

DEPARTMENT OF
ECOLOGY
State of Washington

Drought and Water Supply Update

Columbia River Policy Advisory Group (CRPAG) Meeting

Caroline Mellor, Statewide Drought Lead

April 17, 2025

Quick agenda

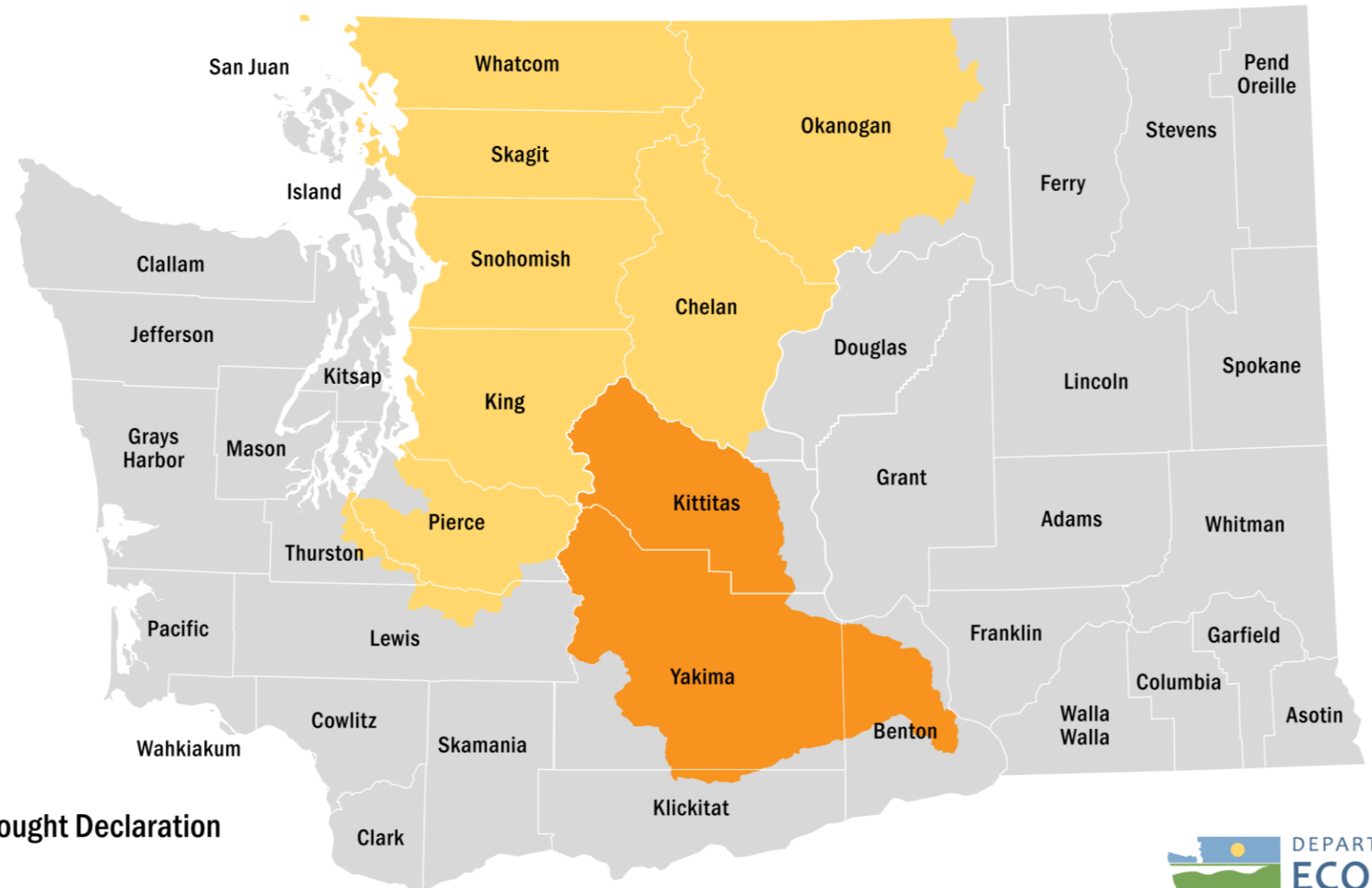
- 1** Goals for presentation
- 2** Drought declaration and process
- 3** Water supply and drought conditions update
- 4** Next steps for drought

Drought Emergency Declaration

On April 8, 2025, Ecology declared drought in the **Upper Yakima, Lower Yakima and Naches watersheds**, due to low reservoir storage and compounding deficits.

Drought advisory for Pierce, King, Snohomish, Skagit and Whatcom counties, along with Okanogan and Chelan counties.

*The utilities of Everett, Seattle and Tacoma do not expect issues for their customers.



Drought Conditions

Drought conditions - two requirements:

1. **Hydrologic threshold** – An area is receiving, or is projected to receive, less than seventy-five percent of normal water supply.
2. **Hardship threshold** – Water users and the environment are or are expected to experience undue hardship.

See: [RCW 43.83B.405](#) and [WAC 173-166-050](#).

Water Supply Factors

Water
year to
date

- Snowpack
- Precipitation
- Temperature
- Soil moisture

Hydrologic
threshold
for
drought
was met
in 2025

Forecasts

- Streamflow
- Precipitation
- Temperature
- Soil moisture



Anticipated Hardships

Three types of hardship:

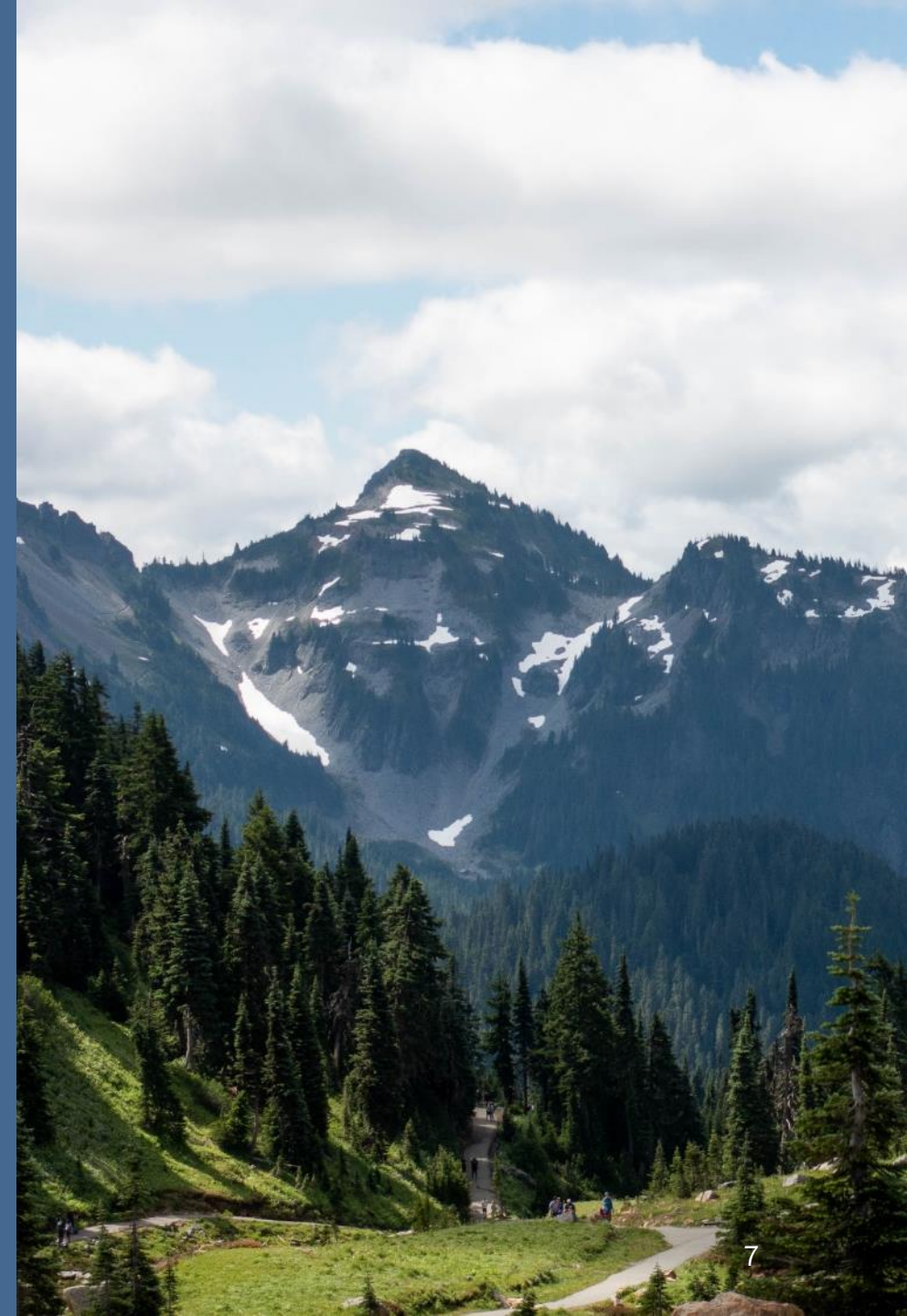
- Instream flows, fish, and wildlife
- Agricultural and livestock
- Public water systems and domestic uses

Multiple irrigation districts in Yakima Basin watersheds have contingency plans for water transfers and shared a need to use this spring.





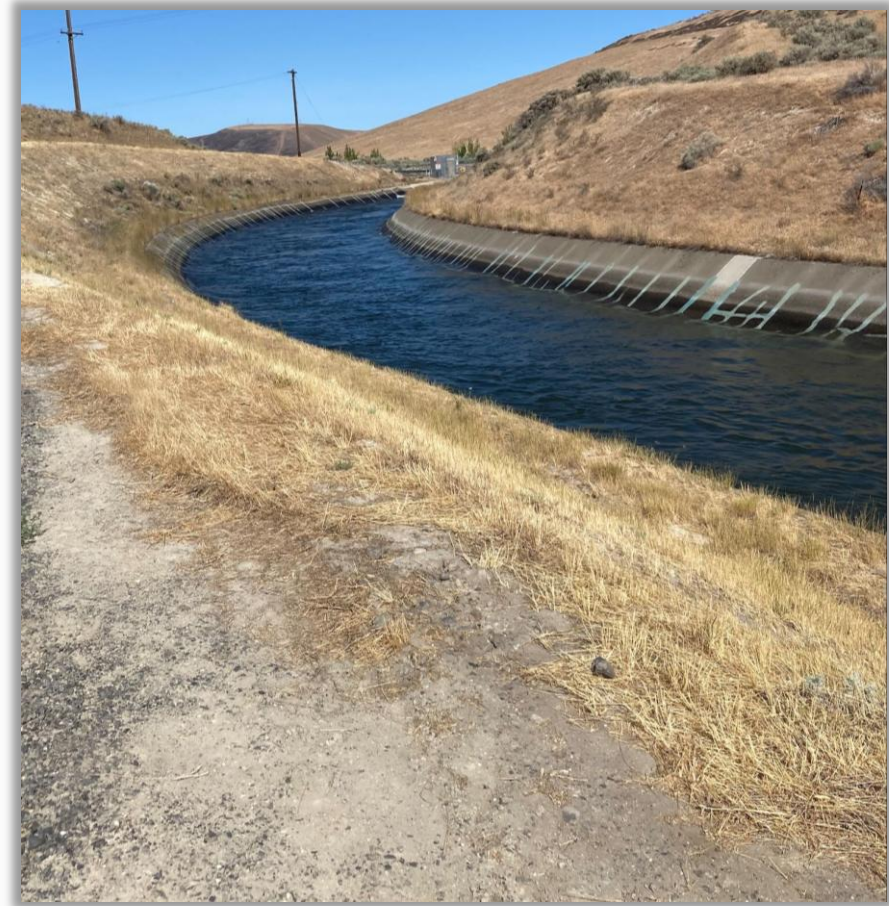
Implications of a Drought Declaration



What Does a Declaration Do?

Provides Ecology with the authority to:

1. Expedite emergency water transfer applications.
2. Establish a grant program to mitigate hardships to water users and the environment.



Drought Response Funding

Grants to governmental entities:

- Federally recognized Tribes
- Counties, cities, and towns
- Water and sewer districts
- Public utility districts
- Port districts Conservation districts Irrigation districts
- Watershed management partnerships

Additional Implications

State agencies – Ecology can enter into interagency agreements to fund drought response efforts

- Examples: DOH, DFW, SCC, AGR

Eligibility for federal drought funding

Important communications tool

Example Drought Response Grant Projects

Agriculture or livestock

- Purchasing or leasing water or water rights
- Replacing intakes, pumps, and related accessories

Public water supply

- Transporting emergency water supplies
- Implementing water conservation strategies

Fisheries and wildlife

- Eliminating migration barriers
- Modifying stream channels adjacent to a hatchery

Drought Advisory

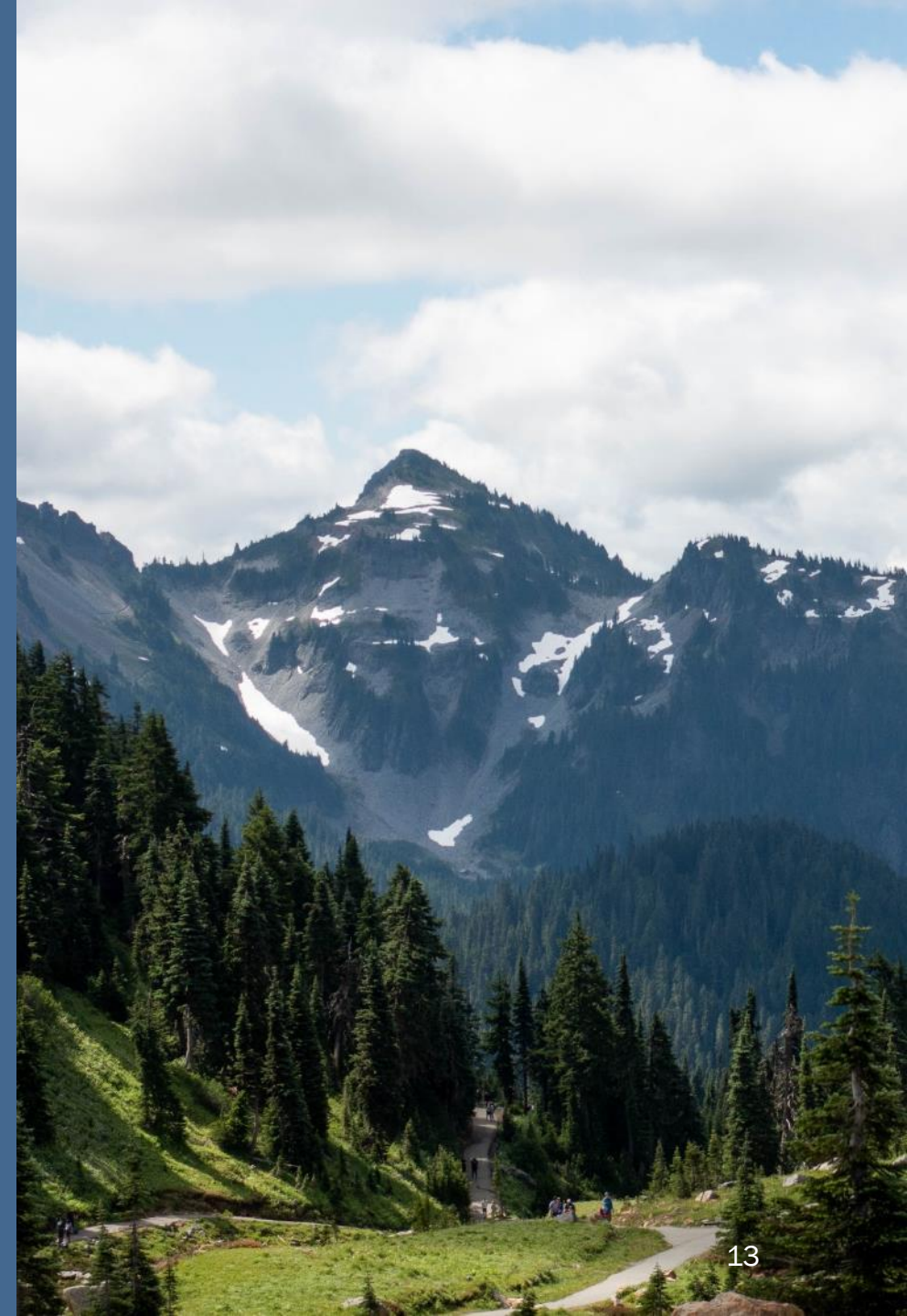
Advisory tool:

- Indicates that drought conditions may develop.
- Public awareness & preparation tool to support readiness.
- Drought relief tools not available in these areas.





Drought Conditions and Water Supply Outlook



Snow Water Equivalent

Washington SNOTEL

Percent NRCS 1991-2020 Median

April 16, 2025, end of day

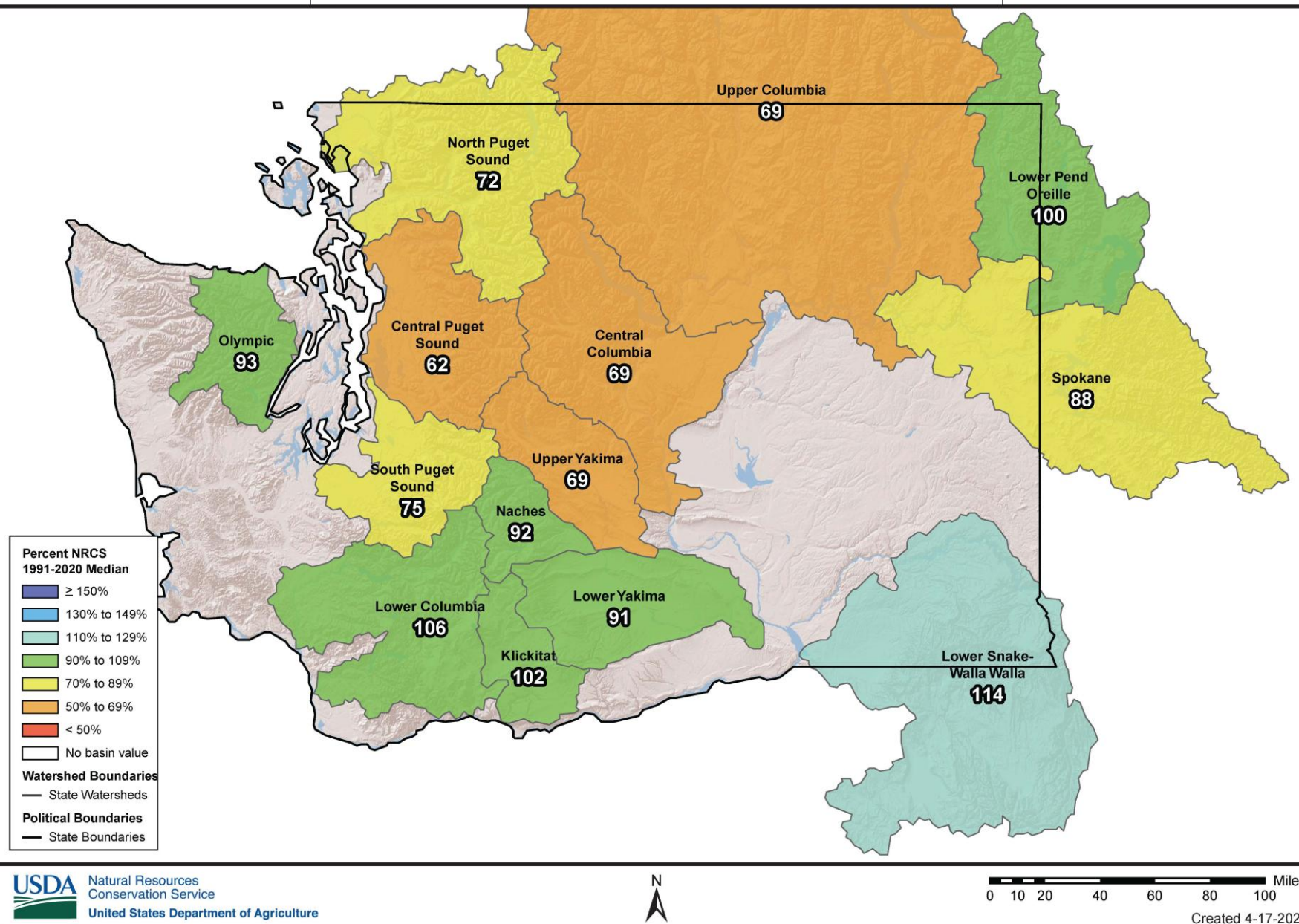


Snowpack Conditions

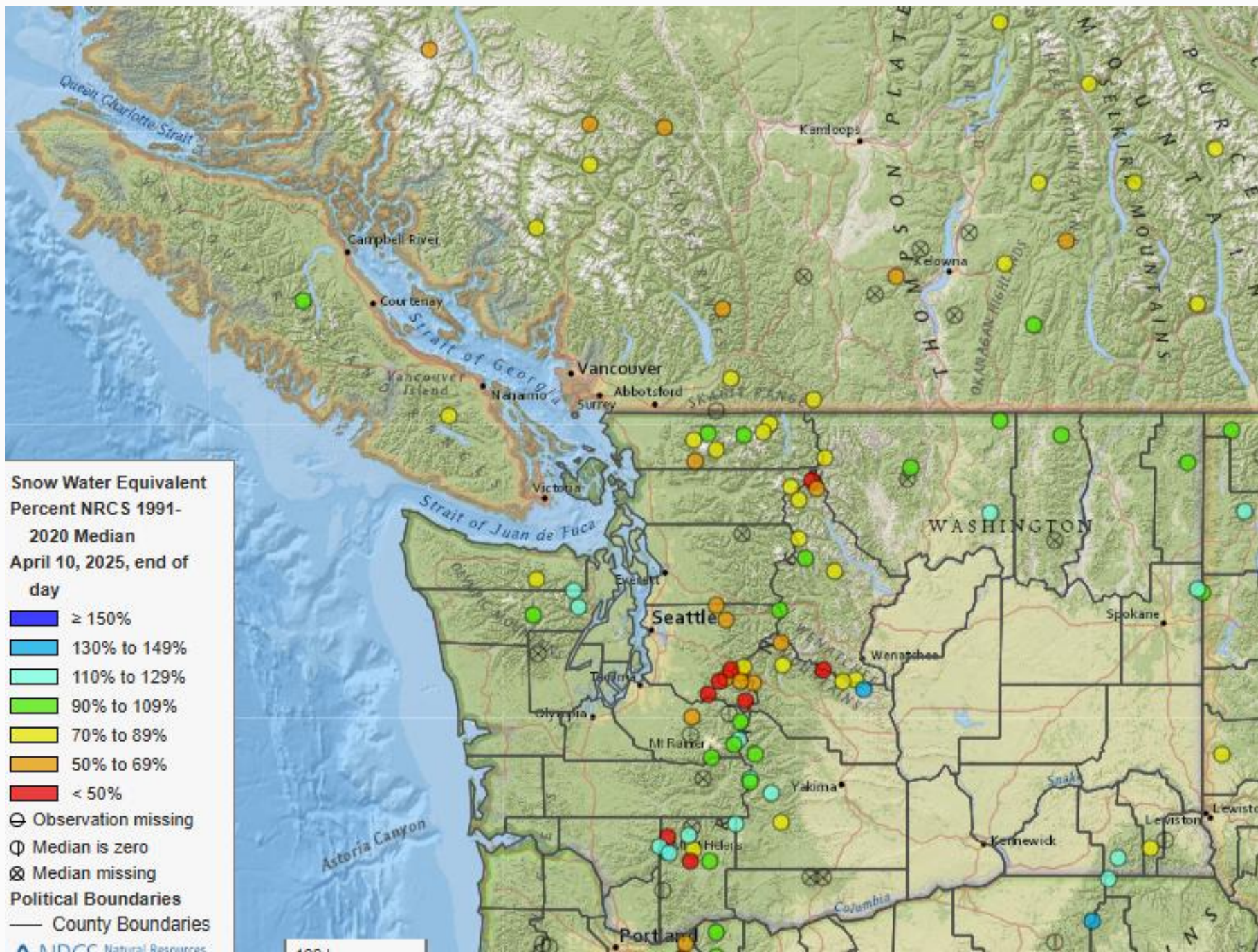
Statewide Snow Water Equivalent (SWE) = 81% today.

Statewide water year to date precipitation = 90%

(Source: NRCS).

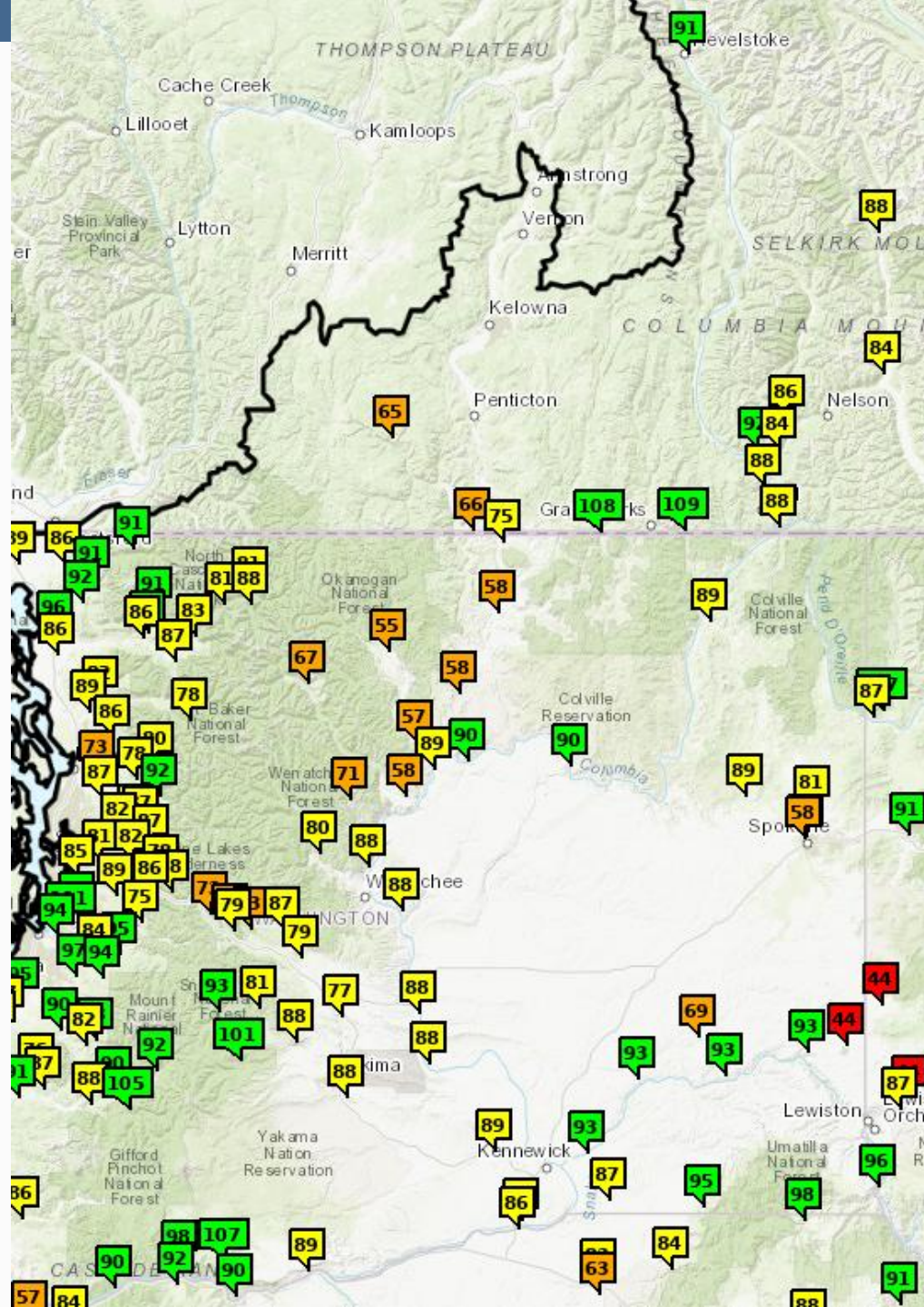


Snowpack Conditions by SNOTEL sites



(Source: NRCS).

Streamflow natural forecast as % of normal



Snowpack as Snow Water Equivalent (SWE)



Washington SNOTEL Snow/Precipitation Update Report

Based on Mountain Data from NRCS SNOTEL Sites

Provisional data, subject to revision

Data based on the first reading of the day (typically 00:00) for Thursday, April 17, 2025

Basin Site Name	Elev (ft)	Snow Water Equivalent			Water Year-to-Date Precipitation		
		Current (in)	Median (in)	Pct of Median	Current (in)	Median (in)	Pct of Median

UPPER COLUMBIA

Swamp Creek	3930	0.0	13.5 ₍₂₁₎	0	25.9	37.4 ₍₂₁₎	69
Gold Mountain	4500	1.8	N/A	*	20.4	N/A	*
Salmon Meadows	4460	3.3	6.4	52	15.1	13.7	110
Muckamuck	4470	0.0	N/A	*	14.4	N/A	*
Sentinel Butte	4680	6.6	8.7 ₍₁₇₎	76	15.7	13.7 ₍₁₇₎	115
Rainy Pass	4880	23.8	37.4	64	33.6	47.7	70
Moses Mtn	5470	17.2	14.8 ₍₂₉₎	116	22.5	18.4 ₍₂₉₎	122
Gold Axe Camp	5380	7.2	7.6 ₍₁₀₎	95	14.3	11.0 ₍₁₀₎	130
Harts Pass	6490	35.7	46.6	77	31.5	41.4	76

Basin Index (%)

69

87

CENTRAL COLUMBIA

Trinity	2900	19.6	23.2 ₍₁₀₎	84	48.4	58.0 ₍₁₀₎	83
Fish Lake	3430	13.0	25.6	51	41.5	53.8	77
Pope Ridge	3600	7.8	11.8	66	25.3	28.4	89
Stevens Pass	3940	29.1	35.0	83	60.7	77.0	79
Blewett Pass	4240	0.2	7.0	3	24.7	28.5	87
Upper Wheeler	4330	6.6	10.0	66	20.3	20.6	99
Park Creek Ridge	4610	29.3	44.3	66	49.4	58.8	84
Rainy Pass	4880	23.8	37.4	64	33.6	47.7	70
Grouse Camp	5390	11.3	15.6	72	24.8	27.2	91
Trough	5480	9.6	8.7	110	22.8	21.3	107
Lyman Lake	5990	42.1	61.8	68	56.4	66.4	85

Basin Index (%)

69

84

Washington SNOTEL Snow/Precipitation Update Report

Based on Mountain Data from NRCS SNOTEL Sites

Provisional data, subject to revision

Data based on the first reading of the day (typically 00:00) for Thursday, April 17, 2025

Basin Site Name	Elev (ft)	Snow Water Equivalent			Water Year-to-Date Precipitation		
		Current (in)	Median (in)	Pct of Median	Current (in)	Median (in)	Pct of Median

LOWER COLUMBIA

Pepper Creek	2140	0.0	0.0 ₍₁₃₎	*	55.4	54.1 ₍₁₃₎	102
Calamity	2510	0.0	0.0 ₍₁₂₎	*	83.3	82.0 ₍₁₂₎	102
Spencer Meadow	3400	21.9	29.2	75	82.7	85.6	97
June Lake	3440	42.2	37.7	112	128.4	140.3	92
Spirit Lake	3520	0.0	0.0	*	72.4	73.4	99
Skate Creek	3770	31.5	N/A	*	74.7	N/A	*
Lone Pine	3940	45.3	37.9	120	85.8	84.0	102
Sheep Canyon	3990	40.9	34.9	117	135.5	113.6	119
Surprise Lakes	4280	47.1	47.3	100	82.2	86.8	95
Pinto Rock	4450	38.1	N/A	*	57.7	N/A	*
Swift Creek	4440	90.9	69.9 ₍₁₈₎	130	167.7	133.4 ₍₁₈₎	126
White Pass E.S.	4440	24.0	21.4	112	40.6	38.8	105
Potato Hill	4480	34.2	29.4	116	51.3	54.2	95
Paradise	5150	69.9	79.2	88	84.8	98.5	86
Cayuse Pass	5260	63.0	61.5 ₍₁₄₎	102	-M	80.6 ₍₁₁₎	*
Morse Lake	5400	58.6	54.7	107	70.4	72.0	98
Pigtail Peak	5800	53.3	55.0	97	57.9	69.8	83

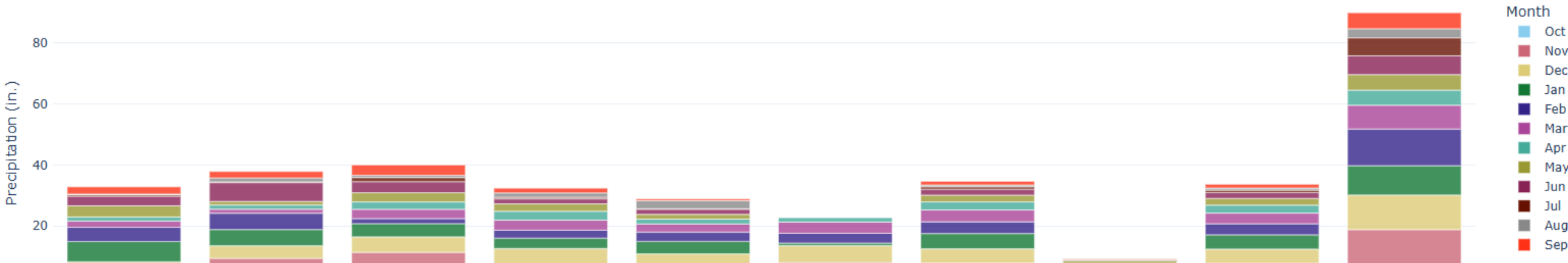
Basin Index (%)

106

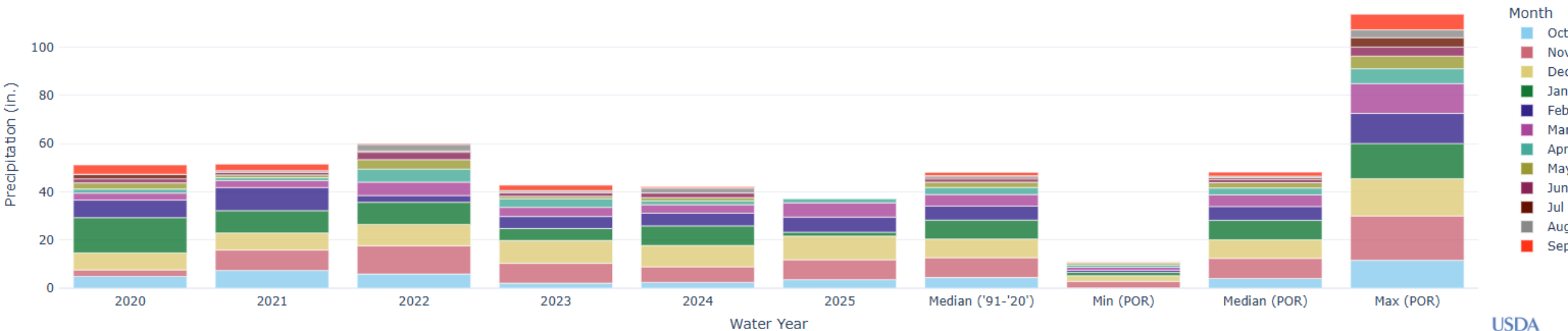
101

Water Year Precipitation

UPPER COLUMBIA MONTHLY PRECIPITATION SUMMARY

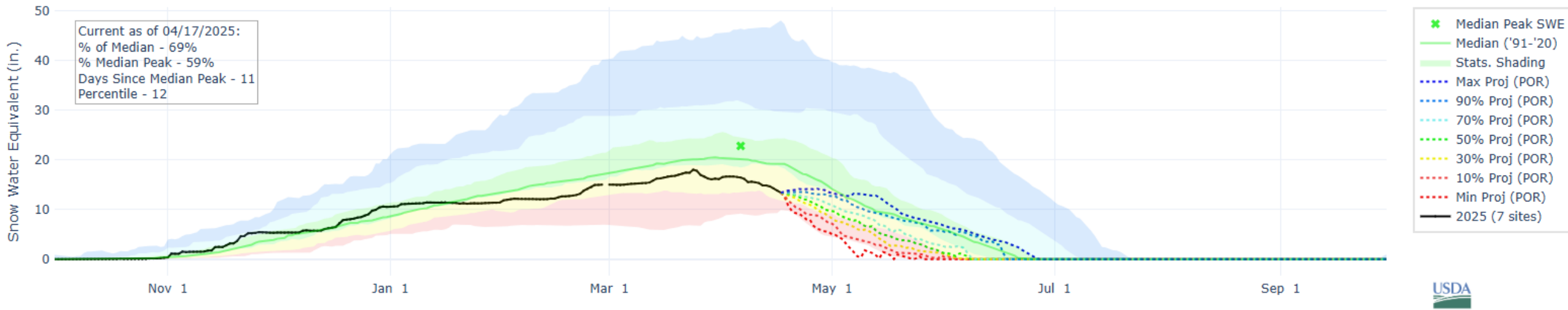


CENTRAL COLUMBIA MONTHLY PRECIPITATION SUMMARY

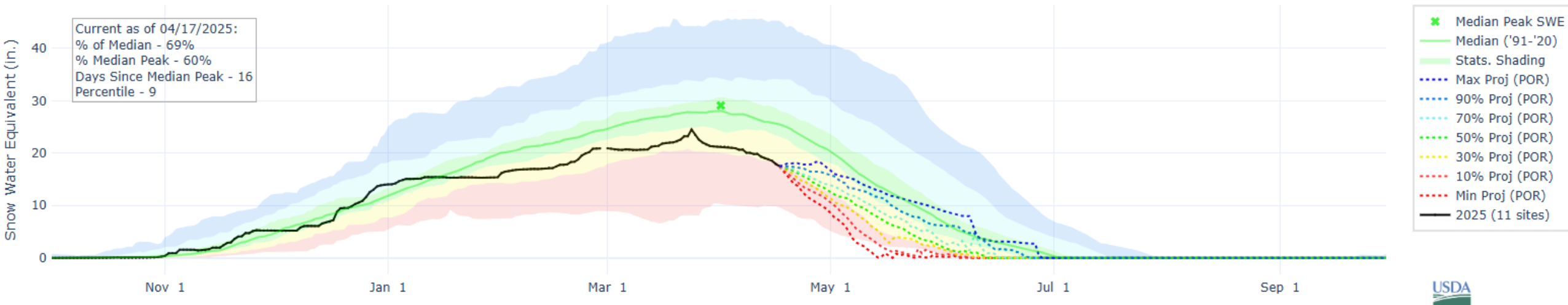


Water Year Projection SWE by Basin

SNOW WATER EQUIVALENT PROJECTION IN UPPER COLUMBIA

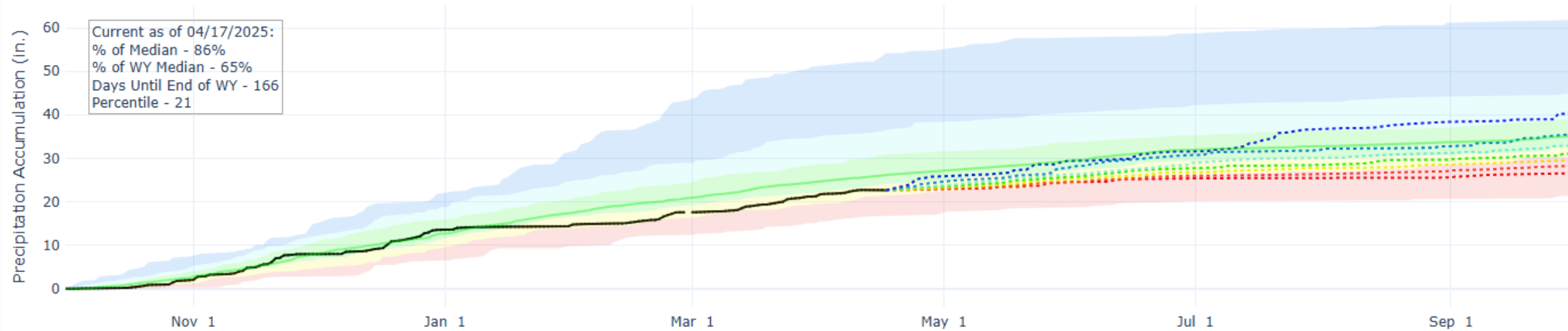


SNOW WATER EQUIVALENT PROJECTION IN CENTRAL COLUMBIA

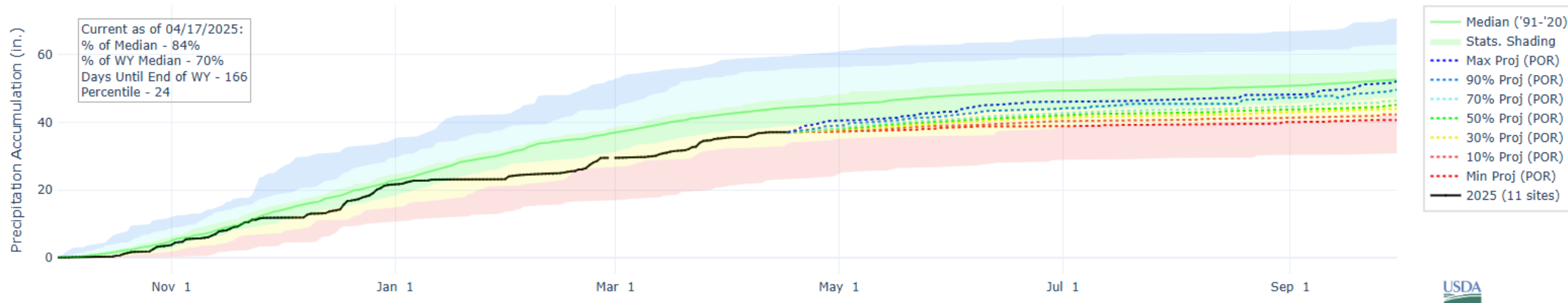


Water Year Projection Precipitation

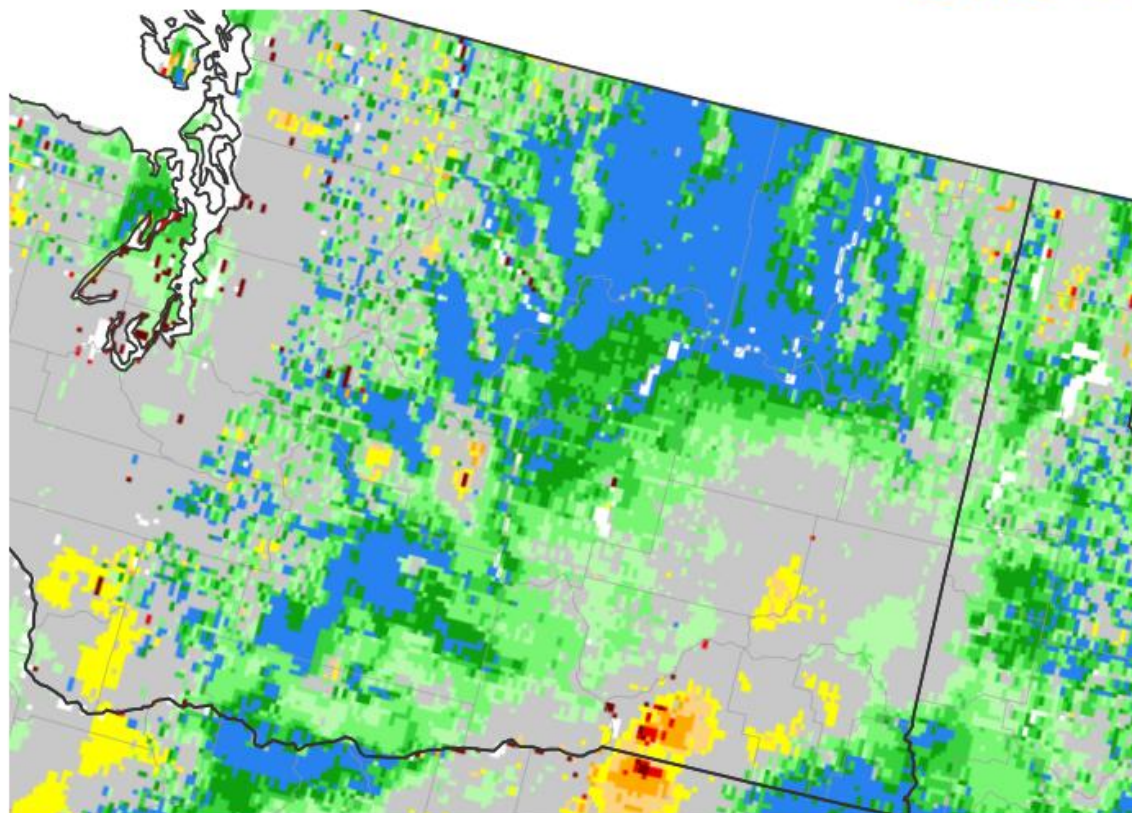
PRECIPITATION ACCUMULATION PROJECTION IN UPPER COLUMBIA



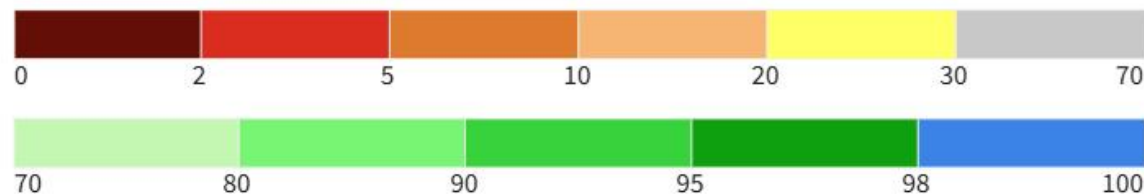
PRECIPITATION ACCUMULATION PROJECTION IN CENTRAL COLUMBIA



0–100 cm Soil Moisture Percentile



0–100 cm Soil Moisture Percentile



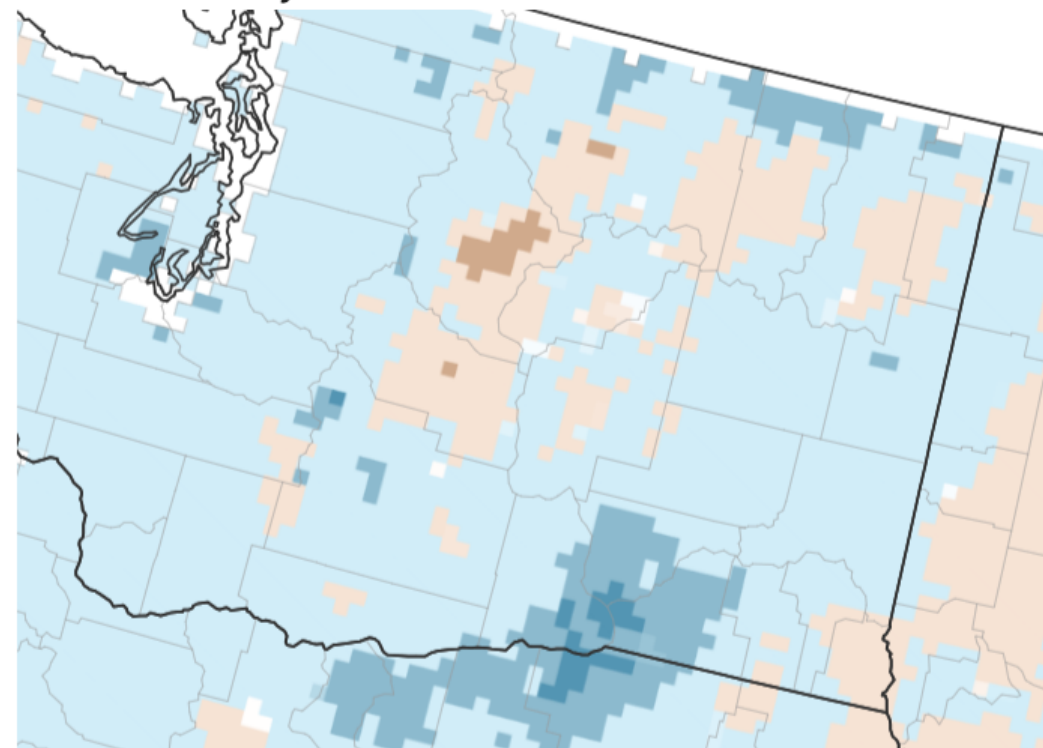
This NASA SPoRT-LIS soil moisture map shows the moisture content of the top 100 cm of soil compared to historical conditions (1981–2013), based on the Noah unified land surface model. Red and orange hues indicate drier soils, while greens and blues indicate greater soil moisture.

Source(s): NASA

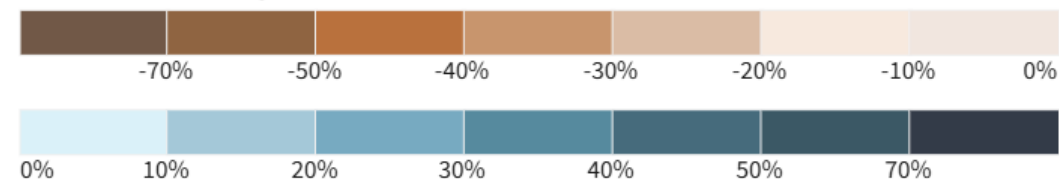
Data Valid: 04/16/25

Drought.gov

Crop-CASMA Subsoil (1 Meter) Soil Moisture Anomaly



Soil Moisture Anomaly



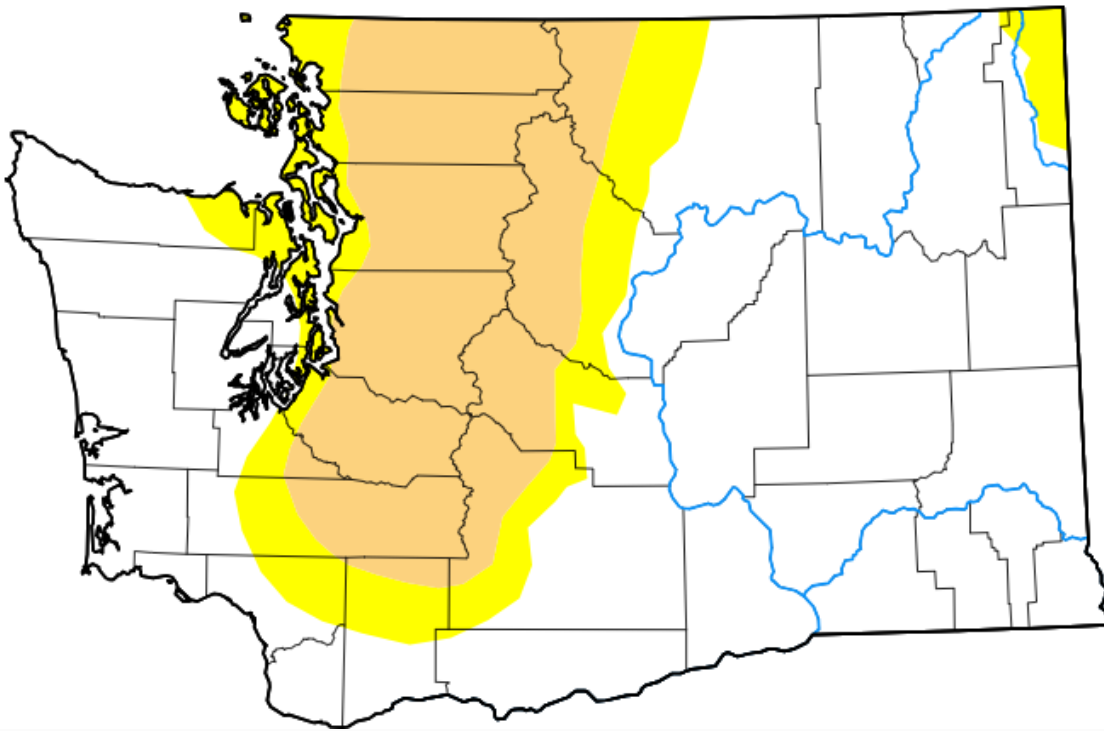
This map shows the moisture content of the top 1 meter of soil, according to NASA's Crop-CASMA (Crop Condition and Soil Moisture Analytics). Soil moisture is shown as a deviation from average soil moisture conditions from 2015–present. This map relies on remotely sensed soil moisture data derived from NASA missions (SMAP) to assess soil moisture conditions across the lower 48 U.S. states. Brown hues indicate below-average soil moisture, and blue hues indicate above-average soil moisture.

Source(s): NASA, USDA, George Mason University

Data Valid: 04/12/25

Drought.gov

Current US Drought Monitor



Map released: Thurs. April 17, 2025

Data valid: April 15, 2025 at 8 a.m. EDT

Intensity

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

Authors

United States and Puerto Rico Author(s):

[Curtis Riganti](#), National Drought Mitigation Center

Pacific Islands and Virgin Islands Author(s):

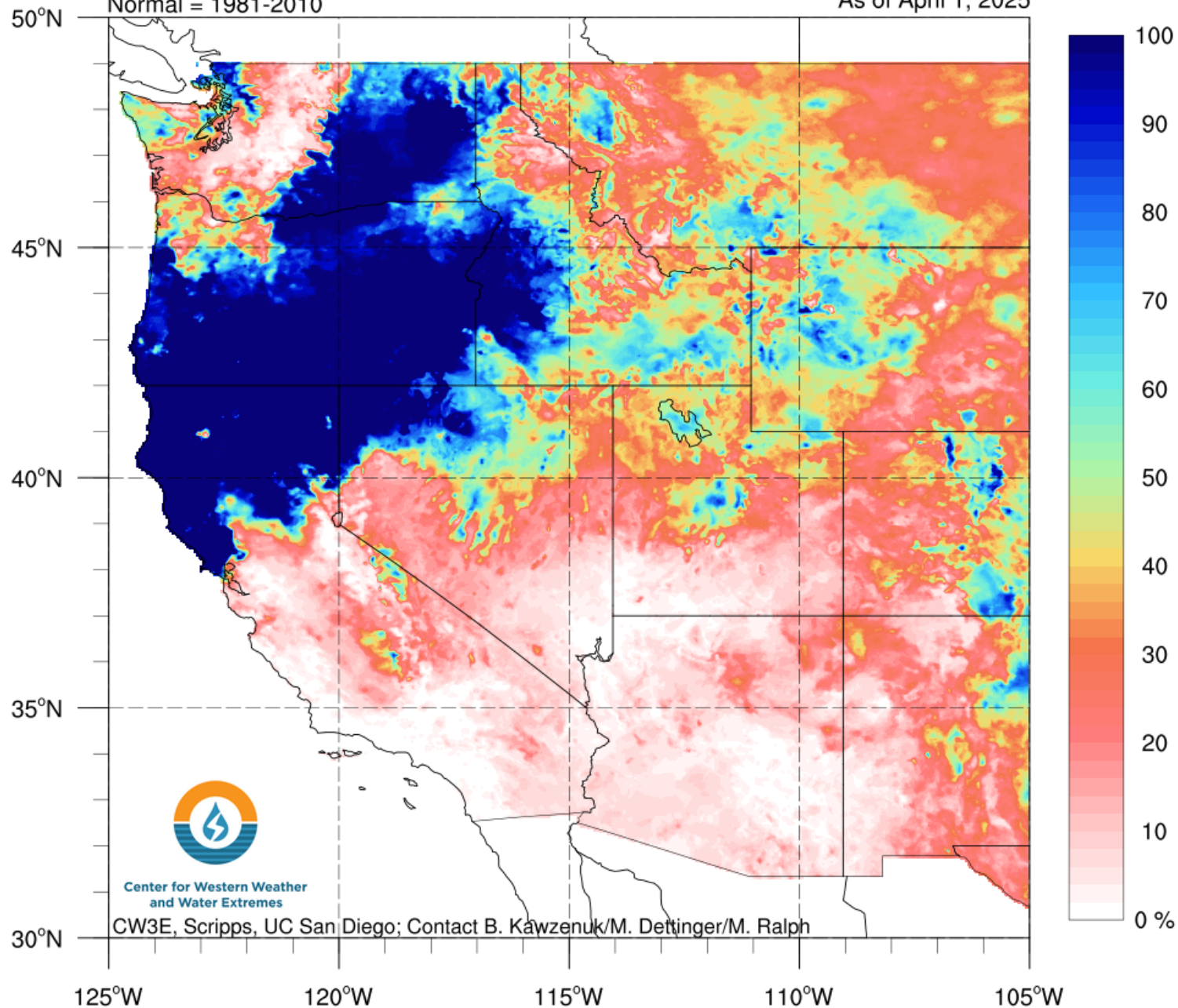
[Daniel Whitesel](#), National Drought Mitigation Center

*The US Drought Monitor does not reflect snowpack or water supply waters but is a statement on immediate conditions.

Odds of Water Year 2025 Reaching 100% of Water Year Normal Precipitation

Normal = 1981-2010

As of April 1, 2025



Center for Western Weather
and Water Extremes

CW3E, Scripps, UC San Diego; Contact B. Kawzenuk/M. Dettinger/M. Ralph



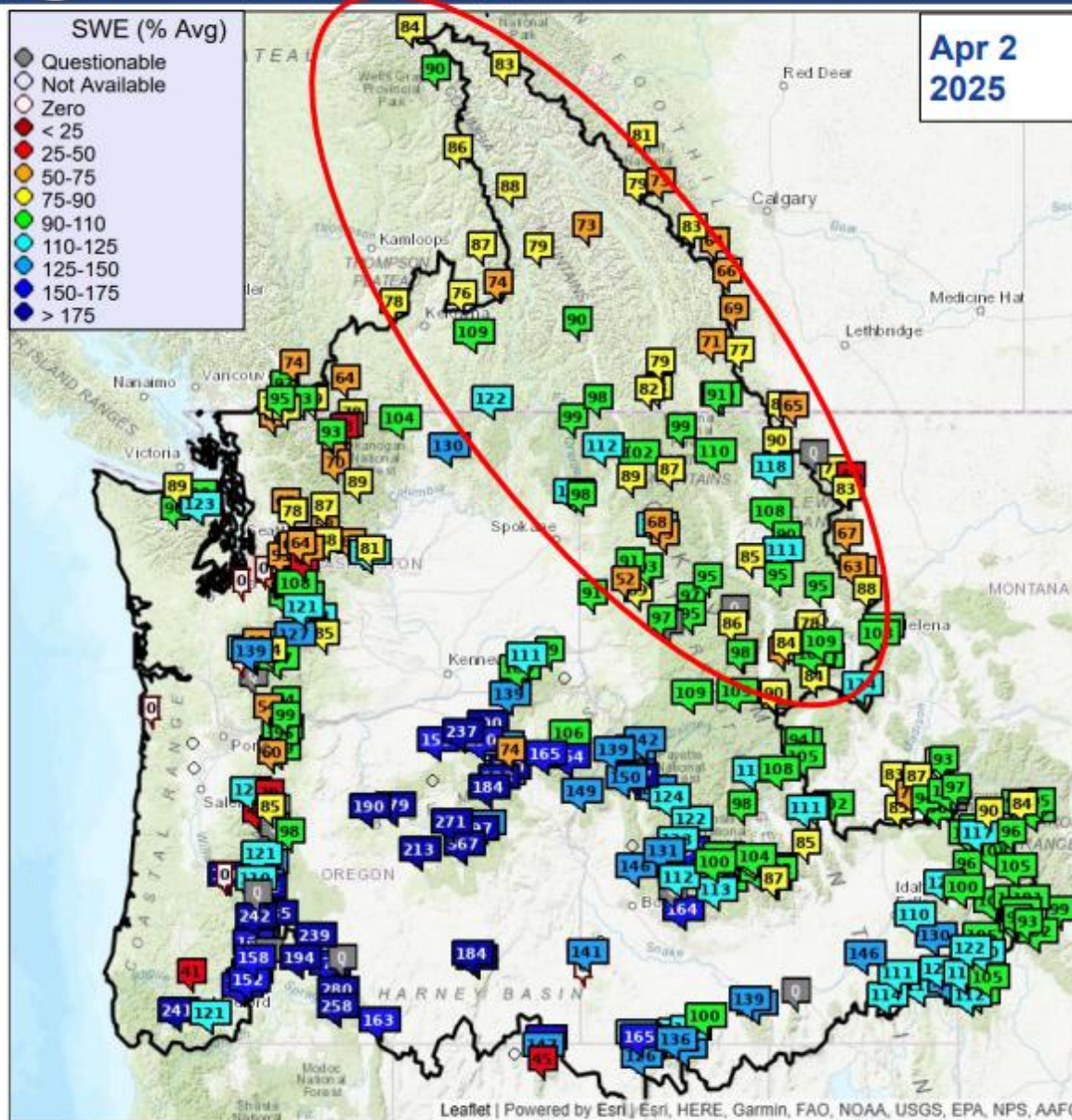
DEPARTMENT OF
ECOLOGY
State of Washington

Odds of reaching Normal Water Year precipitation

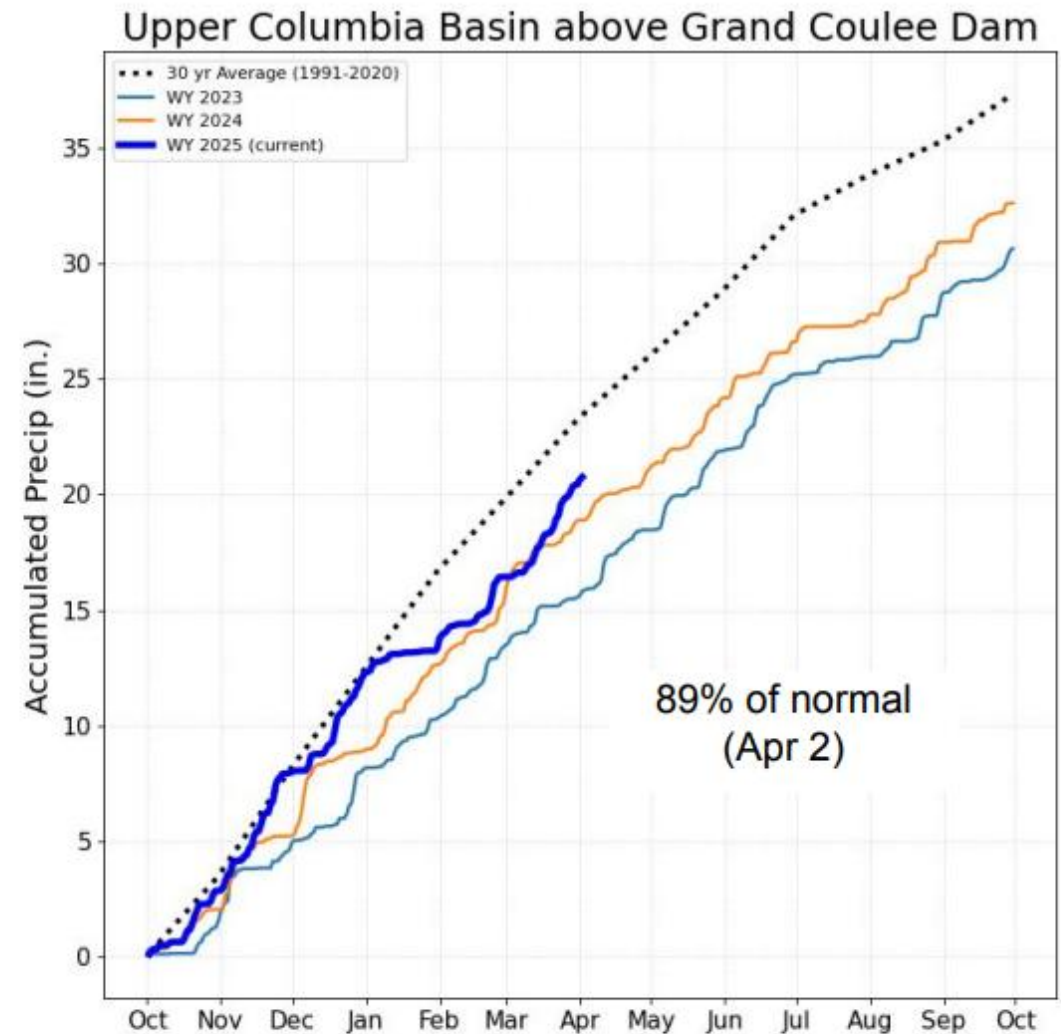
Shading represents odds, in percent of water years from 1948-2017

Data courtesy: PRISM Climate Group, Oregon State University, <http://prism.oregonstate.edu>

Snowpack and Precipitation



Snow data from Natural Resources Conservation Service, BC Hydro, Ministry of Environment and Climate Change Strategy, and Alberta Environment and Parks.



Precip averages from PRISM, OSU and PCIC.

Water Year to Date Adjusted Observed Runoff

% Normal Runoff Oct 1 - April 2

Upper Columbia Basin

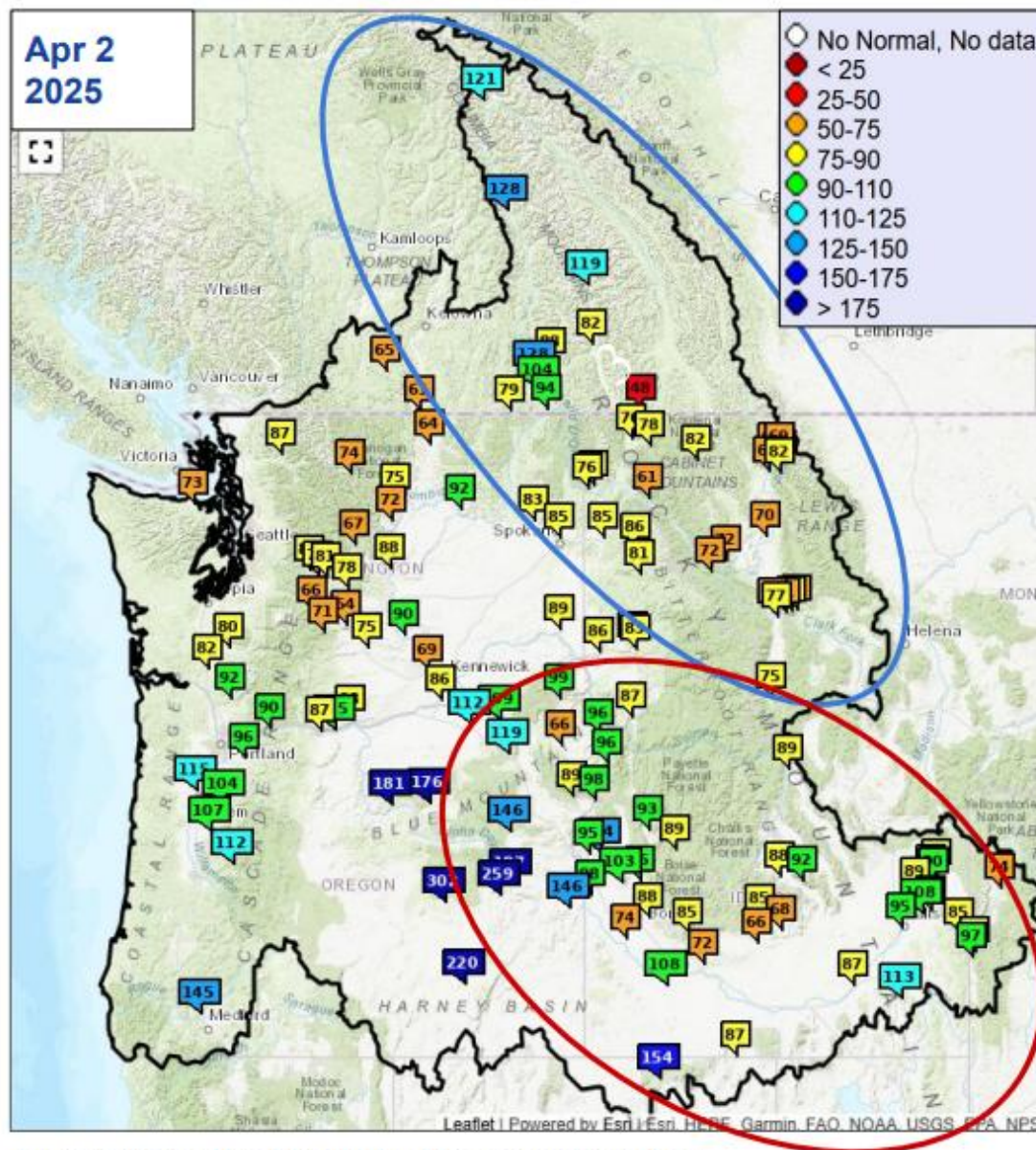
		<u>Δ since Mar</u>
Mica	121	-1
Duncan	119	0
Queens Bay	82	2
Libby	82	0
Hungry Horse	82	22
Grand Coulee	92	4

Snake River Basin

American Falls	87	1
Lucky Peak	88	9
Dworshak	87	16
Lower Granite	89	9

Lower Columbia Basin

The Dalles	87	6
------------	----	---



ESP10 Water Supply Forecasts

% Normal Apr-Sep Volume

Upper Columbia Basin

Δ since Mar 5

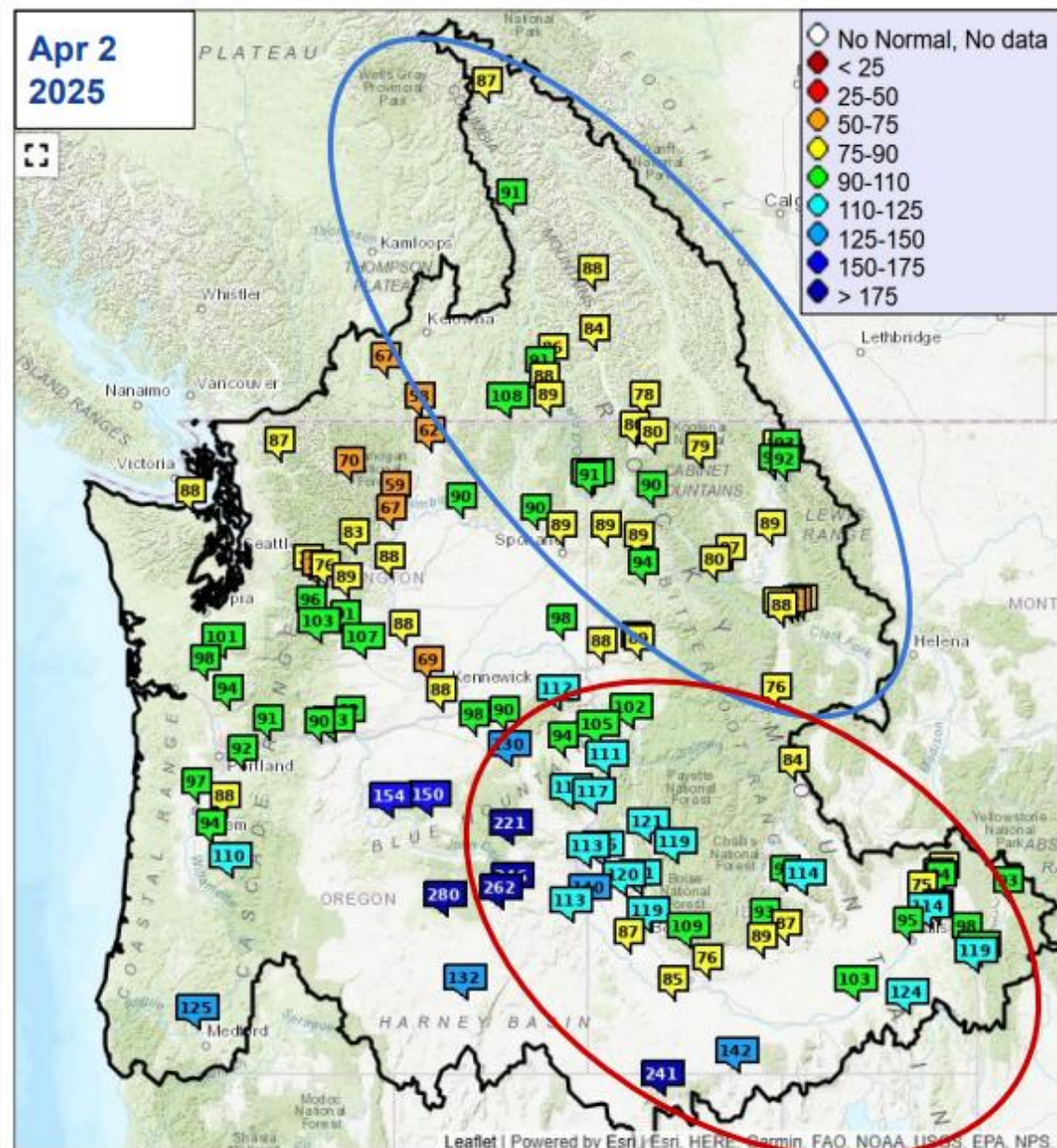
Mica	87	5
Duncan	88	10
Queens Bay	84	8
Libby	79	7
Hungry Horse	92	12
Grand Coulee	90	9

Snake River Basin

American Falls	103	6
Lucky Peak	119	7
Dworshak	91	2
Lower Granite	98	-3

Lower Columbia Basin

The Dalles	90	5
------------	----	---





ESP10 Water Supply Forecast

COLUMBIA - GRAND COULEE DAM (GCDW1)
Forecasts for Water Year 2025

Official Water Supply

ESP with 10 Days QPF Ensemble: 2025-04-02 Issued: 2025-04-02

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	Average	10 %	
APR-SEP	51220	55488	90	60286	61483
APR-JUL	42391	46828	89	51704	52774
APR-AUG	47659	52169	90	57206	58186
JAN-SEP	58950	63218	90	68016	70457
JAN-JUL	50121	54558	88	59434	61749
OCT-SEP	67248	71516	91	76314	78842

Experimental Water Supply

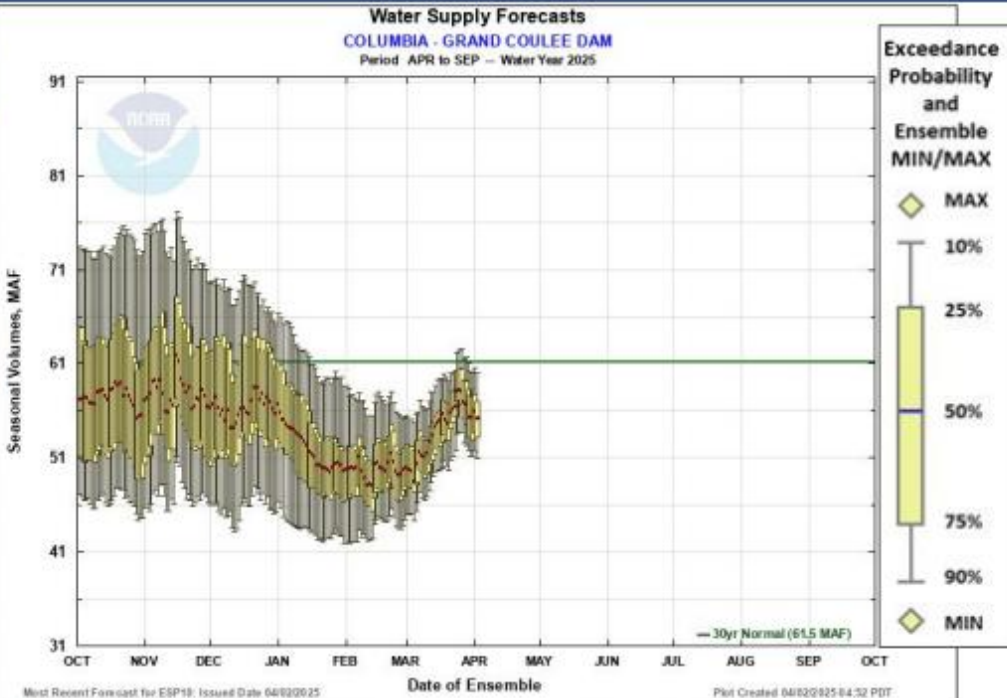
HEFS with 15 days EQPF Ensemble: 2025-04-02 Issued: 2025-04-02

APR-SEP	51413	56106	91	60728	61483
APR-JUL	42659	47478	90	52157	52774
APR-AUG	47644	52792	91	57453	58186
JAN-SEP	59143	63836	91	68458	70457
JAN-JUL	50389	55208	89	59887	61749
OCT-SEP	67441	72134	91	76756	78842

Reference

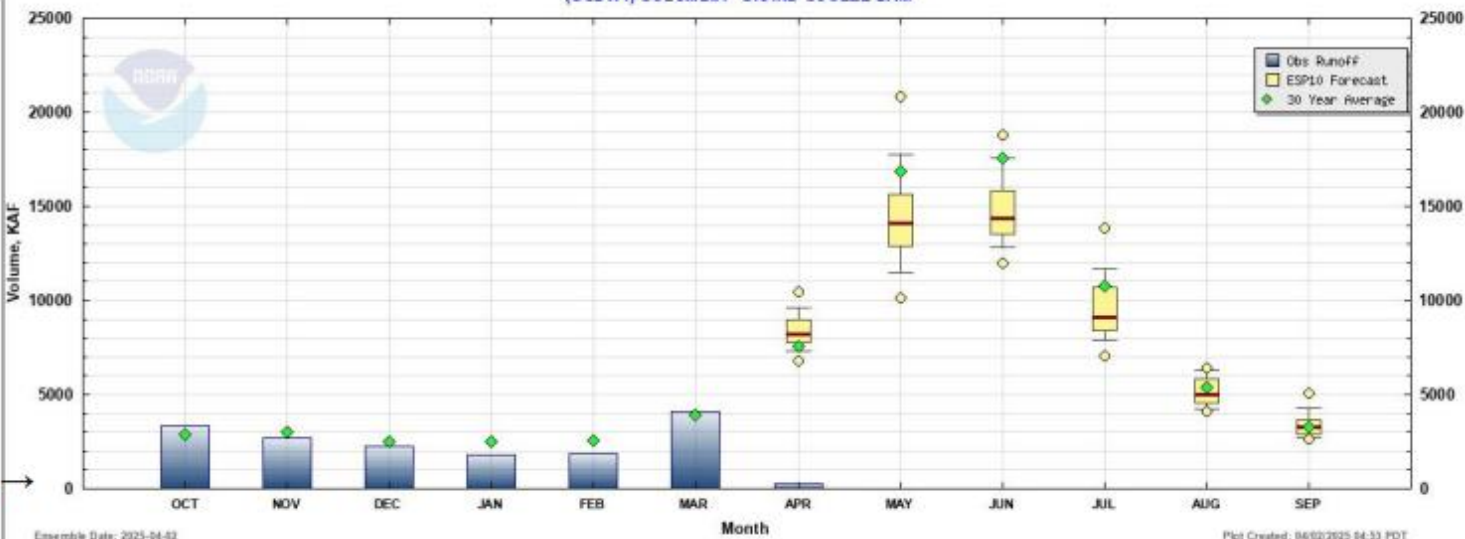
ESP with 0 Days QPF Ensemble: 2025-04-02 Issued: 2025-04-02

APR-SEP	51479	56304	92	60190	61483
APR-JUL	42665	47630	90	52048	52774
APR-AUG	47665	52838	91	57082	58186
JAN-SEP	59209	64034	91	67920	70457
JAN-JUL	50395	55360	90	59778	61749
OCT-SEP	67507	72332	92	76218	78842



☒ Max Scale ☐ Scale To Data ☐ Scale To Last 45 Days ☐ Show Min/Max En

Water Supply Volume Monthly Forecasts (ESP10) for Water Year 2025 (GCDW1) COLUMBIA - GRAND COULEE DAM



[↑ nwrfc.noaa.gov/water_supply/ws_forecasts.php?id=GCDW1](https://nwrfc.noaa.gov/water_supply/ws_forecasts.php?id=GCDW1)

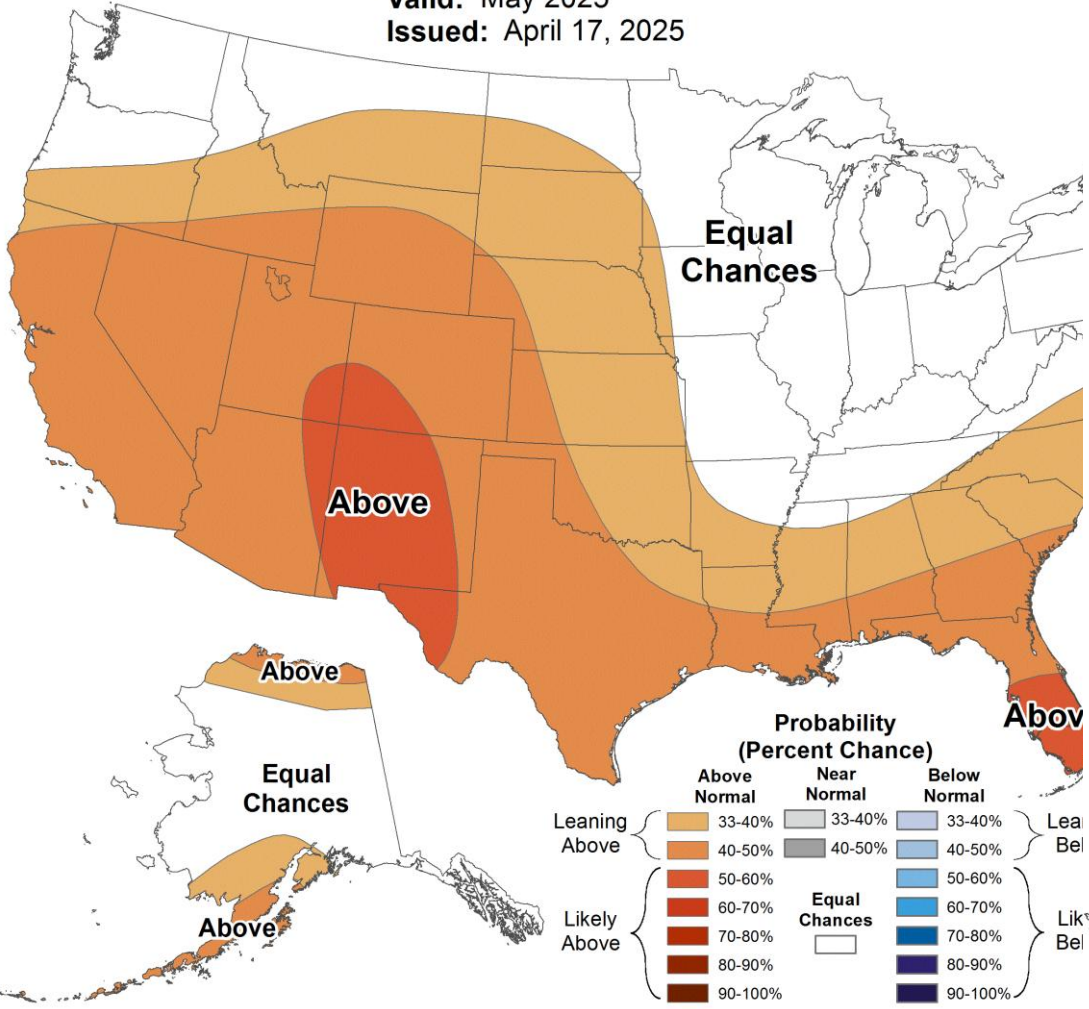
nwrfc.noaa.gov/water_supply/monthly/monthly_forecasts.php?id=GCDW1

Outlook – Next Month



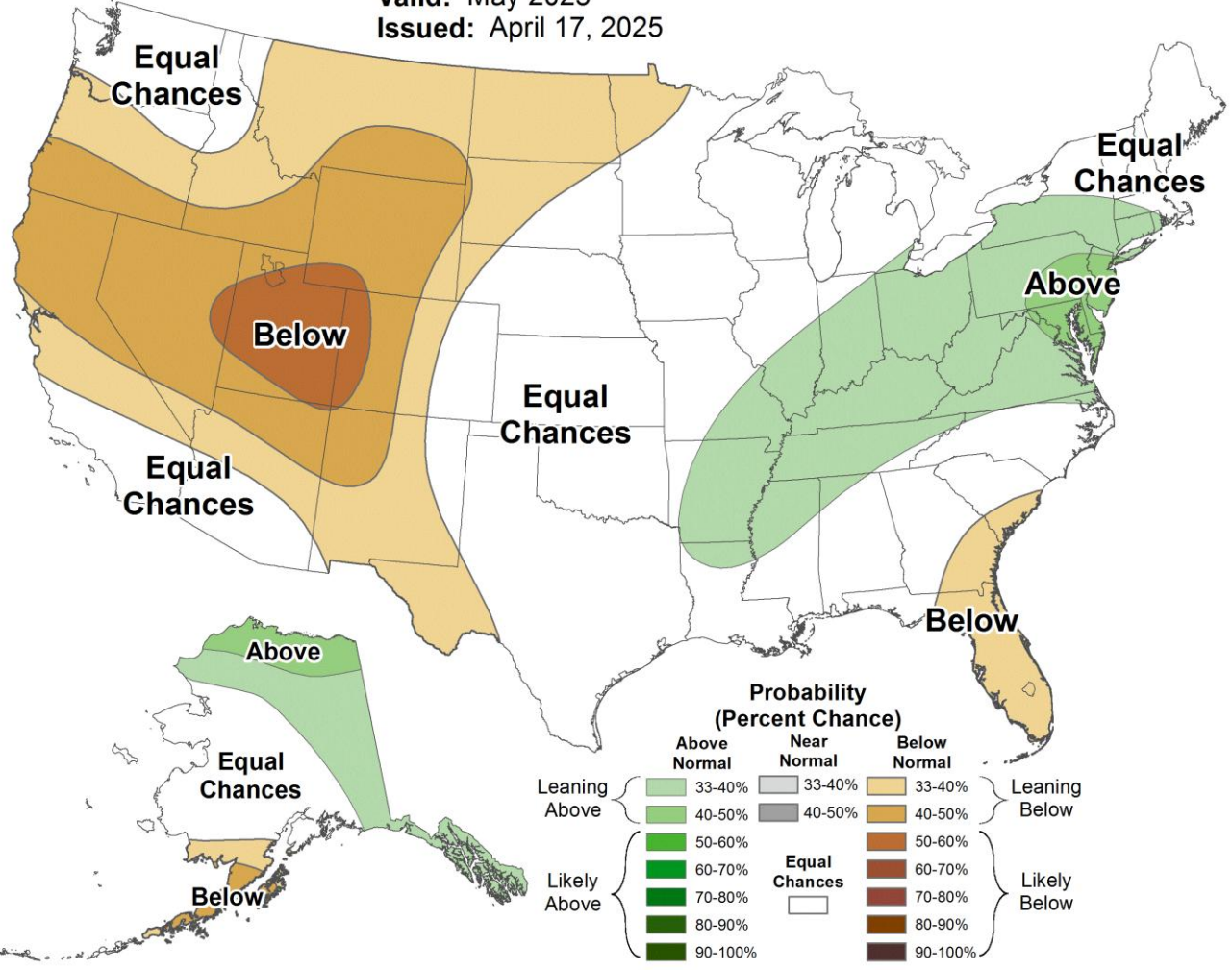
Monthly Temperature Outlook

Valid: May 2025
Issued: April 17, 2025



Monthly Precipitation Outlook

Valid: May 2025
Issued: April 17, 2025

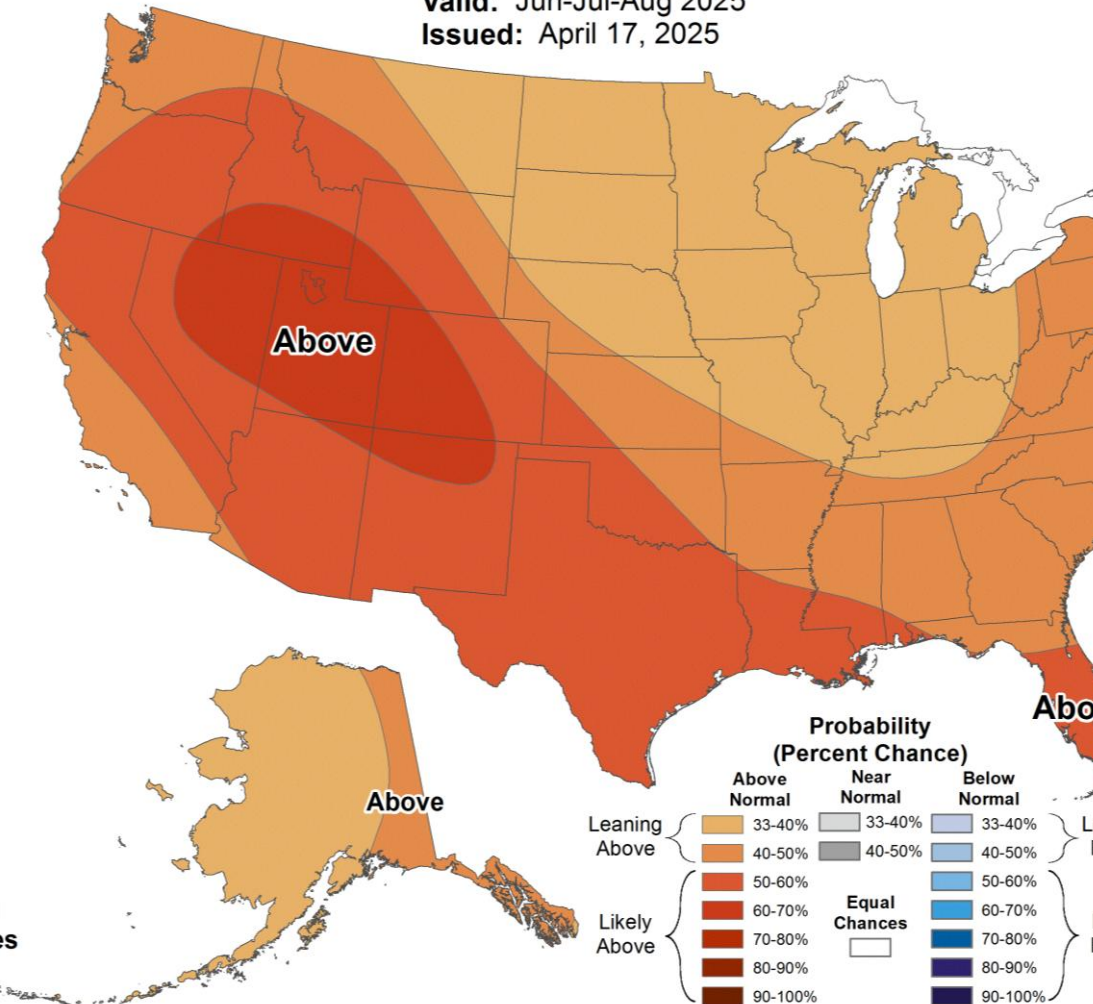


Outlook - Three-Month Summer



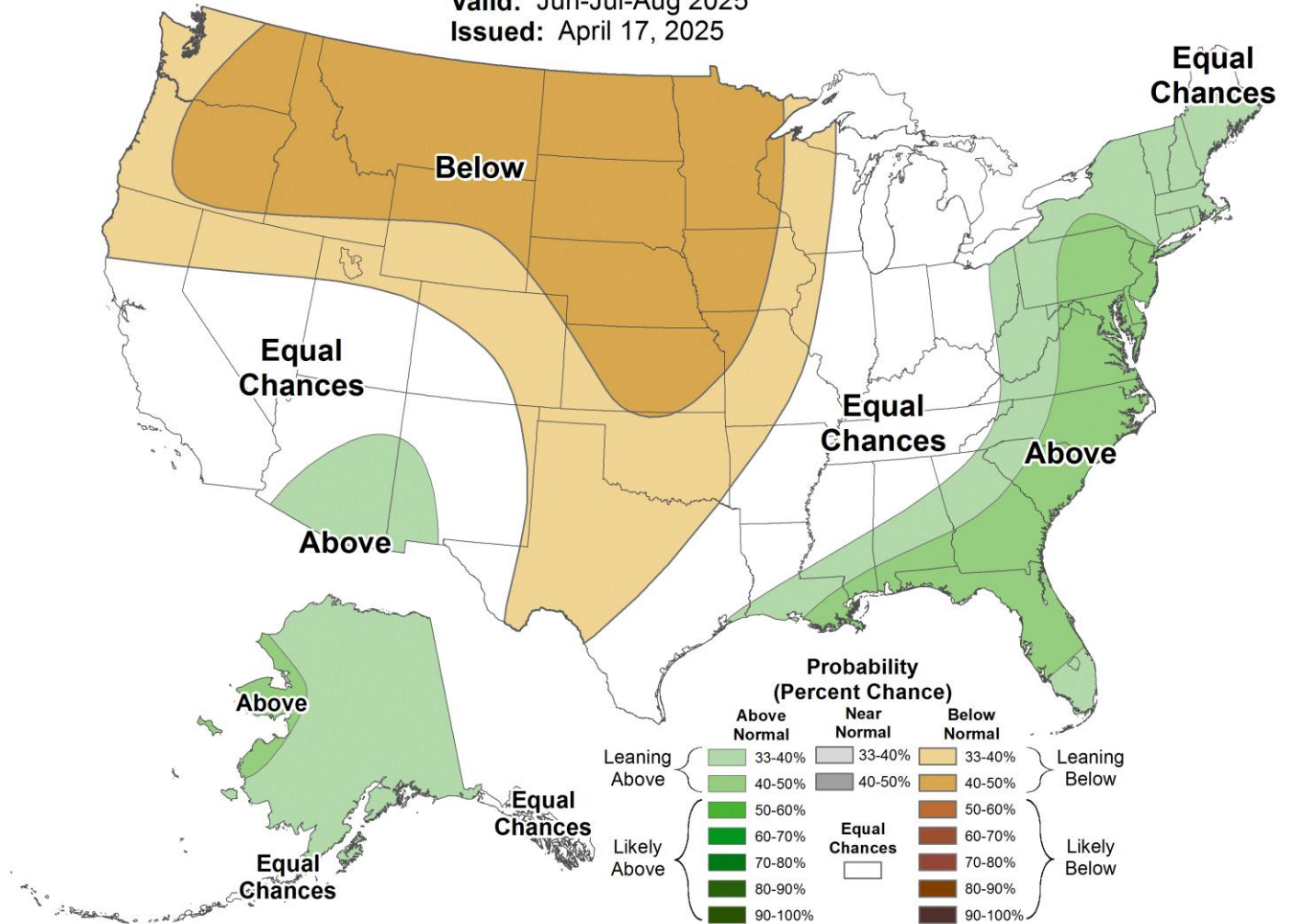
Seasonal Temperature Outlook

Valid: Jun-Jul-Aug 2025
Issued: April 17, 2025



Seasonal Precipitation Outlook

Valid: Jun-Jul-Aug 2025
Issued: April 17, 2025



Takeaways

- The current drought emergency declaration is for the Yakima basin watersheds.
- Ecology is closely monitoring the areas in drought advisory, but these areas do not yet meet the threshold.
- March was mostly warmer with near or wetter than normal precipitation, leading to some earlier runoff but also improving water supply forecasts.
- Even with above normal March precipitation in the Yakima region, the U.S. Bureau of Reclamation's April-September Total Water Supply Available (TWSA) for proratable water right holders only went up from 48% to 58%.

Drought Info

- Updated drought website: [Drought Response - Washington State Department of Ecology](#)
 - Declaration: [Order of Determination by the Director](#)
 - Press release: [April 8 - Drought - Washington State Department of Ecology](#)
- [Water Supply Availability Committee \(WSAC\) website](#)



Questions?



Thank you

Caroline Mellor

Statewide Drought Lead

Caroline.Mellor@ecy.wa.gov