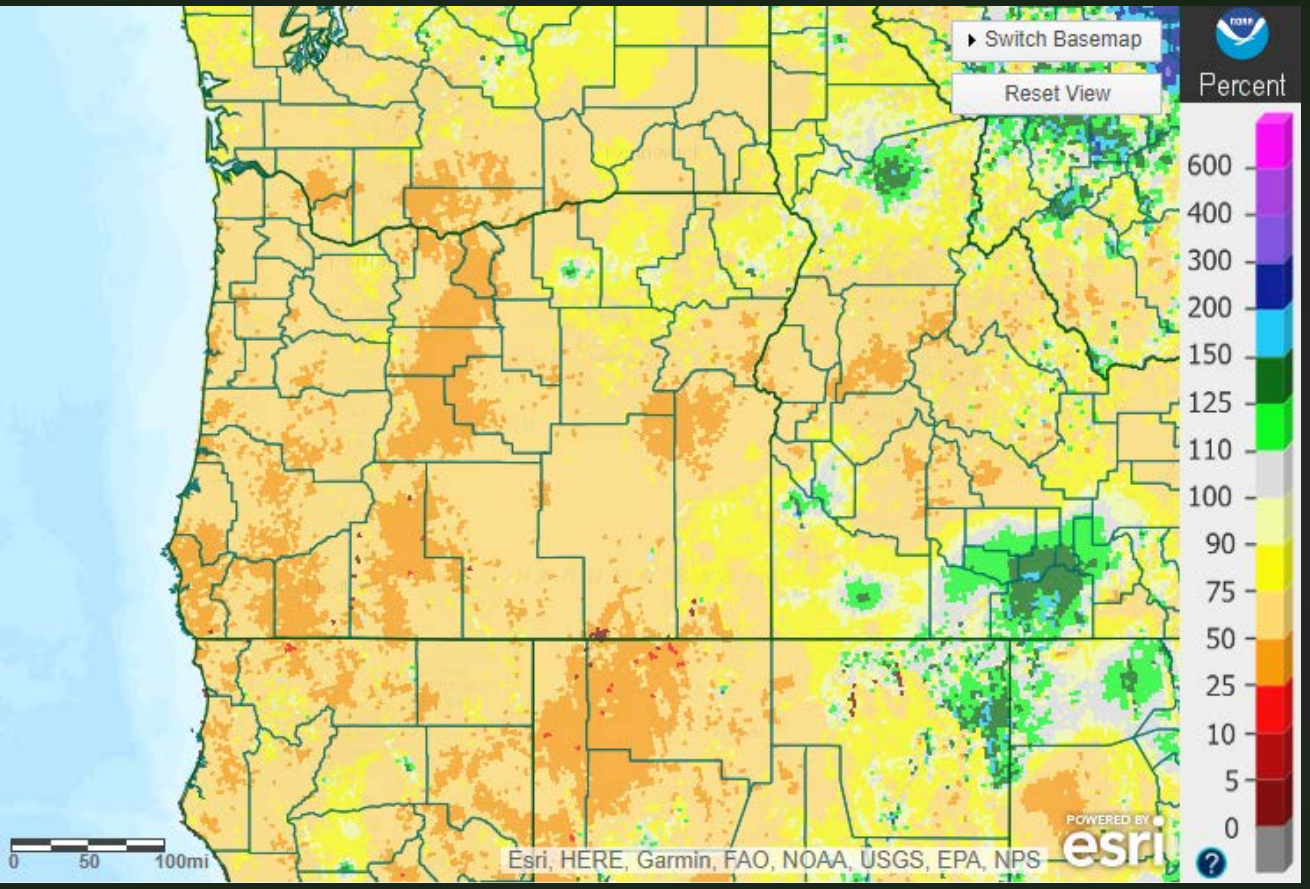
Andy Bryant, NWS Portland &

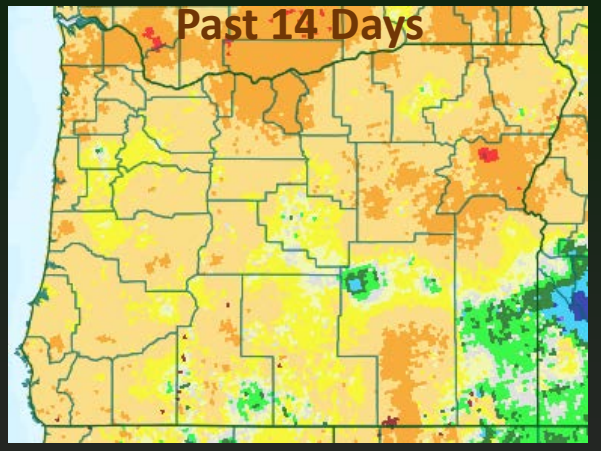
Northwest River Forecast Center Hydrologists

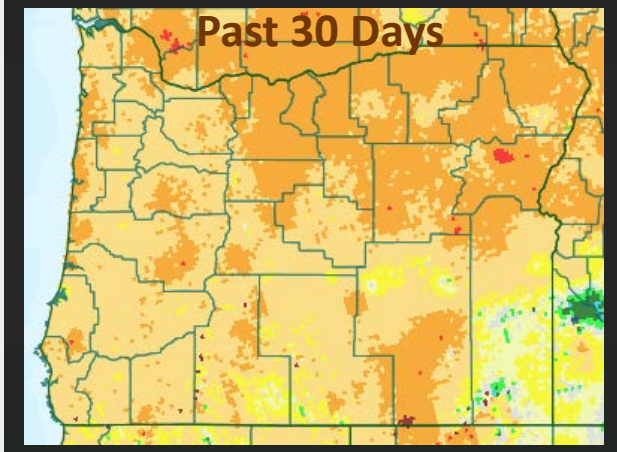
Abernethy Creek near Oregon City

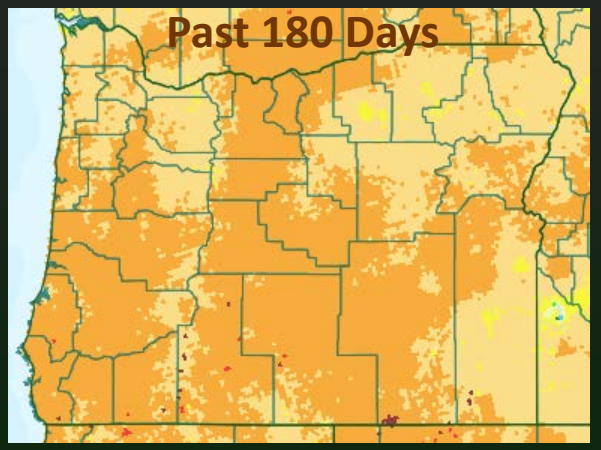
Precipitation % of Average

2019 Water Year thus far







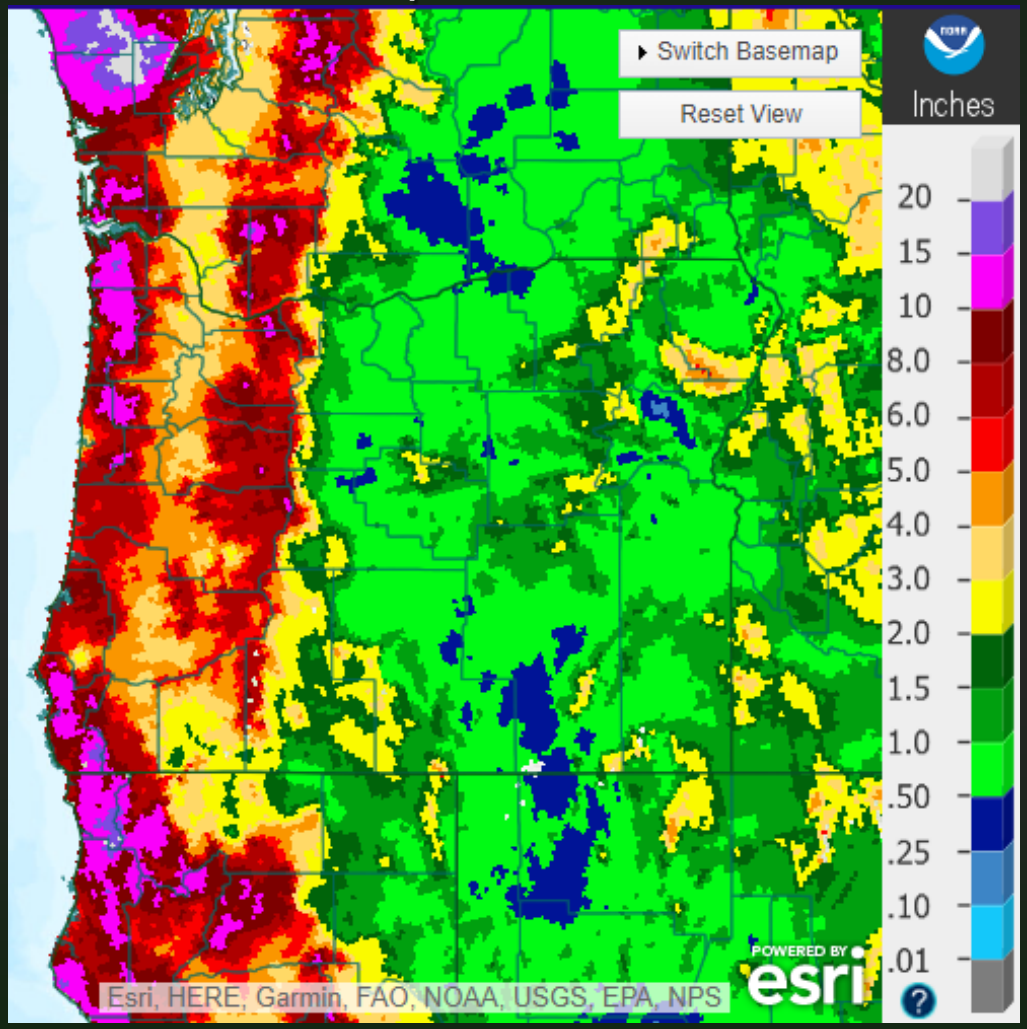


Precipitation Data as of December 10, 2018

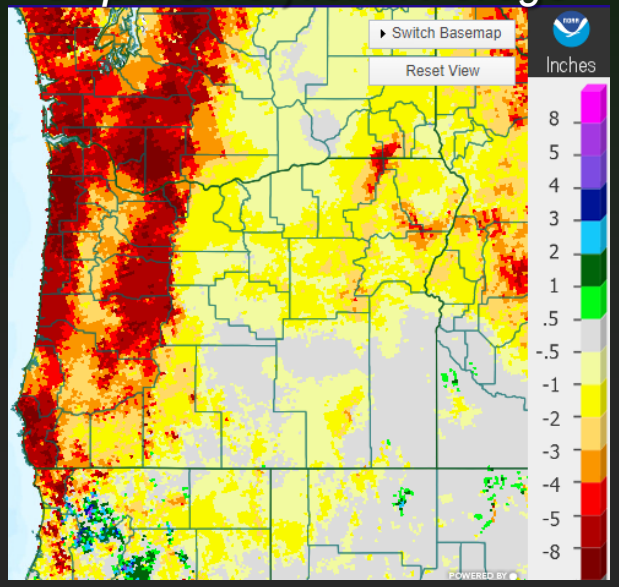
Source: water.weather.gov/precip/index.php?location_type=wfo&location_name=pqr

Precipitation Past 30 Days

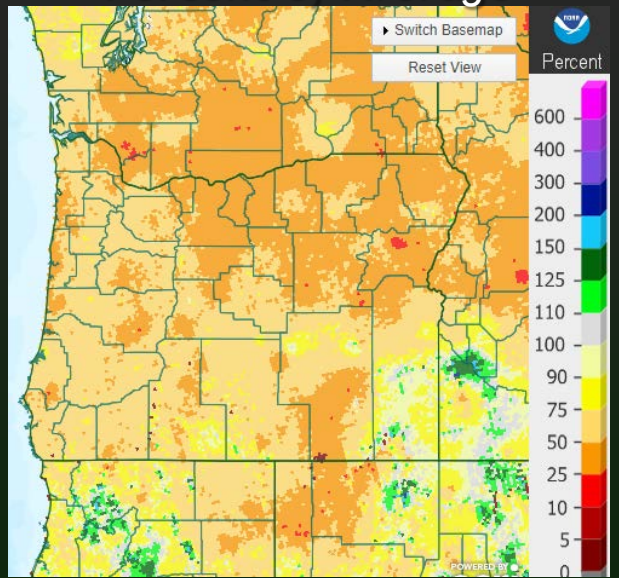
Precipitation Totals



Departure from Average



Percent of Average

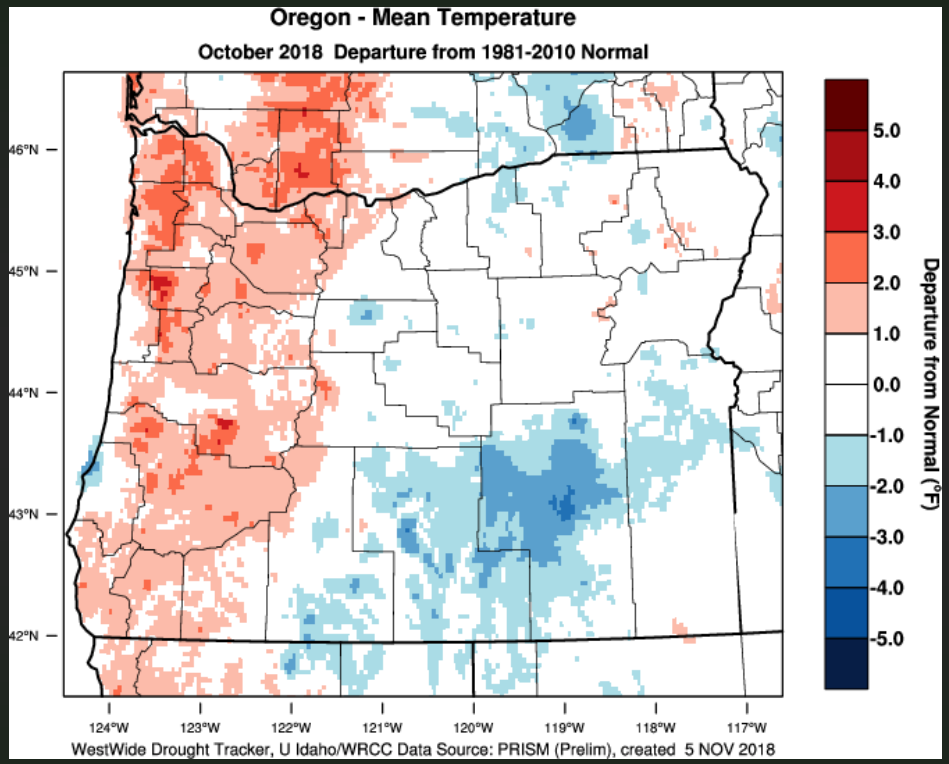


Precipitation Data as of December 10, 2018

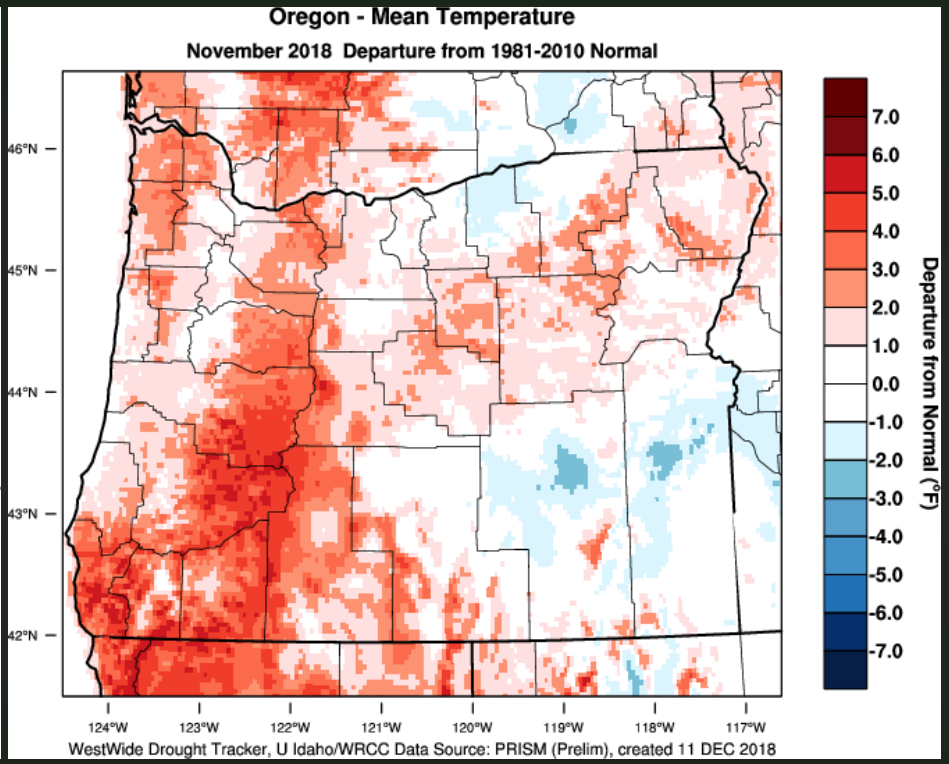
Source: water.weather.gov/precip/index.php?location_type=wfo&location_name=pqr

Recent Temperatures

October 2018



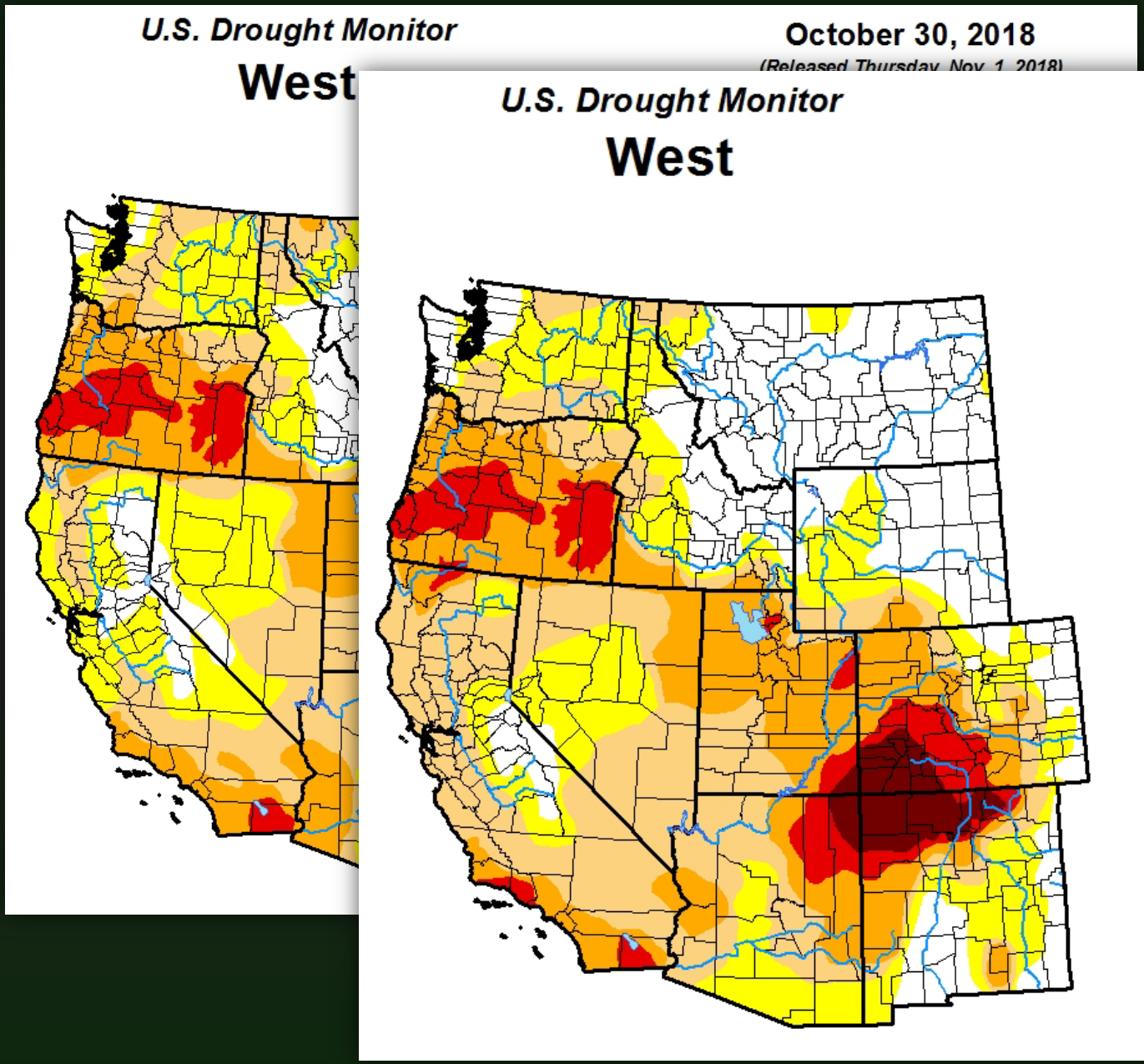
November 2018



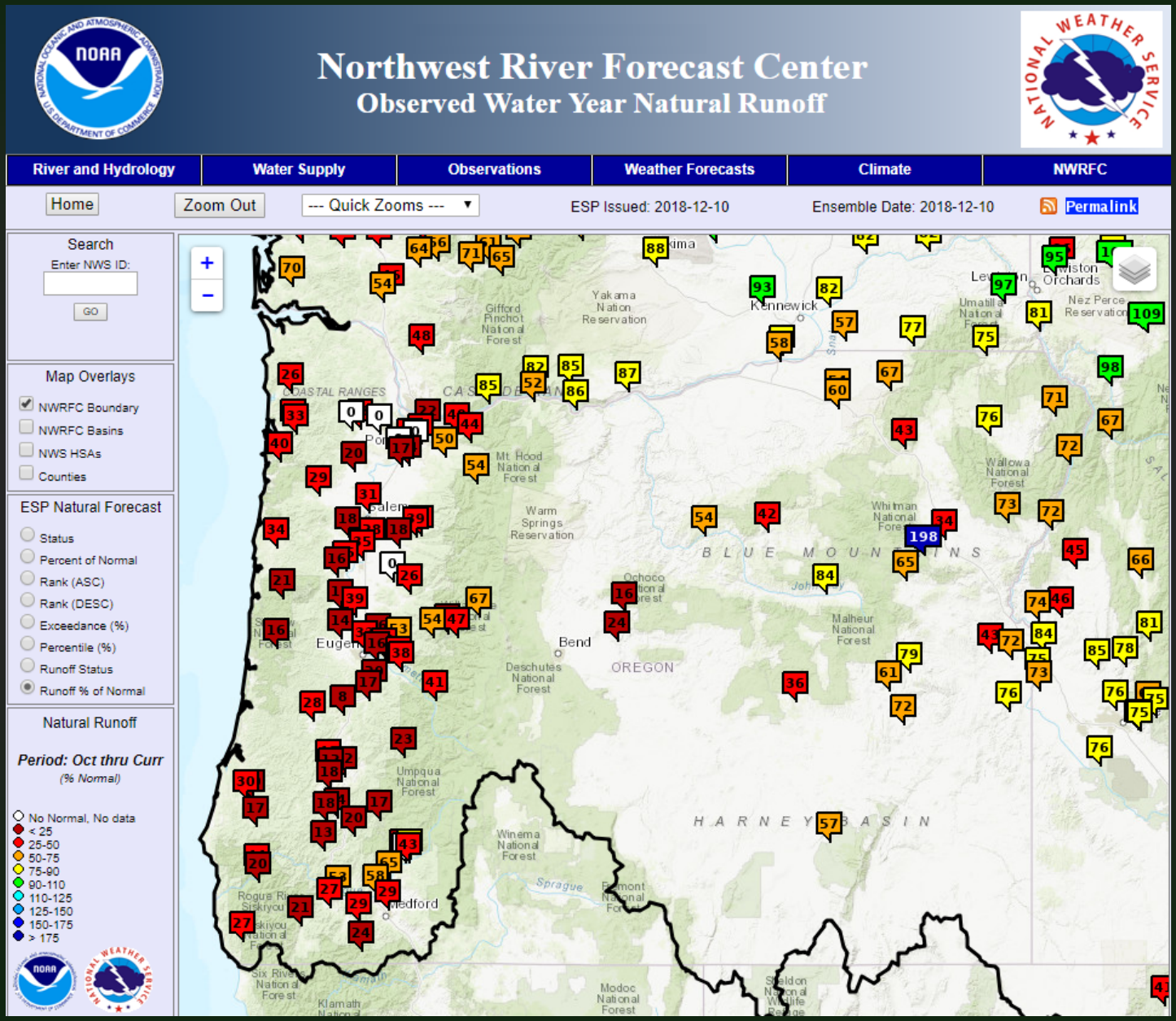
Temperatures thus far in December are below average.

https://wrcc.dri.edu/wwdt/current.php?folder=mdn1

Drought Monitor

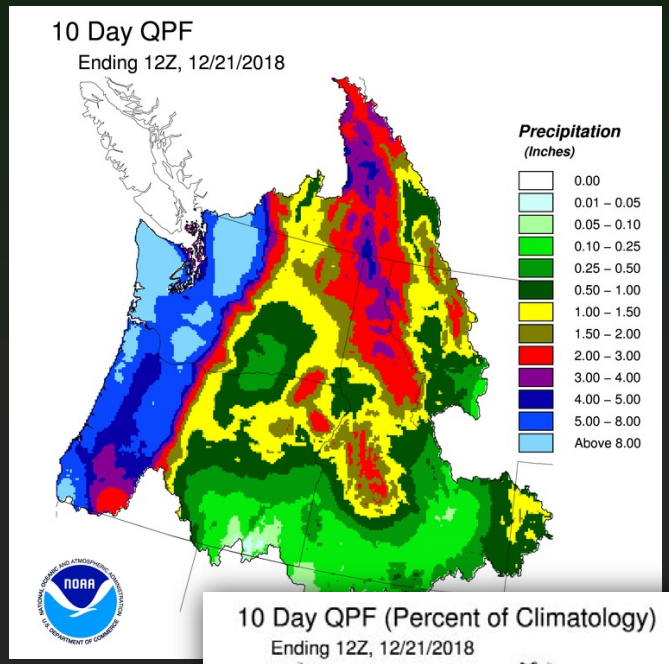


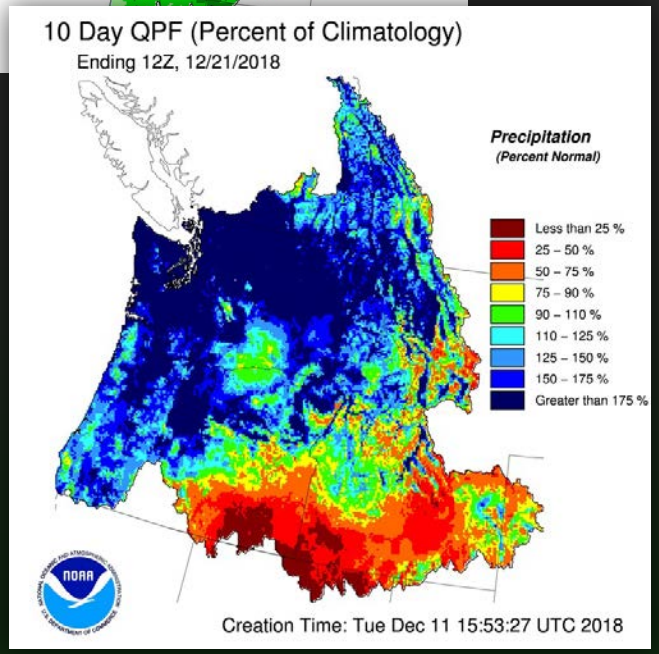
Observed WY19 Runoff thus far



https://www.nwrfc.noaa.gov/natural/index.html?version=20181015v2

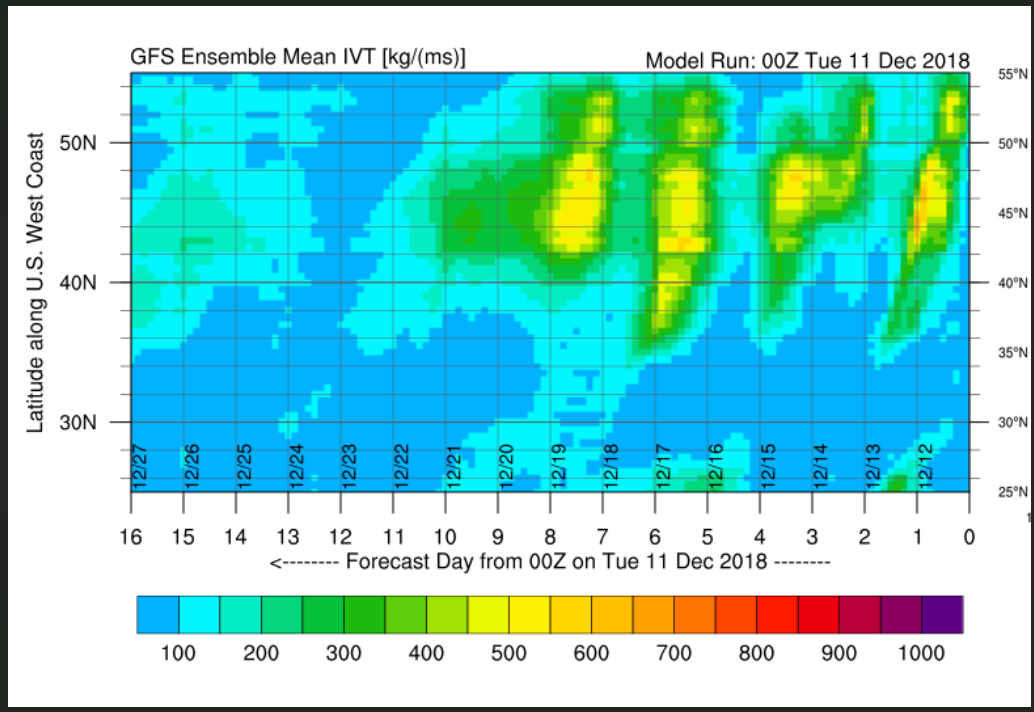
Mid-December Outlook





GFS Ensemble Mean – Integrated Vapor Transport

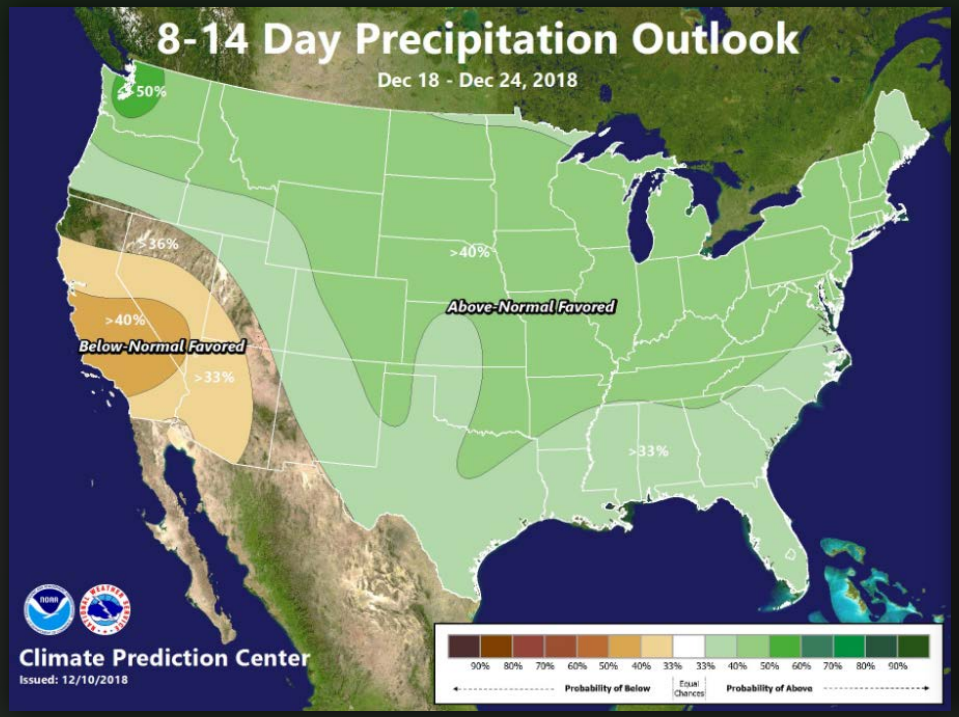
Indicates series of "beneficial" atmospheric rivers next 10 days

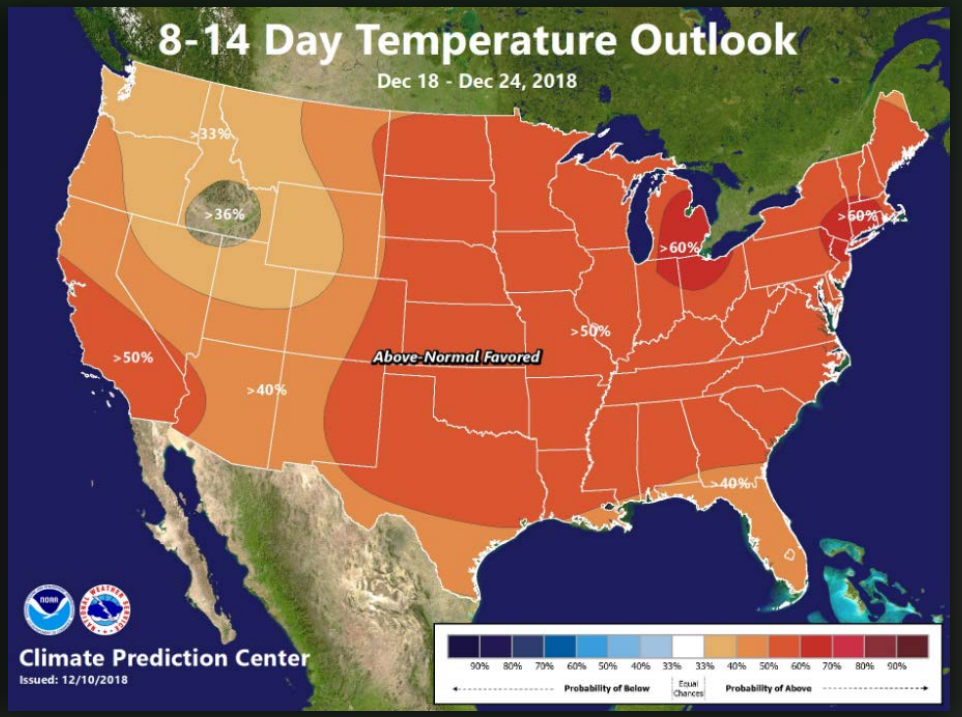


vortex.plymouth.edu/~j_cordeira/ARPortal/Current/Ensemble/LandfallTool/dProgdt_IVTmean.html

https://www.nwrfc.noaa.gov/water_supply/wy_summary/wy_summary.php?tab=3

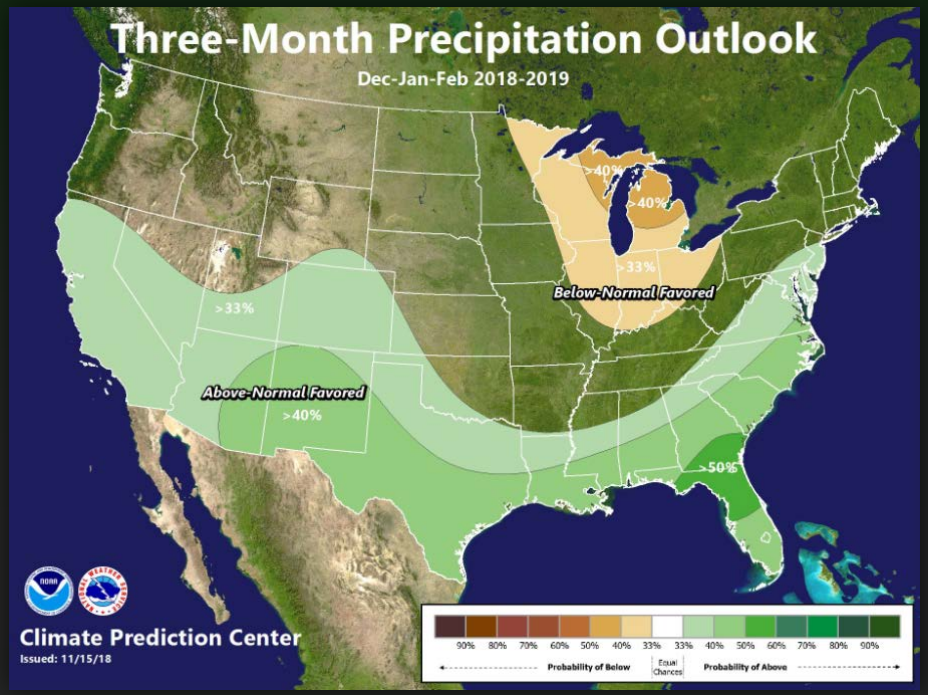
Mid-December Outlook

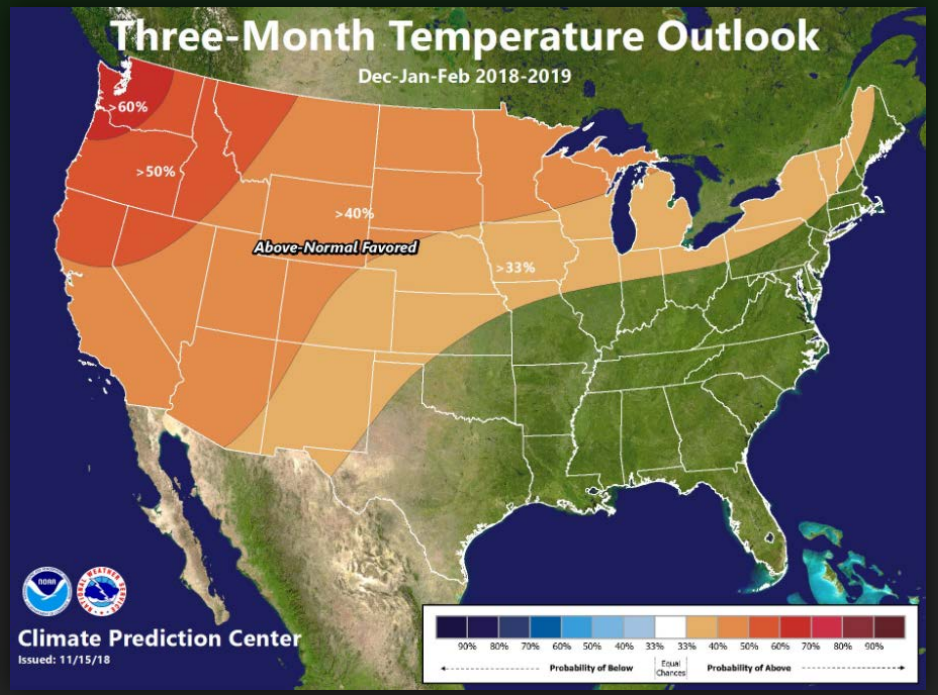




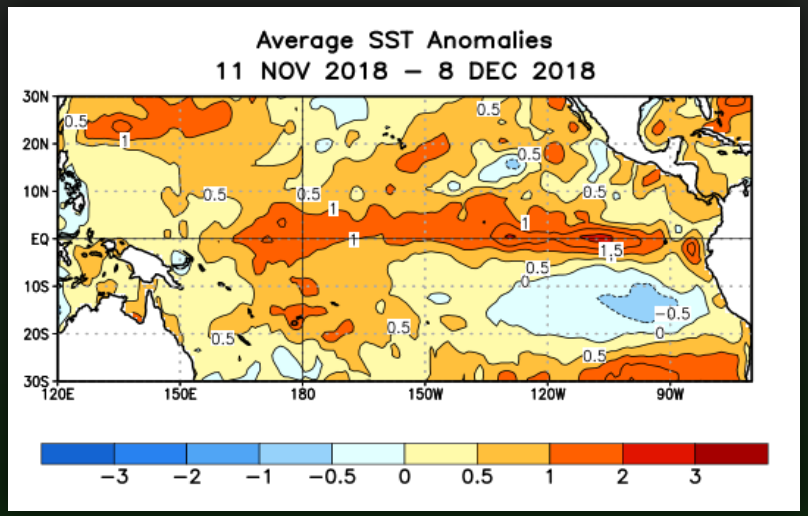
https://www.wrh.noaa.gov/images/sto/GIS_NEW/

Outlook for Dec 2018 – Feb 2019

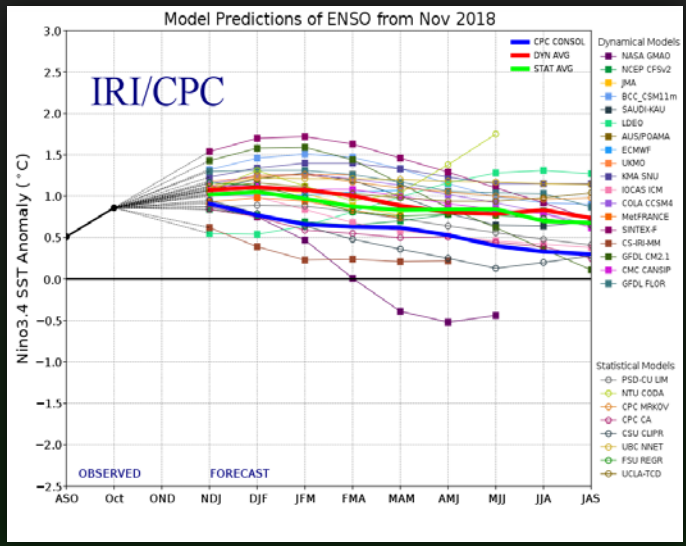




https://www.wrh.noaa.gov/images/sto/GIS_NEW/

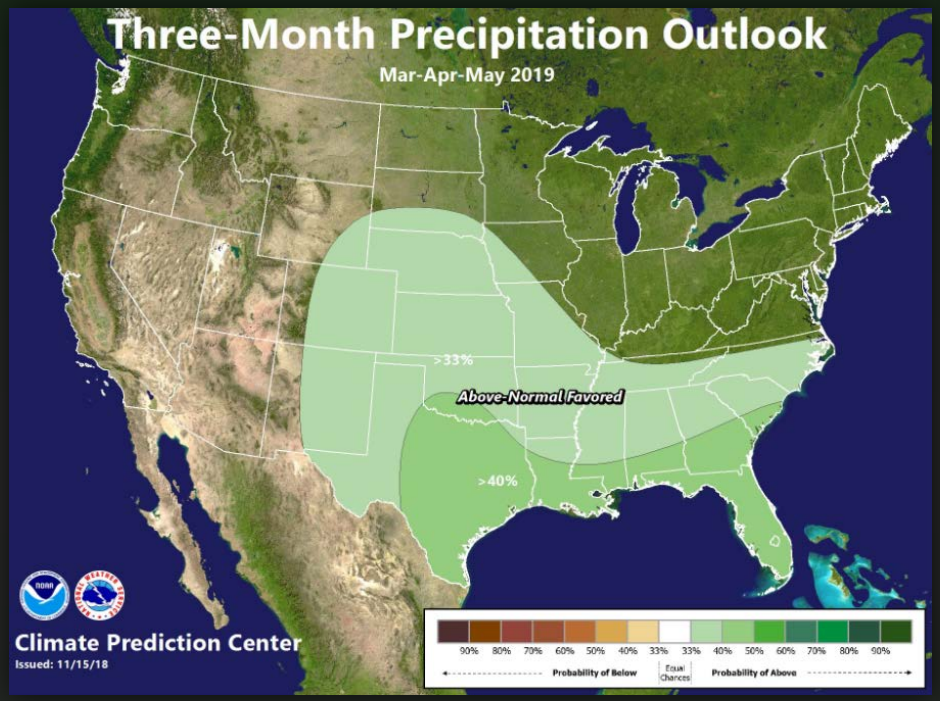


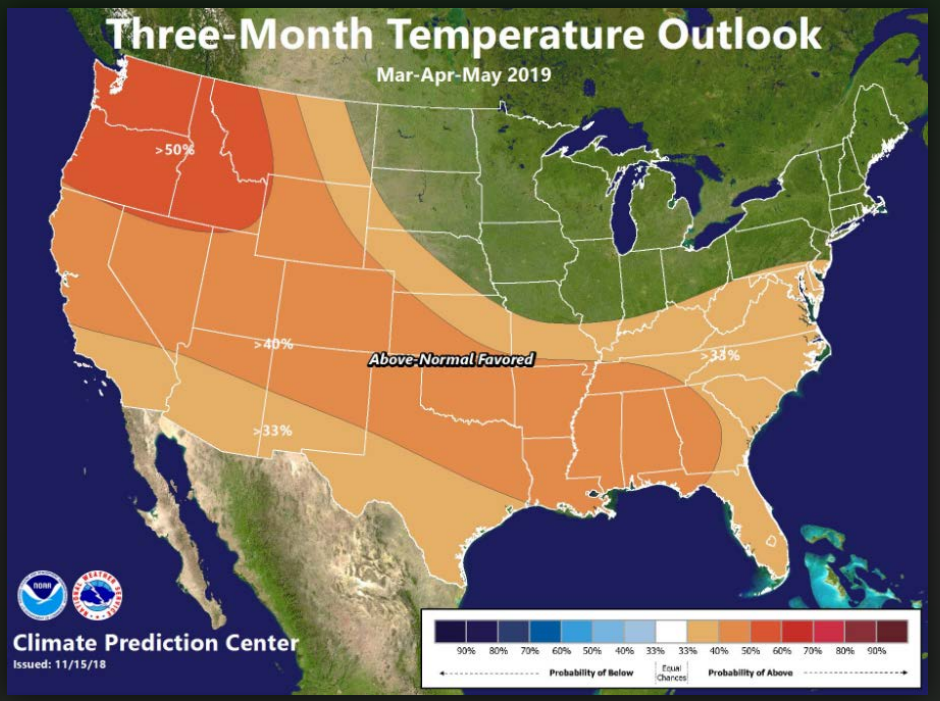
ENSO Prediction based on consensus of model guidance



iri.columbia.edu/our-expertise/climate/forecasts/enso/current/

Outlook for March-April-May 2019





https://www.wrh.noaa.gov/images/sto/GIS_NEW/

USGS
science for a changing world

Oregon Water Supply Availability Meeting

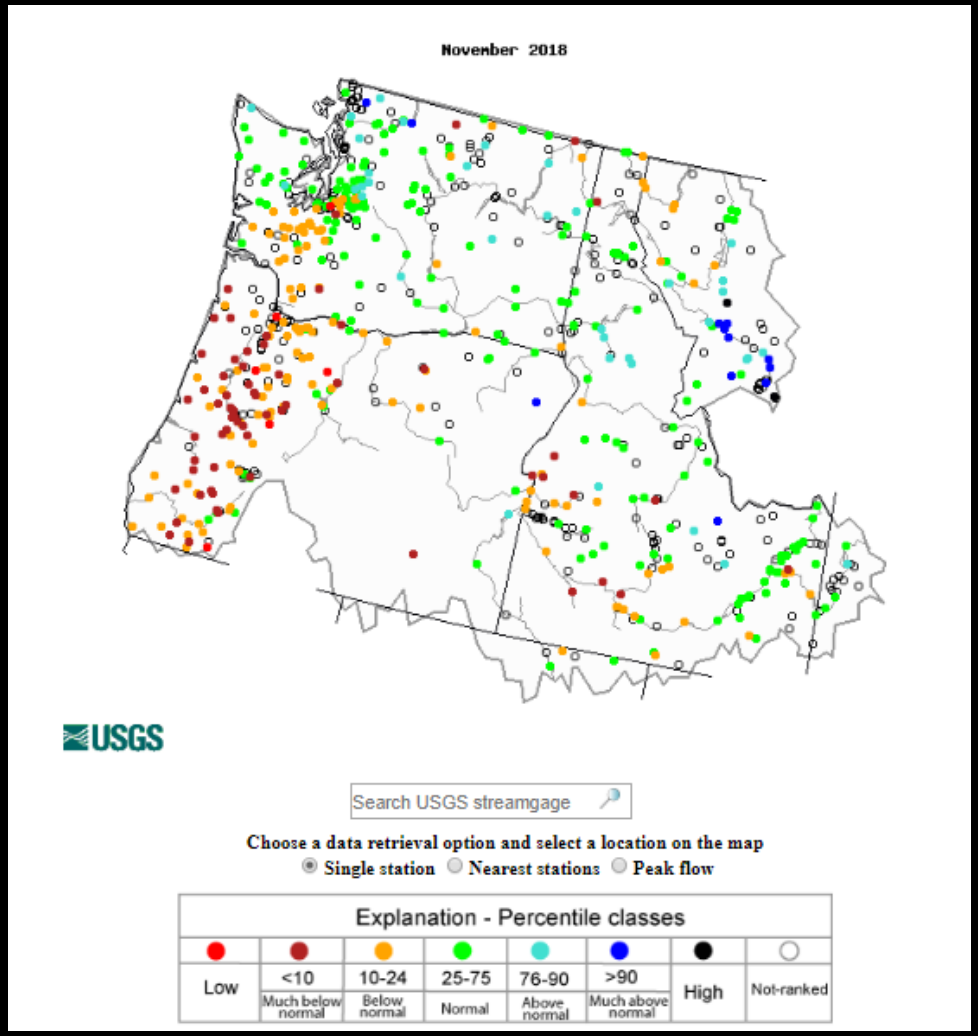
December 2018

USGS Update on Surface Water Conditions

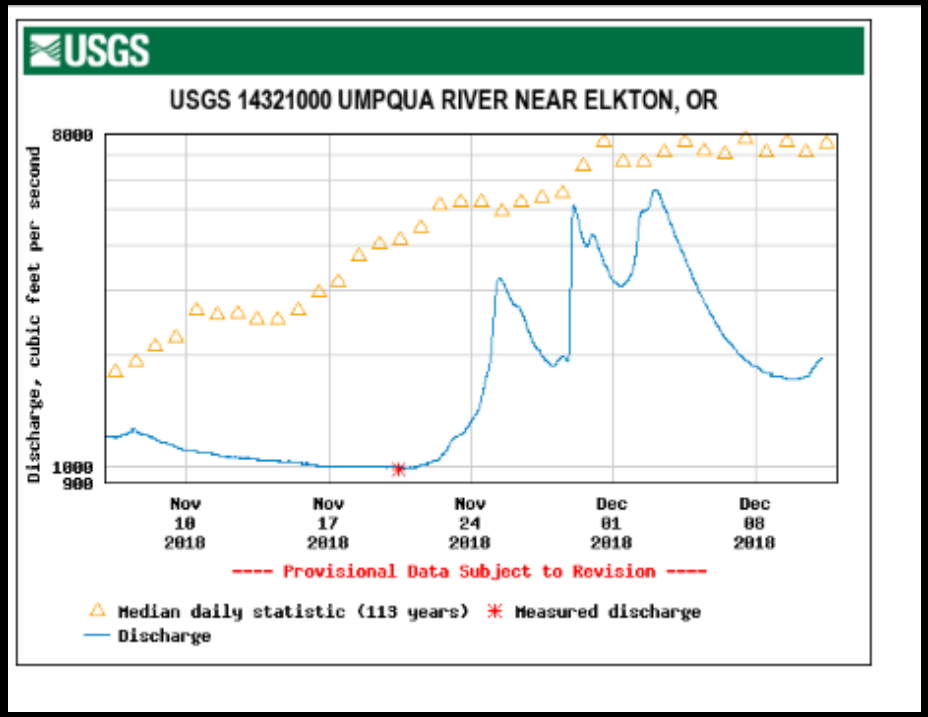
Marc Stewart & Carrie Boudreau

Oregon Water Science Center

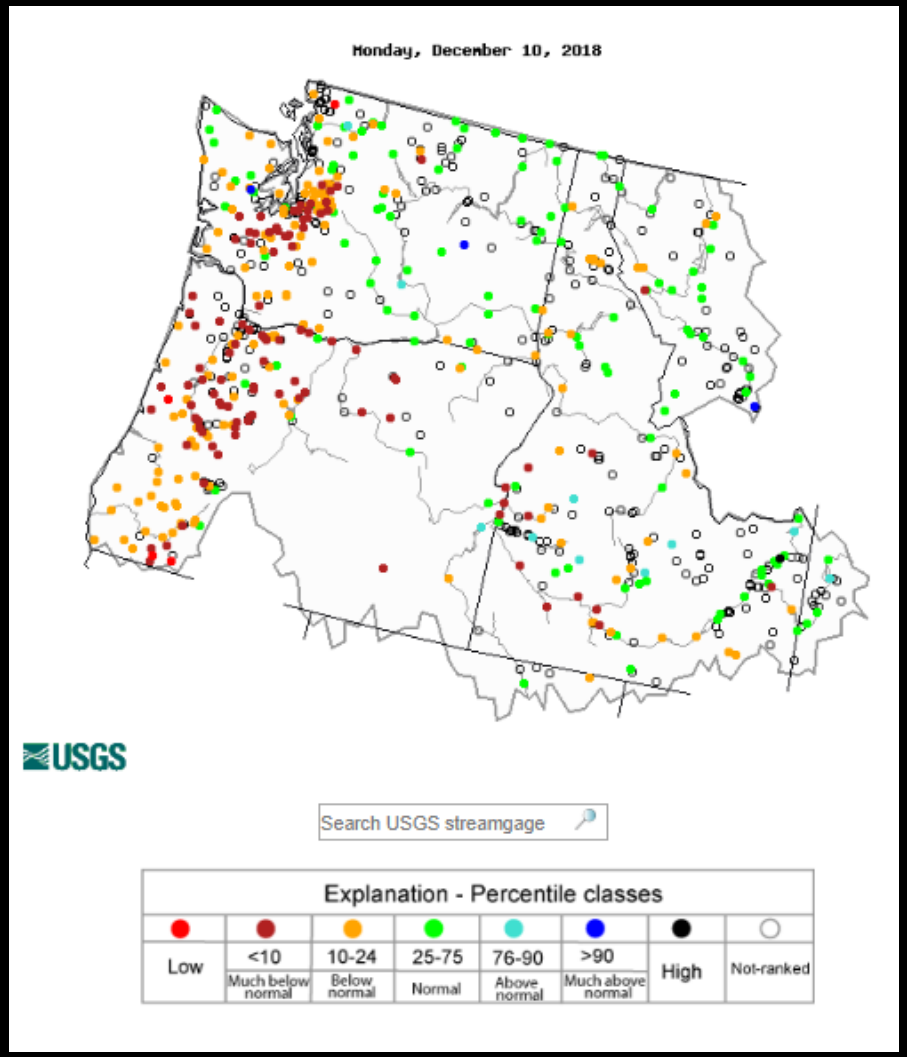
U.S. Department of the Interior
U.S. Geological Survey



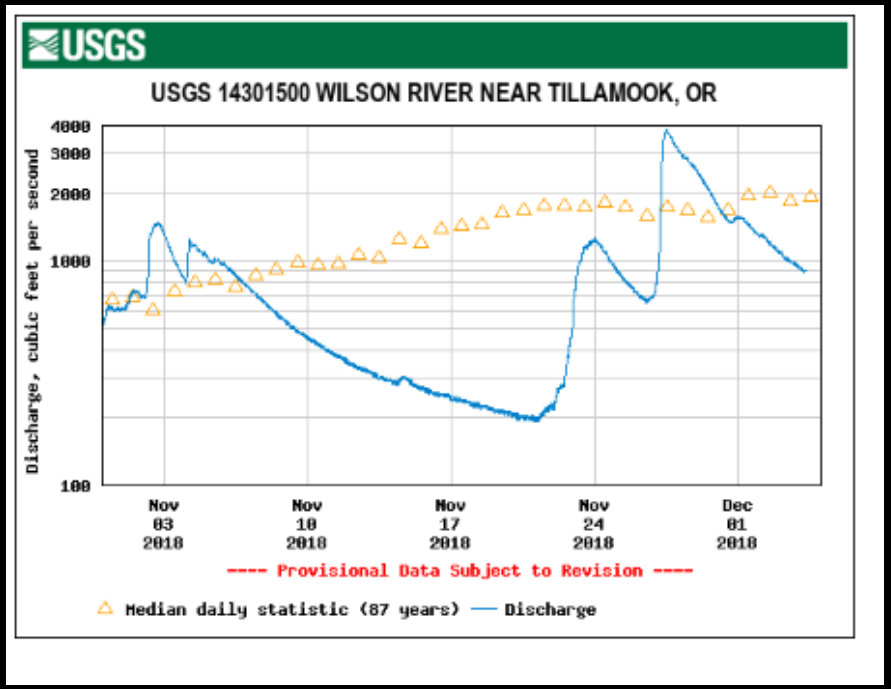
Pacific Northwest Map of monthly (Nov) Stream compared to historical streamflow for month.



USGS

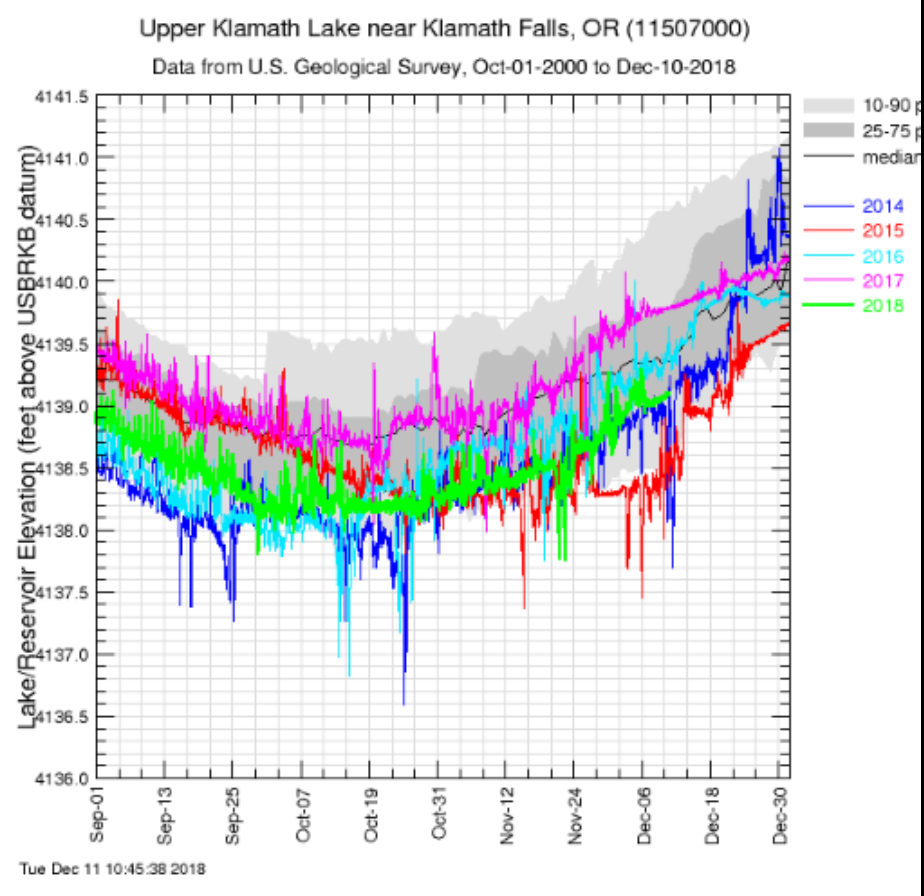


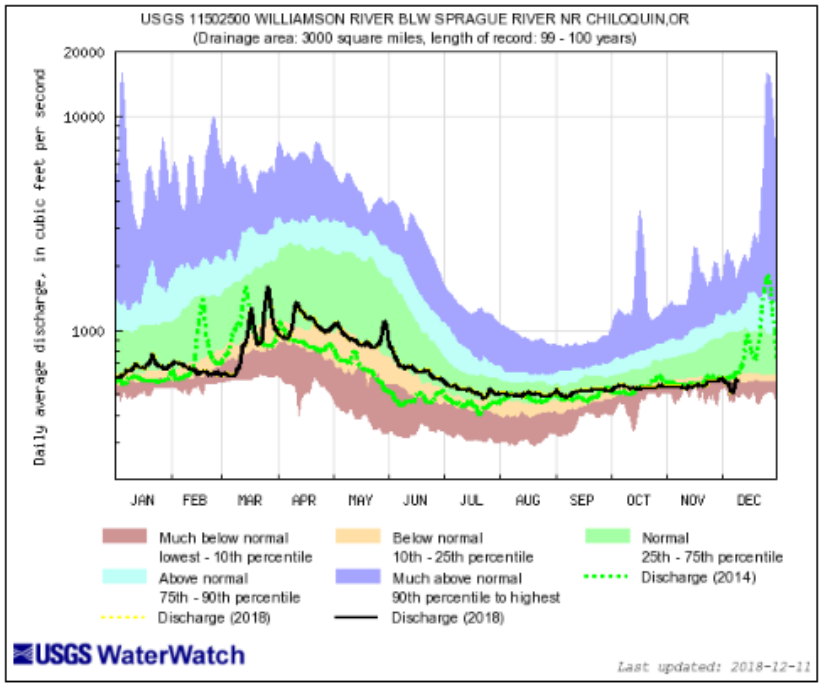
Map of 7-day average streamflow compared to historical streamflow for the day of the year (Pacific Northwest)

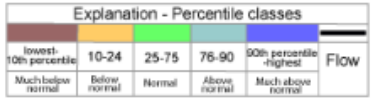


USGS

Klamath Basin

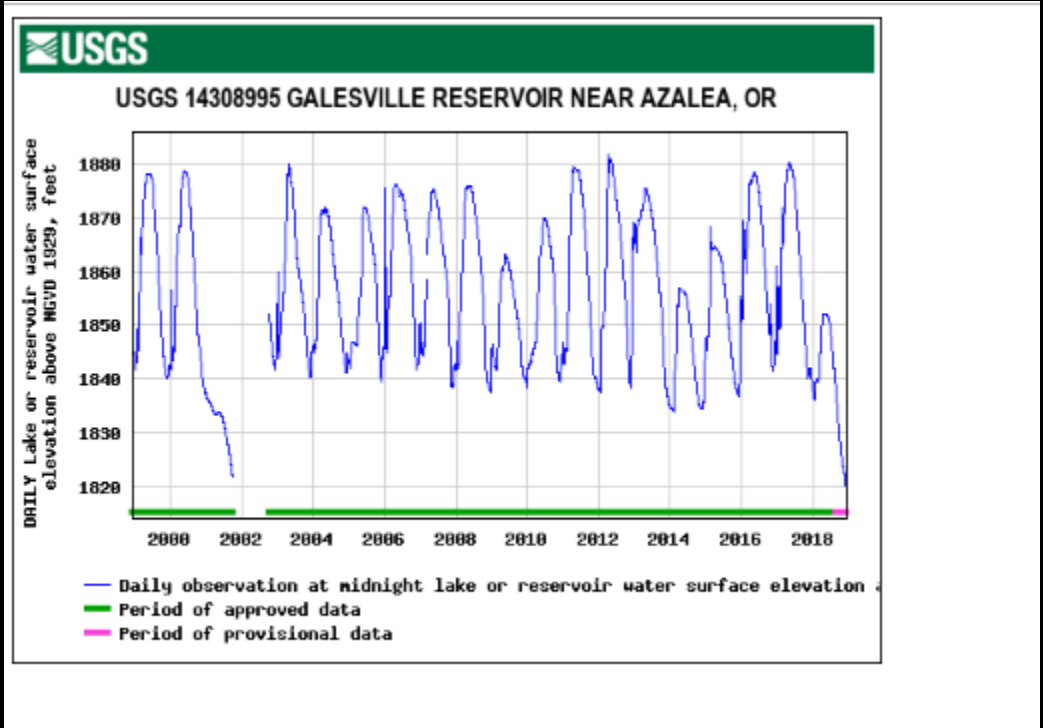


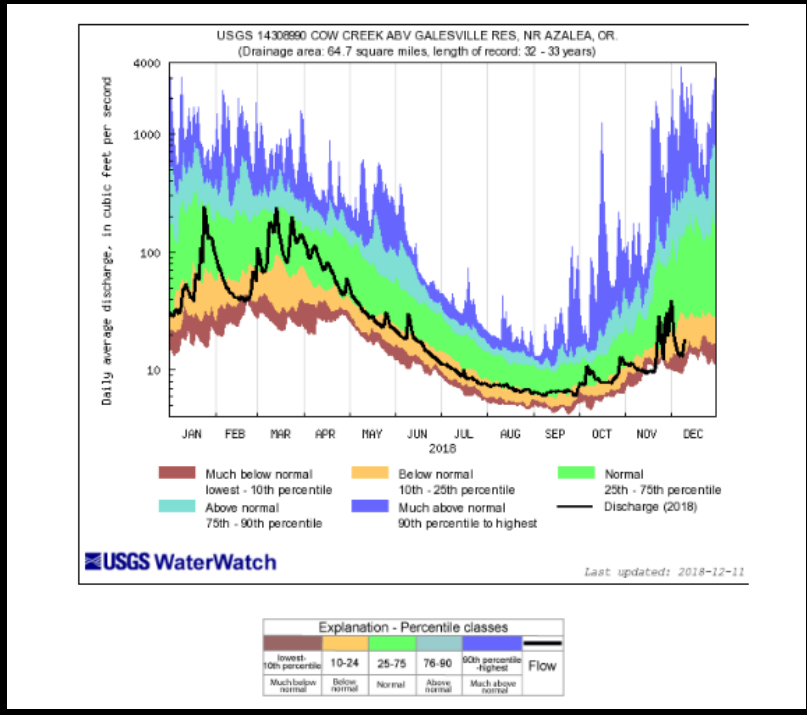




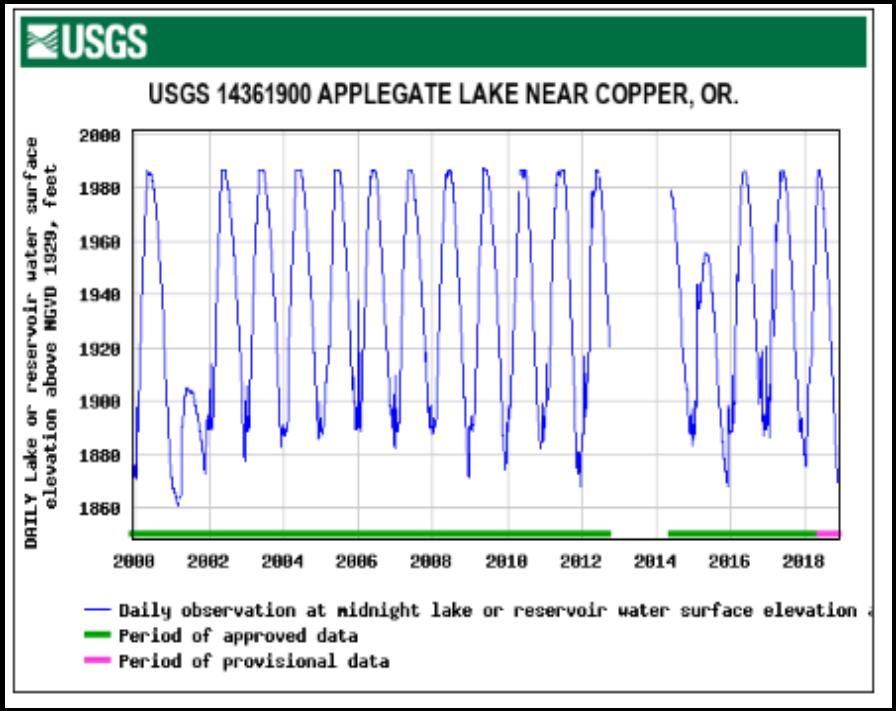
USGS

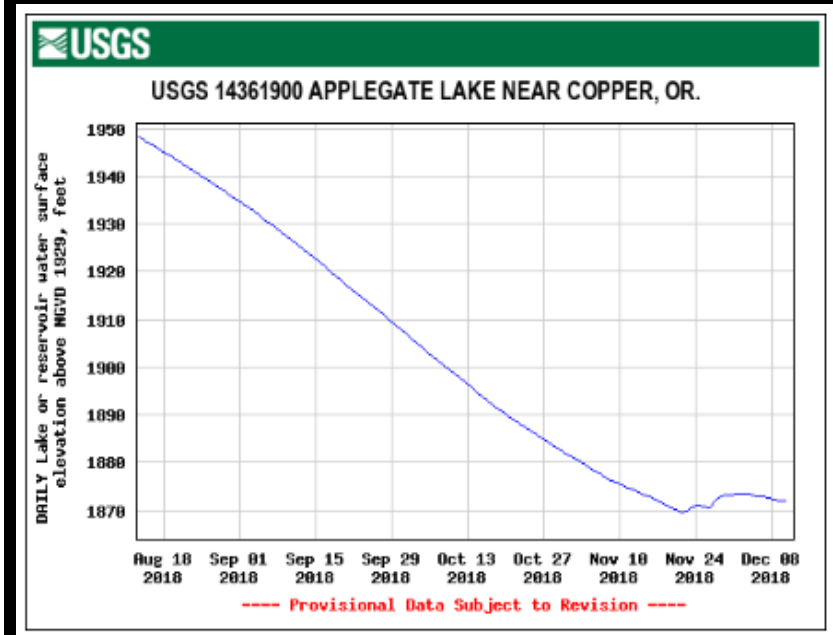
Reservoirs

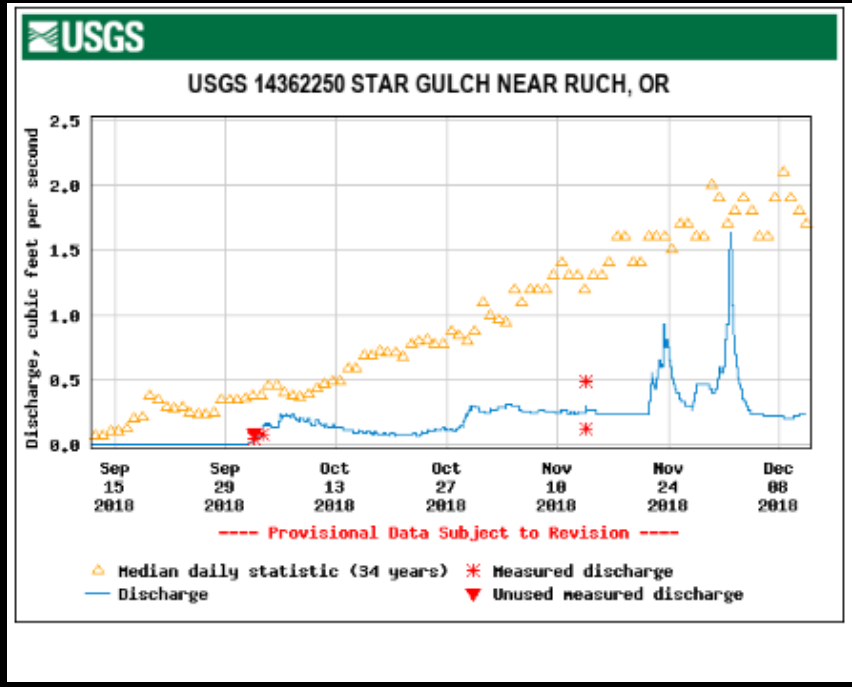




USGS


USGS
USGS 14361900 APPLEGATE LAKE NEAR COPPER, OR.
DAILY Lake or reservoir water surface elevation above NGVD 1929, feet
2000
1980
1960
1940
1920
1900
1880
1860
2000 2002 2004 2006 2008 2010 2012 2014 2016 2018
Daily observation at midnight lake or reservoir water surface elevation
Period of approved data
Period of provisional data


USGS
USGS 14361900 APPLEGATE LAKE NEAR COPPER, OR.
DAILY Lake or reservoir water surface elevation above NGVD 1929, feet
1950
1940
1930
1920
1910
1900
1890
1880
1870
Aug 18 2018
Sep 01 2018
Sep 15 2018
Sep 29 2018
Oct 13 2018
Oct 27 2018
Nov 10 2018
Nov 24 2018
Dec 08 2018
---- Provisional Data Subject to Revision ----

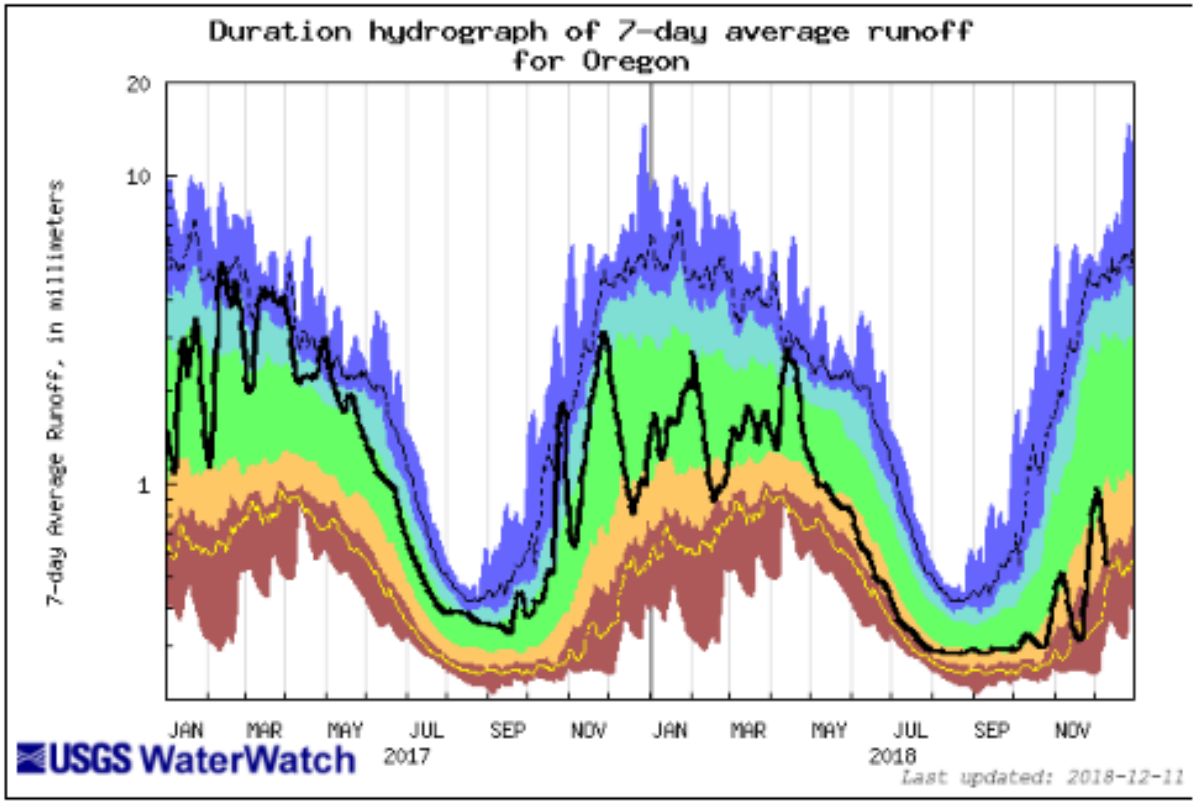

USGS
USGS 14362250 STAR GULCH NEAR RUCH, OR
Discharge, cubic feet per second
2.5
2.0
1.5
1.0
0.5
0.0
Sep 15 2018
Sep 29 2018
Oct 13 2018
Oct 27 2018
Nov 10 2018
Nov 24 2018
Dec 08 2018
---- Provisional Data Subject to Revision ----
Median daily statistic (34 years)
Discharge
Measured discharge
Unused measured discharge

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	28	58	-3	61
*)Deep Creek above Adel	Lake County	16	42	14	49
*)Chewaucan River near Paisley	Lake County	36	72	13	77
Williamson River near Chiloquin	Klamath	557	78	3	83
Owyhee River near Rome	Owyhee	148	70	20	73
*)NF Malheur River near Beulah	Malheur	47	81	-2	86
Grande Ronde R at Troy	Grande Ronde Powder/Burnt	890	77	23	84
Umatilla River nr Gibbon	Umatilla Lower John Day	78	64	50	75
John Day River at Service Crk	Upper John Day	337	56	36	60
*)Little Deschutes River nr LaPine	Upper Deschutes	65	64	14	71
Hood River nr Hood River	Lower Deschutes Mt.Hood	499	51	61	57
Willamette River at Salem	Willamette	8,364	30	8	40
Wilson River near Tillamook	North Coast	815	42	318	44
Umpqua River near Elkton	Rogue/Umpqua	1,511	24	39	33
Rogue River near Agness	Rogue/Umpqua	1,838	43	8	57
SF Coquille River at Powers	South Coast	200	21	700	20
Chetco River near Brookings	South Coast	801	27	603	26

All data should be considered provisional and subject to revision.
Percent of average computed using 30-year base period, water years 1981-2010.
(*) provided by Oregon Water Resources Department

12/4/2018

USGS



Provisional Data Statement
Data are provisional and subject to revision until they have been thoroughly reviewed and received final approval.

Power Point “USGS Update on Surface Water Conditions”

By: Marc Stewart & Carrie Boudreau USGS ORWSC

Water Availability Report By: Tiffany Rae Jacklin

Pictures Marty Berry & Marc Stewart--- USGS ORWSC

USGS

Water Supply Conditions Report

Water Supply Availability Committee

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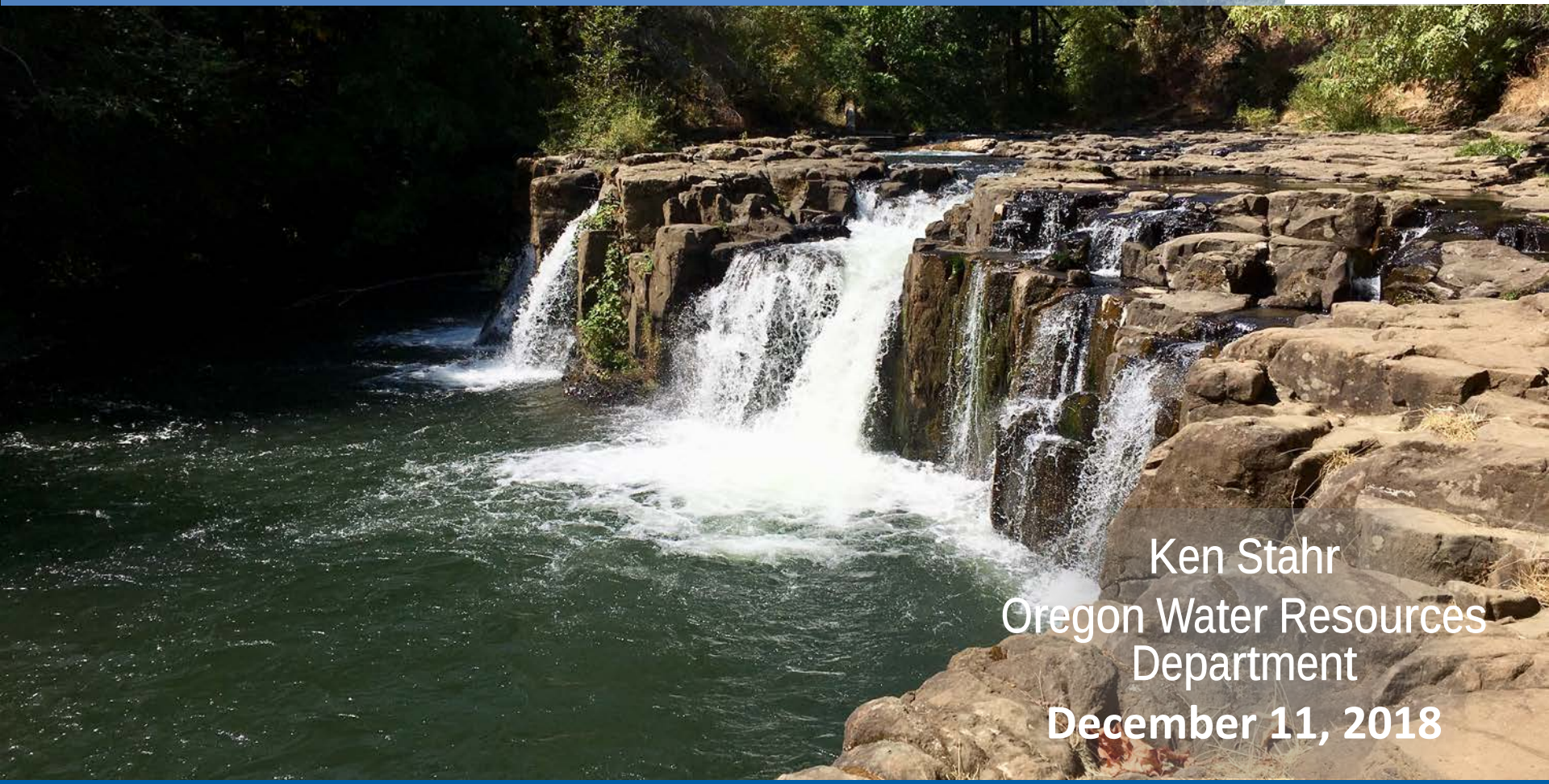
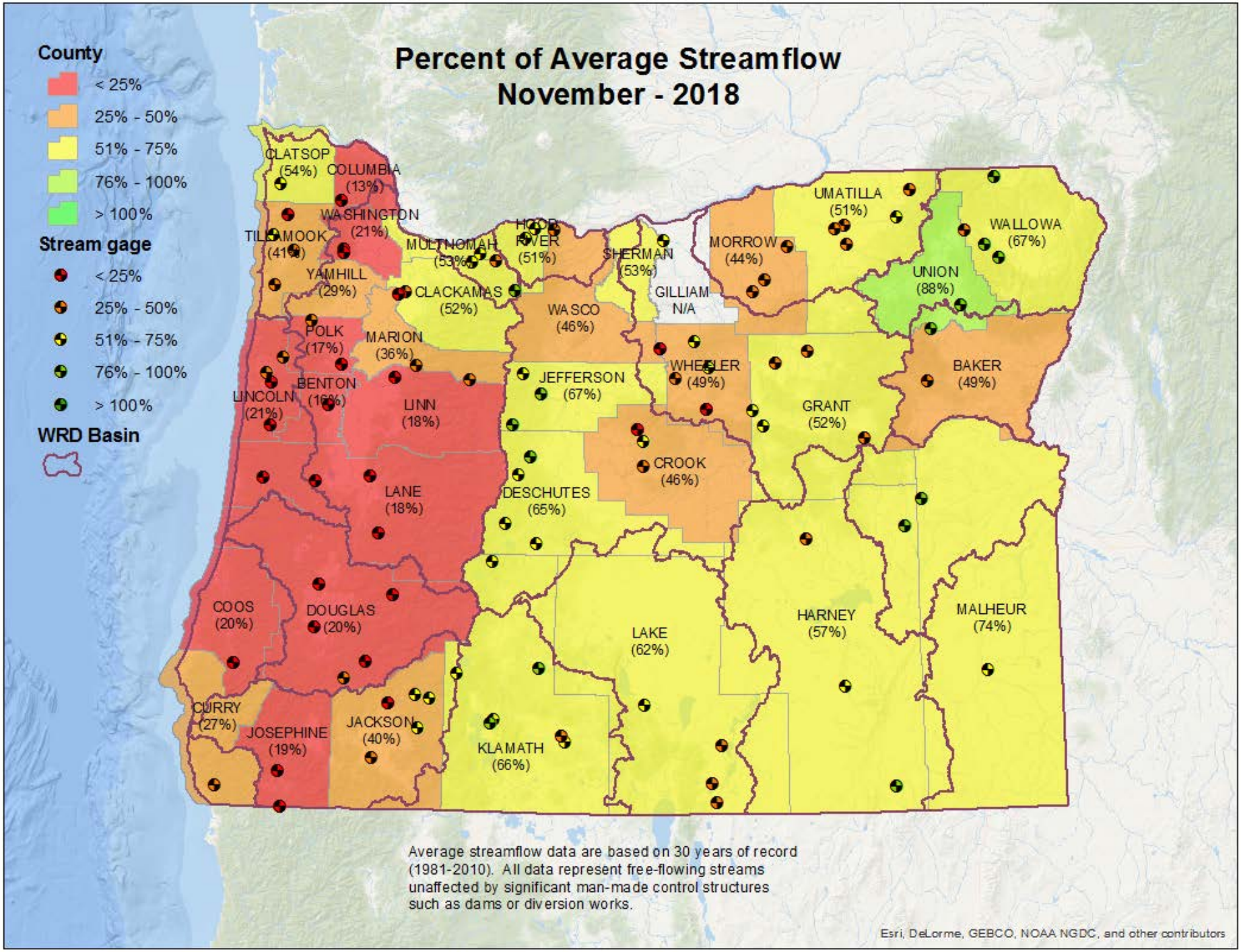
DEPARTMENT



Ken Stahr
Oregon Water Resources Department

December 11, 2018

Percent of Average Streamflow
November - 2018



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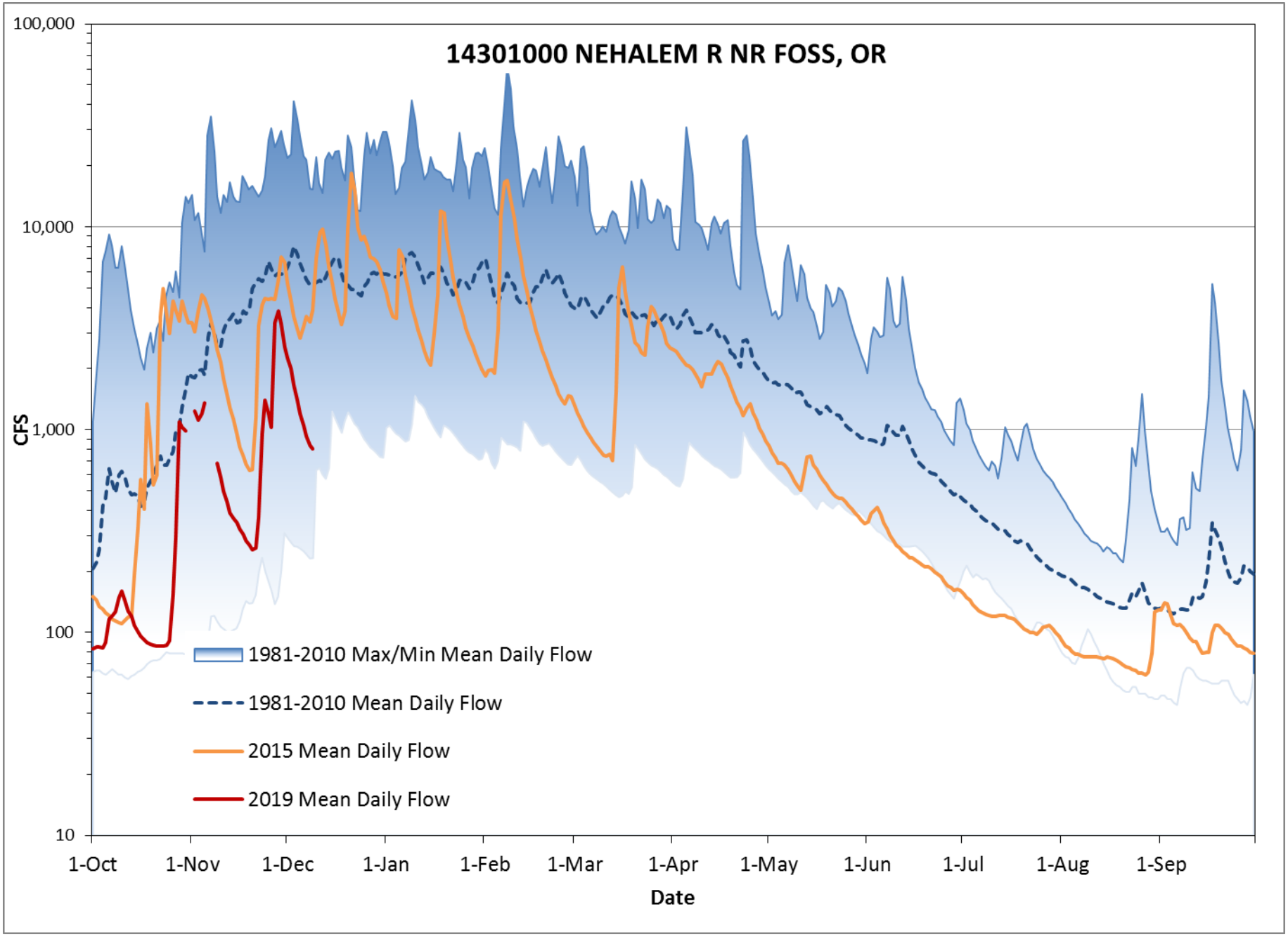
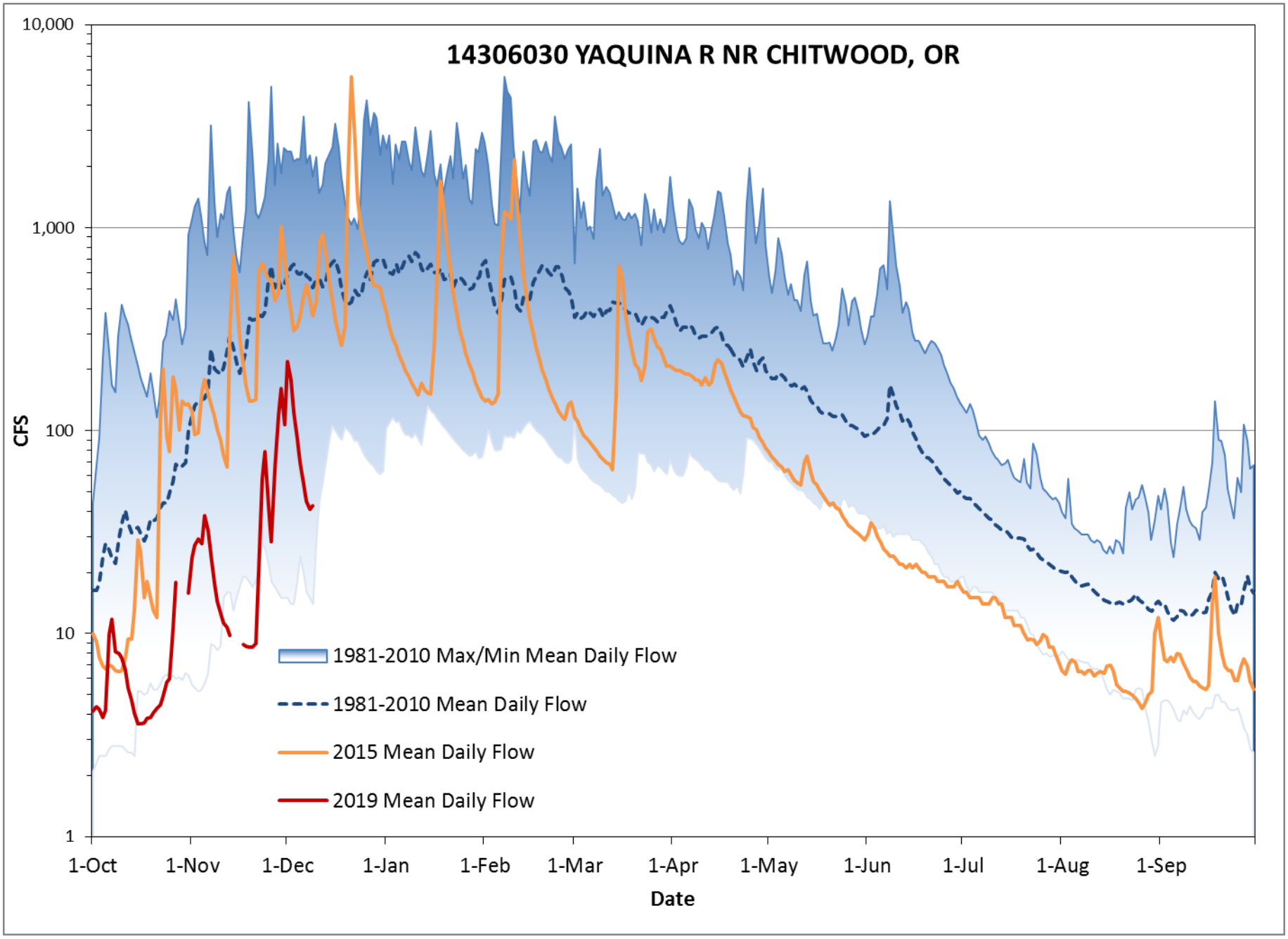
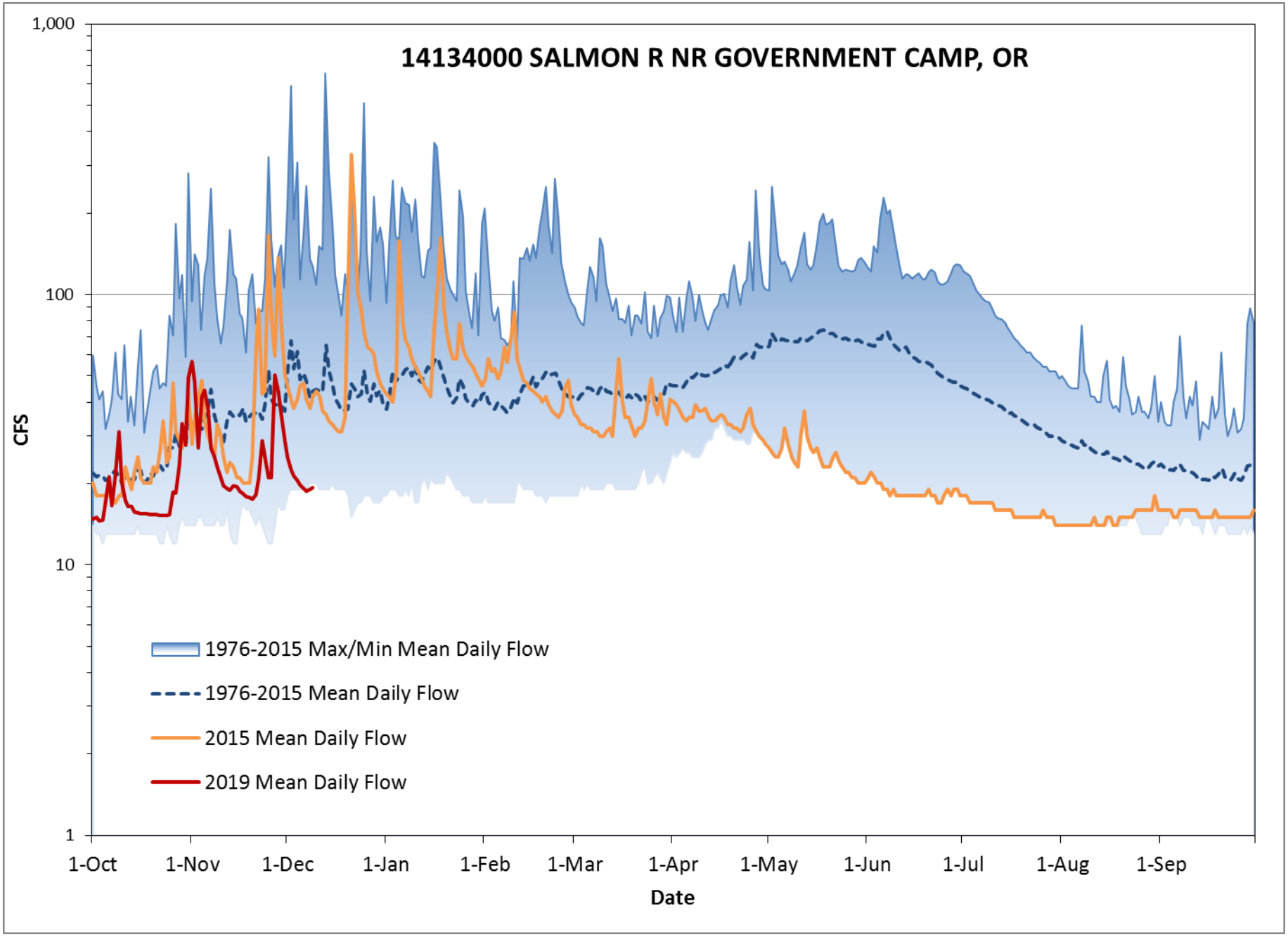
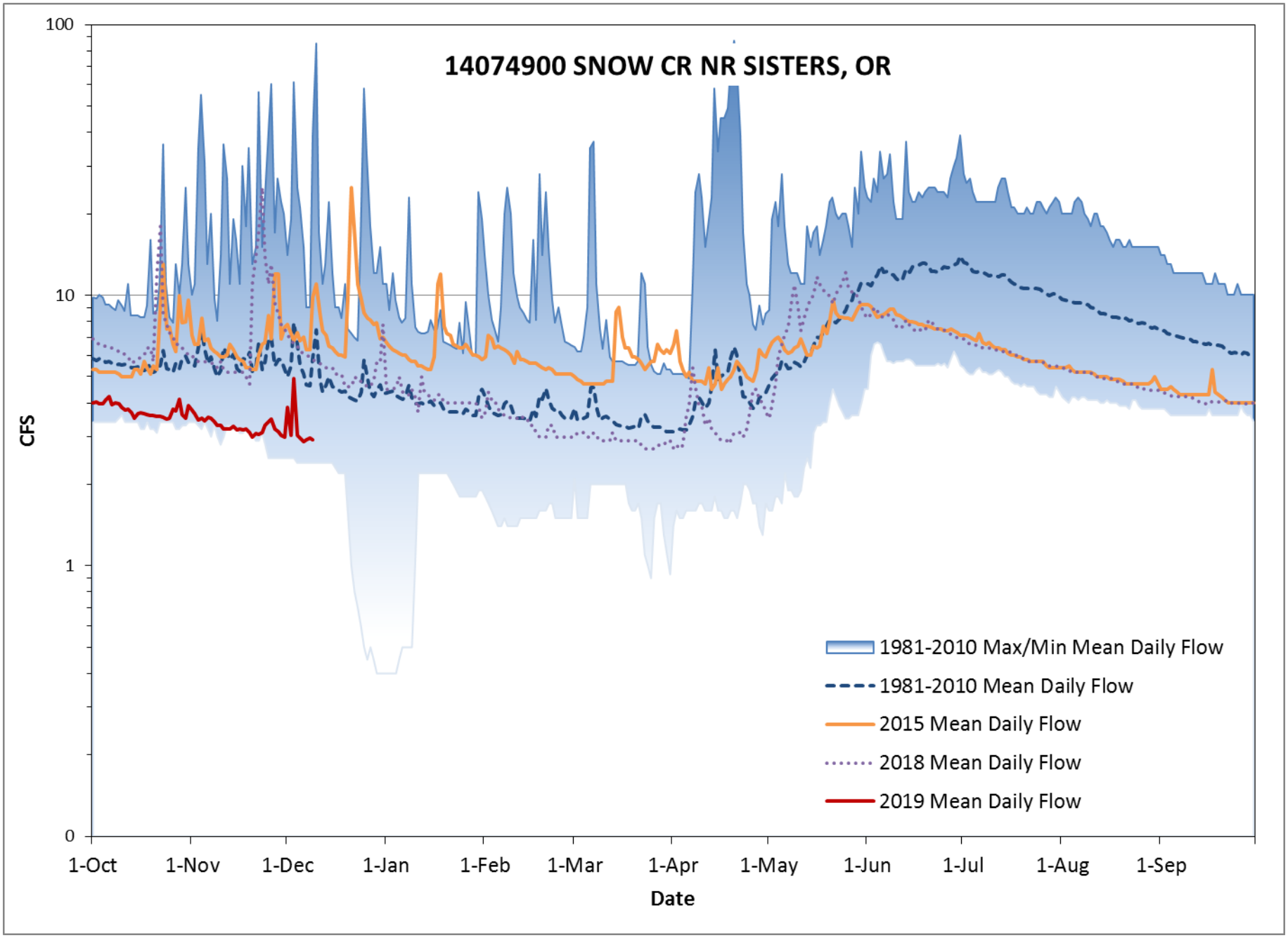
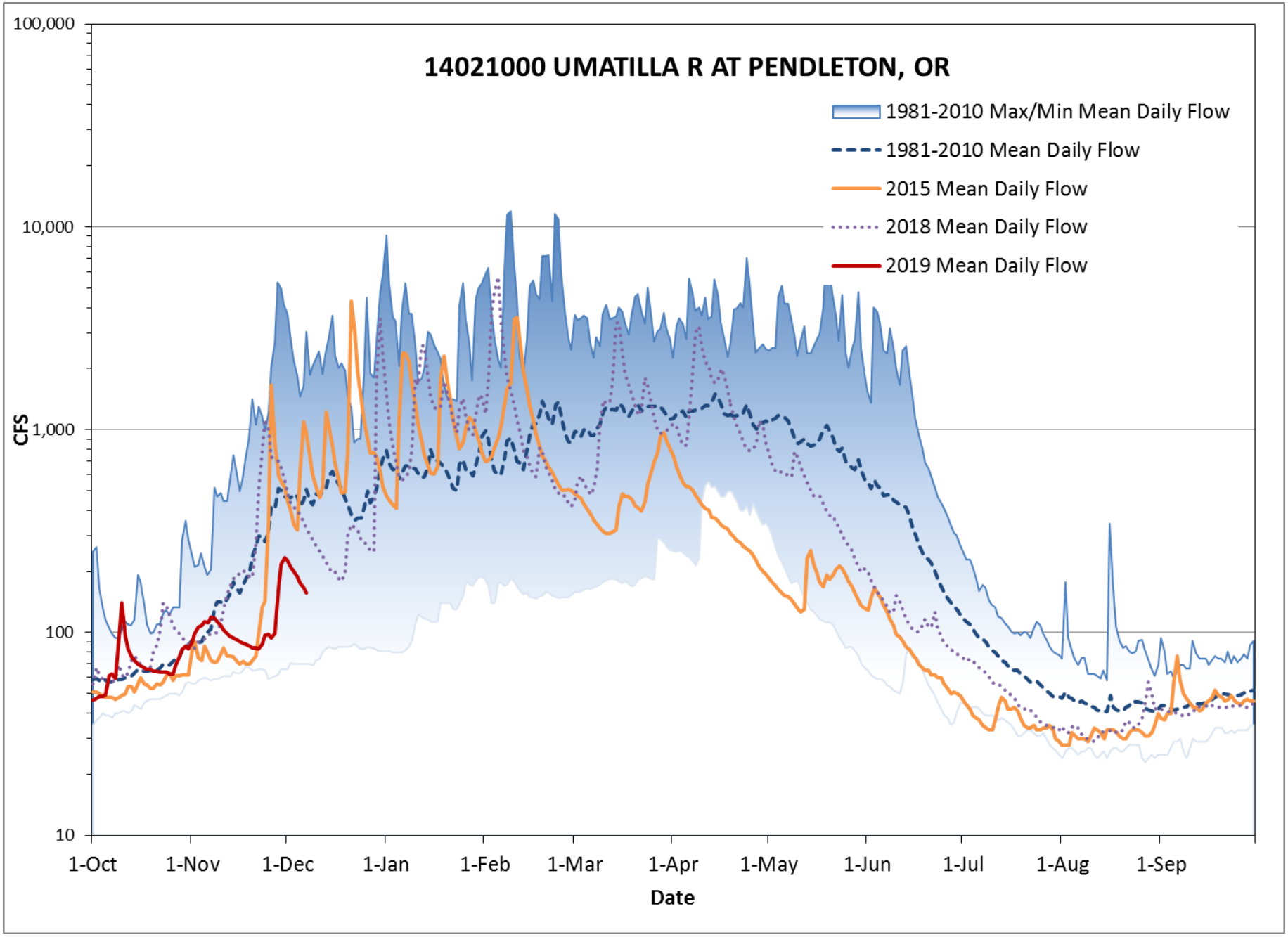
Basin	Water Year % of average through November, 2018	% of average for November	% of average for 12/09/2018	# of data points
West Side	33%	31%	18%	41
East Side	62%	60%	48%	44
State	51%	49%	36%	85

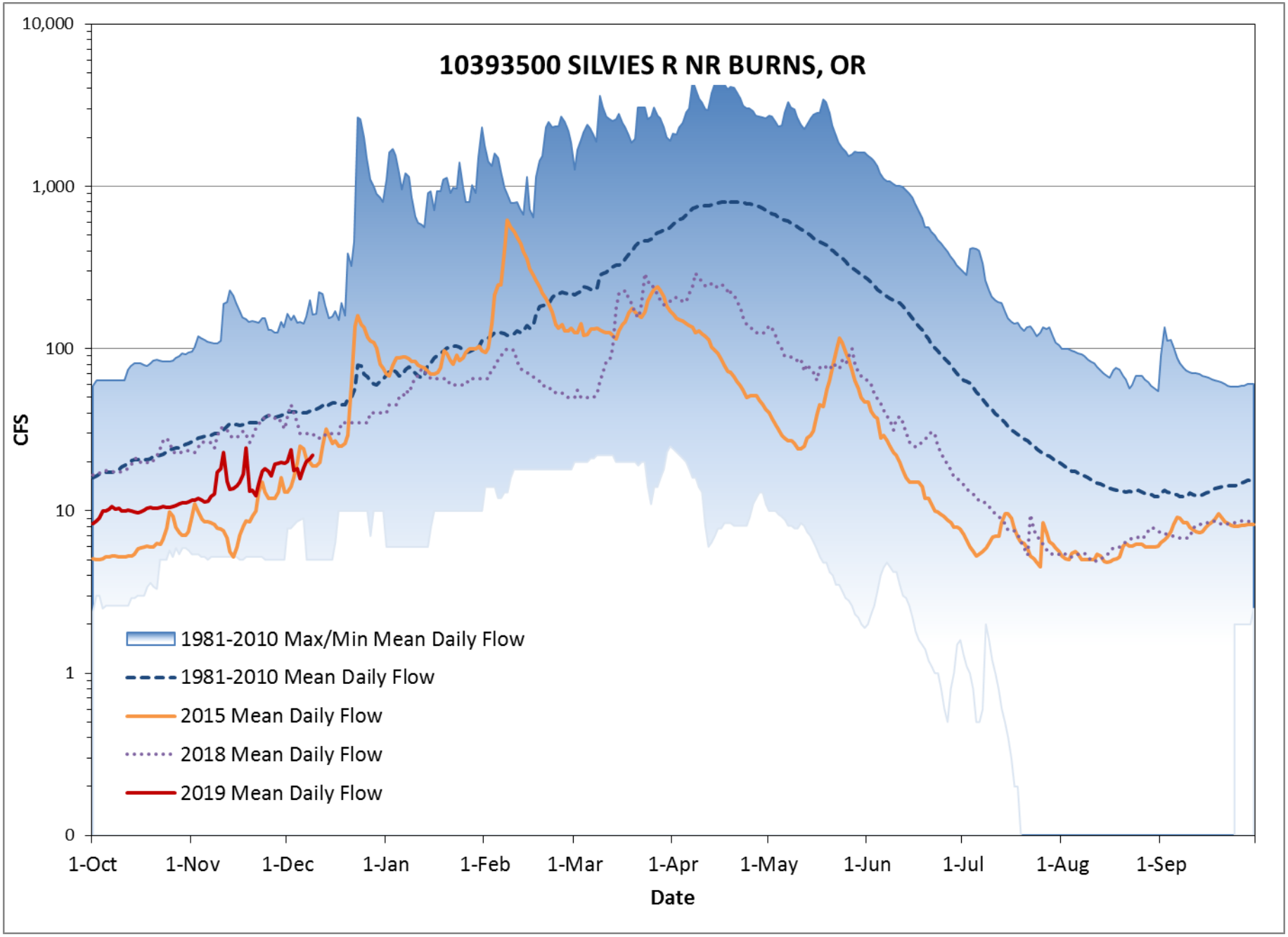

14301000 NEHALEM R NR FOSS, OR
100,000
10,000
1,000
100
10
CFS
1981-2010 Max/Min Mean Daily Flow
1981-2010 Mean Daily Flow
2015 Mean Daily Flow
2019 Mean Daily Flow
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date


14306030 YAQUINA R NR CHITWOOD, OR
10,000
1,000
100
10
1
CFS
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date
1981-2010 Max/Min Mean Daily Flow
1981-2010 Mean Daily Flow
2015 Mean Daily Flow
2019 Mean Daily Flow


14134000 SALMON R NR GOVERNMENT CAMP, OR
1,000
100
10
1
CFS
1976-2015 Max/Min Mean Daily Flow
1976-2015 Mean Daily Flow
2015 Mean Daily Flow
2019 Mean Daily Flow
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date


14074900 SNOW CR NR SISTERS, OR
100
10
1
0
CFS
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date
1981-2010 Max/Min Mean Daily Flow
1981-2010 Mean Daily Flow
2015 Mean Daily Flow
2018 Mean Daily Flow
2019 Mean Daily Flow


14021000 UMATILLA R AT PENDLETON, OR
1981-2010 Max/Min Mean Daily Flow
1981-2010 Mean Daily Flow
2015 Mean Daily Flow
2018 Mean Daily Flow
2019 Mean Daily Flow
100,000
10,000
1,000
100
10
CFS
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date


10393500 SILVIES R NR BURNS, OR
10,000
1,000
100
10
1
0
CFS
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date
1981-2010 Max/Min Mean Daily Flow
1981-2010 Mean Daily Flow
2015 Mean Daily Flow
2018 Mean Daily Flow
2019 Mean Daily Flow

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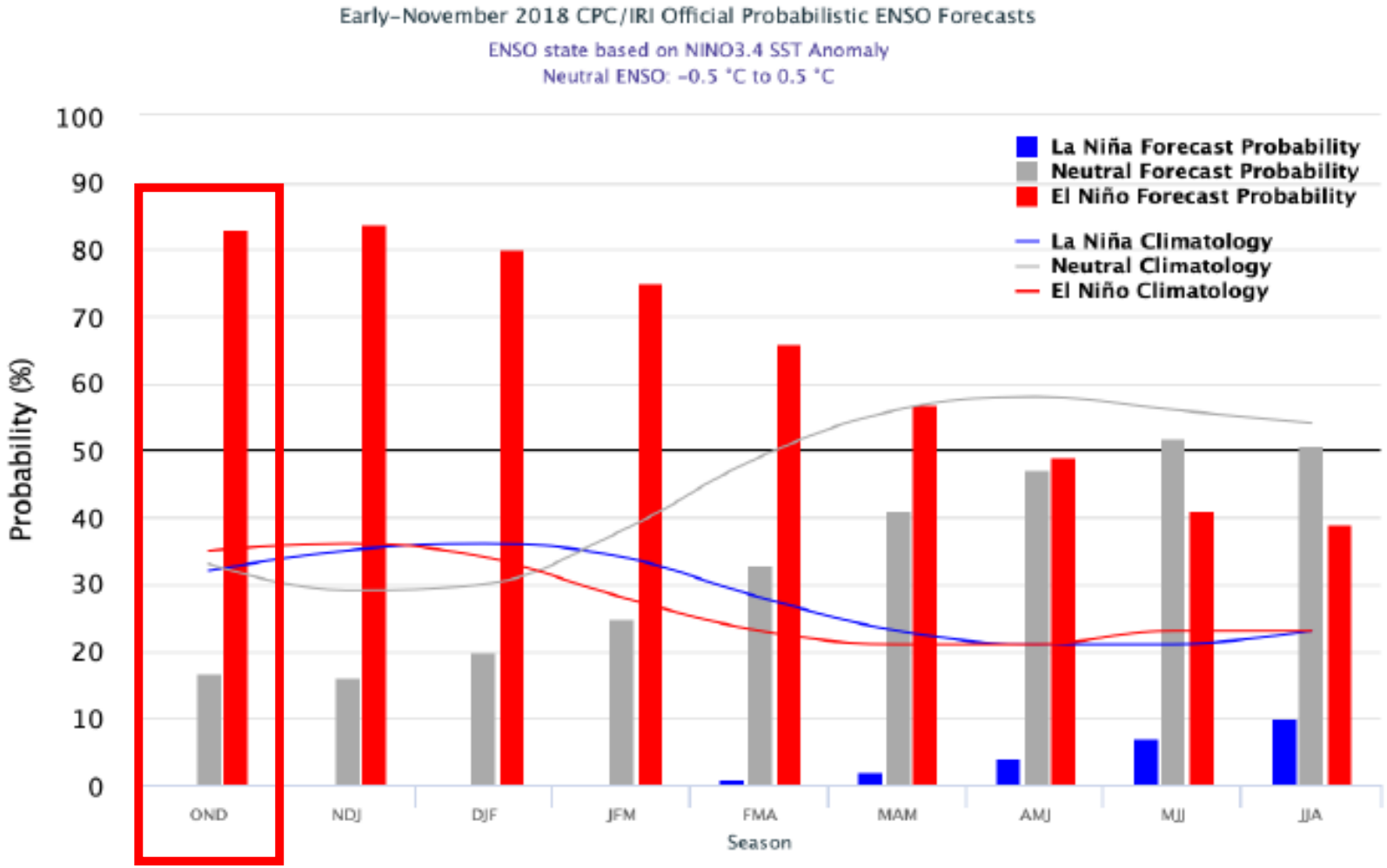
Thank you.

RECLAMATION
Managing Water in the West

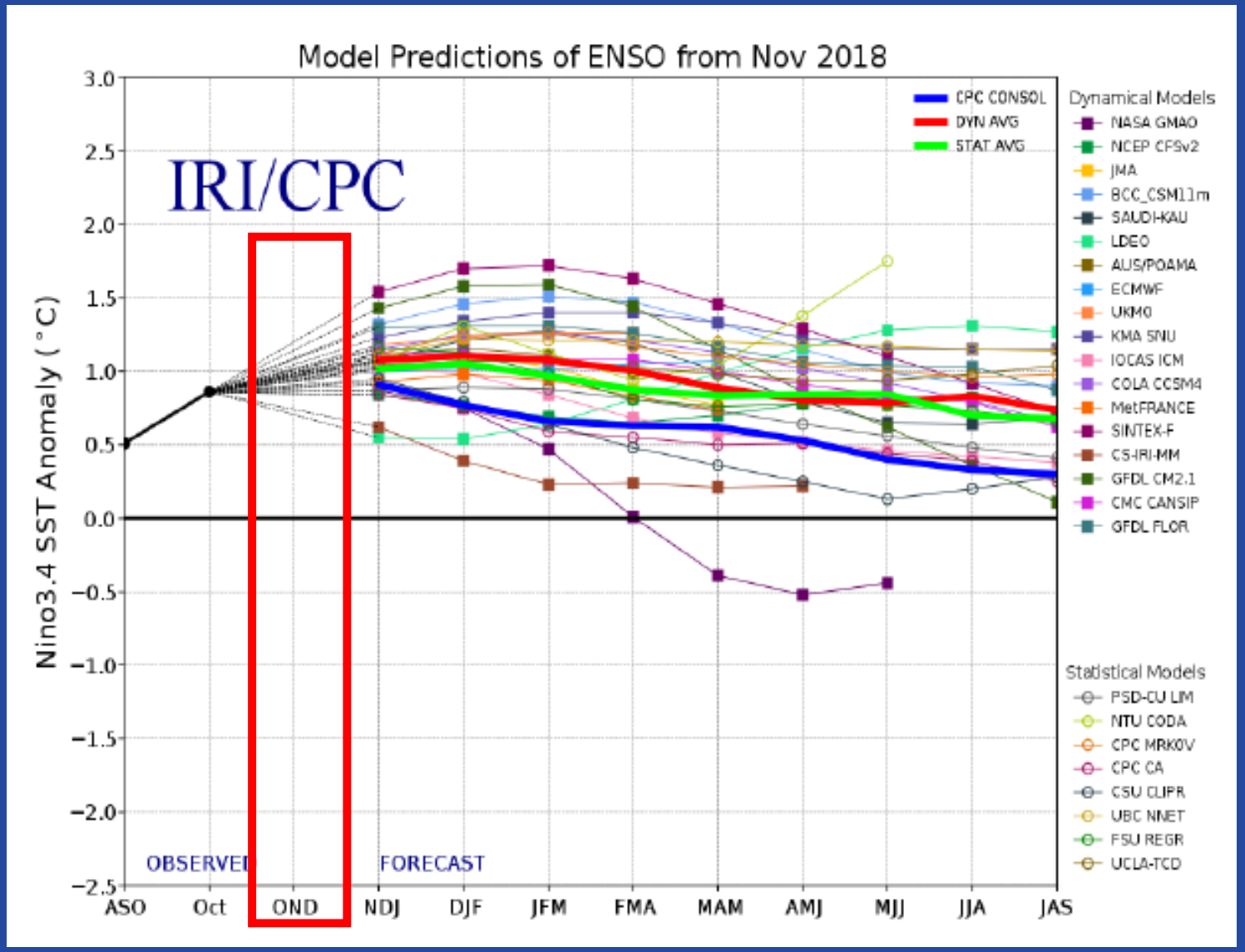
Oregon WSAC

December 11, 2018

Update prepared by:
Climate Prediction Center / NCEP
26 November 2018



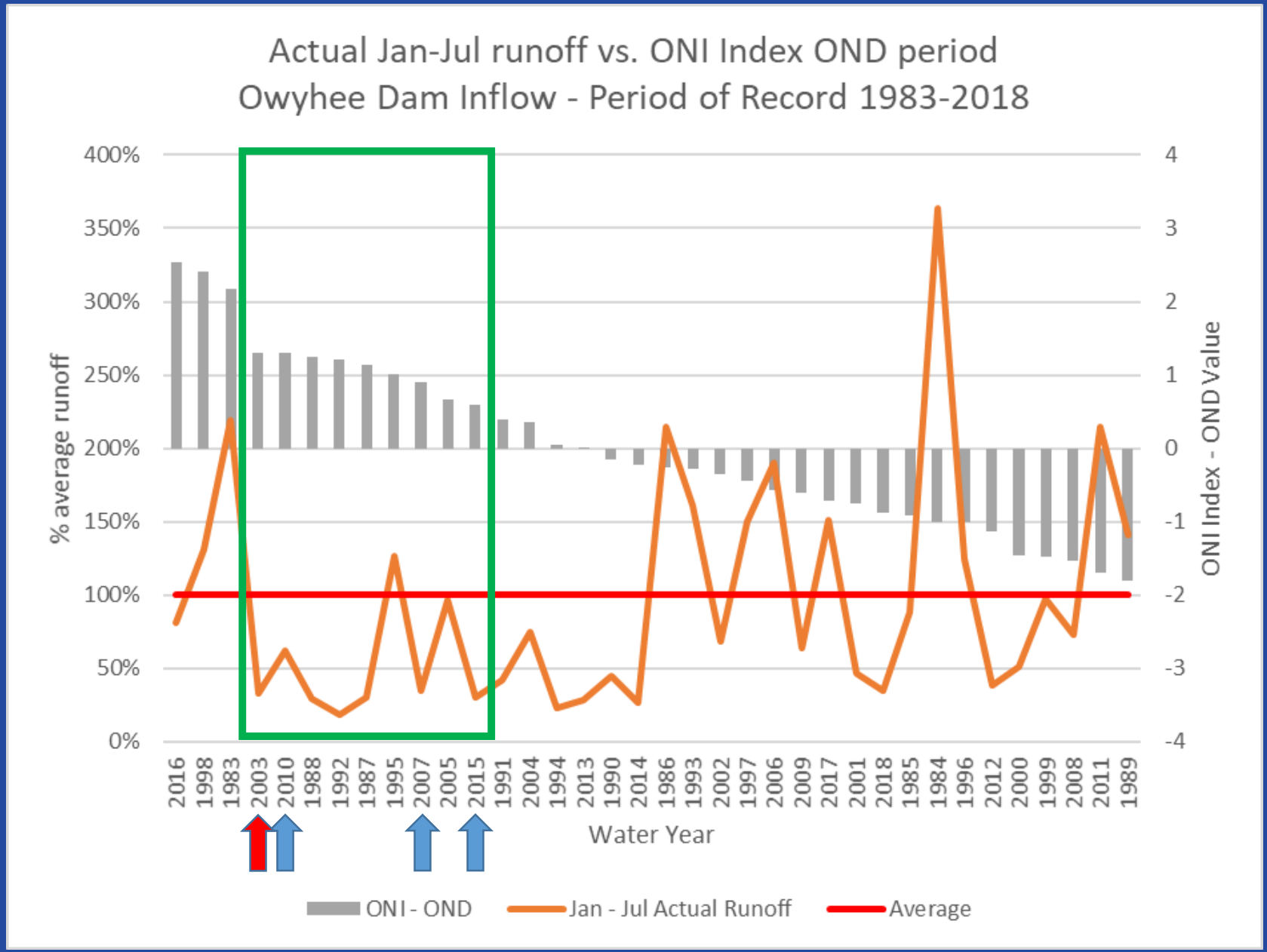
Update prepared by:
Climate Prediction Center / NCEP
26 November 2018



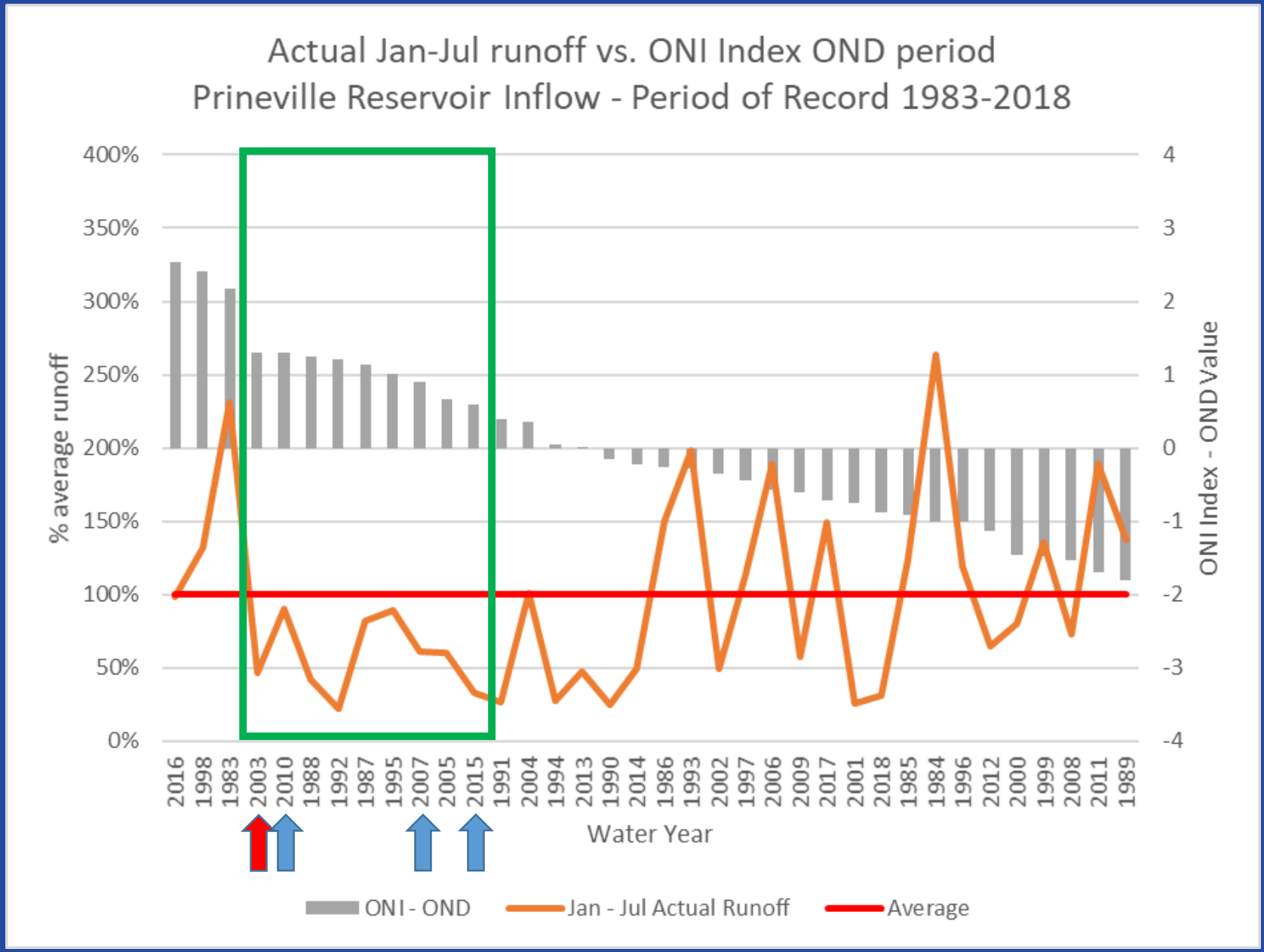
Update prepared by:
Climate Prediction Center / NCEP
26 November 2018

Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2006	-0.8	-0.7	-0.5	-0.3	0.0	0.0	0.1	0.3	0.5	0.7	0.9	0.9
2007	0.7	0.3	0.0	-0.2	-0.3	-0.4	-0.5	-0.8	-1.1	-1.4	-1.5	-1.6
2008	-1.6	-1.4	-1.2	-0.9	-0.8	-0.5	-0.4	-0.3	-0.3	-0.4	-0.6	-0.7
2009	-0.8	-0.7	-0.5	-0.2	0.1	0.4	0.5	0.5	0.7	1.0	1.3	1.6
2010	1.5	1.3	0.9	0.4	-0.1	-0.6	-1.0	-1.4	-1.6	-1.7	-1.7	-1.6
2011	-1.4	-1.1	-0.8	-0.6	-0.5	-0.4	-0.5	-0.7	-0.9	-1.1	-1.1	-1.0
2012	-0.8	-0.6	-0.5	-0.4	-0.2	0.1	0.3	0.3	0.3	0.2	0.0	-0.2
2013	-0.4	-0.3	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.3	-0.2	-0.2	-0.3
2014	-0.4	-0.4	-0.2	0.1	0.3	0.2	0.1	0.0	0.2	0.4	0.6	0.7
2015	0.6	0.6	0.6	0.8	1.0	1.2	1.5	1.8	2.1	2.4	2.5	2.6
2016	2.5	2.2	1.7	1.0	0.5	0.0	-0.3	-0.6	-0.7	-0.7	-0.7	-0.6
2017	-0.3	-0.1	0.1	0.3	0.4	0.4	0.2	-0.1	-0.4	-0.7	-0.9	-1.0
2018	-0.9	-0.8	-0.6	-0.4	-0.1	0.1	0.1	0.2	0.4			

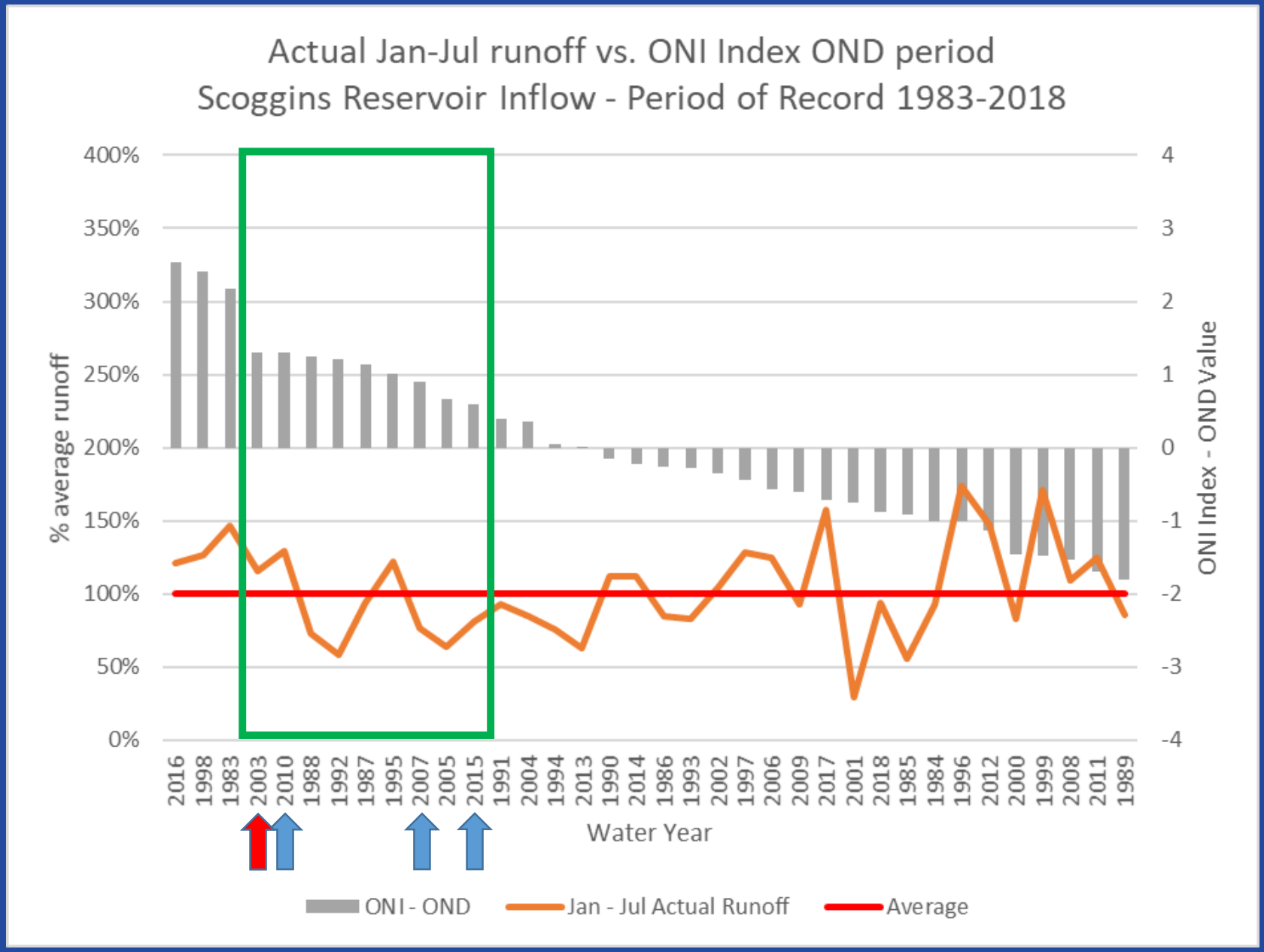
Owyhee Reservoir



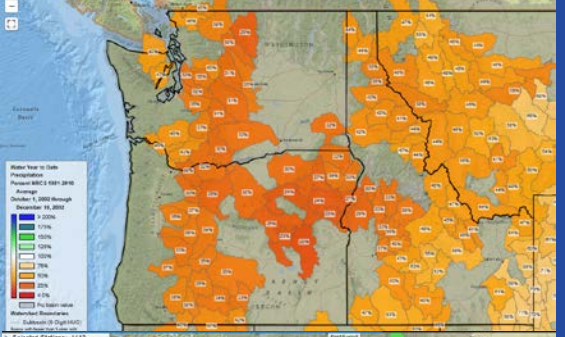
Prineville Reservoir



Scoggins Reservoir



Precip WY to Date
% of 81-10 ave



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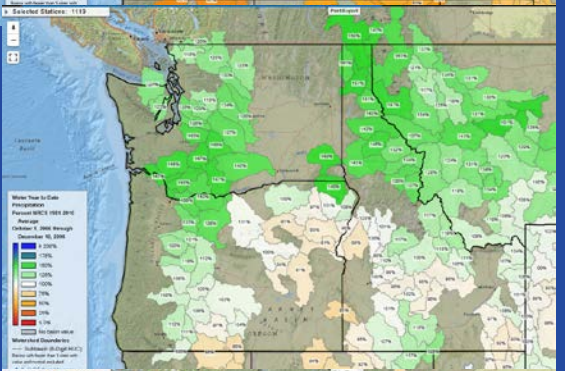

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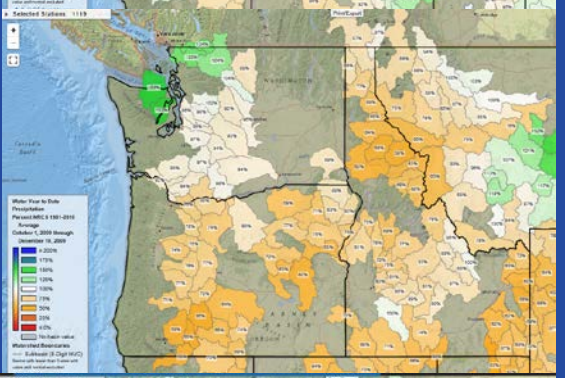

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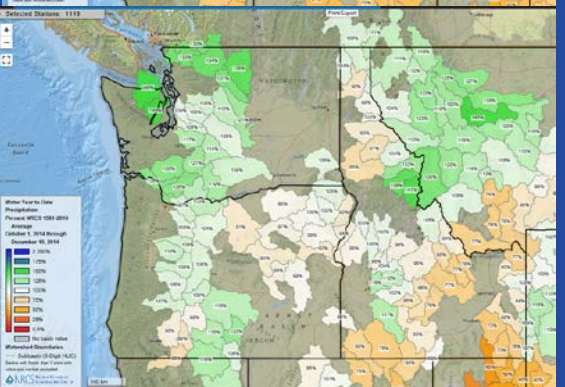

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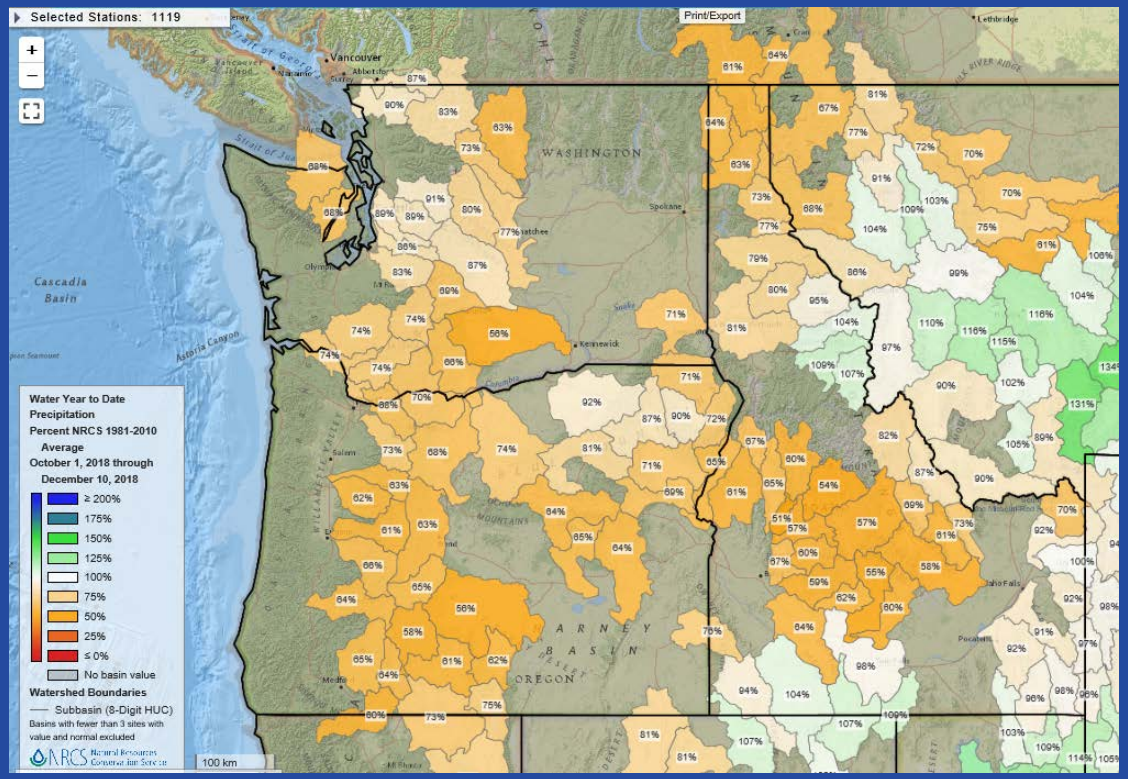
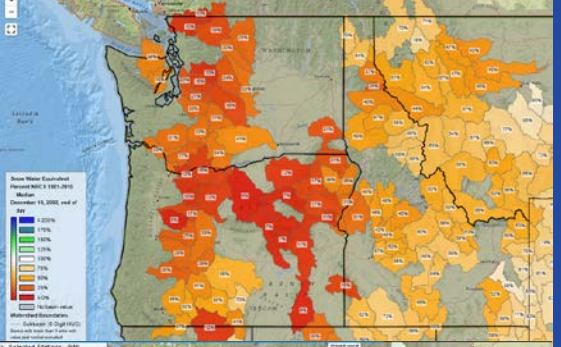
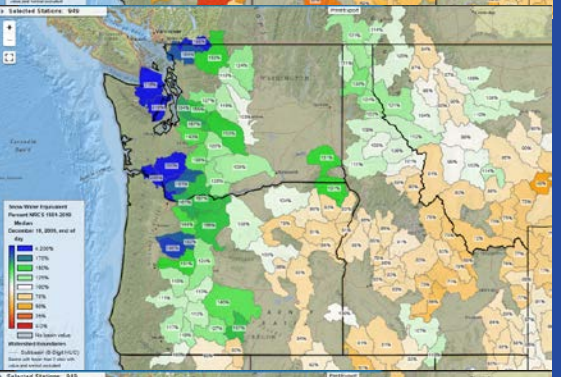


2018

Dec 10 SWE
% of 81-10 Median



2003



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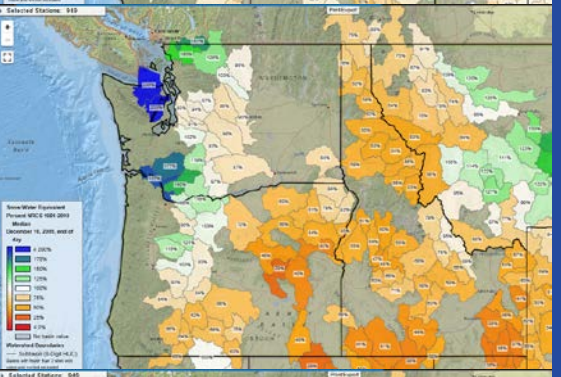
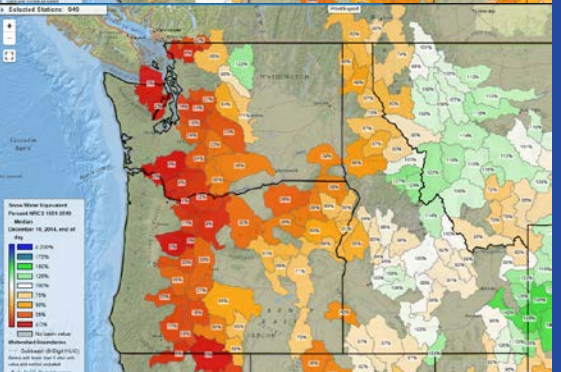
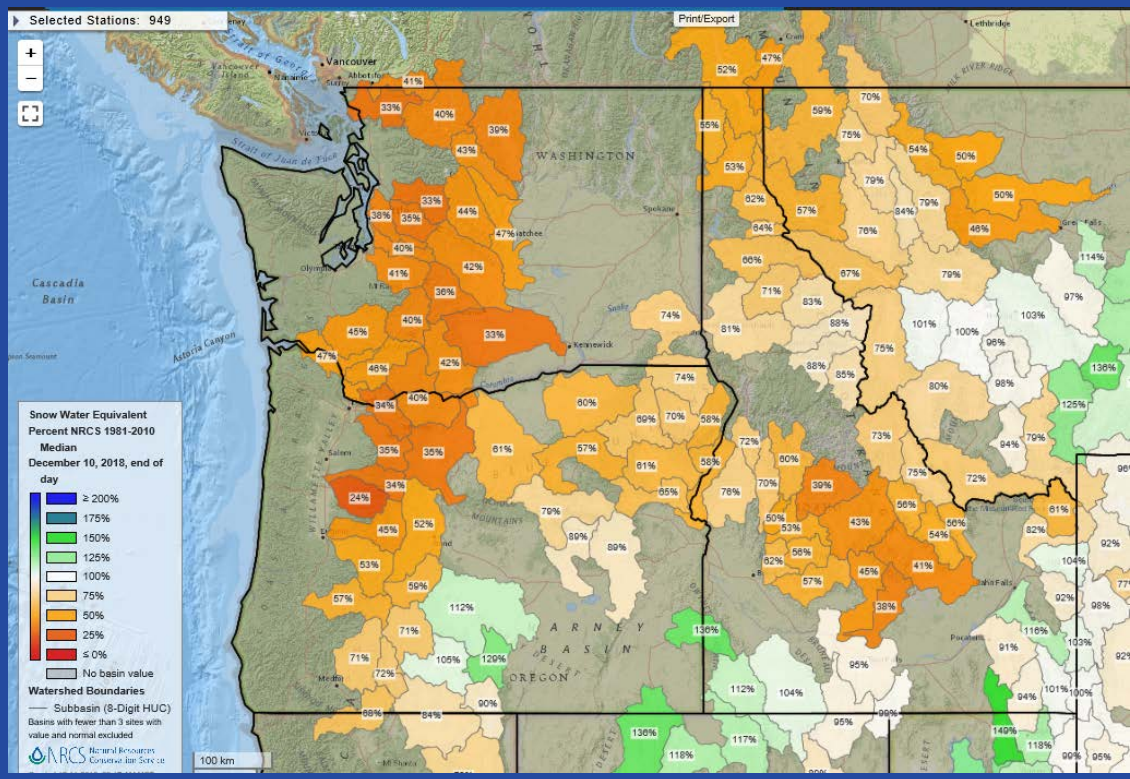


2010

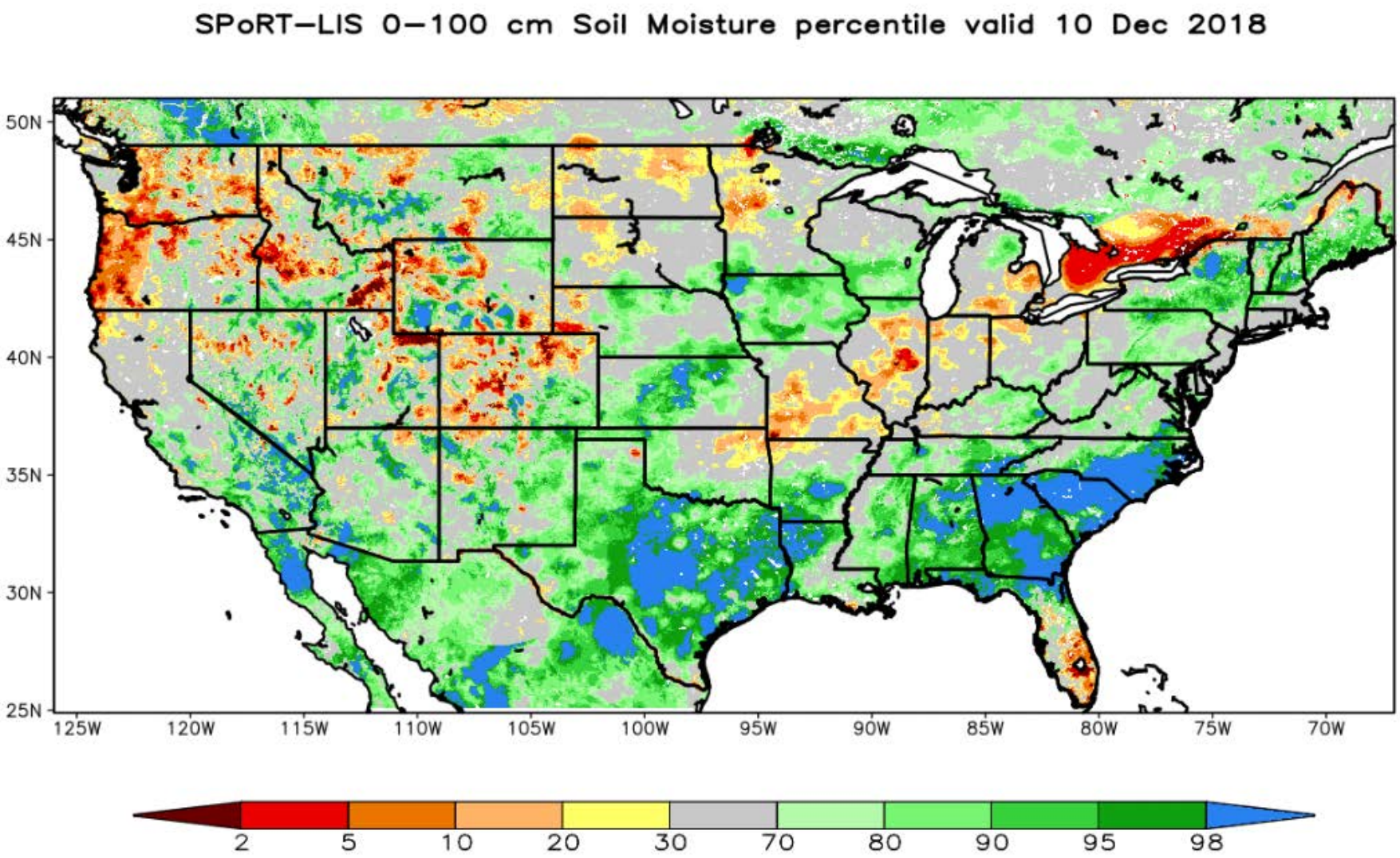


2015



2018

Soil Moisture – Dec 10 Percentile



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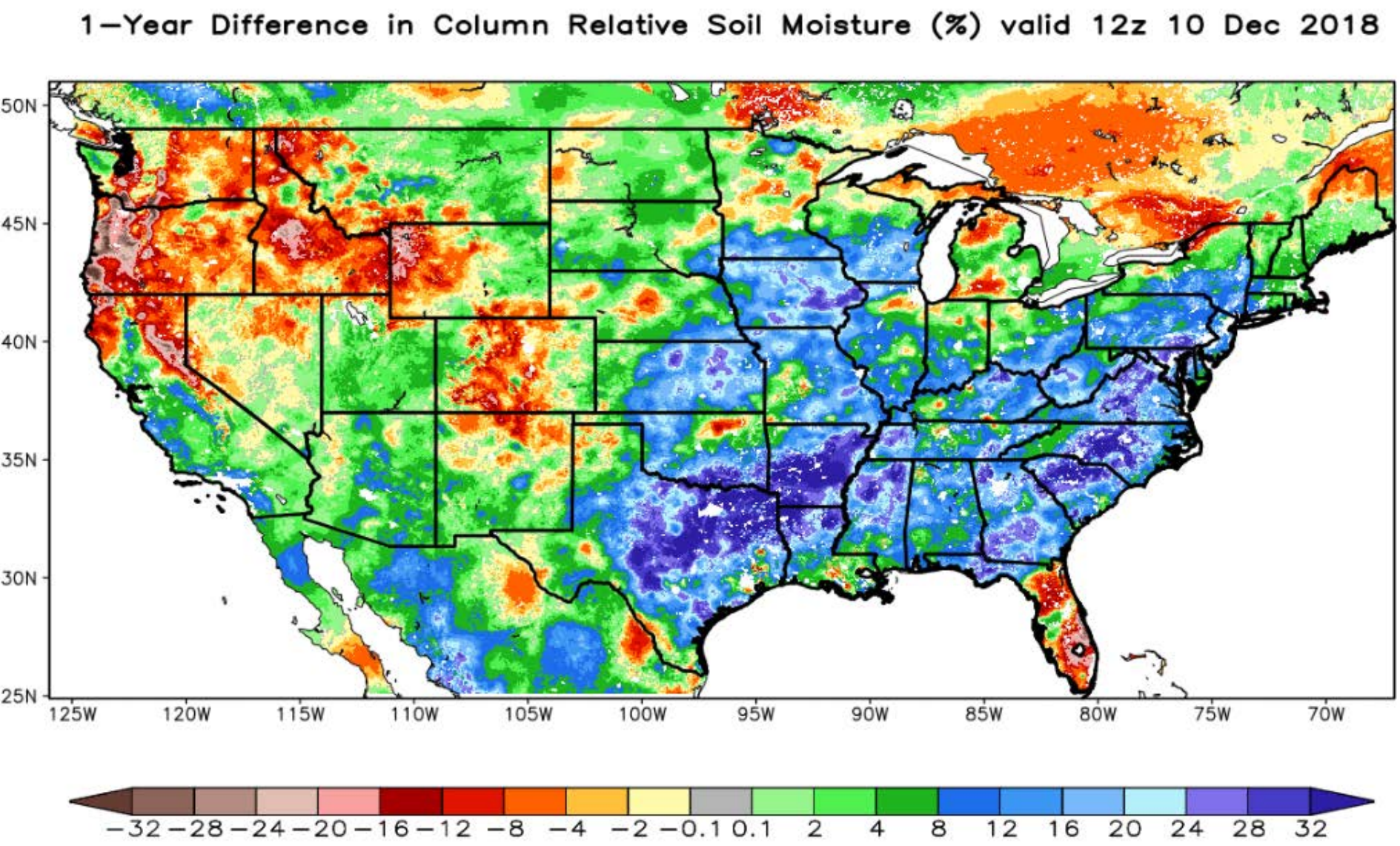
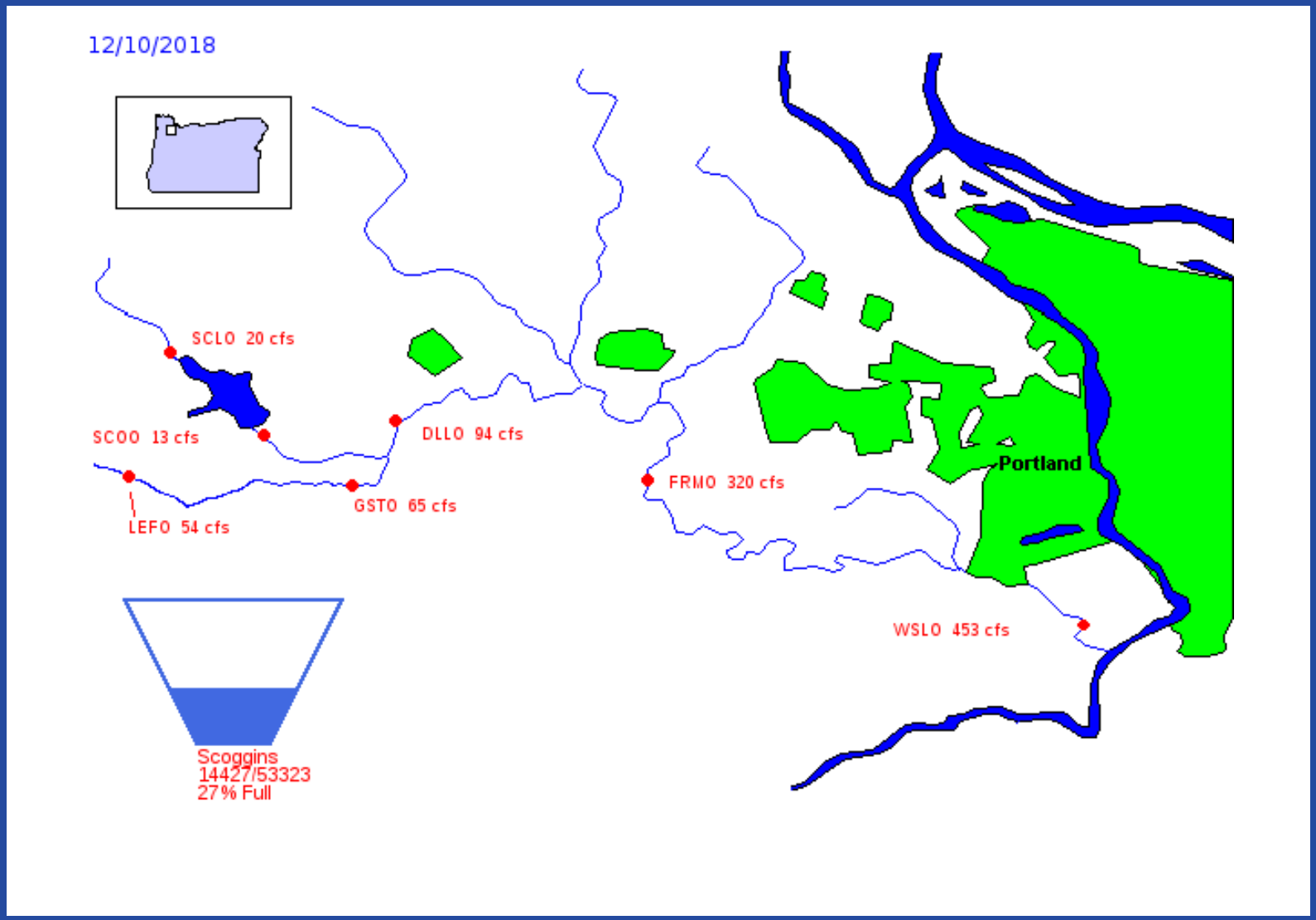
Soil Moisture – 1 yr change



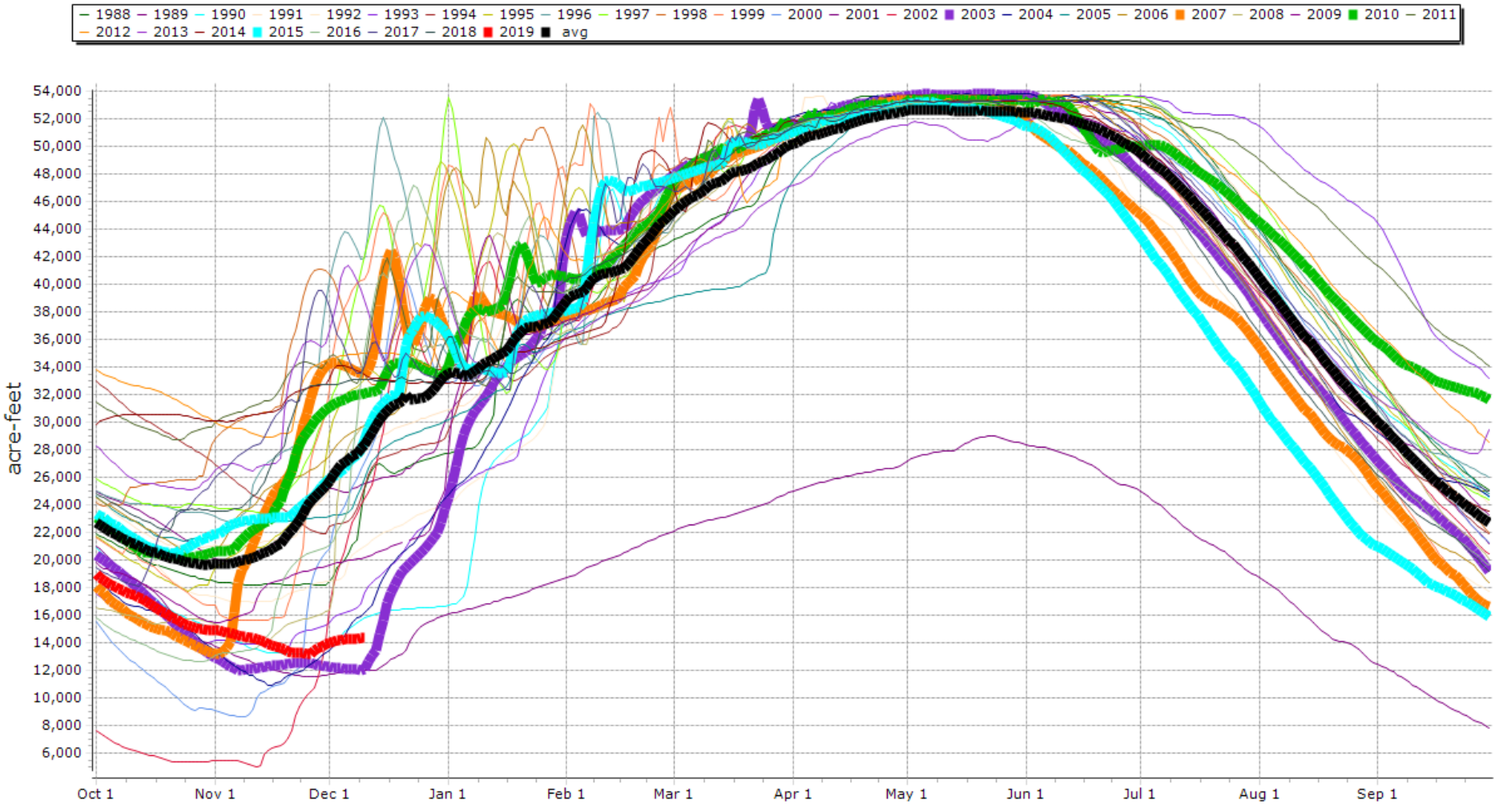
https://weather.msfc.nasa.gov/cgi-bin/basicLooper.pl?category=lis_CONUS&initialize=first&regex=swetdiff365_20181210*.gif

Current Conditions

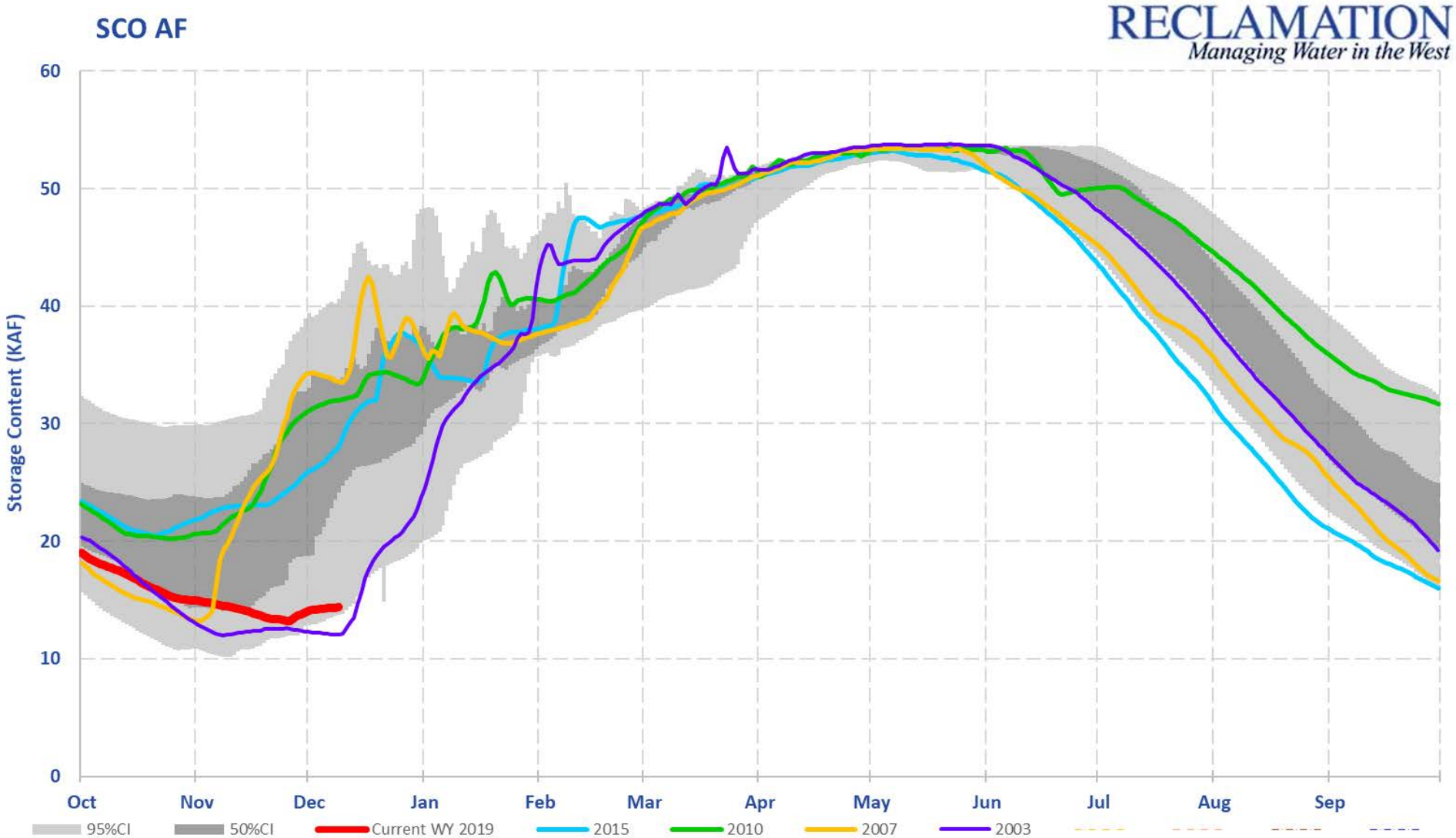
Tualatin River Basin



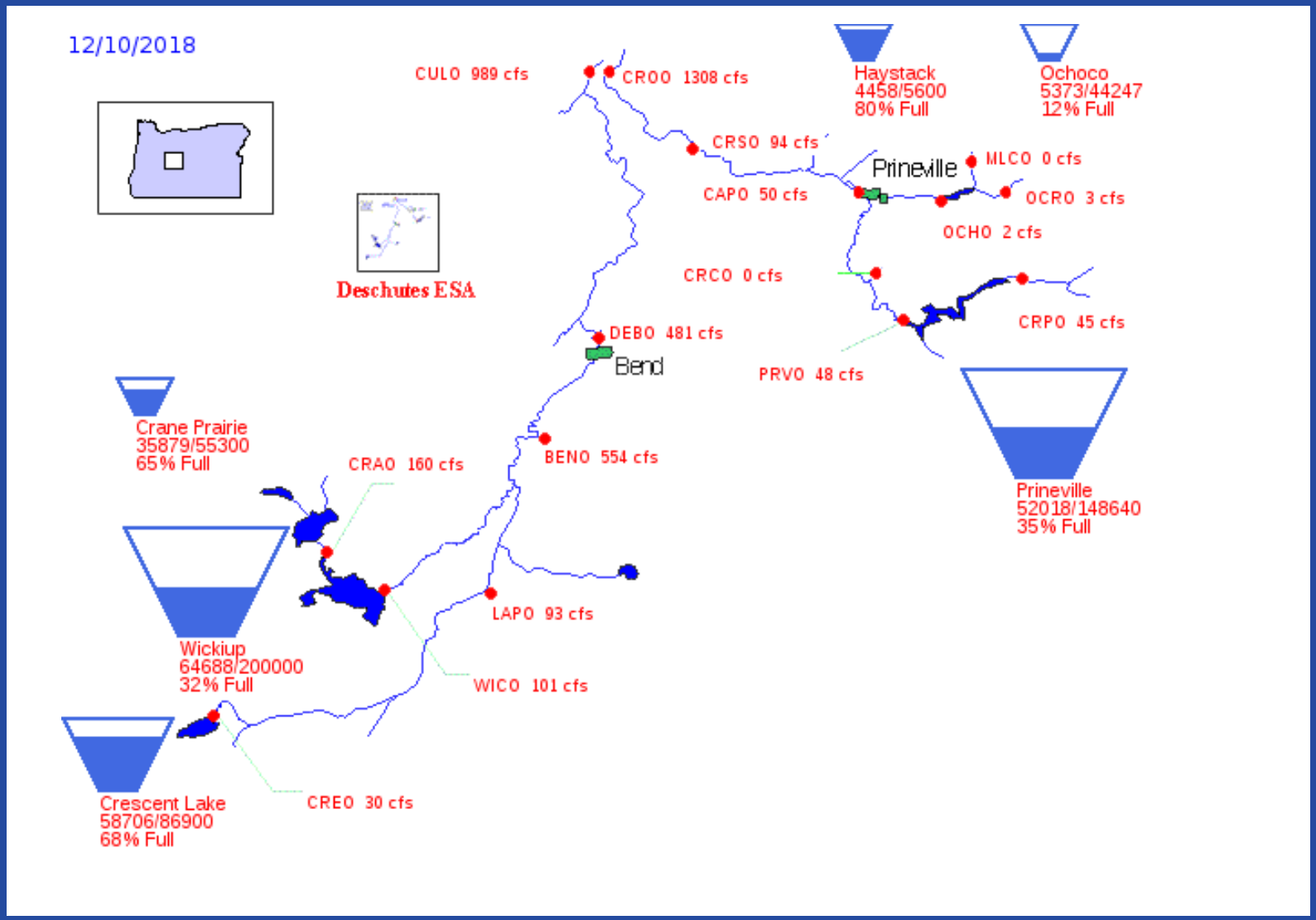
Scoggins Dam & Henry Hagg Lake nr Forest Grove, OR Elevation:200.0000



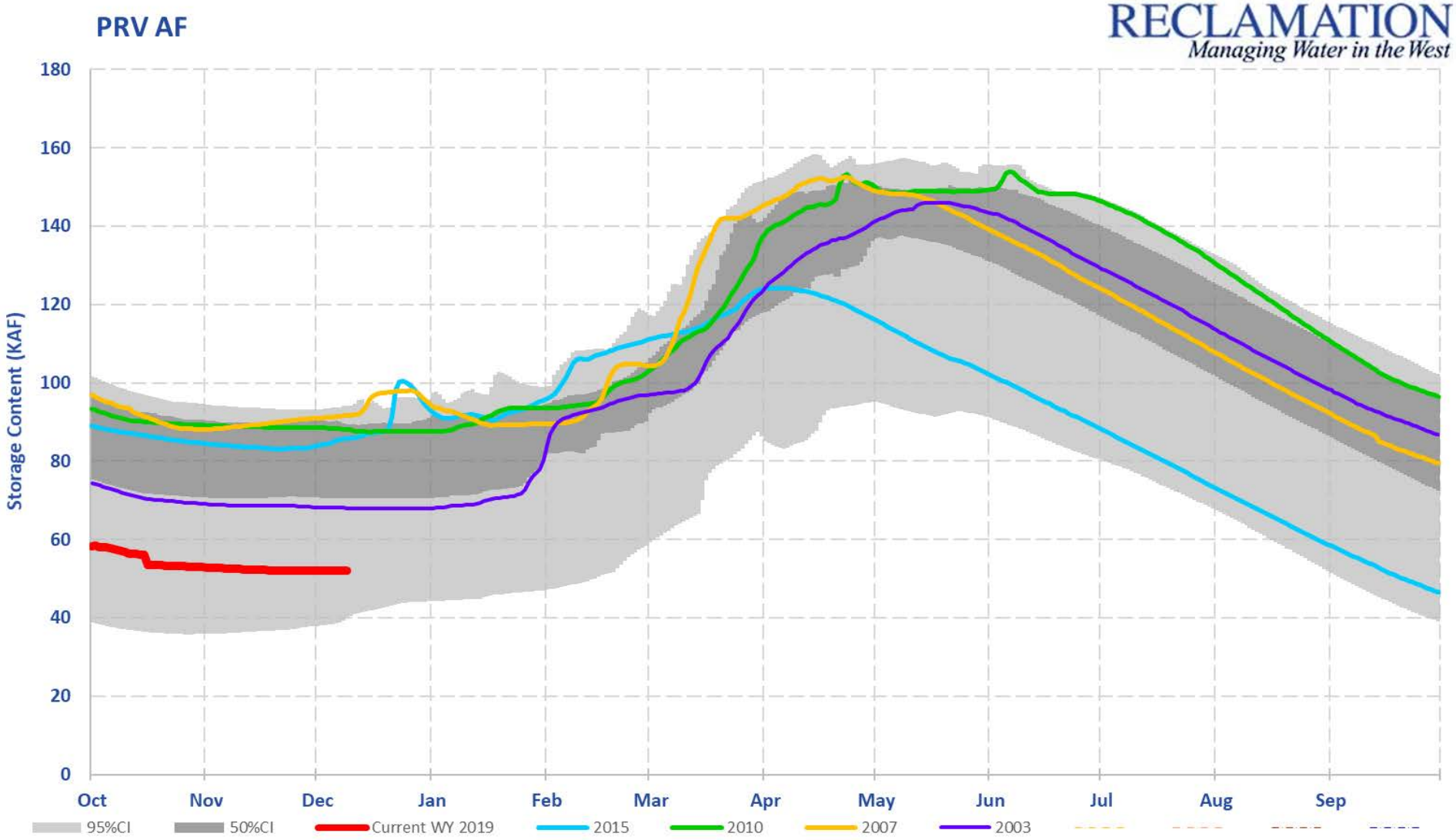
Tualatin River Basin: Scoggins



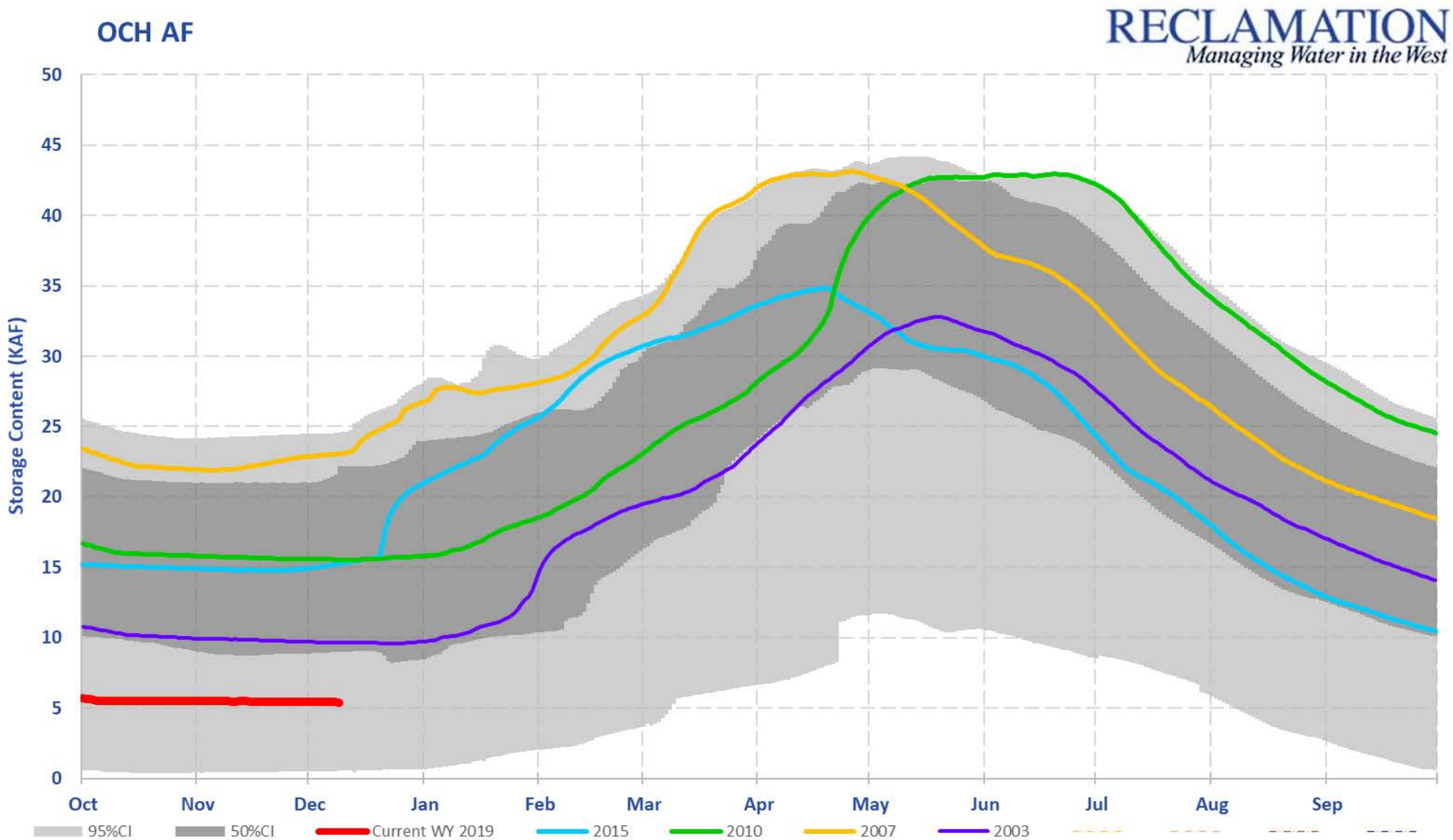
Deschutes River Basin



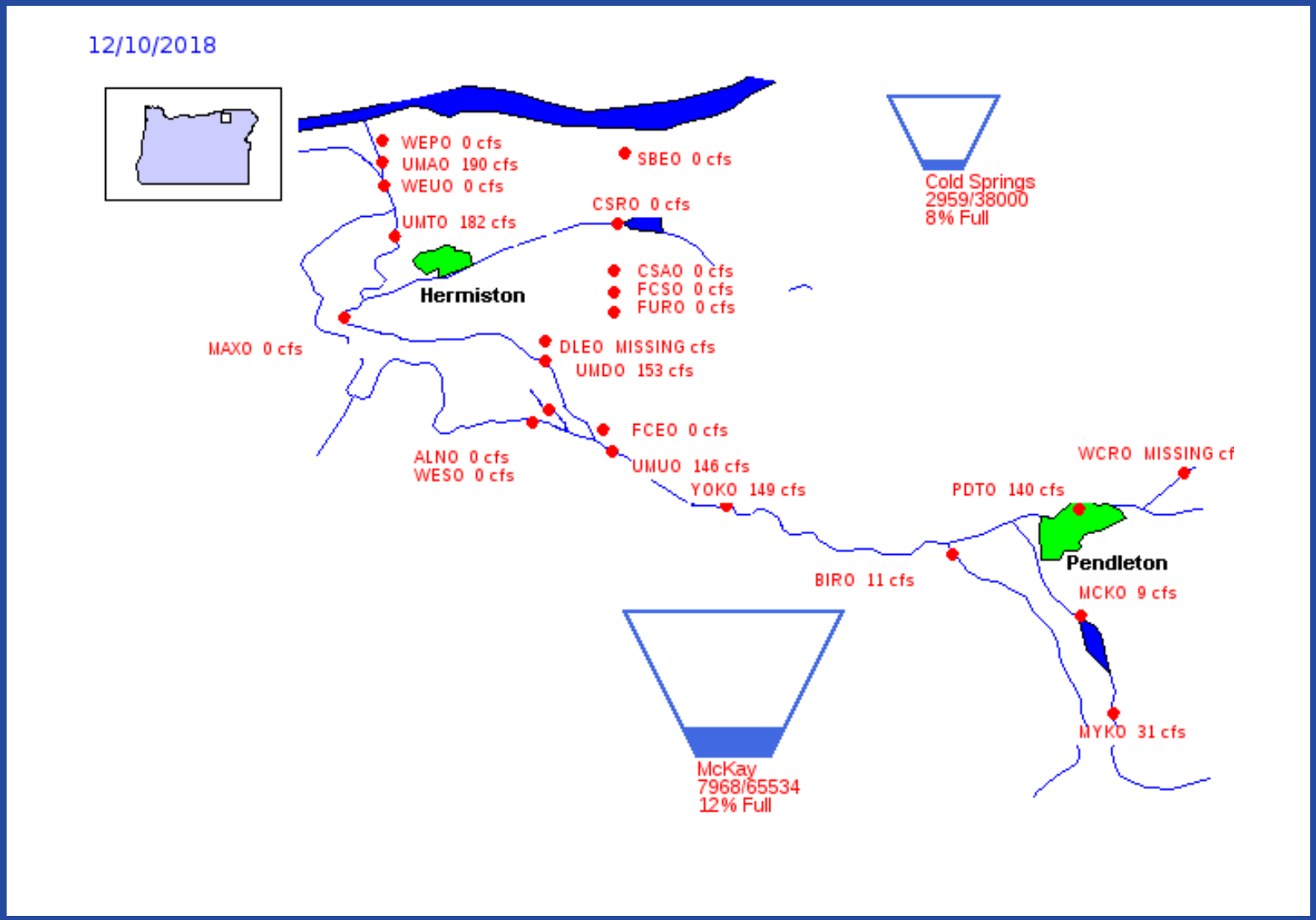
Deschutes River Basin: Prineville



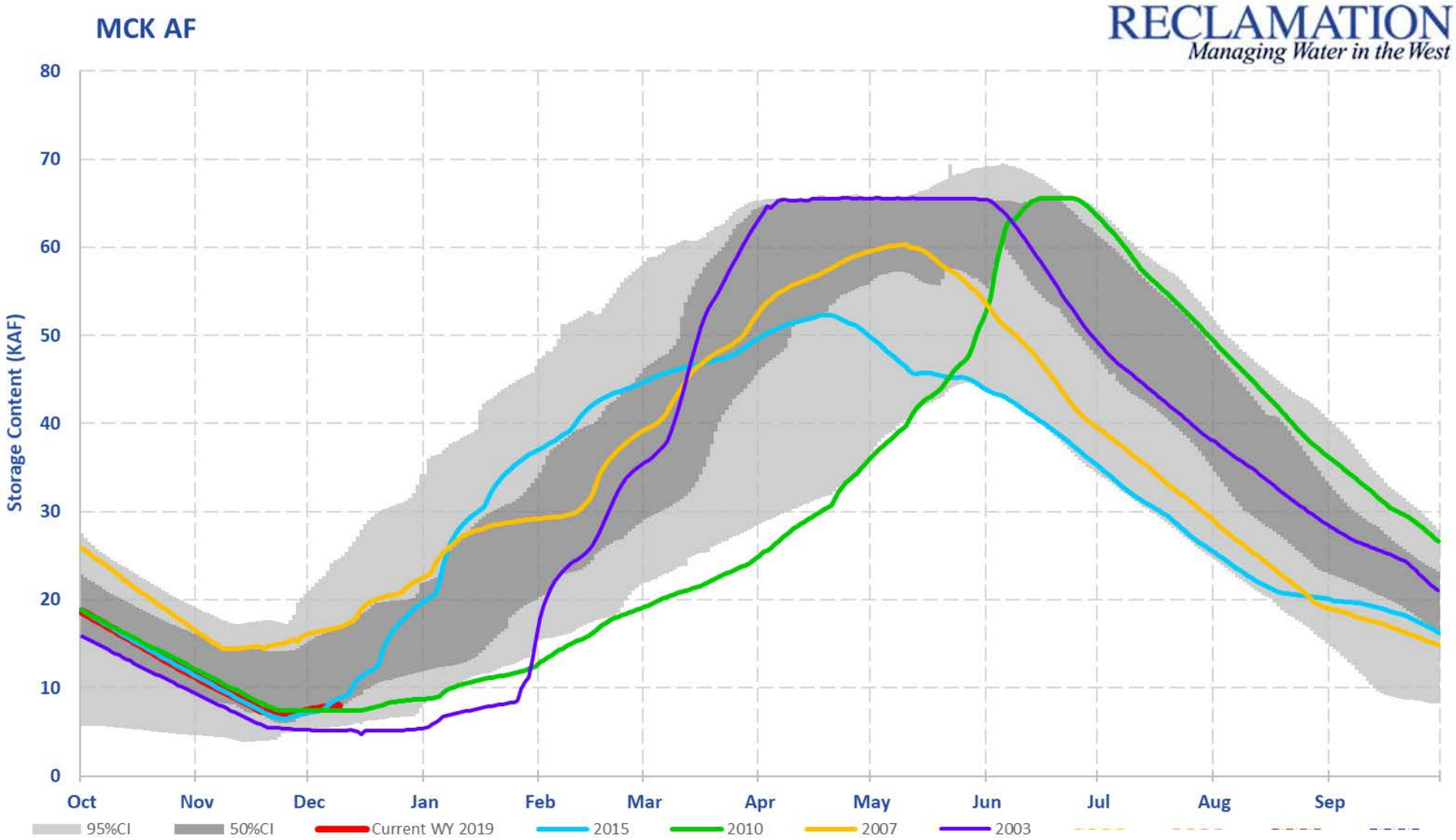
Deschutes River Basin: Ochoco



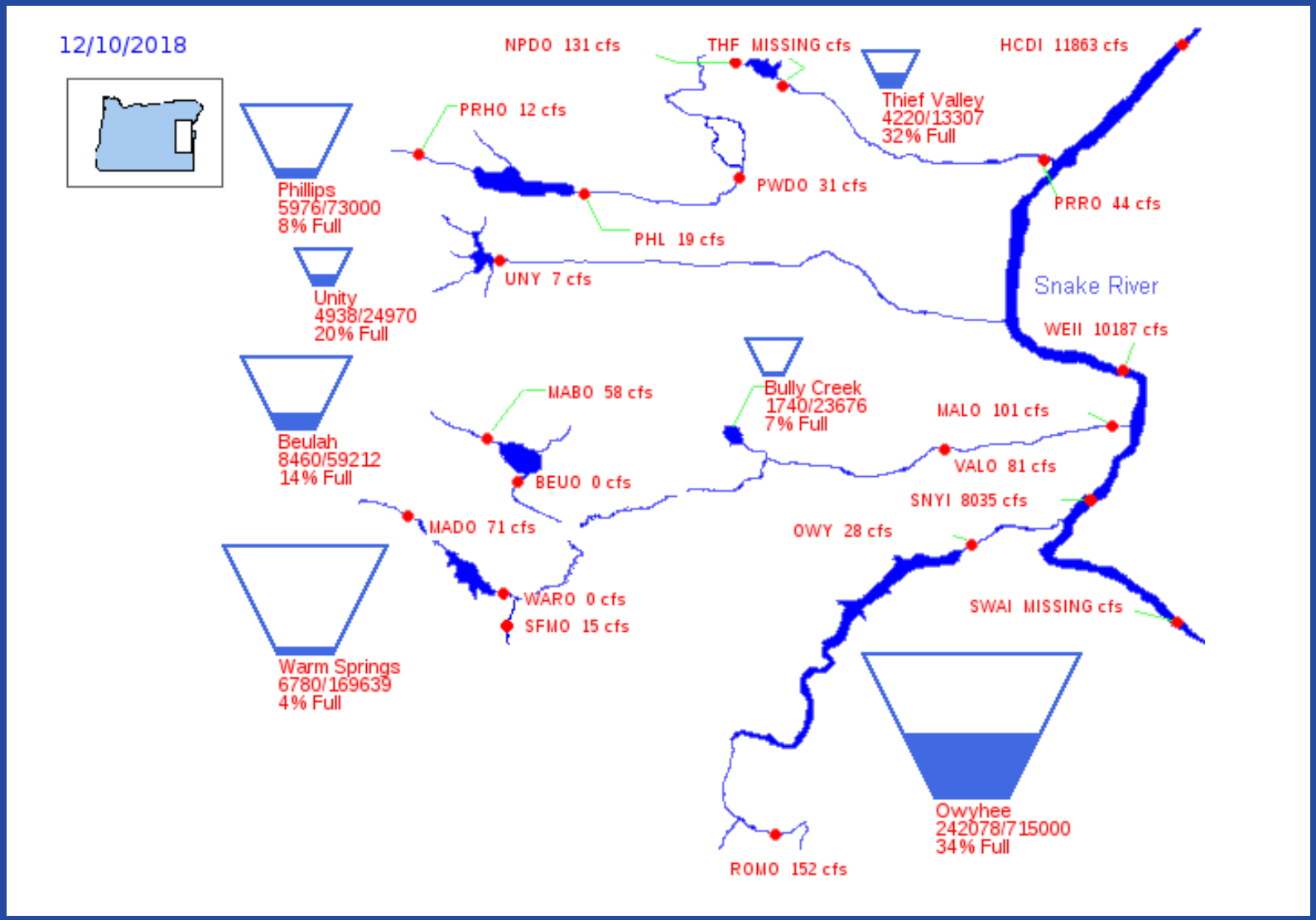
Umatilla River Basin



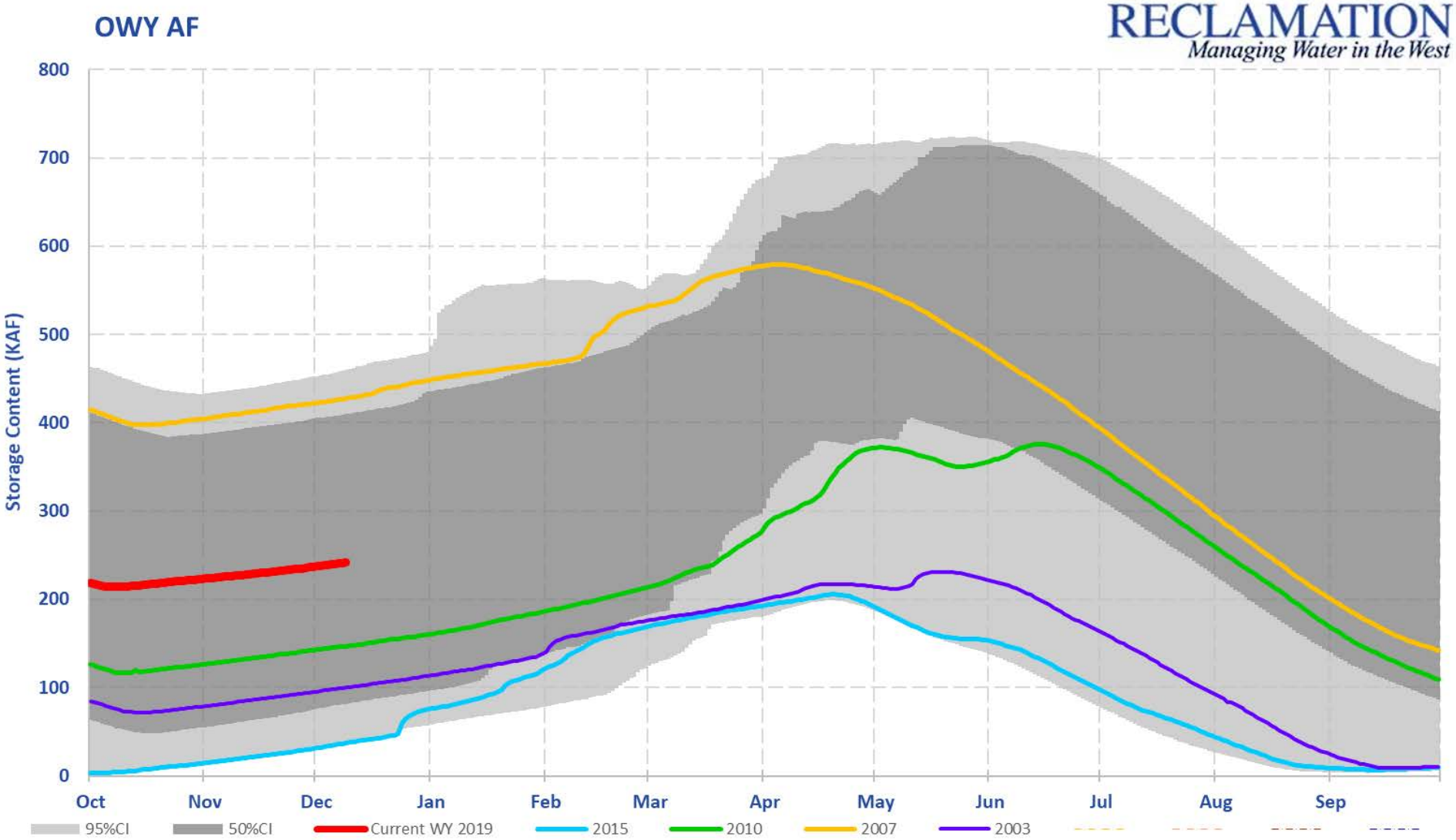
Umatilla River Basin: McKay



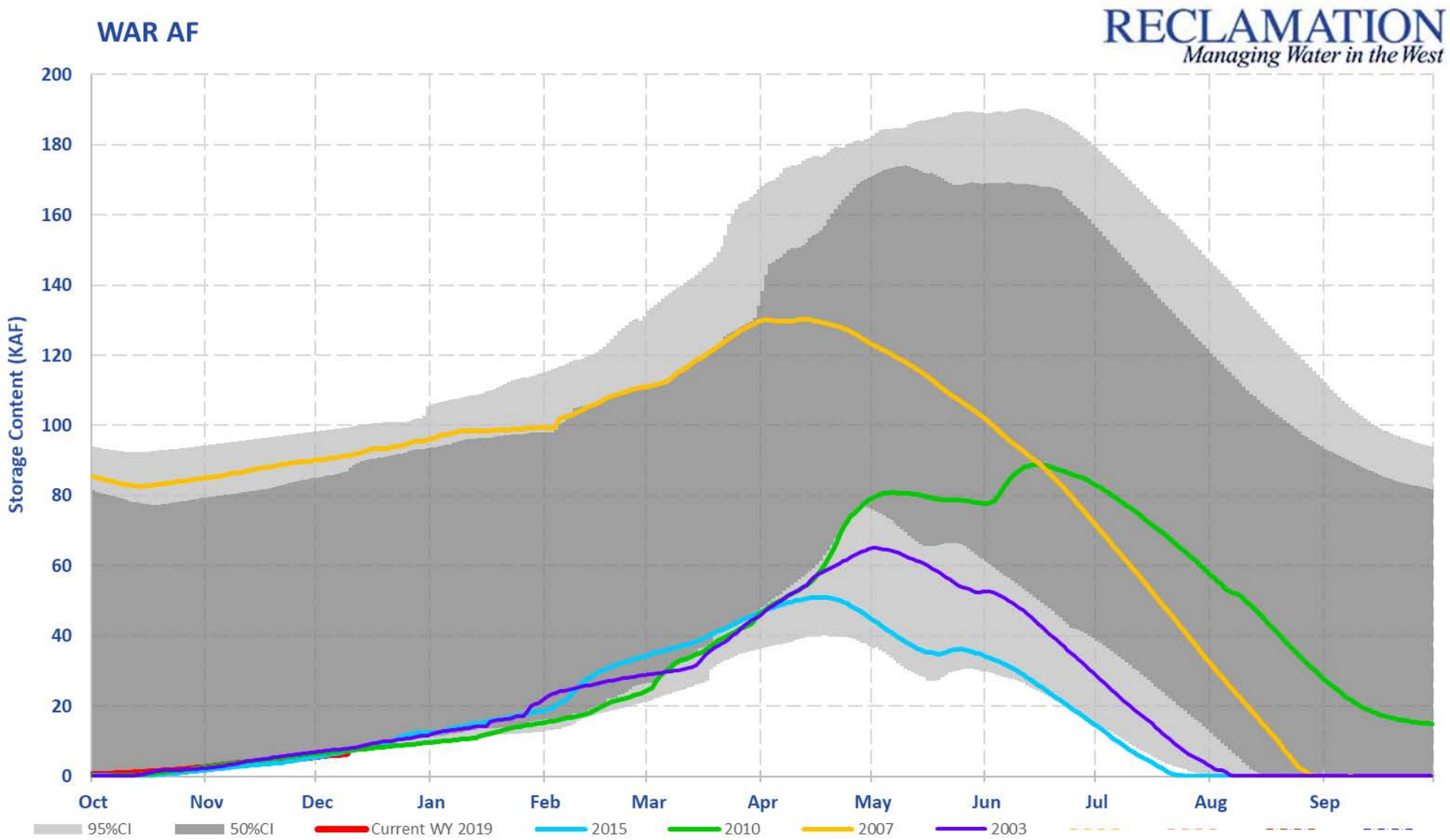
Southeastern Oregon



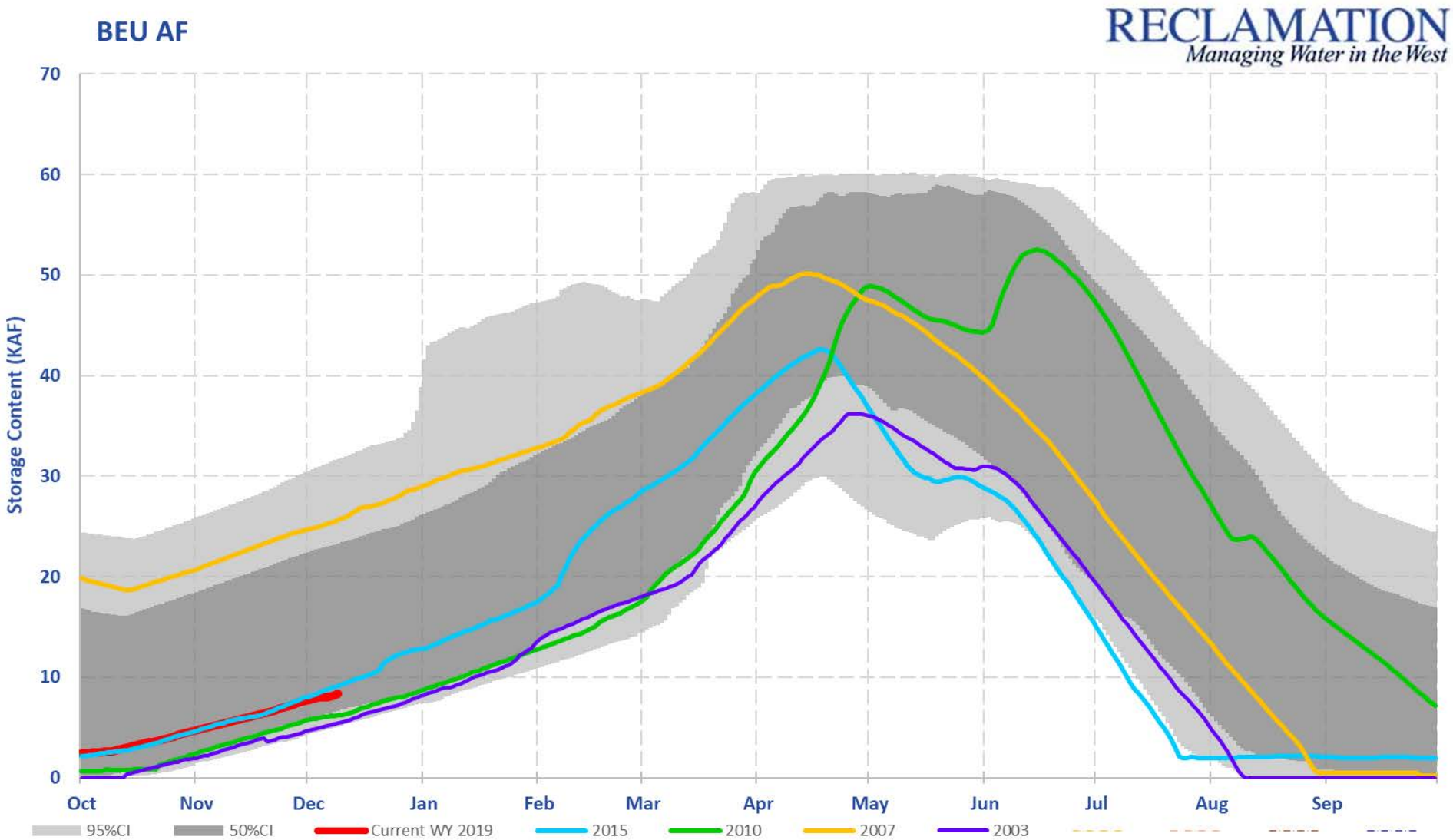
Owyhee River Basin: Owyhee



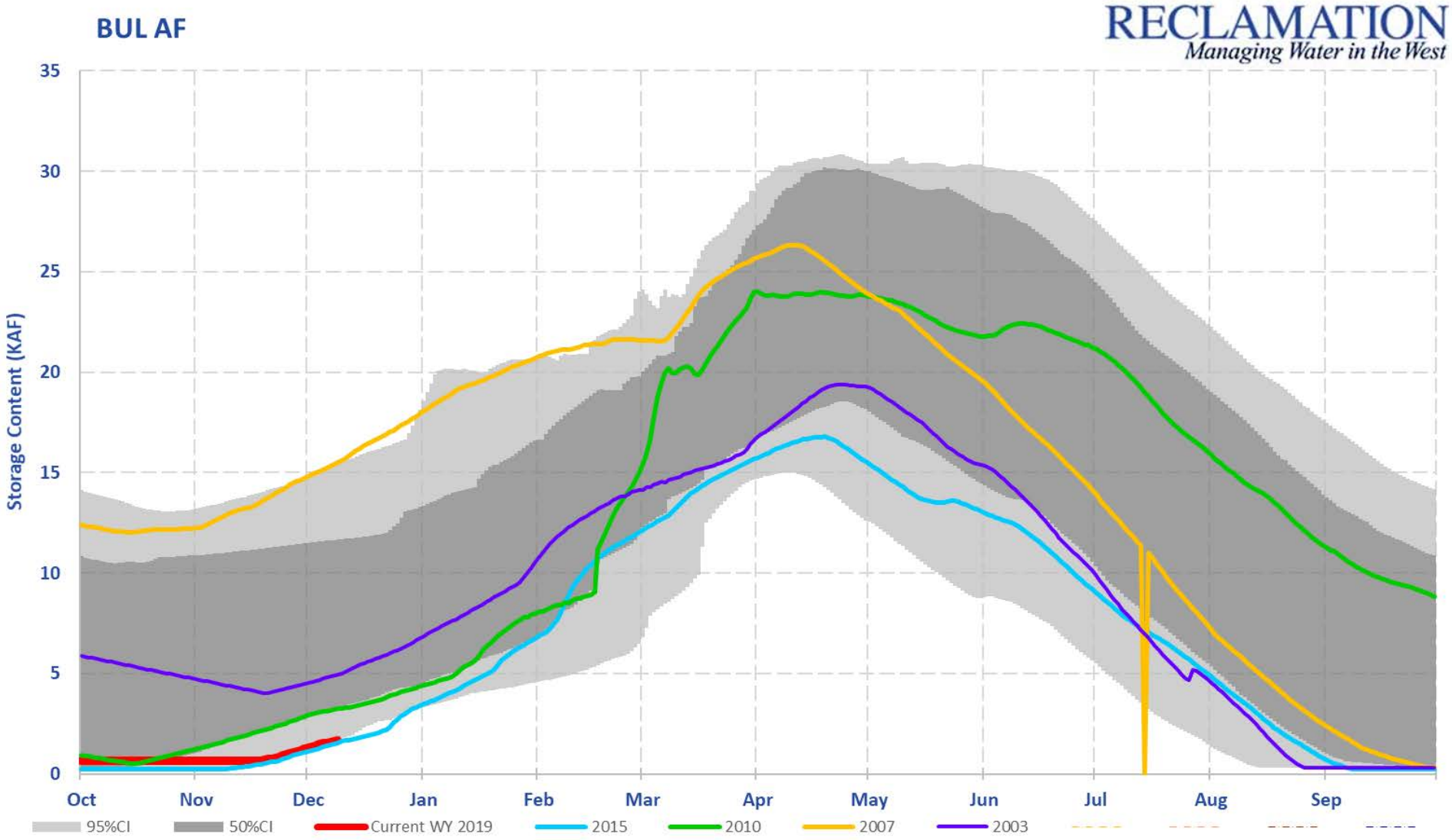
Malheur River Basin: Warm Springs



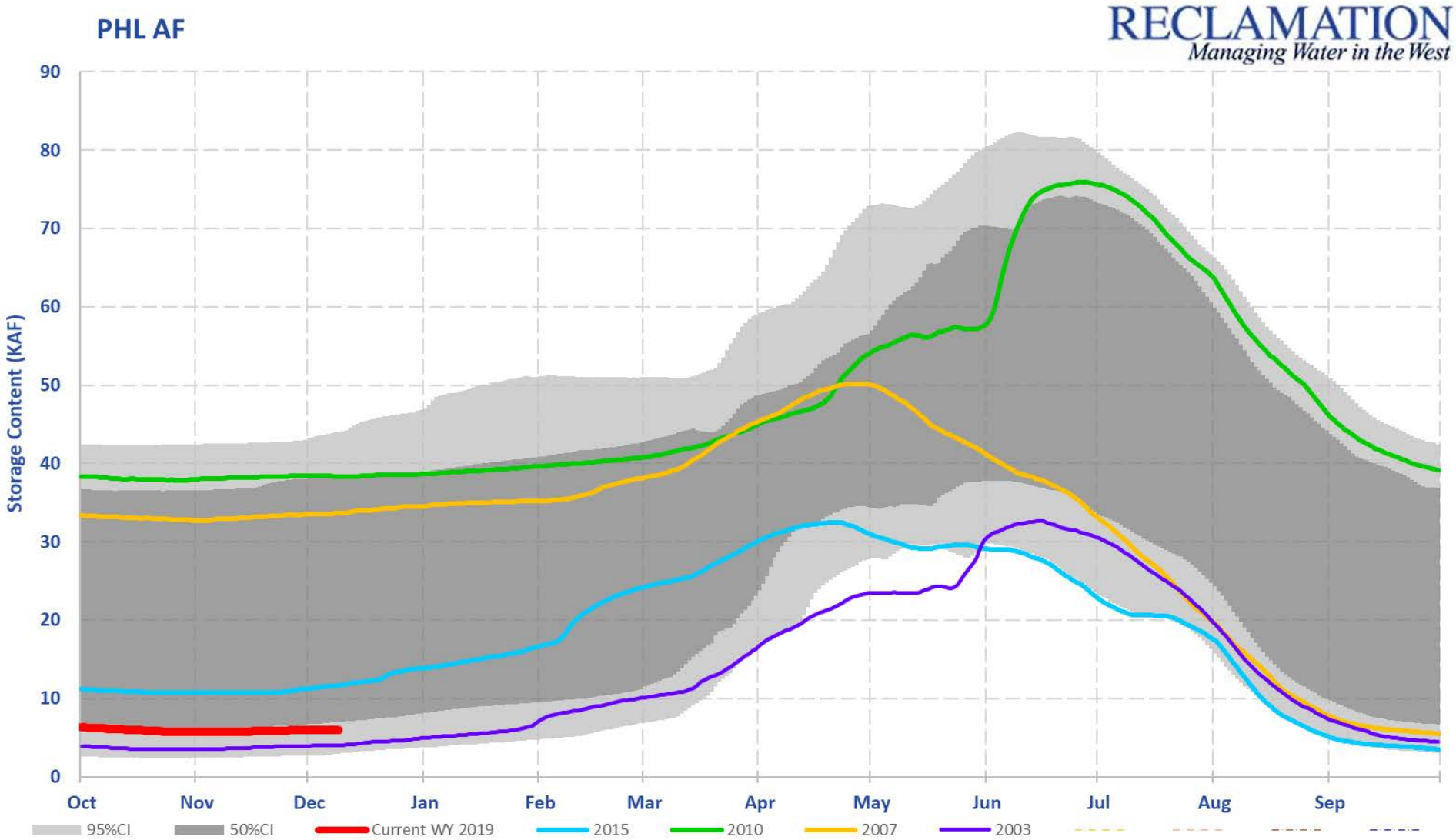
Malheur River Basin: Beulah



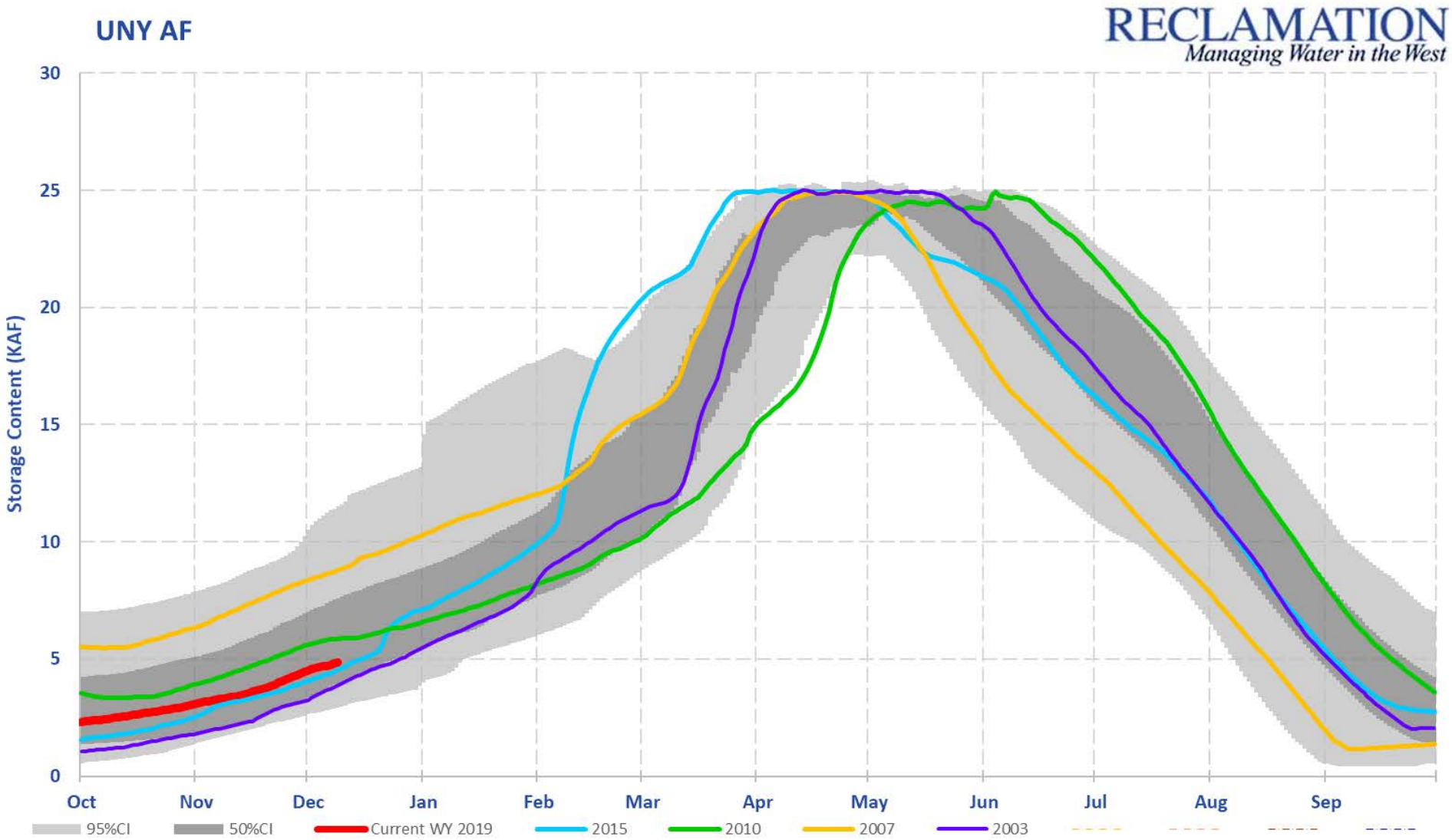
Malheur River Basin: Bully Creek



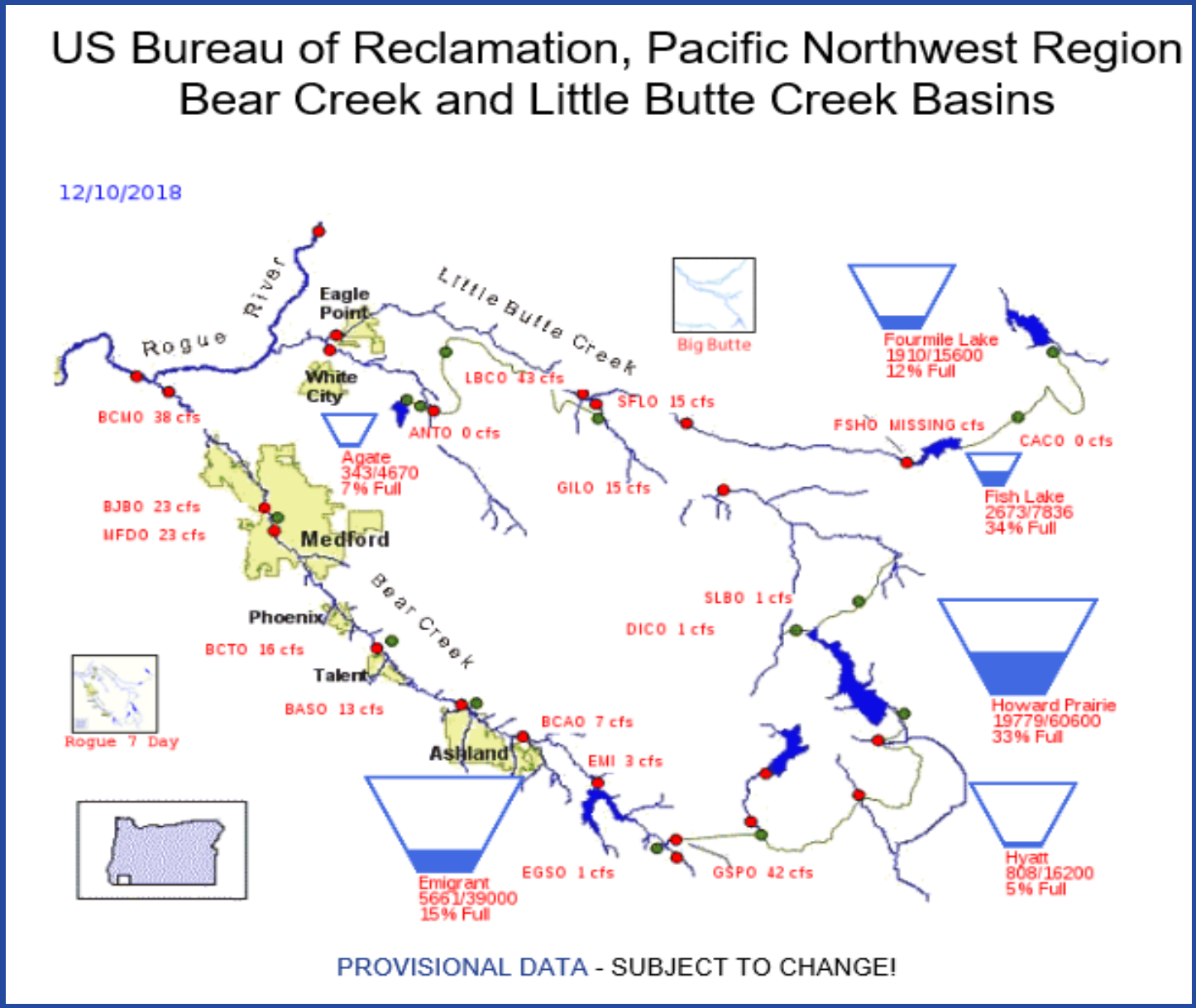
Powder River Basin: Phillips



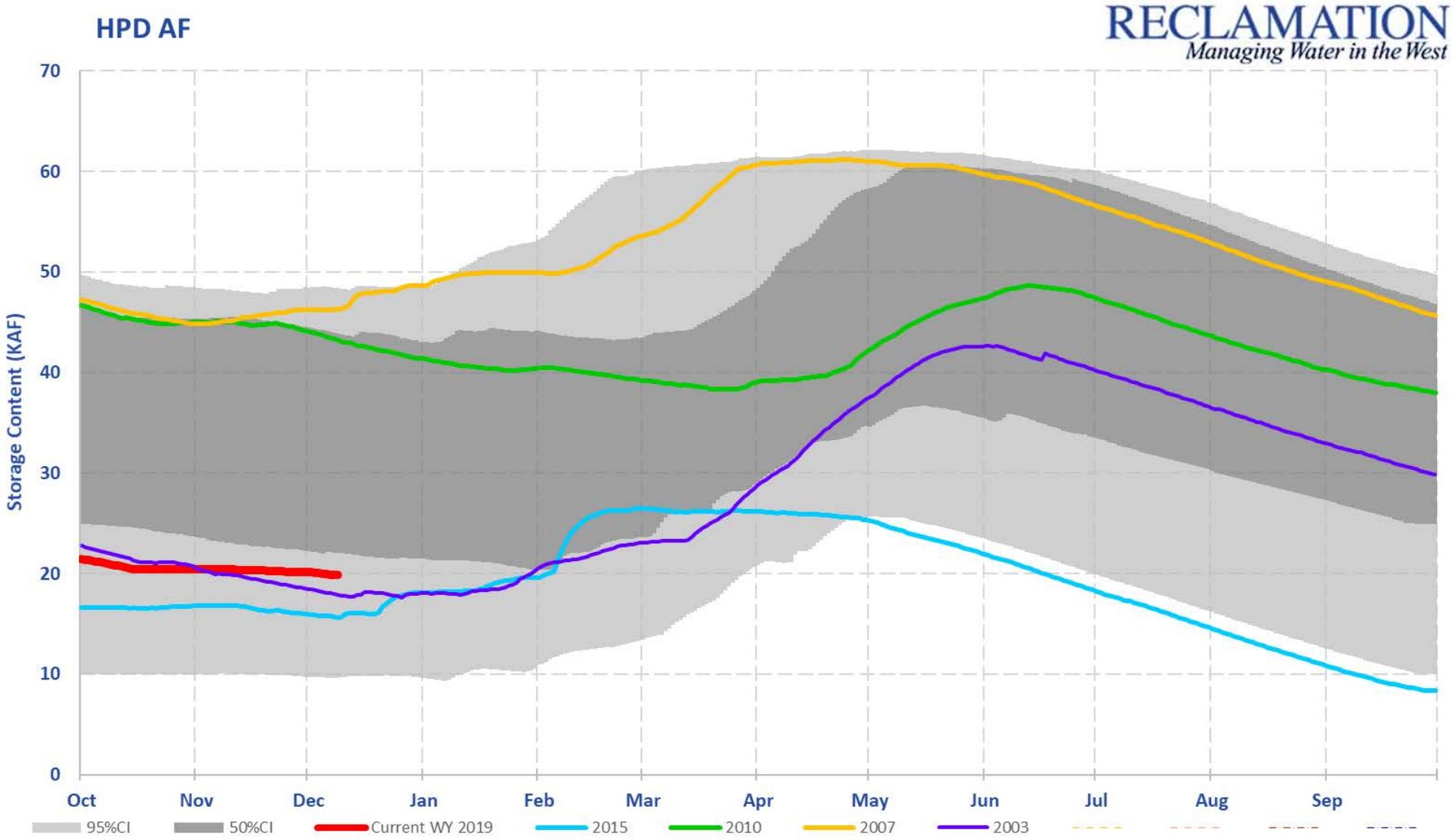
Burnt River Basin: Unity



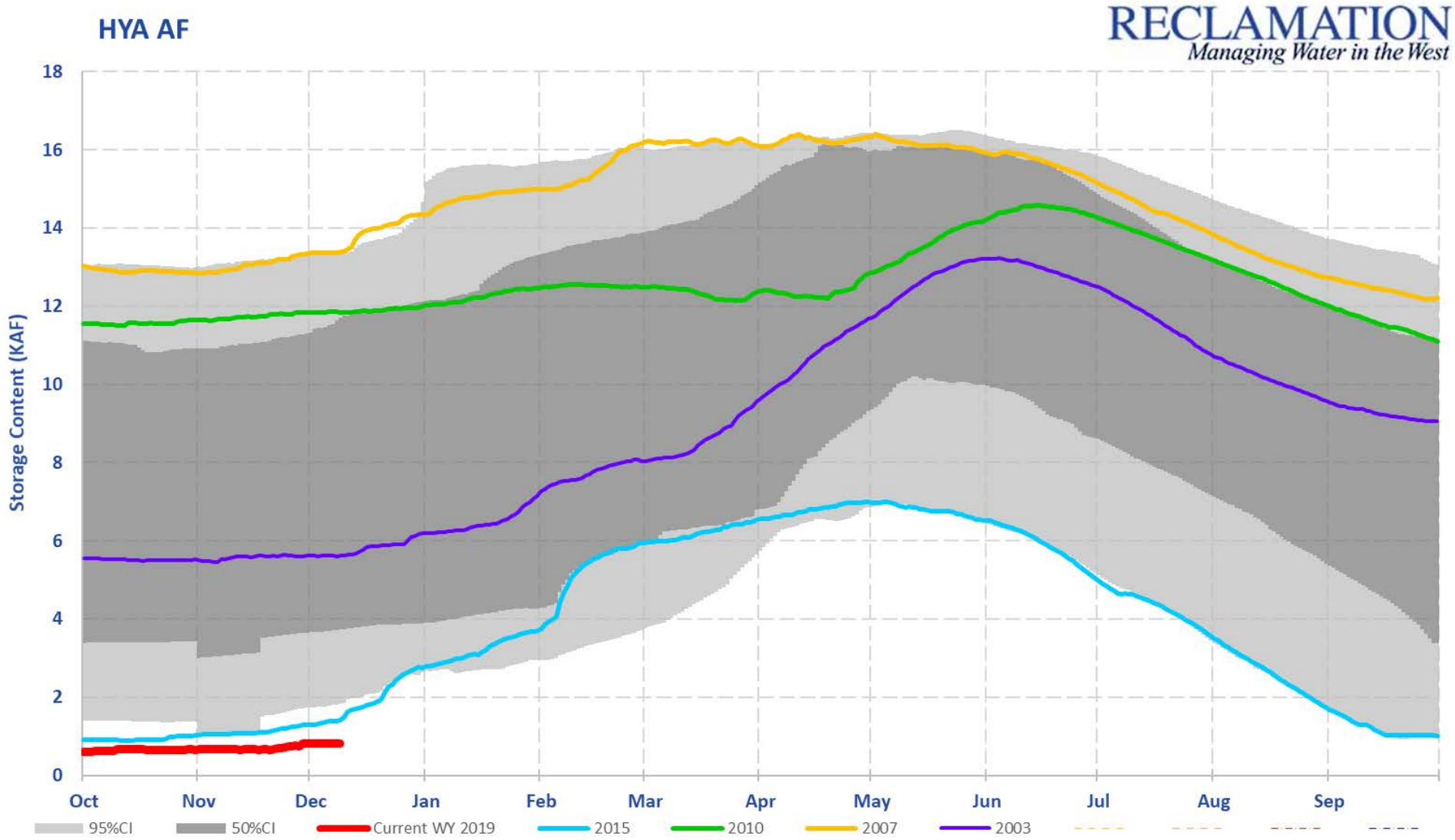
Rogue River Basin



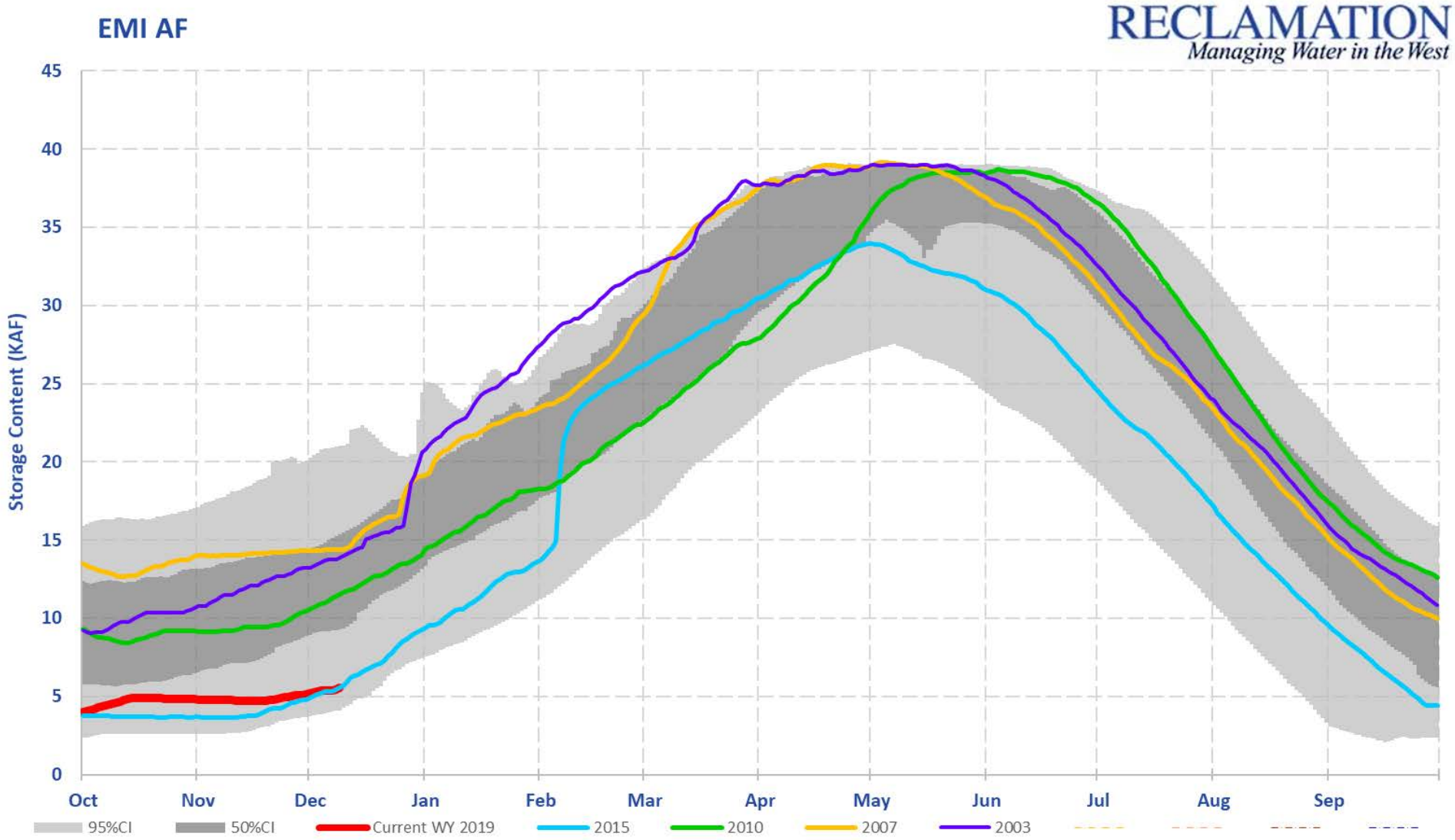
Rogue River Basin: Howard Prairie



Rogue River Basin: Hyatt



Rogue River Basin: Emigrant

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RECLAMATION
Managing Water in the West