



# Northwest River Forecast Center

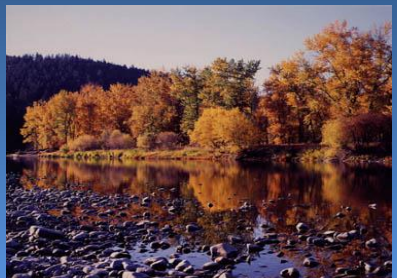


## April 2023 Water Supply Briefing

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



Henry Pai  
[NWRFC.watersupply@noaa.gov](mailto: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

March was colder than normal basinwide, with wetter conditions in the south and drier conditions in the north.

Snowpack continued building even at low elevations, with higher accumulations in the south.

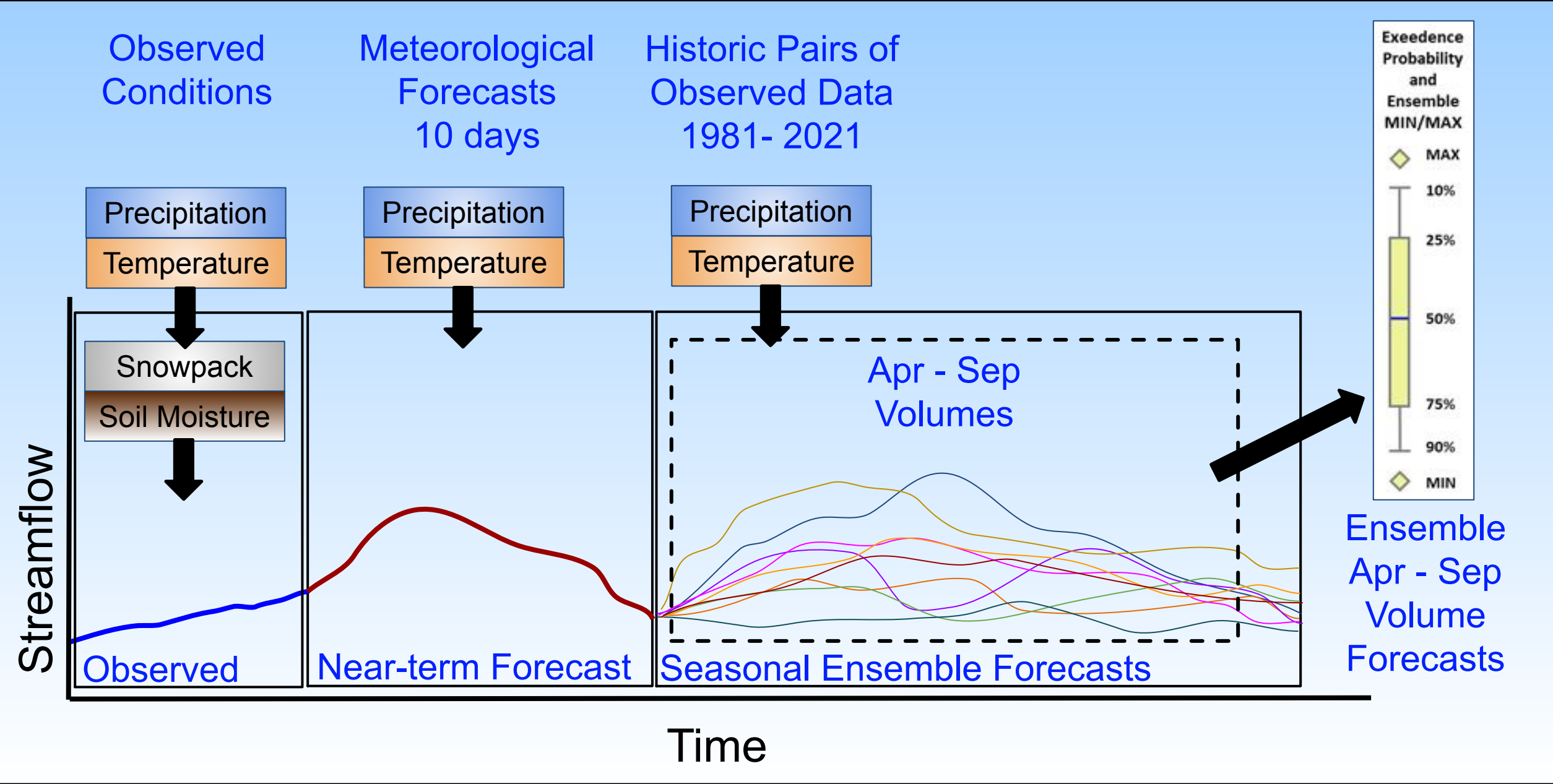
Observed runoff to date remains well below normal.

Apr-Sep water supply forecasts remain mostly normal to below normal, with exception in southern Idaho where forecasts are much higher than normal.



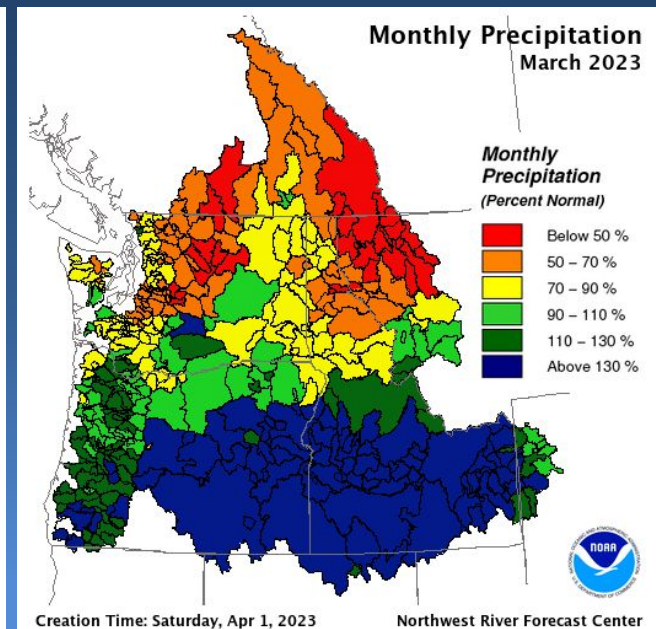
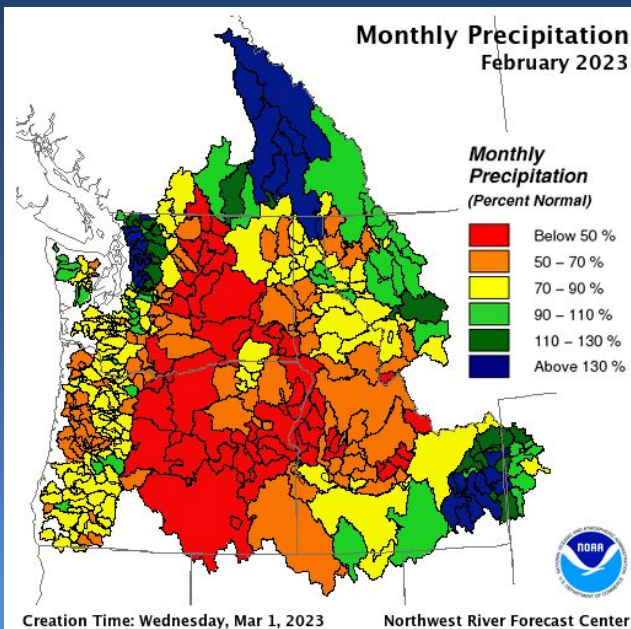
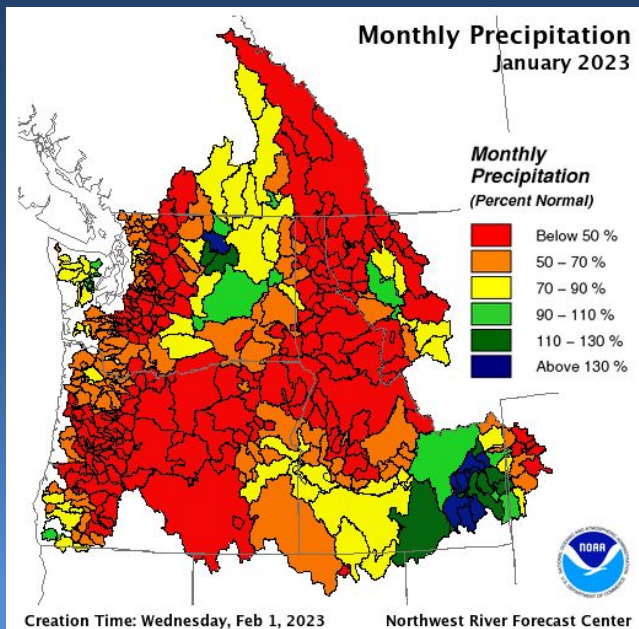
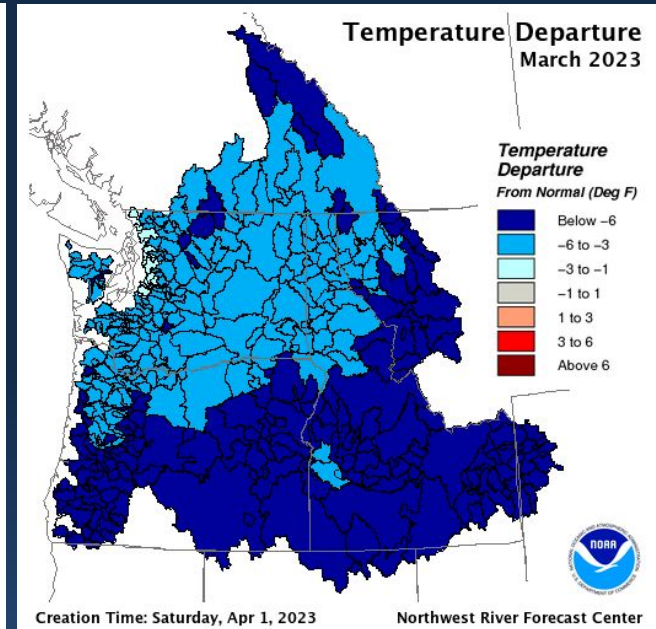
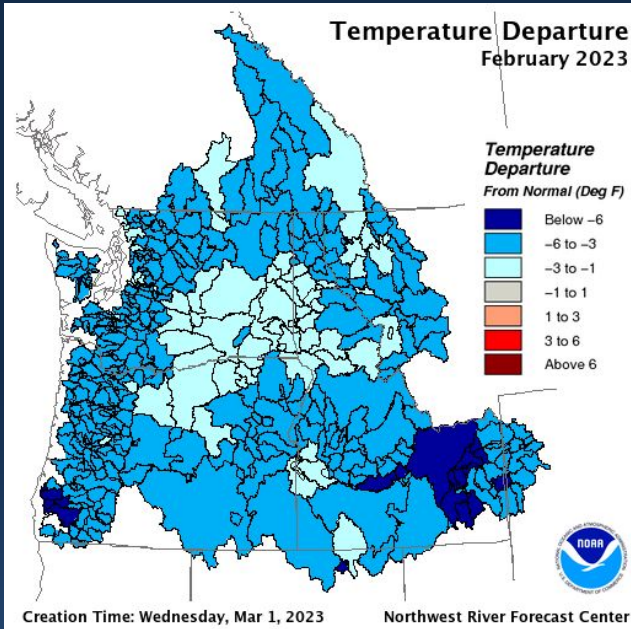
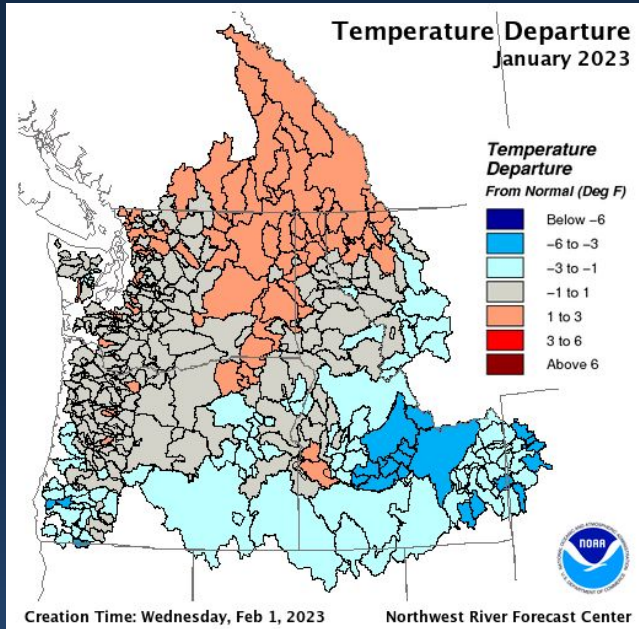


# NWRFC Forecast Technique





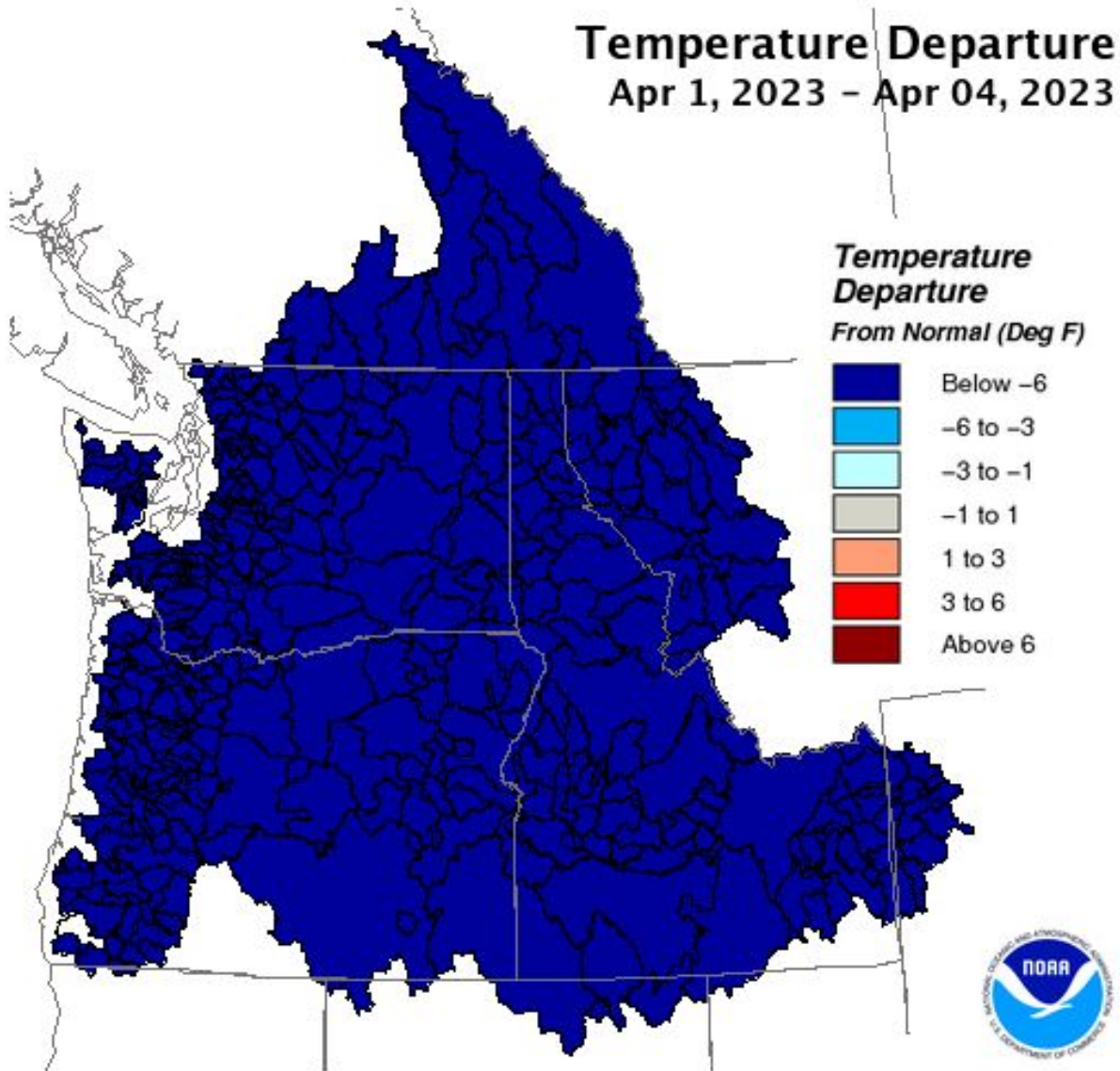
# Temperature and Precipitation - January to March





# Temperature and Precipitation - Start of April

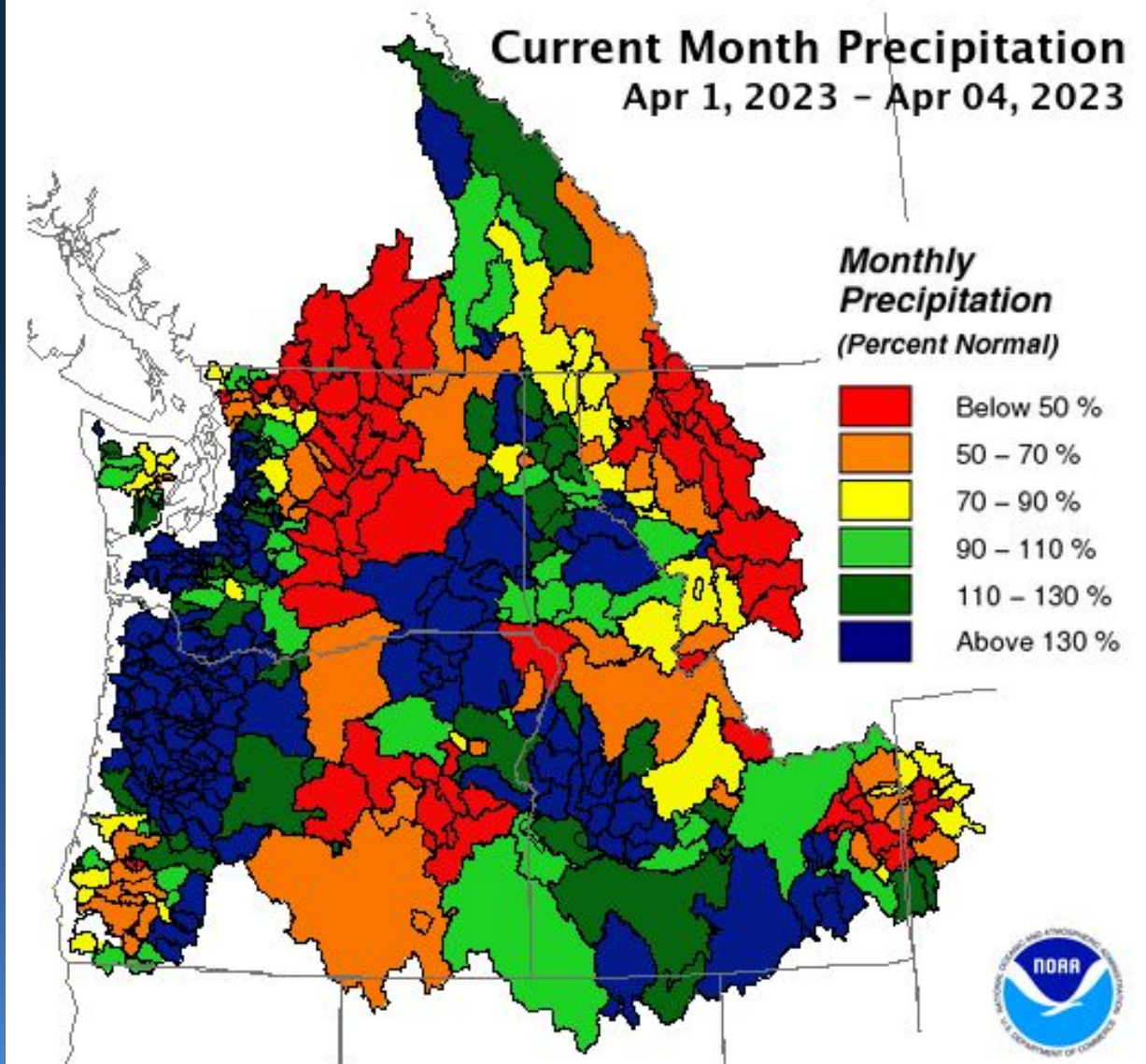
**Temperature Departure**  
Apr 1, 2023 - Apr 04, 2023



Creation Time: Wednesday, Apr 5, 2023

Northwest River Forecast Center

**Current Month Precipitation**  
Apr 1, 2023 - Apr 04, 2023

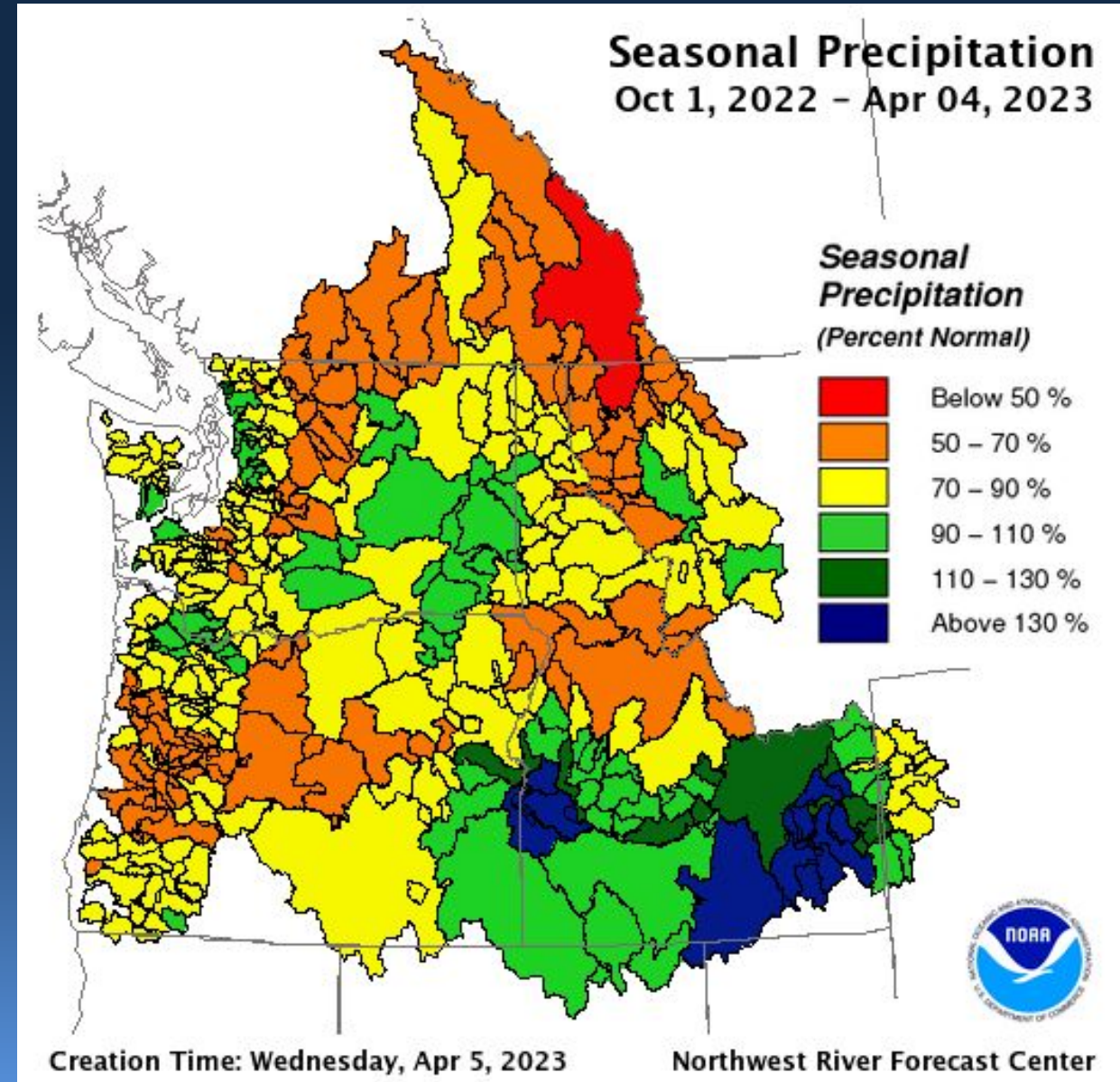
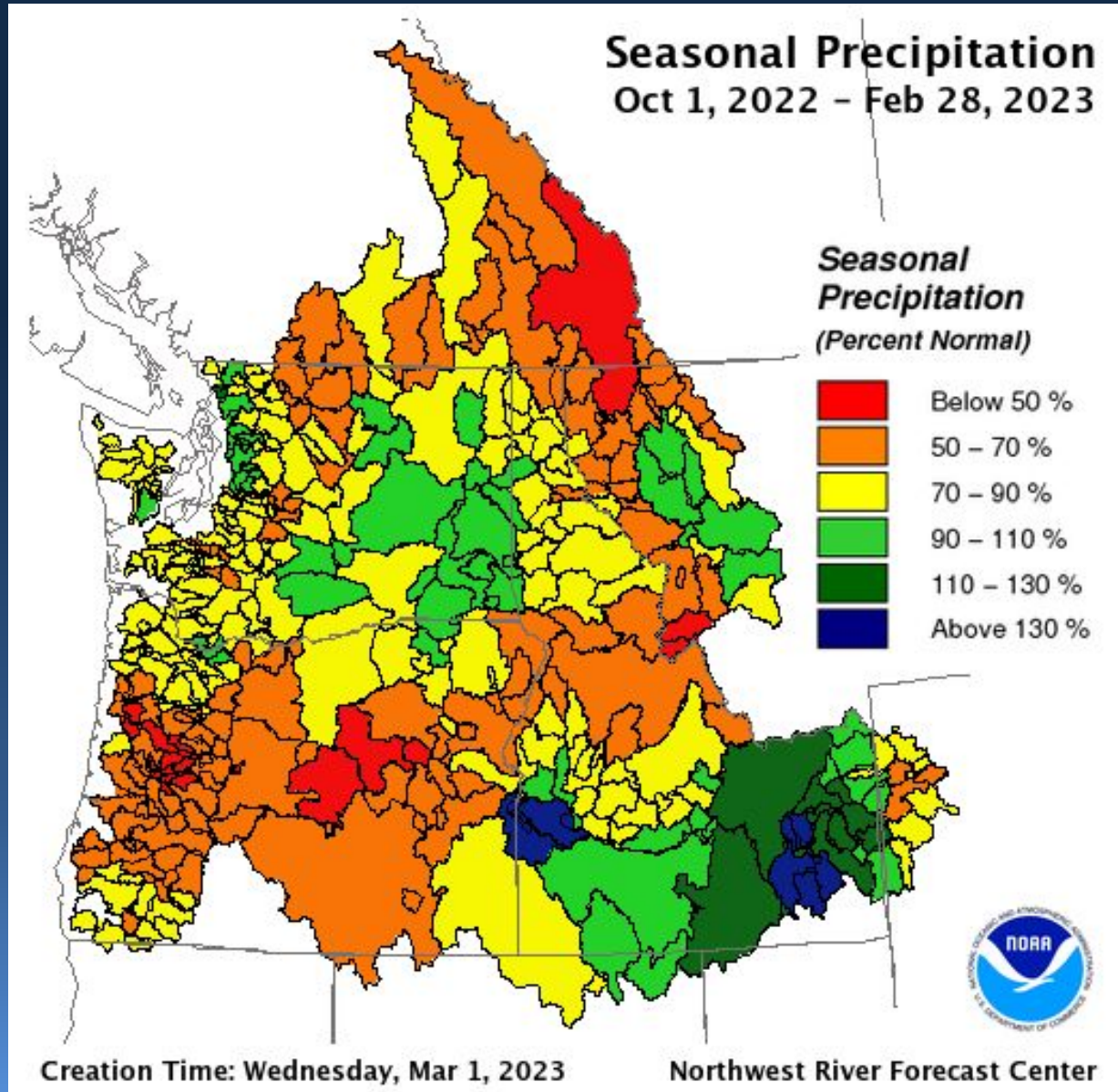


Creation Time: Wednesday, Apr 5, 2023

Northwest River Forecast Center



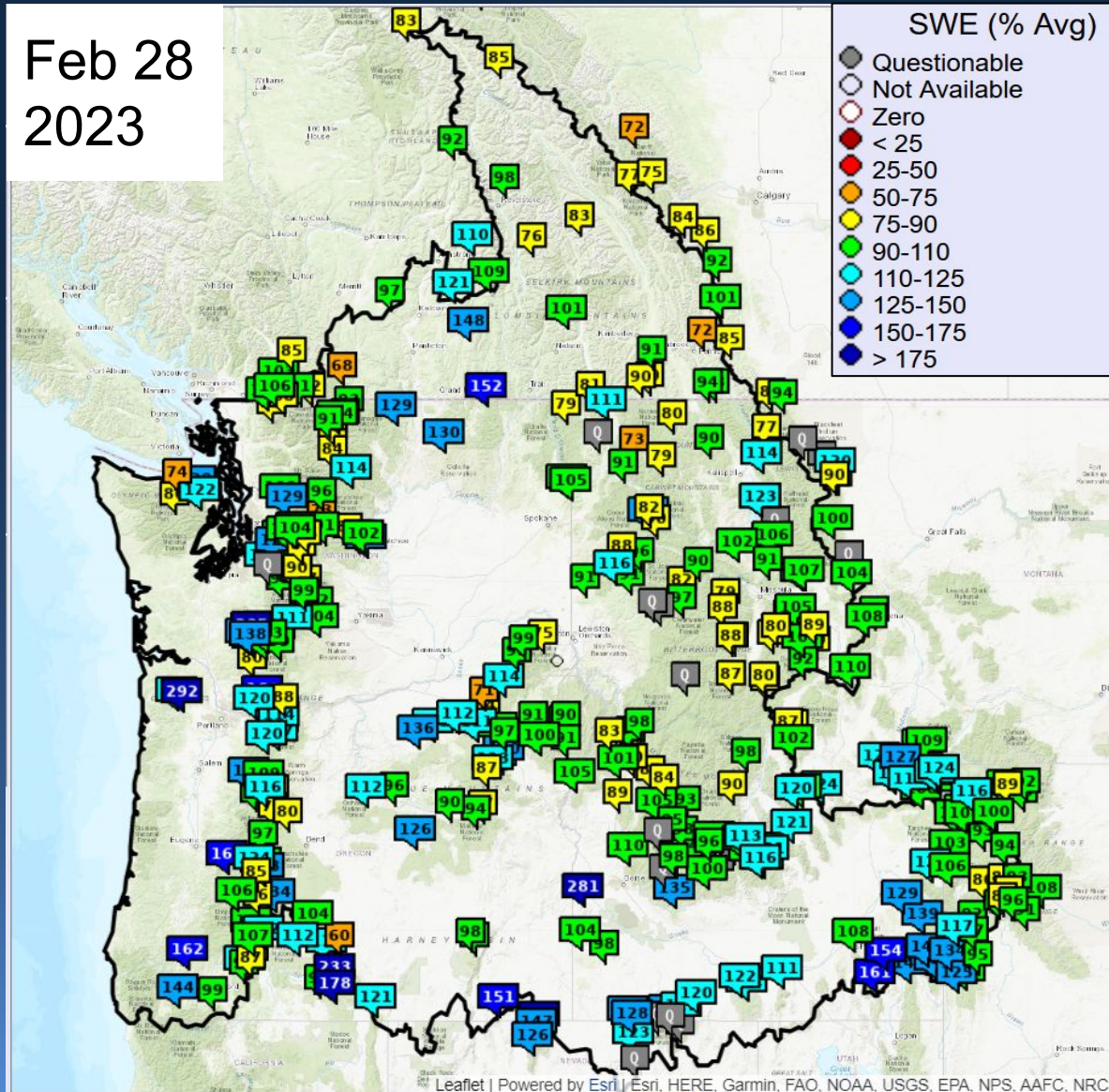
# Change in Water Year Precipitation



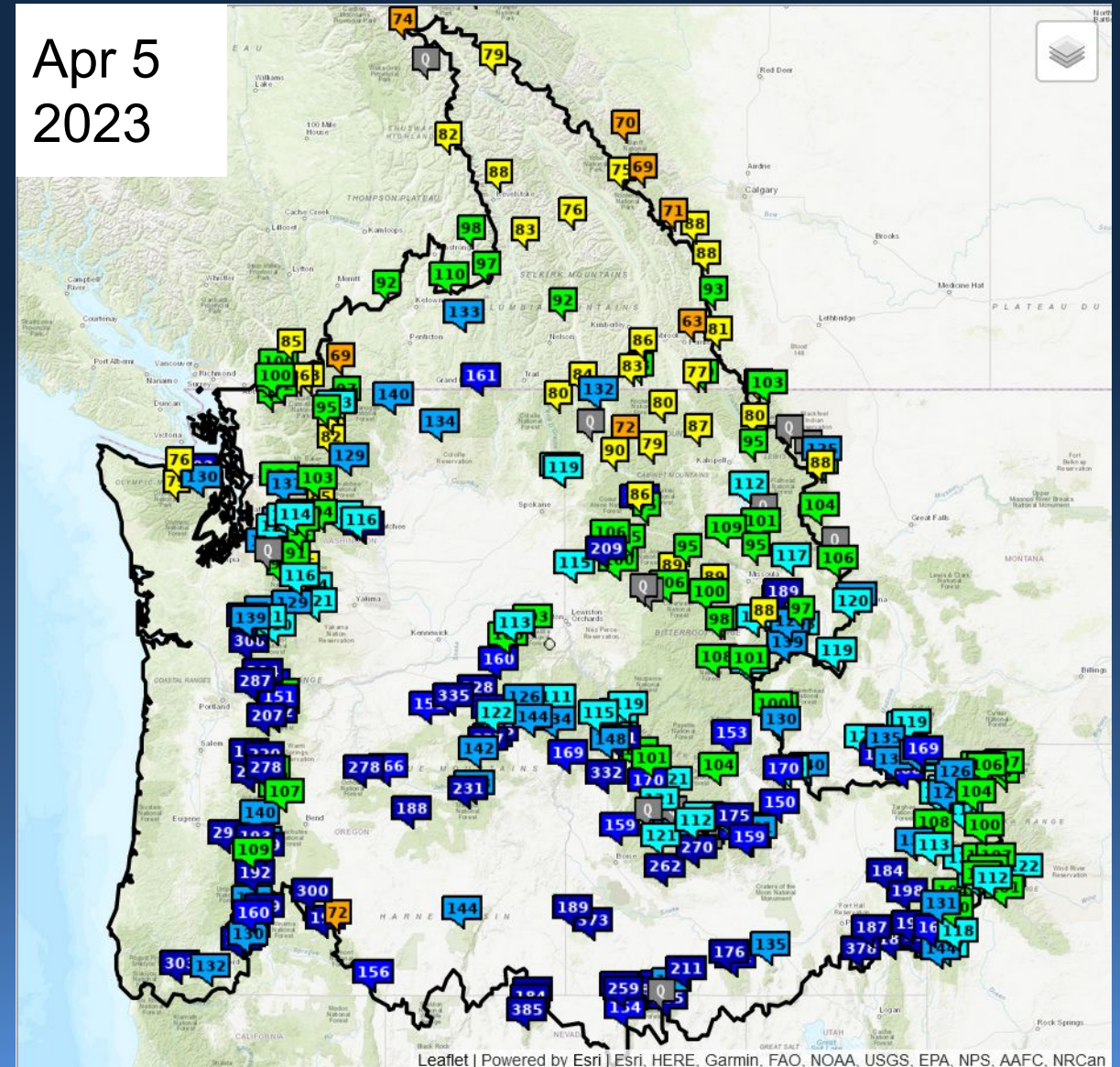


# Change in Snowpack

Feb 28  
2023



Apr 5  
2023



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

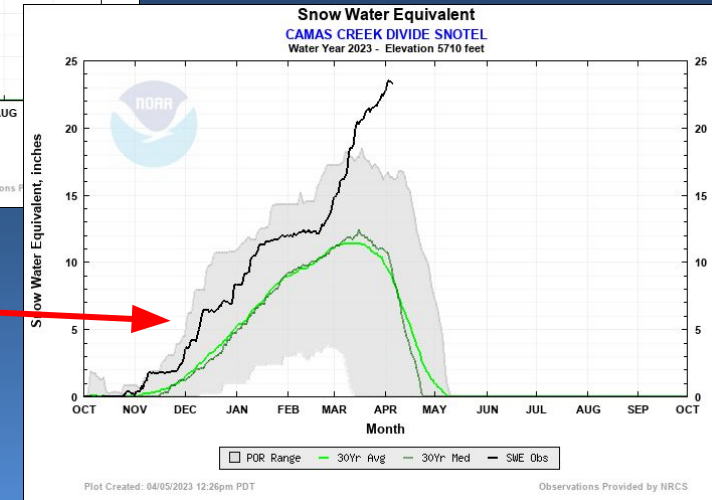
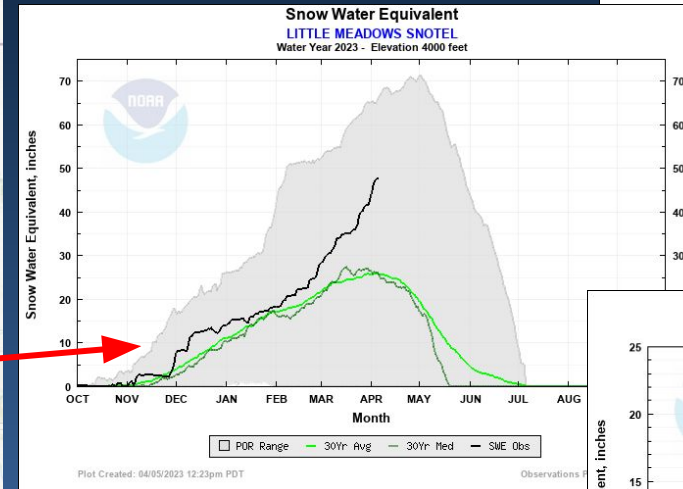
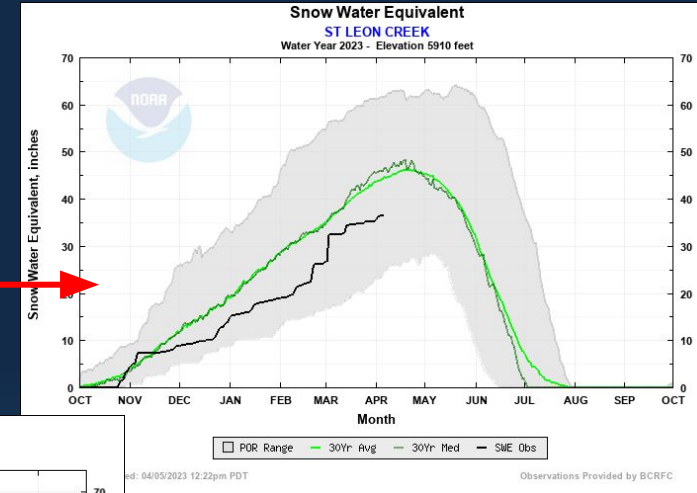
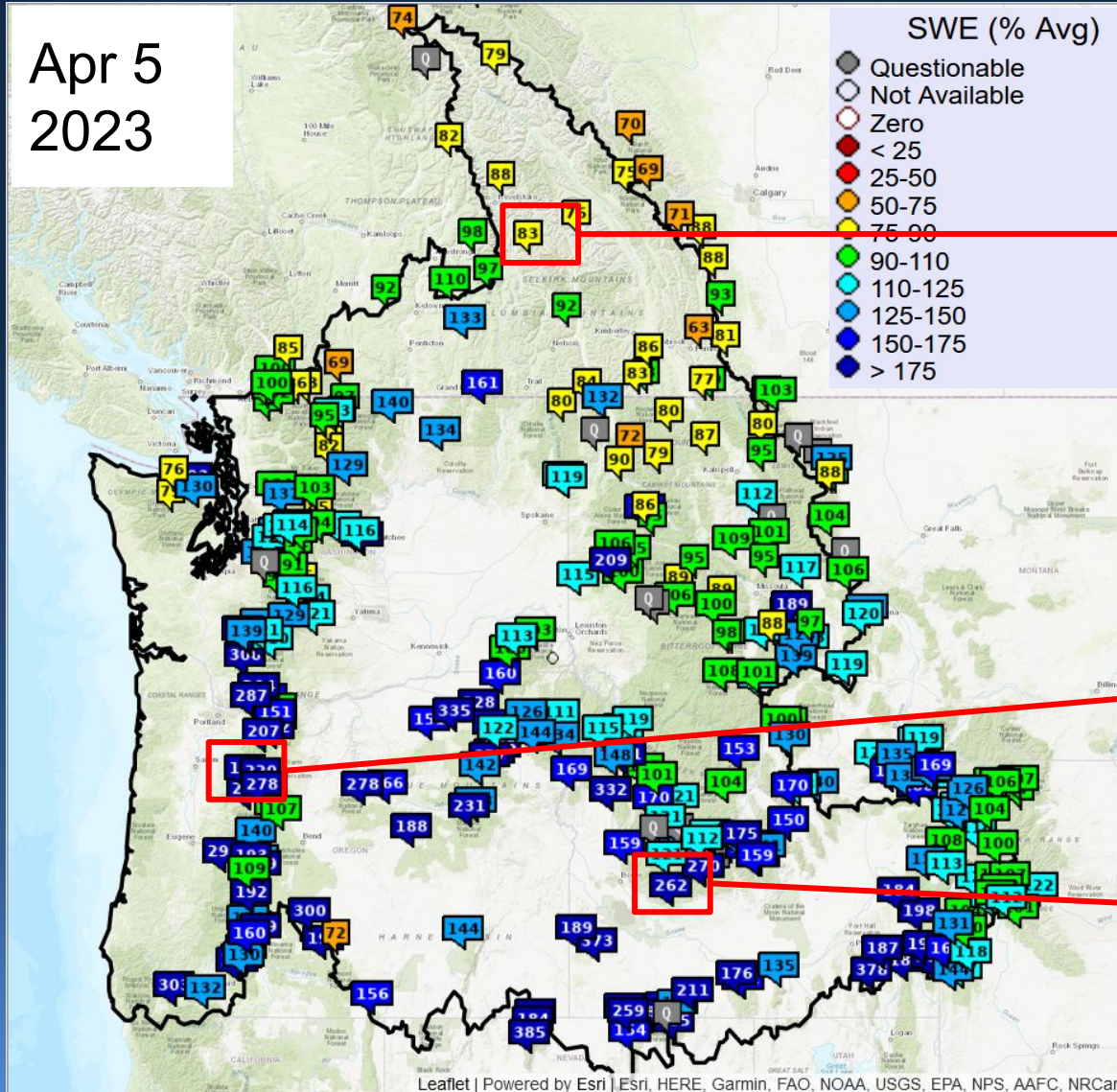






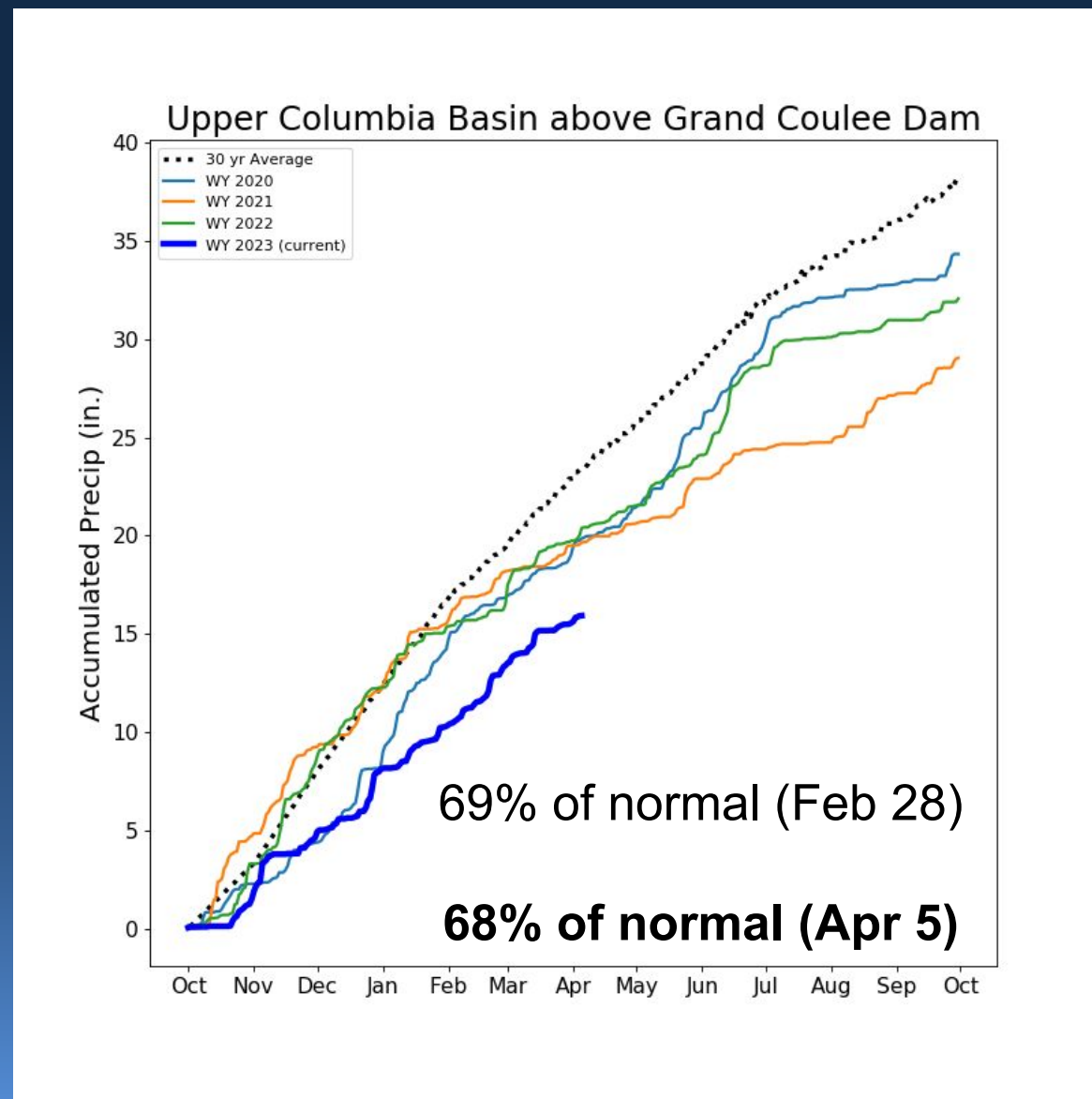
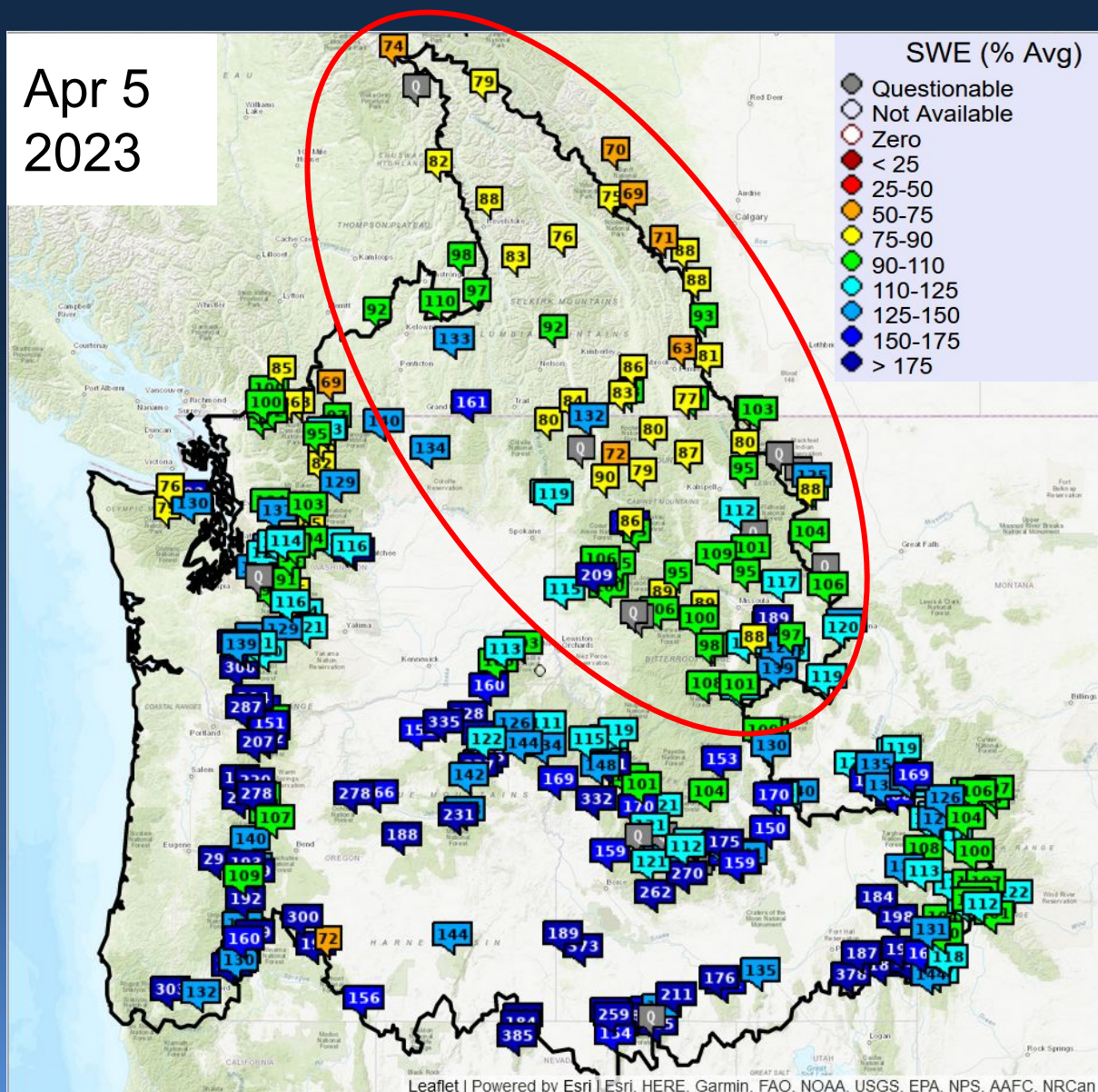
# Snowpack

Apr 5  
2023



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

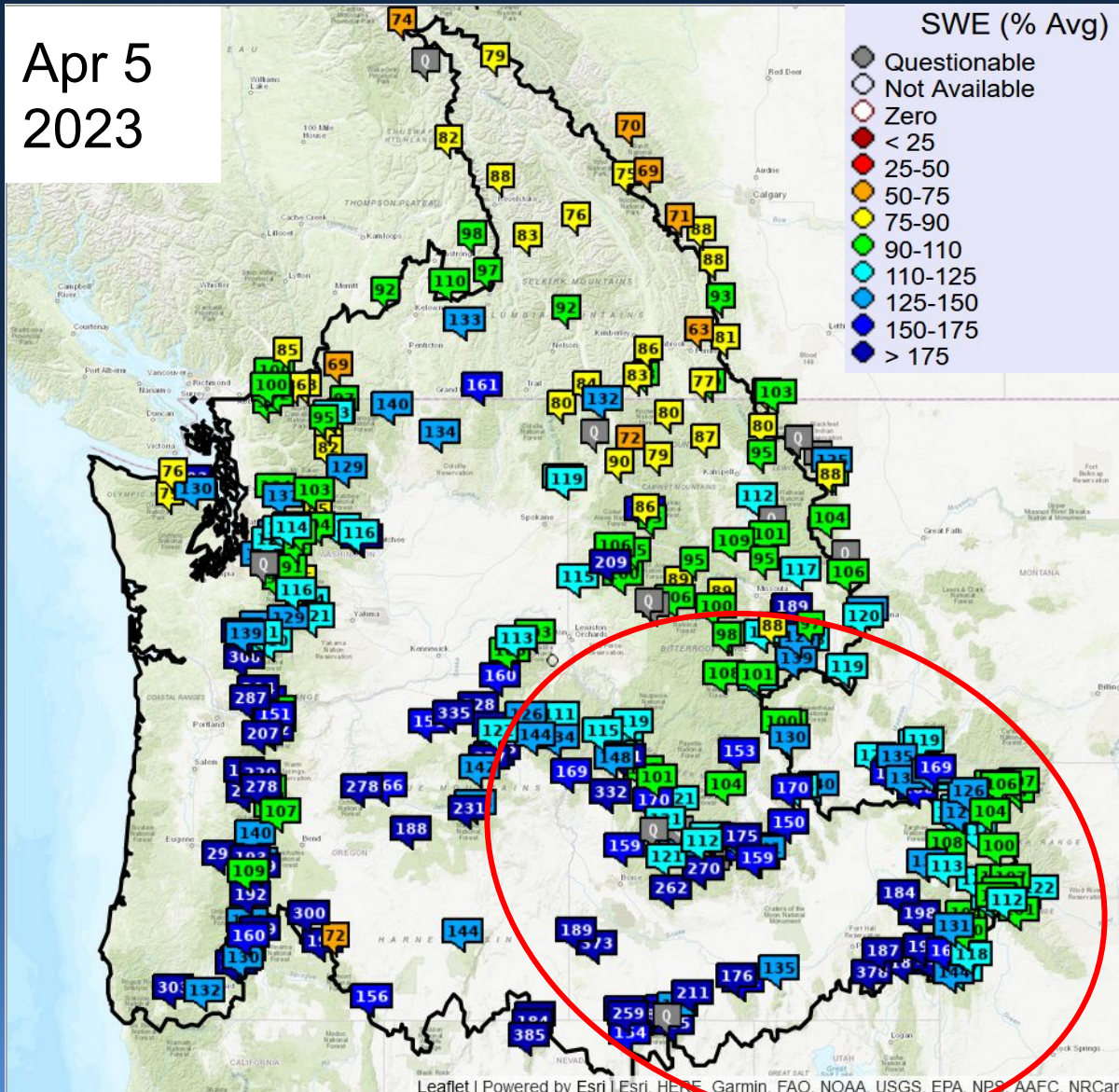




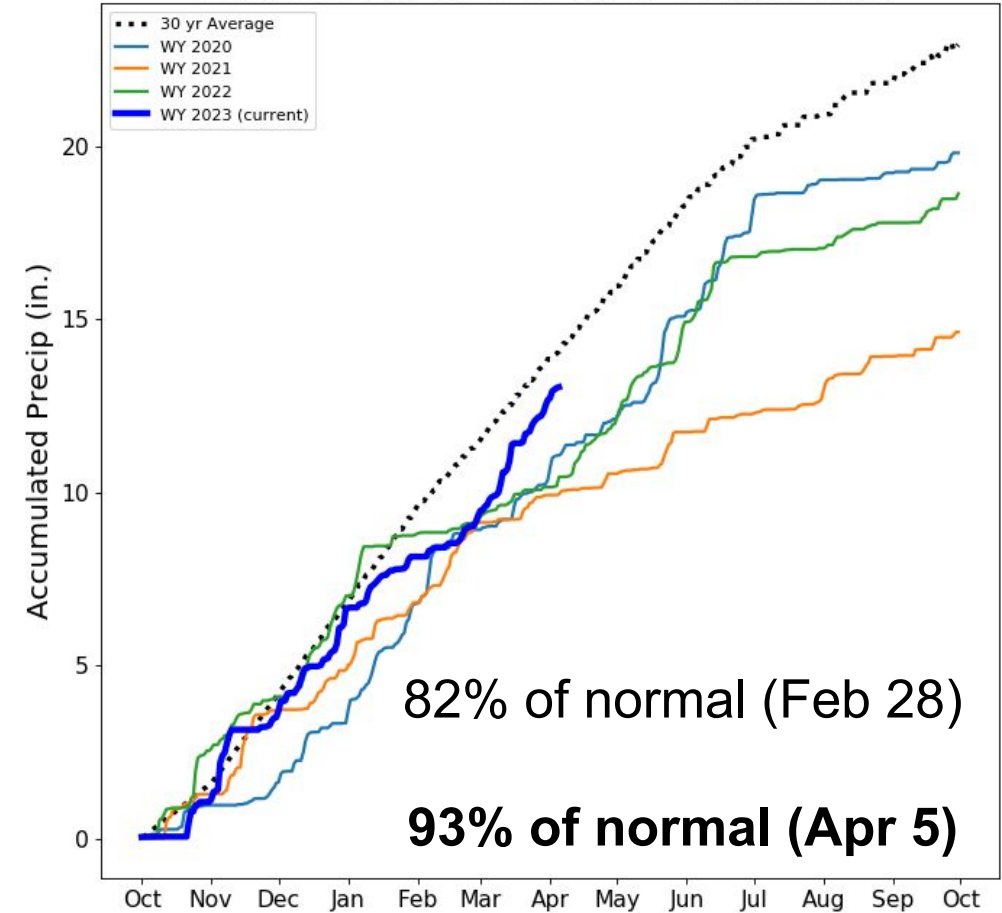


# Snow and Precipitation

Apr 5  
2023



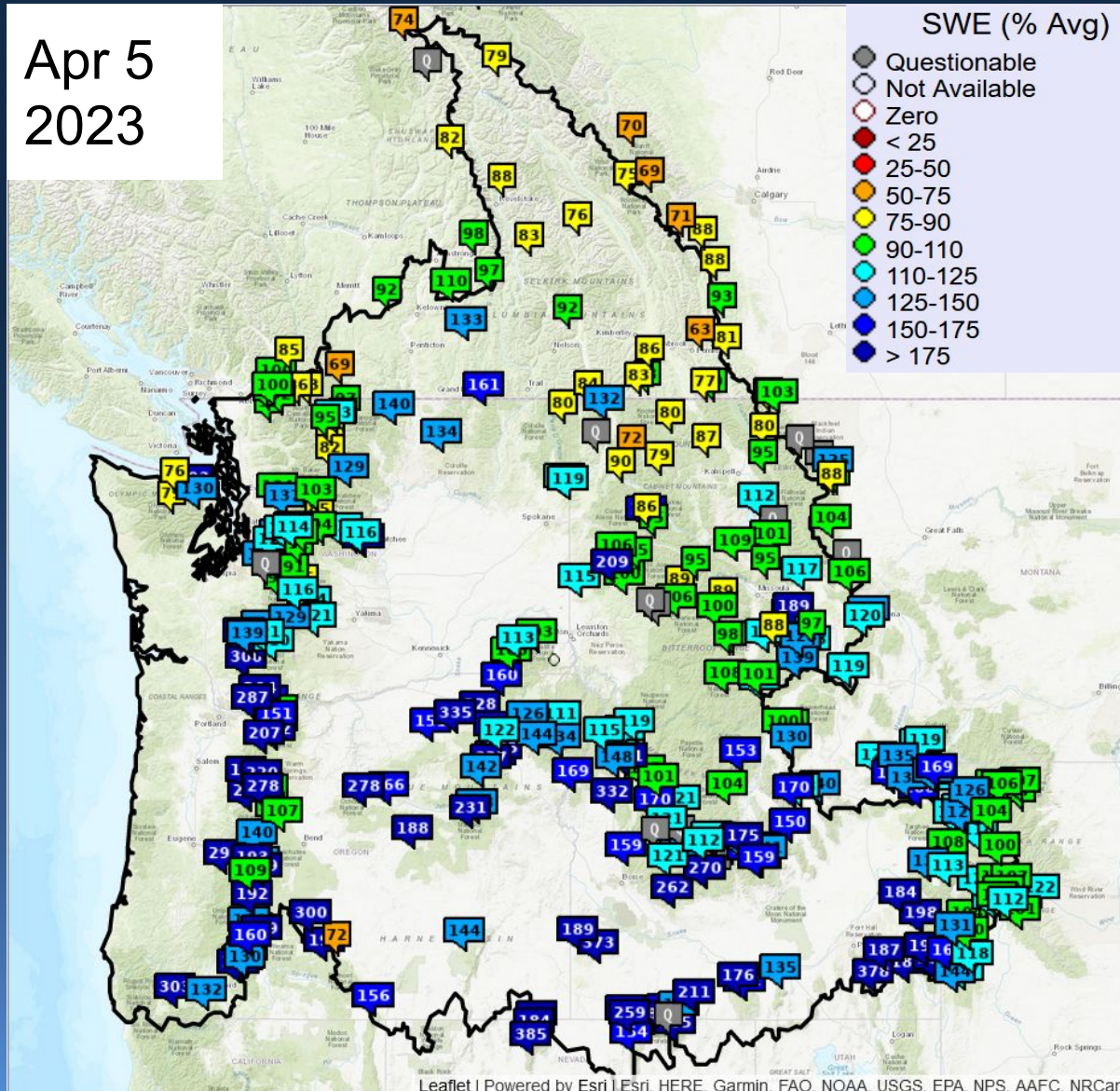
Snake Basin above Lower Granite Dam



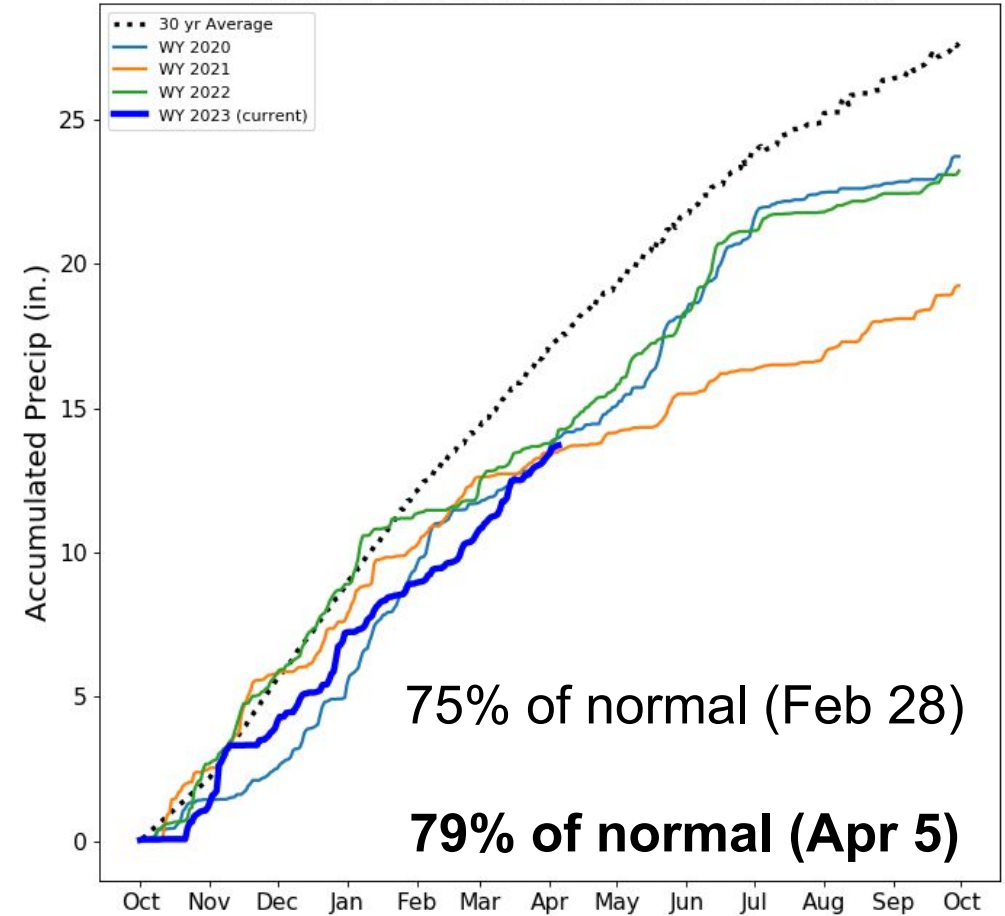


# Snow and Precipitation

Apr 5  
2023



Columbia Basin above The Dalles Dam

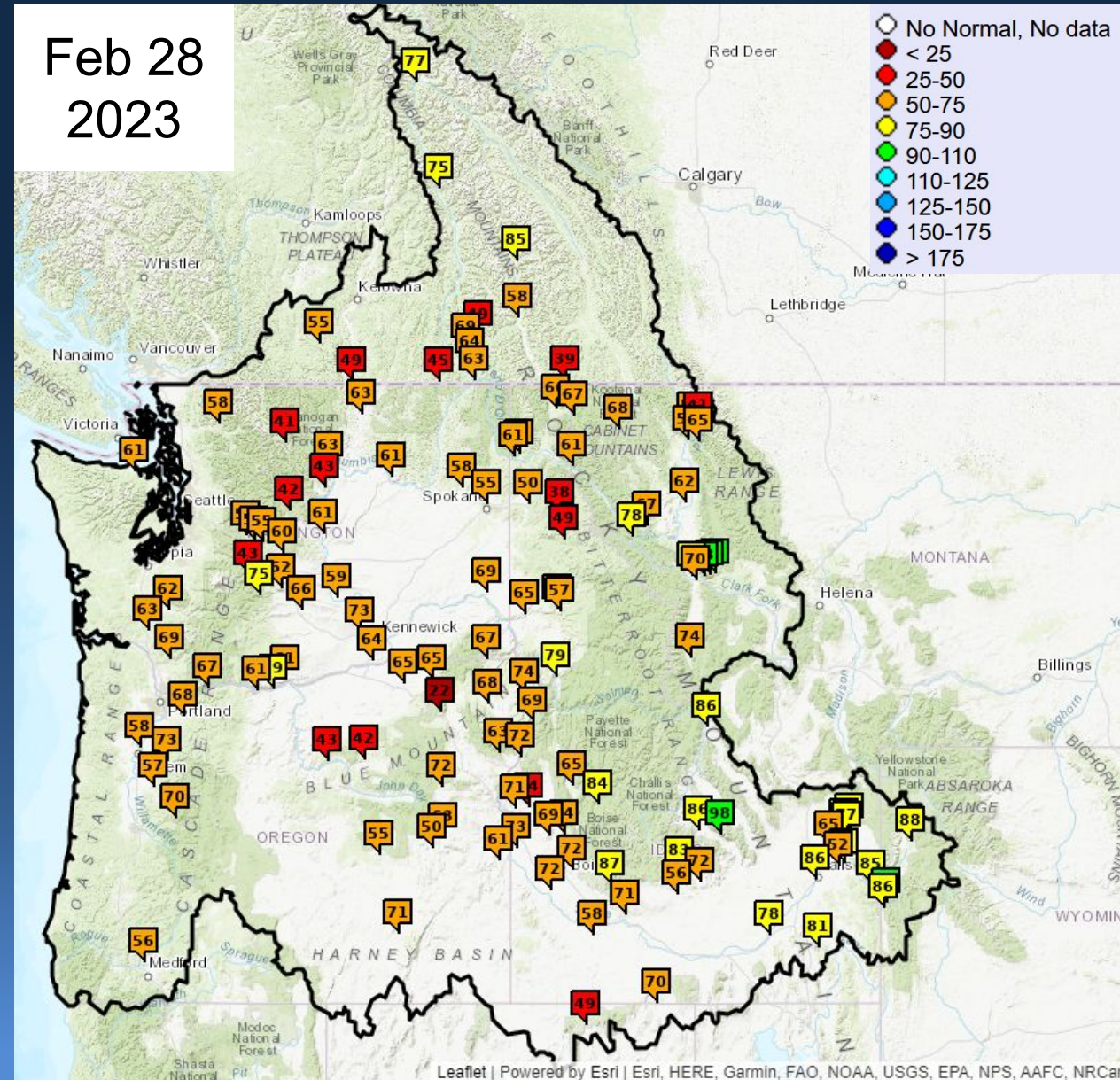


Snow data from NRCS, BC Hydro, and Alberta Environment and Parks. Precip averages from PRISM OSU and PCIC.

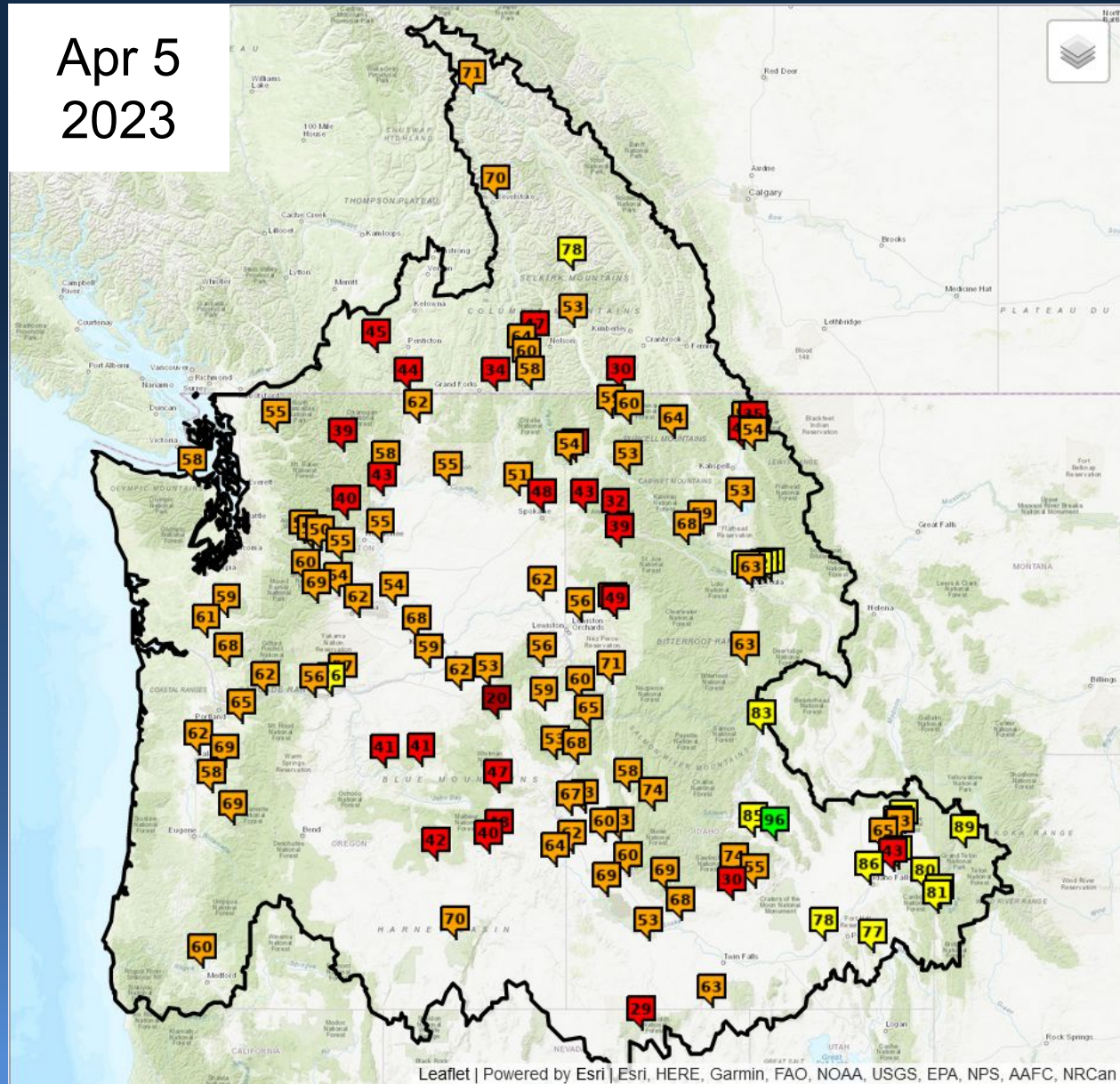


# Water Year to Date Adjusted Runoff

Feb 28  
2023



Apr 5  
2023

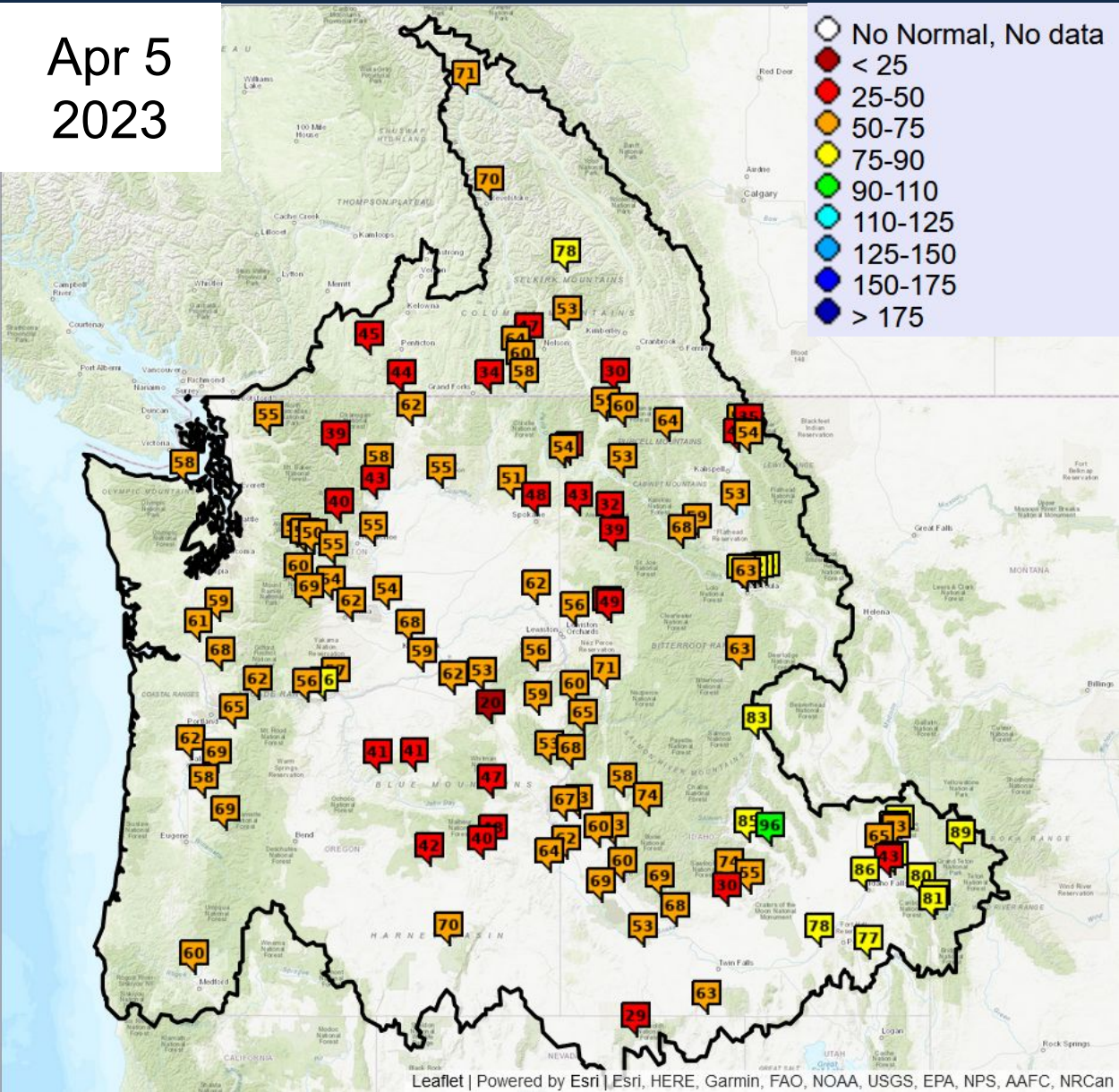






# Water Year to Date Adjusted Runoff

Apr 5  
2023



## % Normal Runoff Oct 1- Apr 5

### Upper Columbia Basin

**Δ since Feb 28**

Mica	71	-6
Duncan	78	-7
Queens Bay	53	-5
Libby	64	-4
Hungry Horse	54	-11
Grand Coulee	55	-6

### Snake River Basin

American Falls	78	0
Lucky Peak	60	-12
Dworshak	48	-8
Lower Granite	62	-7

### Lower Columbia Basin

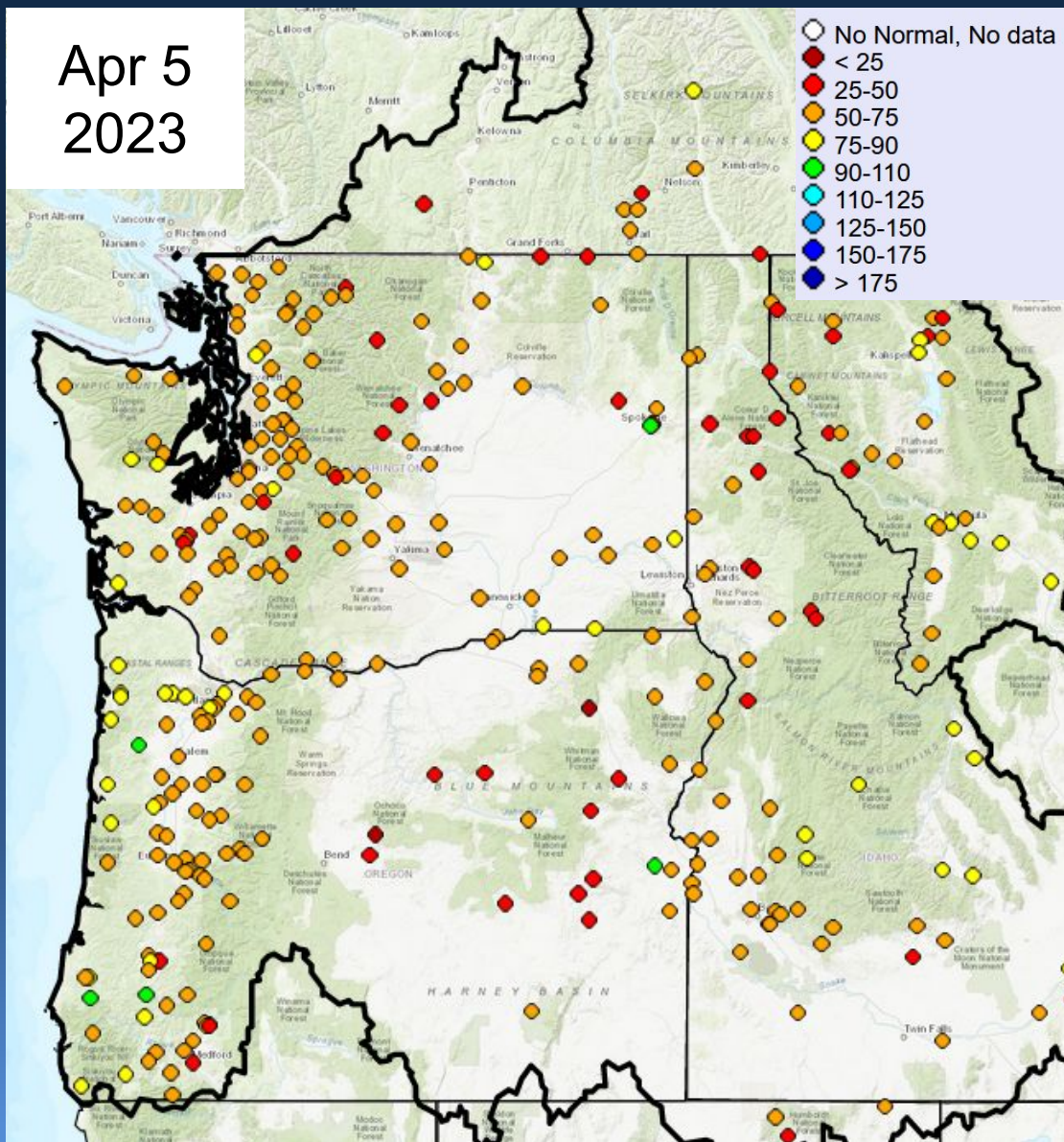
The Dalles	56	-5
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# Water Year to Date Adjusted Runoff

Apr 5  
2023



% Normal Runoff Oct 1- Apr 5

## Washington

		<u>Δ since Feb 28</u>
Skagit nr Mt Vernon	60	-2
Dungeness nr Sequim	58	-3
Chehalis at Porter	64	0
Okanogan at Malott	62	0
Methow nr Pateros	57	-7
Yakima at Parker	61	-6
Walla Walla nr Touchet	86	-10

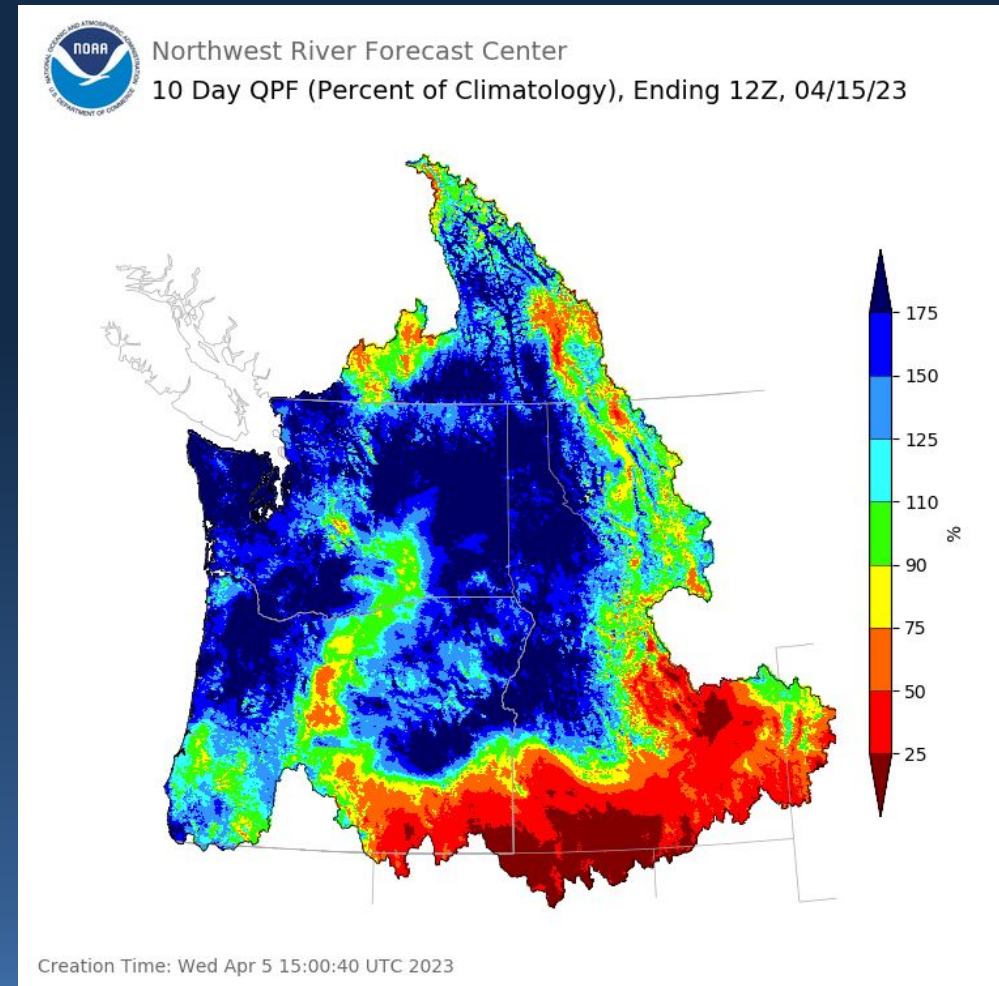
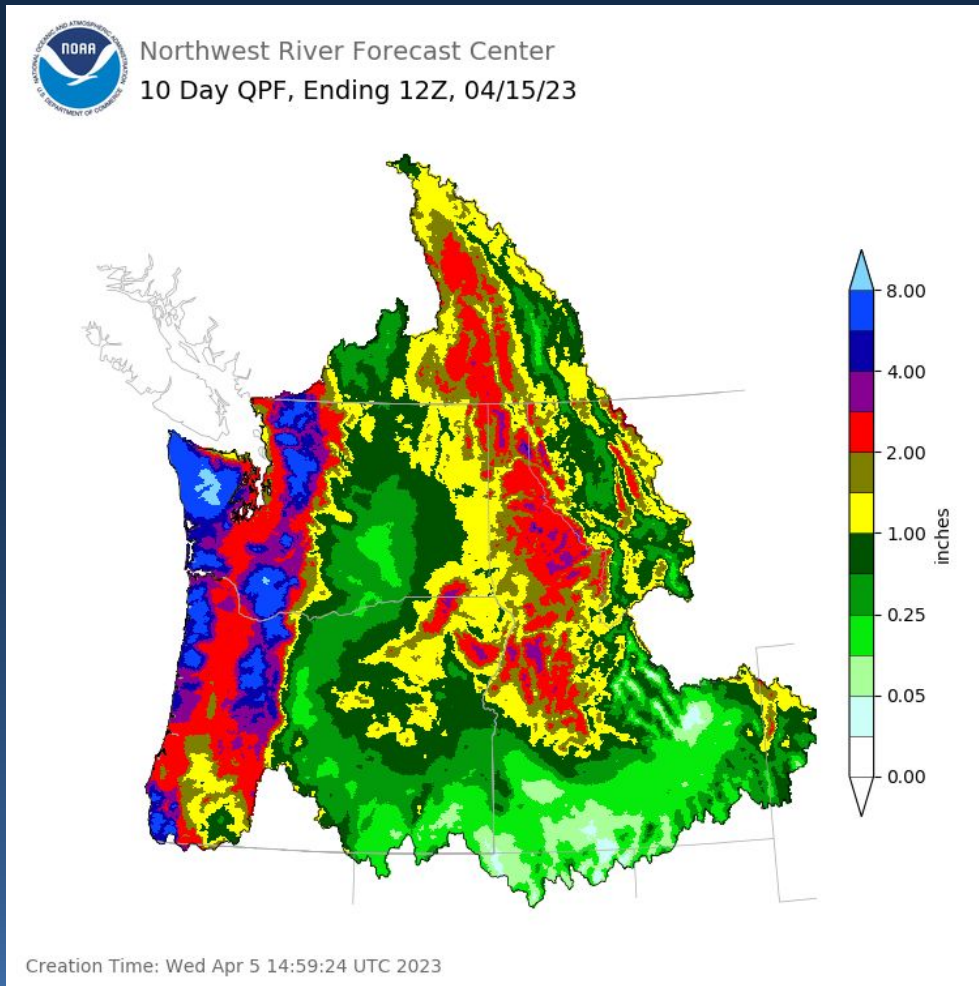
## Oregon

Willamette at Salem	56	4
Rogue at Raygold	59	4
Umatilla at Pendleton	61	-4
Grande Ronde at Troy	55	-12
Crooked nr Prineville	27	-2
Owyhee Dam	67	9





# 10 Day Precipitation Forecast Used in ESP10

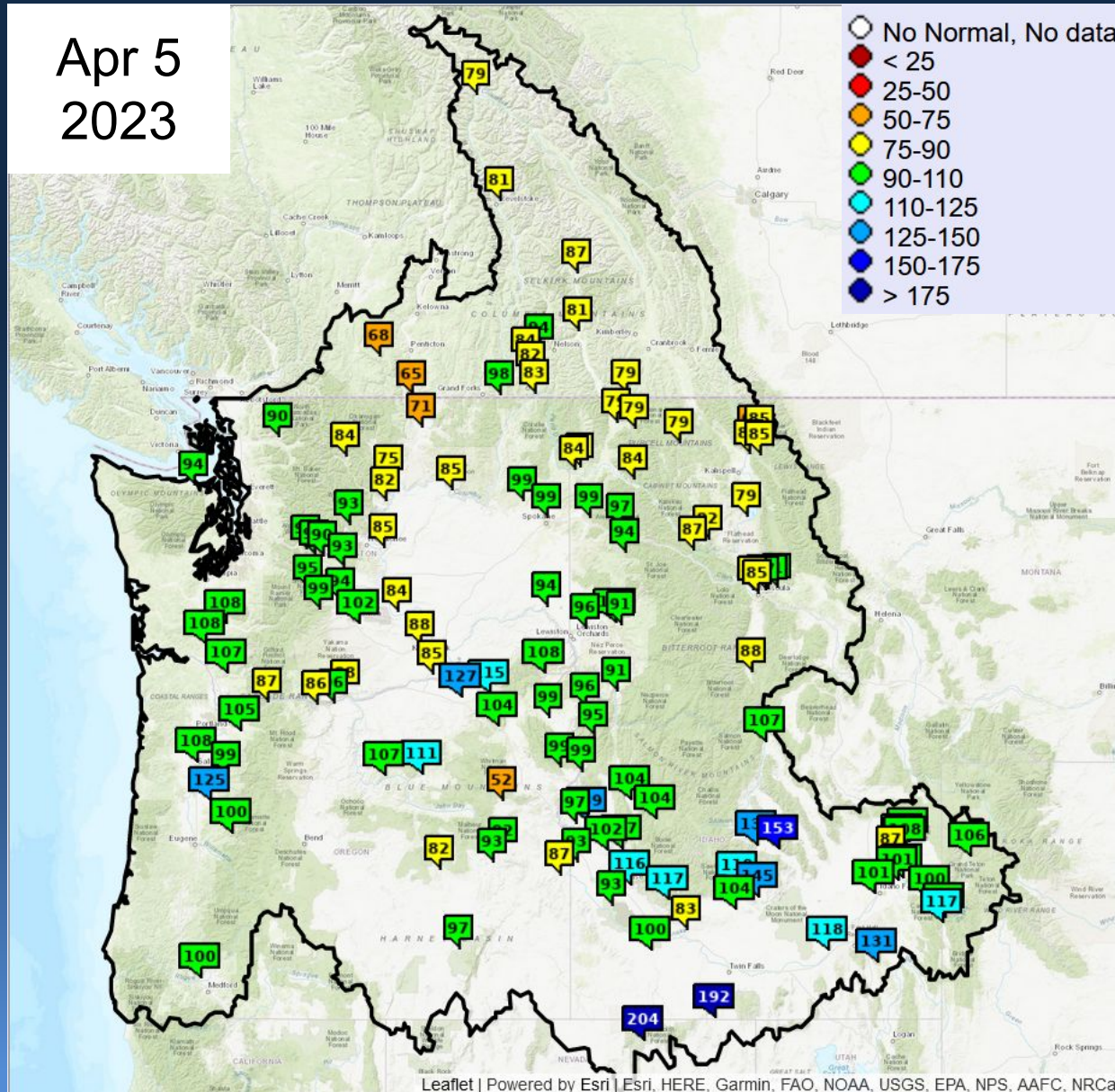


Quantitative Precipitation Forecast (QPF) Sources:  
Days 1 - 2 NWS Weather Forecast Offices (WFO) in the US, WPC in BC  
Days 3 - 7 NWS Weather Prediction Center (WPC)  
Days 8 - 10 NWS National Blend of Models (NBM)



# Water Supply Forecasts

Apr 5  
2023



## % Normal Apr-Sep Volume

### Upper Columbia Basin

### Δ since Feb 28

Mica	79	-4
Duncan	87	-1
Queens Bay	80	-2
Libby	81	-2
Hungry Horse	85	-7
Grand Coulee	85	0

### Snake River Basin

American Falls	118	15
Lucky Peak	116	18
Dworshak	101	8
Lower Granite	94	12

### Lower Columbia Basin

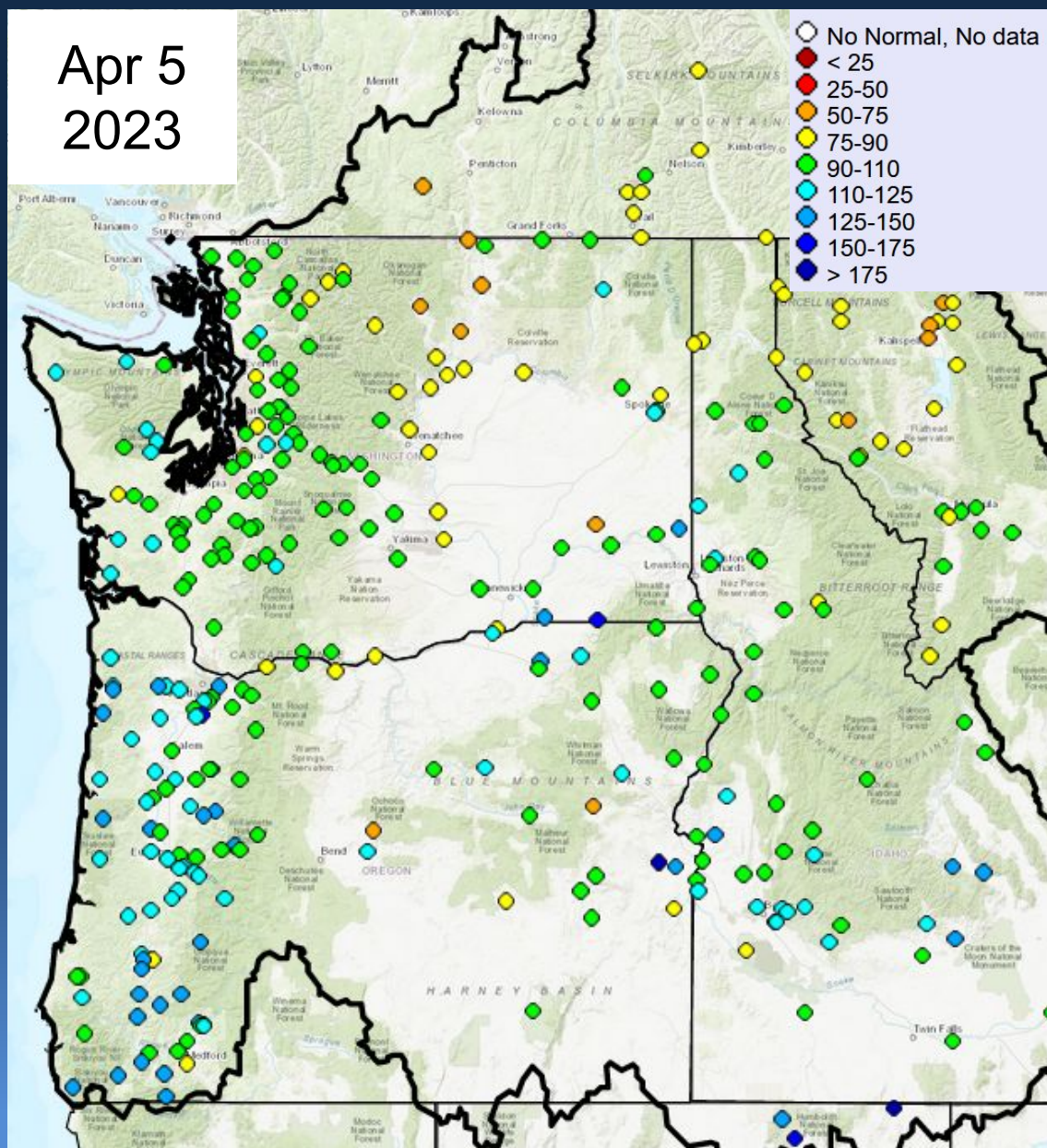
The Dalles	86	3
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# Water Supply Forecasts (Natural)

Apr 5  
2023



## % Normal Apr -Sep Volume

### Washington

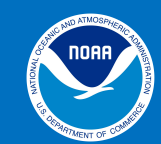
**Δ since Feb 28**

Skagit nr Mt Vernon	93	-1
Dungeness nr Sequim	93	7
Chehalis at Porter	108	19
Okanogan at Malott	70	7
Methow nr Pateros	75	10
Yakima at Parker	94	-1
Walla Walla nr Touchet	125	40

### Oregon

Willamette at Salem	105	19
Rogue at Raygold	102	20
Umatilla at Pendleton	126	43
Grande Ronde R at Troy	108	17
Crooked nr Prineville	118	36
Owyhee Dam	87	4





# Water Supply Forecasts

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

### Official Water Supply

ESP with 10 Days QPF Ensemble: 2023-04-05 Issued: 2023-04-05

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	47896	52299	85	58269	61483
APR-JUL	39267	43694	83	49355	52774
APR-AUG	44519	49289	85	55083	58186
JAN-SEP	52917	57320	81	63290	70457
JAN-JUL	44288	48715	79	54376	61749
OCT-SEP	57781	62184	79	68154	78842

### Experimental Water Supply

HEFS with 15 days EQPF Ensemble: 2023-04-05 Issued: 2023-04-05

APR-SEP	47400	51735	84	56798	61483
APR-JUL	38643	43171	82	48350	52774
APR-AUG	43688	48403	83	53523	58186
JAN-SEP	52421	56756	81	61819	70457
JAN-JUL	43664	48192	78	53371	61749
OCT-SEP	57285	61619	78	66683	78842

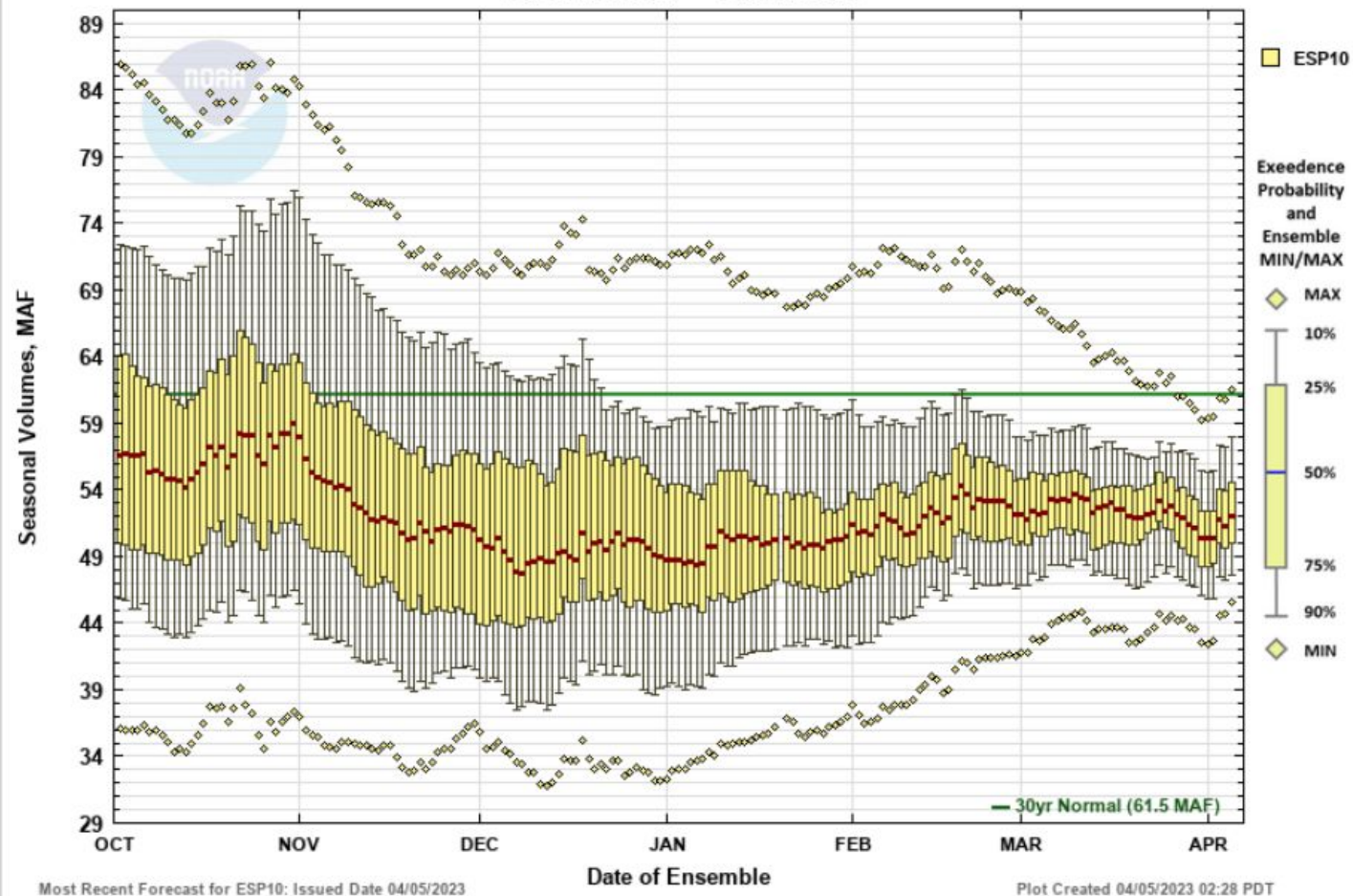
### Reference

ESP with 0 Days QPF Ensemble: 2023-04-05 Issued: 2023-04-05

APR-SEP	46629	51091	83	55674	61483
APR-JUL	38060	42549	81	47321	52774
APR-AUG	43086	47834	82	52496	58186
JAN-SEP	51650	56112	80	60695	70457
JAN-JUL	43081	47570	77	52342	61749
OCT-SEP	56513	60975	77	65559	78842

Move the mouse over the desired "Forecast Period" to display a graph.

## Water Supply Forecasts COLUMBIA - GRAND COULEE DAM Period APR to SEP -- Water Year 2023



☐ 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: 2023-04-05 Issued: 2023-04-05

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	18780	20801	94	25434	22232
APR-JUL	16327	18178	91	22542	19946
APR-AUG	17619	19552	93	24042	21121
JAN-SEP	22907	24927	84	29560	29736
JAN-JUL	20453	22304	81	26668	27450
OCT-SEP	26376	28396	83	33029	34287

### Experimental Water Supply

HEFS with 15 days EQPF Ensemble: 2023-04-05 Issued: 2023-04-05

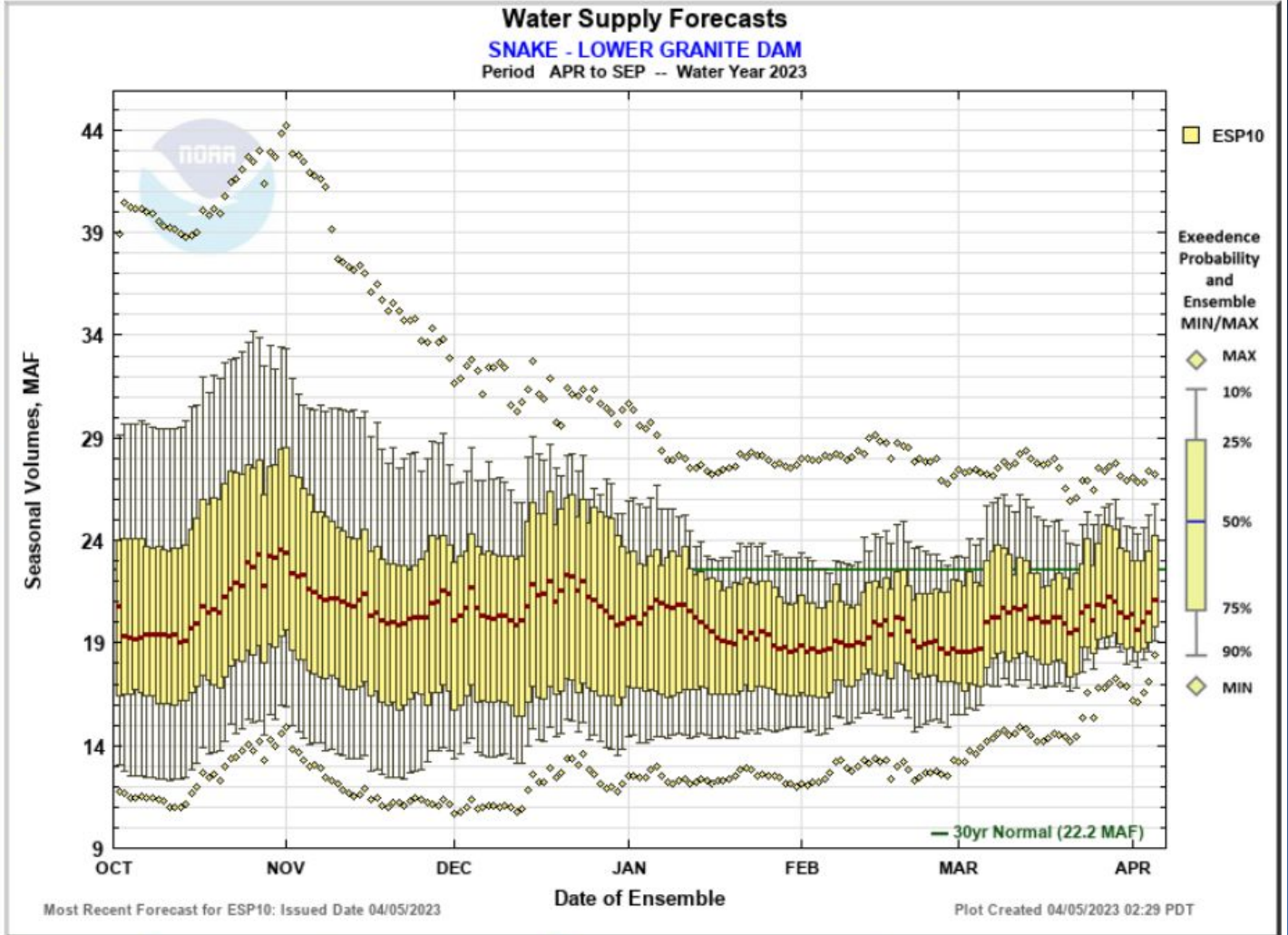
APR-SEP	17963	20527	92	25042	22232
APR-JUL	15569	17931	90	22269	19946
APR-AUG	16797	19236	91	23759	21121
JAN-SEP	22089	24653	83	29168	29736
JAN-JUL	19696	22058	80	26396	27450
OCT-SEP	25559	28123	82	32638	34287

### Reference

ESP with 0 Days QPF Ensemble: 2023-04-05 Issued: 2023-04-05

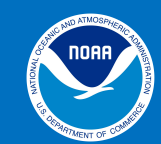
APR-SEP	17901	20413	92	24300	22232
APR-JUL	15556	17845	89	21625	19946
APR-AUG	16732	19138	91	23032	21121
JAN-SEP	22027	24539	83	28427	29736
JAN-JUL	19683	21971	80	25751	27450
OCT-SEP	25496	28008	82	31896	34287

Move the mouse over the desired "Forecast Period" to display a graph.



☐ 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: 2023-04-05 Issued: 2023-04-05

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	75672	81407	86	92748	94166
APR-JUL	62762	69945	85	79836	81933
APR-AUG	71028	76790	86	87692	89196
JAN-SEP	87275	93010	80	104351	115946
JAN-JUL	74365	81548	79	91439	103714
OCT-SEP	97659	103393	78	114734	132314

### Experimental Water Supply

HEFS with 15 days EQPF Ensemble: 2023-04-05 Issued: 2023-04-05

APR-SEP	73649	80961	86	90352	94166
APR-JUL	62138	68776	84	77547	81933
APR-AUG	69104	76087	85	85350	89196
JAN-SEP	85252	92564	80	101955	115946
JAN-JUL	73741	80379	78	89150	103714
OCT-SEP	95635	102947	78	112338	132314

### Reference

ESP with 0 Days QPF Ensemble: 2023-04-05 Issued: 2023-04-05

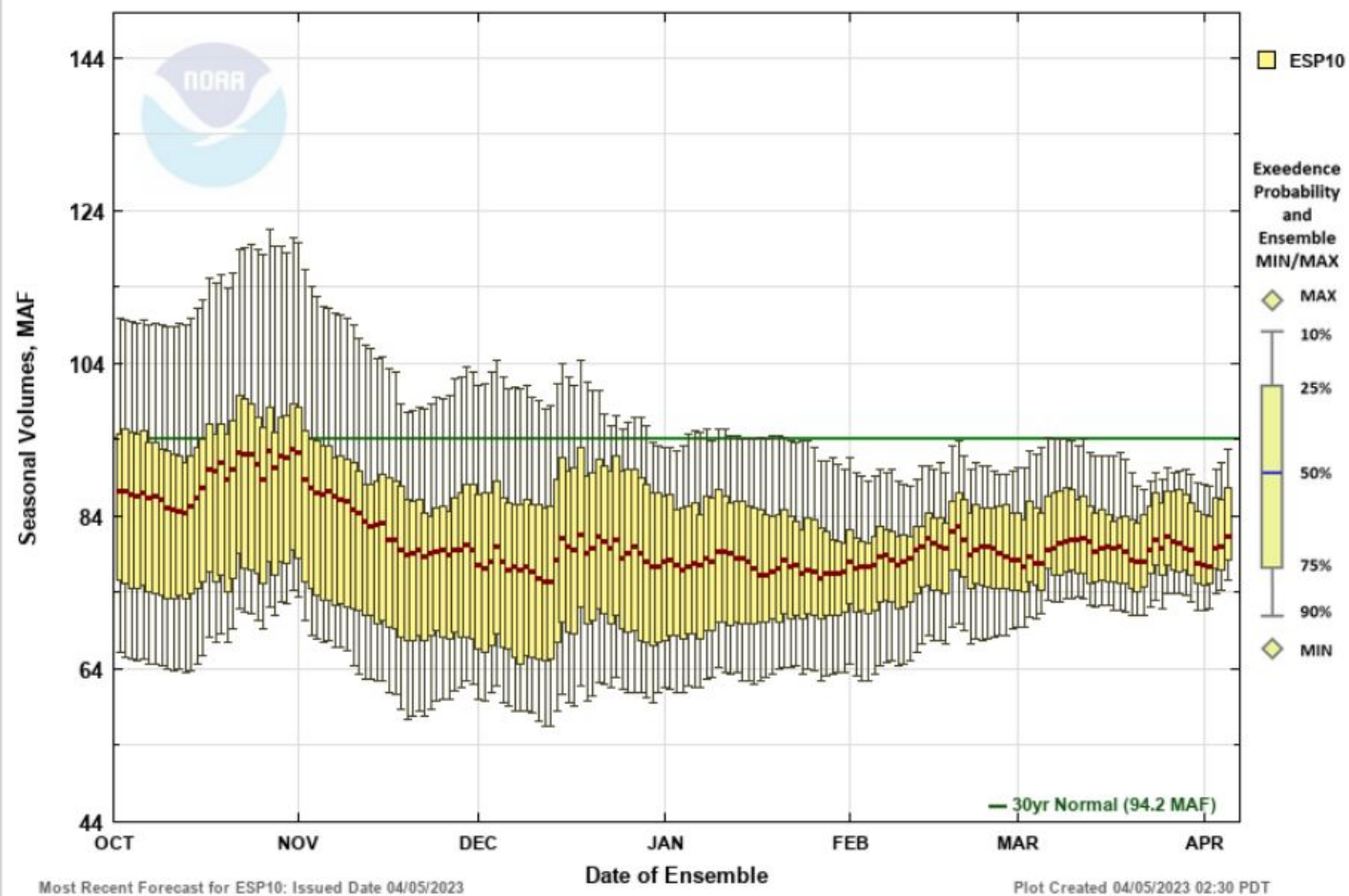
APR-SEP	72347	79477	84	88057	94166
APR-JUL	62076	68140	83	75842	81933
APR-AUG	68201	74621	84	83296	89196
JAN-SEP	83950	91079	79	99660	115946
JAN-JUL	73679	79743	77	87445	103714
OCT-SEP	94333	101463	77	110043	132314

Move the mouse over the desired "Forecast Period" to display a graph.

## Water Supply Forecasts

COLUMBIA - THE DALLES DAM

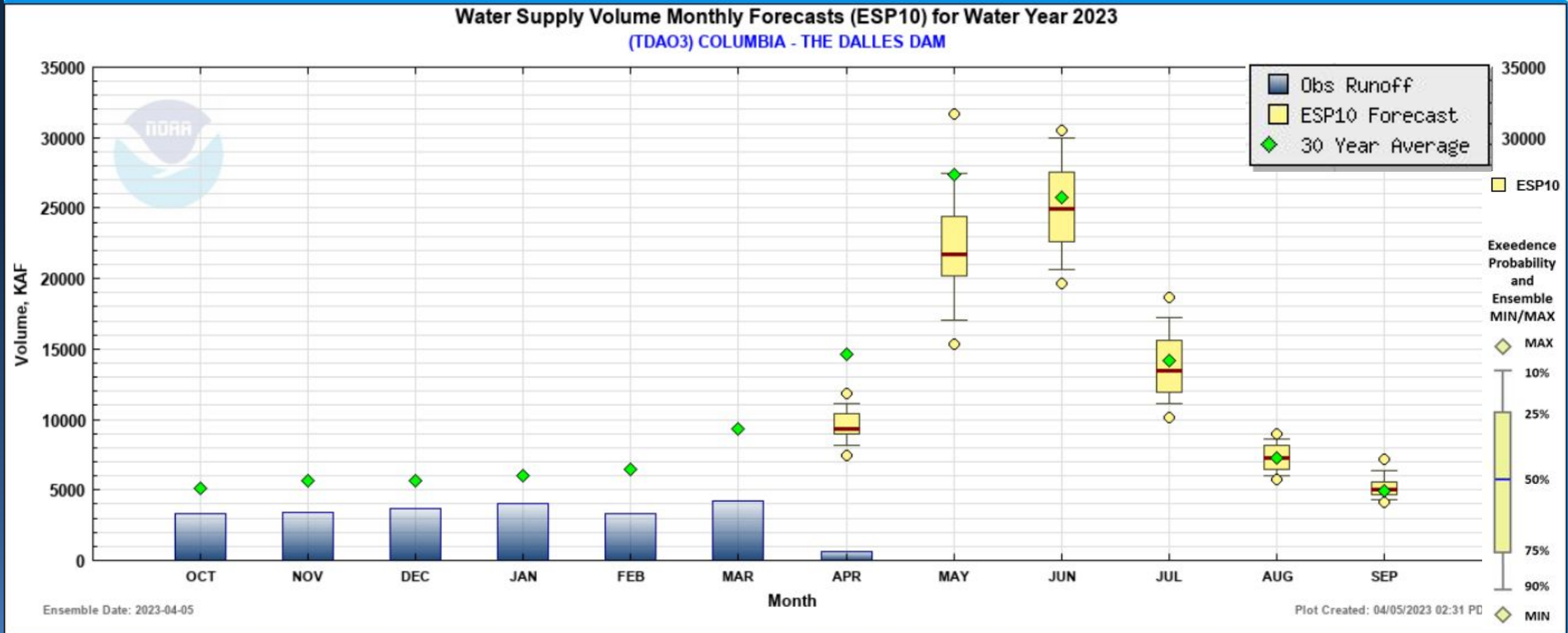
Period APR to SEP -- Water Year 2023



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



# Monthly Water Supply Forecasts









# Climate Prediction Center Model Predictions

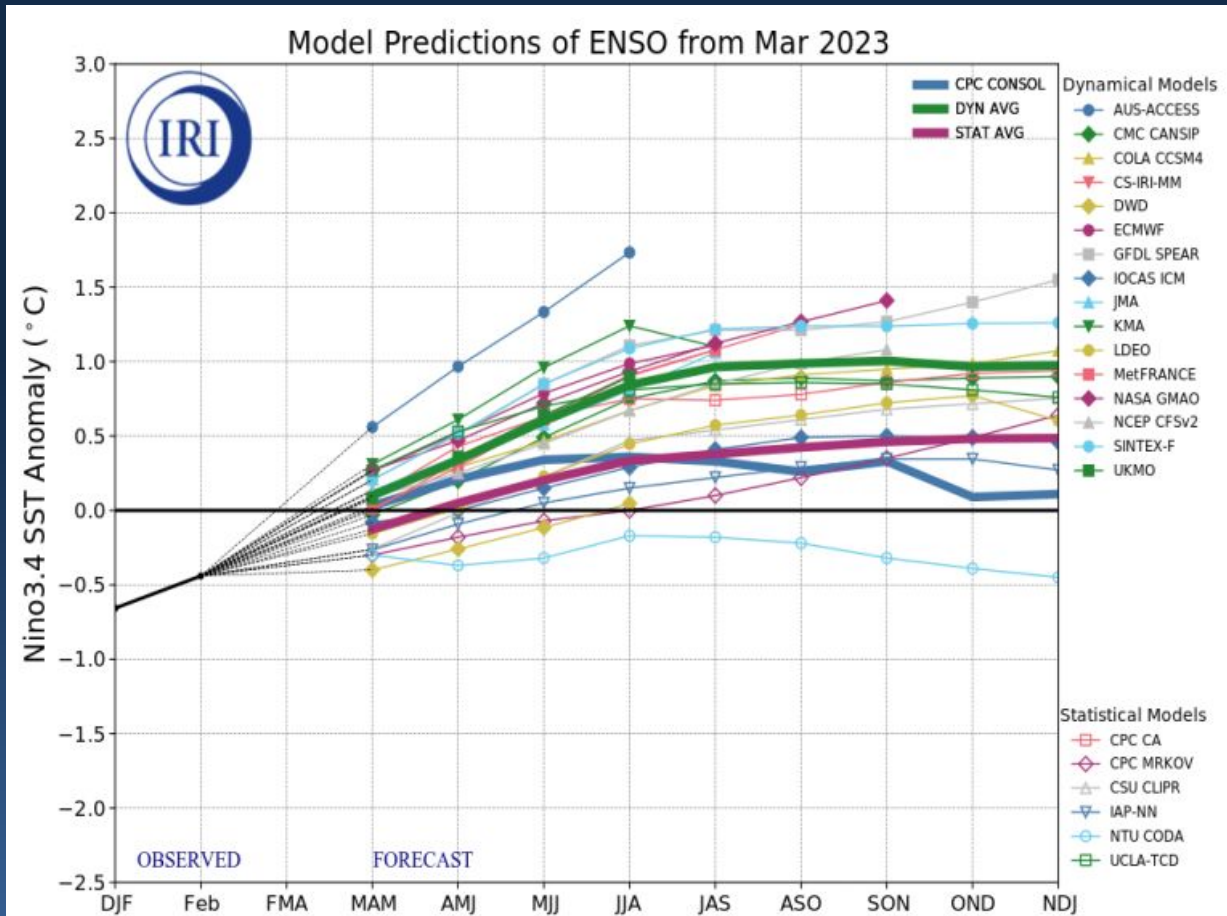
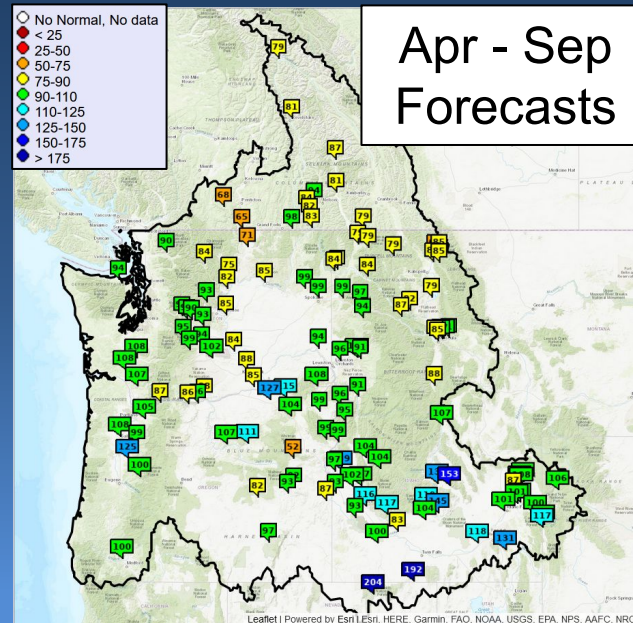
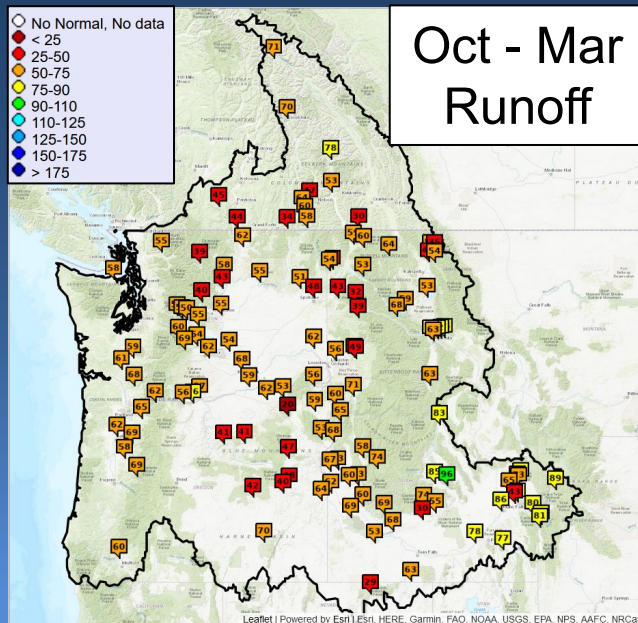
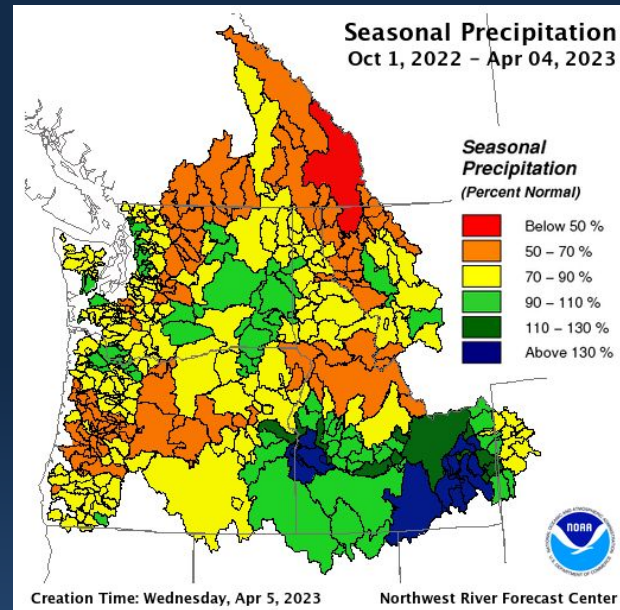
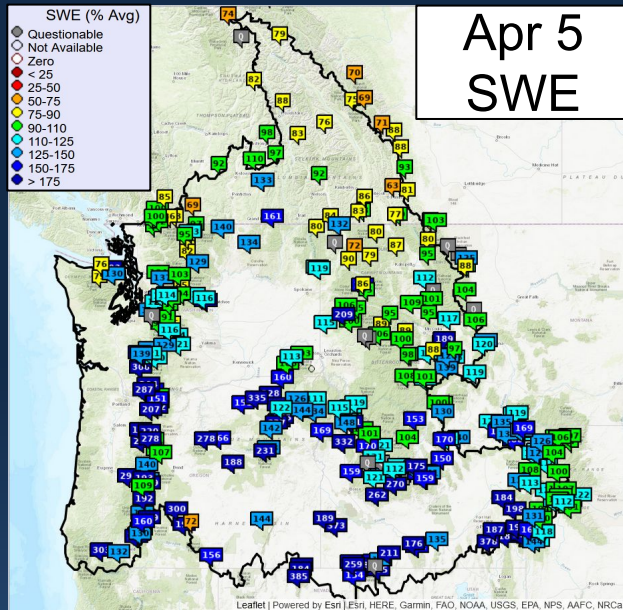


Figure provided by the International Research Institute (IRI) for Climate and Society (updated 20 March 2023).

By May-July 2023, the dynamical models suggest a potential return to El Niño, while the statistical models indicate the continuation of ENSO-neutral into the Northern Hemisphere summer, before warming up to borderline El Niño conditions in the late summer/fall 2023.



# SWE, Precipitation, Runoff and Water Supply Forecasts







# Take Home Messages

March was colder than normal basinwide, with wetter conditions in the south and drier conditions in the north.

Snowpack continued building even at low elevations, with higher accumulations in the south.

Observed runoff to date remains well below normal.

Apr-Sep water supply forecasts remain mostly normal to below normal, with exception in southern Idaho where forecasts are much higher than normal.





## WY2022 Schedule for Live Water Supply Briefings

May	Jun
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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