

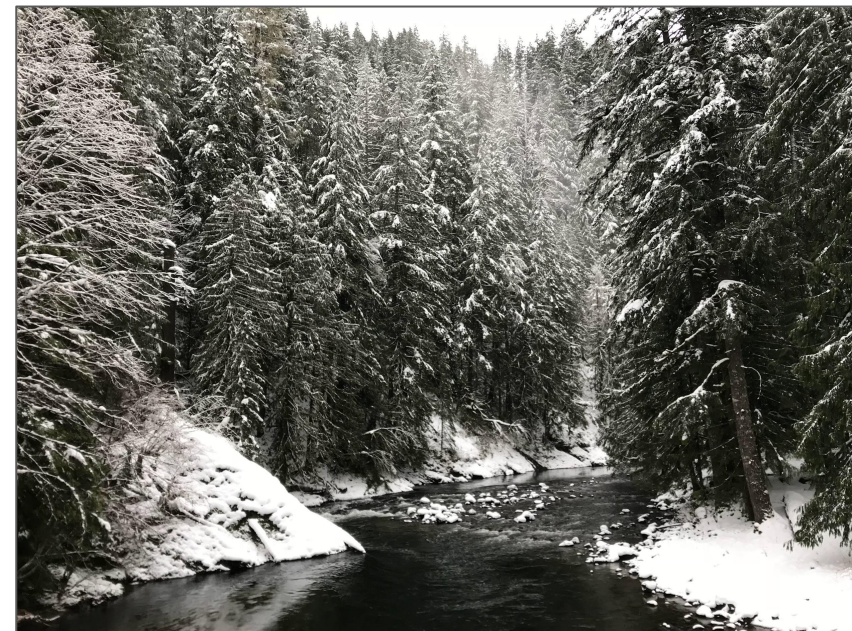


Northwest River Forecast Center

June 2024 Water Supply Briefing

Amy Burke, Senior Hydrologist
NWRFC.watersupply@noaa.gov

June 6, 2024

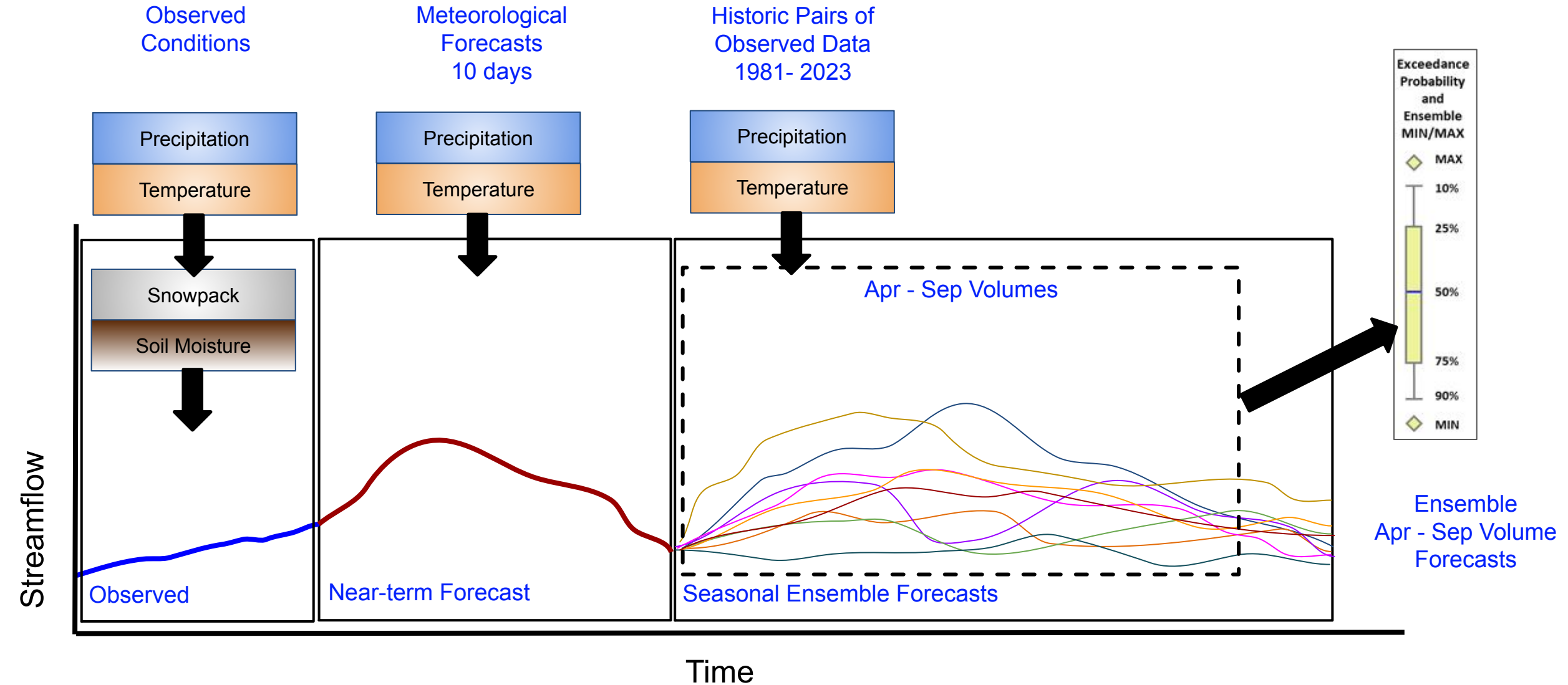




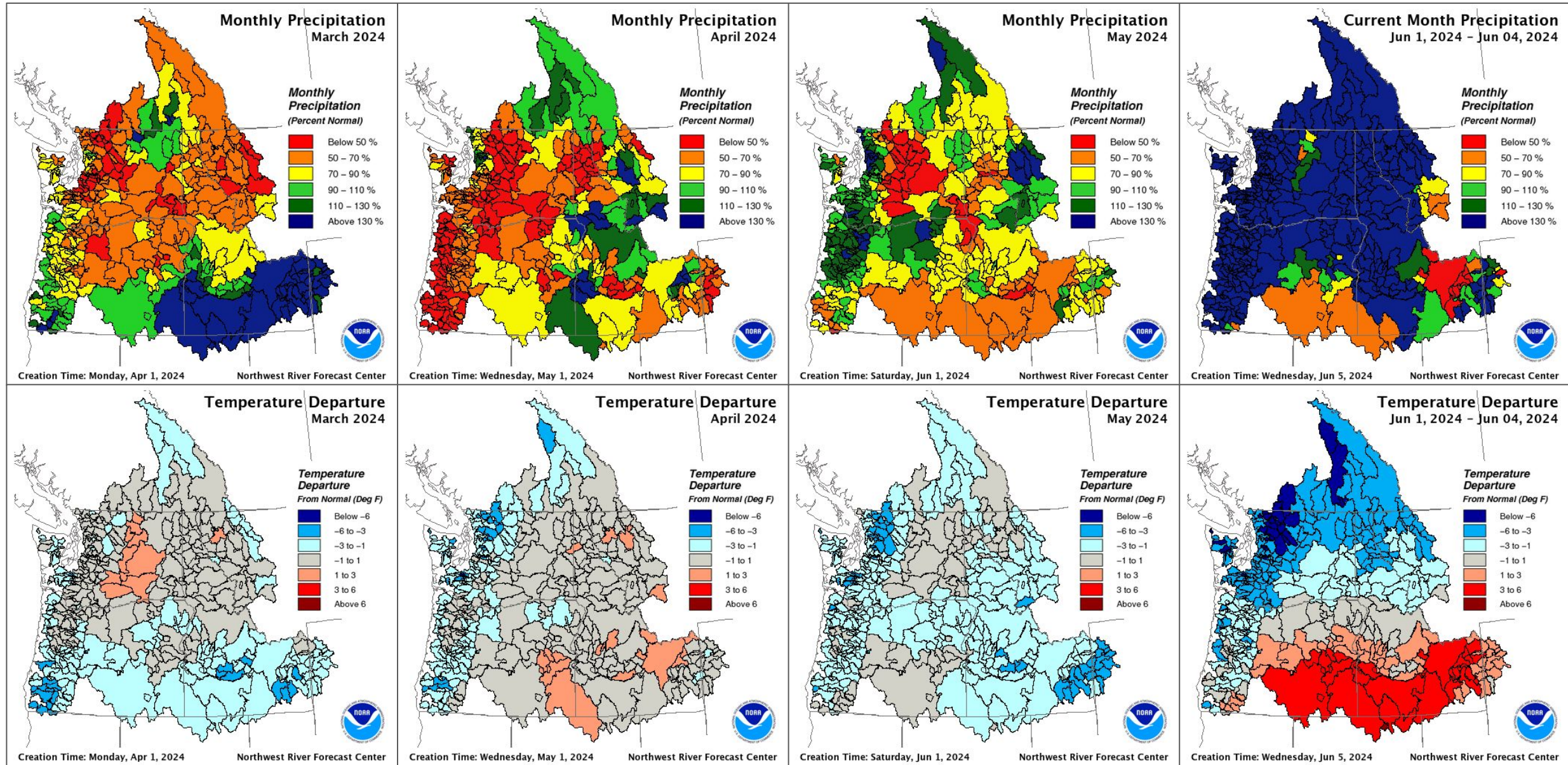
Key Takeaways

- May precipitation was a mix of above and below normal.
- May was overall cooler than normal with a couple of warming periods.
- Peak SWE was very low in the north while southern snowpacks were above normal.
- Water year total precipitation and runoff were below normal in the north and above normal in the south.
- Water supply forecasts follow the same north south pattern.
- The northern portion of our domain had record low snowpacks and water supply forecasts.

NWRFC Forecast Technique: Ensemble Streamflow Prediction



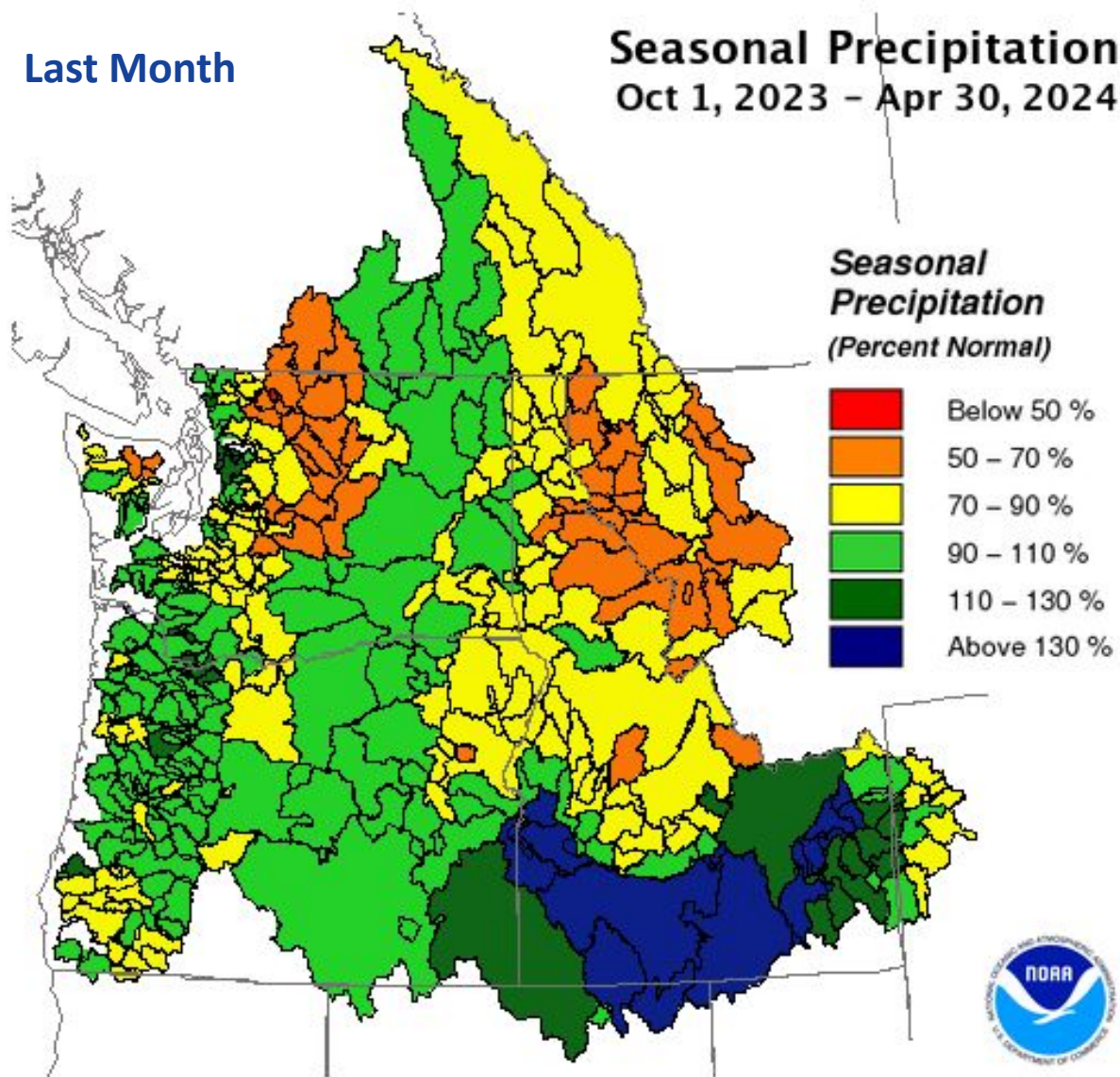
Observed Monthly Precipitation and Temperature



Water Year to Date Precipitation

Last Month

Seasonal Precipitation
Oct 1, 2023 – Apr 30, 2024

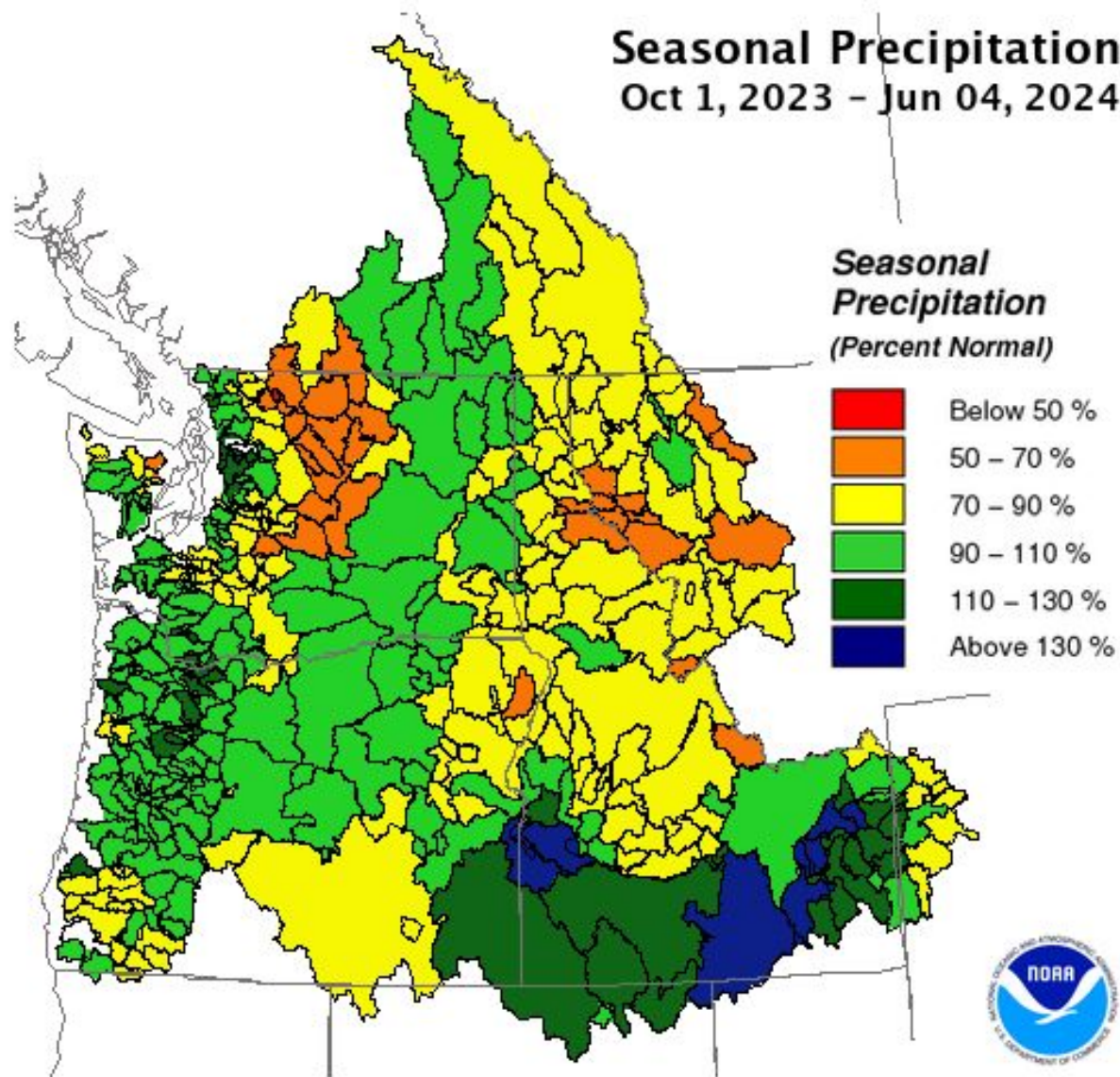


Creation Time: Wednesday, May 1, 2024

Northwest River Forecast Center



Seasonal Precipitation
Oct 1, 2023 – Jun 04, 2024

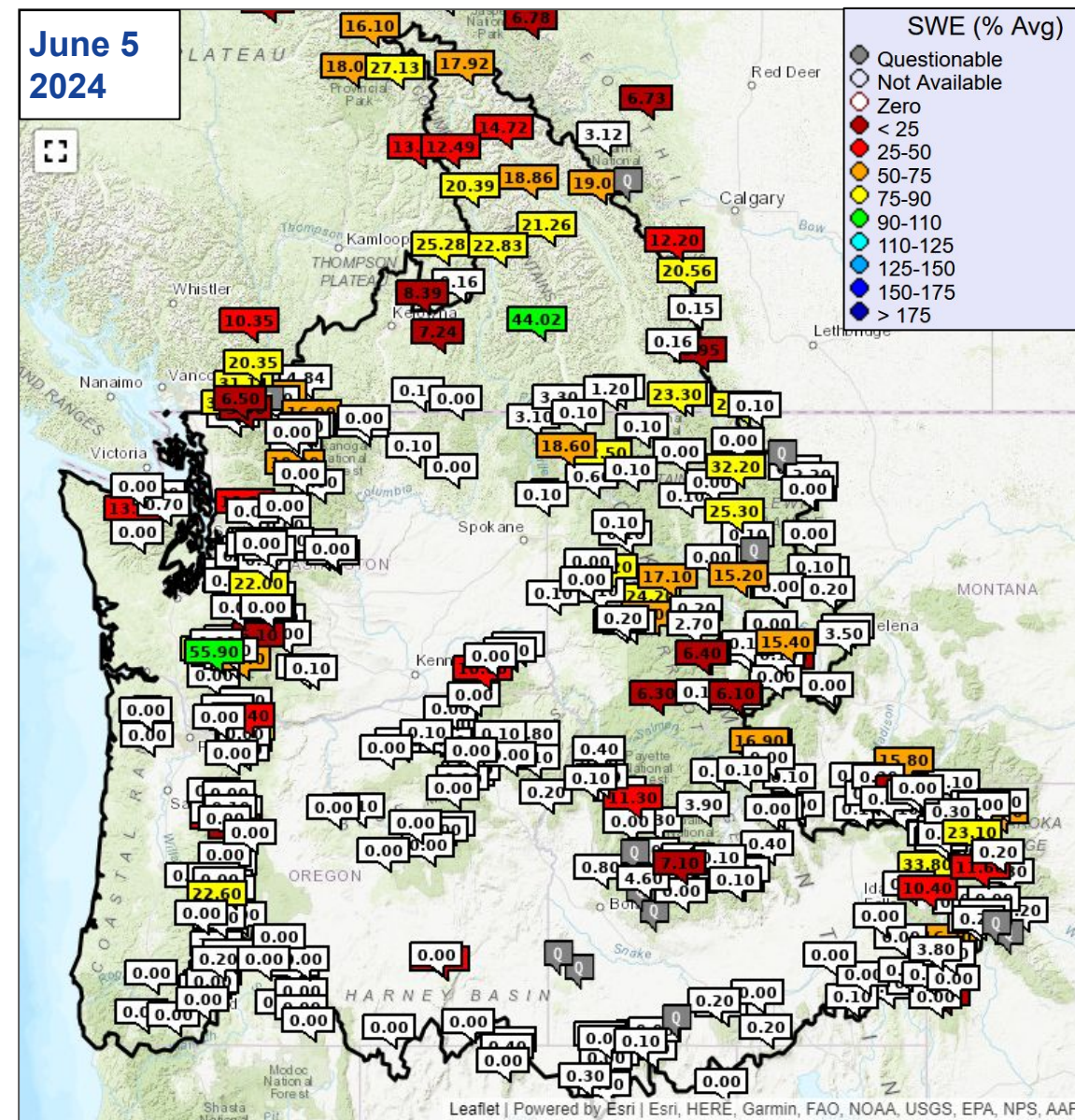
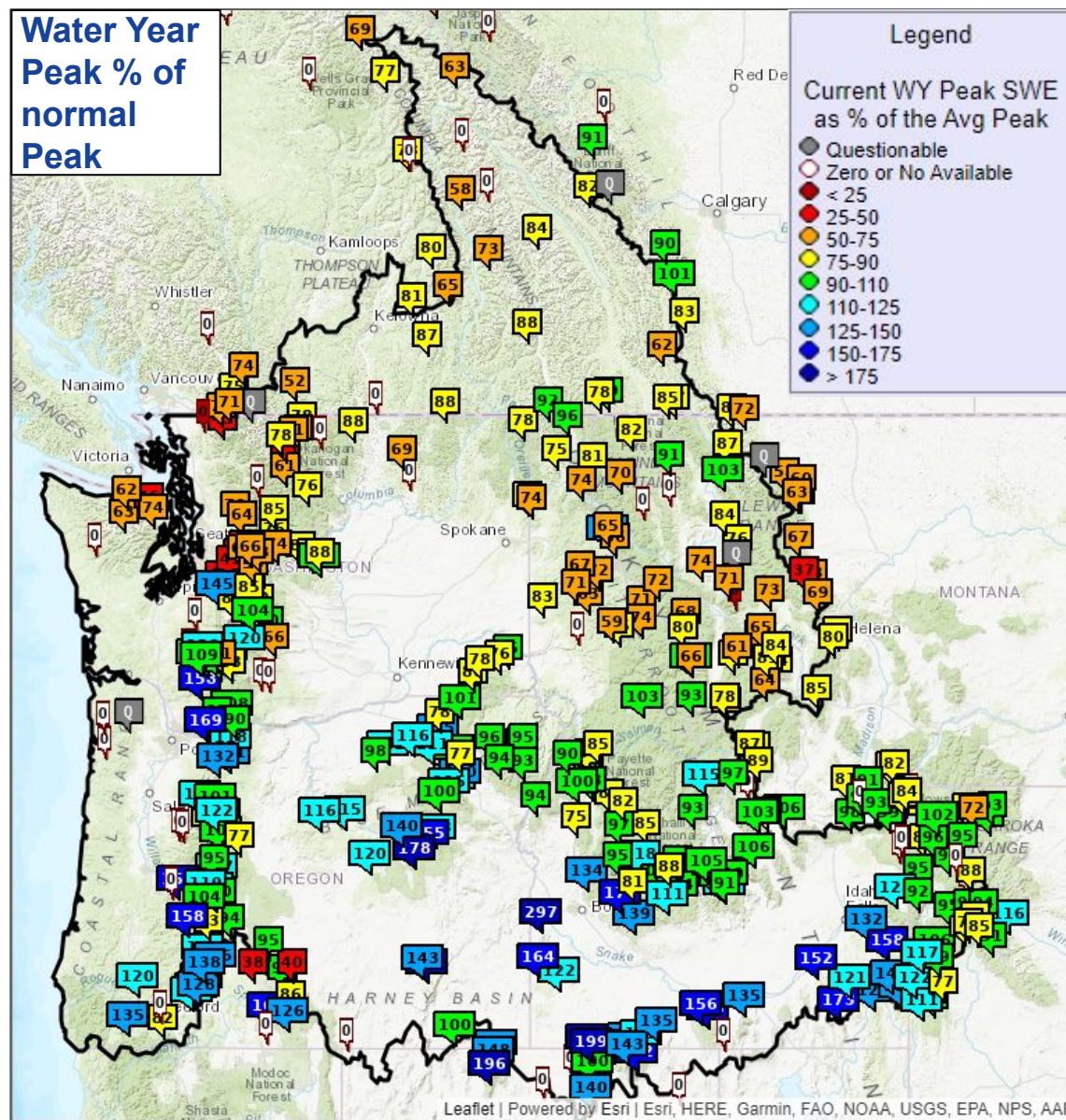


Creation Time: Wednesday, Jun 5, 2024

Northwest River Forecast Center



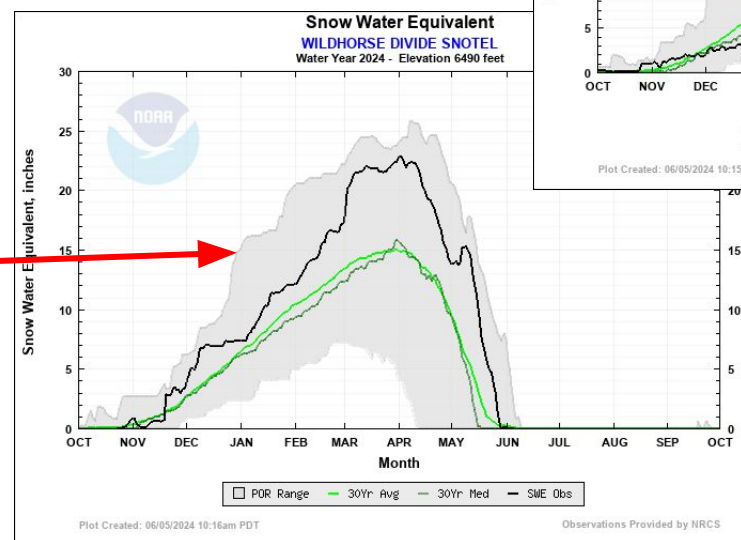
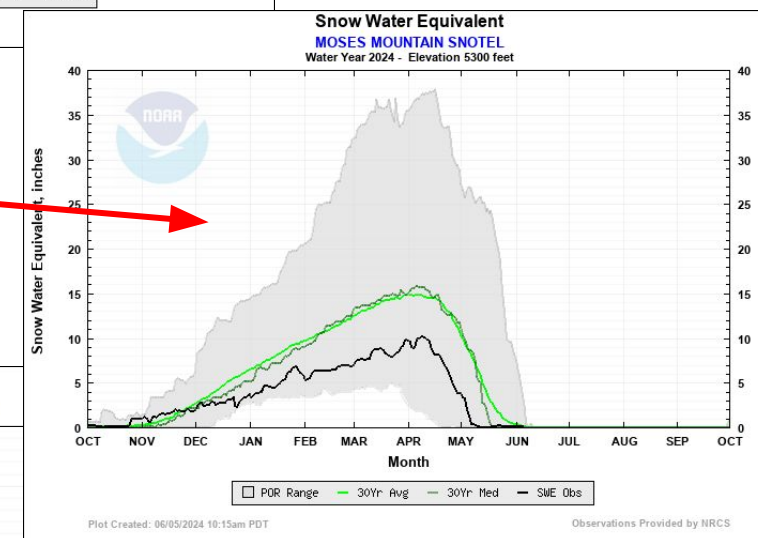
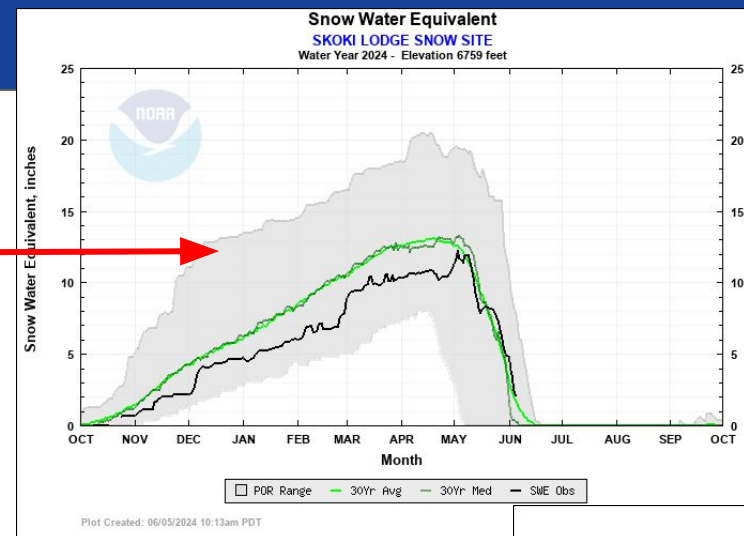
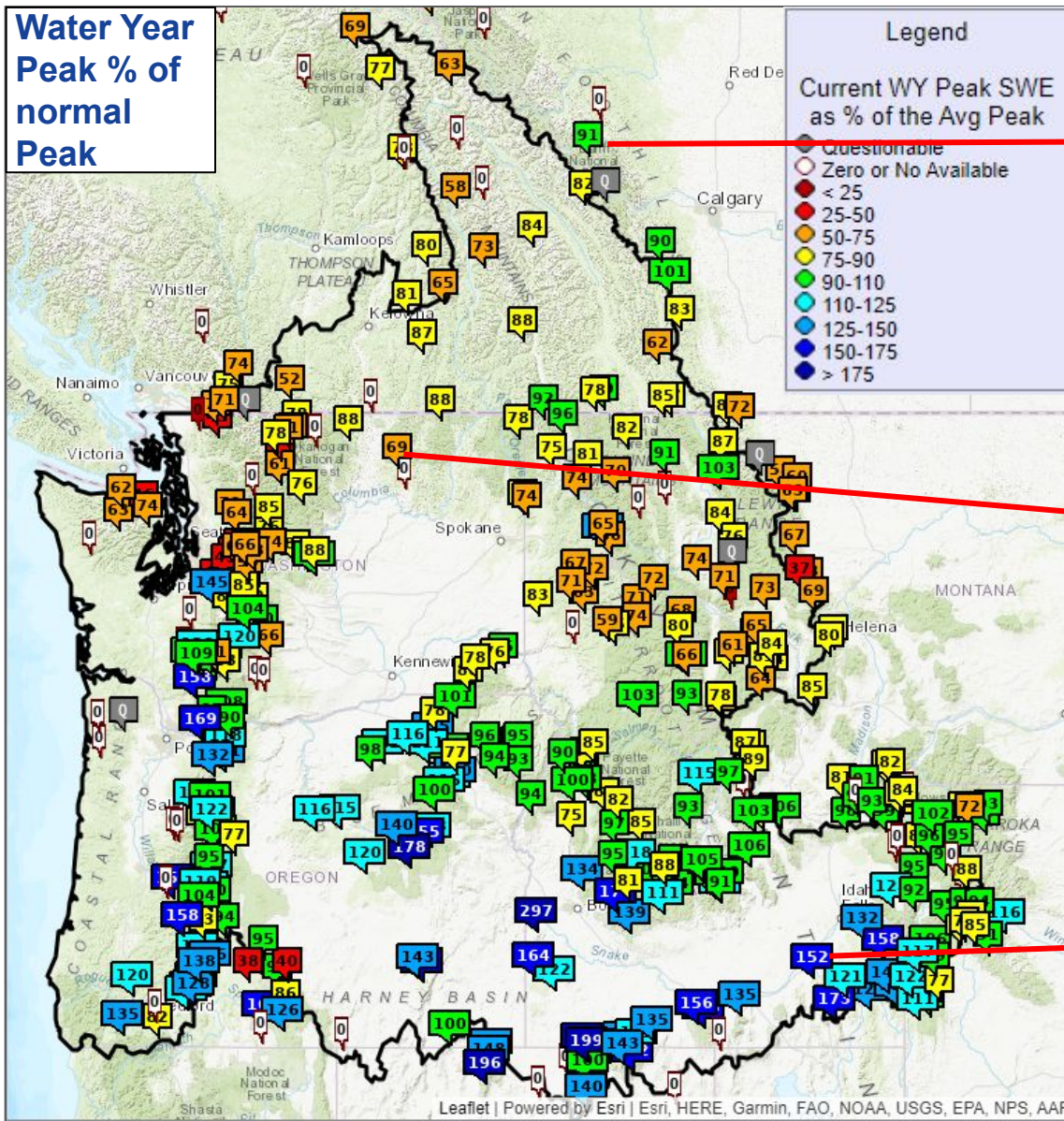
Snowpack



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

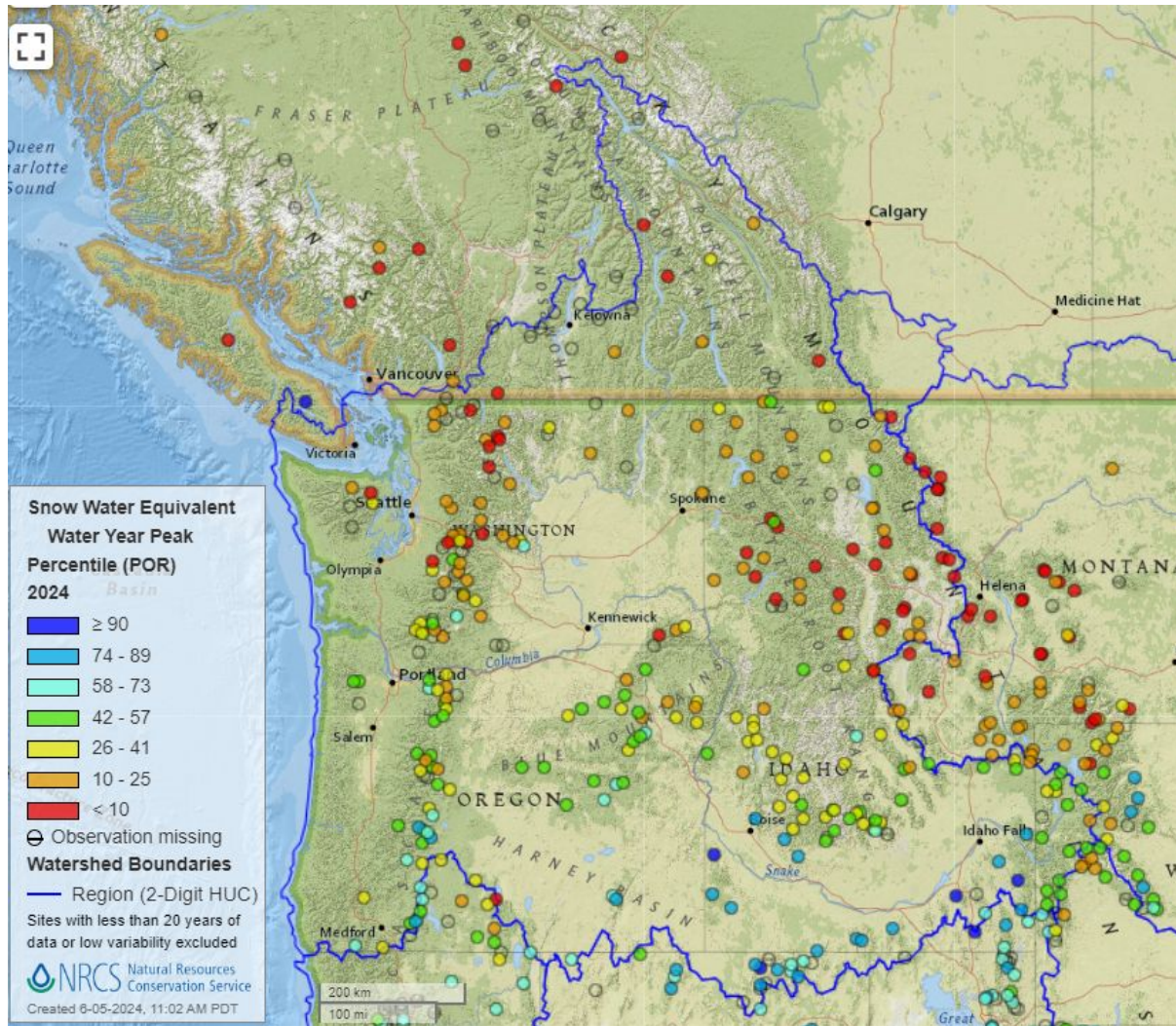
Snowpack

**Water Year
Peak % of
normal
Peak**



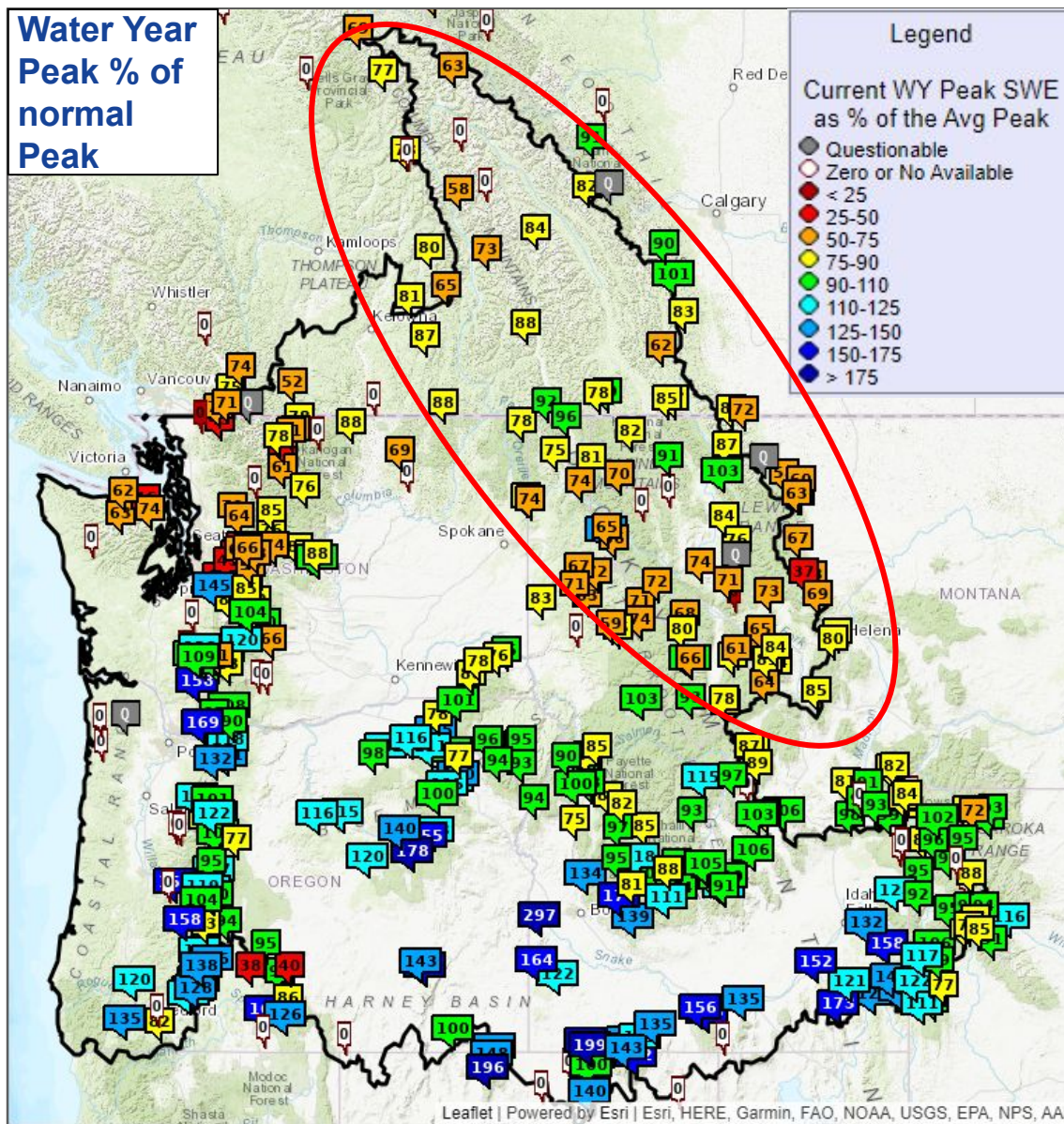
Snow data from Natural Resources Conservation Service, BC Hydro, Ministry of Environment and Climate Change Strategy, and Alberta Environment and Parks.

Peak SWE and melt timing

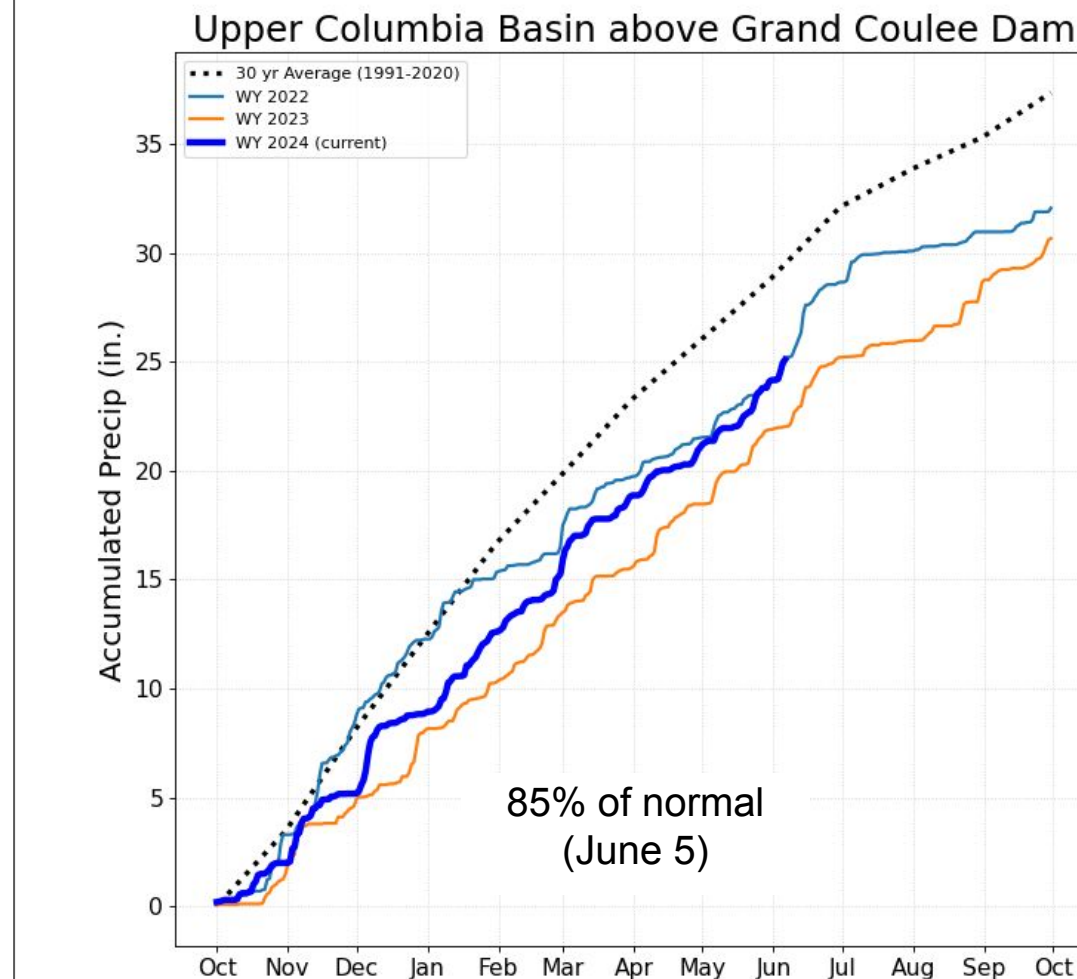


Snow data from Natural Resources Conservation Service, BC Hydro, Ministry of Environment and Climate Change Strategy, and Alberta Environment and Parks.

Snowpack and Precipitation

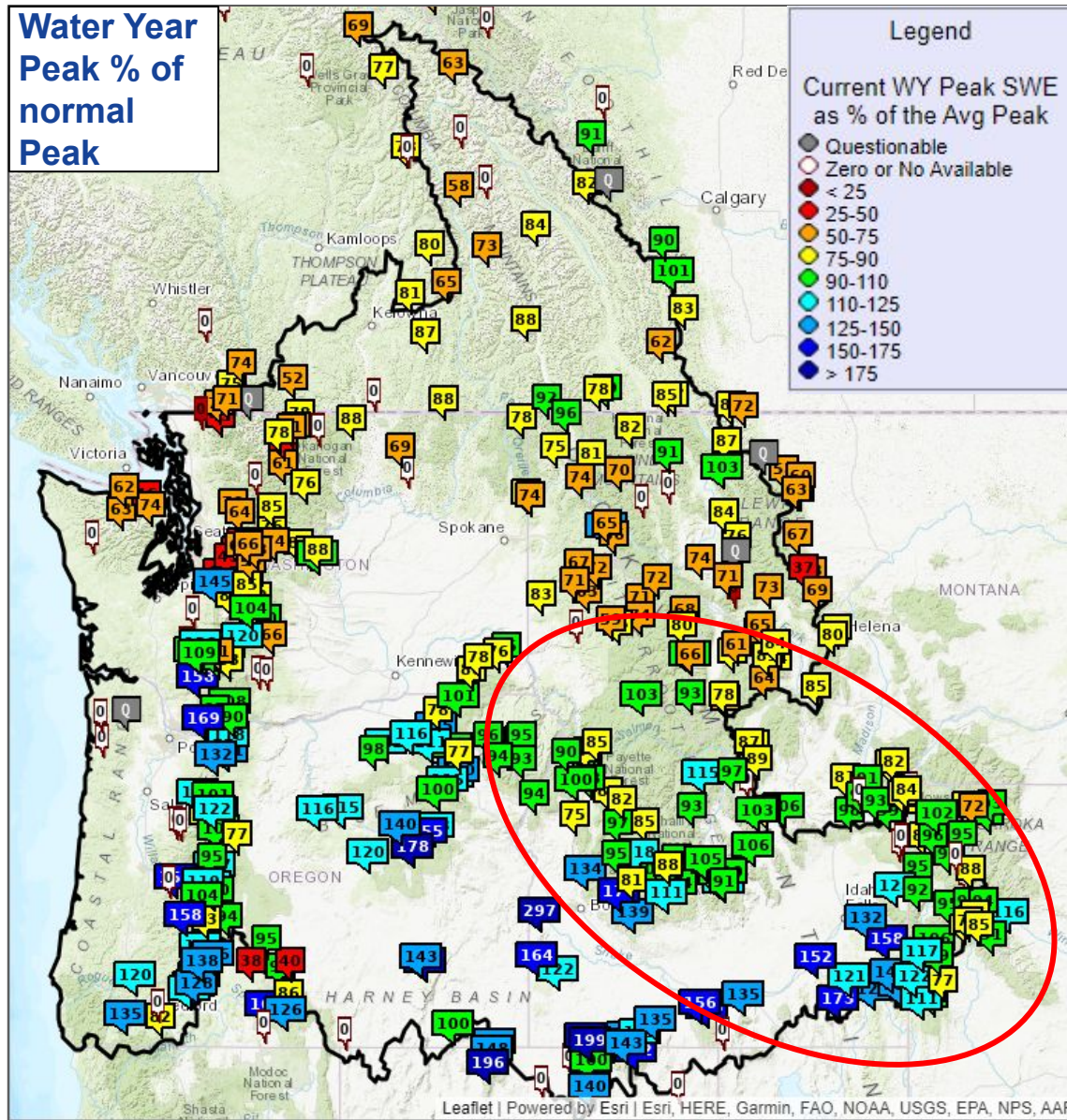


Snow data from Natural Resources Conservation Service, BC Hydro, Ministry of Environment and Climate Change Strategy, and Alberta Environment and Parks.

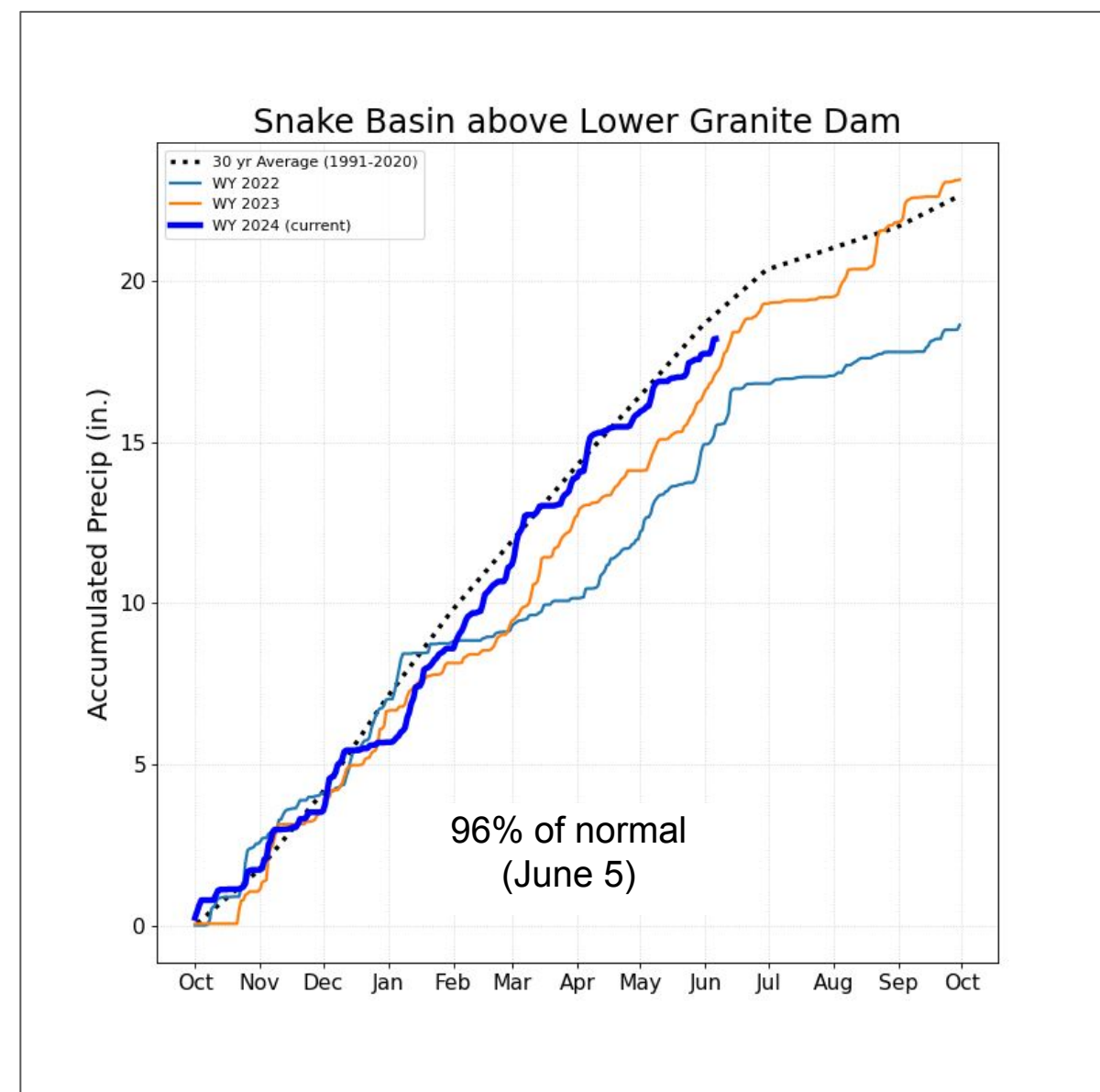


Precip averages from PRISM, OSU and PCIC.

Snowpack and Precipitation

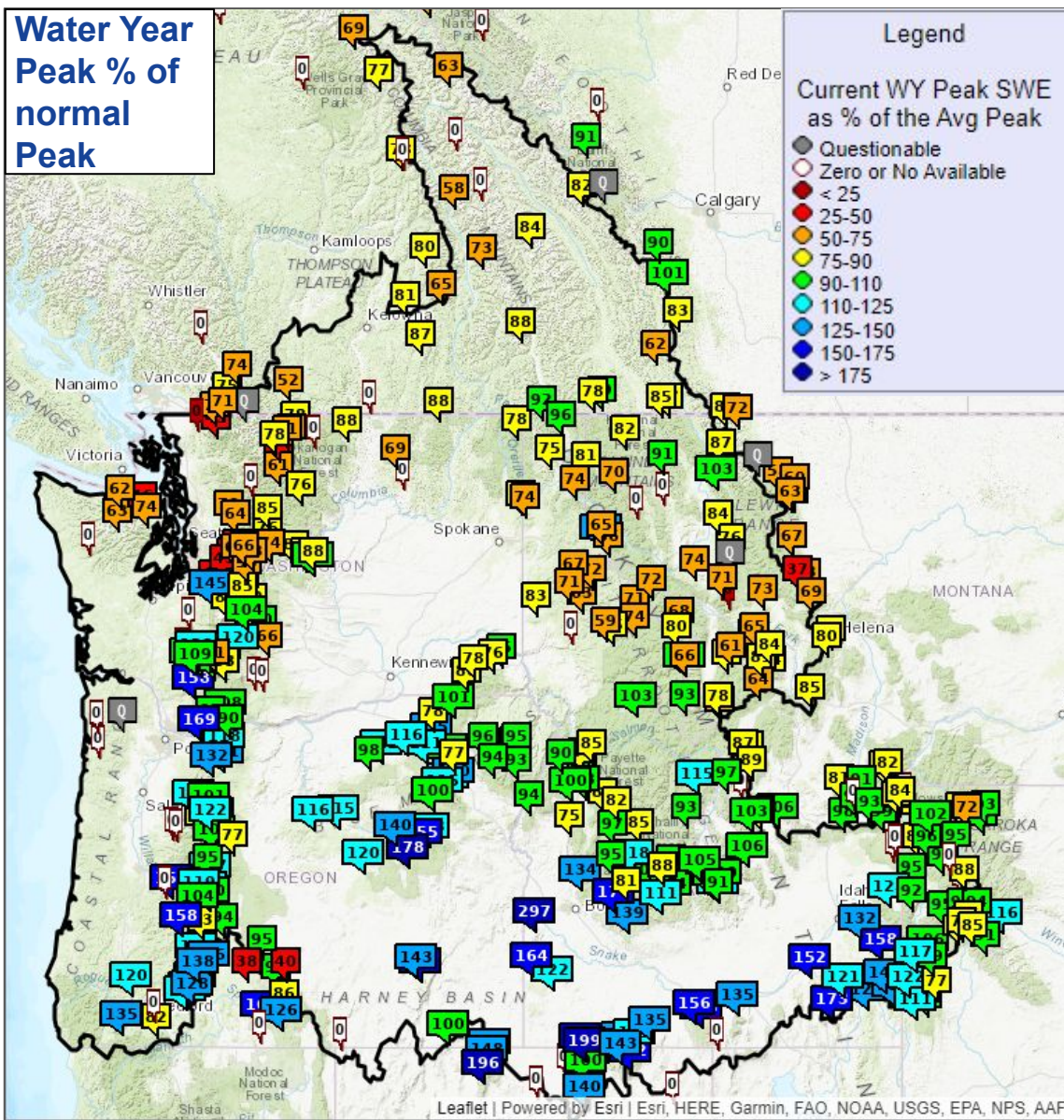


Snow data from Natural Resources Conservation Service, BC Hydro, Ministry of Environment and Climate Change Strategy, and Alberta Environment and Parks.

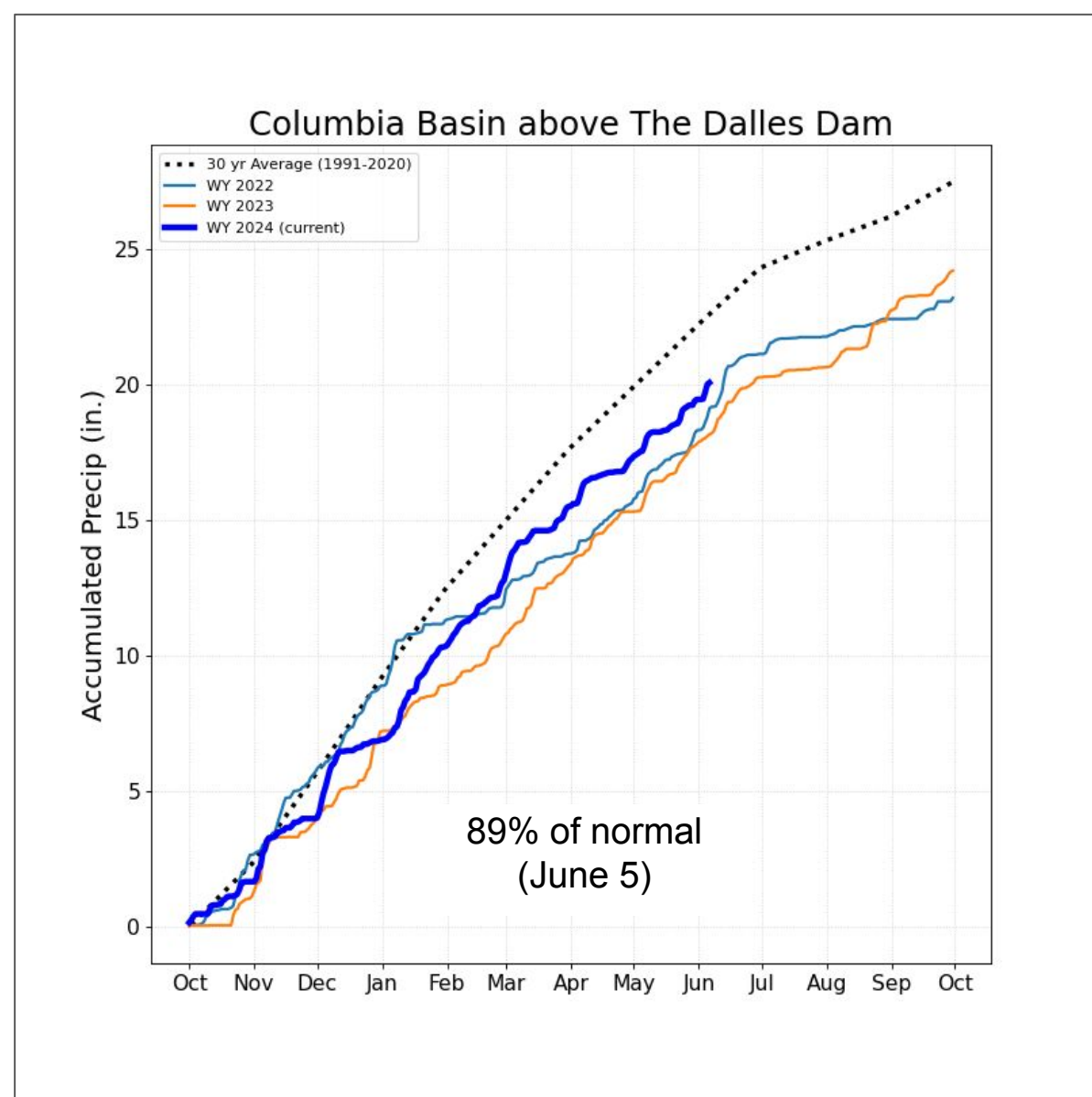


Precip averages from PRISM, OSU and PCIC.

Snowpack and Precipitation



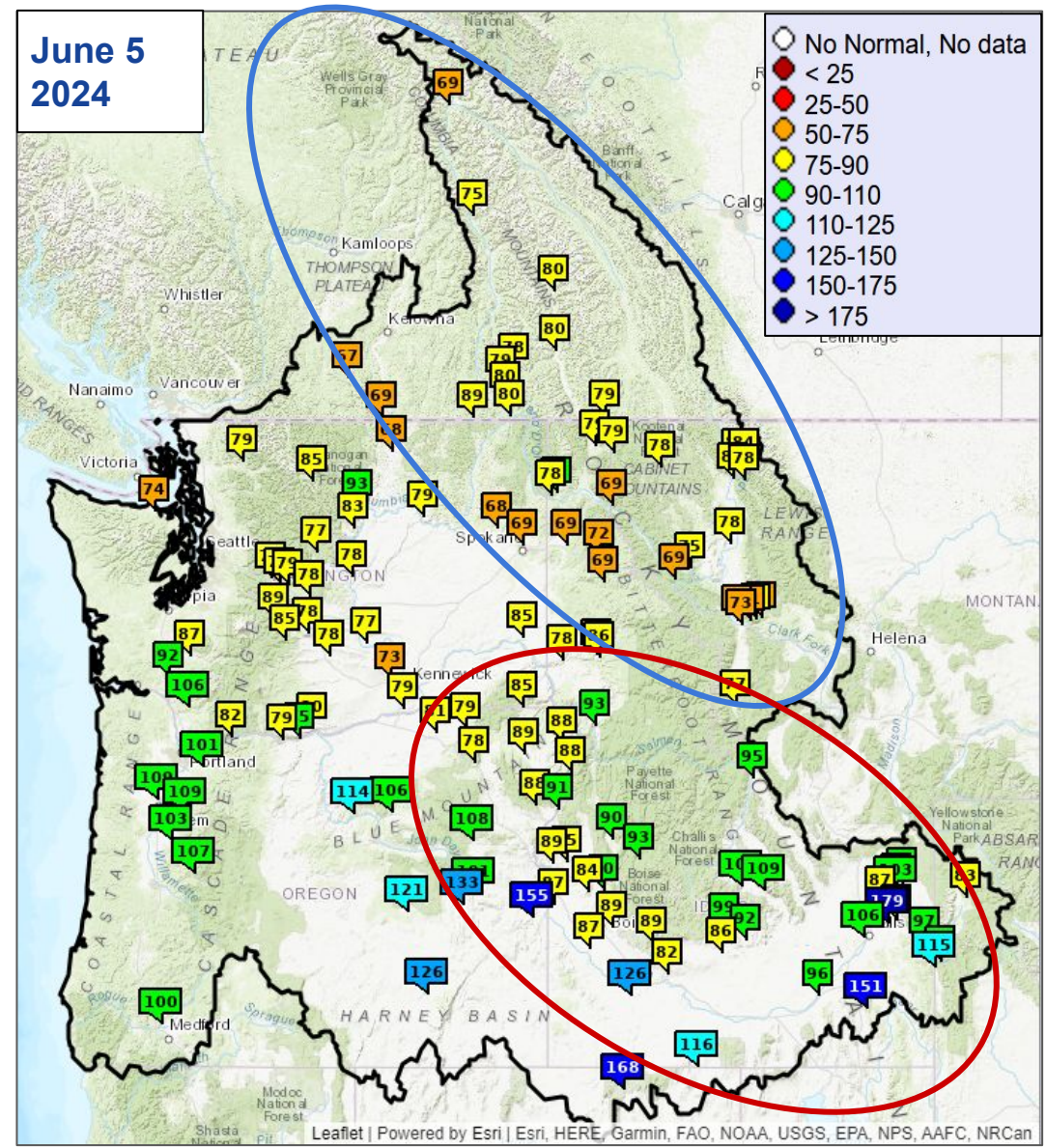
Snow data from Natural Resources Conservation Service, BC Hydro, Ministry of Environment and Climate Change Strategy, and Alberta Environment and Parks.



Precip averages from PRISM, OSU and PCIC.

Water Year to Date Adjusted Observed Runoff

% Normal Runoff Oct 1 - June 5		
<u>Upper Columbia Basin</u>		
		<u>Δ since May</u>
Mica	69	-4
Duncan	80	-12
Queens Bay	80	-10
Libby	78	-5
Hungry Horse	78	-12
Grand Coulee	79	-11
<u>Snake River Basin</u>		
American Falls	96	-1
Lucky Peak	89	-8
Dworshak	69	-4
Lower Granite	85	-3
<u>Lower Columbia Basin</u>		
The Dalles	79	-6



Water Year to Date Natural Observed Runoff

% Normal Runoff Oct 1 - May 1

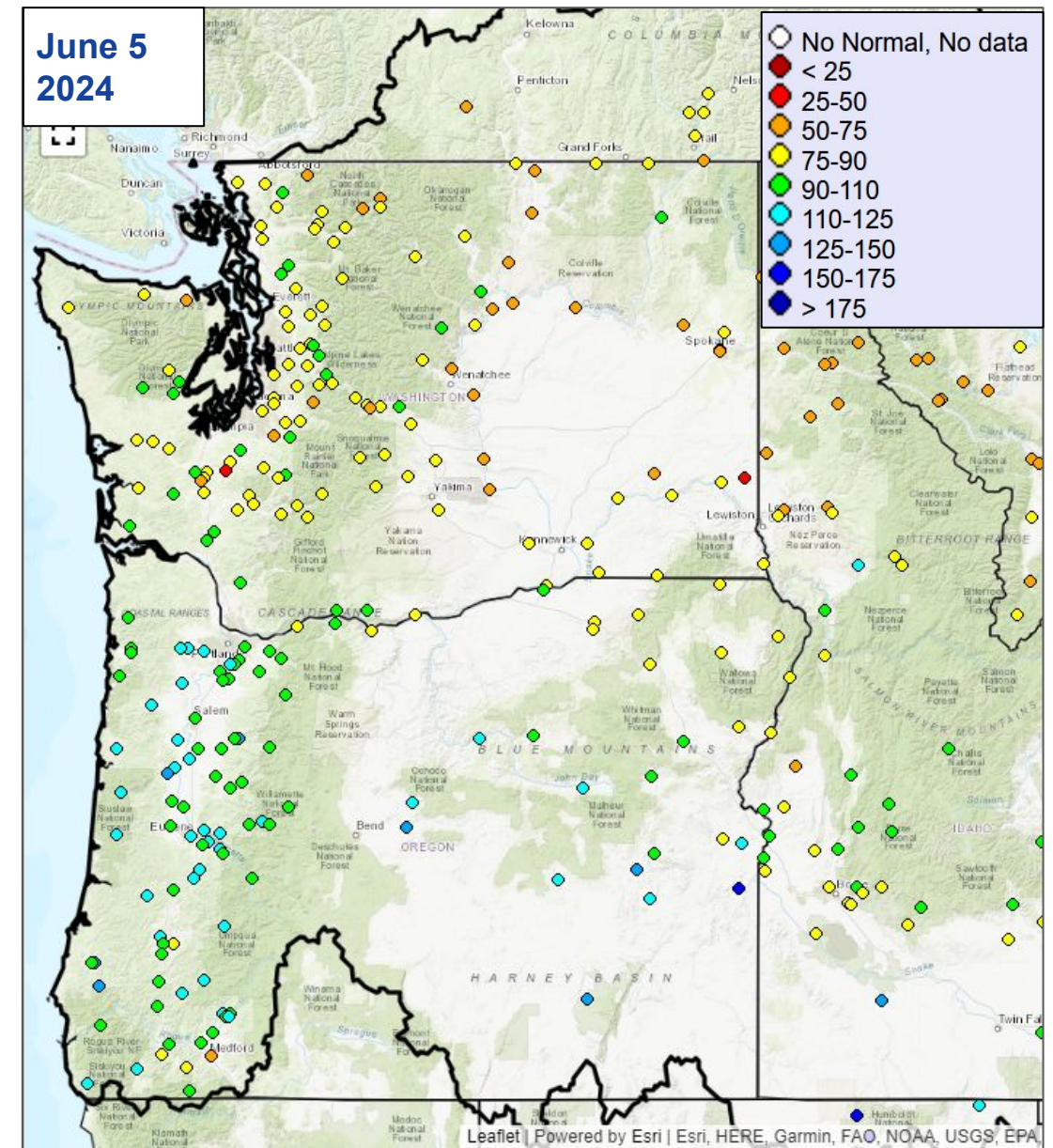
Washington

Δ since May 1

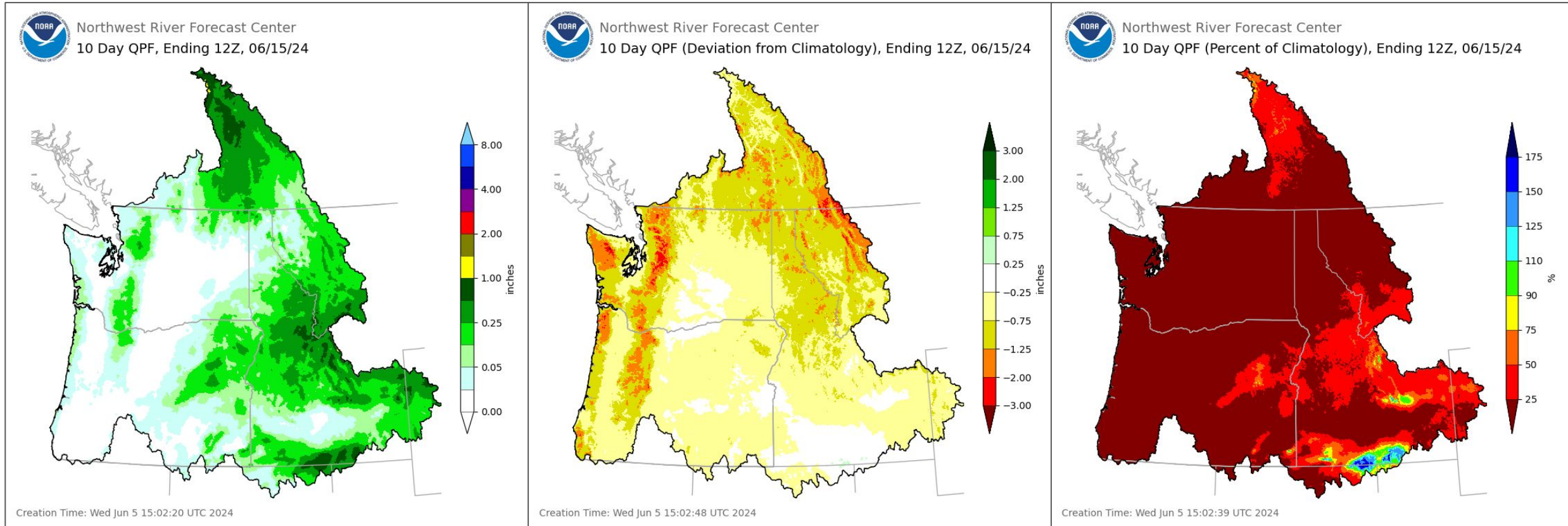
Skagit near Mt Vernon	77	-3
Dungeness near Sequim	73	-4
Chehalis at Porter	88	1
Okanogan at Malott	68	-11
Methow near Pateros	92	-30
Yakima at Parker	78	-6
Walla Walla near Touchet	75	-2

Oregon

Willamette at Salem	99	2
Rogue at Raygold	101	1
Umatilla at Pendleton	82	-1
Grande Ronde at Troy	84	-6
Crooked near Prineville	141	-6
Owyhee Dam	155	-4

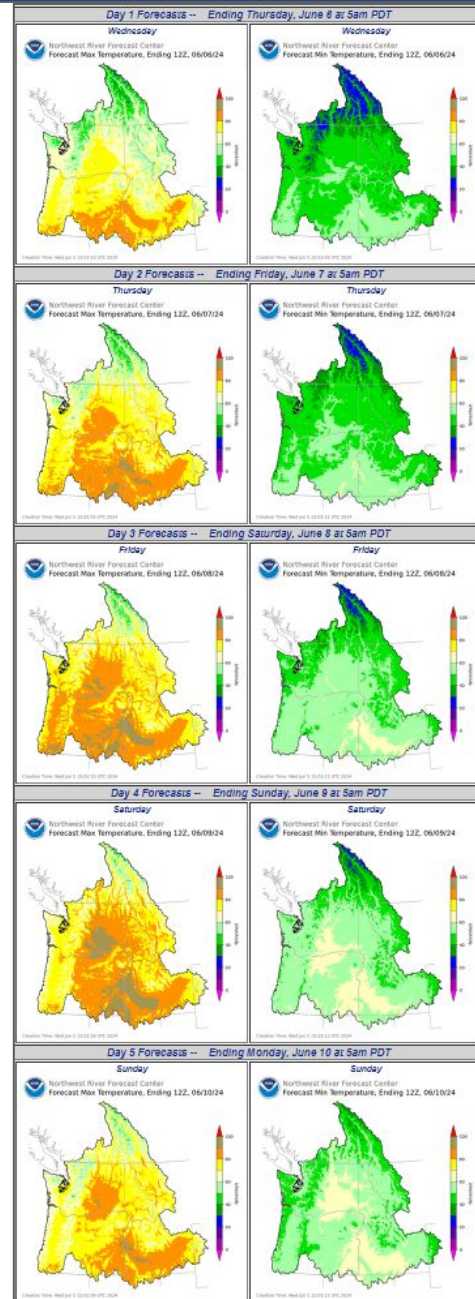
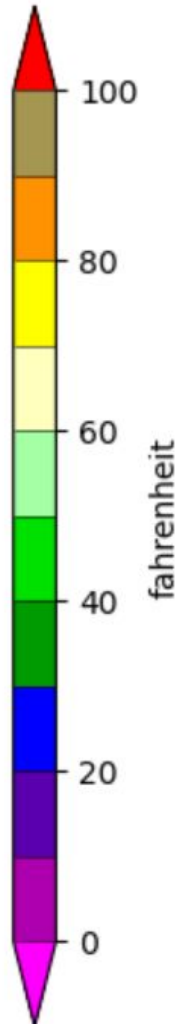


10 Day Precipitation Forecast used in ESP10



Quantitative Precipitation Forecast (QPF) Sources:
 Days 1 - 2 NWS Weather Forecast Offices (WFO) in the US, WPC in BC.
 Days 3 - 7 NWS Weather Prediction Center (WPC).
 Days 8 - 10 NWS National Blend of Models (NBM).

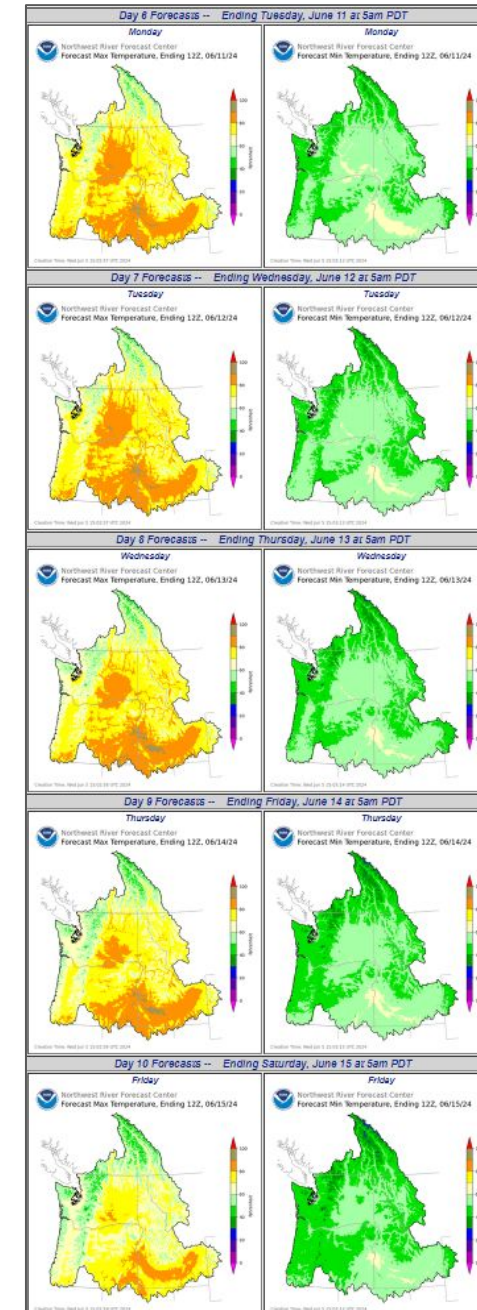
10 Day Temperature Forecast used in ESP10



Days 1 - 5



Days 6 -10



% Normal Apr-Sep Volume

Upper Columbia Basin

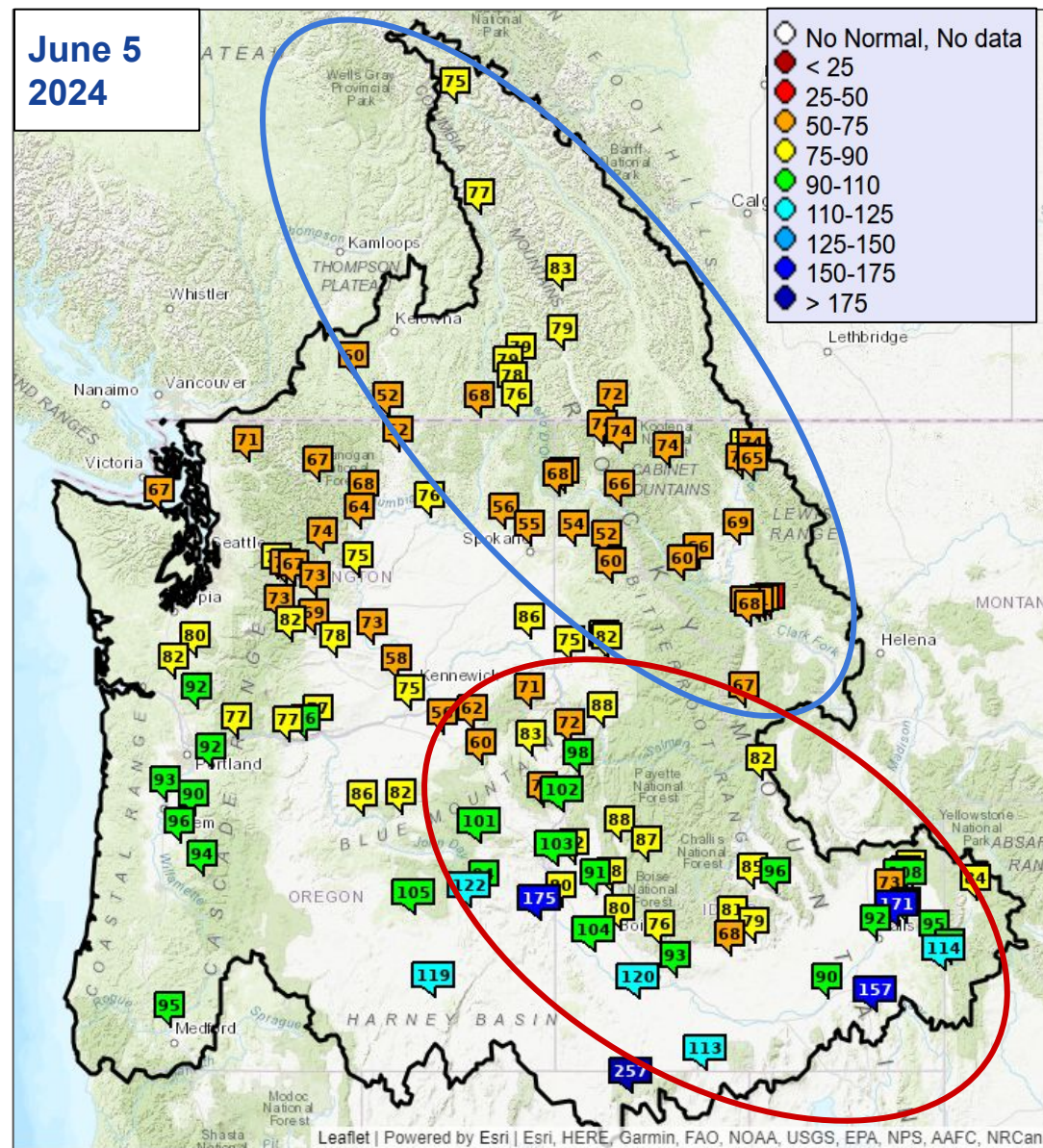
		<u>Δ since May</u>
Mica	75	-5
Duncan	83	-4
Queens Bay	79	-6
Libby	74	-6
Hungry Horse	65	-9
Grand Coulee	76	-3

Snake River Basin

American Falls	90	-24
Lucky Peak	80	-3
Dworshak	66	-5
Lower Granite	86	-6

Lower Columbia Basin

The Dalles	77	-3
------------	----	----





Natural Water Supply Forecasts

% Normal Apr-Sep Volume

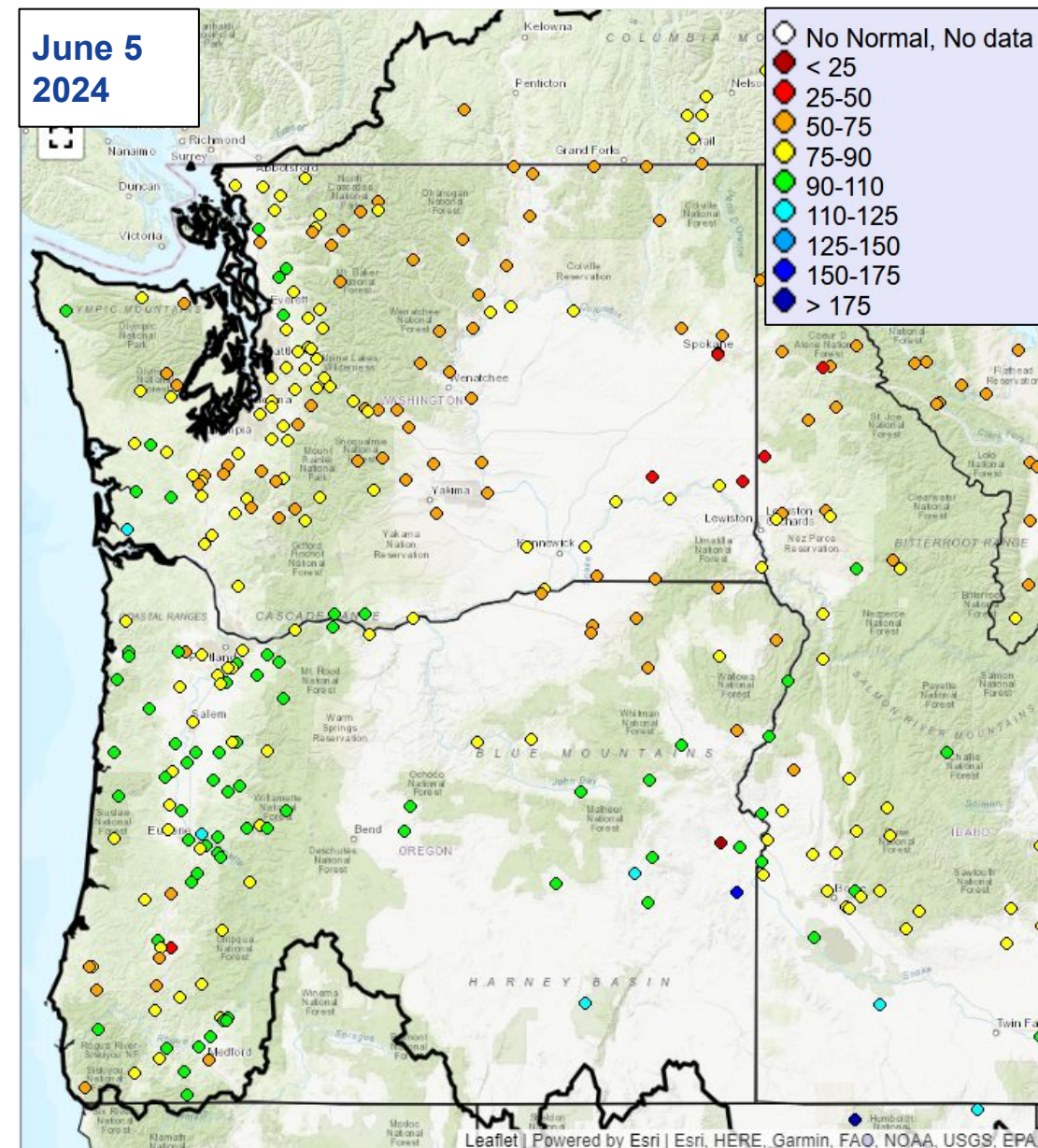
Washington

Δ since May 1

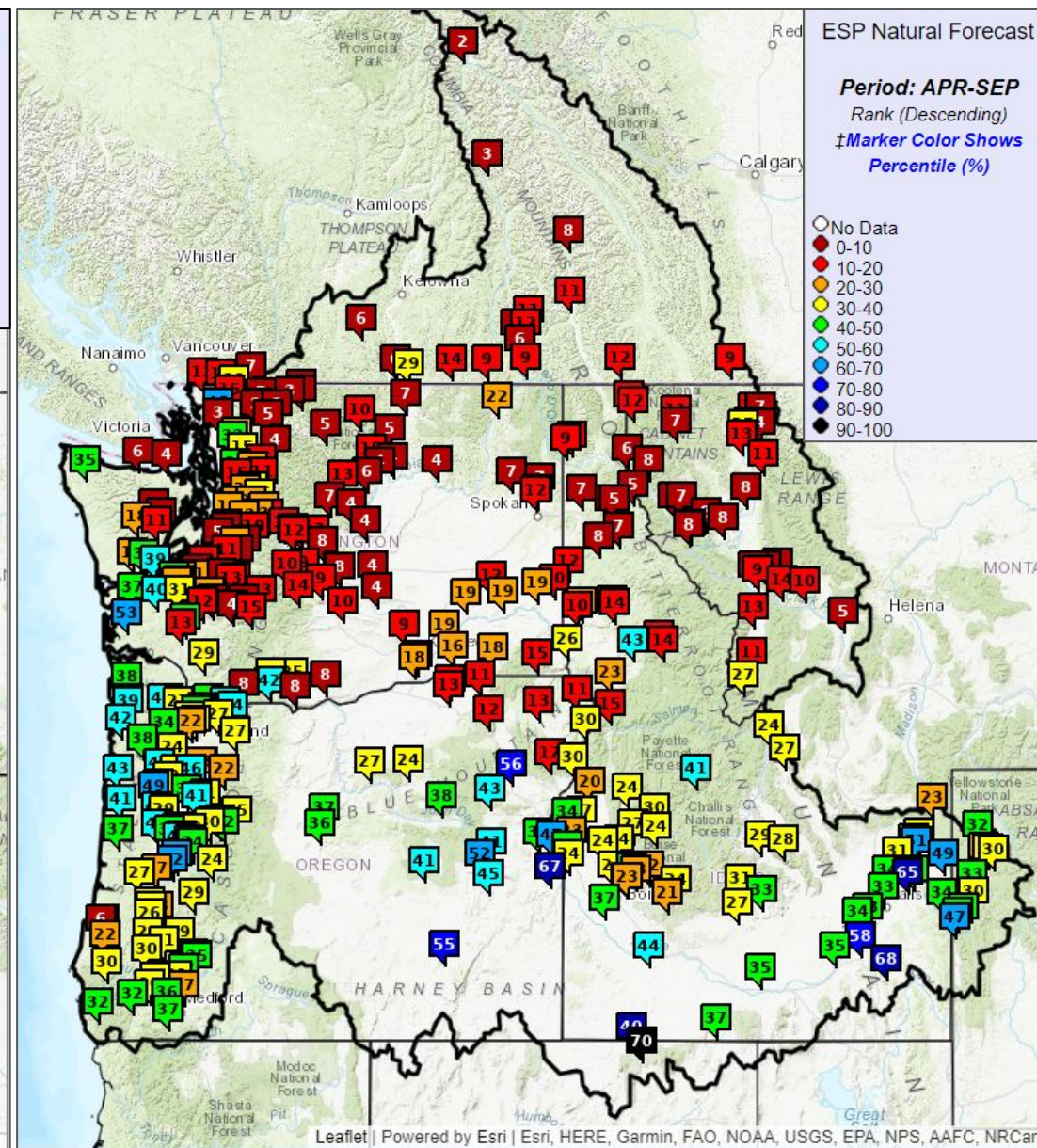
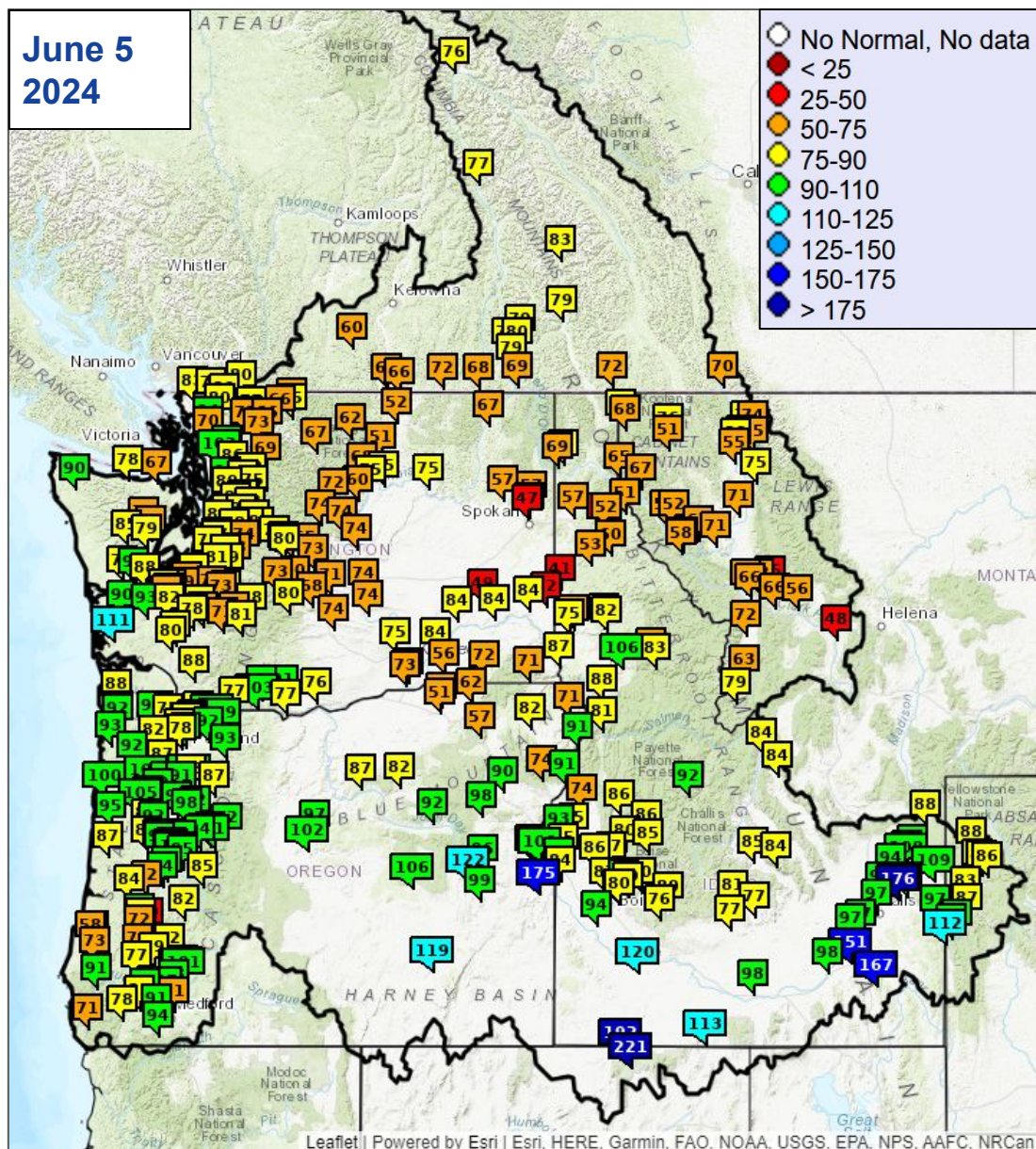
Skagit near Mt Vernon	70	-1
Dungeness near Sequim	67	-7
Chehalis at Porter	88	3
Okanogan at Malott	51	-2
Methow near Pateros	68	2
Yakima at Parker	74	-8
Walla Walla near Touchet	56	0

Oregon

Willamette at Salem	87	0
Rogue at Raygold	97	-4
Umatilla at Pendleton	60	-8
Grande Ronde at Troy	71	-7
Crooked near Prineville	102	-1
Owyhee Dam	175	-12

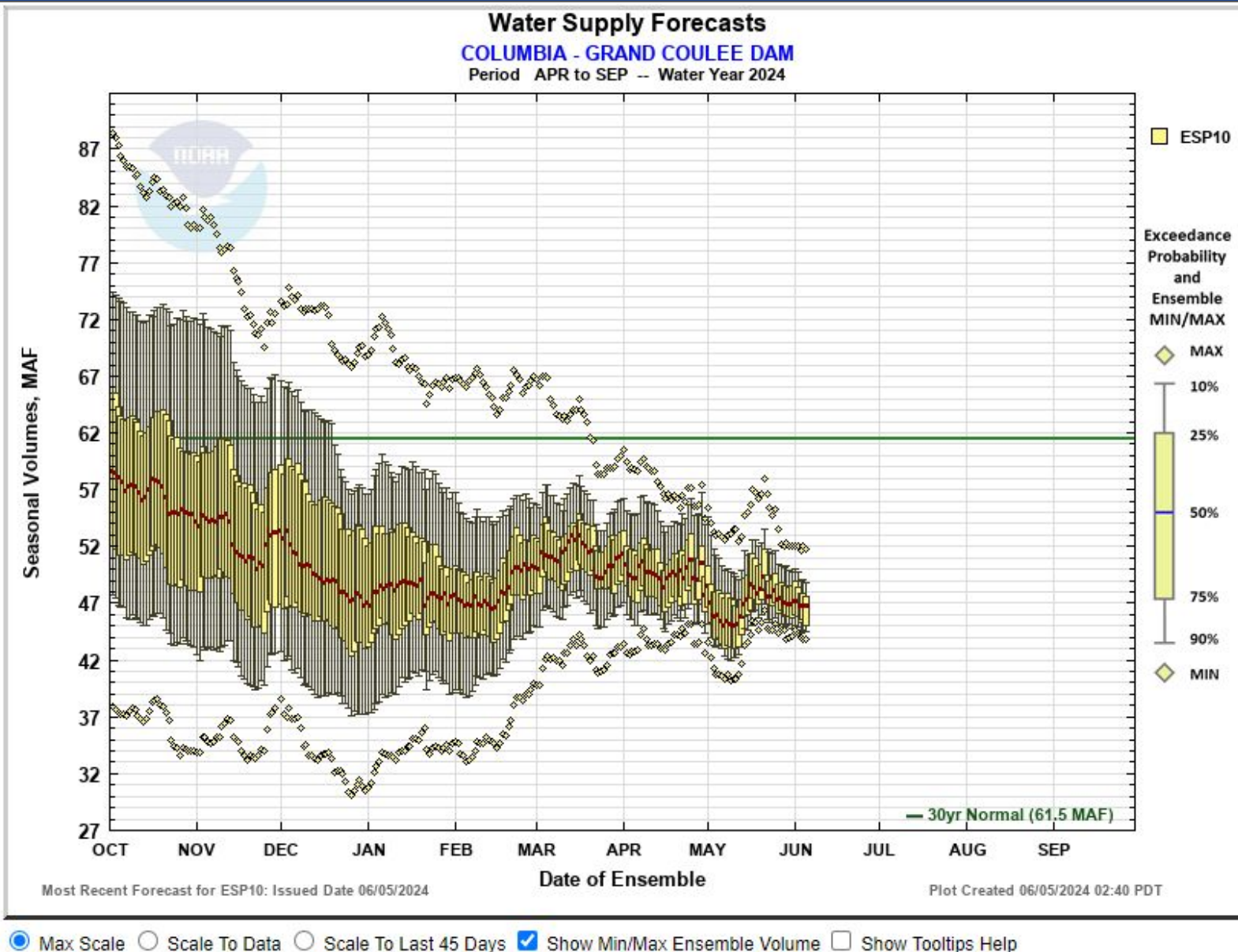


Natural Water Supply Forecasts - Ranked

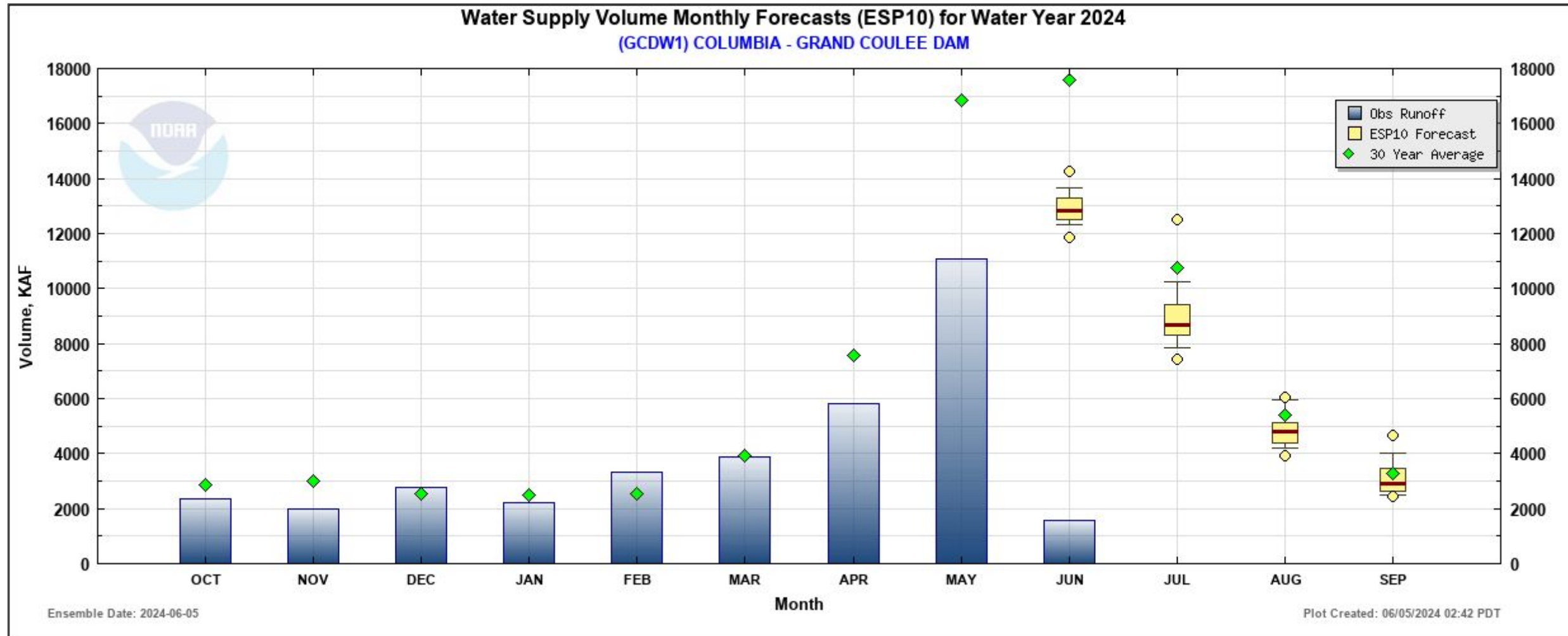


ESP10 Water Supply Forecast

COLUMBIA - GRAND COULEE DAM (GCDW1) Forecasts for Water Year 2024					
Official Water Supply					
ESP with 10 Days QPF Ensemble: 2024-06-05 Issued: 2024-06-05					
Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	44520	46812	76	48857	61483
APR-JUL	37346	38387	73	40402	52774
APR-AUG	41794	43099	74	45940	58186
JAN-SEP	53972	56264	80	58308	70457
JAN-JUL	46798	47839	77	49854	61749
OCT-SEP	61056	63348	80	65393	78842
Experimental Water Supply					
HEFS with 15 days EQPF Ensemble: 2024-06-05 Issued: 2024-06-05					
APR-SEP	44935	47006	76	49621	61483
APR-JUL	37759	38928	74	40725	52774
APR-AUG	42328	43784	75	46262	58186
JAN-SEP	54387	56458	80	59072	70457
JAN-JUL	47210	48380	78	50177	61749
OCT-SEP	61472	63543	81	66157	78842
Reference					
ESP with 0 Days QPF Ensemble: 2024-06-05 Issued: 2024-06-05					
APR-SEP	46271	48476	79	51906	61483
APR-JUL	38823	40097	76	43130	52774
APR-AUG	43275	45103	78	48707	58186
JAN-SEP	55723	57927	82	61358	70457
JAN-JUL	48275	49549	80	52582	61749
OCT-SEP	62807	65012	82	68443	78842



ESP10 Monthly Water Supply Forecast



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

ESP10 Water Supply Forecast

SNAKE - LOWER GRANITE DAM (LGDW1) Forecasts for Water Year 2024

Official Water Supply

ESP with 10 Days QPF Ensemble: 2024-06-05 Issued: 2024-06-05

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	18773	19076	86	19647	22232
APR-JUL	16490	16675	84	17118	19946
APR-AUG	17629	17881	85	18341	21121
JAN-SEP	24655	24958	84	25529	29736
JAN-JUL	22371	22557	82	23000	27450
OCT-SEP	28500	28803	84	29373	34287

Experimental Water Supply

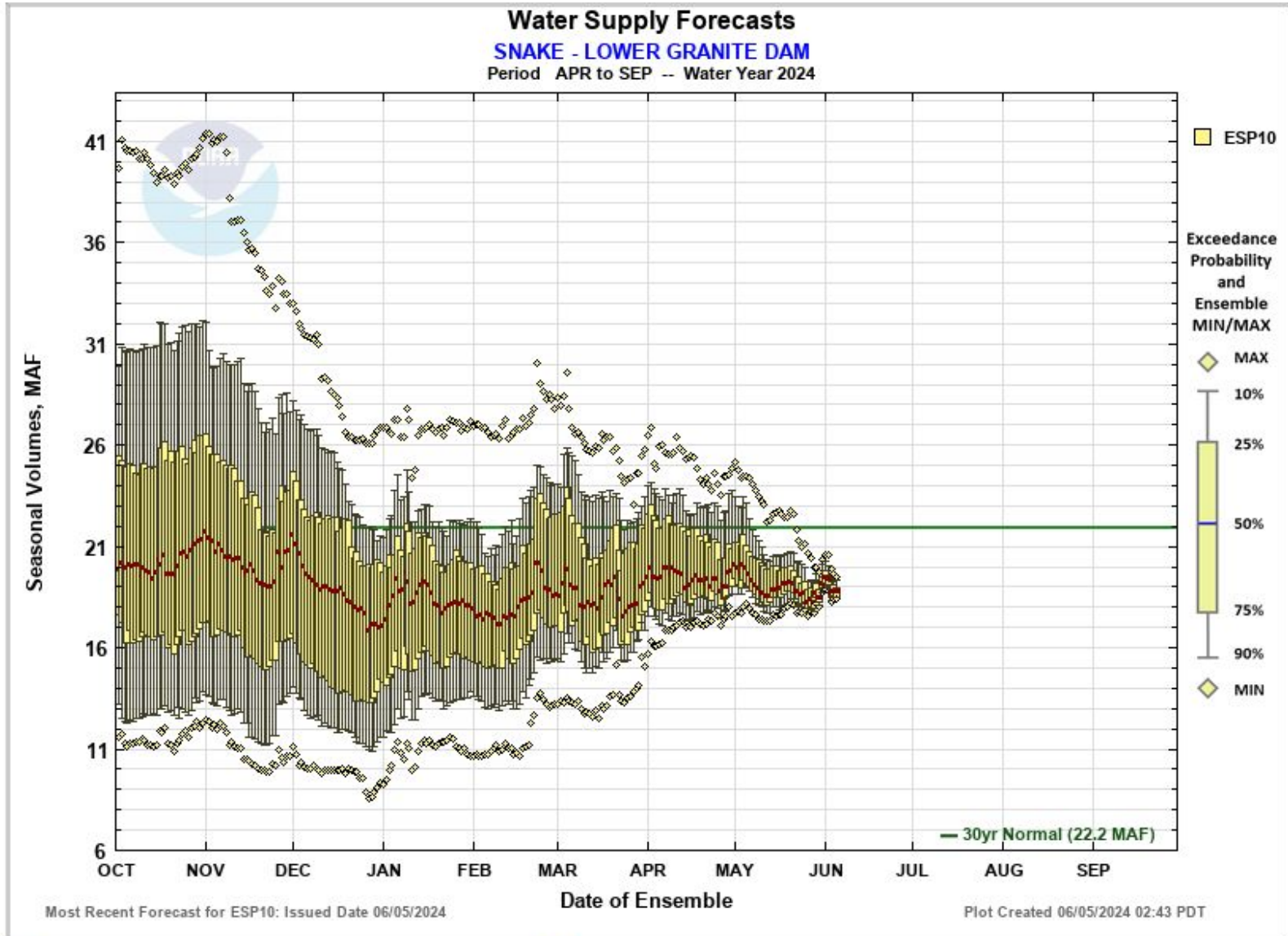
HEFS with 15 days EQPF Ensemble: 2024-06-05 Issued: 2024-06-05

APR-SEP	18721	19093	86	19798	22232
APR-JUL	16465	16714	84	17190	19946
APR-AUG	17581	17903	85	18478	21121
JAN-SEP	24603	24975	84	25679	29736
JAN-JUL	22347	22596	82	23072	27450
OCT-SEP	28447	28820	84	29524	34287

Reference

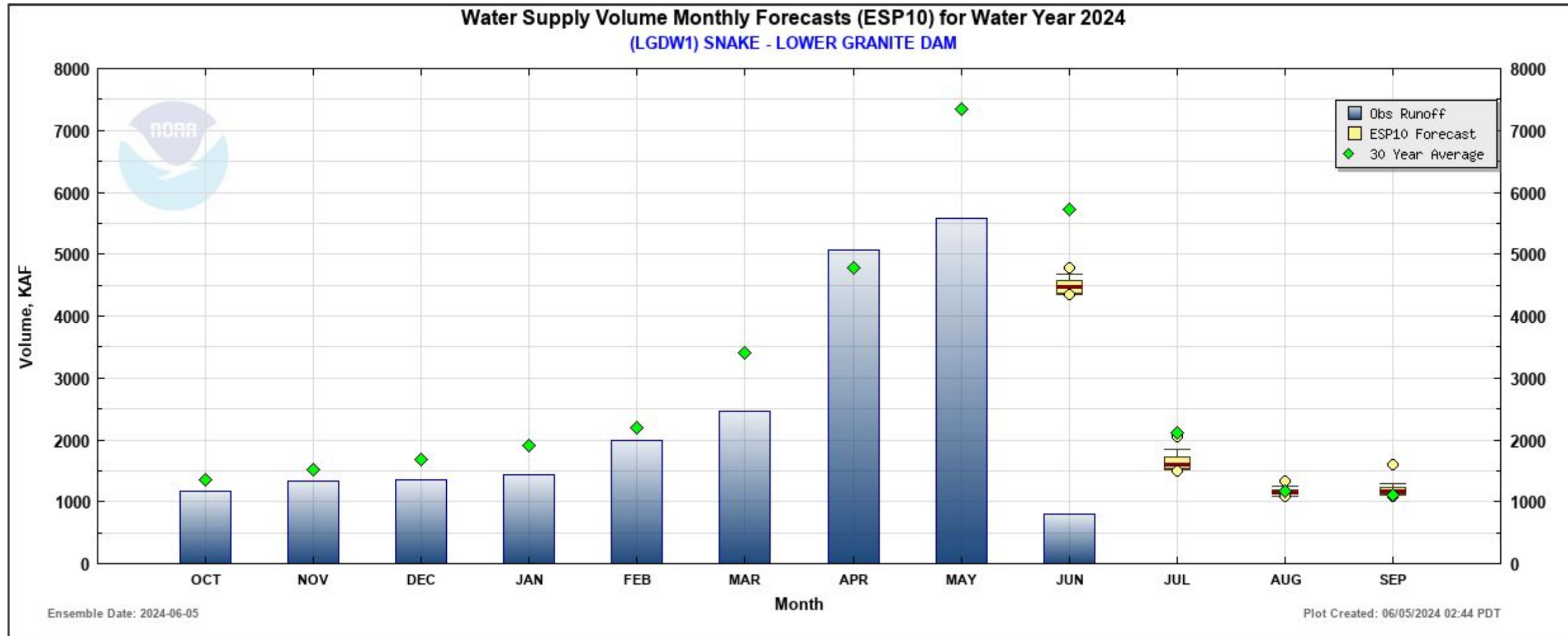
ESP with 0 Days QPF Ensemble: 2024-06-05 Issued: 2024-06-05

APR-SEP	18729	19410	87	20648	22232
APR-JUL	16431	17014	85	18168	19946
APR-AUG	17569	18172	86	19429	21121
JAN-SEP	24611	25291	85	26530	29736
JAN-JUL	22313	22896	83	24049	27450
OCT-SEP	28456	29136	85	30375	34287



☒ Max Scale ☐ Scale To Data ☐ Scale To Last 45 Days ☒ Show Min/Max Ensemble Volume ☐ Show Tooltips Help

ESP10 Monthly Water Supply Forecast



nwrfc.noaa.gov/water_supply/monthly/monthly_forecasts.php?id=LGDW1

ESP10 Water Supply Forecast

COLUMBIA - THE DALLES DAM (TDAO3) Forecasts for Water Year 2024

Official Water Supply

ESP with 10 Days QPF Ensemble: 2024-06-05 Issued: 2024-06-05

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	69859	72176	77	74904	94166
APR-JUL	59527	60508	74	63017	81933
APR-AUG	65525	67197	75	70037	89196
JAN-SEP	89197	91514	79	94241	115946
JAN-JUL	78865	79846	77	82355	103714
OCT-SEP	102451	104768	79	107496	132314

Experimental Water Supply

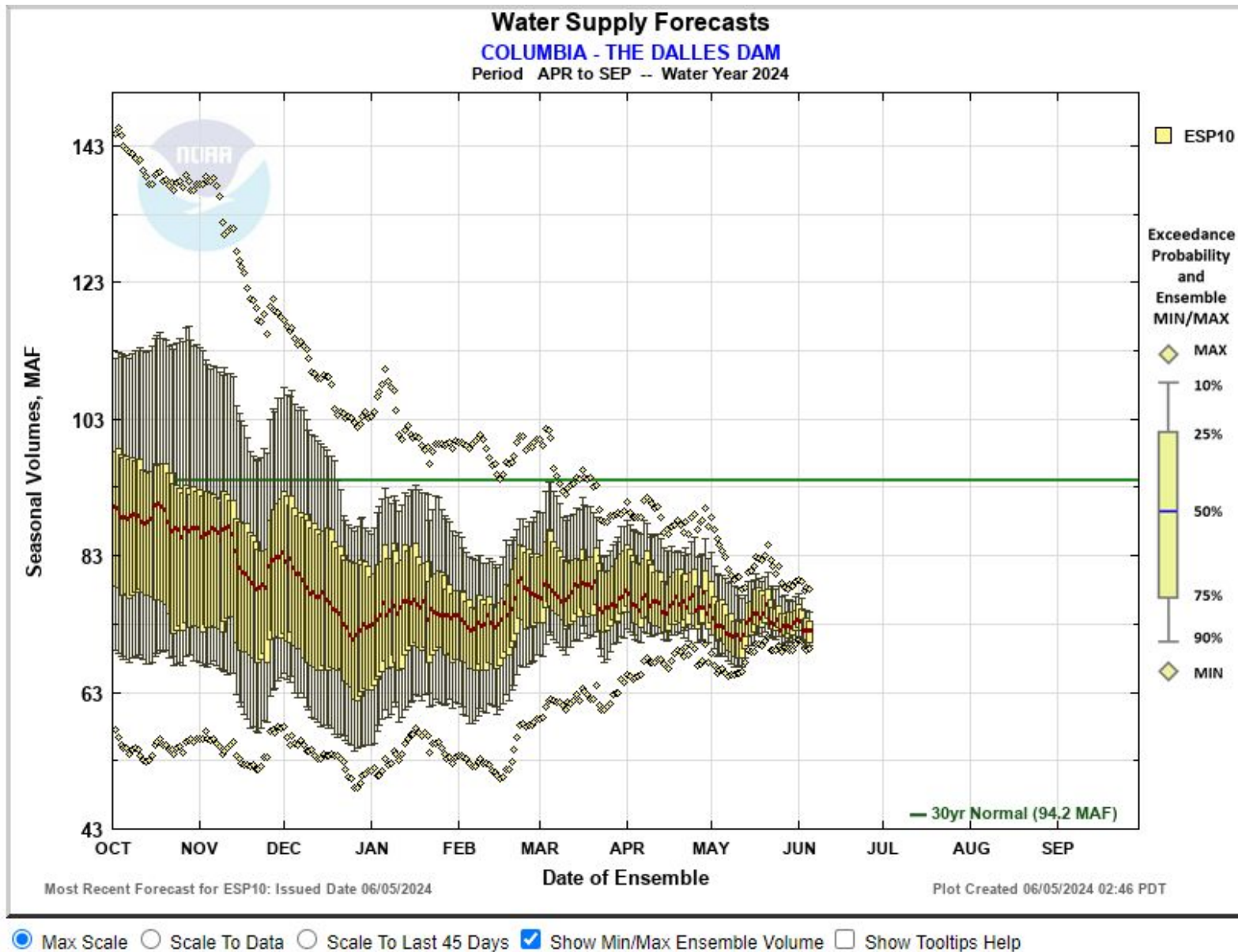
HEFS with 15 days EQPF Ensemble: 2024-06-05 Issued: 2024-06-05

APR-SEP	70450	72547	77	75678	94166
APR-JUL	59877	61102	75	63691	81933
APR-AUG	66167	67529	76	70815	89196
JAN-SEP	89788	91885	79	95016	115946
JAN-JUL	79214	80440	78	83029	103714
OCT-SEP	103042	105139	79	108270	132314

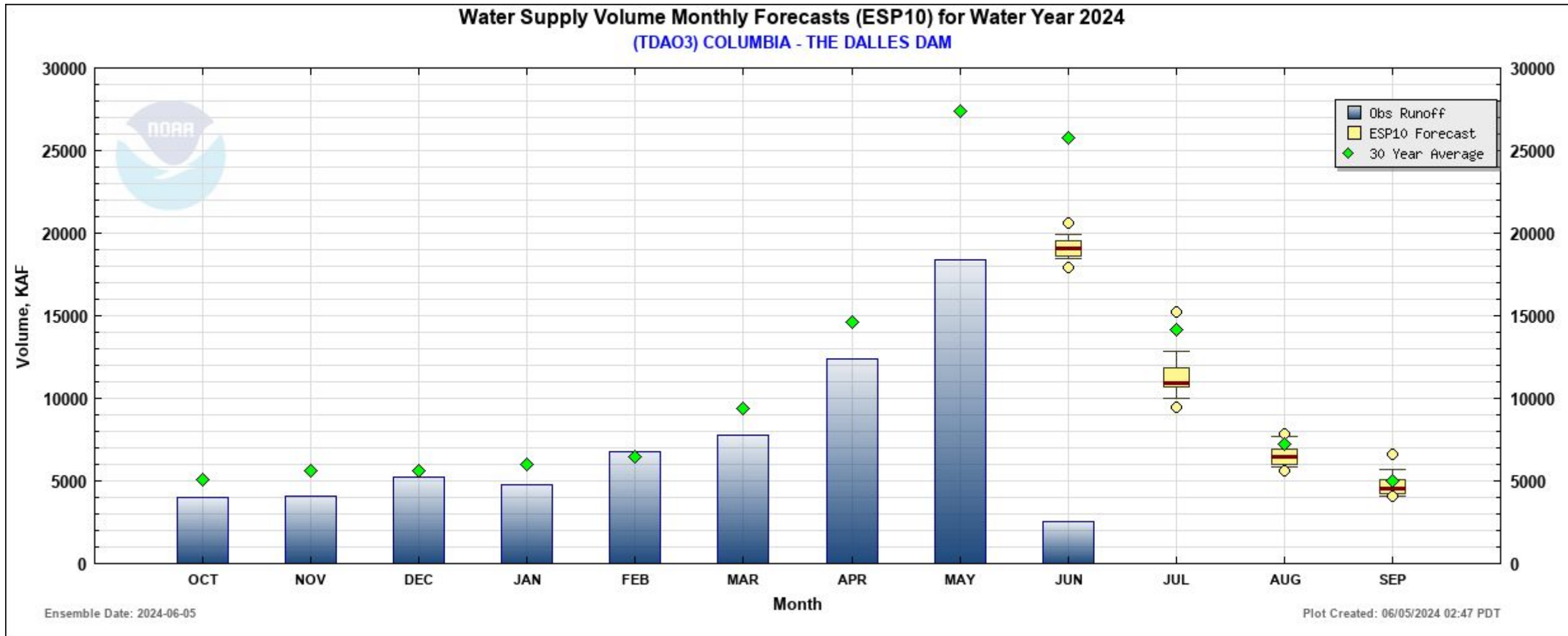
Reference

ESP with 0 Days QPF Ensemble: 2024-06-05 Issued: 2024-06-05

APR-SEP	72034	74173	79	79657	94166
APR-JUL	60975	62747	77	67223	81933
APR-AUG	67556	69346	78	74667	89196
JAN-SEP	91372	93510	81	98995	115946
JAN-JUL	80313	82085	79	86561	103714
OCT-SEP	104626	106765	81	112249	132314



ESP10 Monthly Water Supply Forecast



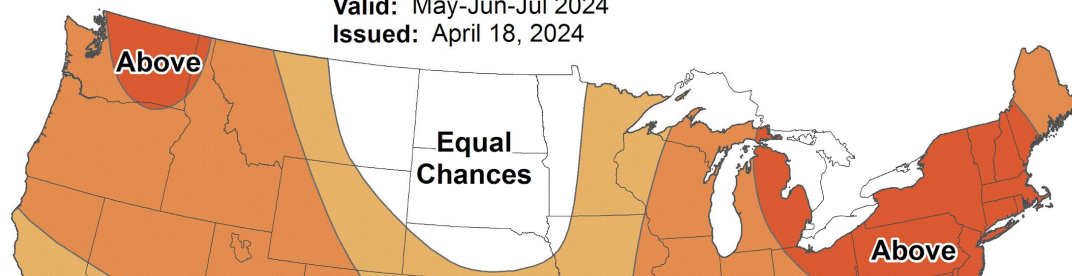
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Climate Prediction Center Seasonal Outlook



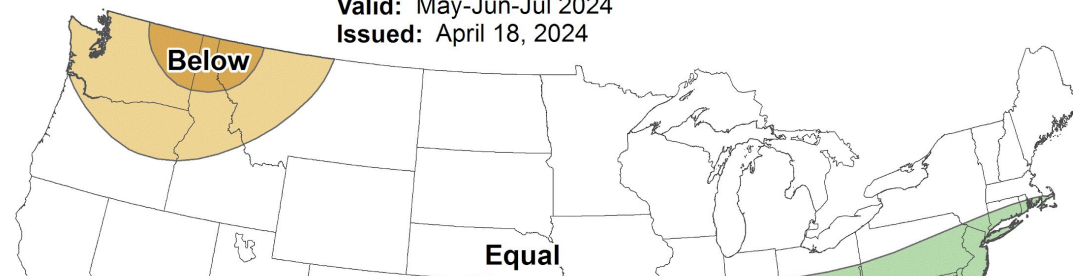
Seasonal Temperature Outlook

Valid: May-Jun-Jul 2024
Issued: April 18, 2024



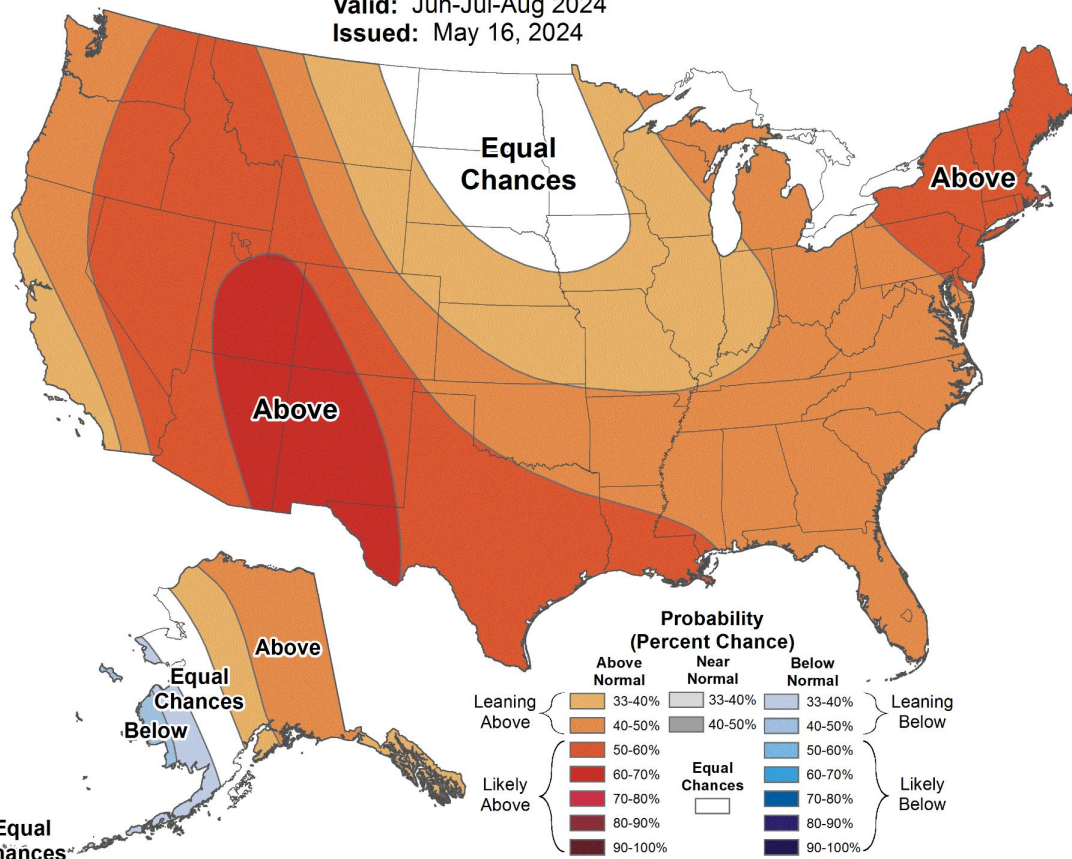
Seasonal Precipitation Outlook

Valid: May-Jun-Jul 2024
Issued: April 18, 2024



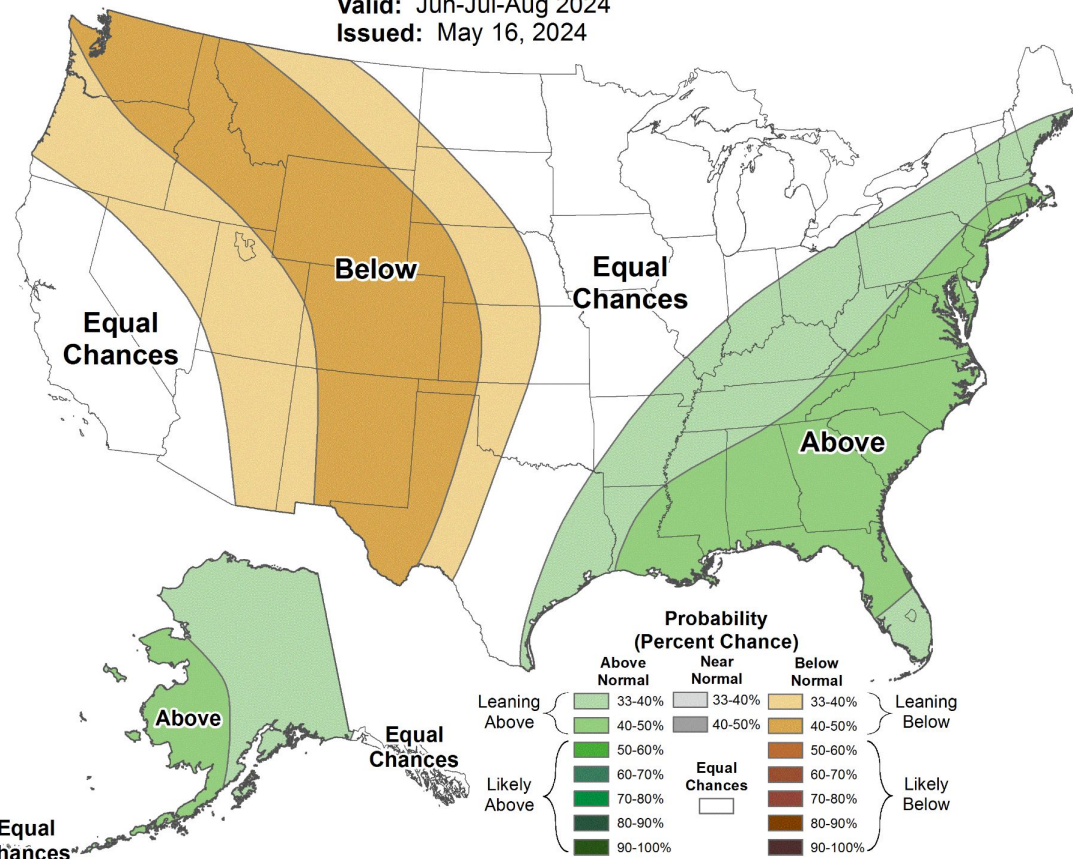
Seasonal Temperature Outlook

Valid: Jun-Jul-Aug 2024
Issued: May 16, 2024



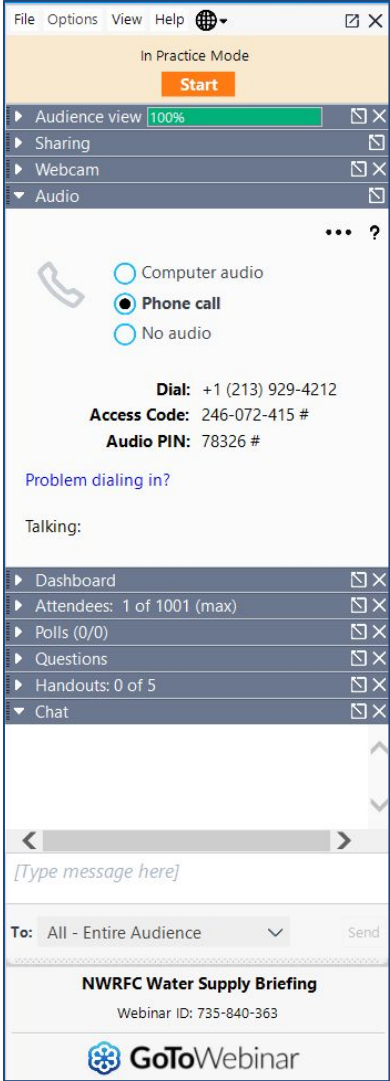
Seasonal Precipitation Outlook

Valid: Jun-Jul-Aug 2024
Issued: May 16, 2024



Key Takeaways

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- Water year total precipitation and runoff were below normal in the north and above normal in the south.
- Water supply forecasts follow the same north south pattern.
- The northern portion of our domain had record low snowpacks and water supply forecasts.



Type questions in the webinar chat box or use the 'Raise Hand' function.

To ask a question using your phone, enter the AUDIO PIN followed by the # sign.

The AUDIO PIN was provided when you logged into the webinar. If you need to enter the PIN after you are connected, try #PIN#.



ENSO prediction for beyond this water year

Model Predictions of ENSO from May 2024

The majority of models indicate ENSO-neutral will persist through July-September 2024. Thereafter, most models indicate a transition to La Niña around August-October 2024.

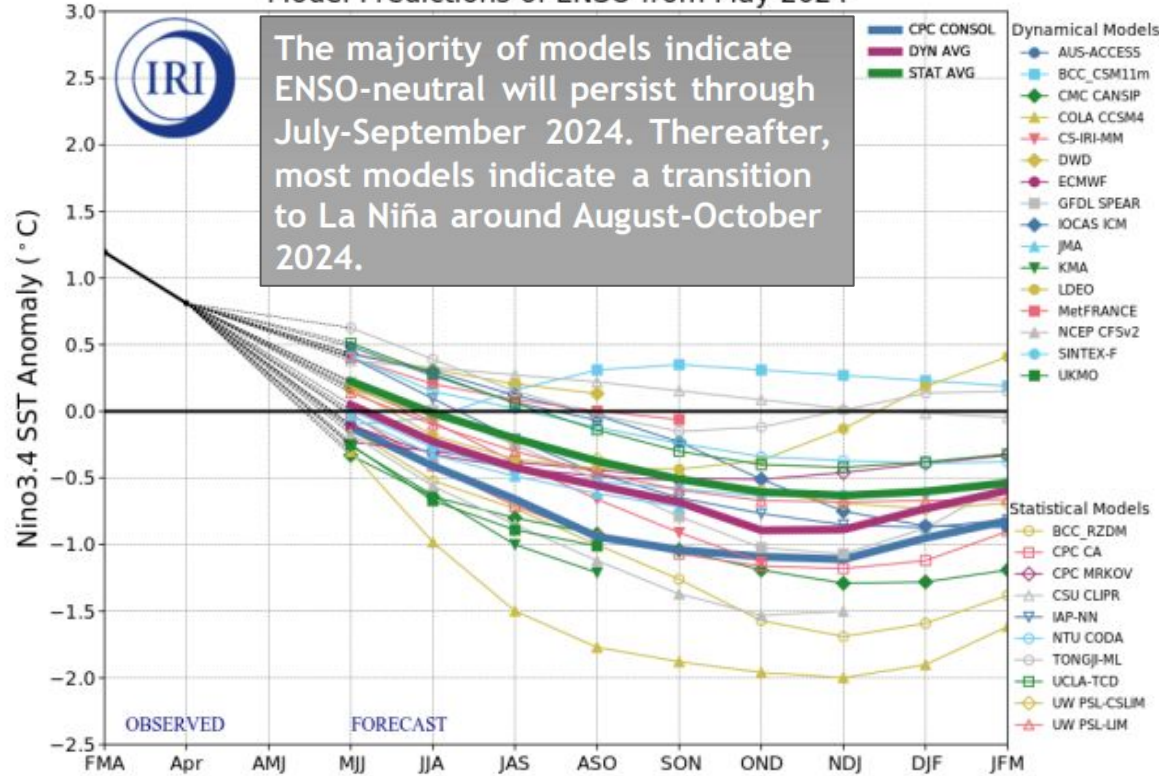
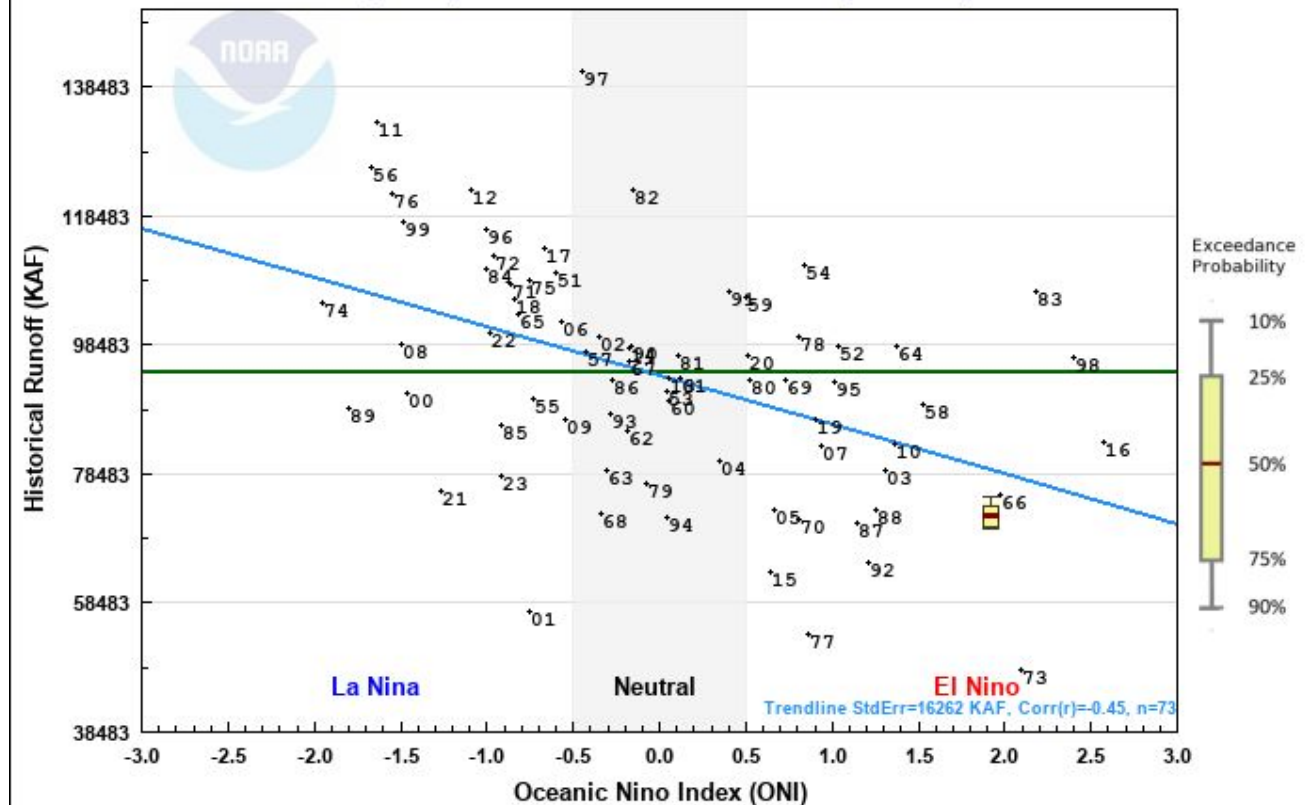


Figure provided by the International Research Institute (IRI) for Climate and Society (updated 20 May 2024).

OCT-DEC Oceanic Nino Index vs APR-SEP Historical Water Supply Runoff

(TDAO3) COLUMBIA - THE DALLES DAM (1951-2023)



ONI Index Date: 11/01/2023

ESP Forecast Date: 06/05/2024

Created: 06/05/2024 02:50 PDT