



Northwest River Forecast Center

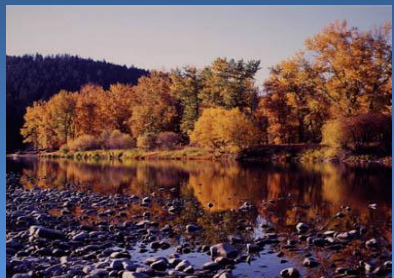


March 2023 Water Supply Briefing

Telephone Conference: (213) 929-4212
Audio Access Code: 949-968-637#



Amy Burke
NWRFC.watersupply@noaa.gov



*Audio PIN is provided when logging into the webinar and is required if you wish to ask questions at the end of presentation



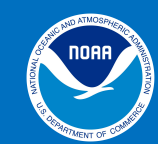
Take Home Messages

February was colder and drier than normal.

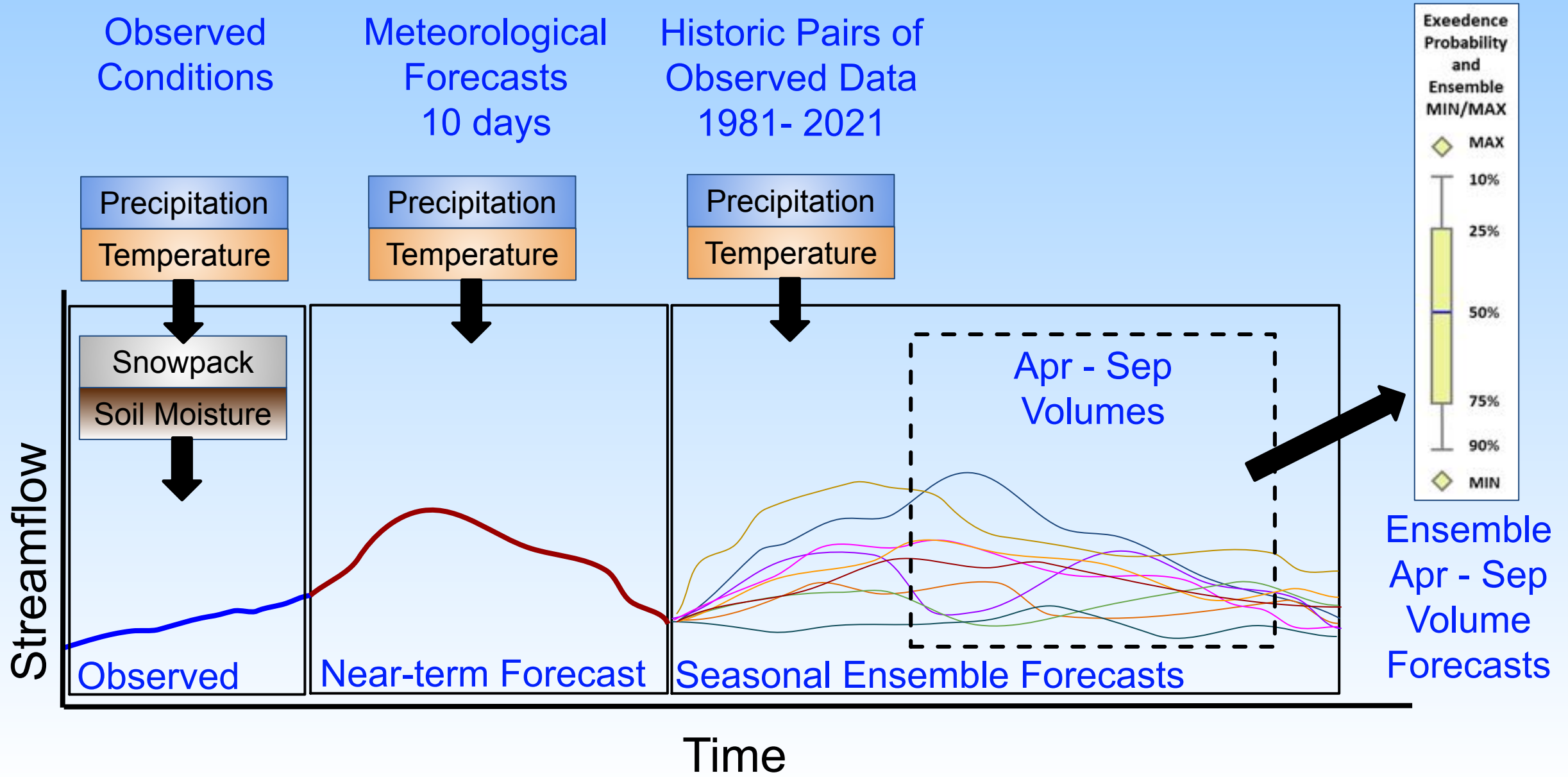
Snowpack is a mix of above and below normal. Much of the Pacific Northwest has higher than normal low elevation snow.

Observed runoff to date remains well below normal.

Apr-Sep water supply forecasts remain mostly normal to below normal.

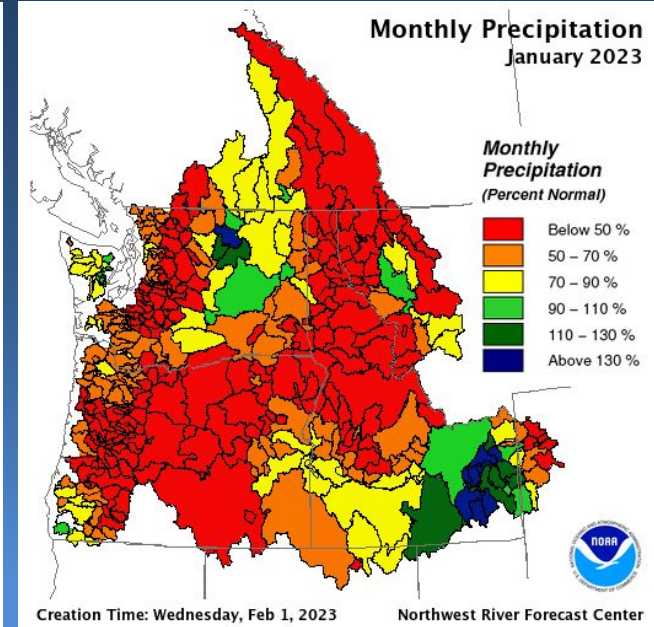
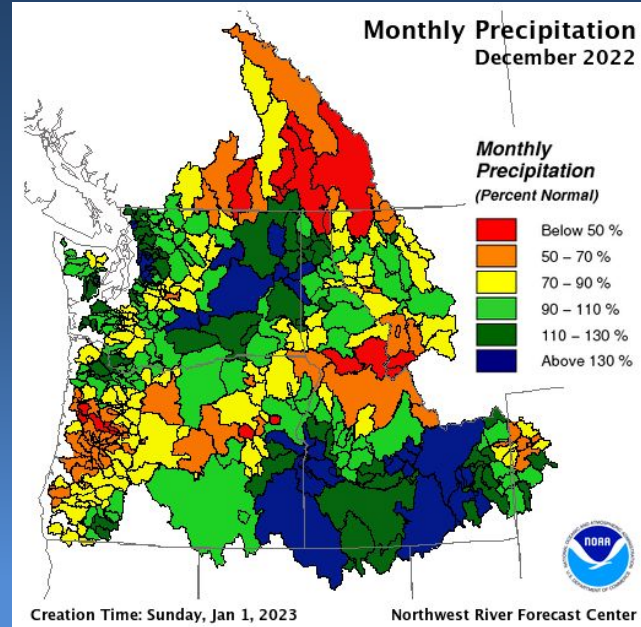
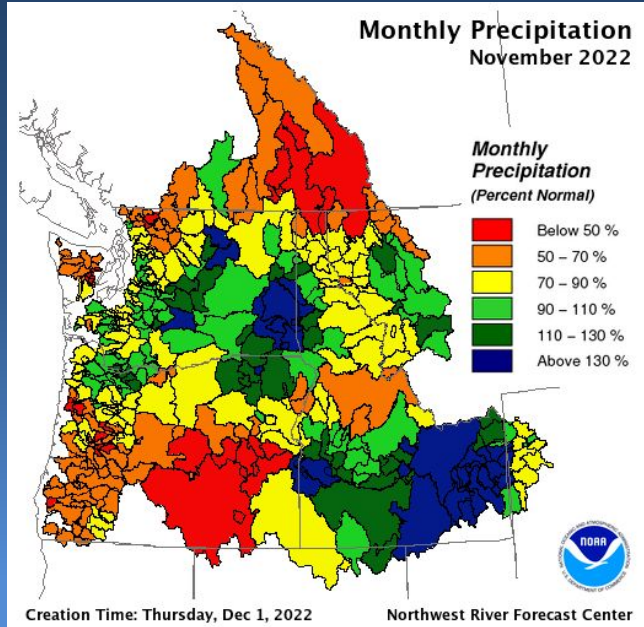
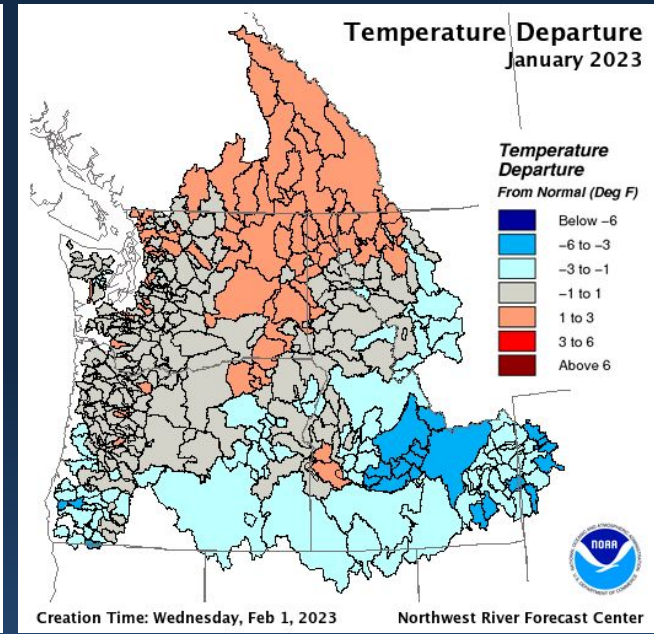
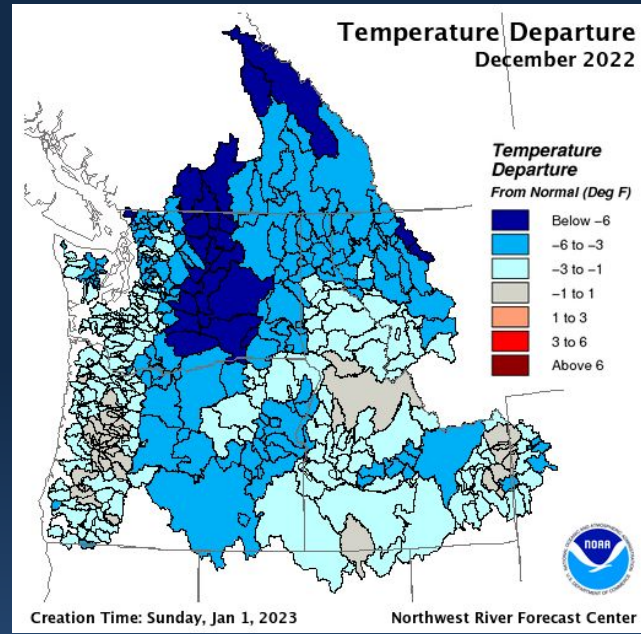
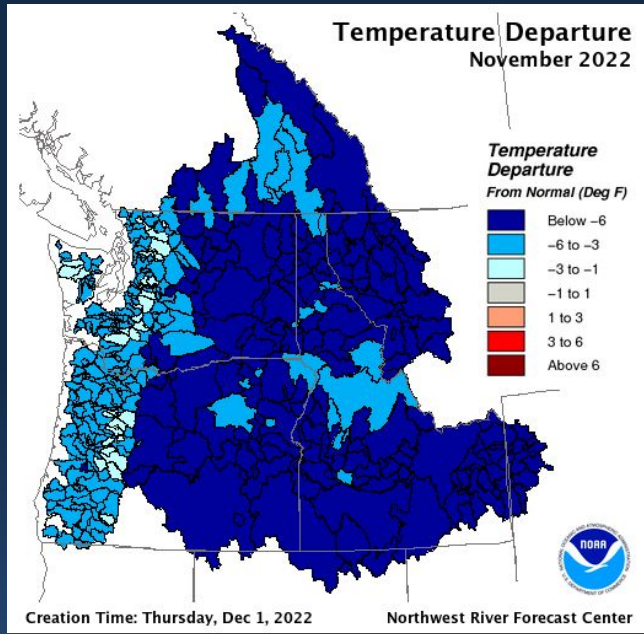


NWRFC Forecast Technique





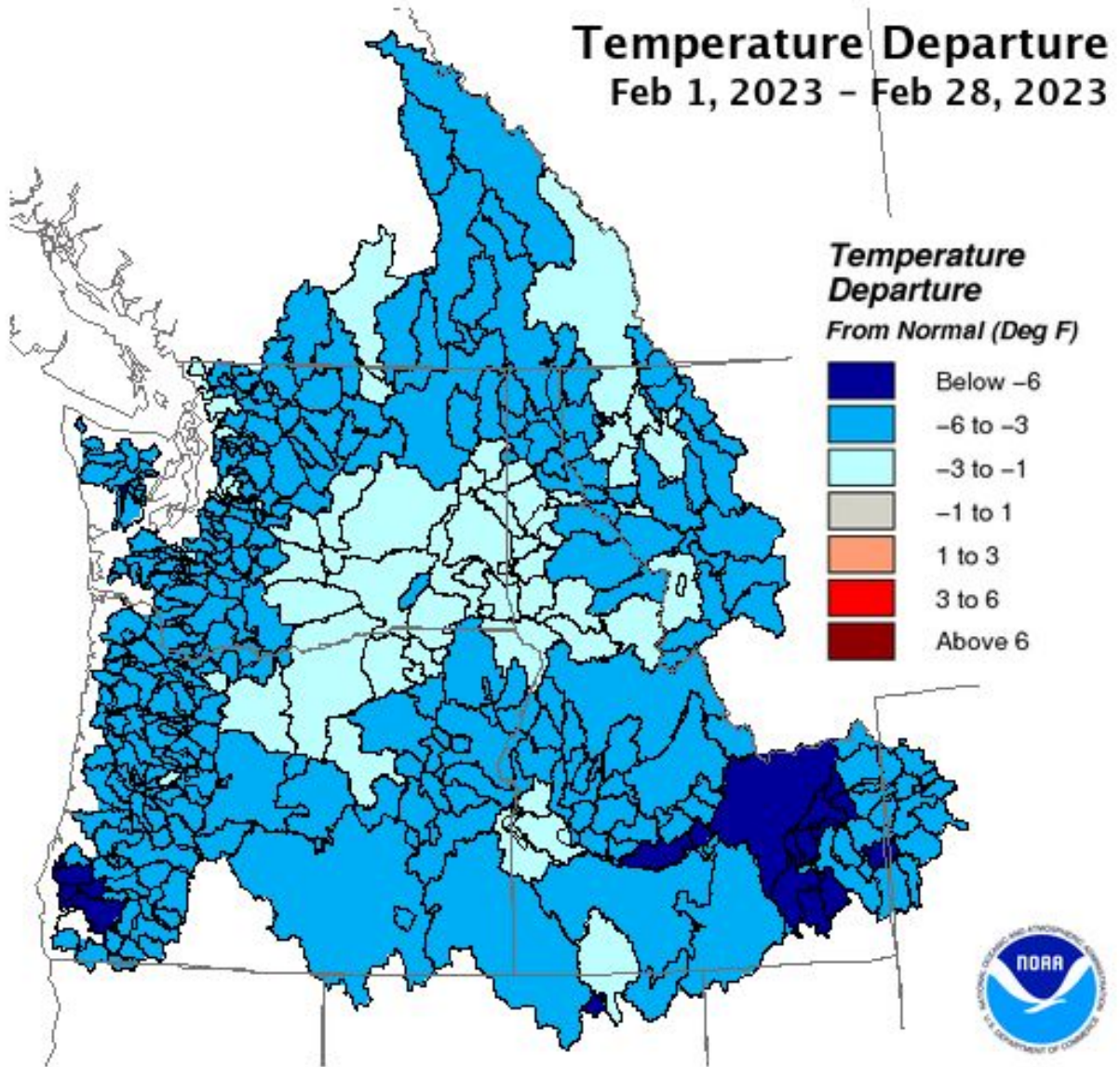
Temperature and Precipitation Nov - Jan





Temperature and Precipitation February

Temperature Departure Feb 1, 2023 - Feb 28, 2023

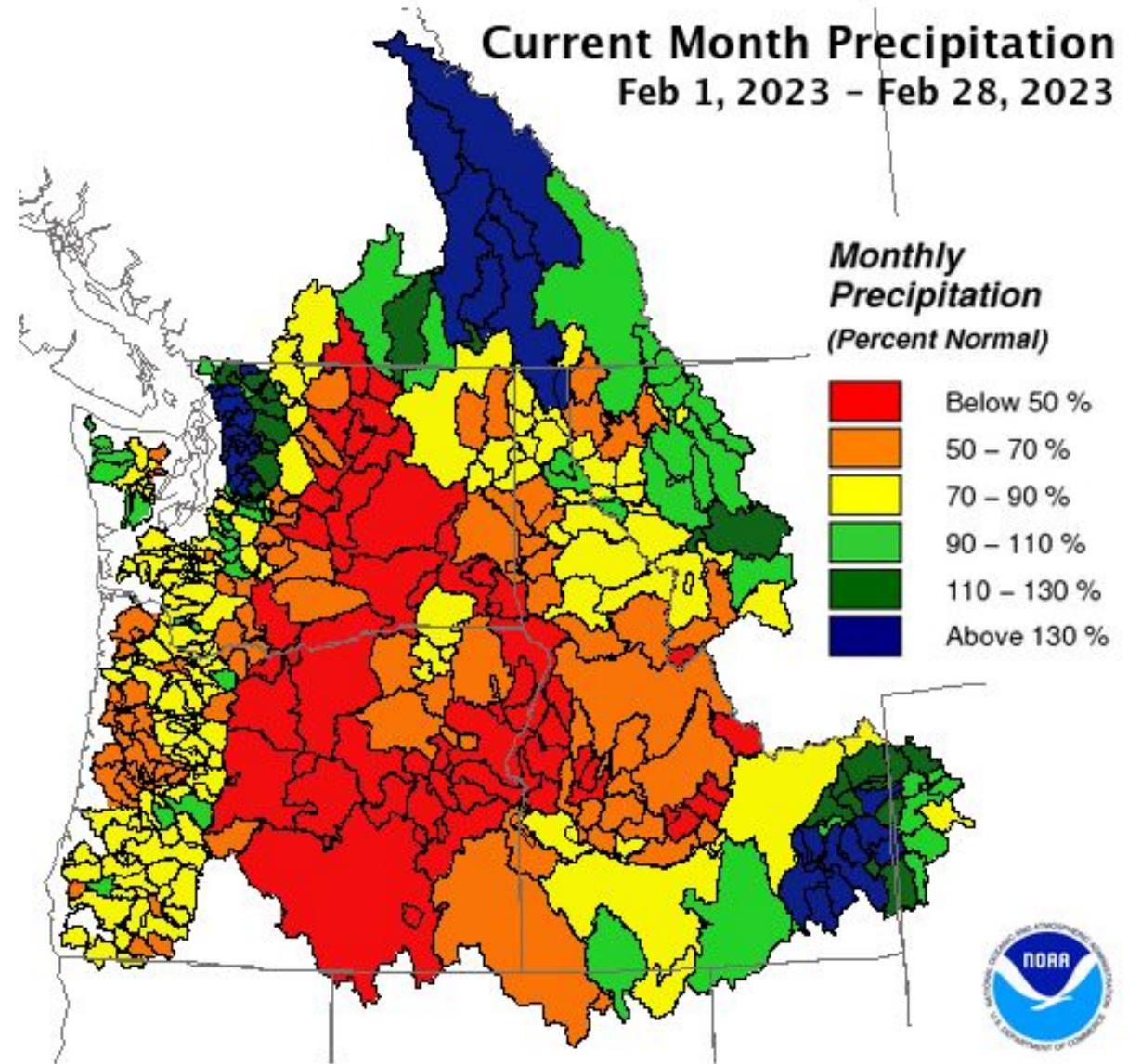


Creation Time: Wednesday, Mar 1, 2023

Northwest River Forecast Center



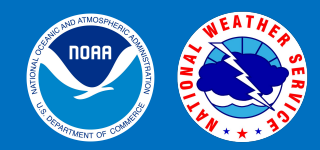
Current Month Precipitation Feb 1, 2023 - Feb 28, 2023



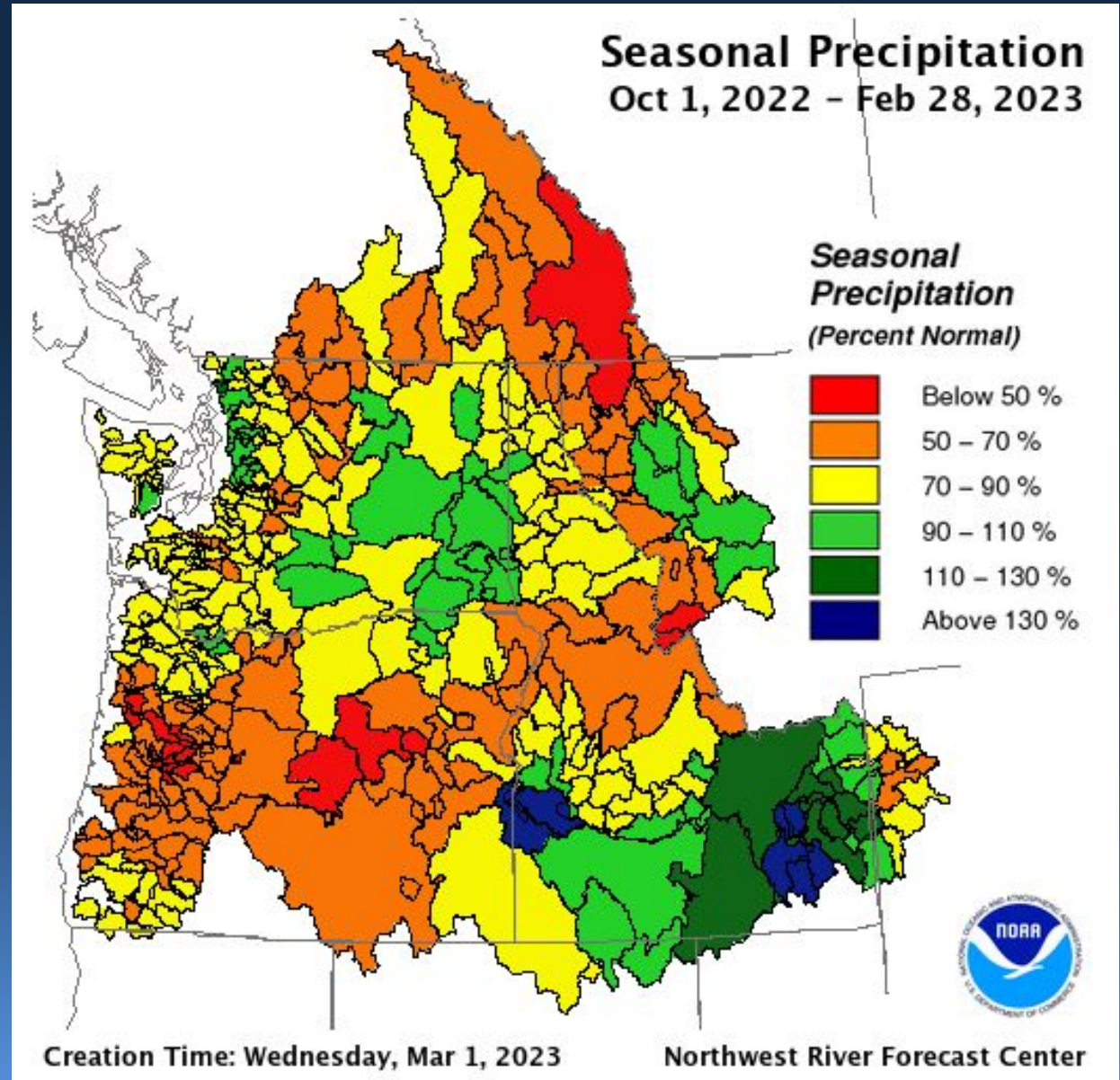
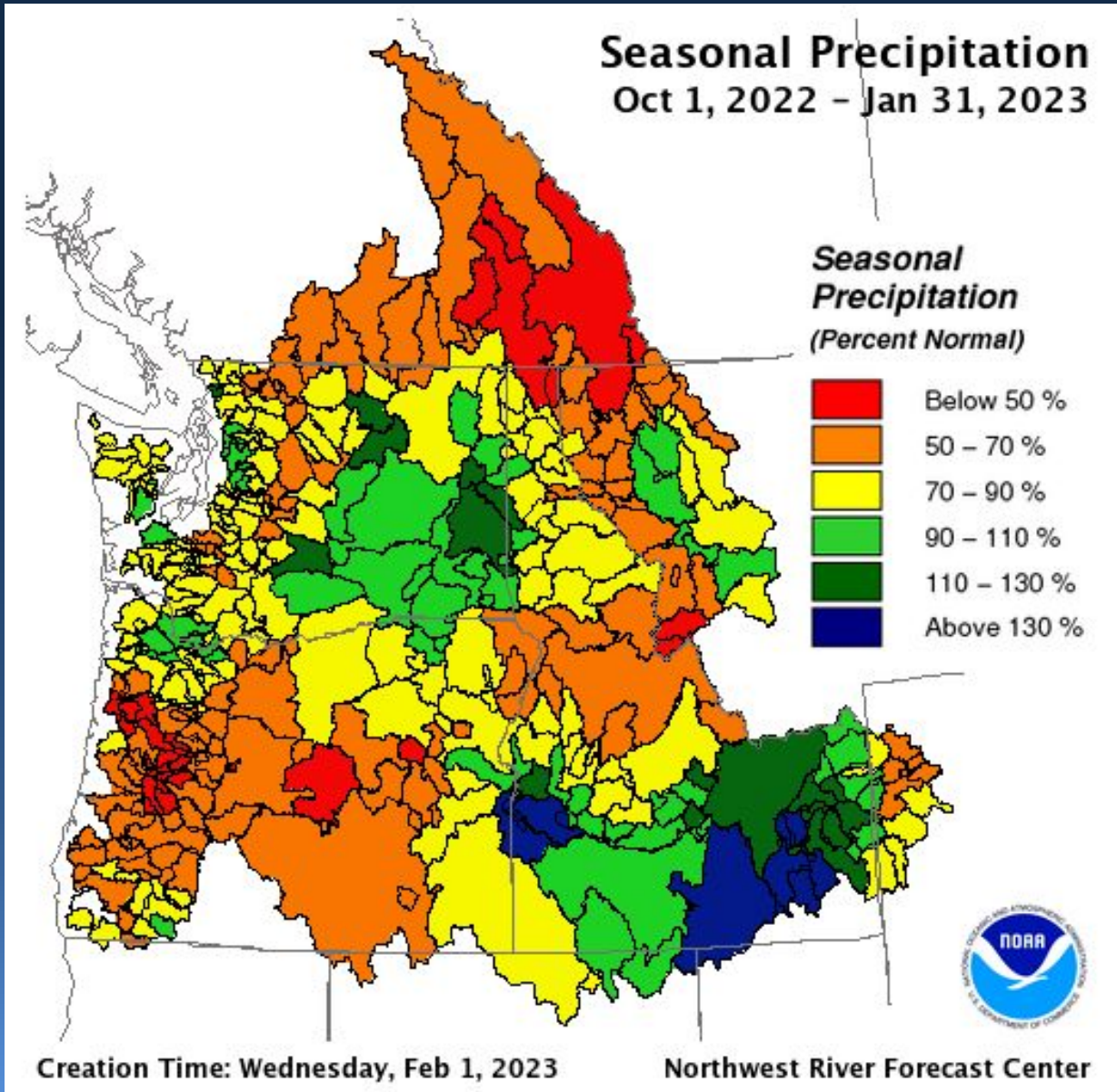
Creation Time: Wednesday, Mar 1, 2023

Northwest River Forecast Center



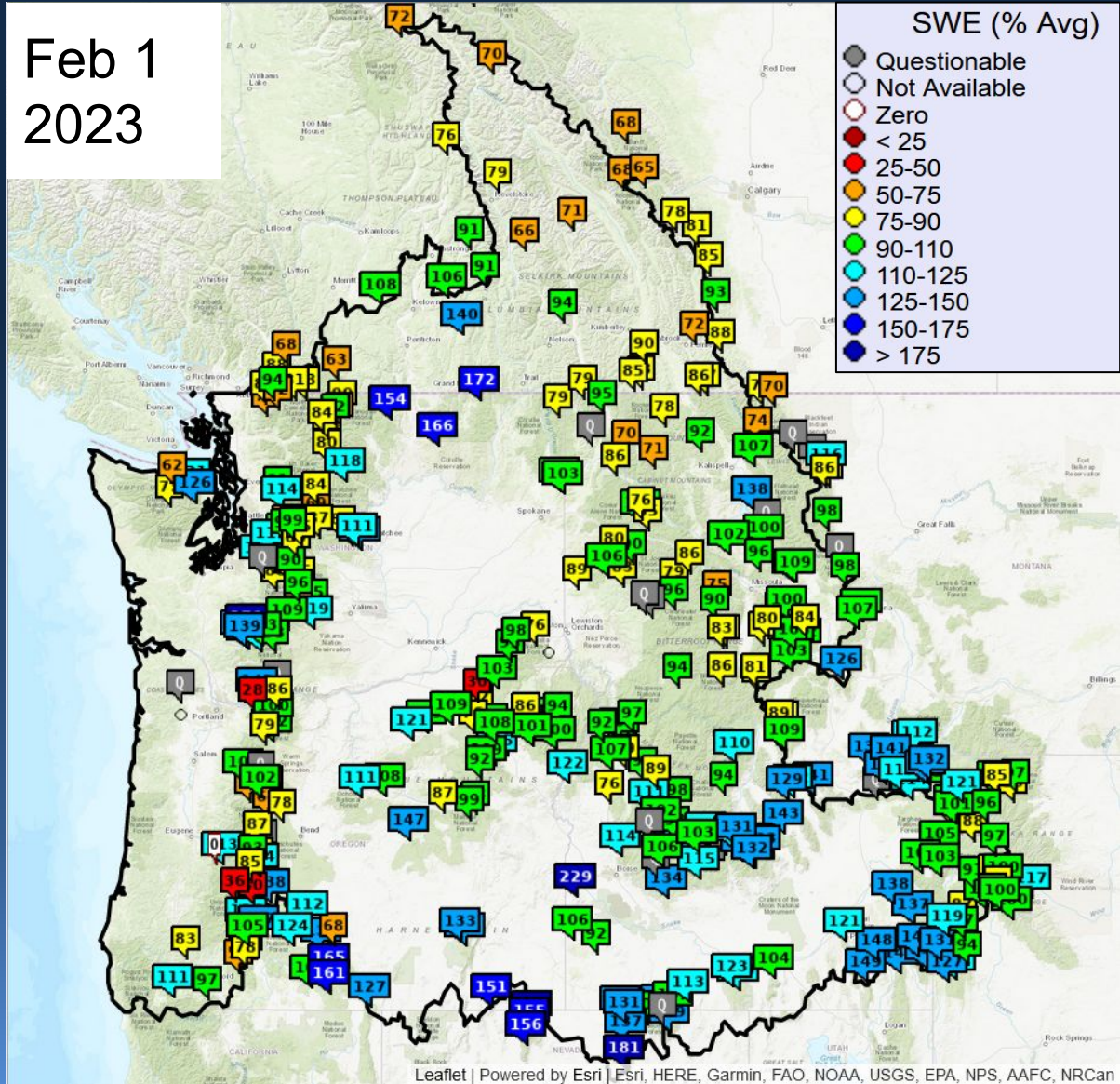


Change in Water Year Precipitation

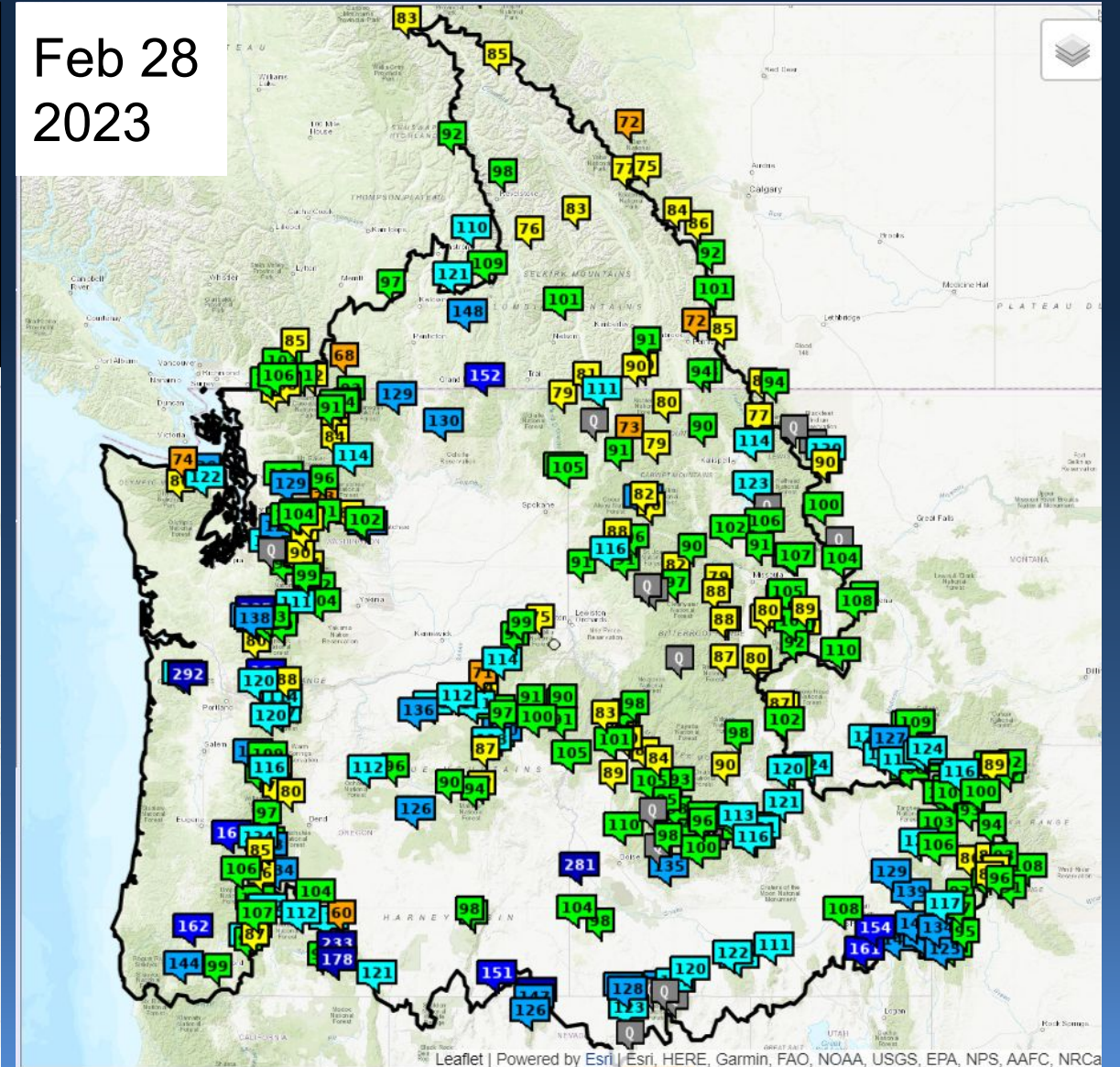


Change in Snowpack

Feb 1
2023

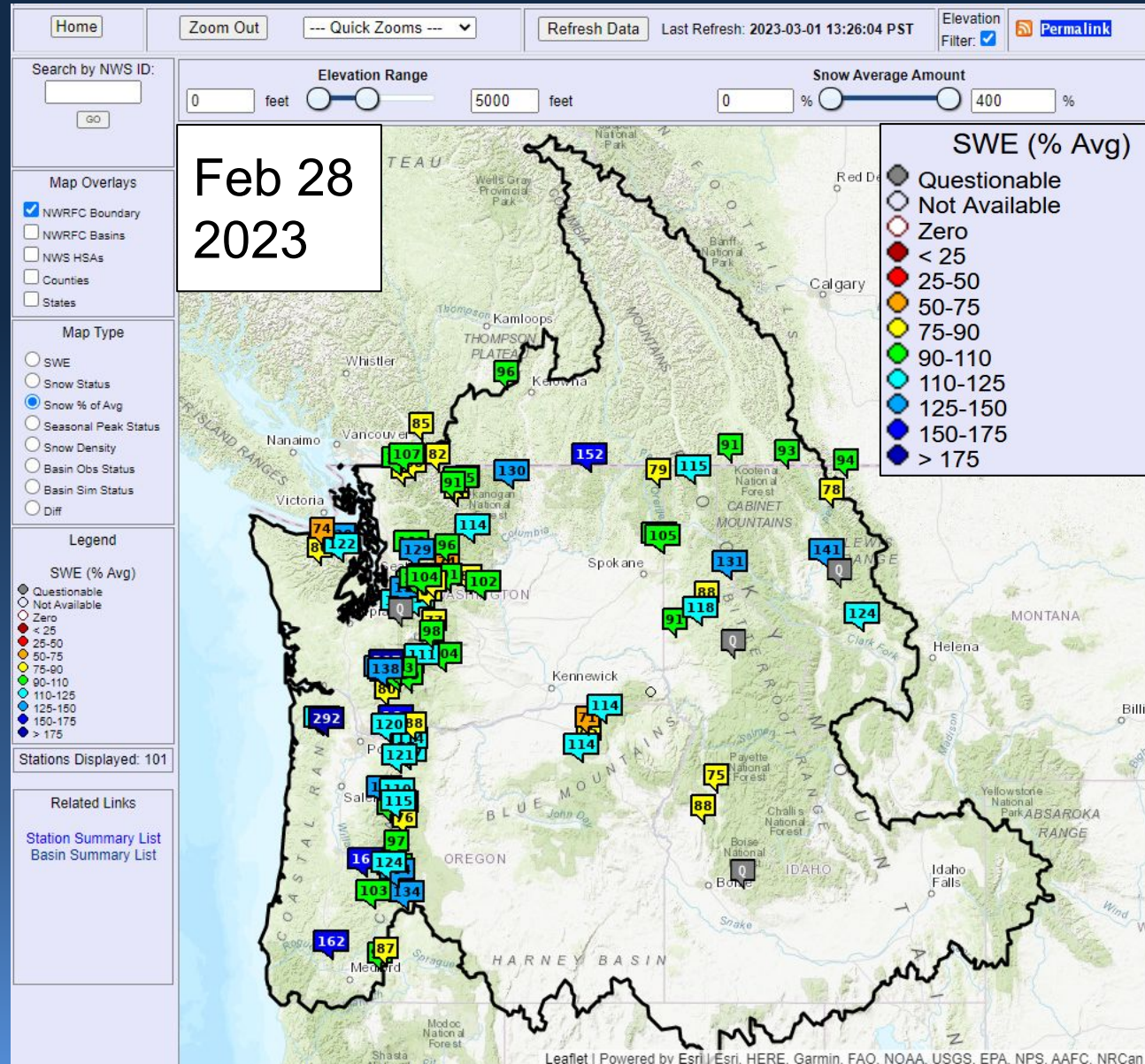


Feb 28
2023





Snowpack below 5,000 ft

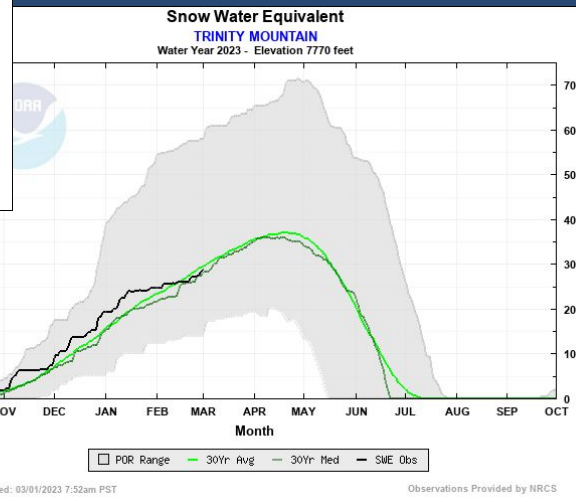
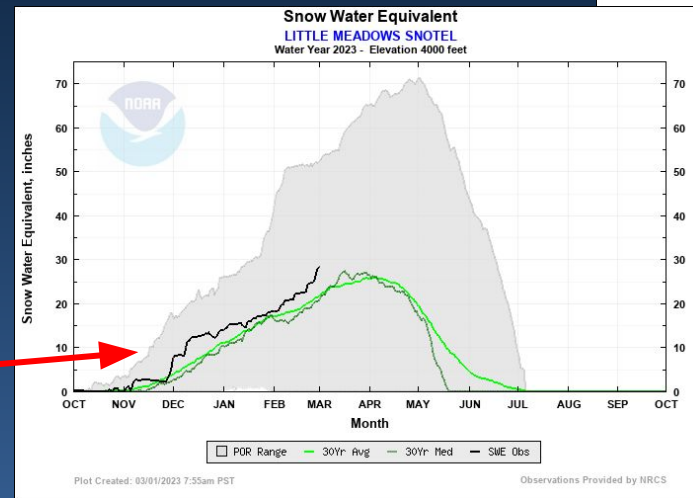
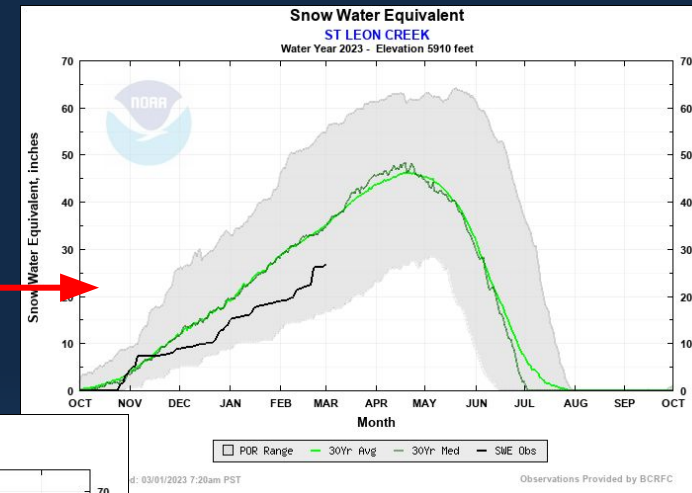
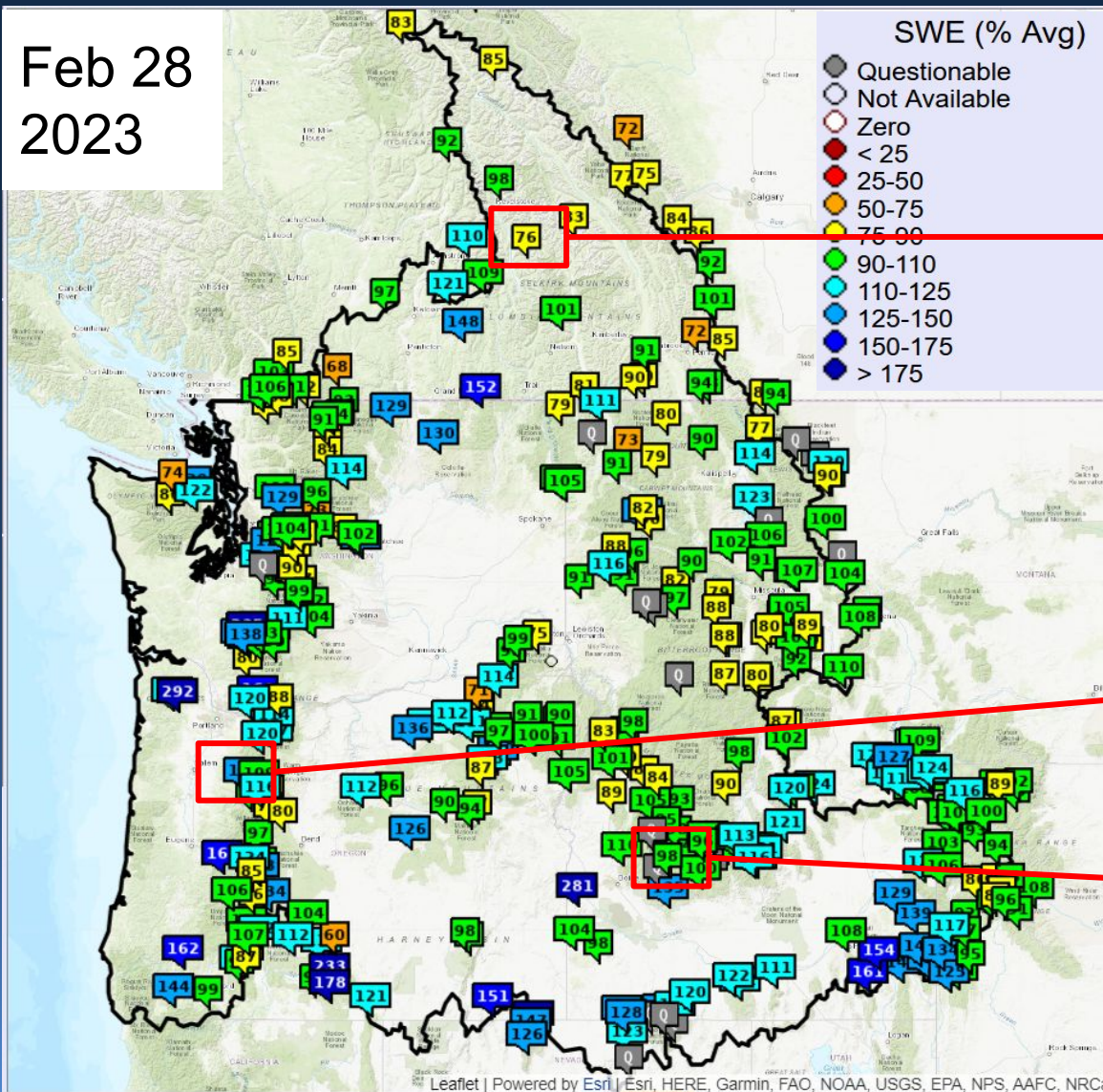


Snow data from Natural Resources Conservation Service, BC Hydro, and Alberta Environment and Parks.



Snowpack

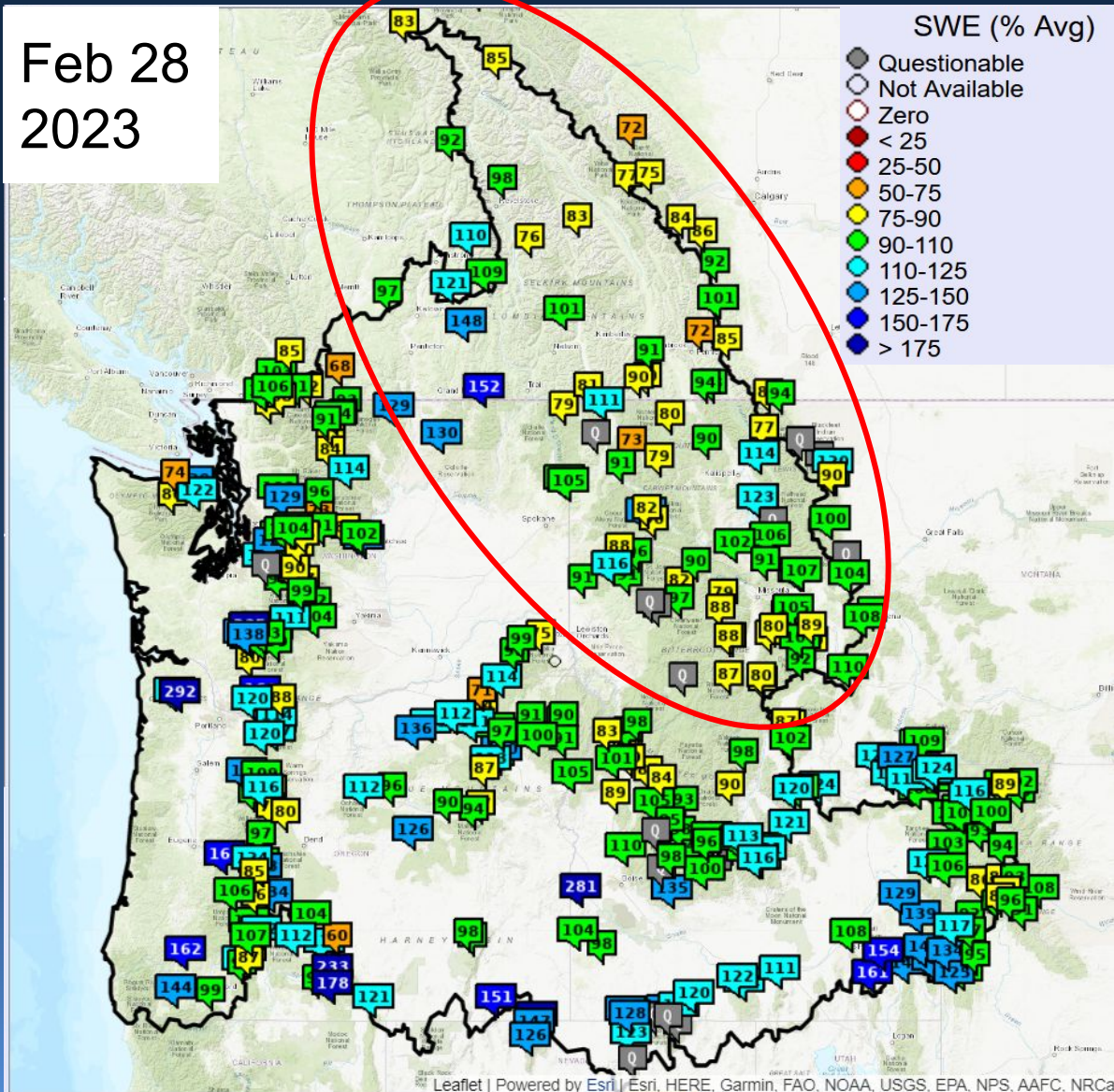
Feb 28
2023



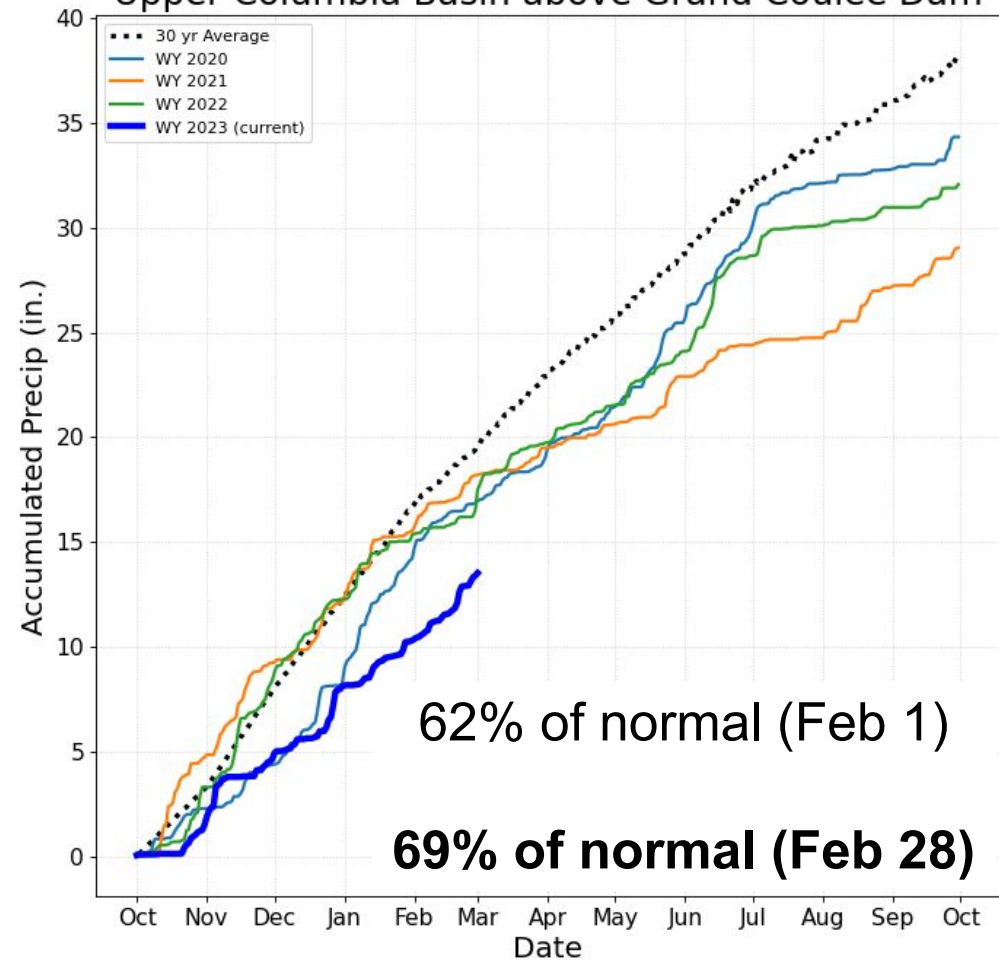


Snow and Precipitation

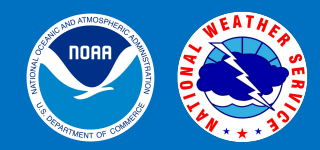
Feb 28
2023



Upper Columbia Basin above Grand Coulee Dam

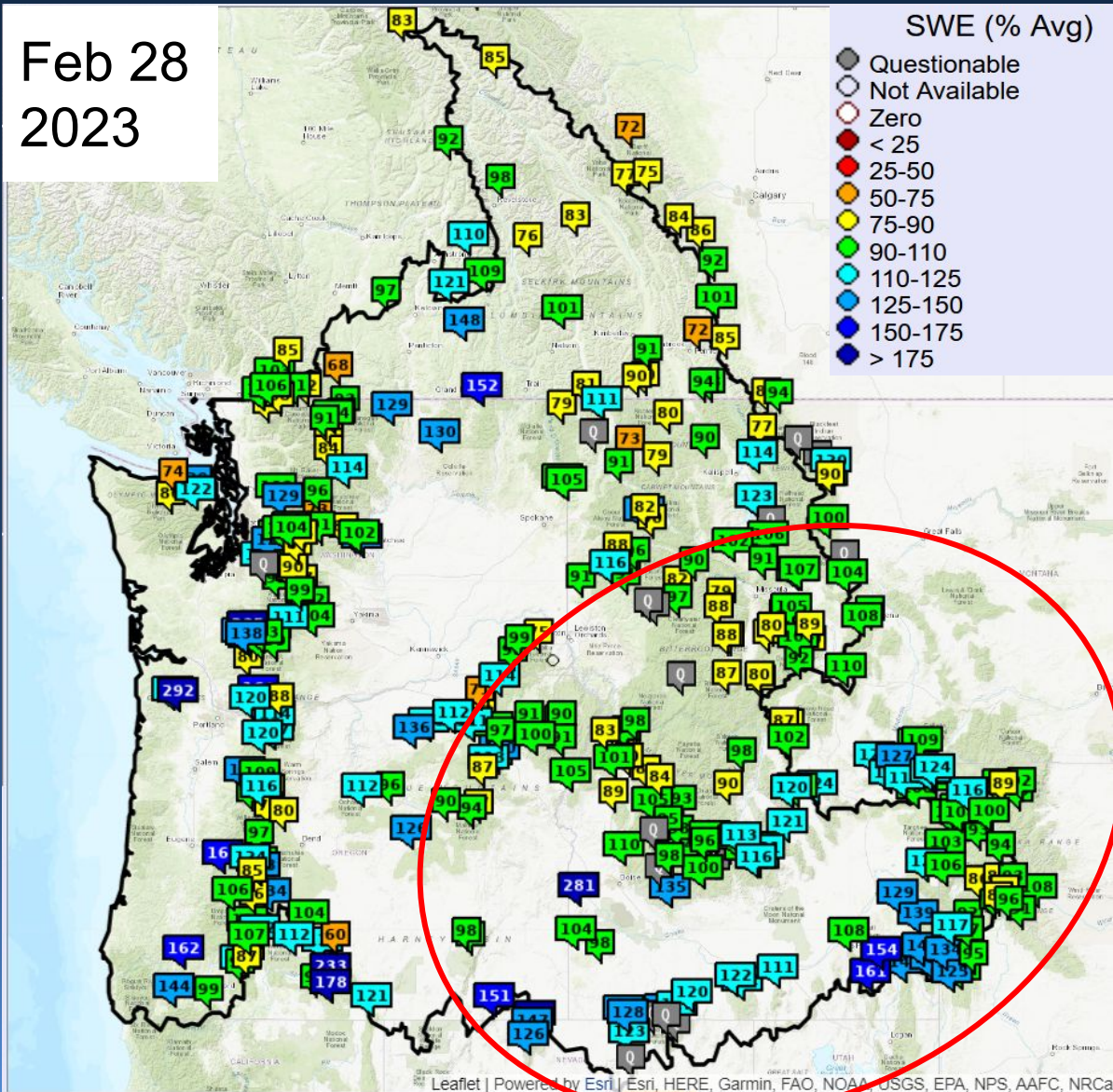


Snow data from NRCS, BC Hydro, and Alberta Environment and Parks. Precip averages from PRISM OSU and PCIC.

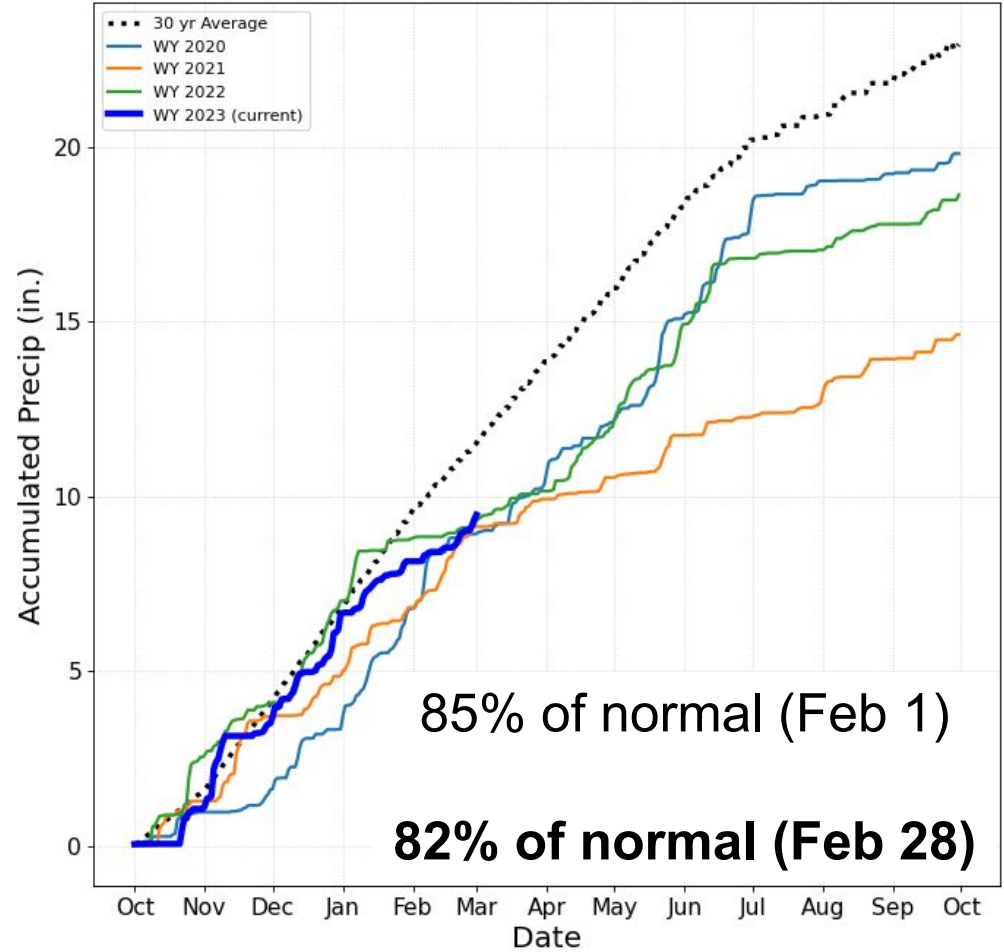


Snow and Precipitation

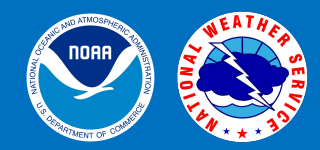
Feb 28
2023



Snake Basin above Lower Granite Dam

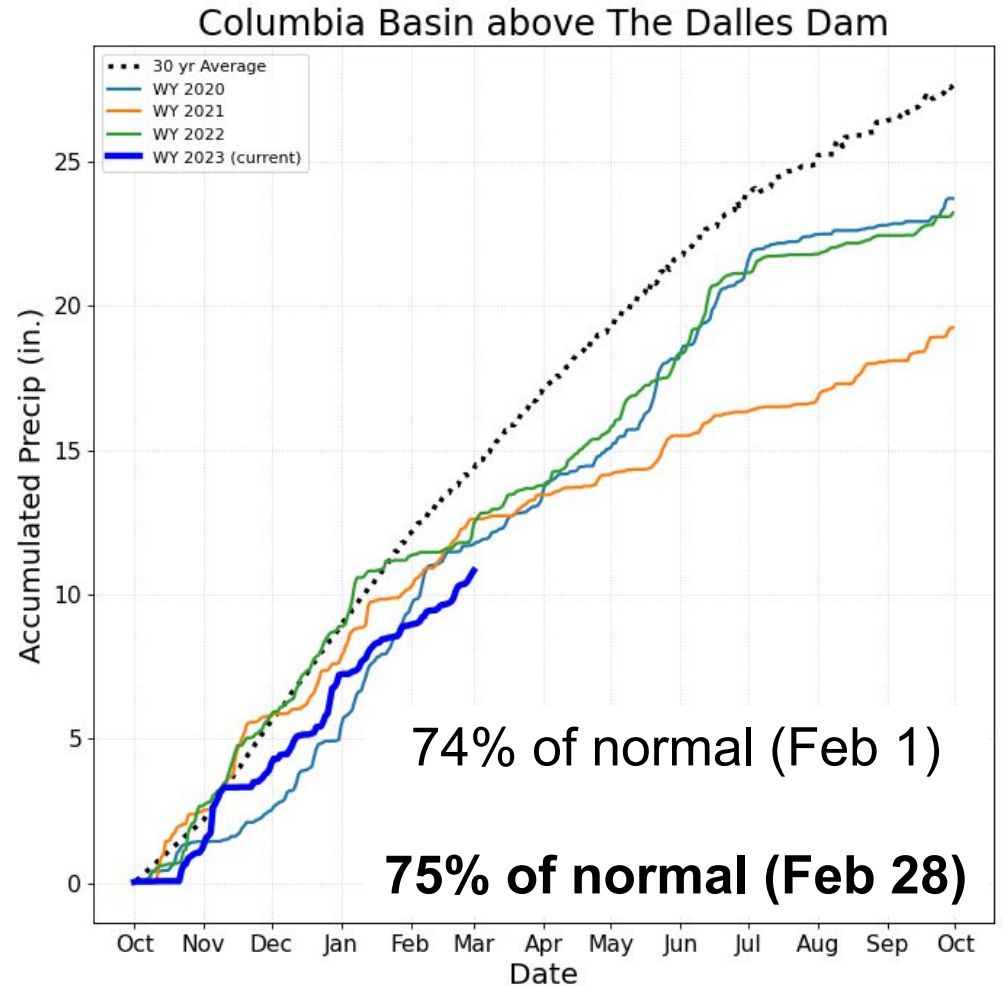
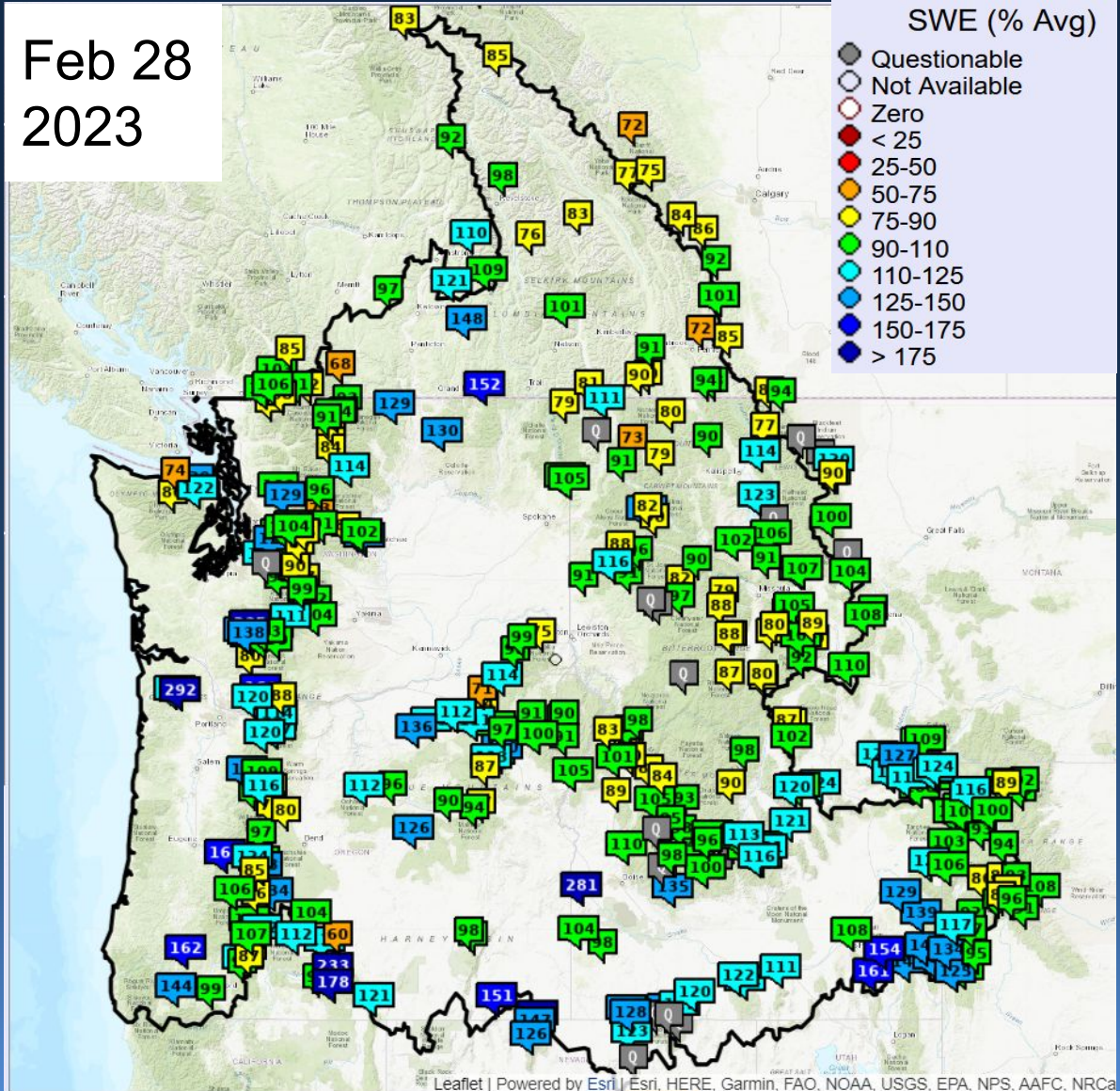


Snow data from NRCS, BC Hydro, and Alberta Environment and Parks. Precip averages from PRISM OSU and PCIC.



Snow and Precipitation

Feb 28
2023



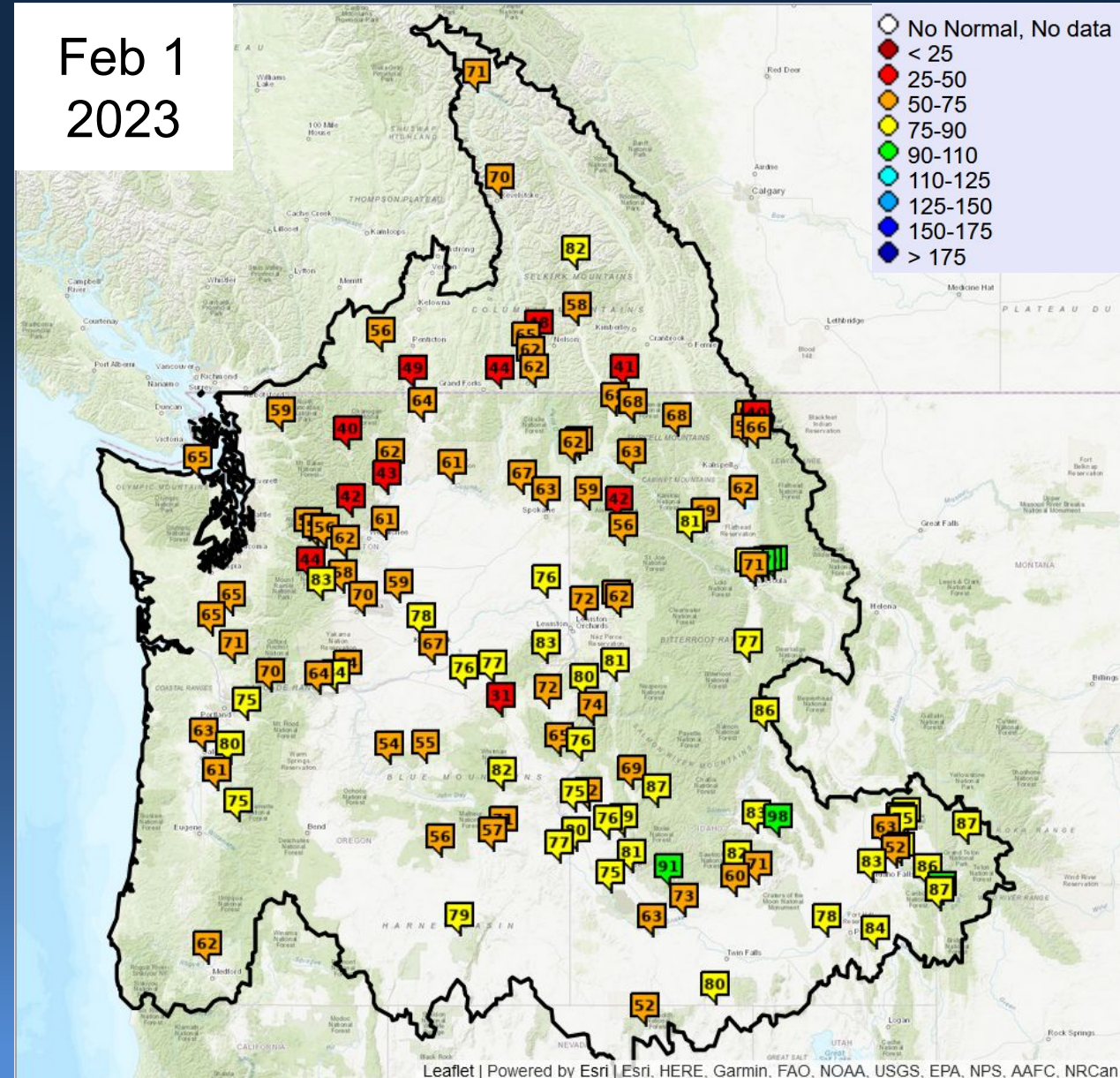
Snow data from NRCS, BC Hydro, and Alberta Environment and Parks. Precip averages from PRISM OSU and PCIC.



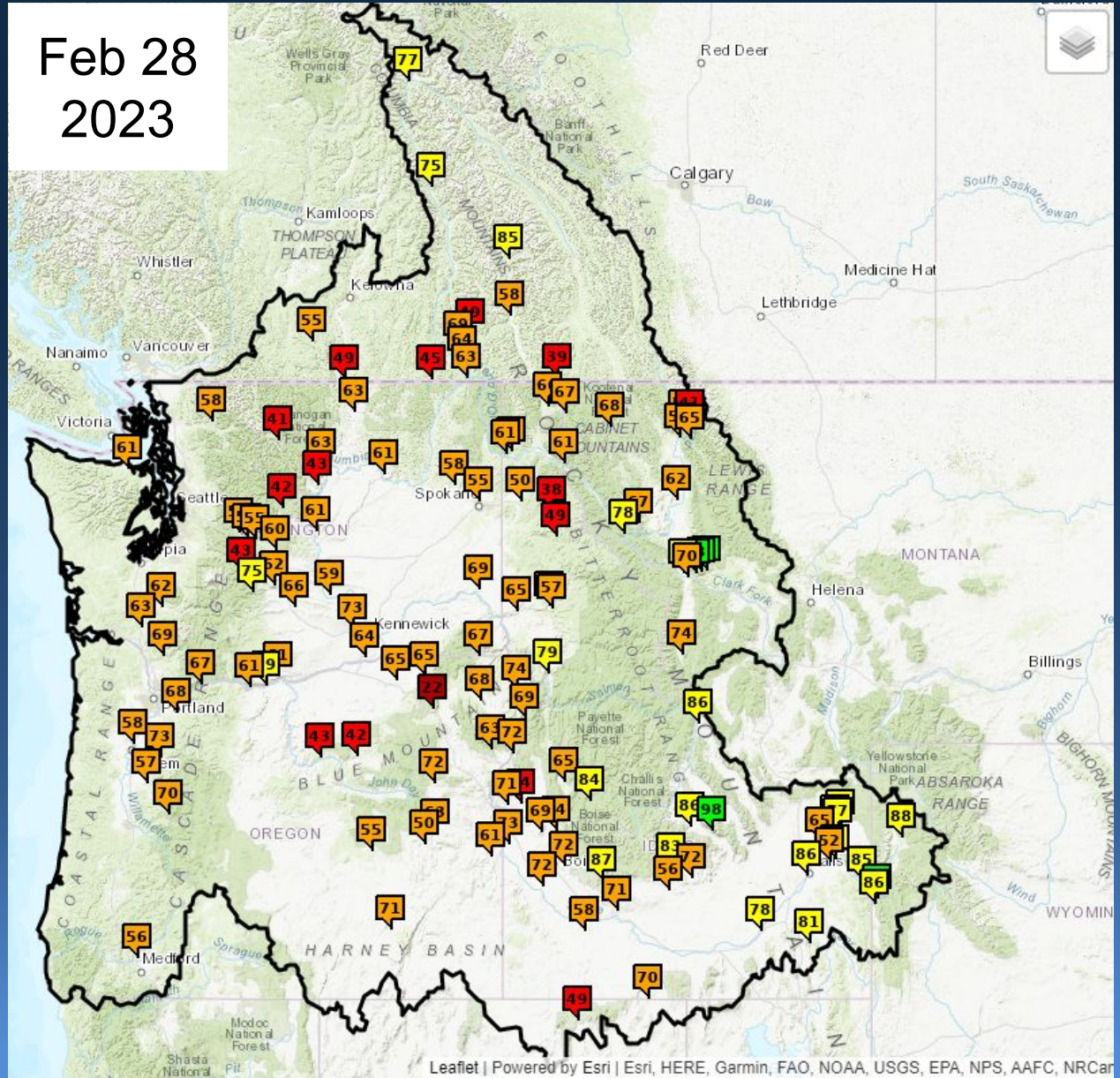
Water Year to Date Adjusted Runoff

Feb 1
2023

- No Normal, No data
- < 25
- 25-50
- 50-75
- 75-90
- 90-110
- 110-125
- 125-150
- 150-175
- > 175



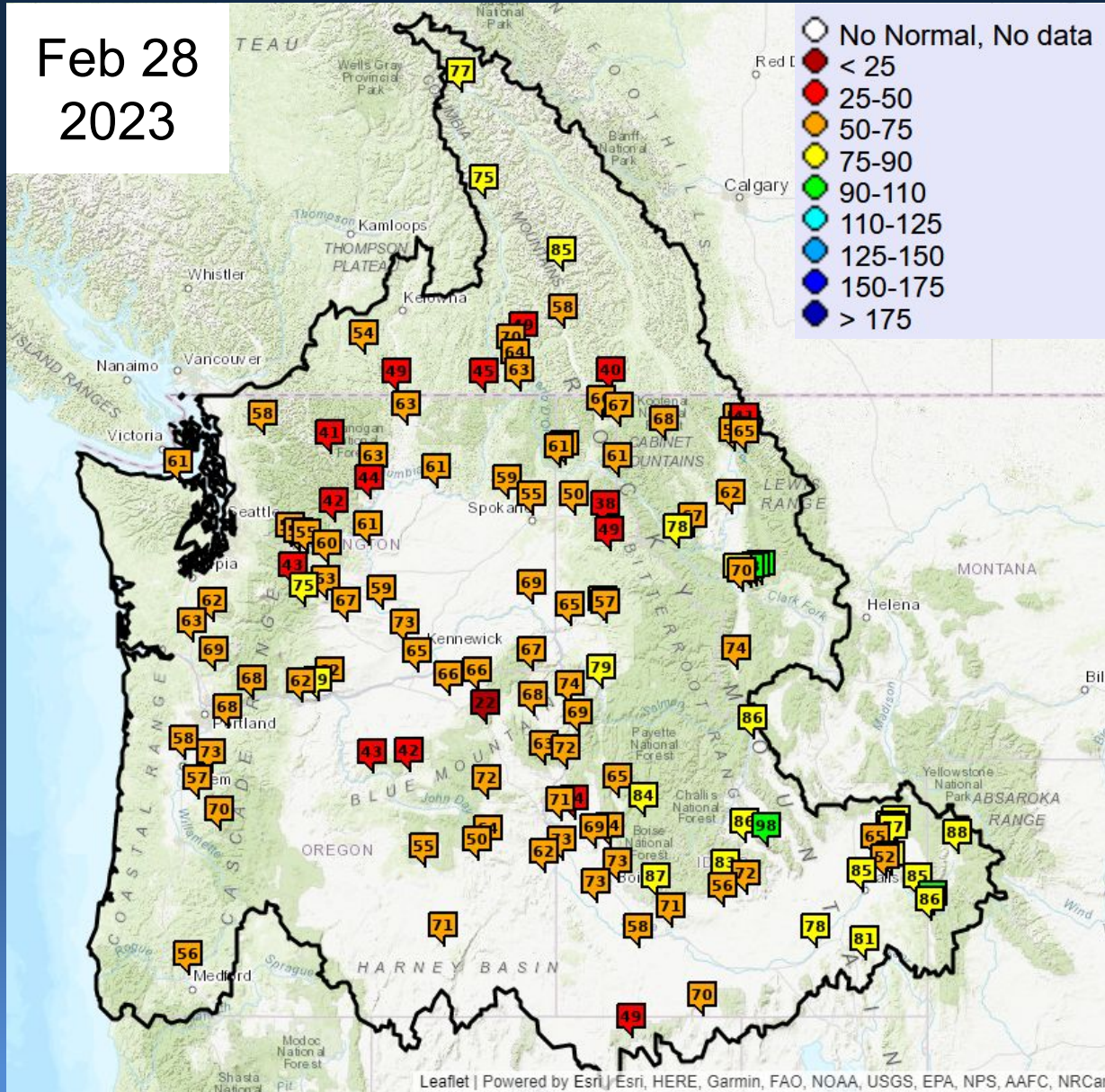
Feb 28
2023





Water Year to Date Adjusted Runoff

Feb 28
2023



% Normal Runoff Oct 1- Feb 28

Upper Columbia Basin

Δ since Feb 1

Mica	77	6
Duncan	85	3
Queens Bay	58	0
Libby	68	0
Hungry Horse	65	-1
Grand Coulee	61	0

Snake River Basin

American Falls	78	0
Lucky Peak	72	-9
Dworshak	56	-7
Lower Granite	69	-7

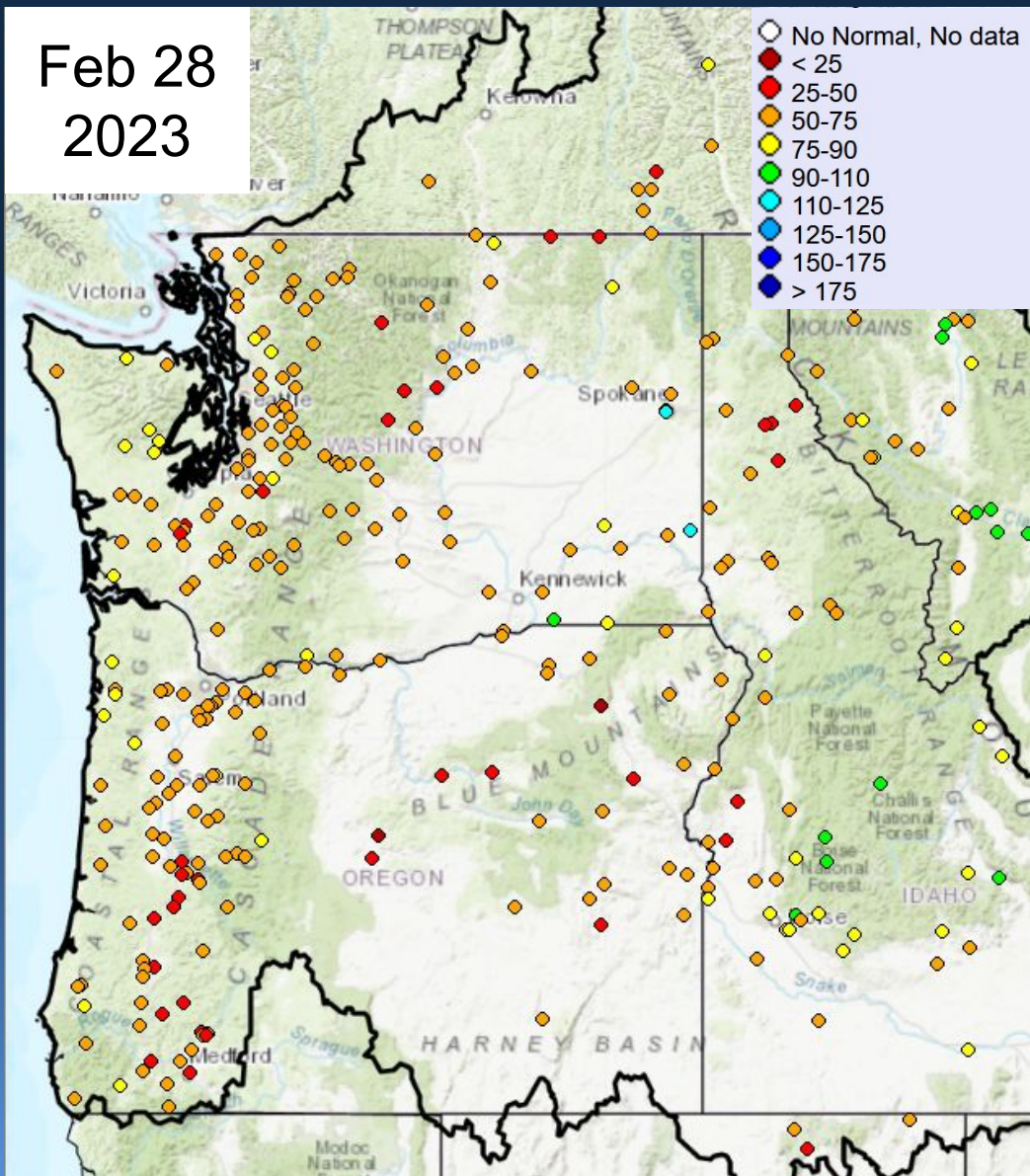
Lower Columbia Basin

The Dalles	61	-3
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Water Year to Date Adjusted Runoff

Feb 28
2023



% Normal Runoff Oct 1- Feb 28

Washington

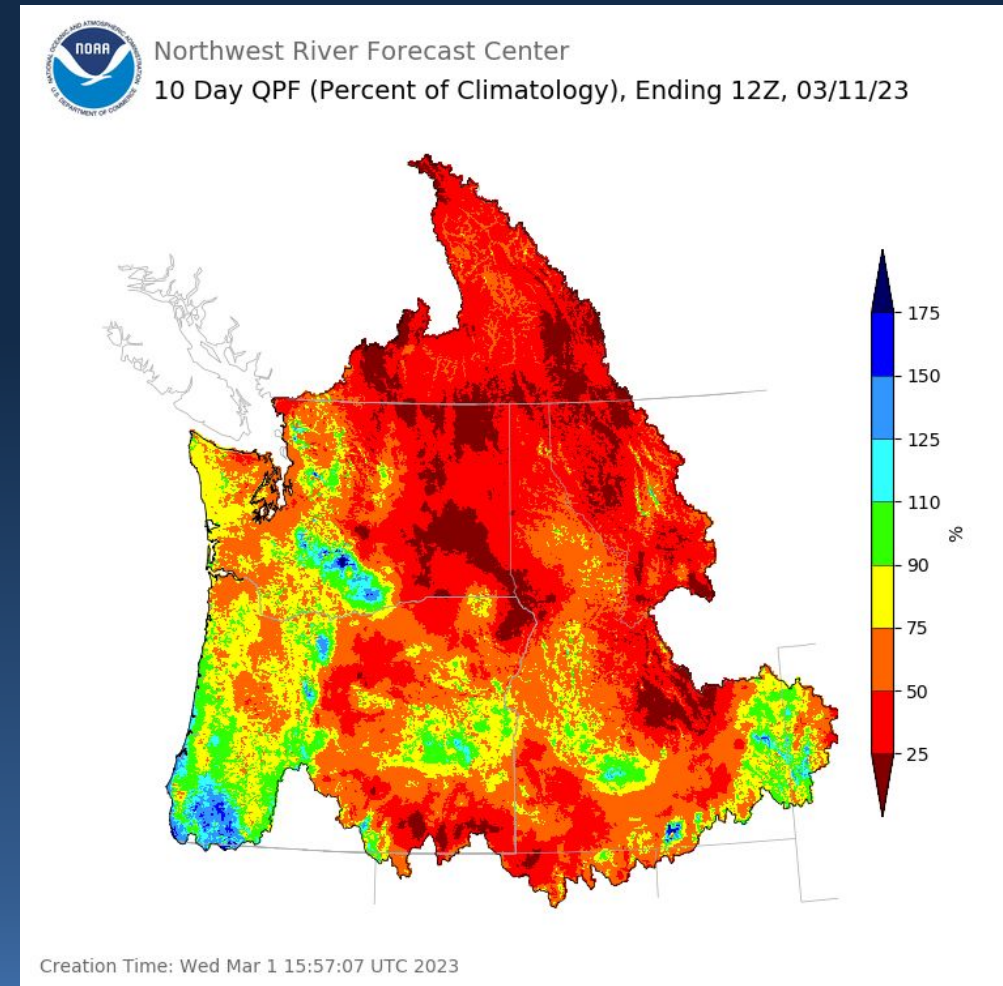
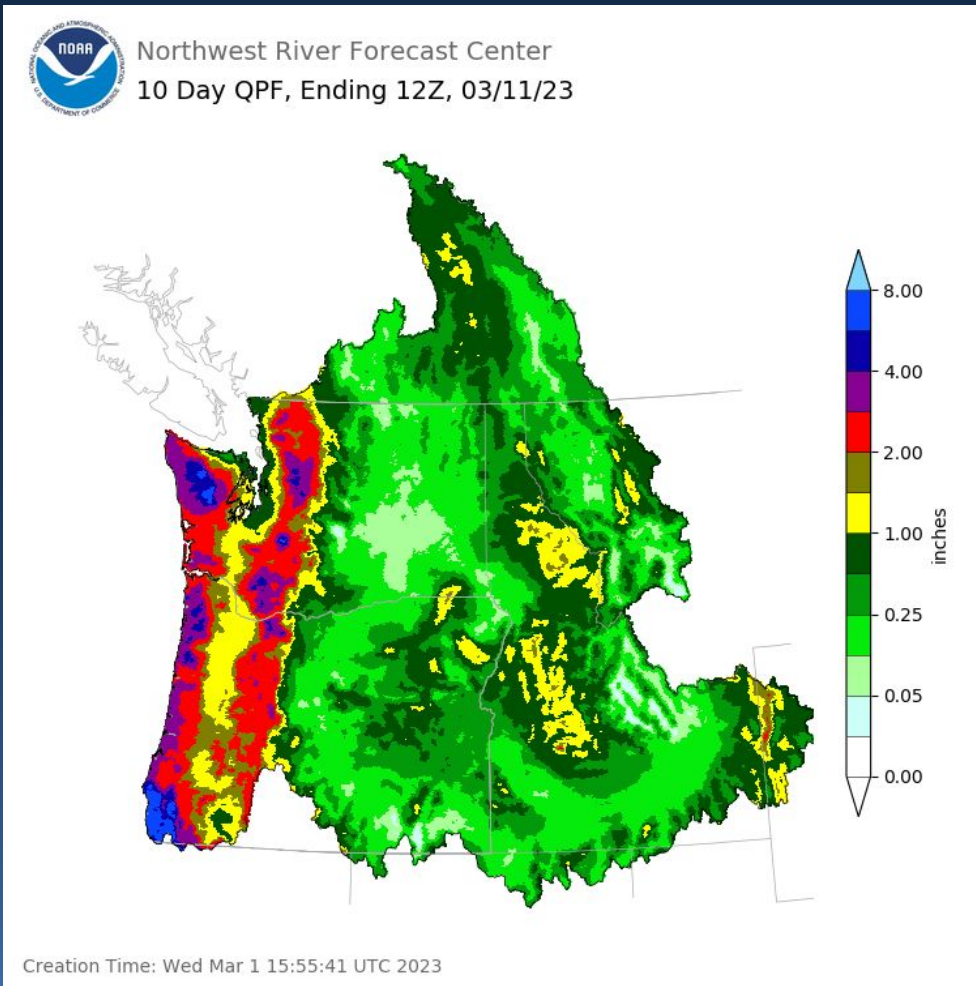
		<u>Δ since Feb 1</u>
Skagit nr Mt Vernon	62	-1
Dungeness nr Sequim	61	-4
Chehalis at Porter	64	-4
Okanogan at Malott	62	0
Methow nr Pateros	64	2
Yakima at Parker	67	-5
Walla Walla nr Touchet	96	-11

Oregon

Willamette at Salem	52	-6
Rogue at Raygold	55	-7
Umatilla at Pendleton	65	-11
Grande Ronde at Troy	67	-16
Crooked nr Prineville	29	-8
Owyhee Dam	58	-13



10 Day Precipitation Forecast Used in ESP10

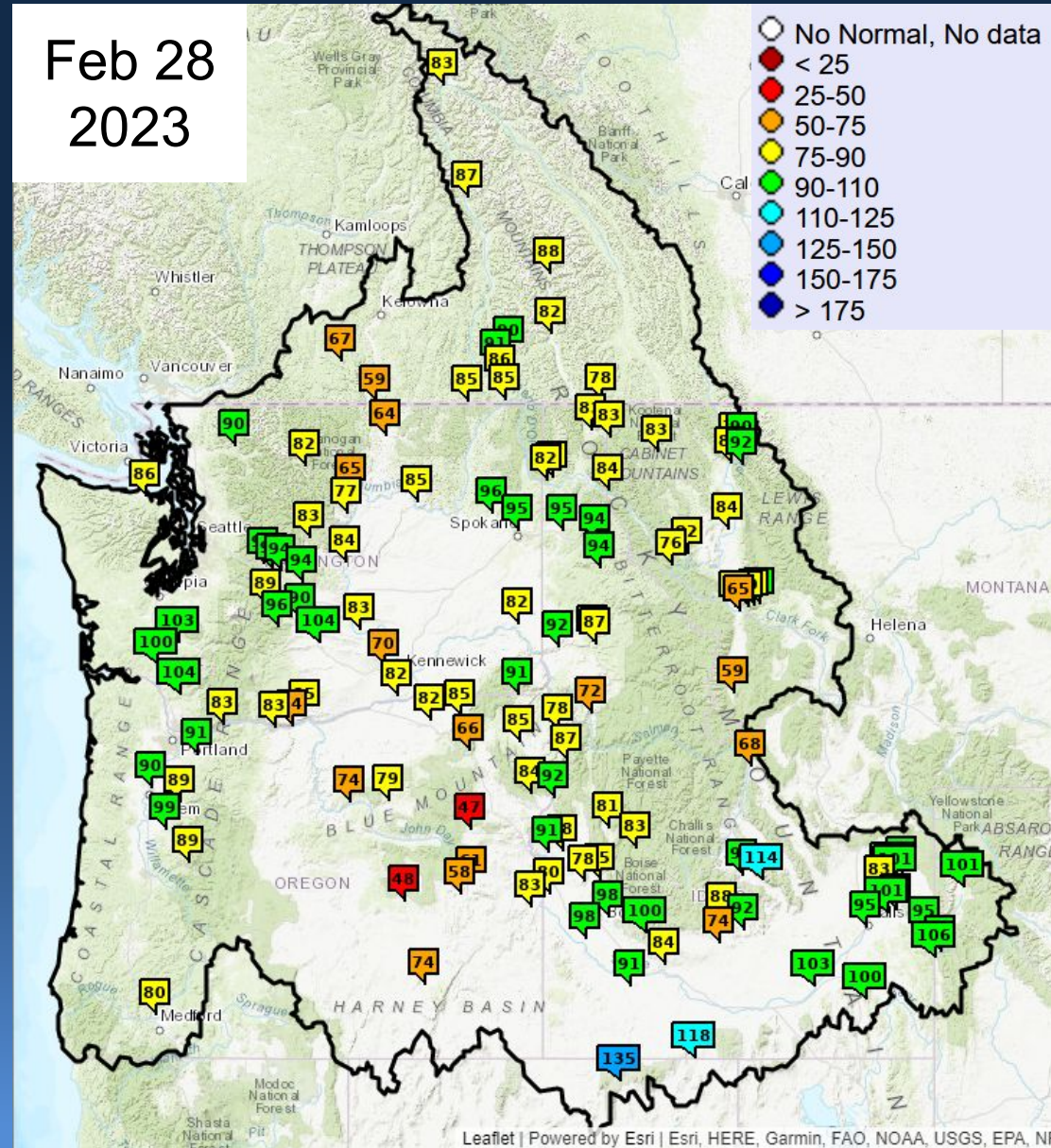


Quantitative Precipitation Forecast (QPF) Sources:
Days 1 - 2 NWS Weather Forecast Offices (WFO) in the US, WPC in BC
Days 3 - 7 NWS Weather Prediction Center (WPC)
Days 8 - 10 NWS National Blend of Models (NBM)



Water Supply Forecasts

Feb 28
2023



% Normal Apr-Sep Volume

Upper Columbia Basin

Δ since Feb 1

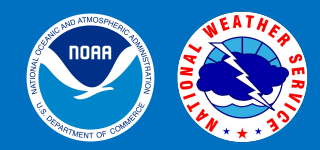
Mica	83	1
Duncan	88	2
Queens Bay	82	-4
Libby	83	-4
Hungry Horse	92	3
Grand Coulee	85	1

Snake River Basin

American Falls	103	19
Lucky Peak	98	-2
Dworshak	93	5
Lower Granite	82	-2

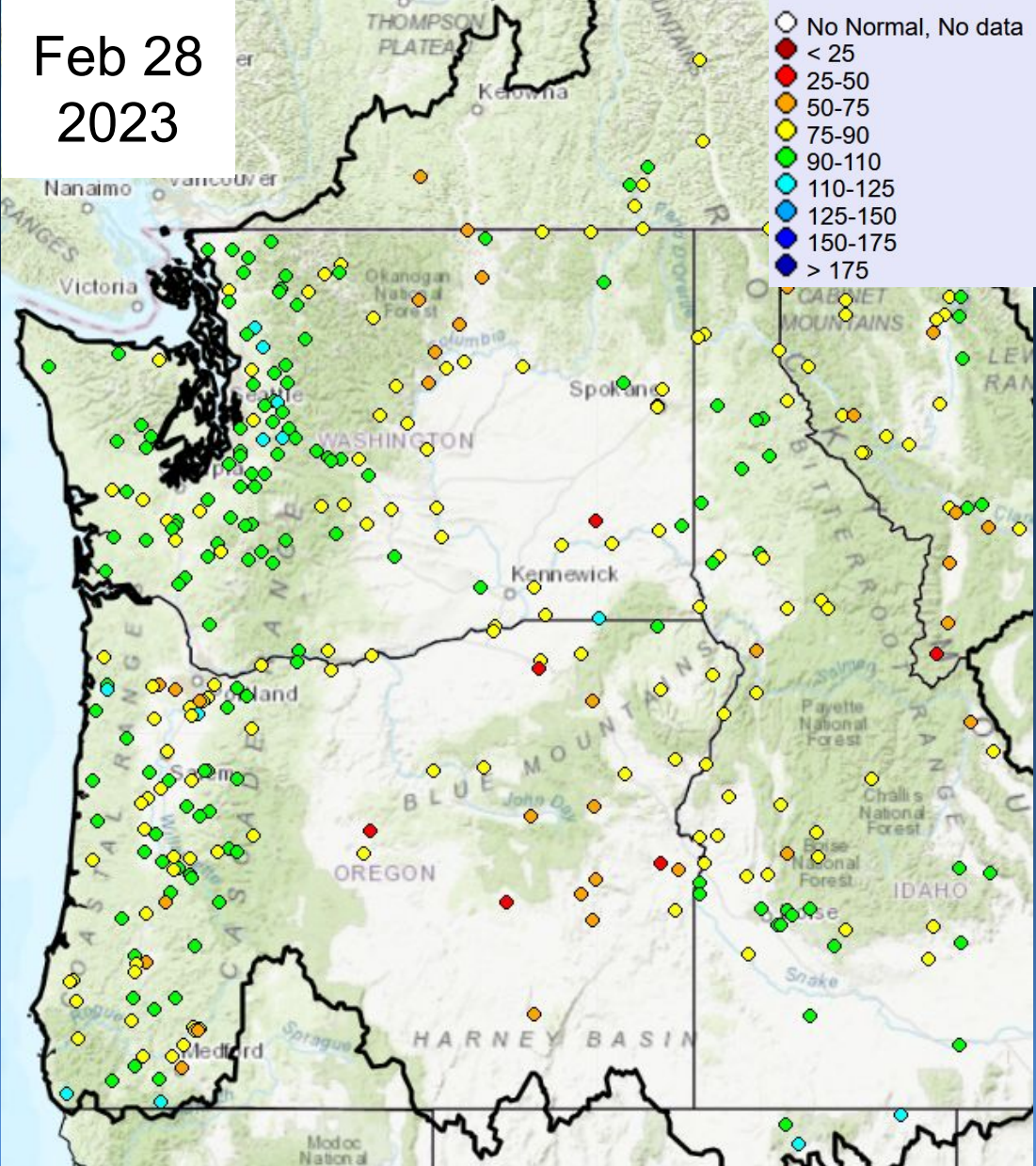
Lower Columbia Basin

The Dalles	83	0
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Water Supply Forecasts (Natural)

Feb 28
2023



% Normal Apr -Sep Volume

Washington

Δ since Feb 1

Skagit nr Mt Vernon	94	3
Dungeness nr Sequim	86	-8
Chehalis at Porter	89	0
Okanogan at Malott	63	-11
Methow nr Pateros	65	-7
Yakima at Parker	95	3
Walla Walla nr Touchet	85	6

Oregon

Willamette at Salem	86	2
Rogue at Raygold	82	2
Umatilla at Pendleton	83	-1
Grande Ronde R at Troy	91	-5
Crooked nr Prineville	82	-3
Owyhee Dam	83	-3



Water Supply Forecasts

COLUMBIA - GRAND COULEE DAM (GCDW1) Forecasts for Water Year 2023

Official Water Supply

ESP with 10 Days QPF Ensemble: 2023-03-01 Issued: 2023-03-01

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	47179	52474	85	58278	61483
APR-JUL	39516	44391	84	49576	52774
APR-AUG	44140	49545	85	54475	58186
JAN-SEP	52911	58100	82	64308	70457
JAN-JUL	44902	50199	81	55776	61749
OCT-SEP	57774	62963	80	69172	78842

Experimental Water Supply

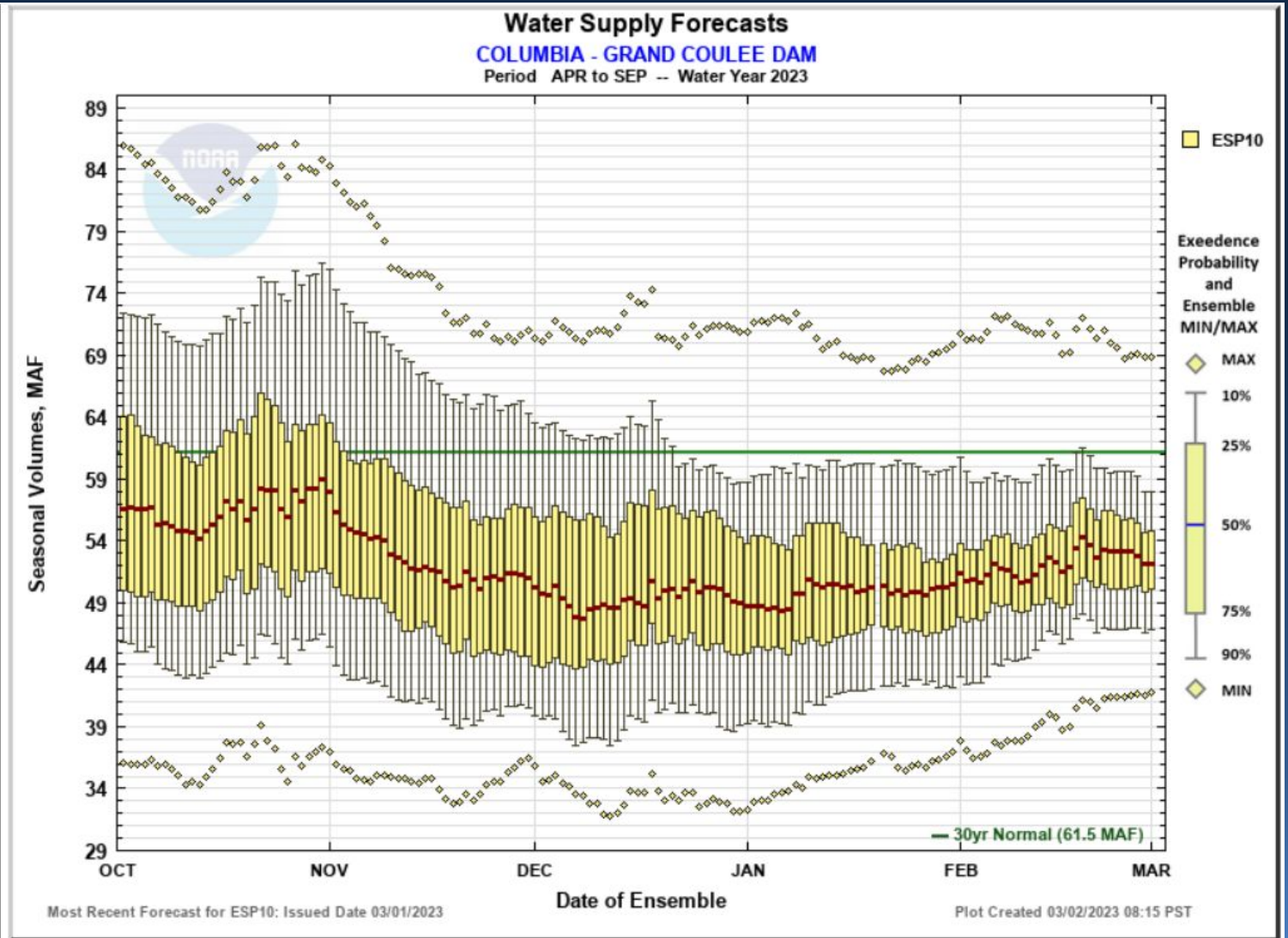
HEFS with 15 days EQPF Ensemble: 2023-03-01 Issued: 2023-03-01

APR-SEP	48448	54026	88	60671	61483
APR-JUL	40266	45328	86	50376	52774
APR-AUG	45227	50546	87	56425	58186
JAN-SEP	53908	59407	84	66248	70457
JAN-JUL	45842	51043	83	55951	61749
OCT-SEP	58771	64271	82	71111	78842

Reference

ESP with 0 Days QPF Ensemble: 2023-03-01 Issued: 2023-03-01

APR-SEP	48385	54514	89	61610	61483
APR-JUL	39736	45399	86	51158	52774
APR-AUG	44849	50536	87	57688	58186
JAN-SEP	54262	60417	86	68550	70457
JAN-JUL	45873	51728	84	57181	61749
OCT-SEP	59125	65281	83	73414	78842

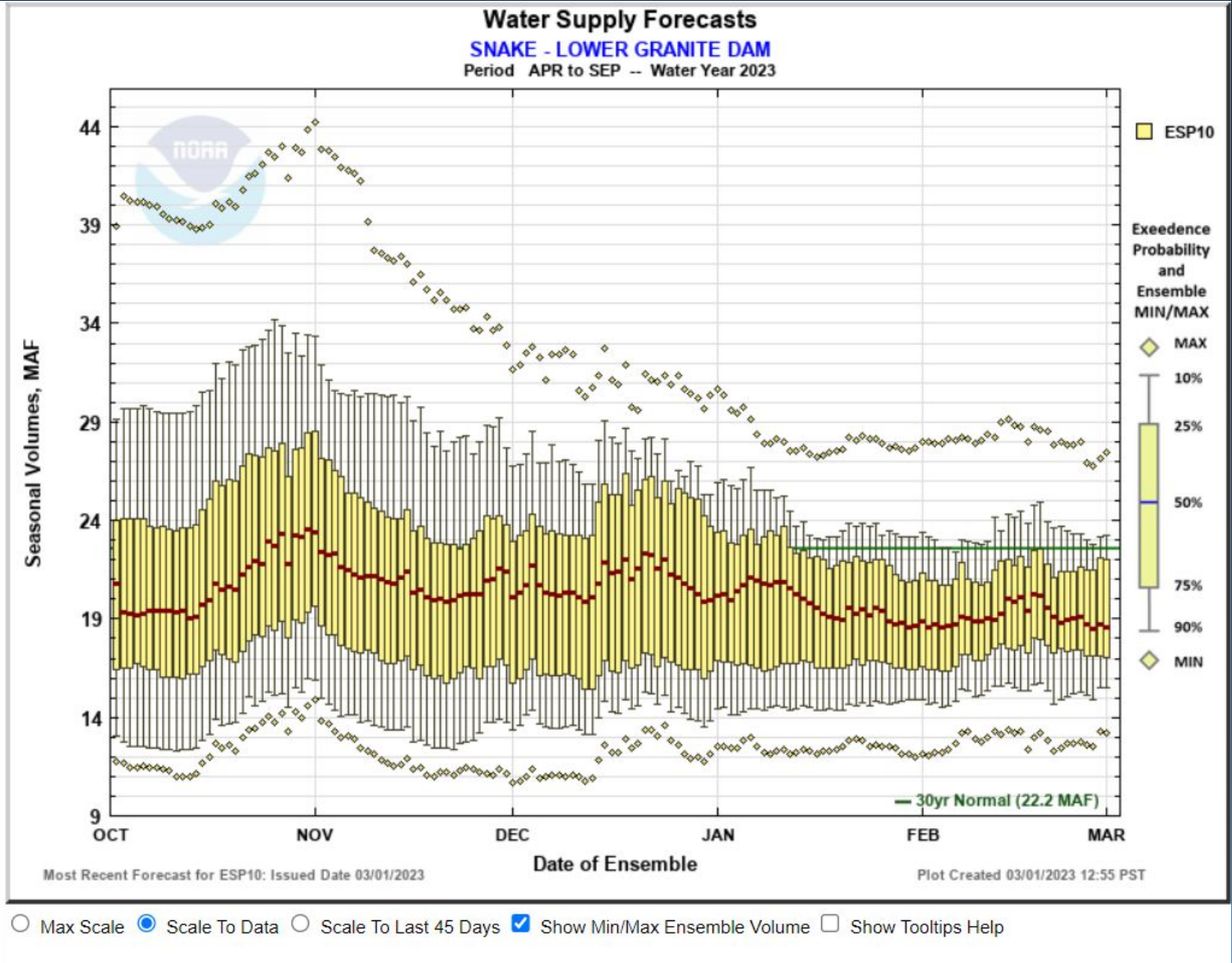


Max Scale
 Scale To Data
 Scale To Last 45 Days
 Show Min/Max Ensemble Volume
 Show Tooltips Help



Water Supply Forecasts

SNAKE - LOWER GRANITE DAM (LGDW1) Forecasts for Water Year 2023					
Official Water Supply					
ESP with 10 Days QPF Ensemble: 2023-03-01 Issued: 2023-03-01					
Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	15205	18284	82	22913	22232
APR-JUL	13126	15976	80	20408	19946
APR-AUG	14186	17182	81	21704	21121
JAN-SEP	19880	23221	78	27810	29736
JAN-JUL	17835	20811	76	25297	27450
OCT-SEP	23349	26690	78	31279	34287
Experimental Water Supply					
HEFS with 15 days EQPF Ensemble: 2023-03-01 Issued: 2023-03-01					
APR-SEP	15560	19465	88	23965	22232
APR-JUL	13504	16934	85	21255	19946
APR-AUG	14524	18244	86	22686	21121
JAN-SEP	19922	24249	82	28907	29736
JAN-JUL	17881	21793	79	26096	27450
OCT-SEP	23391	27718	81	32376	34287
Reference					
ESP with 0 Days QPF Ensemble: 2023-03-01 Issued: 2023-03-01					
APR-SEP	14888	18664	84	23624	22232
APR-JUL	12887	16391	82	20885	19946
APR-AUG	13866	17553	83	22315	21121
JAN-SEP	19629	24201	81	28668	29736
JAN-JUL	17609	21658	79	25988	27450
OCT-SEP	23098	27670	81	32137	34287



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



Water Supply Forecasts

COLUMBIA - THE DALLES DAM (TDAO3) Forecasts for Water Year 2023

Official Water Supply

ESP with 10 Days QPF Ensemble: 2023-03-01 Issued: 2023-03-01

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	69586	78258	83	90382	94166
APR-JUL	59422	66417	81	77475	81933
APR-AUG	64732	73236	82	85286	89196
JAN-SEP	82433	90598	78	103824	115946
JAN-JUL	72662	79446	77	91147	103714
OCT-SEP	92816	100981	76	114208	132314

Experimental Water Supply

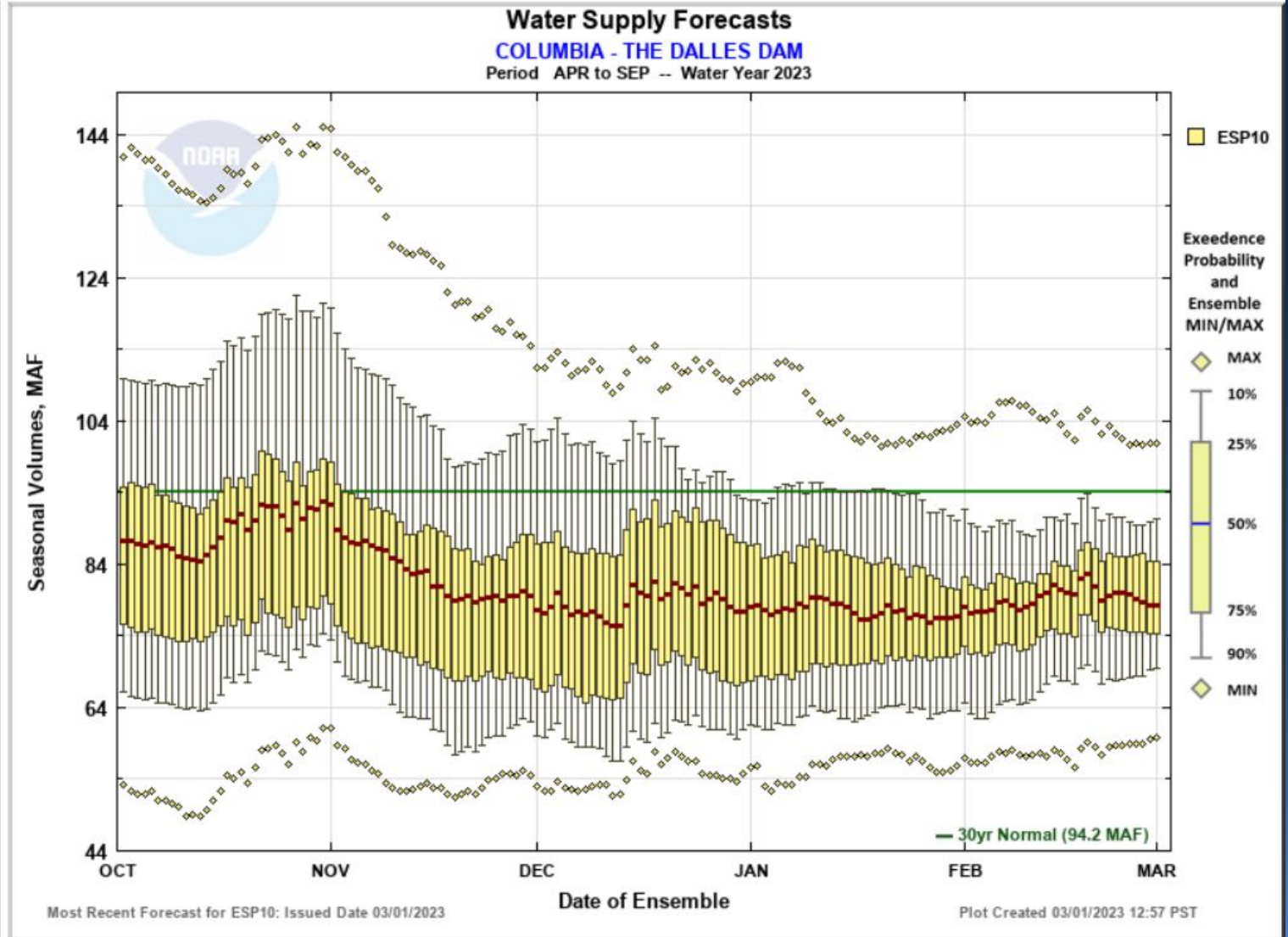
HEFS with 15 days EQPF Ensemble: 2023-03-01 Issued: 2023-03-01

APR-SEP	70876	81604	87	91959	94166
APR-JUL	59666	69419	85	79772	81933
APR-AUG	65561	76249	85	87137	89196
JAN-SEP	83937	94296	81	106189	115946
JAN-JUL	72832	82227	79	93482	103714
OCT-SEP	94321	104680	79	116572	132314

Reference

ESP with 0 Days QPF Ensemble: 2023-03-01 Issued: 2023-03-01

APR-SEP	69144	81201	86	92308	94166
APR-JUL	57708	69304	85	79625	81933
APR-AUG	63823	76088	85	87163	89196
JAN-SEP	83482	95036	82	107814	115946
JAN-JUL	72367	83163	80	93785	103714
OCT-SEP	93865	105419	80	118197	132314

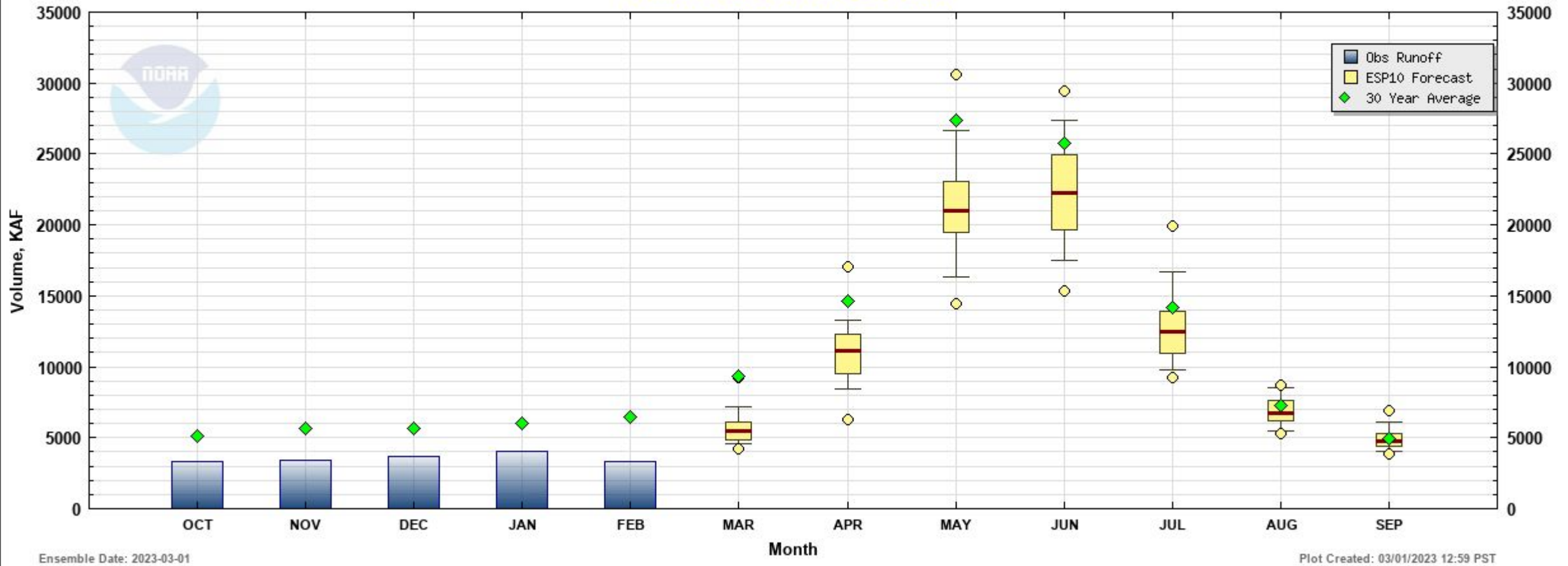


Max Scale
 Scale To Data
 Scale To Last 45 Days
 Show Min/Max Ensemble Volume
 Show Tooltips Help



Water Supply Forecasts

Water Supply Volume Monthly Forecasts (ESP10) for Water Year 2023
(TDA03) COLUMBIA - THE DALLES DAM

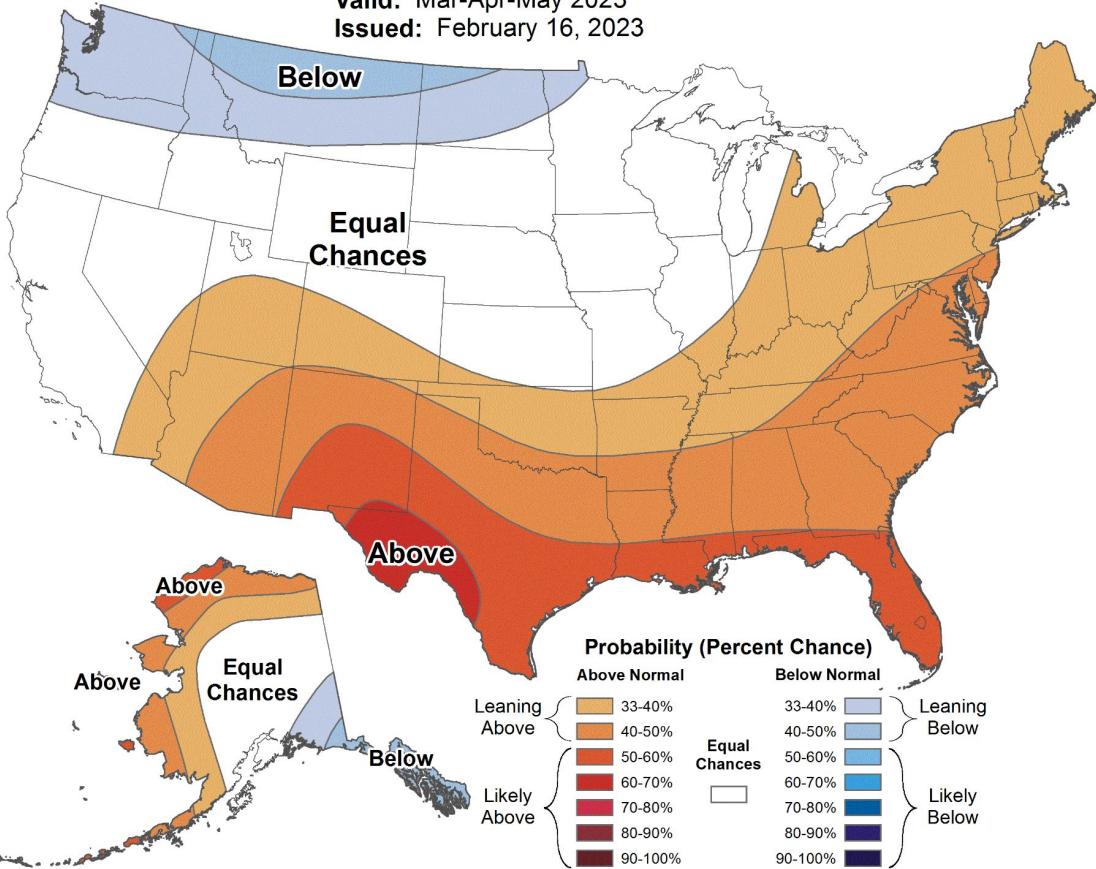




Seasonal Temperature Outlook



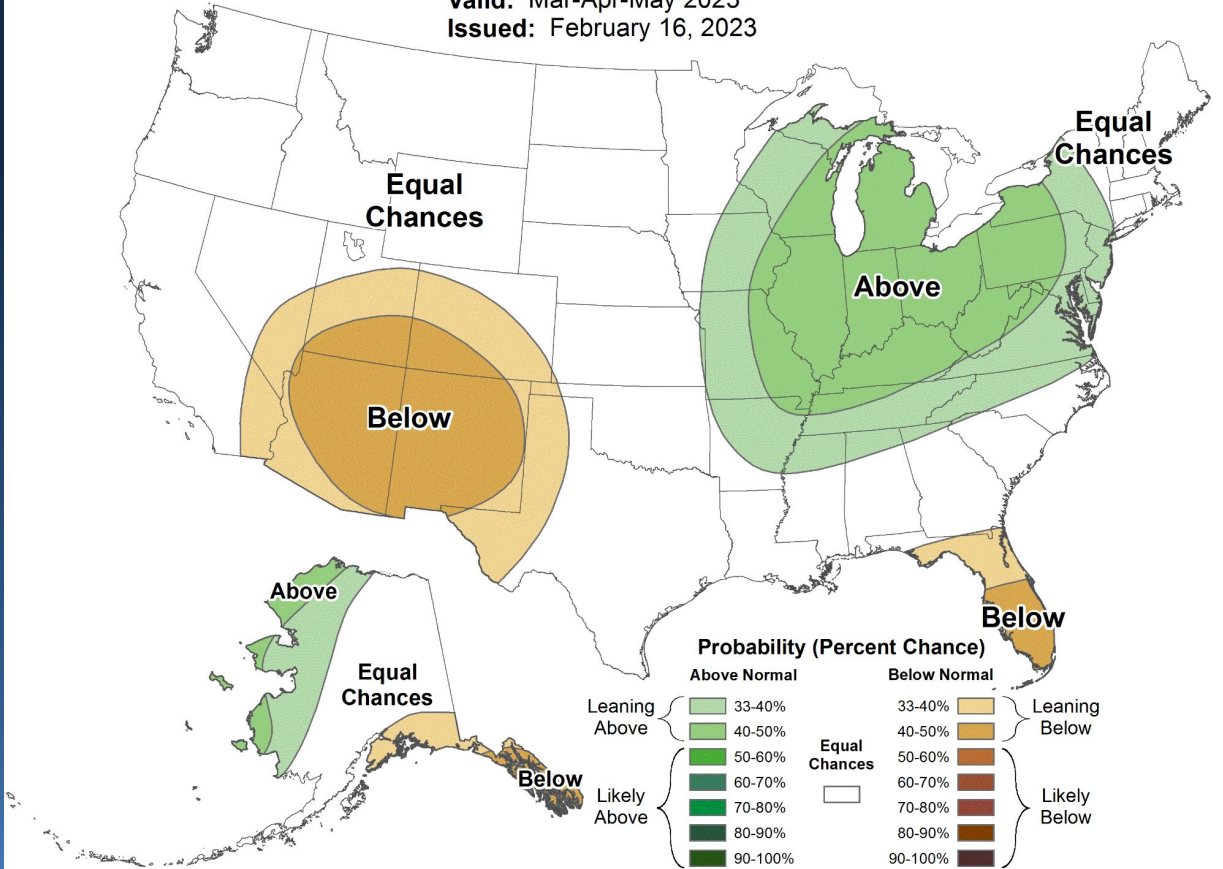
Valid: Mar-Apr-May 2023
 Issued: February 16, 2023



Seasonal Precipitation Outlook



Valid: Mar-Apr-May 2023
 Issued: February 16, 2023





Climate Prediction Center Model Predictions

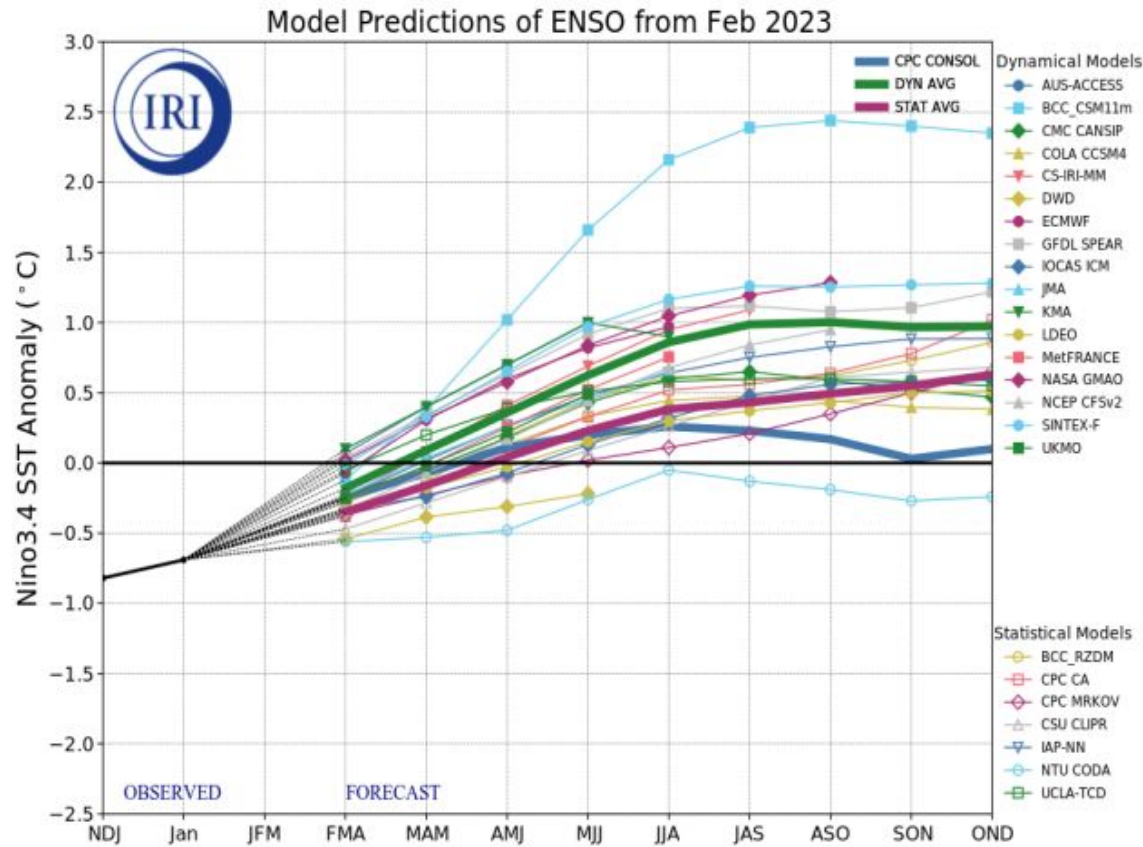
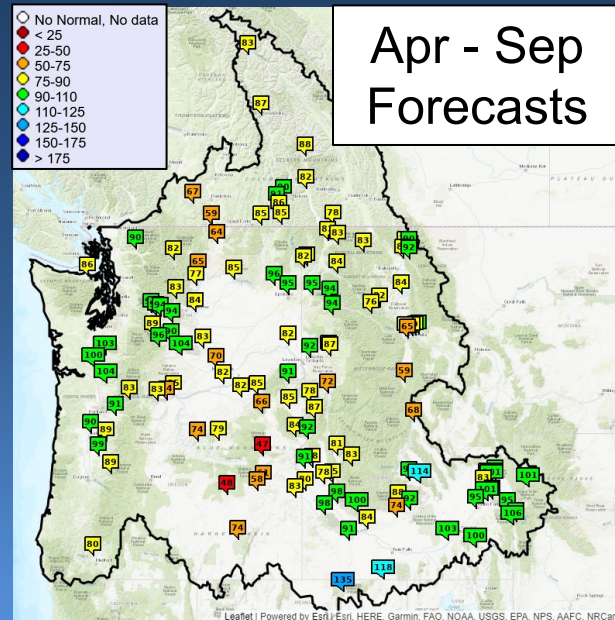
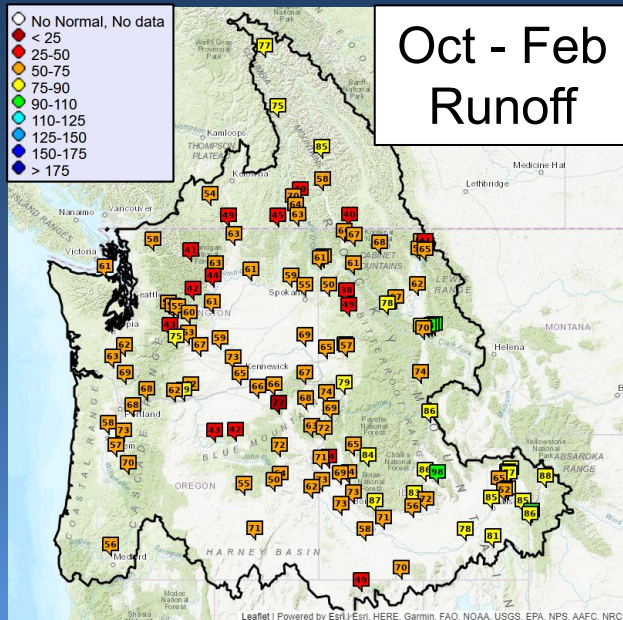
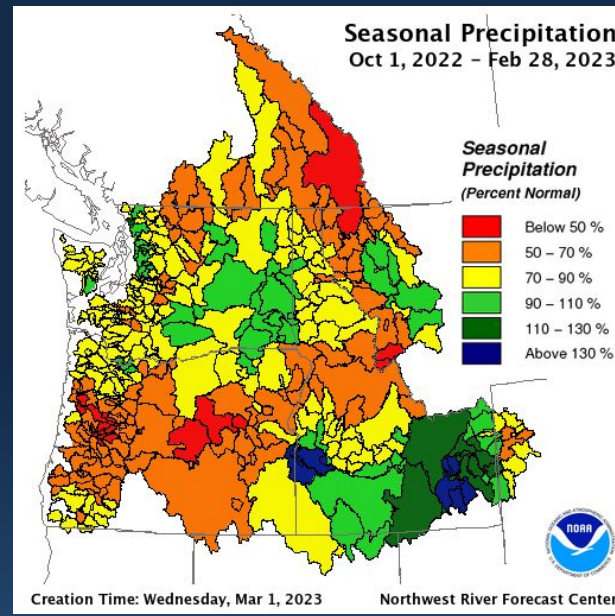
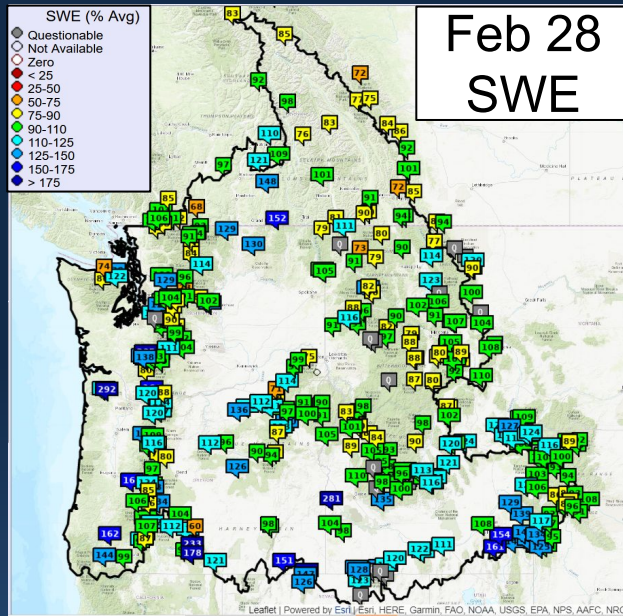


Figure provided by the International Research Institute (IRI) for Climate and Society (updated 19 February 2023).

By February-April 2023, most models indicate the return of ENSO-neutral. By May-July, the dynamical models suggest a potential return to El Niño, while the statistical models indicate the continuation of ENSO-neutral through the Northern Hemisphere summer.



SWE, Precip, Runoff and Water Supply Forecasts





Take Home Messages

February was colder and drier than normal.

Snowpack is a mix of above and below normal. Much of the Pacific Northwest has higher than normal low elevation snow.

Observed runoff to date remains well below normal.

Apr-Sep water supply forecasts remain mostly normal to below normal.



WY2022 Schedule for Live Water Supply Briefings

Apr	May	Jun
6	4	TBD
All presentations held at 10:00 am Pacific Time unless noted otherwise		

Telephone Conference Call Number
(same for each month's brief):
(213) 929 - 4212

Access Code :
949-968-637#



Questions?

If you have a question, use the 'Raise Hand' function we can unmute you or type your question in the chat.

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#**.

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