



Northwest River Forecast Center



Jan 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

A hot and dry summer resulted in below normal river flows.

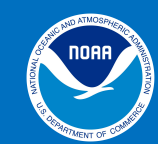
Water year 2023 started with a hot and dry Oct followed by colder than normal temperatures.

Water year to date precipitation has been a mix of above and below normal.

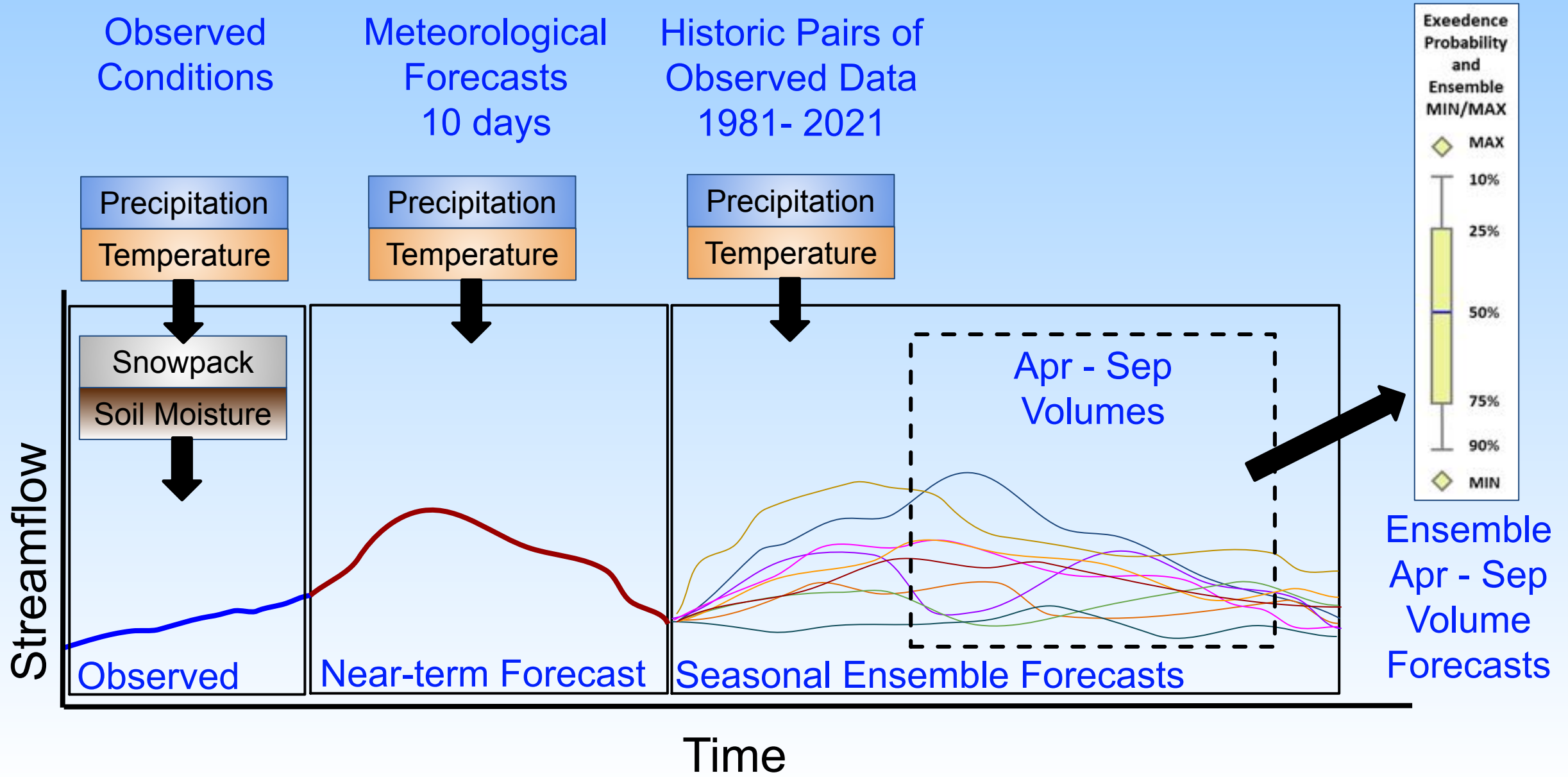
Snowpacks are generally above normal.

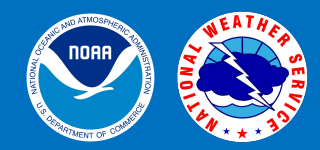
Water year to date runoff has been below normal.

Apr- Sep water supply forecasts are normal to slightly below normal. These are early season forecasts!

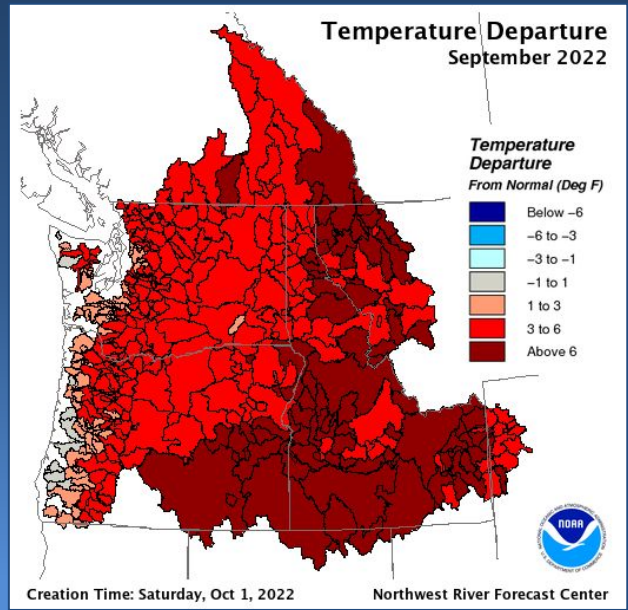
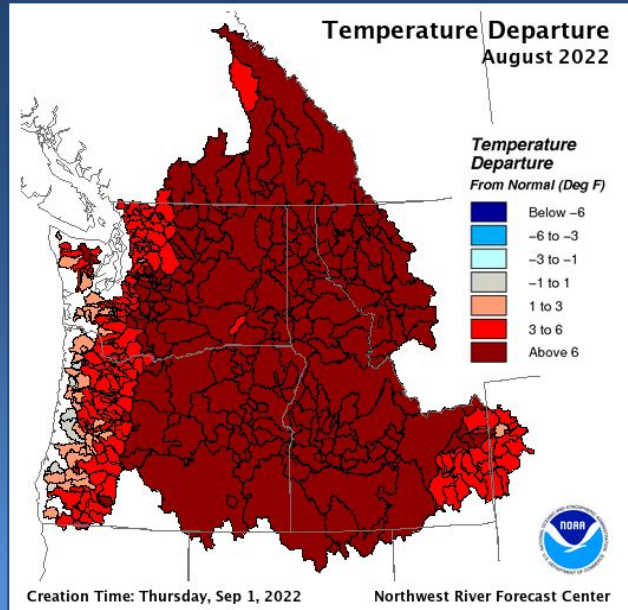
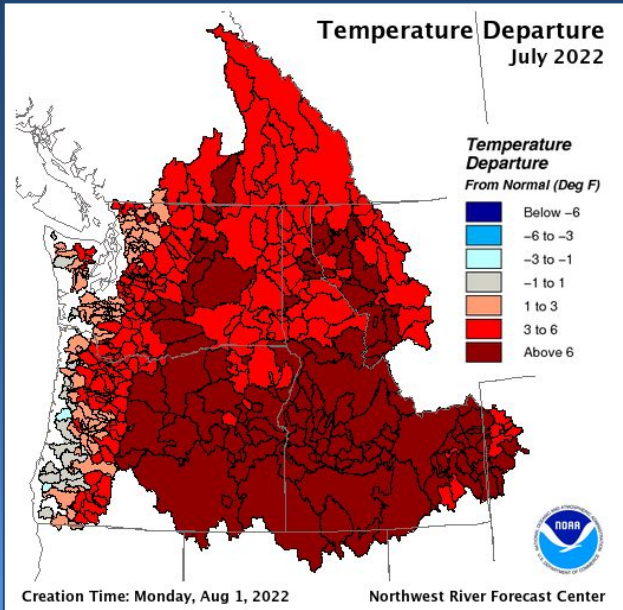
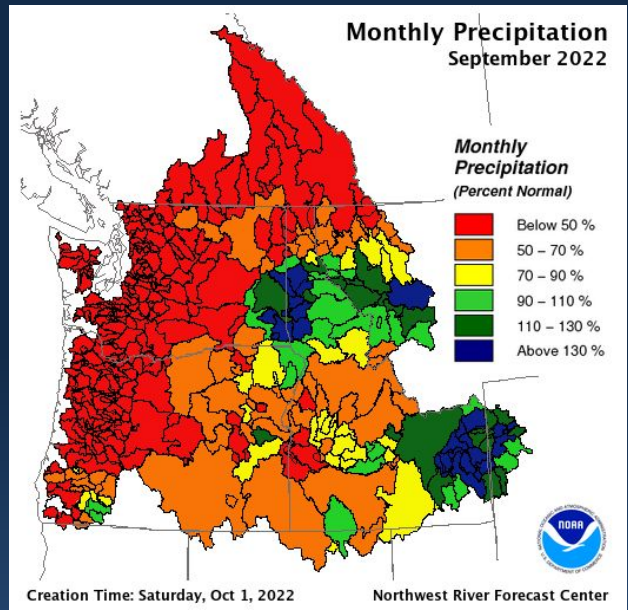
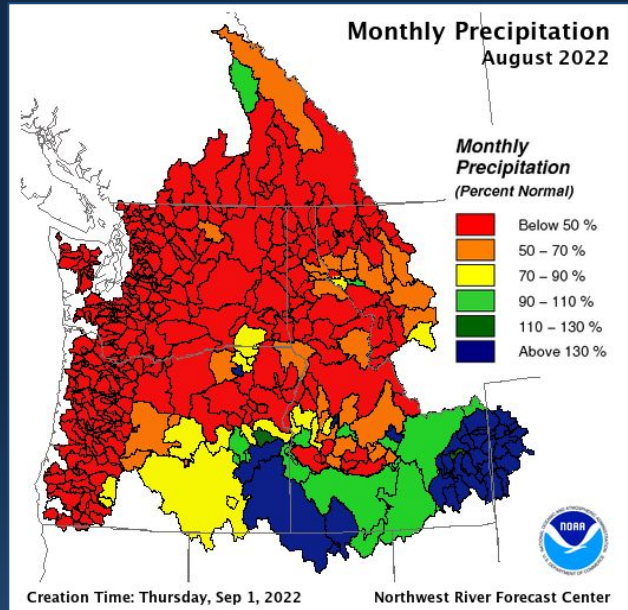
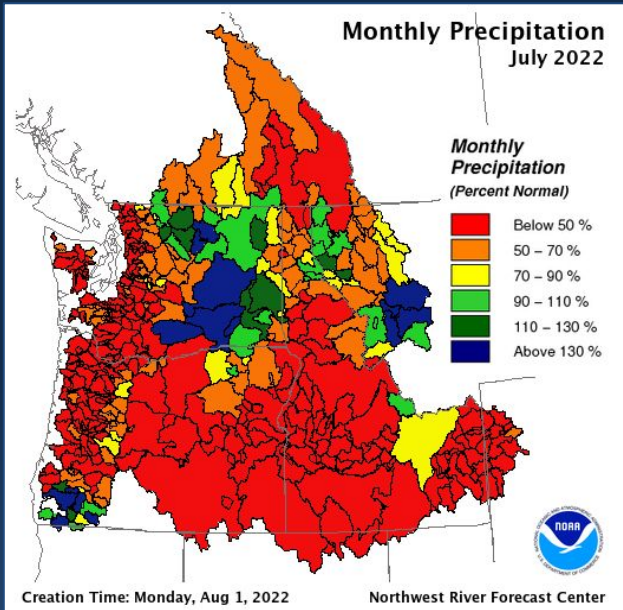


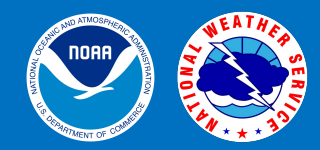
NWRFC Forecast Technique



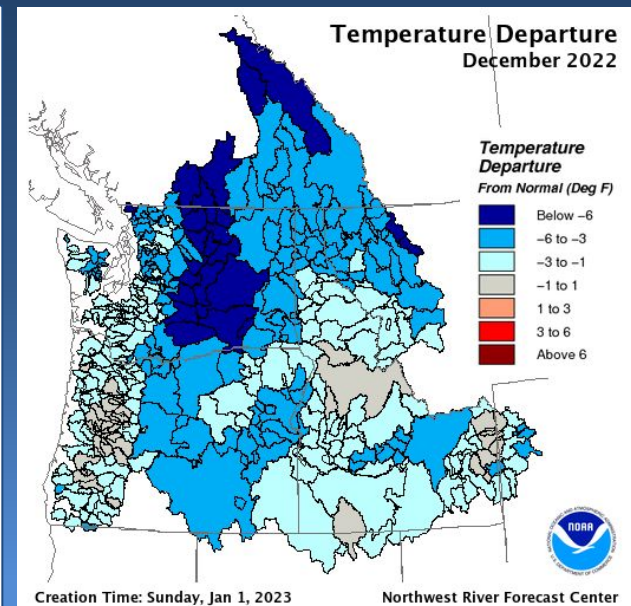
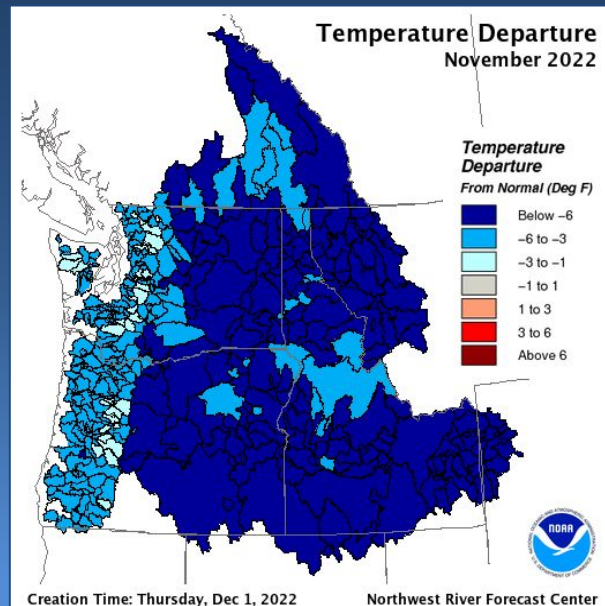
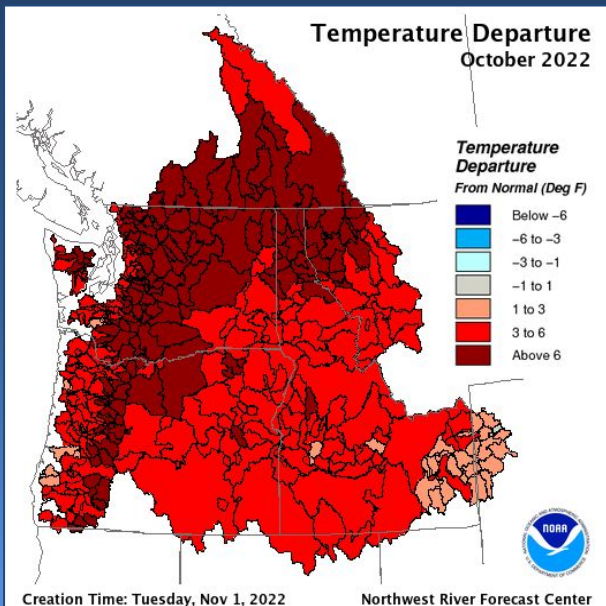
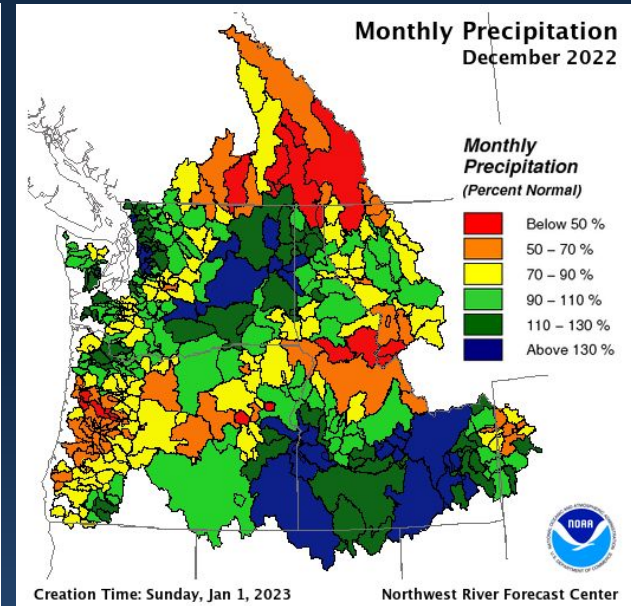
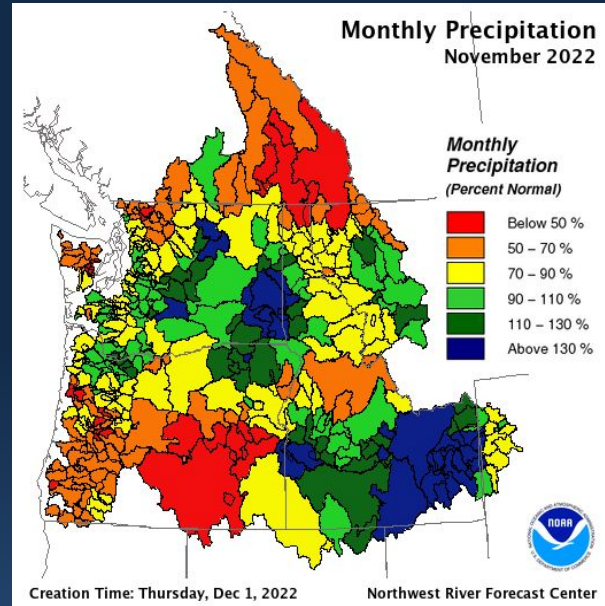
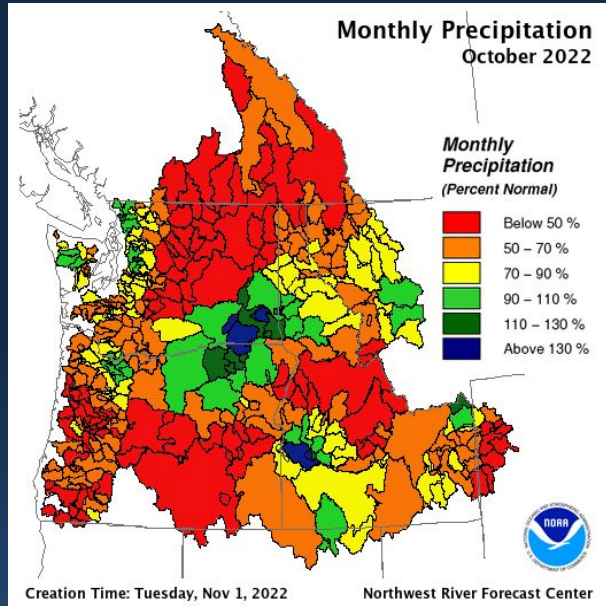


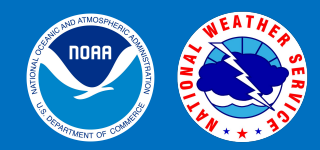
Precipitation and Temperature Jul - Sep



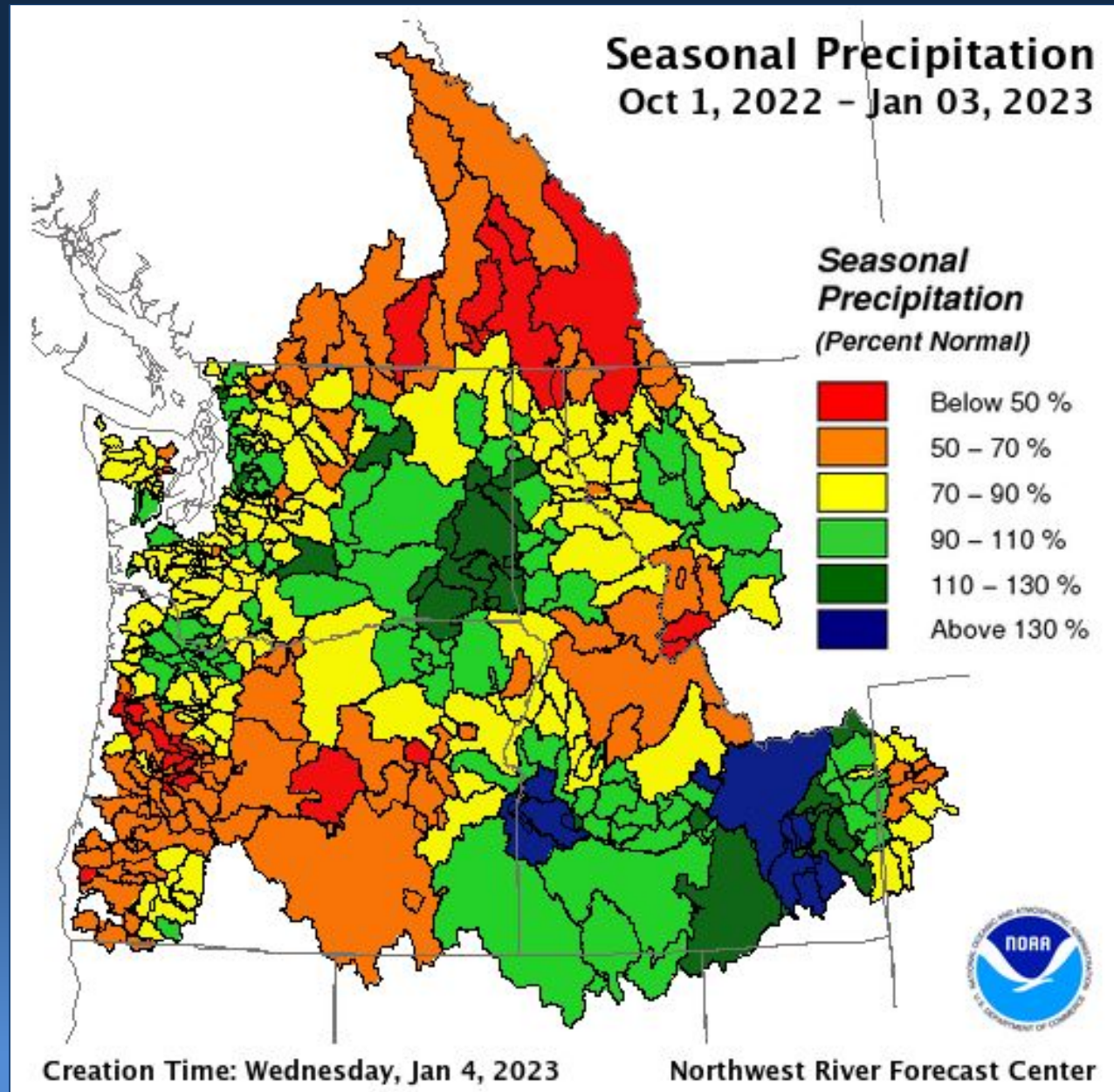


Precipitation and Temperature Oct - Dec



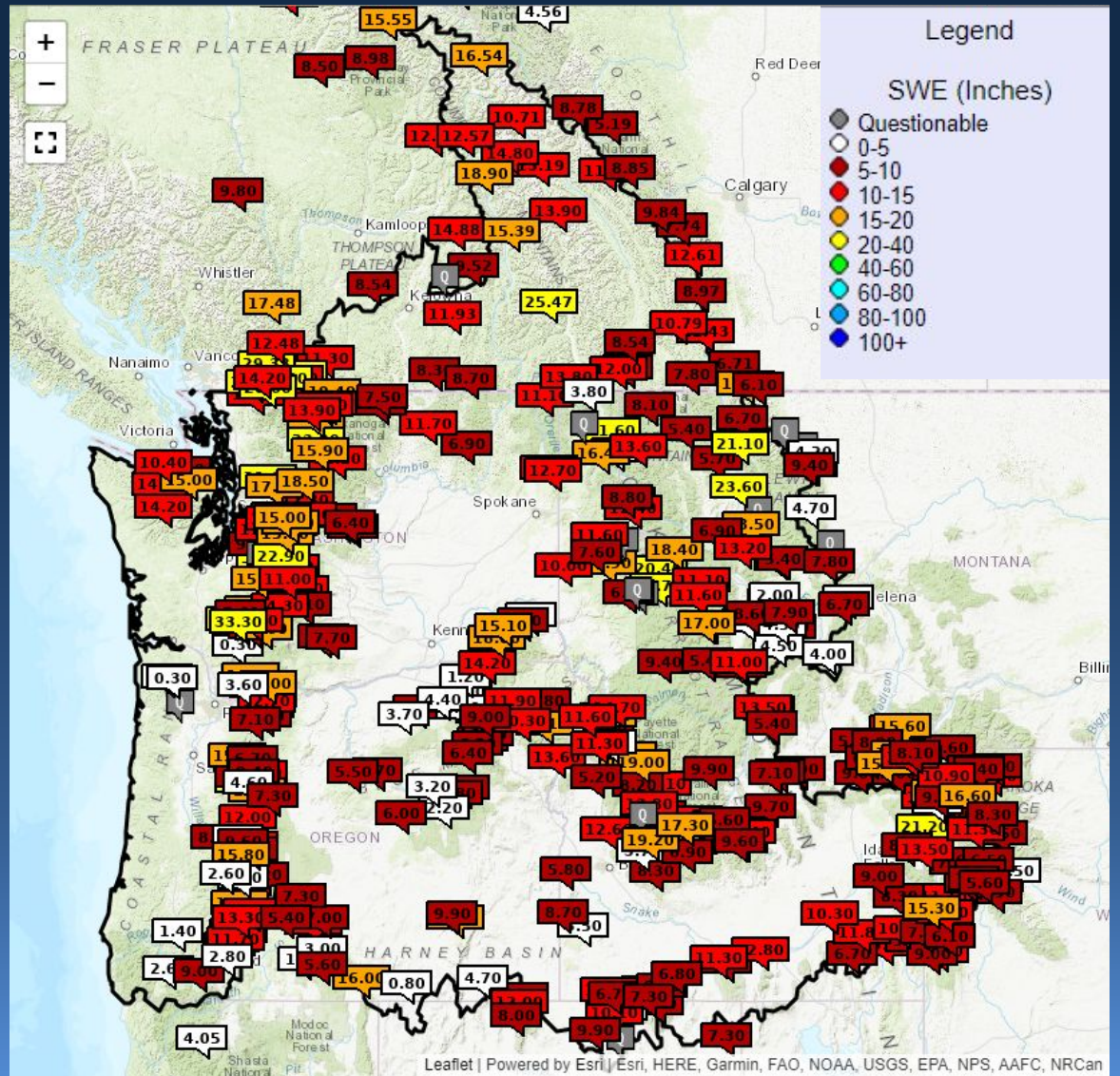
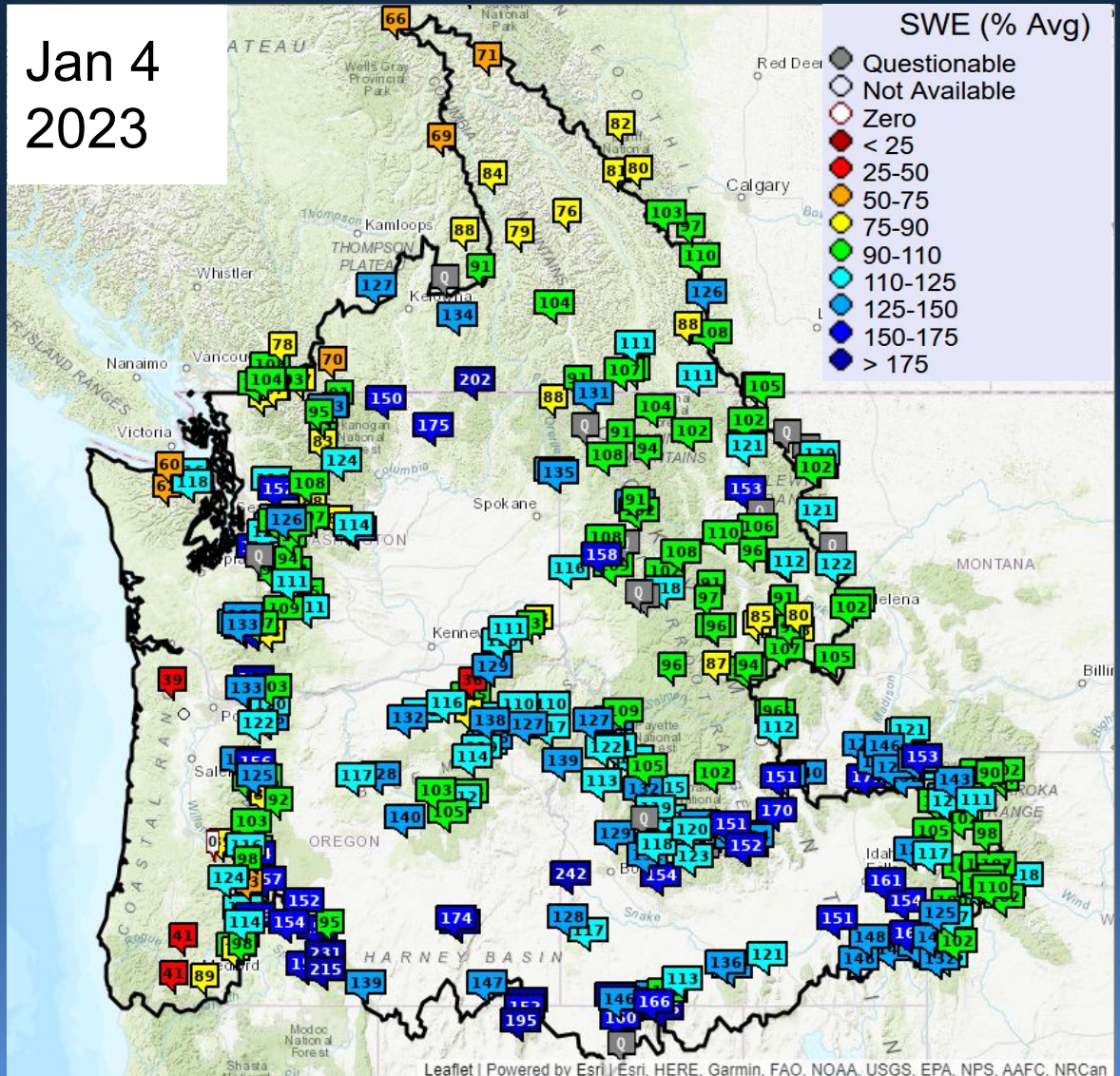


Water Year to Date Precipitation



Snowpack

Jan 4
2023

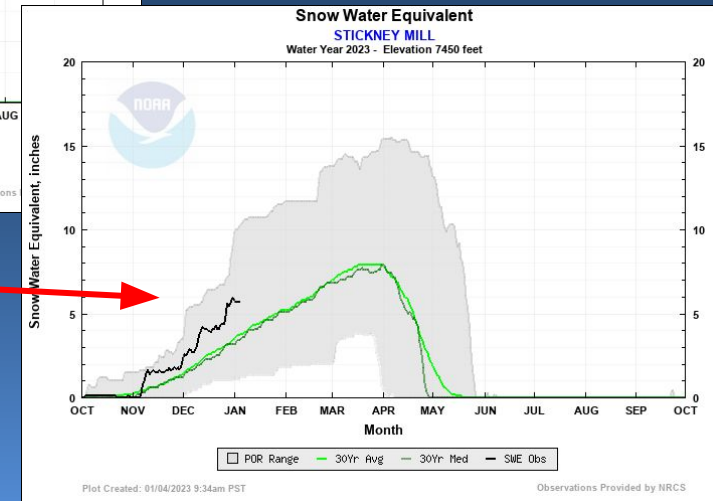
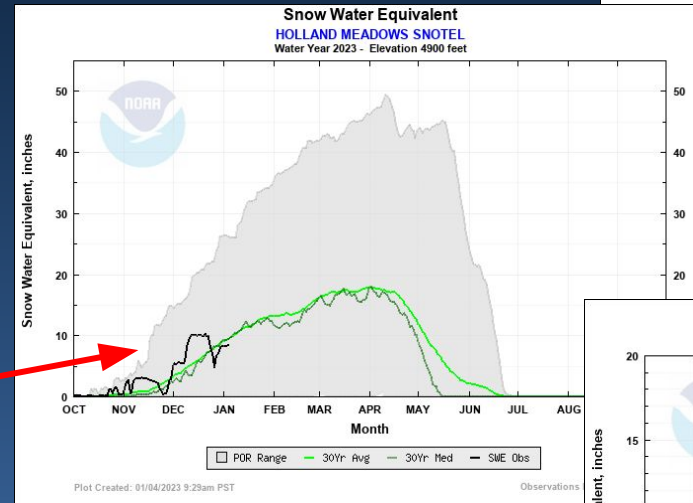
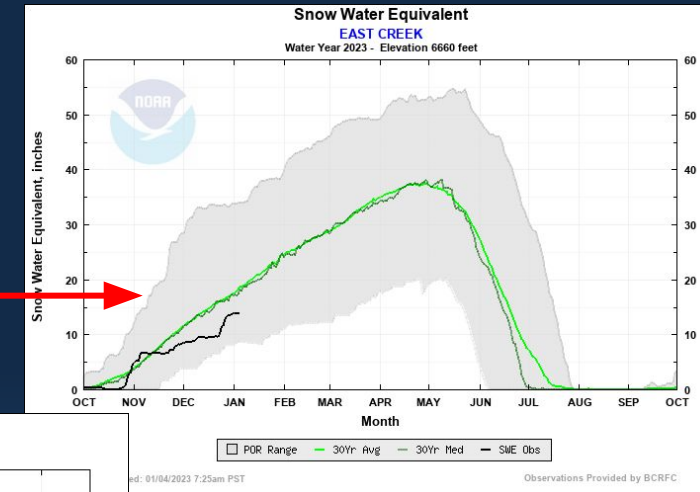
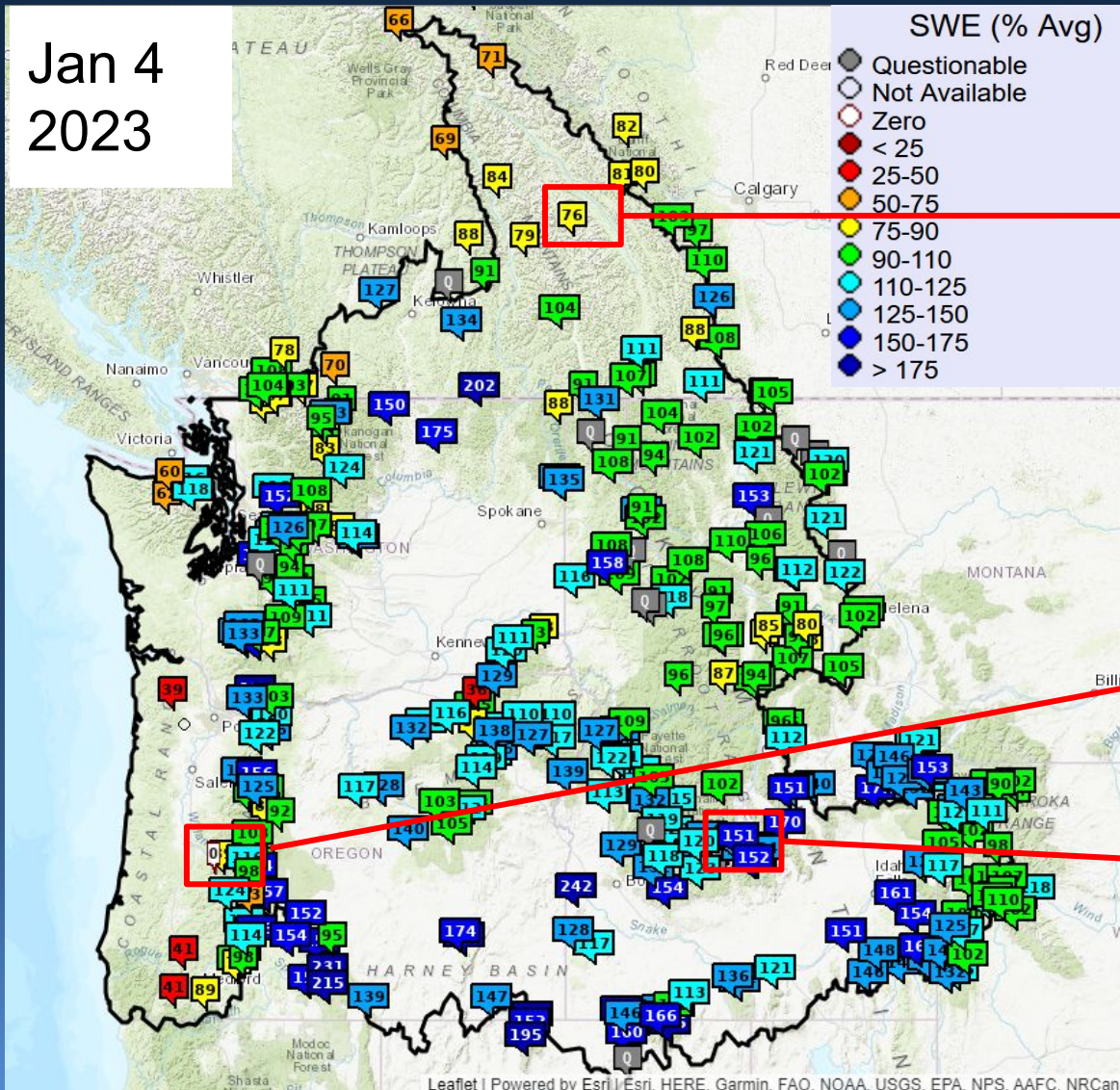


Snow data from Natural Resources Conservation Service, BC Hydro, and Alberta Environment and Parks.



Snowpack

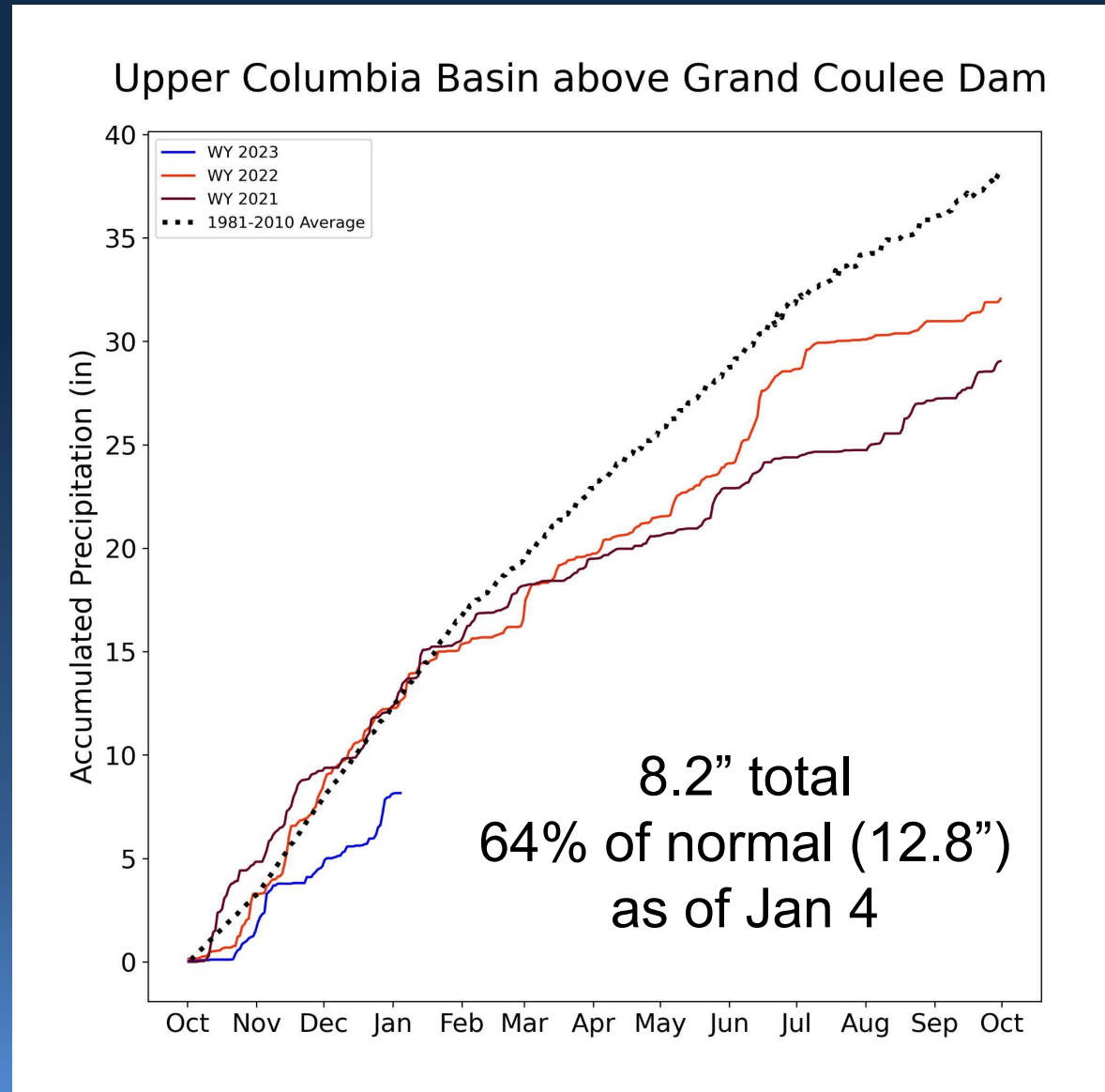
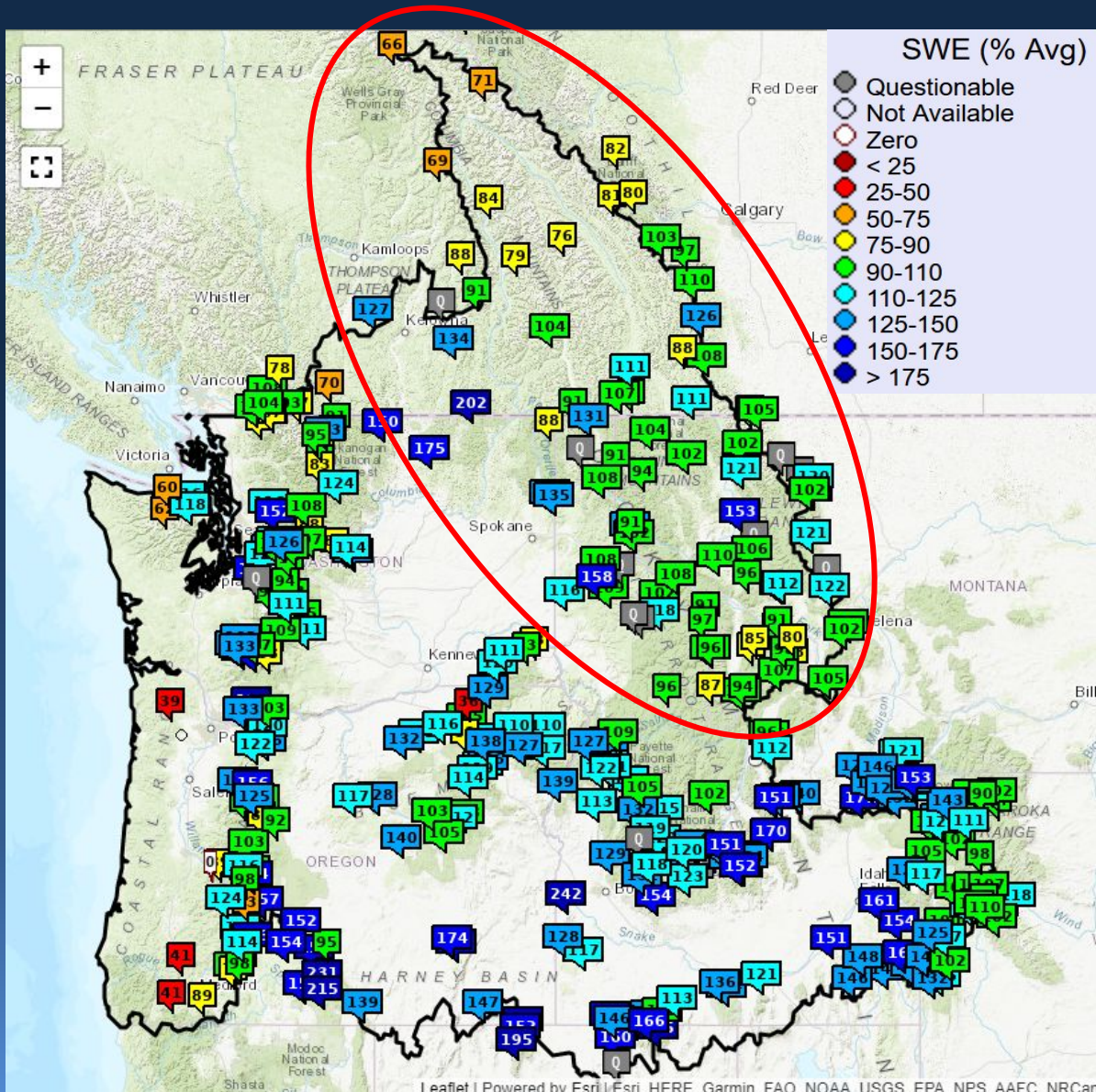
Jan 4
2023



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

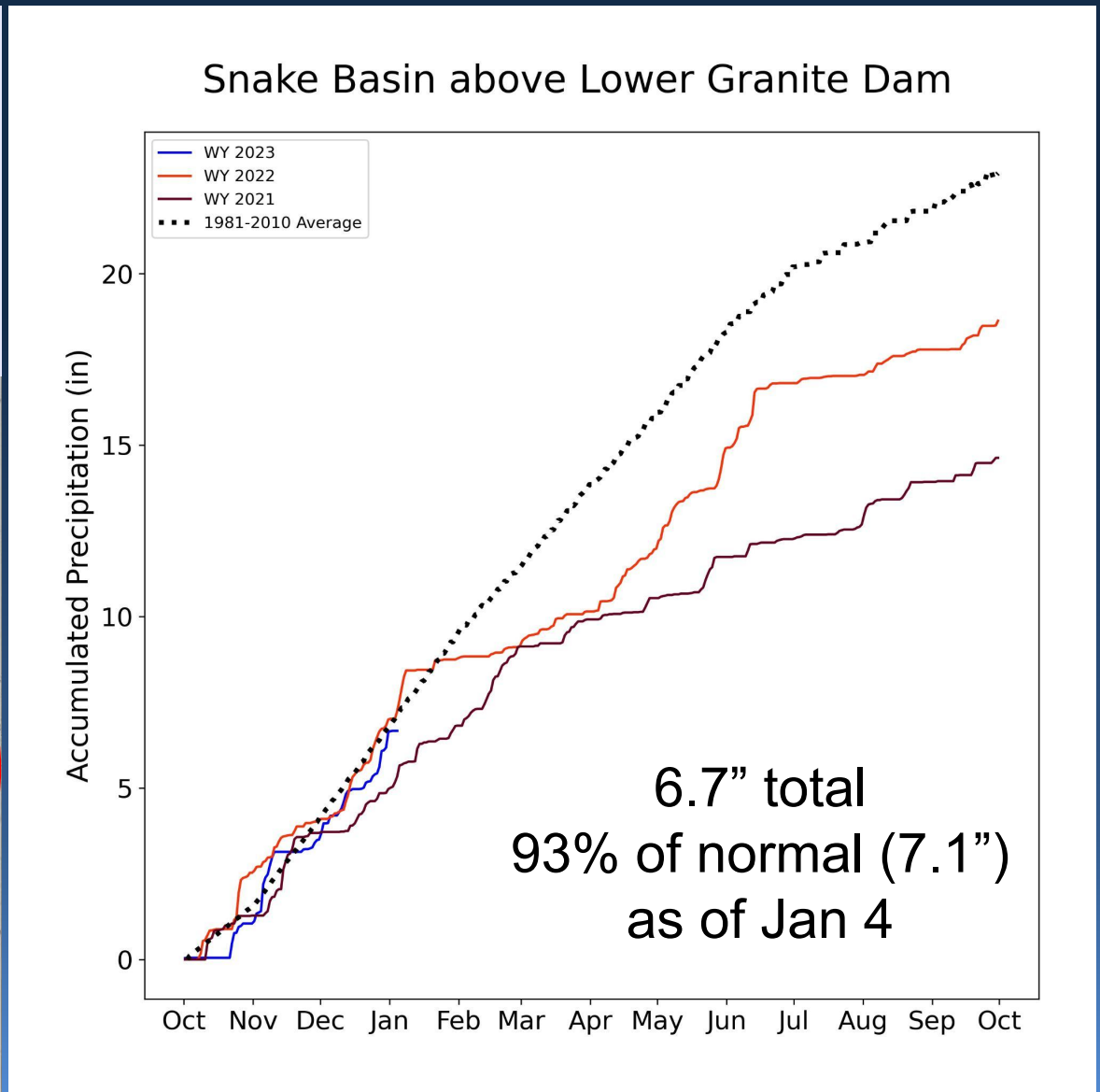
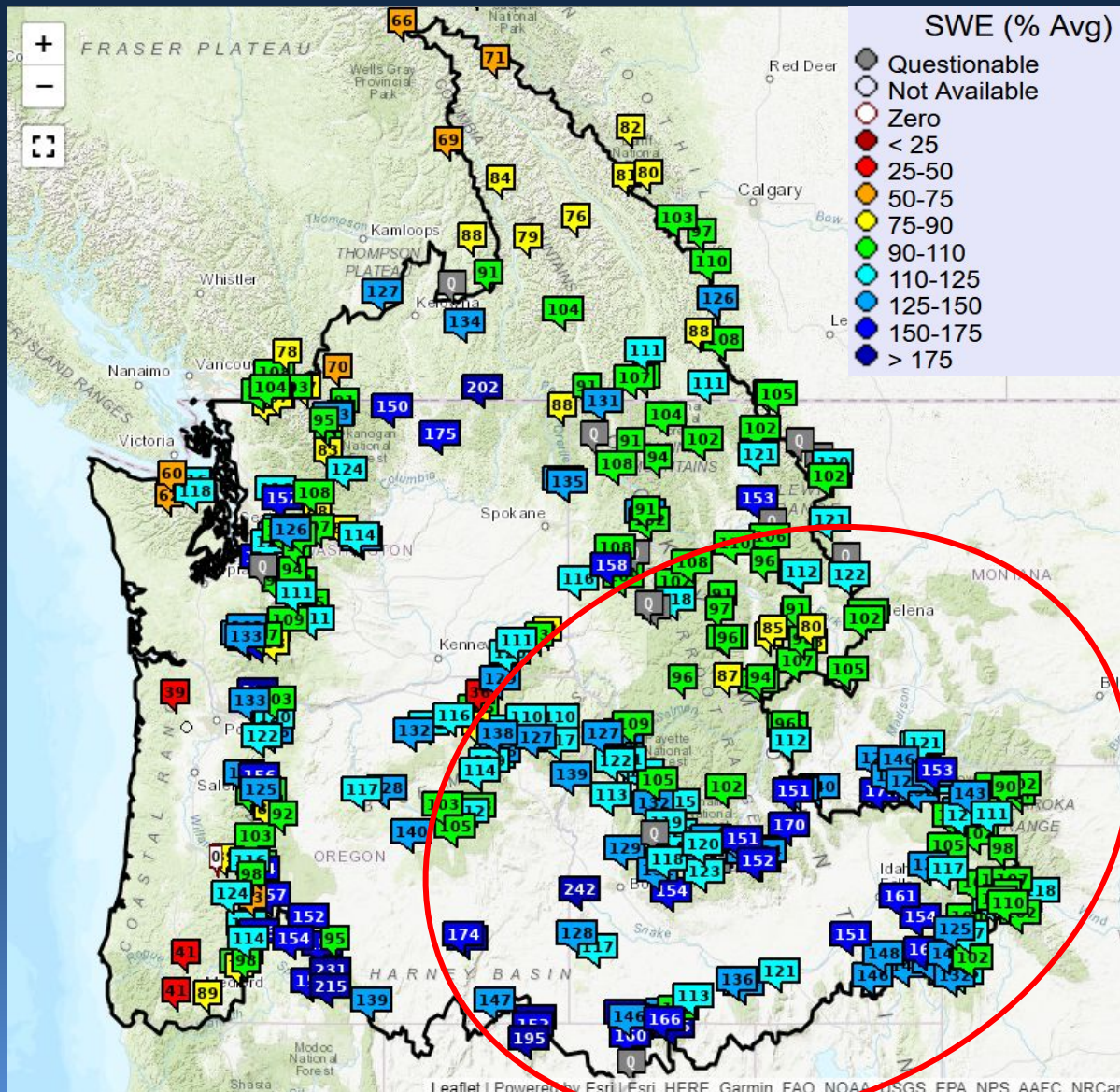


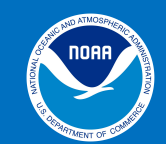
Snow and Precipitation



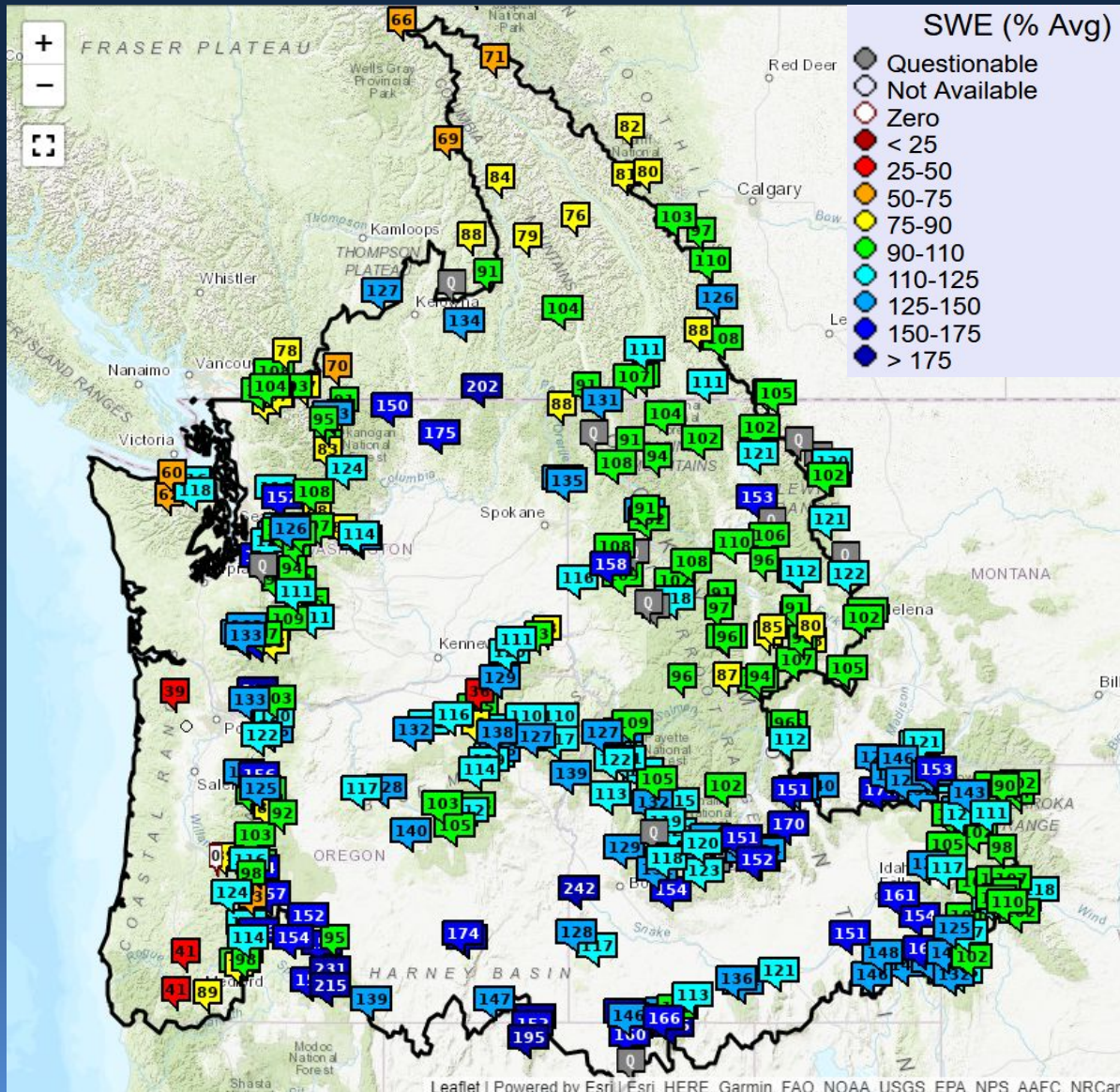
Snow data from NRCS, BC Hydro, and Alberta Environment and Parks. Precip averages from PRISM OSU and PCIC.

Snow and Precipitation

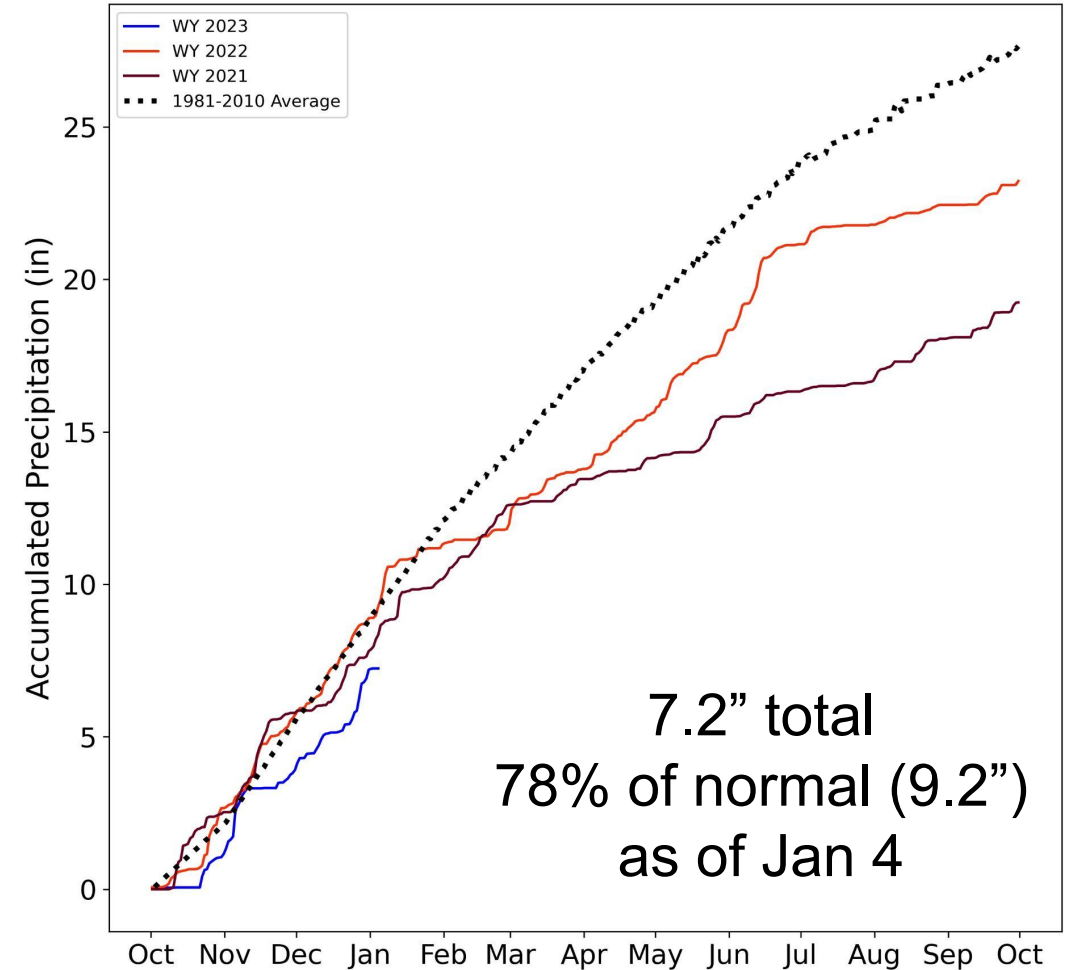




Snow and Precipitation



Columbia Basin above The Dalles Dam

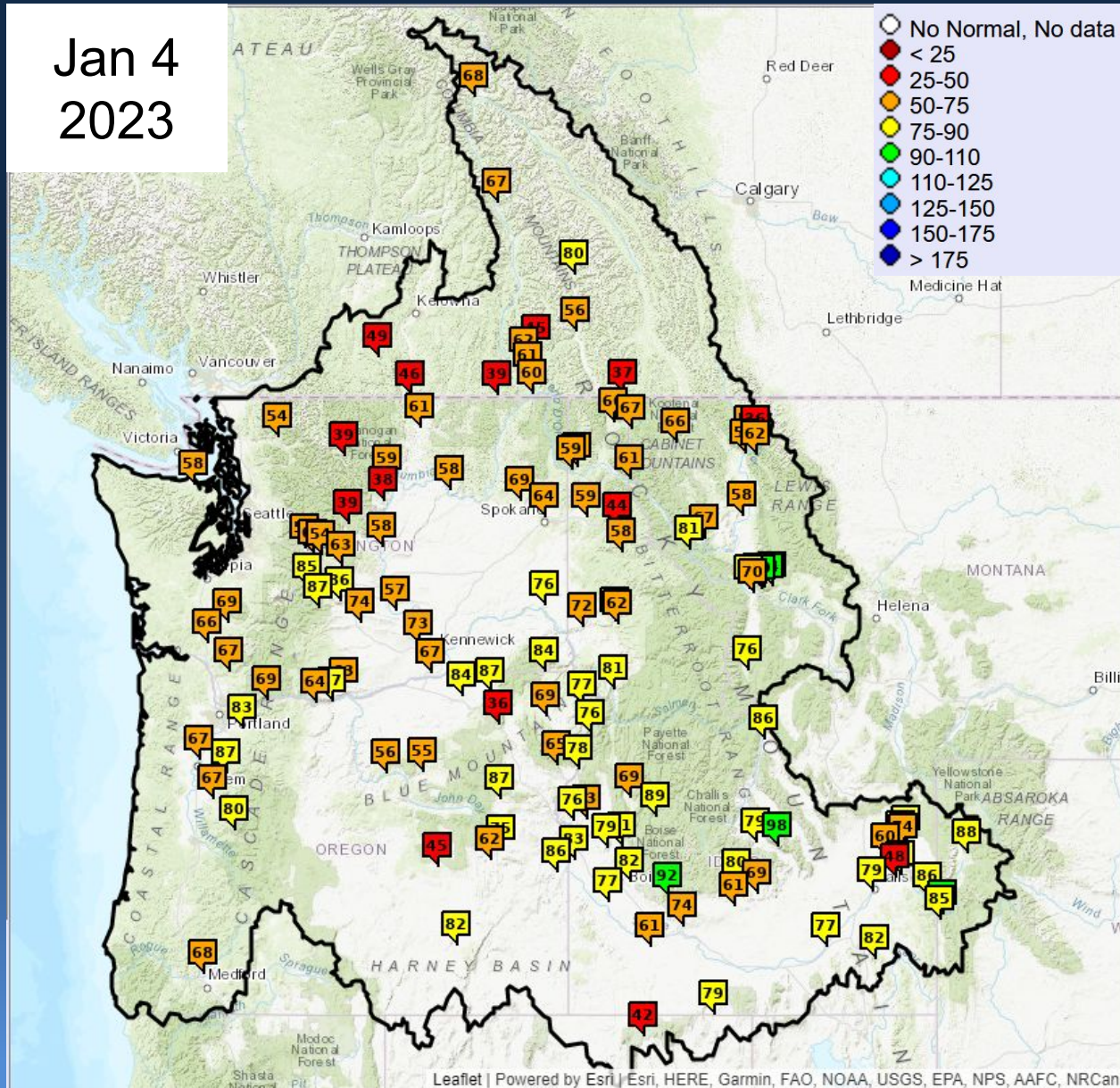


Snow data from NRCS, BC Hydro, and Alberta Environment and Parks. Precip averages from PRISM OSU and PCIC.



Water Year to Date Adjusted Runoff

Jan 4
2023



% Normal Runoff Oct 1 - Jan 4

Upper Columbia Basin

Mica	68
Duncan	80
Queens Bay	56
Libby	66
Hungry Horse	62
Grand Coulee	58

Snake River Basin

American Falls	77
Lucky Peak	82
Dworshak	64
Lower Granite	76

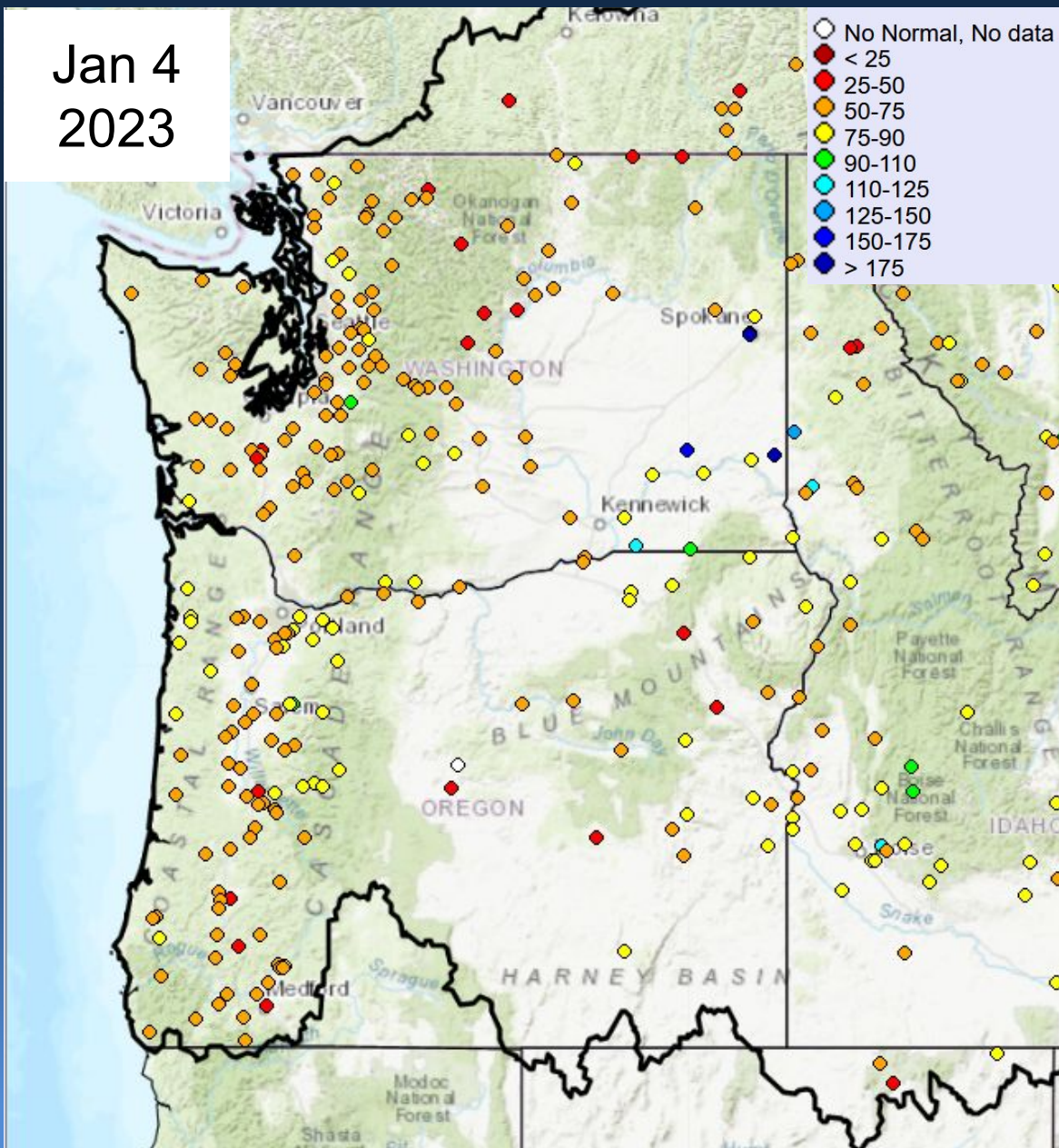
Lower Columbia Basin

The Dalles	64
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Water Year to Date Adjusted Runoff

Jan 4
2023



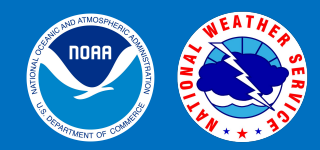
% Normal Runoff Oct 1 - Jan 4

Washington

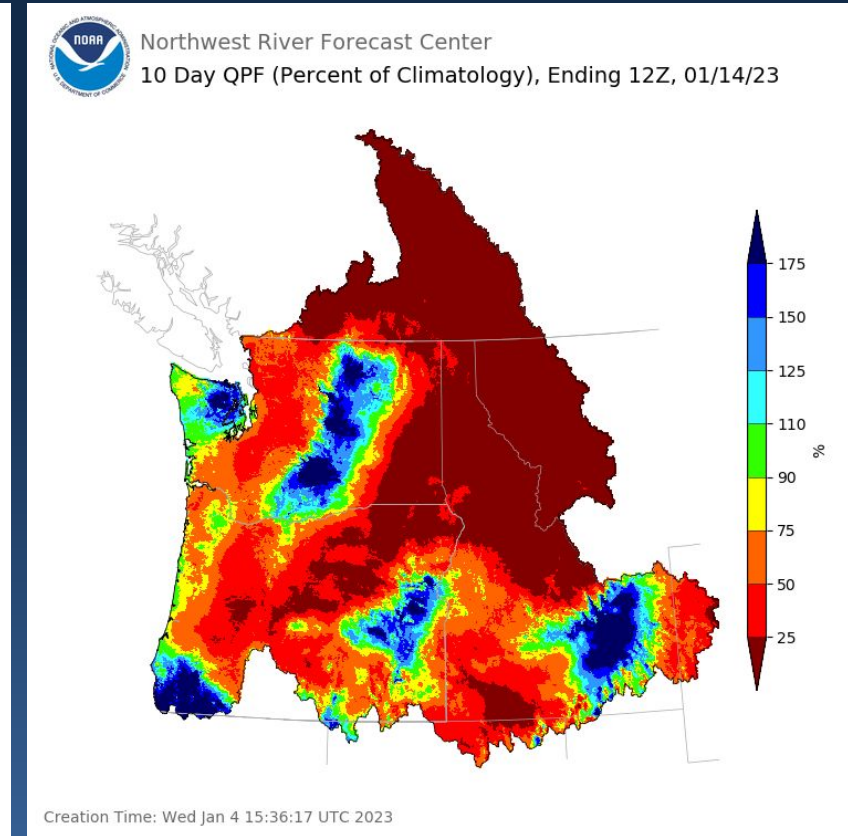
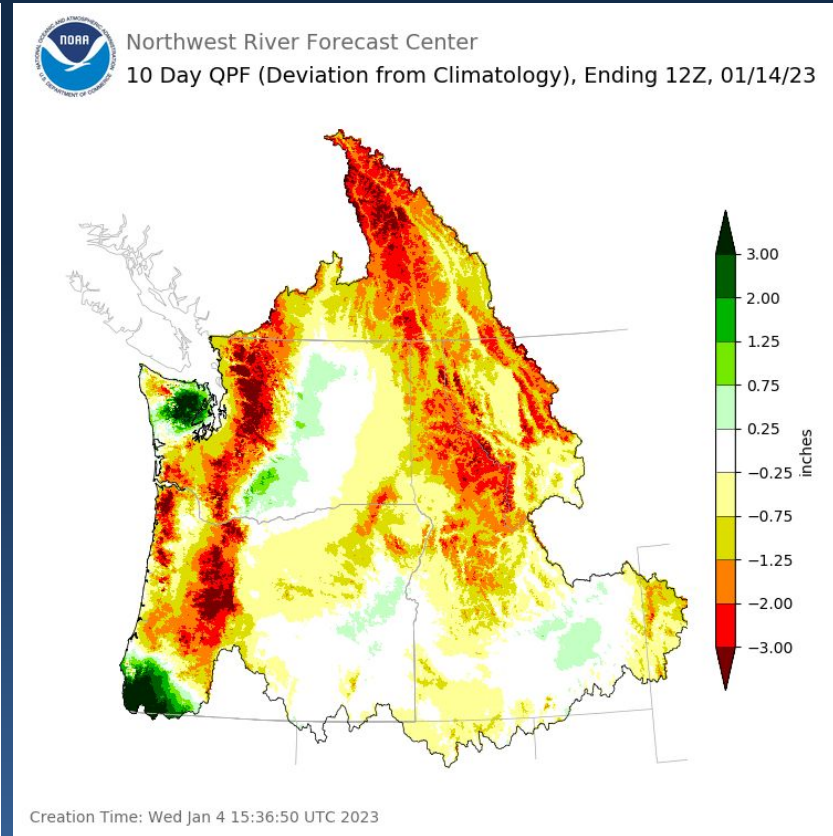
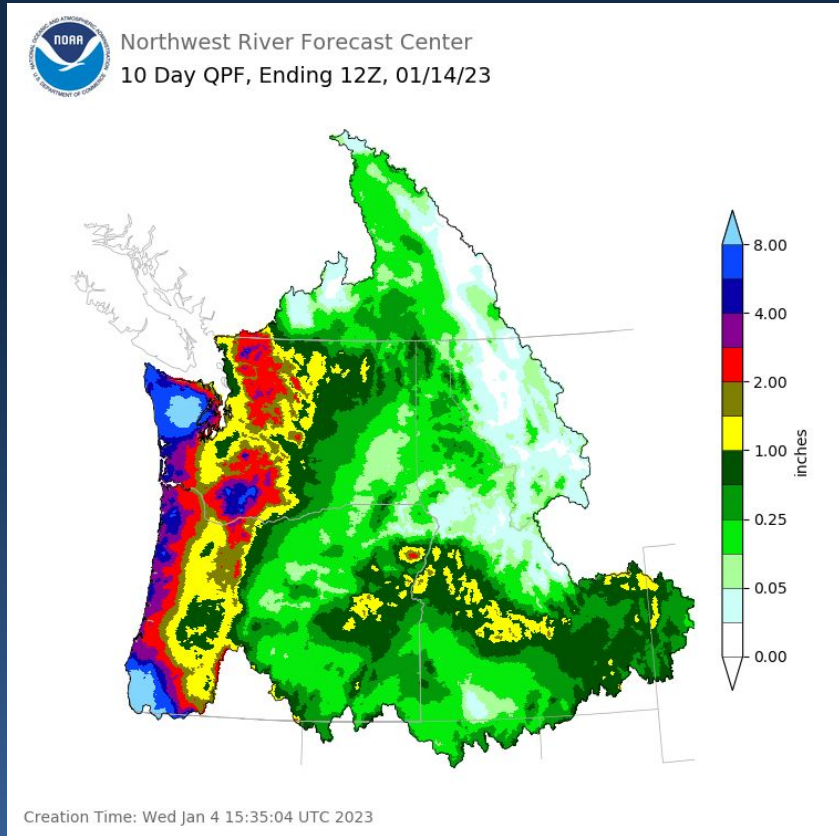
Skagit nr Mt Vernon	57
Dungeness nr Sequim	57
Chehalis at Porter	65
Okanogan at Malott	60
Methow nr Pateros	58
Yakima at Parker	69
Walla Walla nr Touchet	118

Oregon

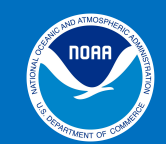
Willamette at Salem	61
Rogue at Raygold	67
Umatilla at Pendleton	82
Grande Ronde at Troy	82
Crooked nr Prineville	36
Owyhee Dam	76



10 Day Precipitation Forecast Used in ESP10

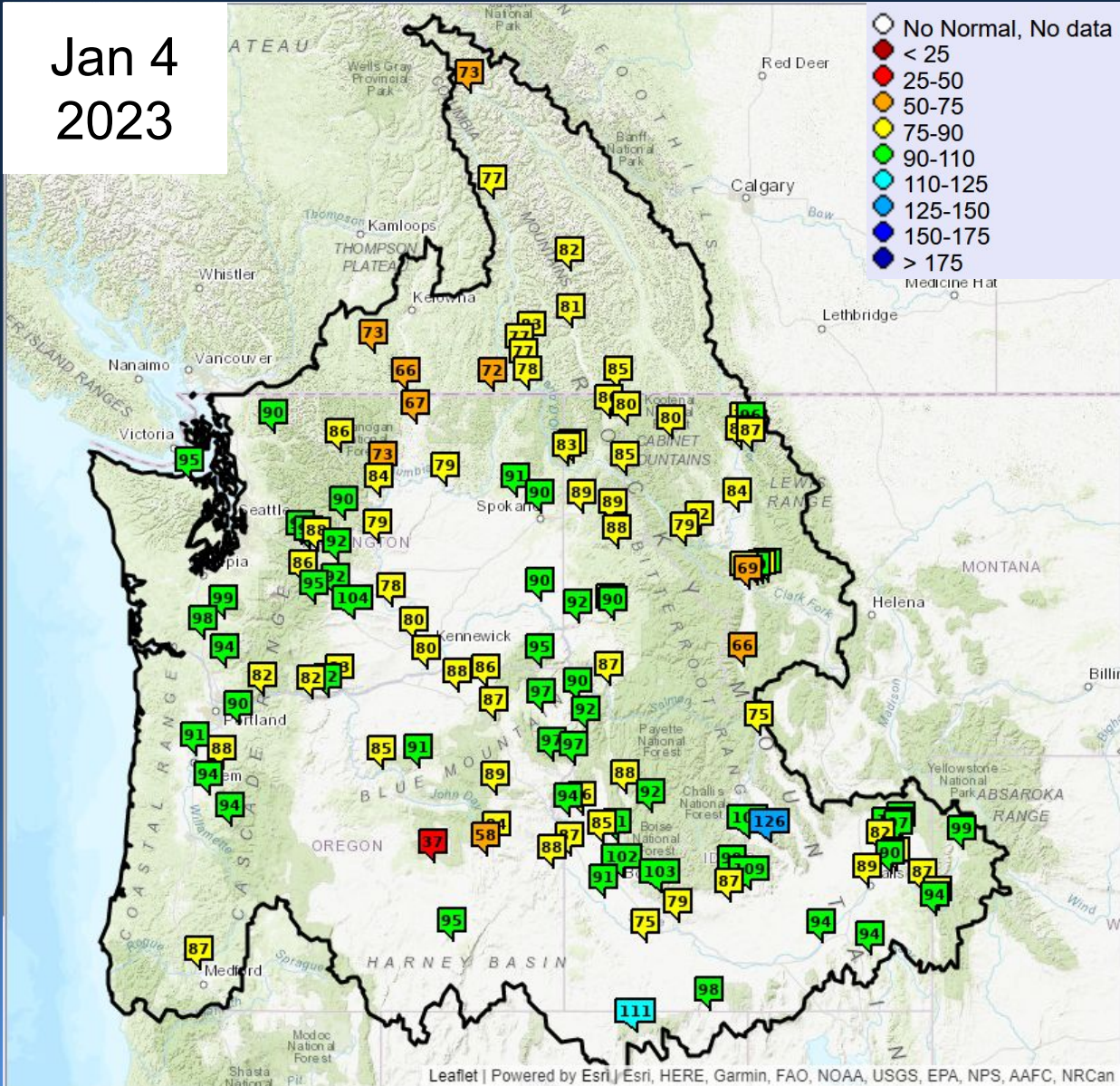


Quantitative Precipitation Forecast (QPF) Sources
Days 1 - 2 NWS Weather Forecast Offices (WFO) in the US, WPC in BC
Days 3 - 7 NWS Weather Prediction Center (WPC)
Days 8 - 10 NWS National Blend of Models (NBM)



Water Supply Forecasts

Jan 4
2023



% Normal Apr-Sep Volume

Upper Columbia Basin

Mica	73
Duncan	82
Queens Bay	81
Libby	80
Hungry Horse	87
Grand Coulee	79

Snake River Basin

American Falls	94
Lucky Peak	102
Dworshak	88
Lower Granite	90

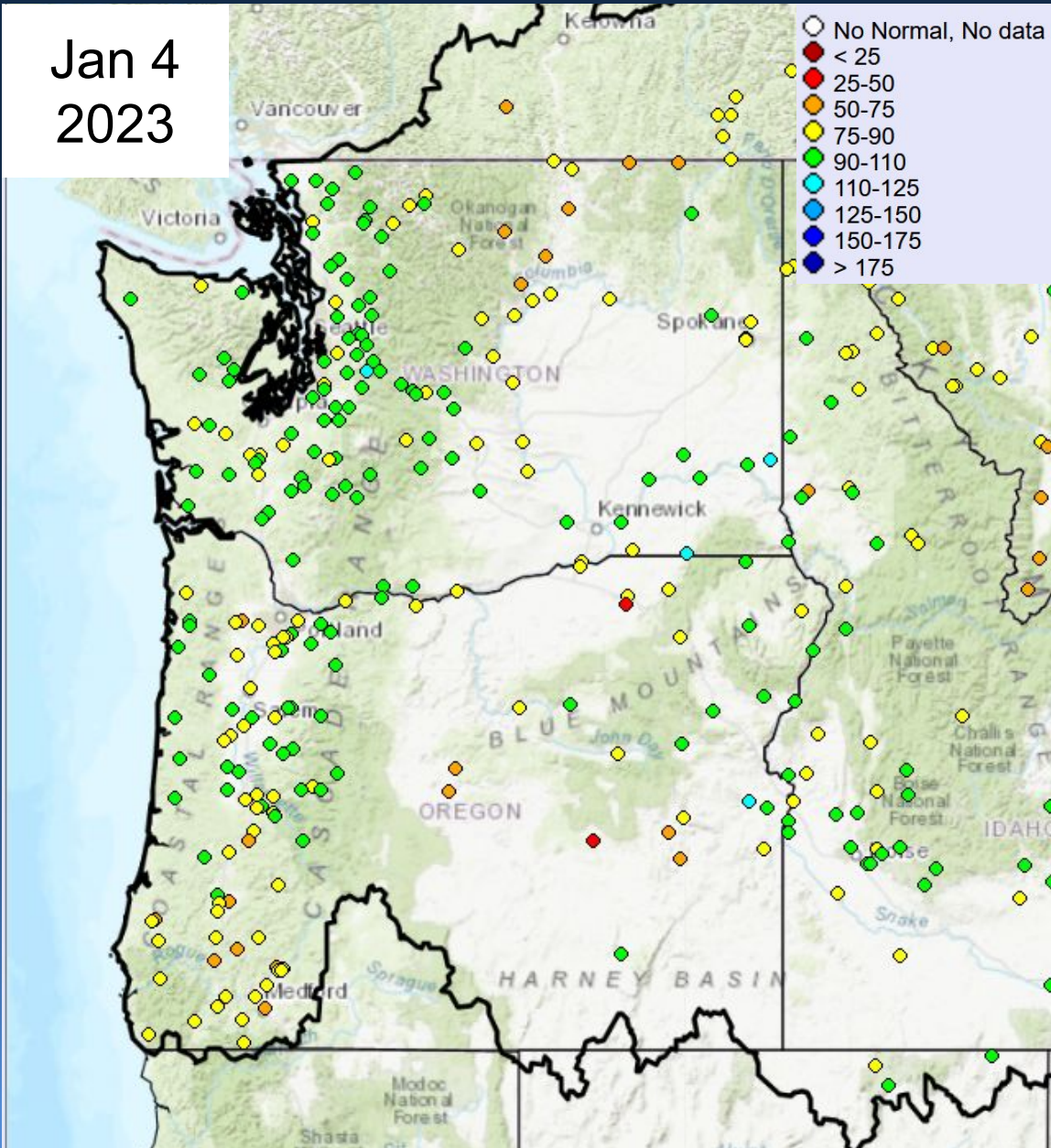
Lower Columbia Basin

The Dalles	82
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Water Supply Forecasts (Natural)

Jan 4
2023



% Normal Apr -Sep Volume

Washington

Skagit nr Mt Vernon	91
Dungeness nr Sequim	94
Chehalis at Porter	89
Okanogan at Malott	67
Methow nr Pateros	73
Yakima at Parker	95
Walla Walla nr Touchet	112

Oregon

Willamette at Salem	87
Rogue at Raygold	88
Umatilla at Pendleton	89
Grande Ronde R at Troy	95
Crooked nr Prineville	74
Owyhee Dam	88



Water Supply Forecasts

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

Official Water Supply

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

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	39500	49034	80	59735	61483
APR-JUL	32407	40943	78	50877	52774
APR-AUG	36800	45841	79	55935	58186
JAN-SEP	45757	56165	80	67819	70457
JAN-JUL	38677	47624	77	59267	61749
OCT-SEP	50604	61012	77	72666	78842

Experimental Water Supply

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

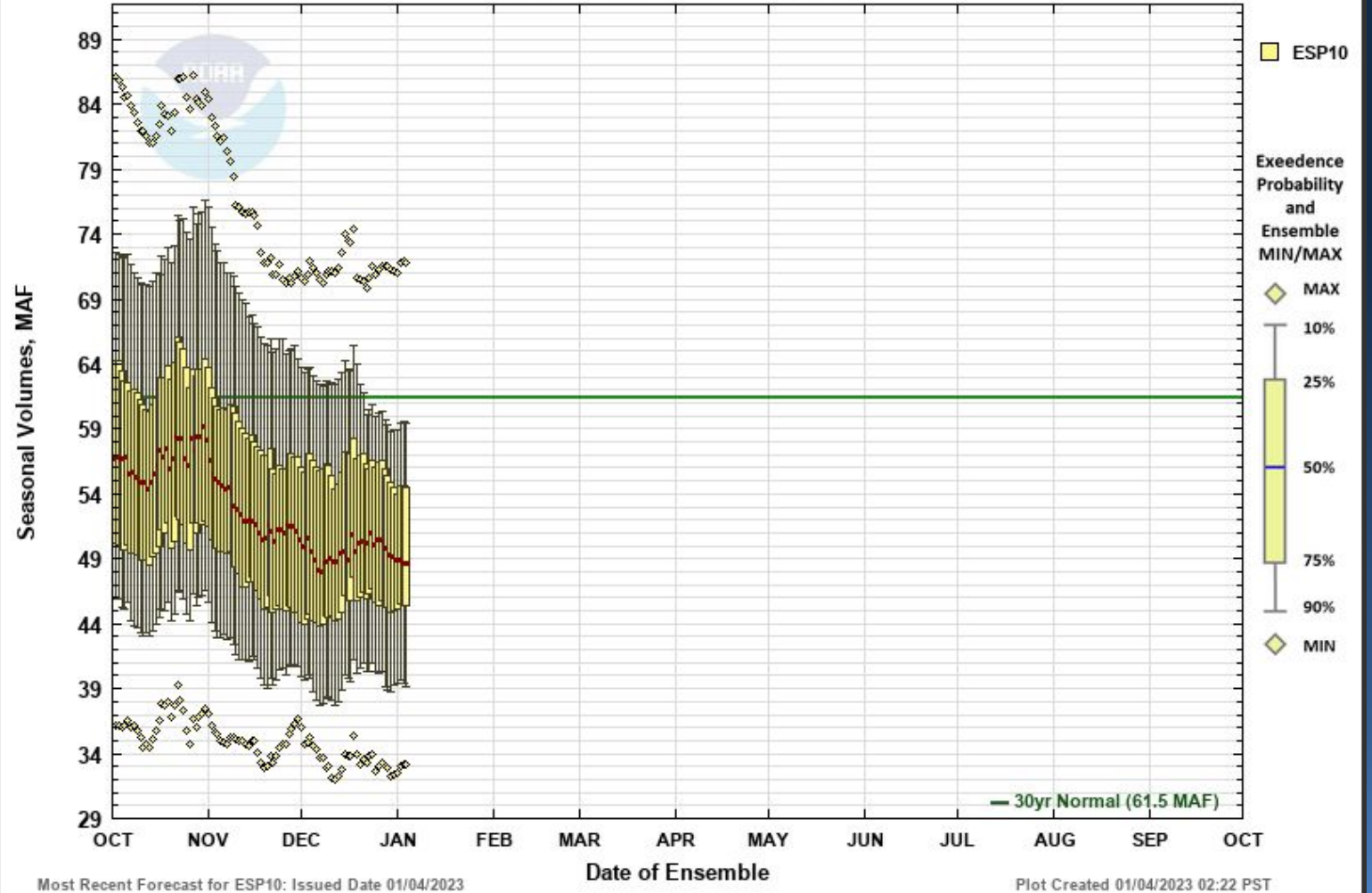
APR-SEP	40727	51600	84	61300	61483
APR-JUL	33779	42665	81	52576	52774
APR-AUG	37954	48493	83	57410	58186
JAN-SEP	47507	59137	84	69546	70457
JAN-JUL	40654	50567	82	61406	61749
OCT-SEP	52355	63985	81	74393	78842

Reference

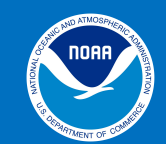
ESP with 0 Days QPF Ensemble: 2023-01-03 Issued: 2023-01-03

APR-SEP	43115	53542	87	63537	61483
APR-JUL	35664	44363	84	53459	52774
APR-AUG	40003	50178	86	59478	58186
JAN-SEP	49869	60730	86	70705	70457
JAN-JUL	42528	51607	84	62350	61749
OCT-SEP	54717	65577	83	75552	78842

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: 2023-01-03 Issued: 2023-01-03

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)					
	90 %	50 %	% Average	10 %						
APR-SEP	13787	19656	88	25495	22232					
APR-JUL	11877	17215	86	22542	19946					
APR-AUG	12821	18495	88	24110	21121					
JAN-SEP	19555	25561	86	33573	29736					
JAN-JUL	17644	23289	85	27450	OCT-SEP	23025	29030	85	37043	34287
OCT-SEP	23025	29030	85	37043	34287					

Experimental Water Supply

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

APR-SEP	14215	20747	93	26514	22232
APR-JUL	12160	18231	91	23710	19946
APR-AUG	13183	19529	92	25178	21121
JAN-SEP	20425	26939	91	35547	29736
JAN-JUL	18441	24337	89	32728	27450
OCT-SEP	23895	30408	89	39017	34287

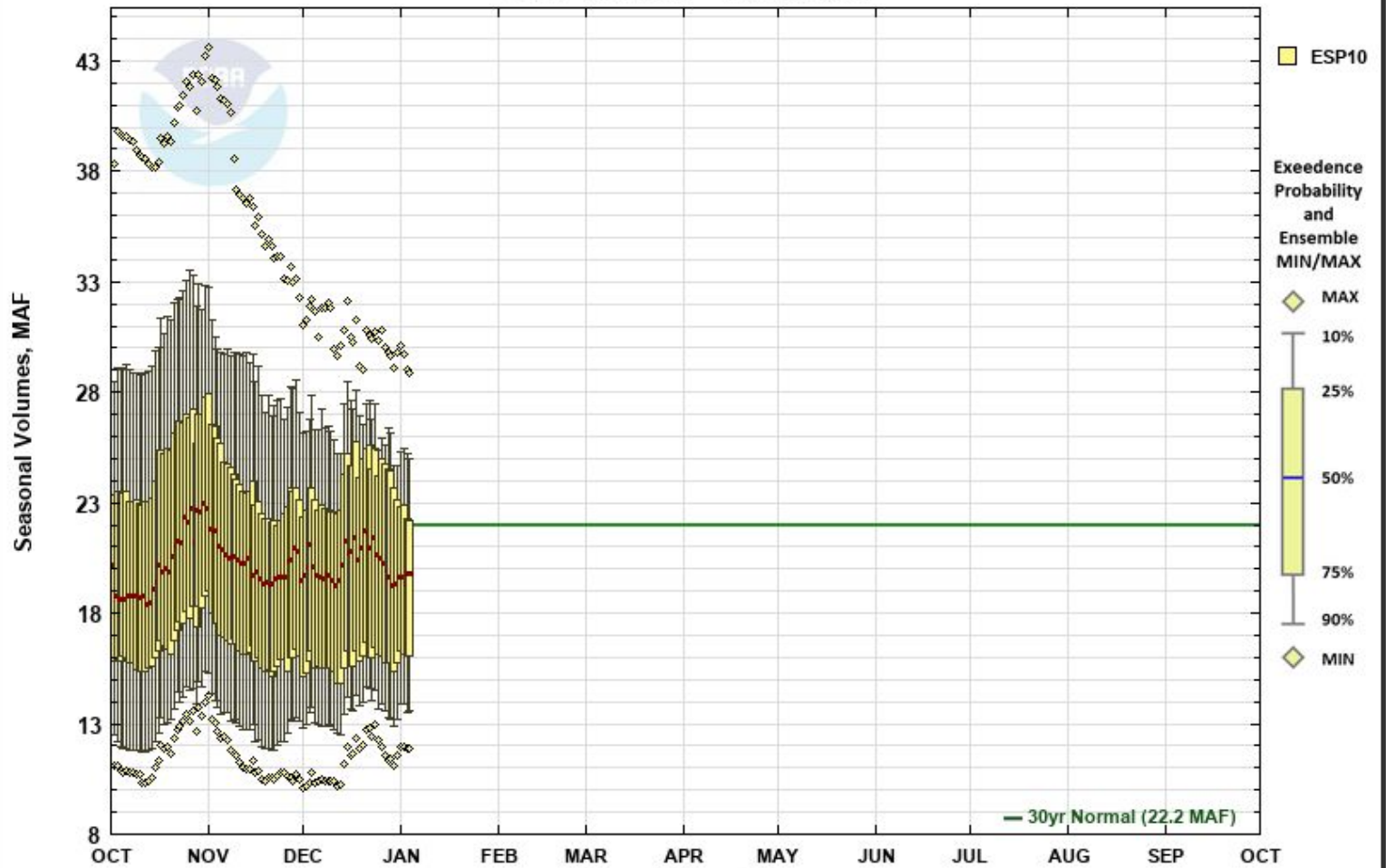
Reference

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

APR-SEP	14549	21410	96	27150	22232
APR-JUL	12521	18817	94	24173	19946
APR-AUG	13515	20179	96	25768	21121
JAN-SEP	20447	27477	92	35812	29736
JAN-JUL	18475	24885	91	32814	27450
OCT-SEP	23916	30947	90	39282	34287

Water Supply Forecasts

SNAKE - LOWER GRANITE DAM
Period APR to SEP -- Water Year 2023



Most Recent Forecast for ESP10: Issued Date 01/04/2023

Plot Created 01/04/2023 02:24 PST

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: 2023-01-03 Issued: 2023-01-03

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	60913	77772	83	92565	94166
APR-JUL	51152	65364	80	80463	81933
APR-AUG	56848	72341	81	87240	89196
JAN-SEP	77592	96453	83	114683	115946
JAN-JUL	67941	85209	82	103415	103714
OCT-SEP	87933	106794	81	125024	132314

Experimental Water Supply

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

APR-SEP	62872	81129	86	97708	94166
APR-JUL	52688	68503	84	85556	81933
APR-AUG	58091	76044	85	92270	89196
JAN-SEP	80189	99481	86	121174	115946
JAN-JUL	70608	87919	85	107792	103714
OCT-SEP	90530	109822	83	131515	132314

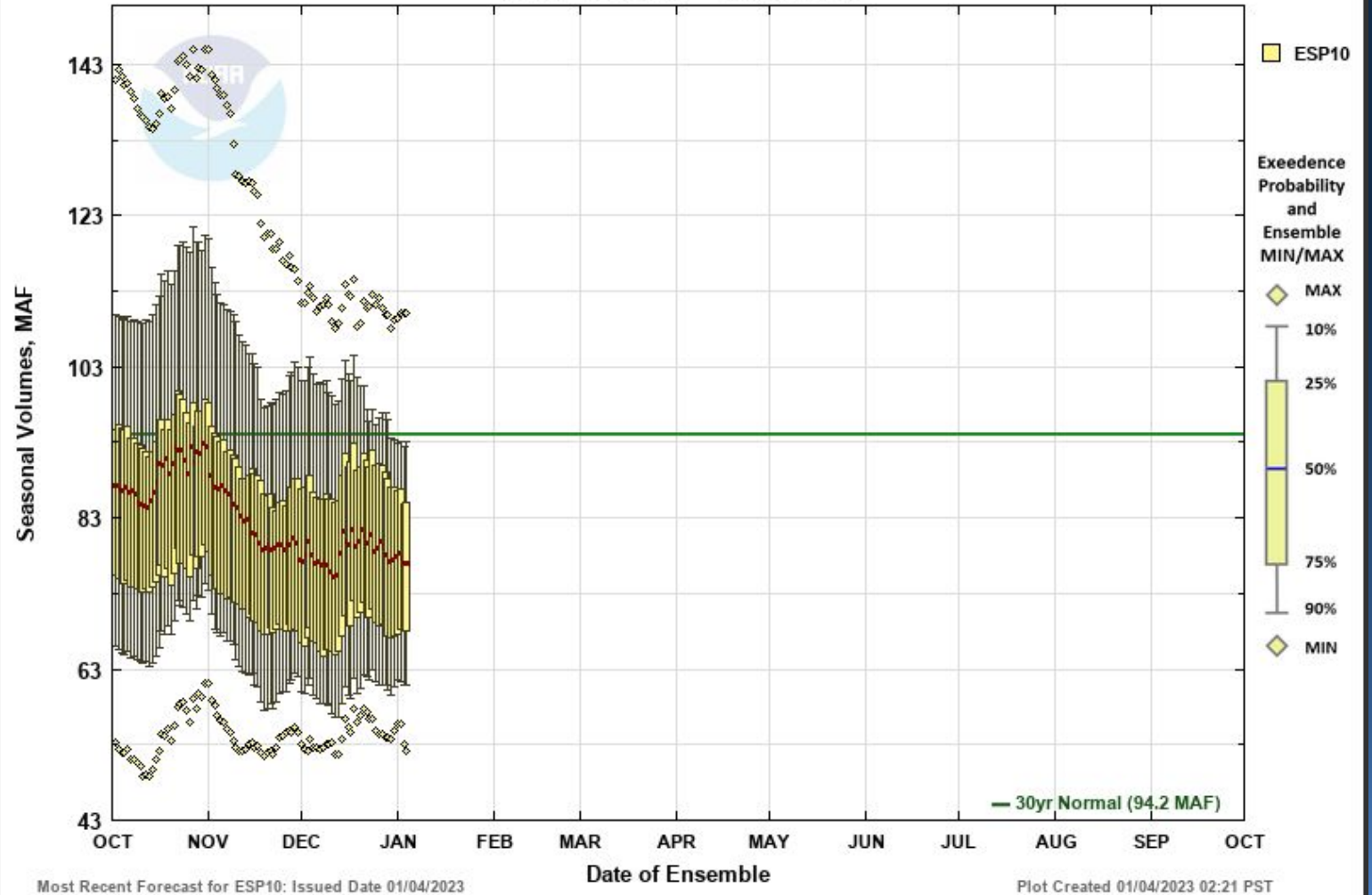
Reference

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

APR-SEP	64846	82912	88	99004	94166
APR-JUL	55050	70586	86	87408	81933
APR-AUG	60193	77976	87	93997	89196
JAN-SEP	80605	101256	87	122298	115946
JAN-JUL	70966	88019	85	110523	103714
OCT-SEP	90946	111597	84	132639	132314

Water Supply Forecasts

COLUMBIA - THE DALLES DAM
Period APR to SEP -- Water Year 2023

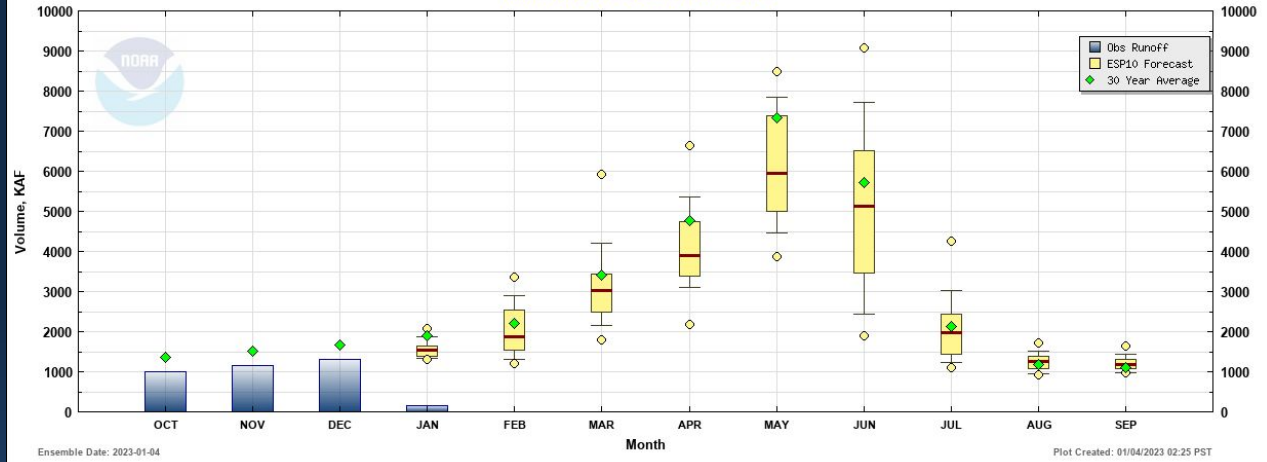


Max Scale
 Scale To Data
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 Show Min/Max Ensemble Volume
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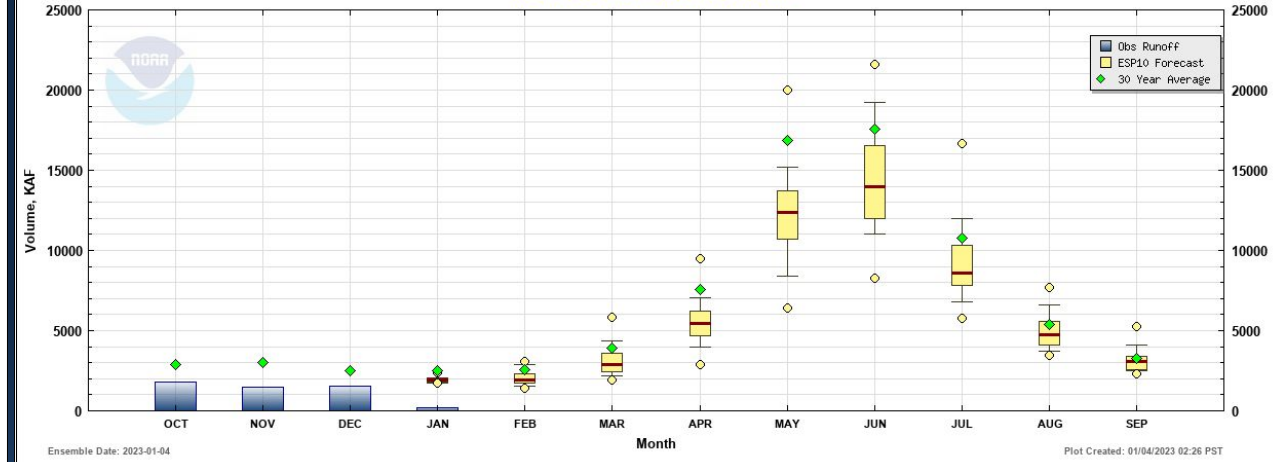


Water Supply Forecasts

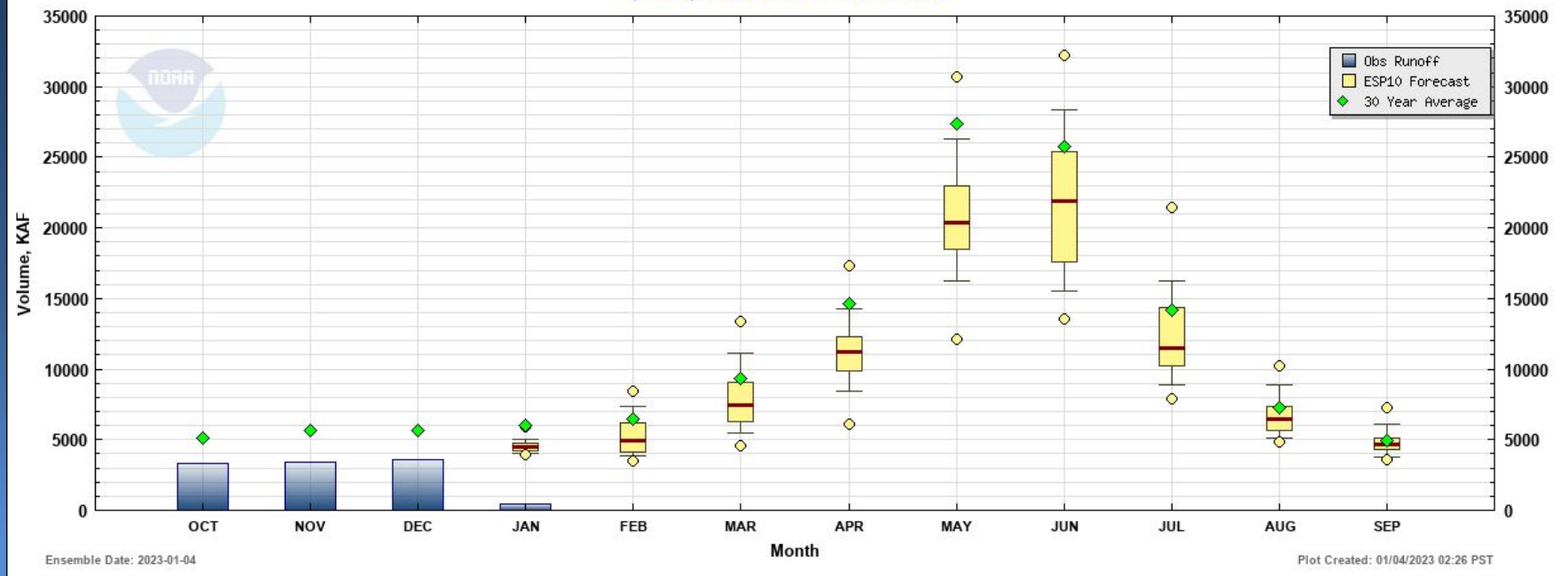
Water Supply Volume Monthly Forecasts (ESP10) for Water Year 2023
(LGDW1) SNAKE - LOWER GRANITE DAM



Water Supply Volume Monthly Forecasts (ESP10) for Water Year 2023
(GCDW1) COLUMBIA - GRAND COULEE DAM



Water Supply Volume Monthly Forecasts (ESP10) for Water Year 2023
(TDAO3) COLUMBIA - THE DALLES DAM



ESP10

Exceedence Probability and Ensemble MIN/MAX

- MAX
- 10%
- 25%
- 50%
- 75%
- 90%
- MIN



Climate Prediction Center Model Predictions

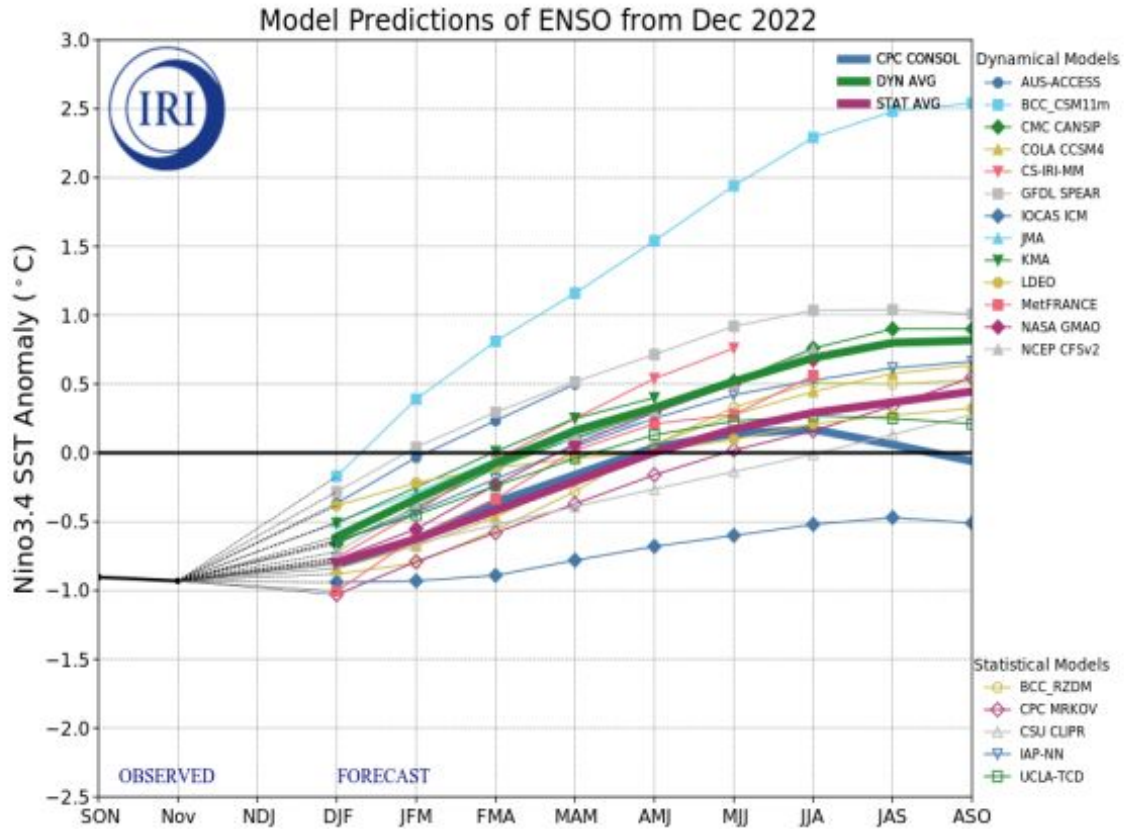


Figure provided by the International Research Institute (IRI) for Climate and Society (updated 19 December 2022).

According to the dynamical model average (green thick line), La Niña is expected to transition to ENSO-neutral during January-March 2023. For the statistical model average (red thick line), the transition to ENSO-neutral is around February-April 2023.



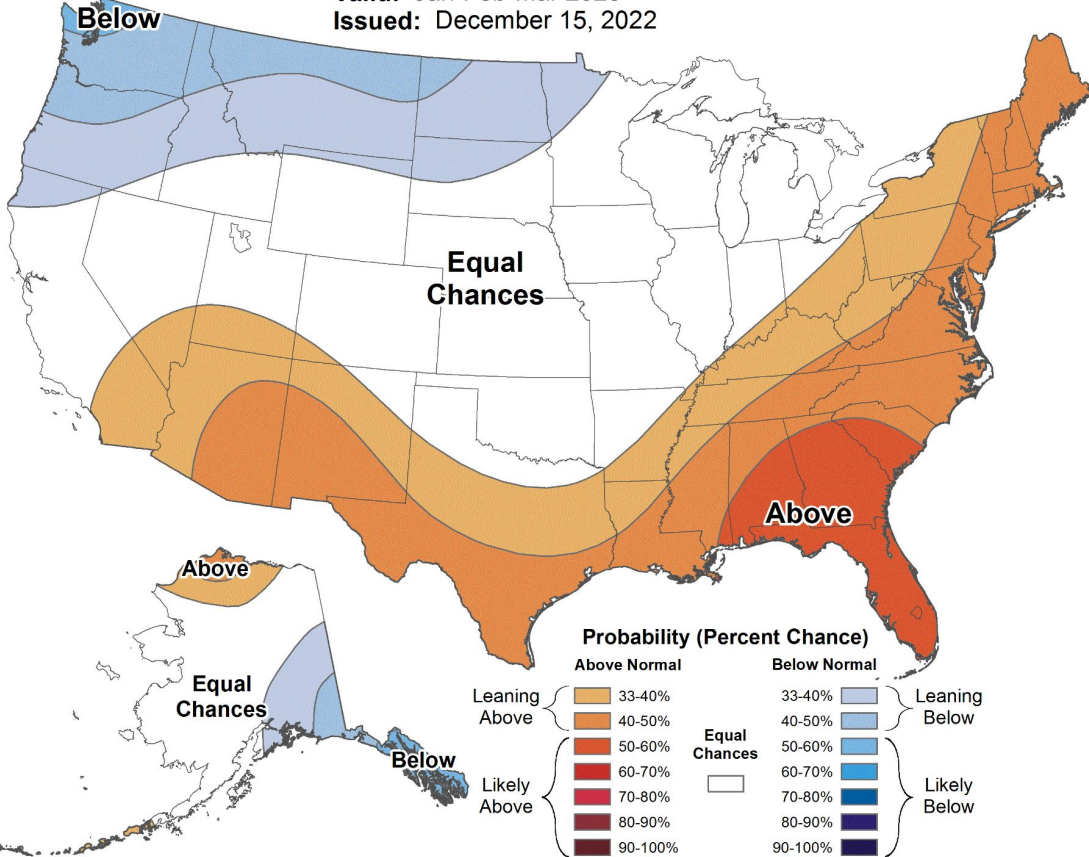
Climate Prediction Center Seasonal Outlook



Seasonal Temperature Outlook



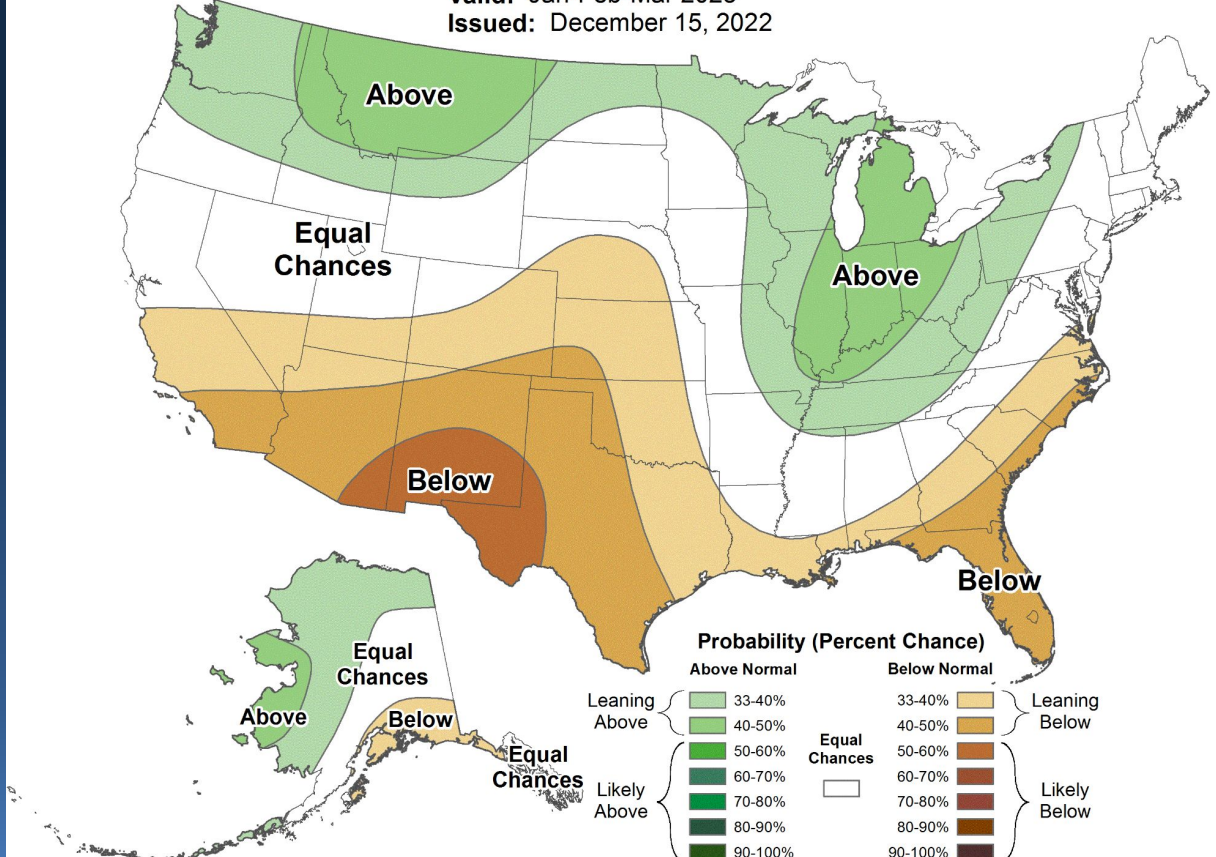
Valid: Jan-Feb-Mar 2023
Issued: December 15, 2022

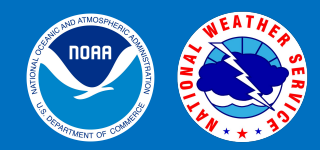


Seasonal Precipitation Outlook

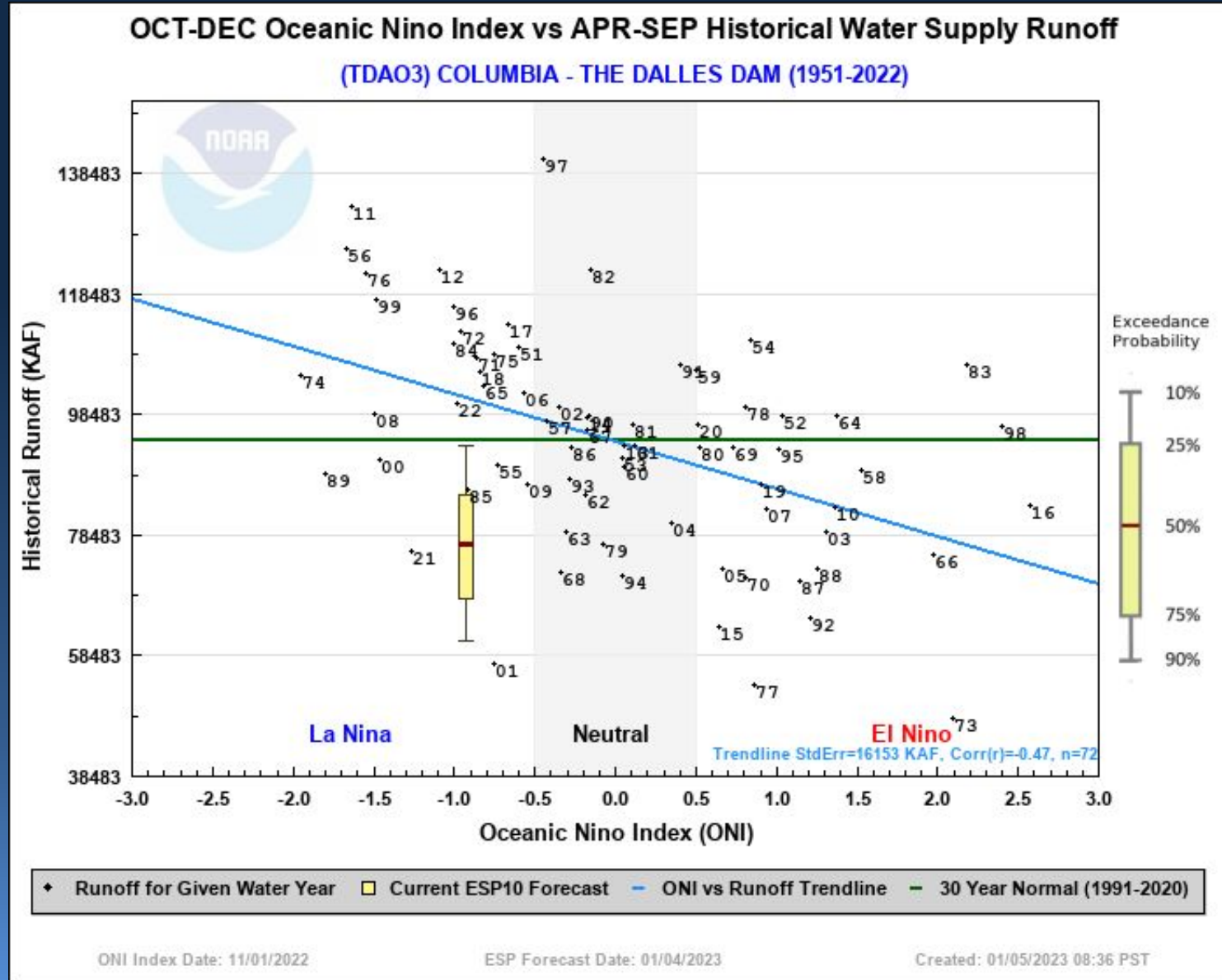


Valid: Jan-Feb-Mar 2023
Issued: December 15, 2022





Oceanic Niño Index vs Apr - Sep Runoff Volumes





Status of Updates to 30 Year Data Normals

NWRFC updated runoff and snow water equivalent normals for the 1991-2020 period prior to last season (fall of WY21).

Updates to precipitation and temperature normals expected prior to WY24 (fall of 2023).

Precipitation and temperature normals based on PRISM estimates.

Sources:

- United States: PRISM Climate Group (Oregon State University)
- Canada: pending delivery of NWRFC/BPA contract with Pacific Climate Impacts Consortium (University of Victoria)



Take Home Messages

A hot and dry summer resulted in below normal river flows.

Water year 2023 started with a hot and dry Oct followed by colder than normal temperatures.

Water year to date precipitation has been a mix of above and below normal.

Snowpacks are generally above normal.

Water year to date runoff has been below normal.

Apr- Sep water supply forecasts are normal to slightly below normal. These are early season forecasts!



WY2022 Schedule for Live Water Supply Briefings

Jan	Feb	Mar	Apr	May
5	2	2	6	4

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#**.

NWRFC.watersupply@noaa.gov
(503) 326-7291

