

2019 Drought Overview and 2020 Forecast

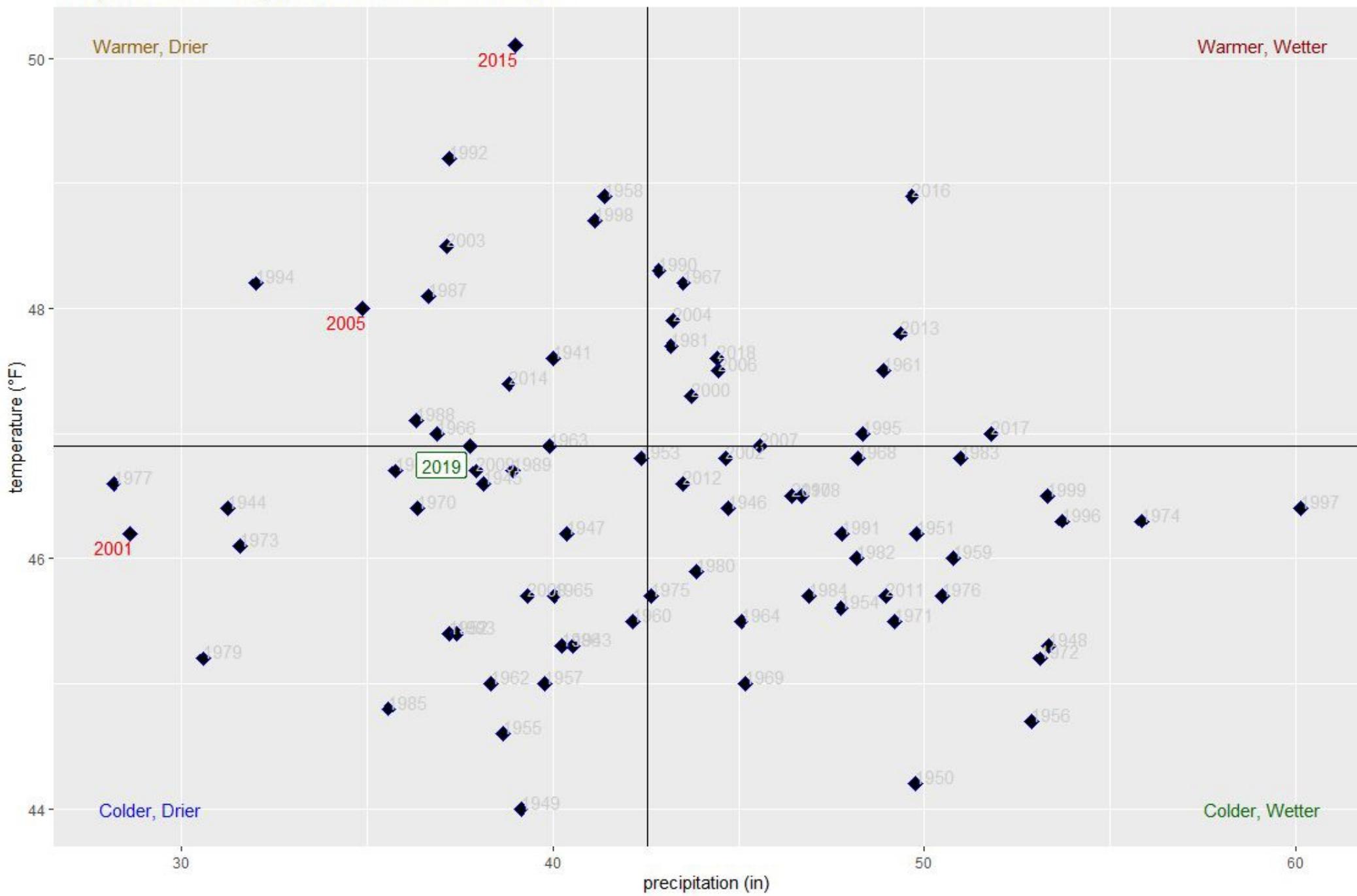
Columbia River Policy Advisory Group

Jeff Marti

December 12, 2019



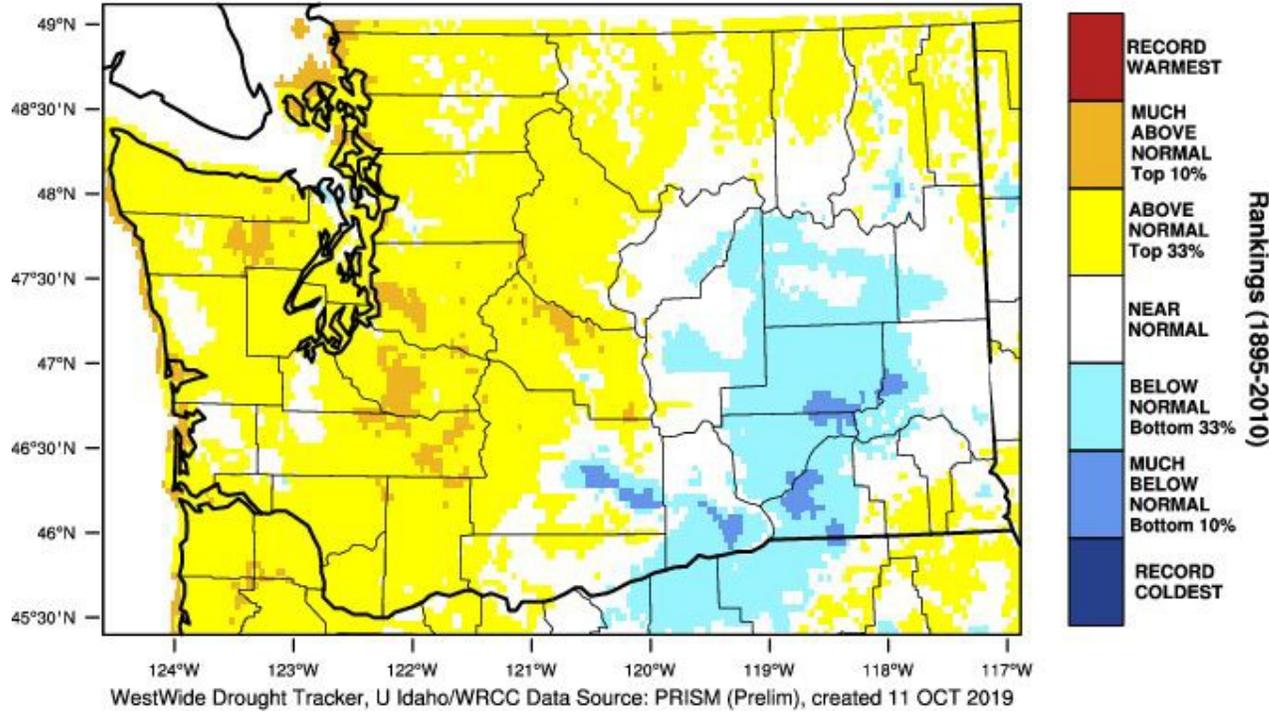
Temperature vs Precipitation, Water Years 1941-2019



Temperature and Precipitation Conditions

Oct 2018 – Sept 2019

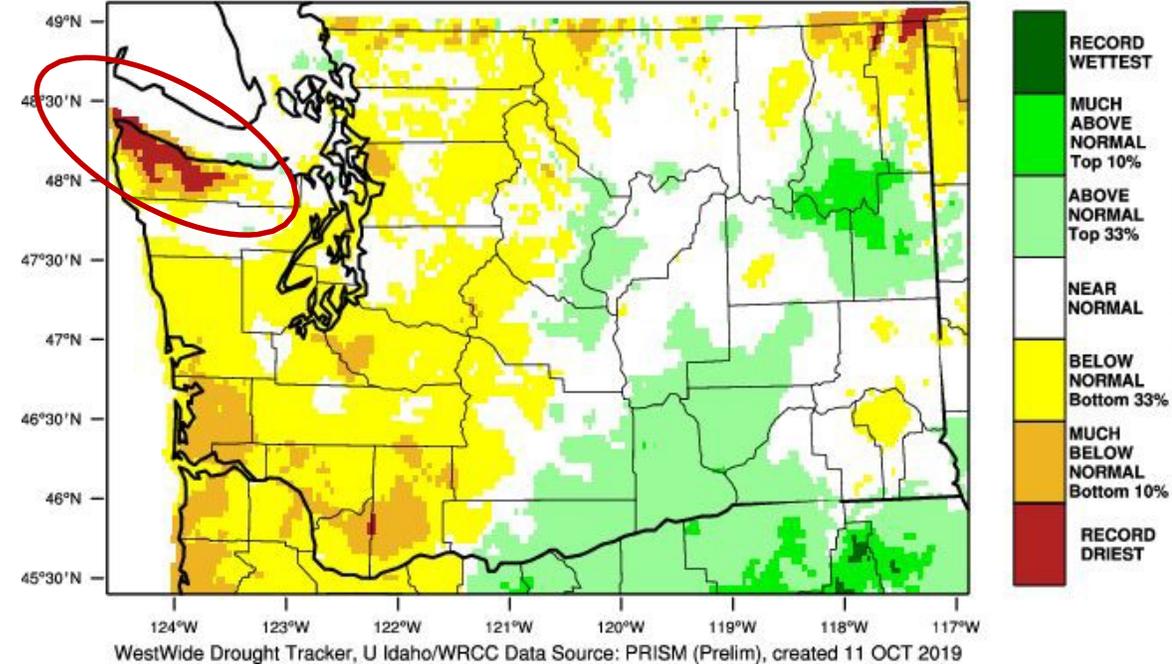
Washington - Mean Temperature
October-September 2019 Percentile



29th Warmest

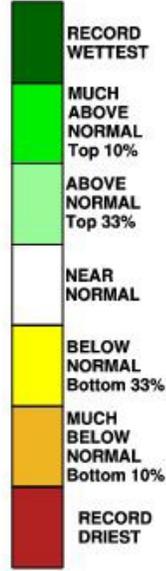
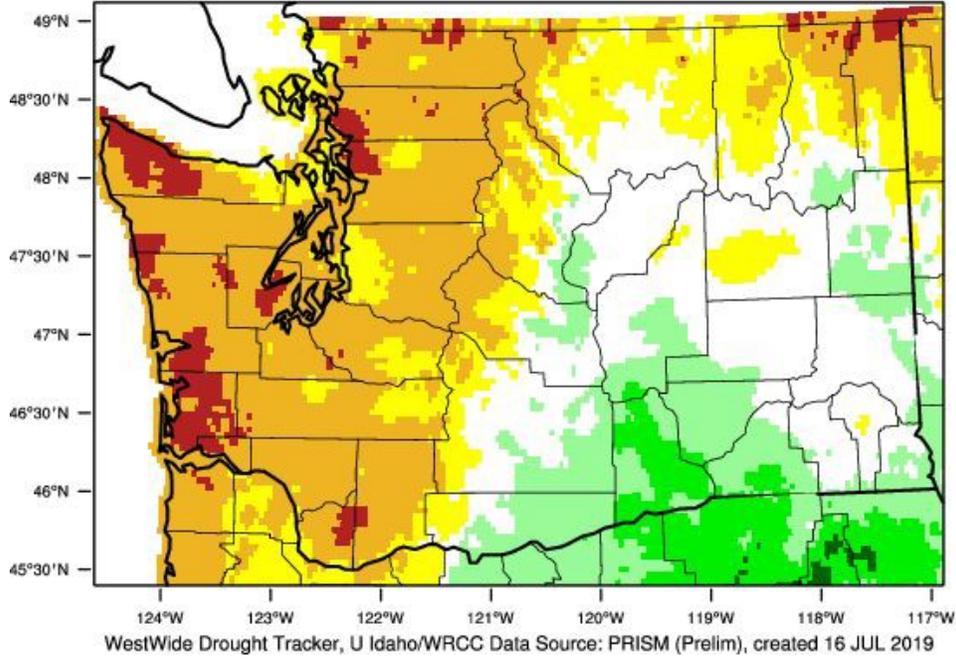
Interesting note: April – Sept was the 4th warmest for minimum temperatures

Washington - Precipitation
October-September 2019 Percentile



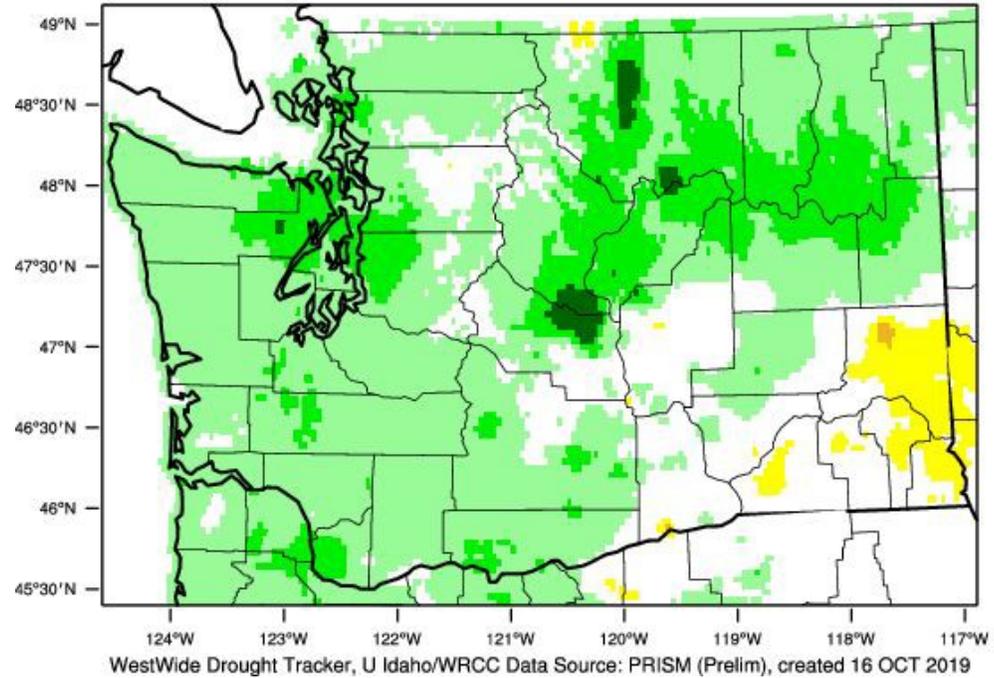
28th Driest statewide, but variable across regions

Washington - Precipitation
January-June 2019 Percentile



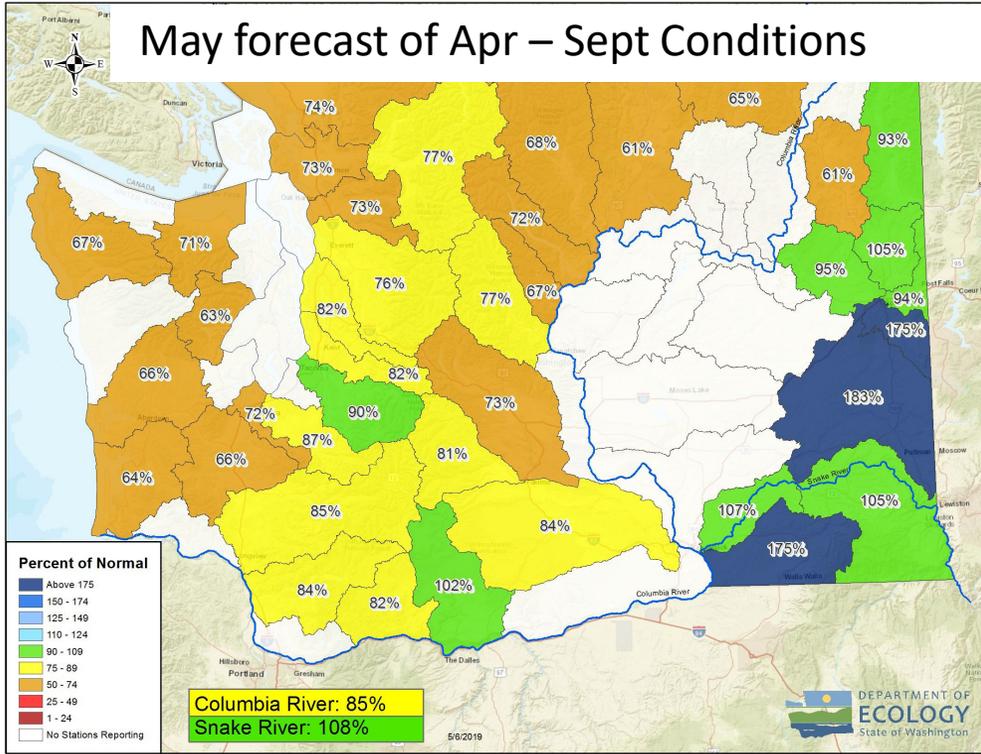
Rankings (1895-2010)

Washington - Precipitation
July-September 2019 Percentile

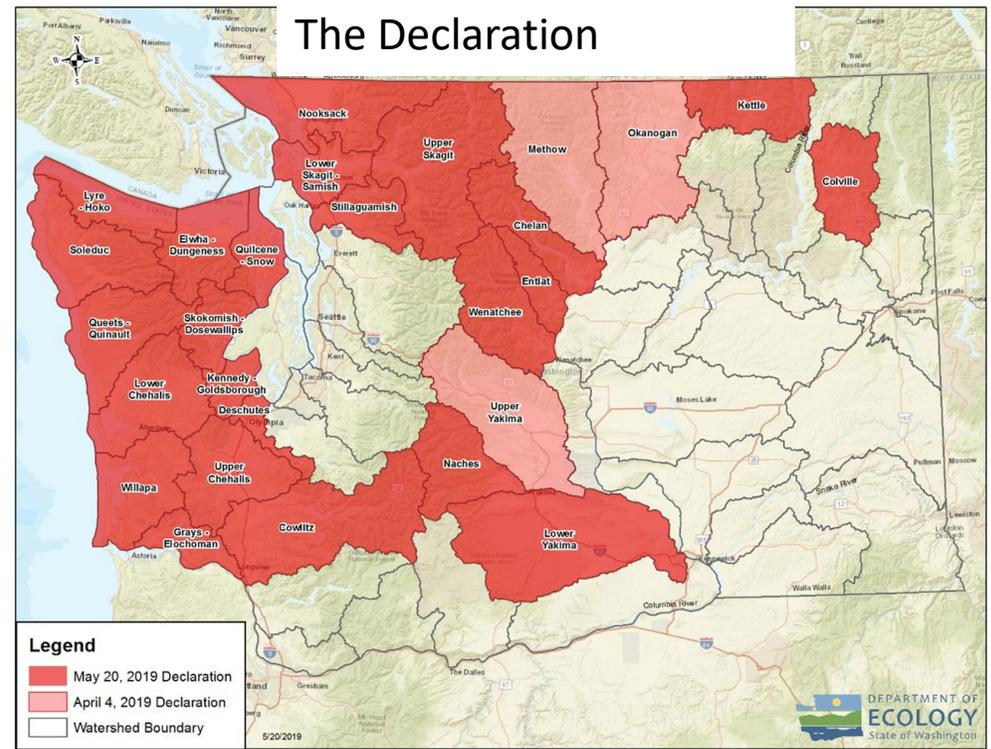


Rankings (1895-2010)

May forecast of Apr – Sept Conditions



The Declaration

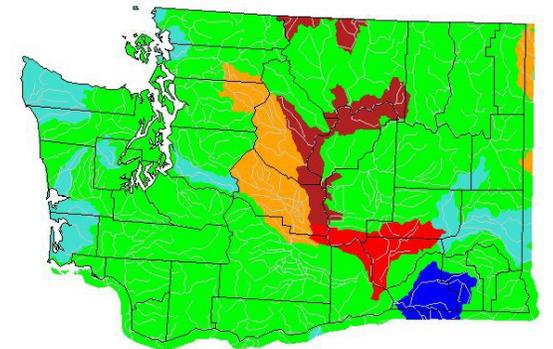
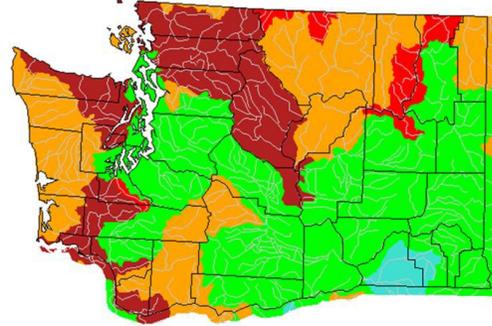
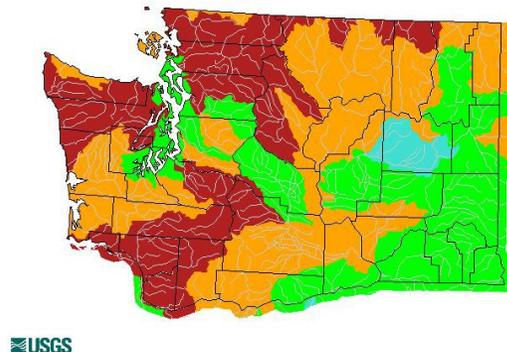
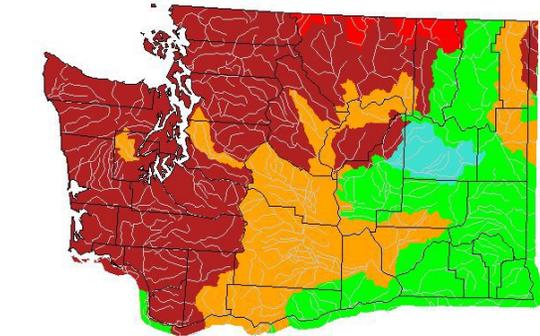


June 2019

July 2019

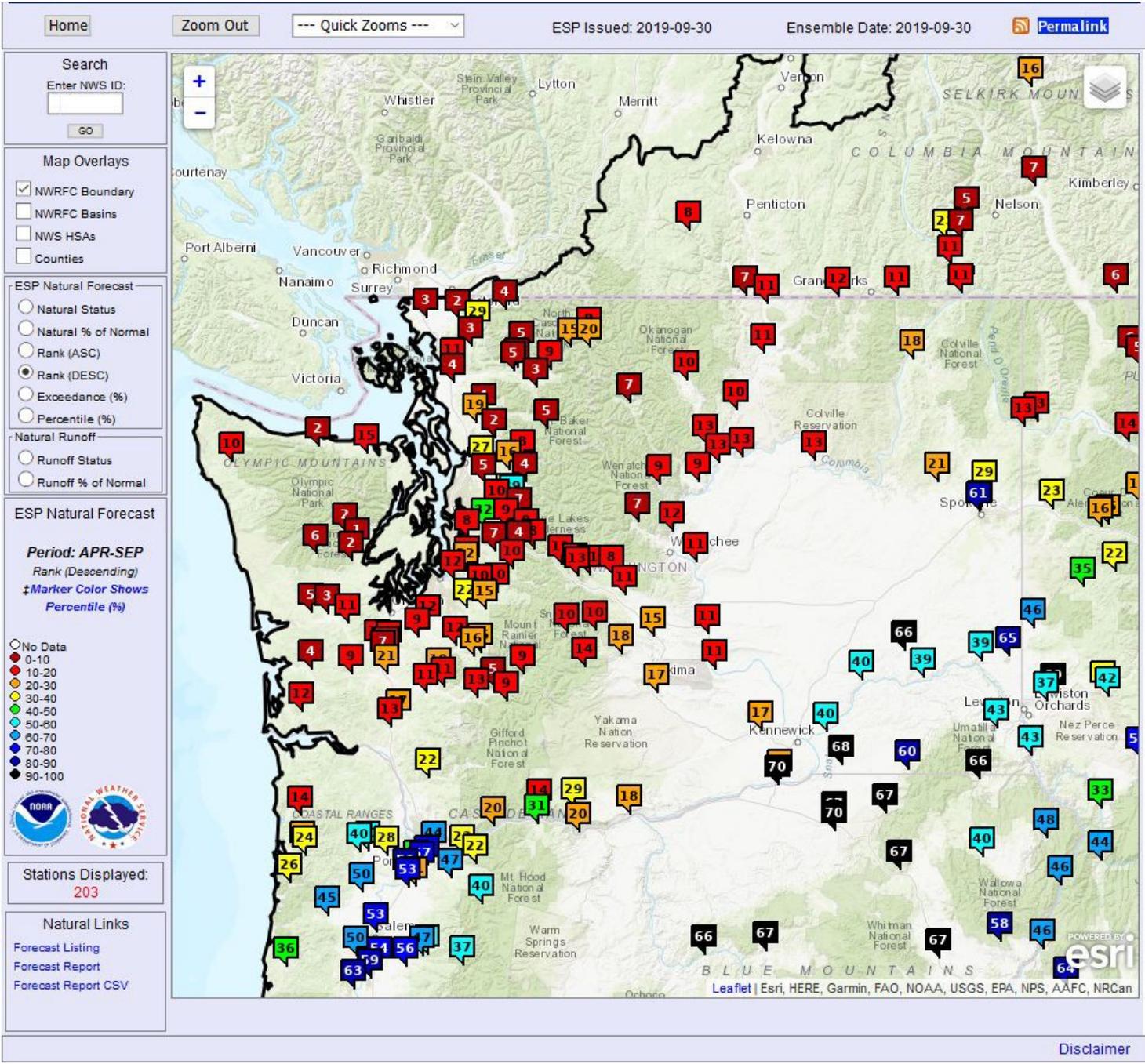
August 2019

September 2019



Explanation - Percentile classes

Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	



Emergency Drought Grants

7 approvals

- 6 drinking water
- 1 fisheries

Projects Total:

\$1,282,080

State Share: \$688,290

6 ineligible projects

- Project initiation or completion outside of emergency timeframe
- Project did not address drought caused hardship
- Not located in drought declared area
- Applicant did not respond to inquiries for additional information

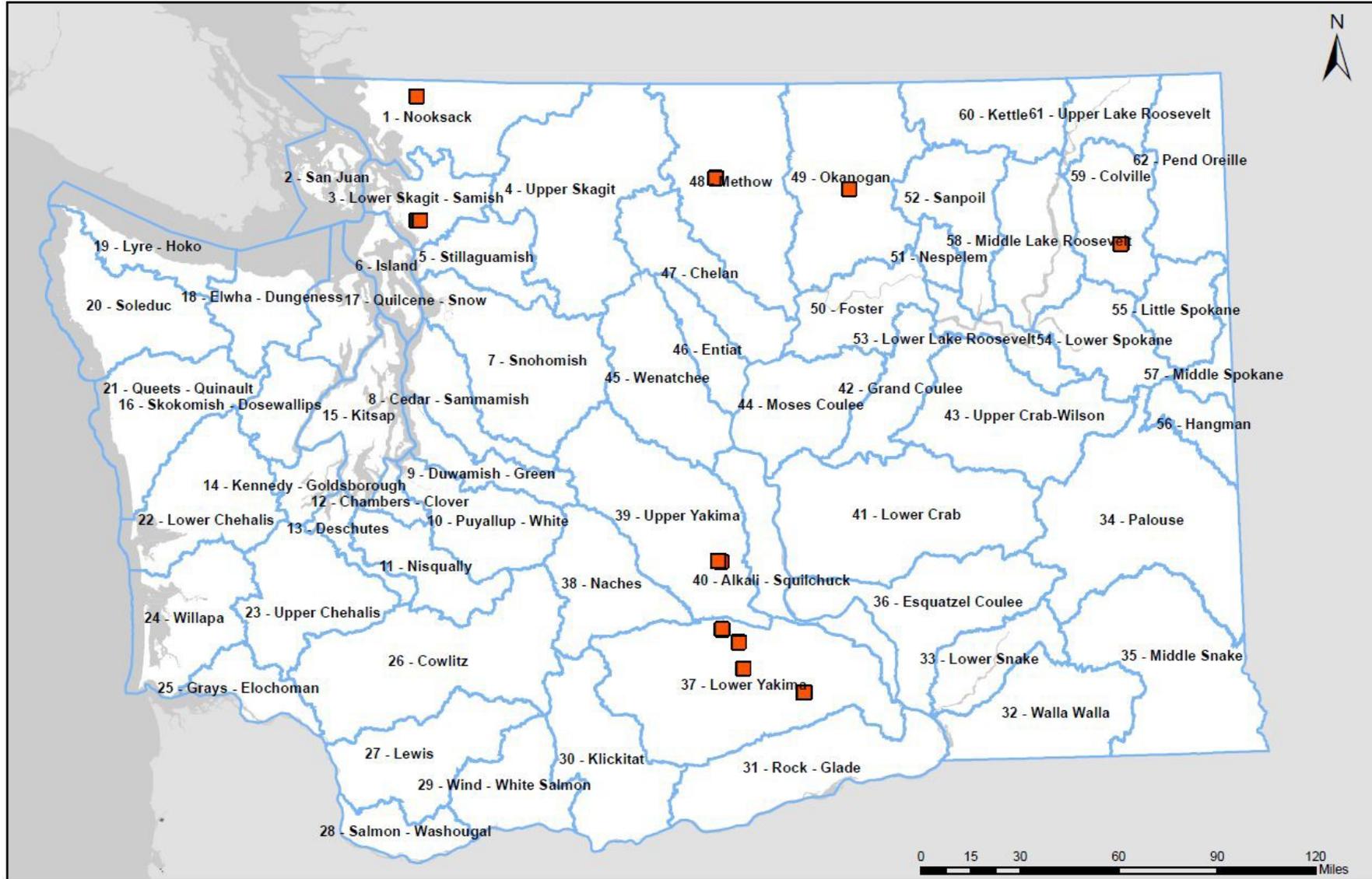


Emergency Water Right Requests

- 13 approved applications
- No denials
- All for purpose of irrigation
- Common themes
 - Obtaining authorization to access emergency wells, with mitigation
 - Gaining access to a senior water right to avoid curtailment of a junior water right
 - Moving from surface to groundwater, subject to instream flows
- 6 in the Yakima Basin
- 2 in the Methow Watershed
- 1 in the Colville Watershed
- 1 in the Okanogan Watershed
- 1 in the Nooksack Watershed
- 2 in the Skagit Watershed



Emergency Drought Authorizations 2019 (13 total)



Emergency Water Right Permit Points of Diversion

Water Right Curtailments

- Curtailment in adjudicated basins occurs when there is a call for water by senior users.
- Curtailment also occurs when river flows drop below levels adopted by rule to protect instream values.
- More than water right holders have been asked to stop diverting.

Area	Water Rights Curtailed	Water Right Holders
Methow River	60	77
Similkameen River	20	15
Okanogan River	79	89
Nooksack River	9	9
Wenatchee River	41	61
Yakima River Basin (Post 5/10/1905)	217	149
Skagit River	8	4
Tenmile Creek (Nooksack Basin)	1	1
Entiat River	11	11
Teanaway River (post-1884 priority date)	146	



Yakima Emergency Well Program

Evolution of Bureau of Reclamation forecast for Total Water Supply Available

- March 90 percent
- April 78 percent
- May 86 percent
- June 74 percent

- July 67 percent
- August 69 percent
- Sept 70 percent

- Emergency Well Program Activated following Bureau July Forecast
- Ecology authorizes quantity necessary to satisfy 70 percent of entitlement (e.g., difference between 69 and 70 percent)
- Mitigation cost-share is \$500 per acre foot
- Fewer applicants this year than in previous drought years.
- Total cost to purchase mitigation water will be modest ~\$24k
- Some applicants self-mitigated

Reports of impacts

Agriculture

- Reduced water allocation in the Yakima Basin
- Curtailment of junior water rights
- Reduced hay yields, fewer cuttings of hay
- Ended season on a wet note (Sept tied for 10th wettest)

Drinking Water

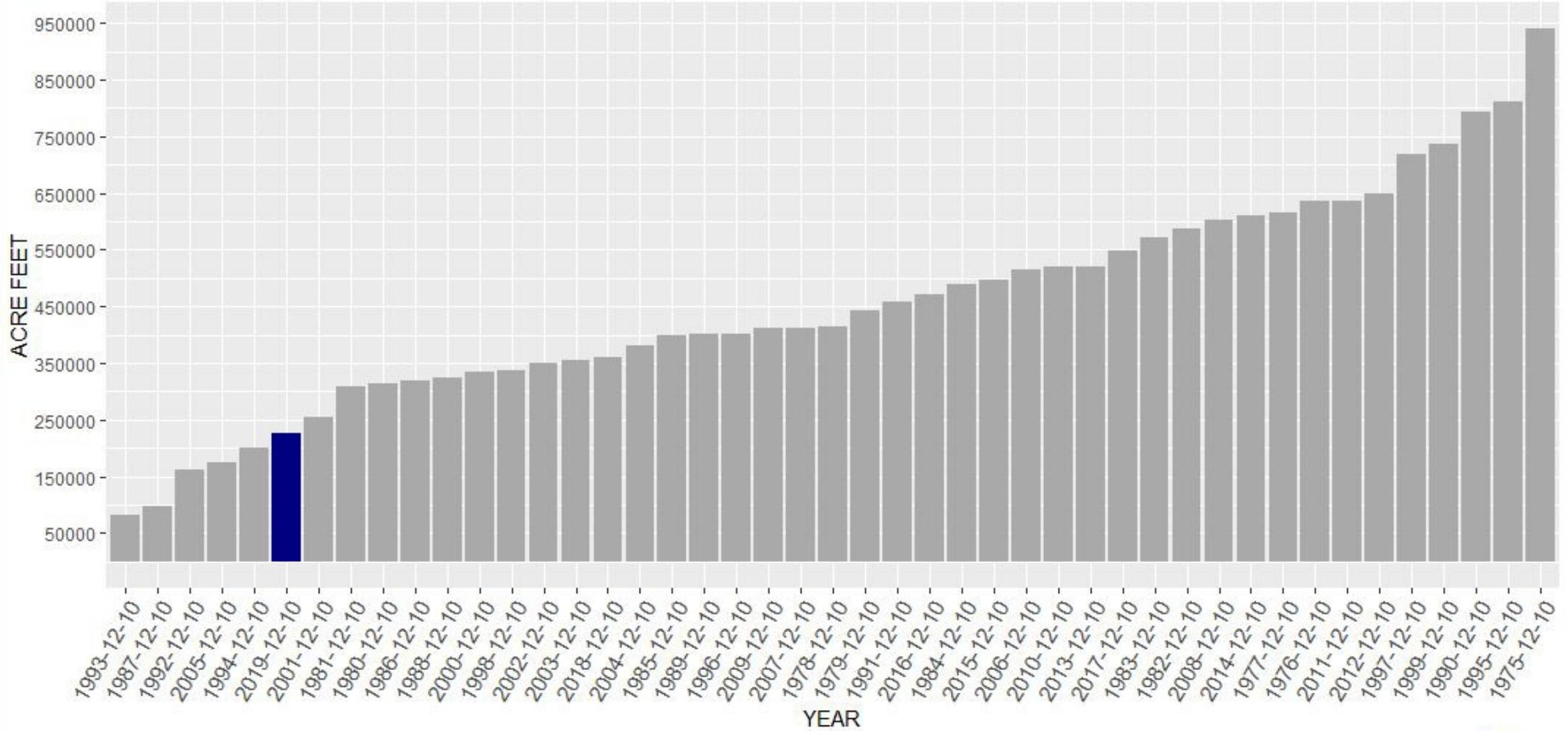
- Some Olympic Peninsula water systems are on voluntary or mandatory conservation
- Water hauling for one Clallam County system
- Two cities in Eastern Washington reported low water levels

Fish

- Low flow levels
- Fish stranding in upper Yakima



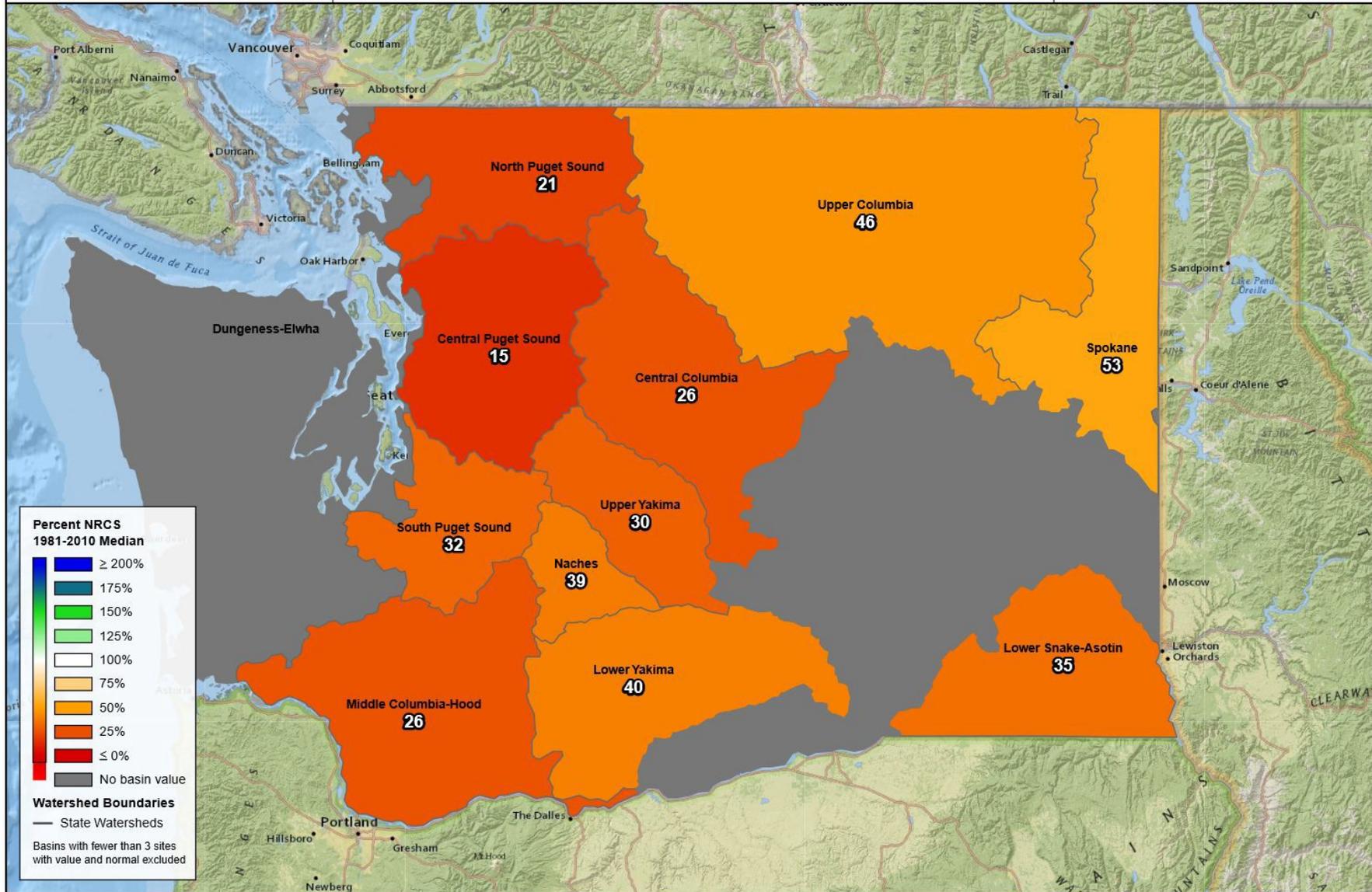
2019-12-10 YAKIMA TOTAL SYSTEM STORAGE



Snow Water Equivalent

Percent NRCS 1981-2010 Median

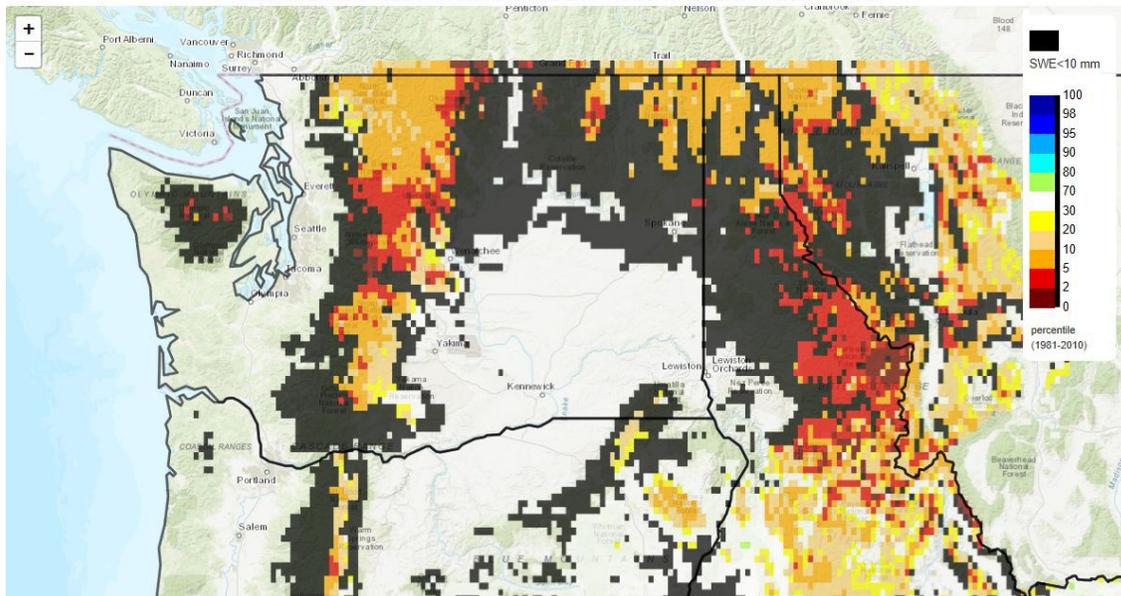
December 11, 2019, first of day



Snow Water Equivalent Percentile, Week 1, Next 1-7 Days

2019/12/10 - 2019/12/16

Multi-forecast mean from 16 VIC runs forced by downscaled CFSv2- forecast made 12Z-08-Dec-2019 to 6Z-09-Dec-2019

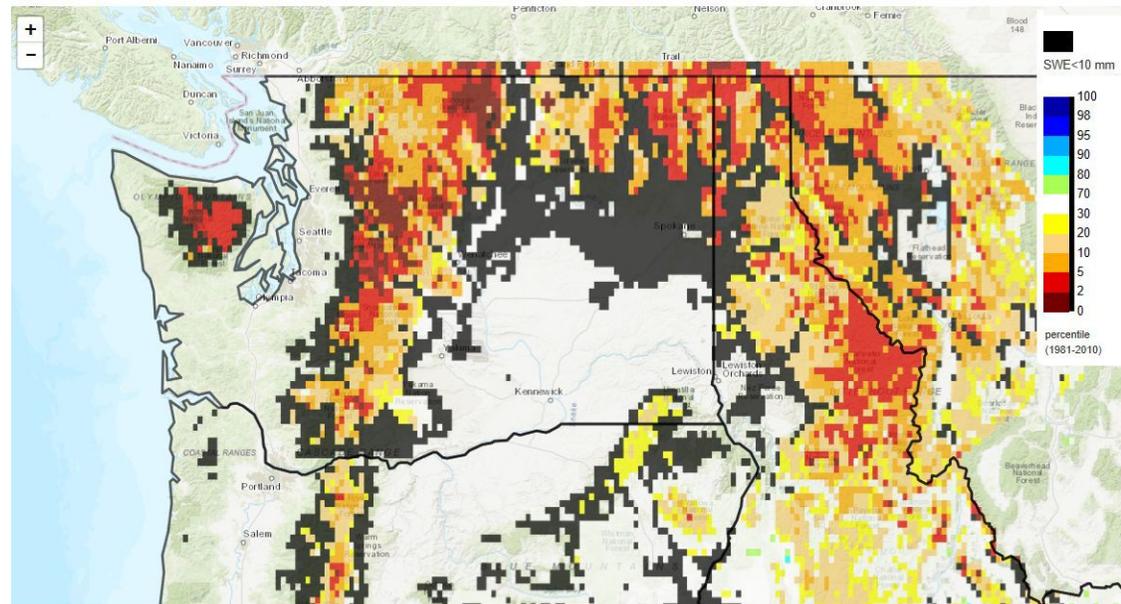


NW Climate Toolbox, Data: VIC-CFS-gridMET

Snow Water Equivalent Percentile, Week 2, Next 8-14 Days

2019/12/17 - 2019/12/23

Multi-forecast mean from 16 VIC runs forced by downscaled CFSv2- forecast made 12Z-08-Dec-2019 to 6Z-09-Dec-2019

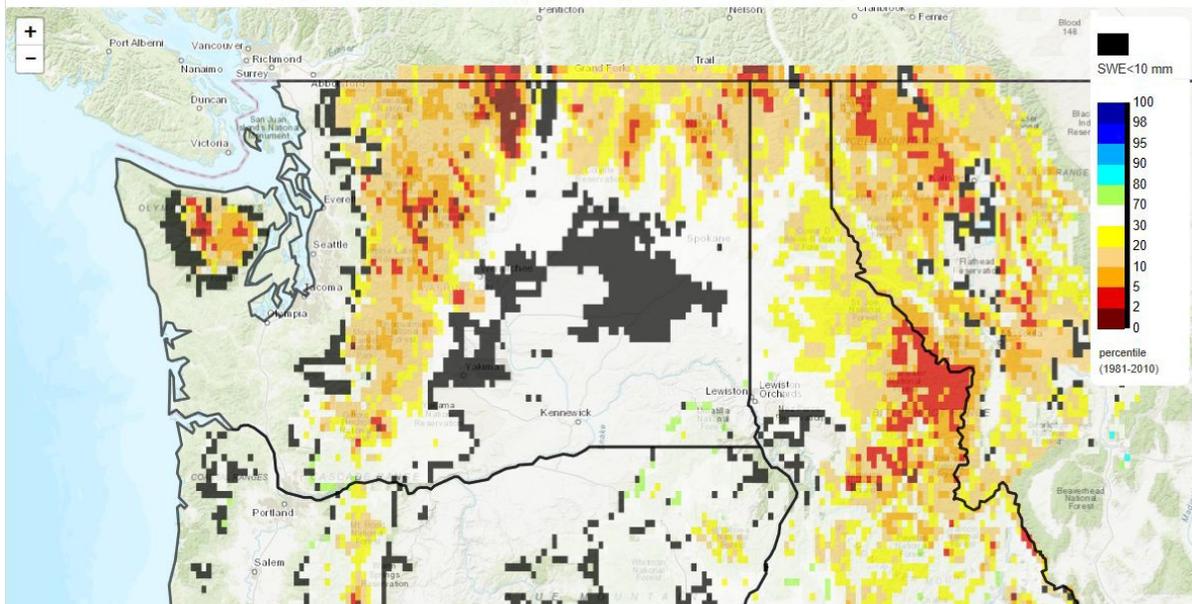


NW Climate Toolbox, Data: VIC-CFS-gridMET

Snow Water Equivalent Percentile, Week 3, Next 15-21 Days

2019/12/24 - 2019/12/30

Multi-forecast mean from 16 VIC runs forced by downscaled CFSv2- forecast made 12Z-08-Dec-2019 to 6Z-09-Dec-2019

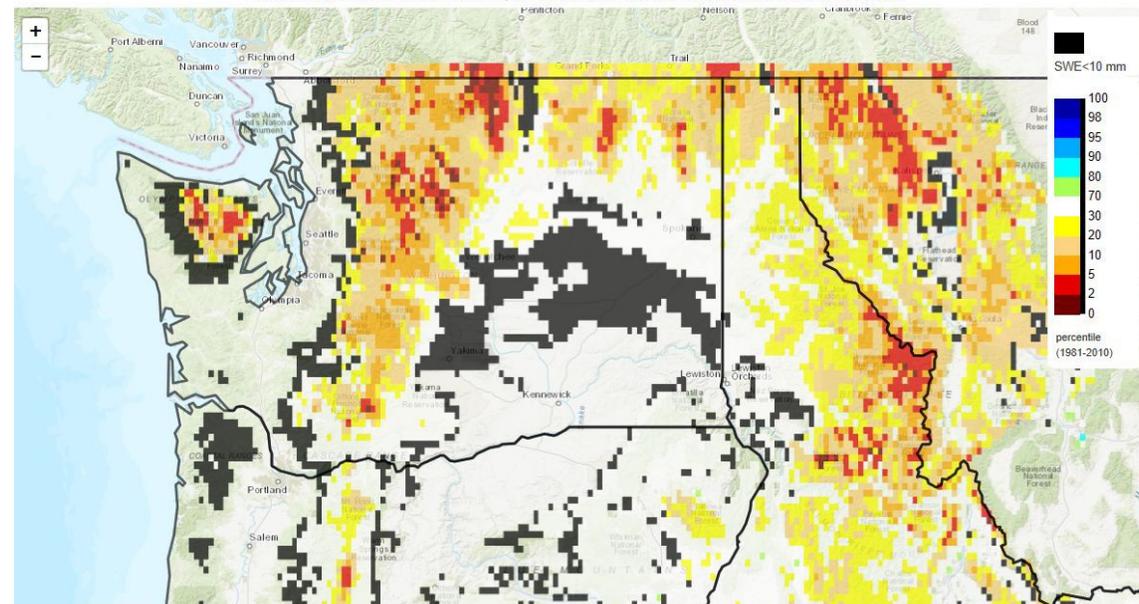


NW Climate Toolbox, Data: VIC-CFS-gridMET

Snow Water Equivalent Percentile, Week 4, Next 22-28 Days

2019/12/31 - 2020/01/06

Multi-forecast mean from 16 VIC runs forced by downscaled CFSv2- forecast made 12Z-08-Dec-2019 to 6Z-09-Dec-2019

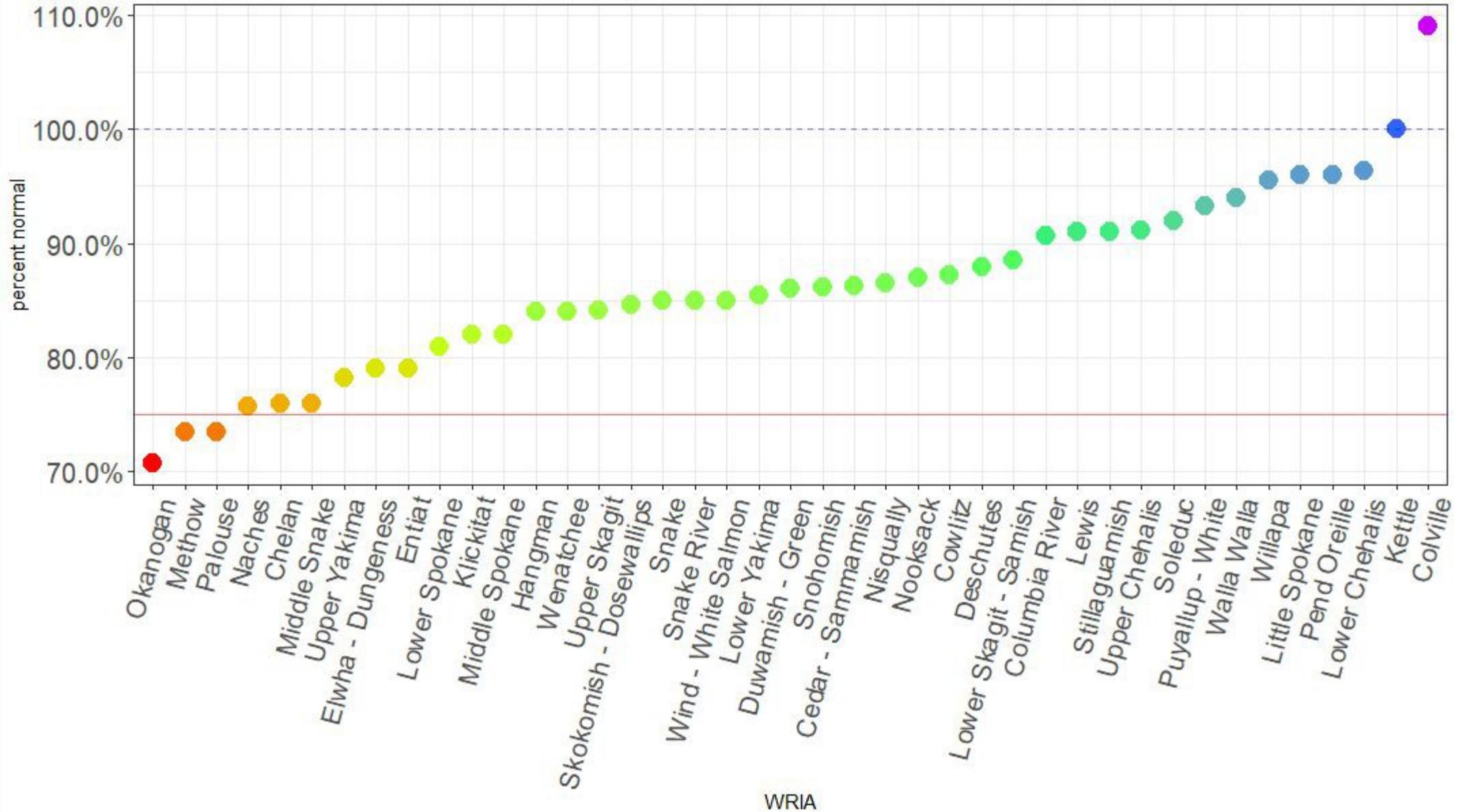


NW Climate Toolbox, Data: VIC-CFS-gridMET

So you're saying there's a chance:
A short history (WY 1990 – 2019) of snowpack rebounds

Month	Statewide Average Start	Count (N total = 30)	April 1st Goal for Statewide Average	Count of Times Goal Achieved	Comeback Kid Percent
Jan	Under 100 pct	16	100	7	44%
Jan	Under 75 pct	7	90	2	29%
Jan	Under 50 pct	3	80	2	67%
Feb	Under 100 pct	15	100	5	33%
Feb	Under 75 pct	7	90	1	14%
Feb	Under 50 pct	2	80	0	0%
Mar	Under 100 pct	15	100	4	27%
Mar	Under 75 pct	5	90	0	0%
Mar	Under 50 pct	2	80	0	0%

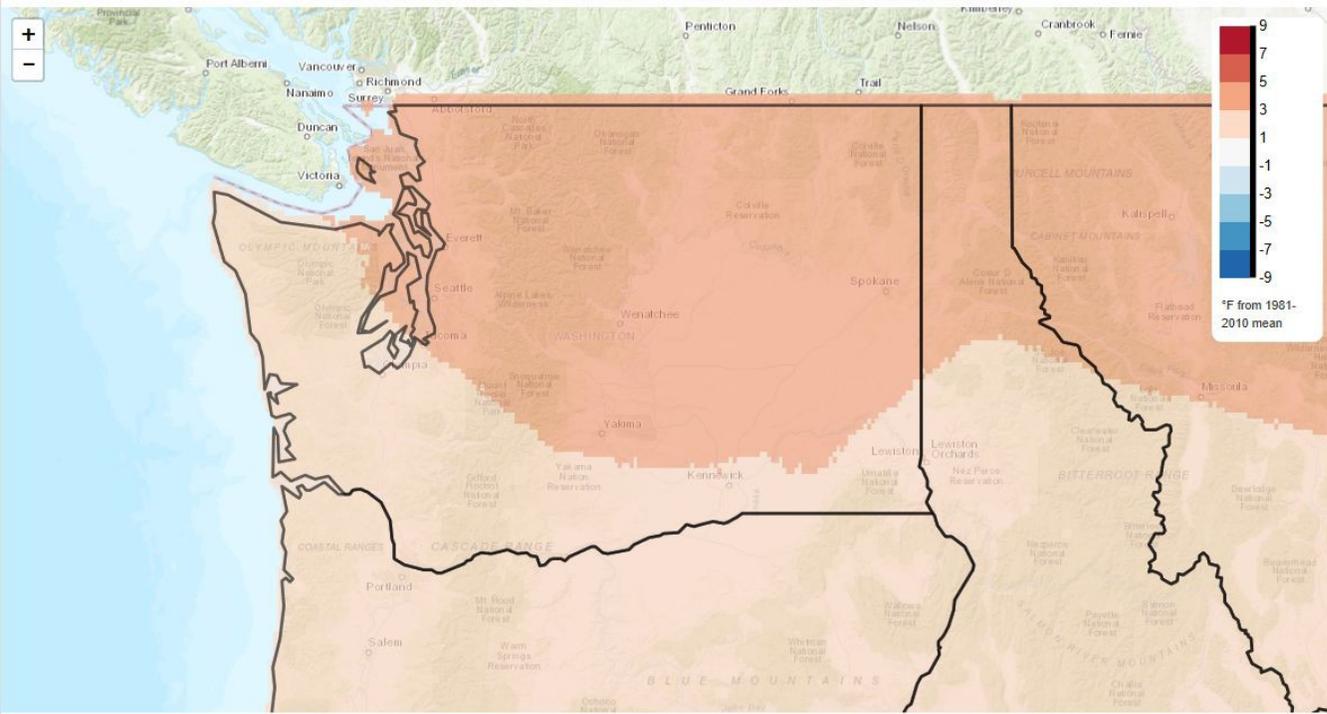
Forecasted Water Supply: Percent of Normal
Averaged by WRIA



Mean Temperature Anomaly, Week 1-4, Next 1-28 Days

2019/12/11 - 2020/01/07

Multi-forecast mean from 48 downscaled CFSv2 forecasts - forecast made 12Z-07-Dec-2019 to 6Z-10-Dec-2019

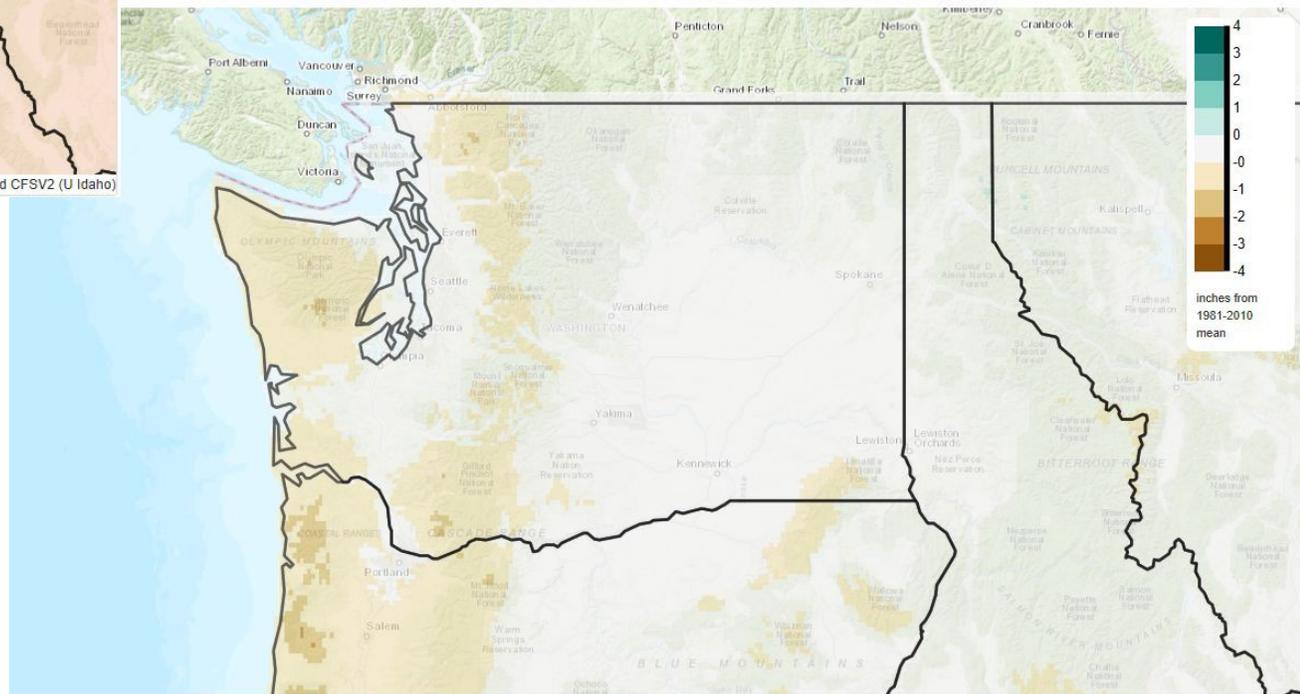


NW Climate Toolbox, Data Source: Downscaled CFSv2 (U Idaho)

Precipitation Anomaly, Week 1-4, Next 1-28 Days

2019/12/11 - 2020/01/07

Multi-forecast mean from 48 downscaled CFSv2 forecasts - forecast made 12Z-07-Dec-2019 to 6Z-10-Dec-2019



NW Climate Toolbox, Data Source: Downscaled CFSv2 (U Idaho)

Thank you

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