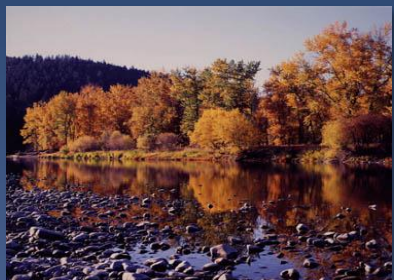




Northwest River Forecast Center



February 2021 Water Supply Briefing

Telephone Conference: (415) 930-5321

Audio Access Code: 524-795-021#

Amy Burke

NWRFC.watersupply@noaa.gov

(503) 326-7291

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



Take Home Messages

Water year precipitation thus far

- Near normal in the north
- Below normal in south

Snowpack

- Melt in lower elevations, building at higher elevation
- Percent normal higher in the north and west
- Percent normal lower in the south and east

Water supply forecasts for Apr-Sep

- Near normal in the north
- Below normal in south

Additional Guidance

- CPC calling for below normal temps but mixed precip
- La Nina weakly correlated to higher runoff



Water Supply Forecast Briefing

Observed Conditions:

- Temperature
- Precipitation
- Snowpack
- Runoff

Model States

Future Conditions:

- 10 days of quantitative forecast precipitation (QPF)
- 10 days of quantitative forecast temperature (QTF)
- Historical climate forcings appended thereafter
- Water Supply Forecasts

Model Forcings

Model Inputs

Climate Prediction Center Outlook



Water Supply Forecast Briefing

Observed Conditions:

- Temperature
- Precipitation
- Snowpack
- Runoff

Model States

Future Conditions:

- 10 days of quantitative forecast precipitation (QPF)
- 10 days of quantitative forecast temperature (QTF)
- Historical climate forcings appended thereafter
- Water Supply Forecasts

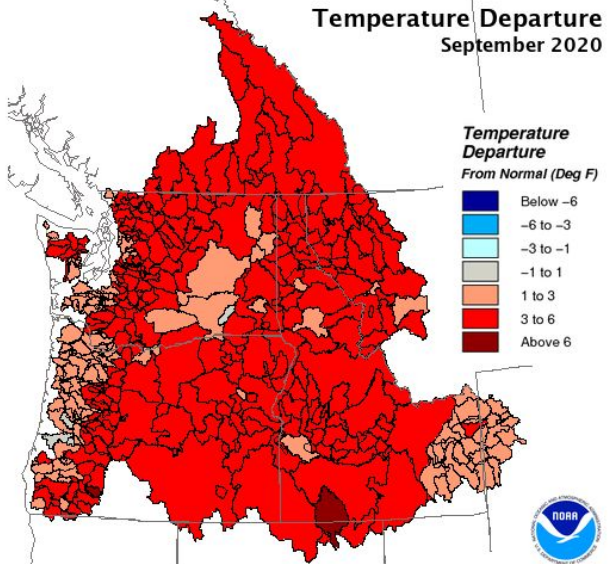
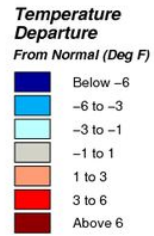
Model Forcings

Model Inputs



Monthly Temperature Departure

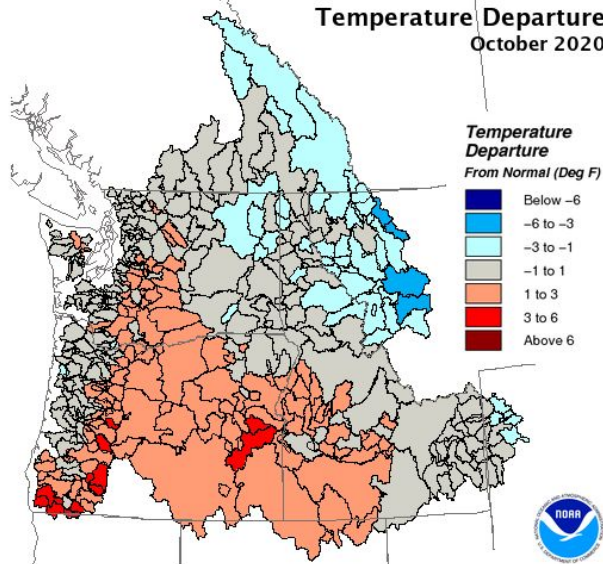
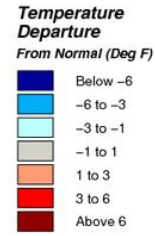
Temperature Departure
September 2020



Creation Time: Thursday, Oct 1, 2020

Northwest River Forecast Center

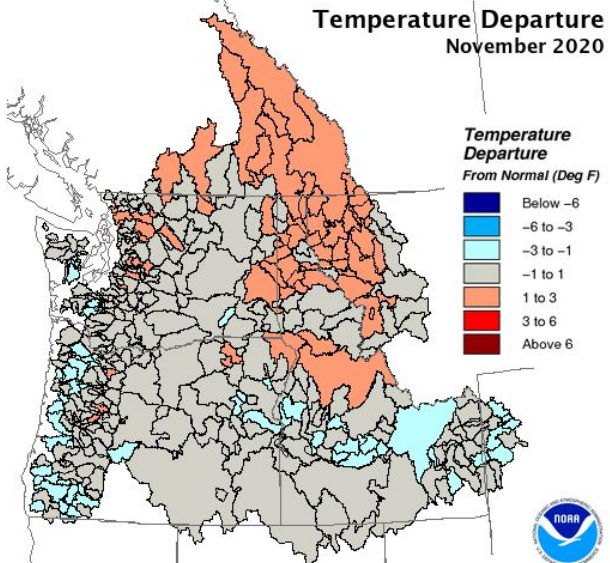
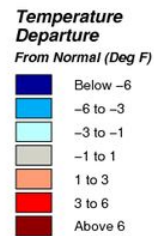
Temperature Departure
October 2020



Creation Time: Sunday, Nov 1, 2020

Northwest River Forecast Center

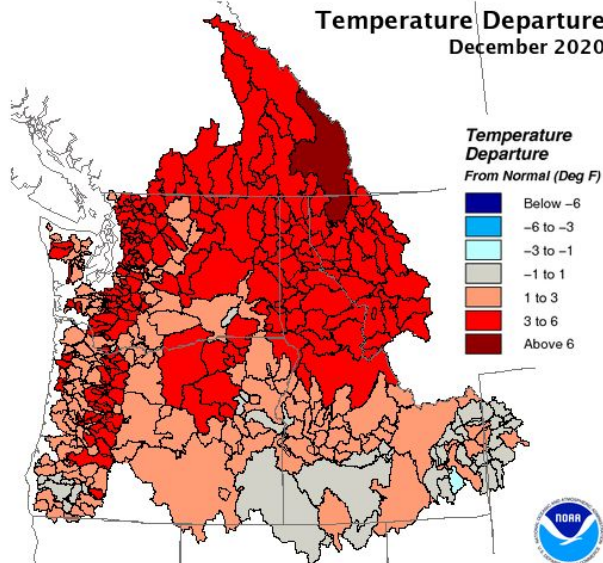
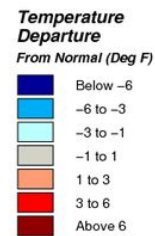
Temperature Departure
November 2020



Creation Time: Tuesday, Dec 1, 2020

Northwest River Forecast Center

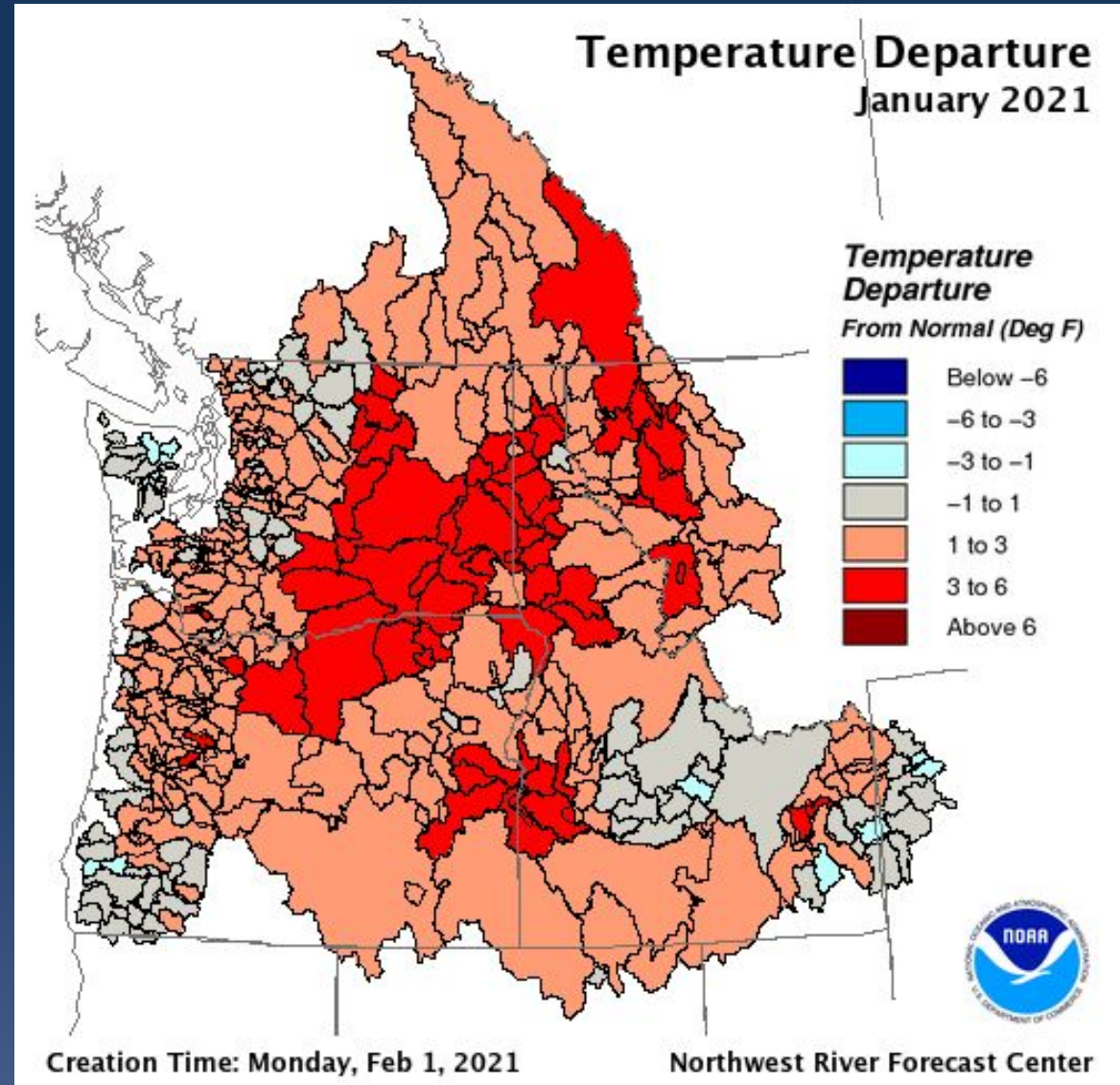
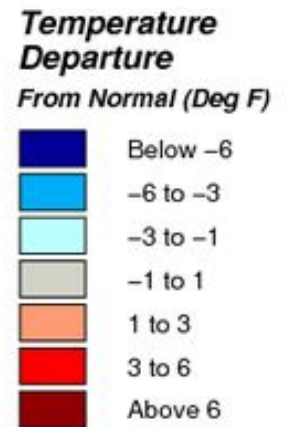
Temperature Departure
December 2020



Creation Time: Friday, Jan 1, 2021

Northwest River Forecast Center

Temperature Departure
January 2021

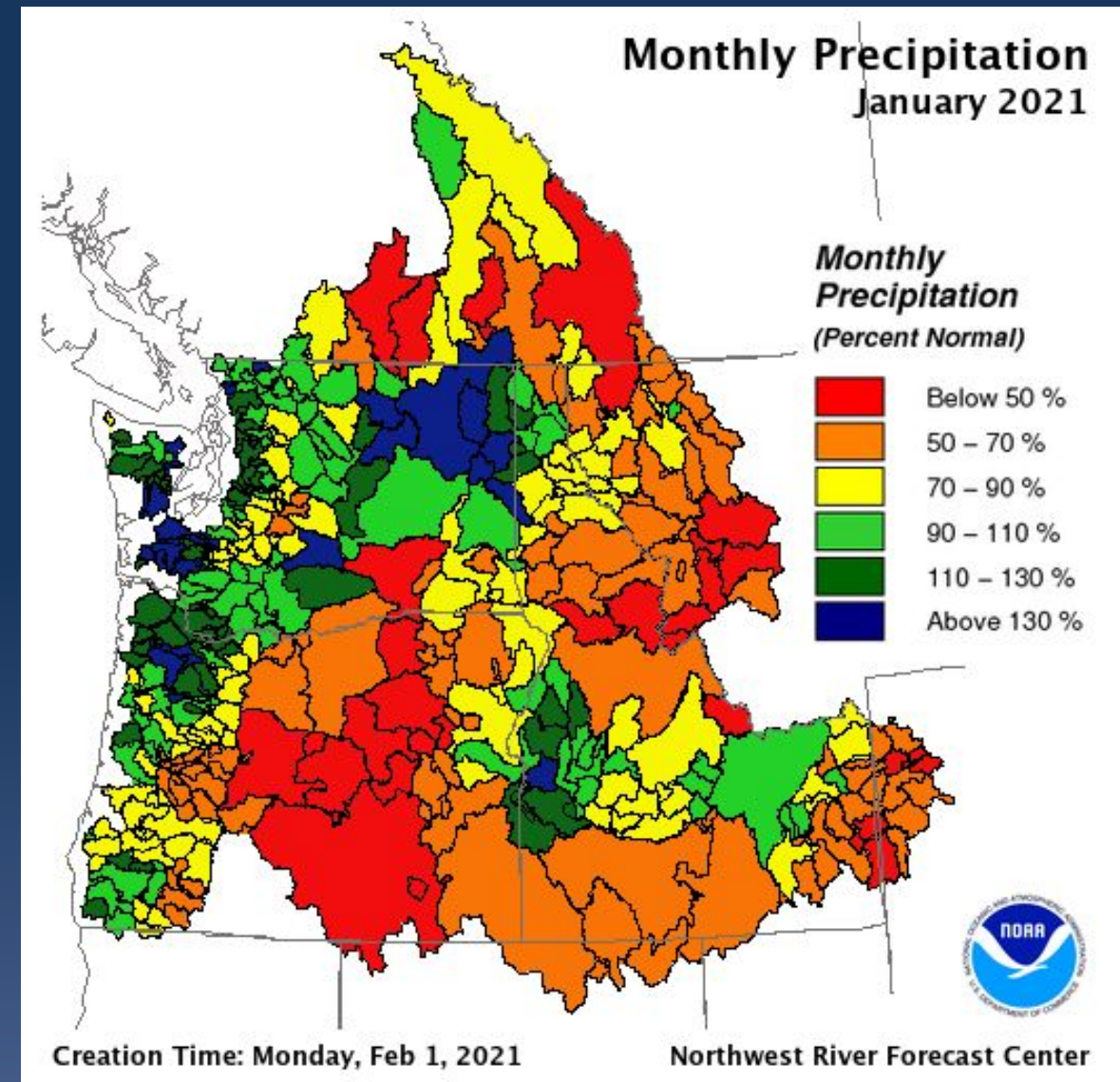
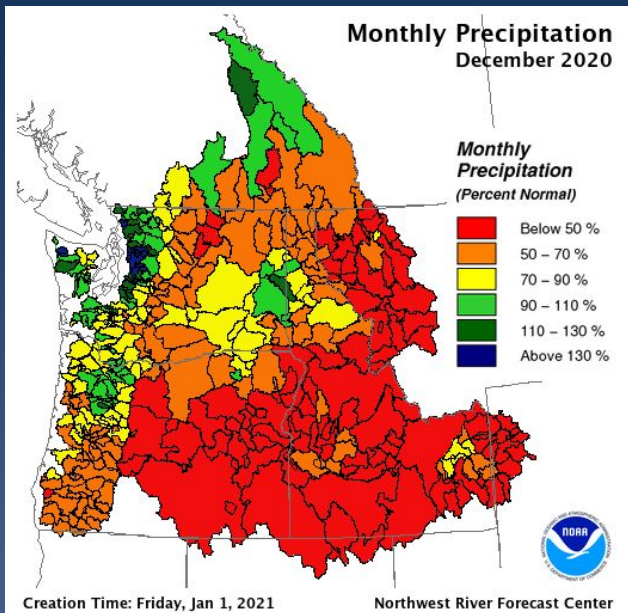
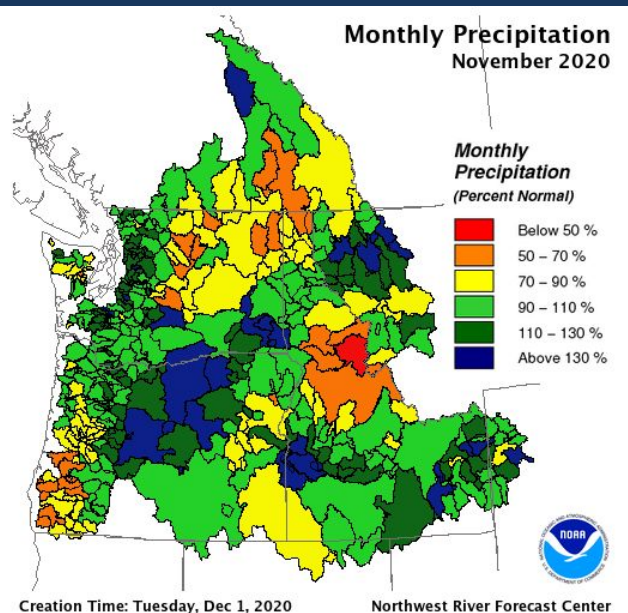
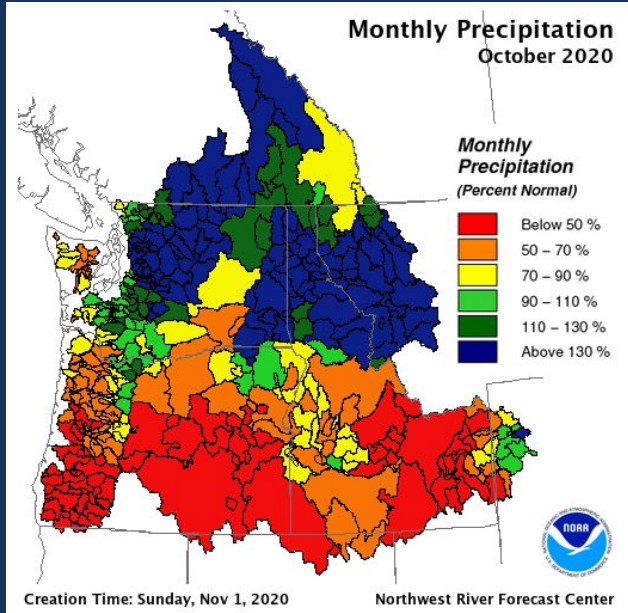
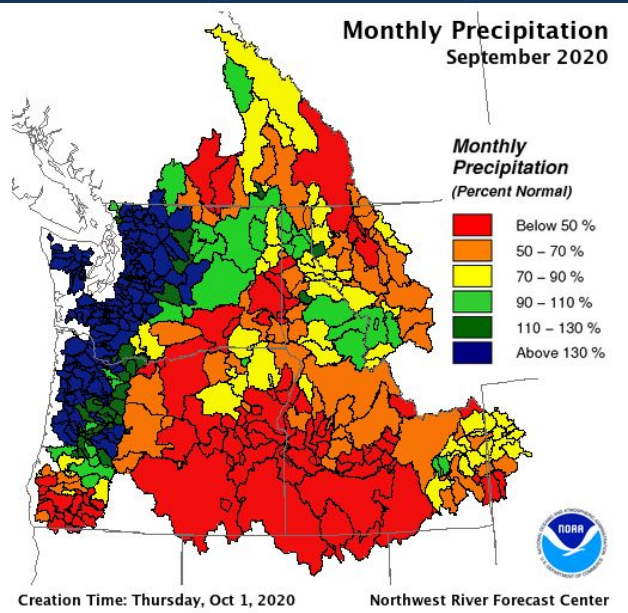


Creation Time: Monday, Feb 1, 2021

Northwest River Forecast Center

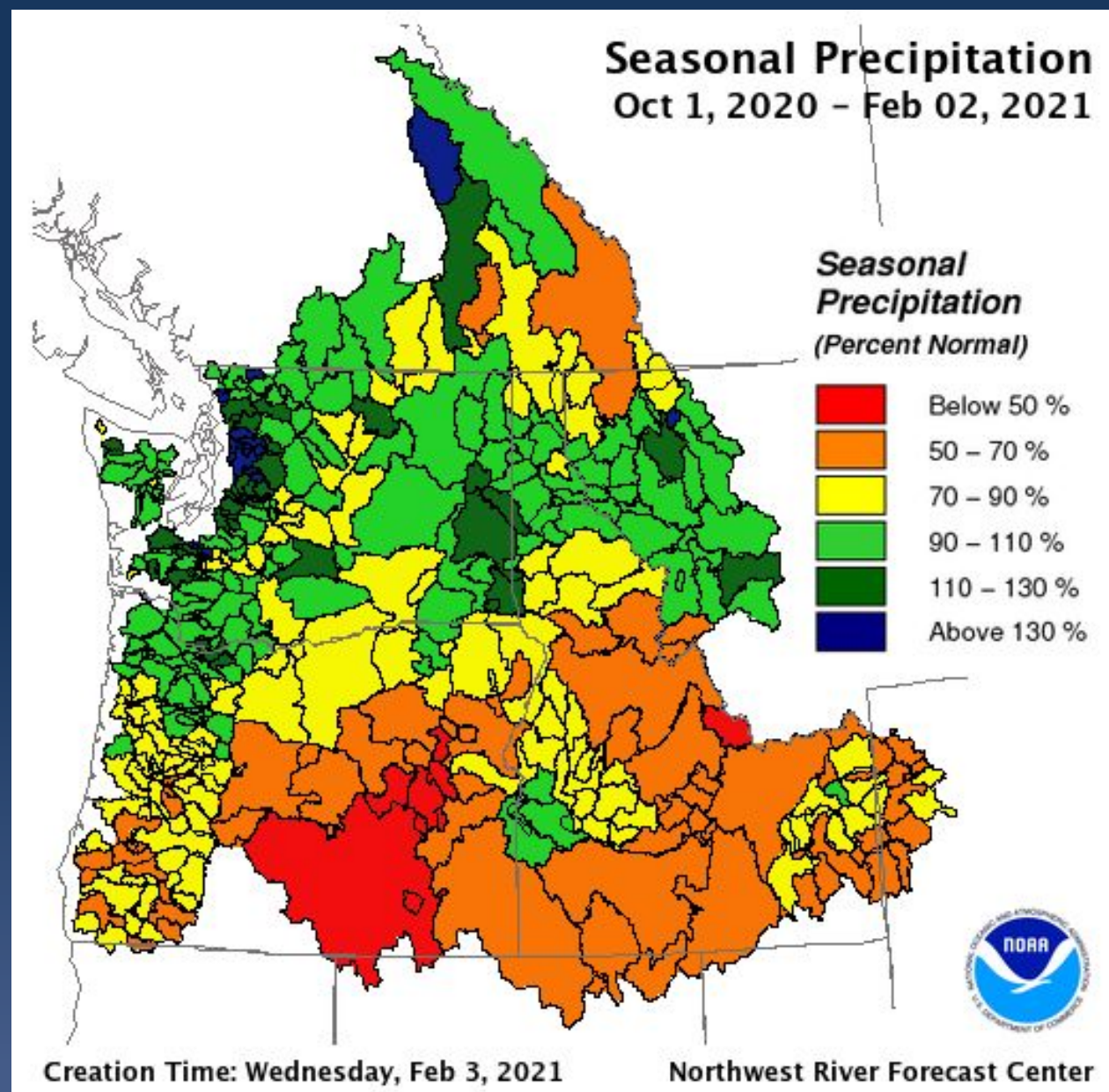


Monthly Precipitation





Water Year to Date Precipitation

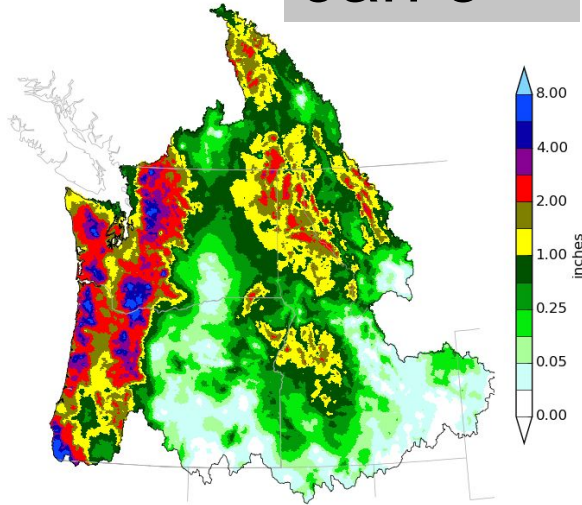




Events Since Last Briefing

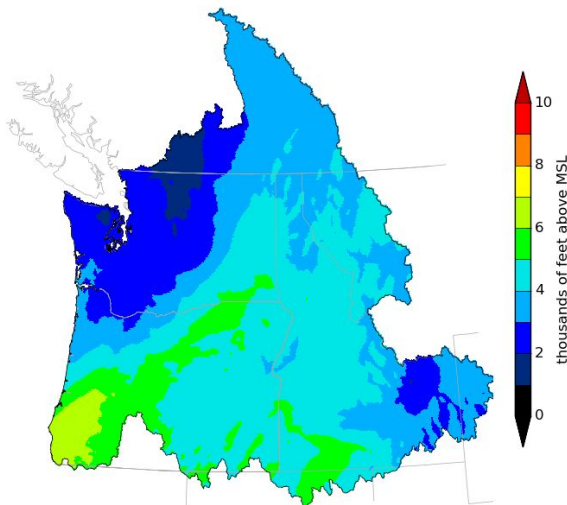
Northwest River Forecast Center
Observed 24hr Precipitation, Ending 12Z, 01/13/21

Jan 3



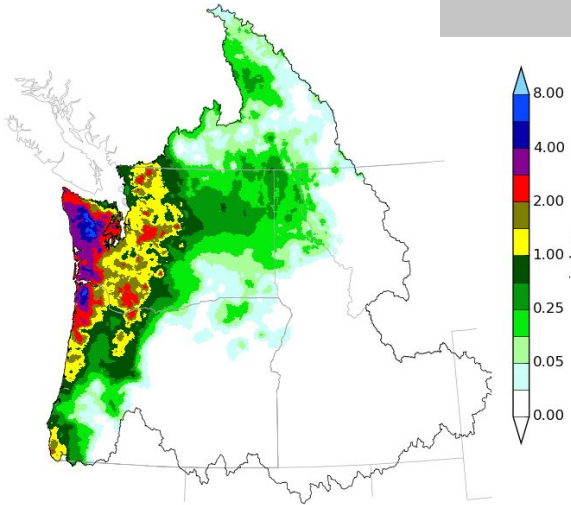
Creation Time: Wed Jan 13 15:32:57 UTC 2021

Northwest River Forecast Center
Forecast Snow Level, Ending 12Z, 01/03/21



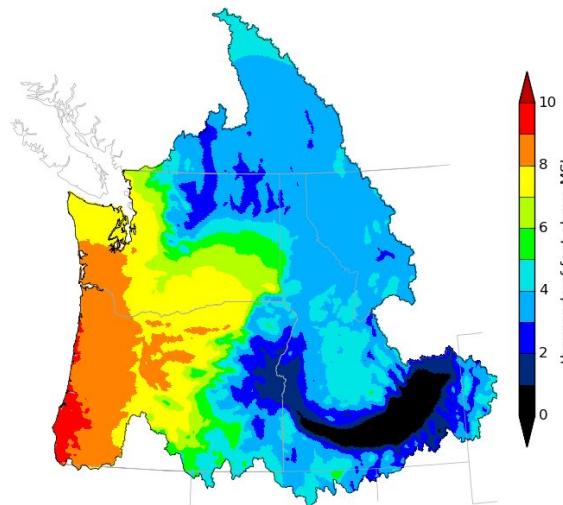
Northwest River Forecast Center
Observed 24hr Precipitation, Ending 12Z, 01/12/21

Jan 12-13

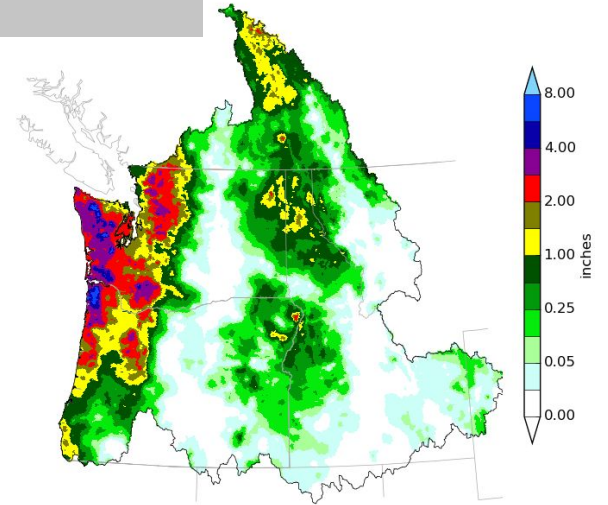


Creation Time: Tue Jan 12 15:14:05 UTC 2021

Northwest River Forecast Center
Forecast Snow Level, Ending 12Z, 01/12/21

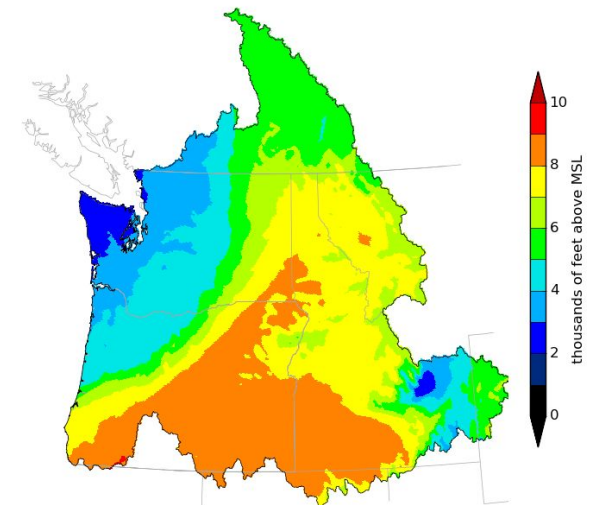


Northwest River Forecast Center
Observed 24hr Precipitation, Ending 12Z, 01/03/21



Creation Time: Sun Jan 3 15:56:40 UTC 2021

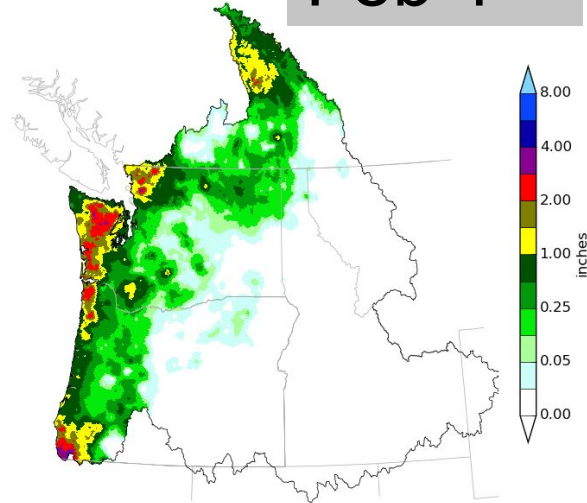
Northwest River Forecast Center
Forecast Snow Level, Ending 12Z, 01/13/21





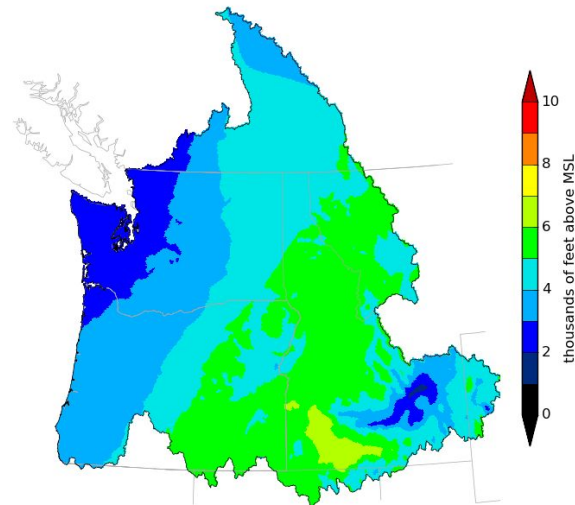
Events Since Last Briefing

Northwest River Forecast Center
Observed 24hr Precipitation, Ending 12Z, 02/01/21
Feb 1



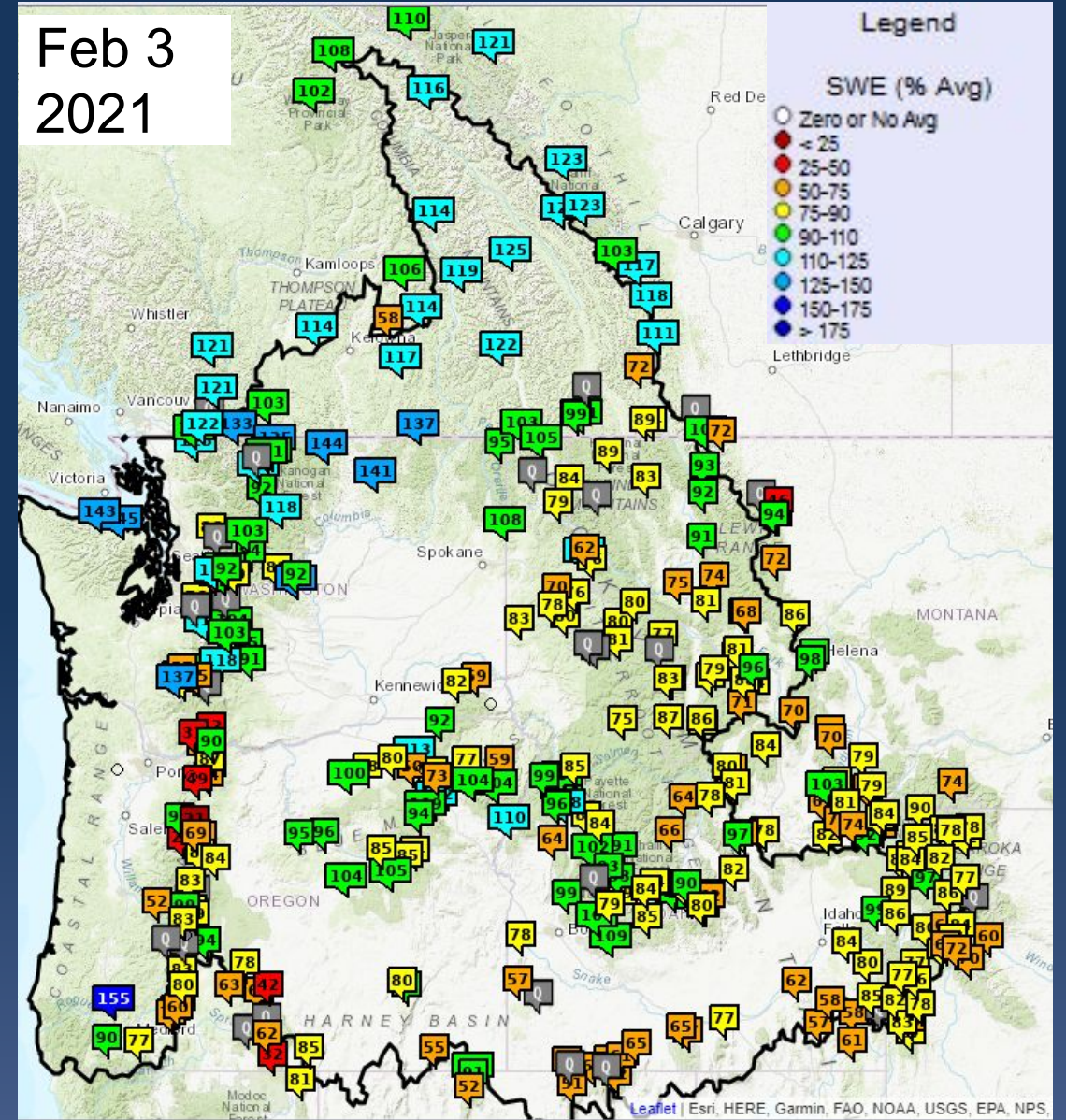
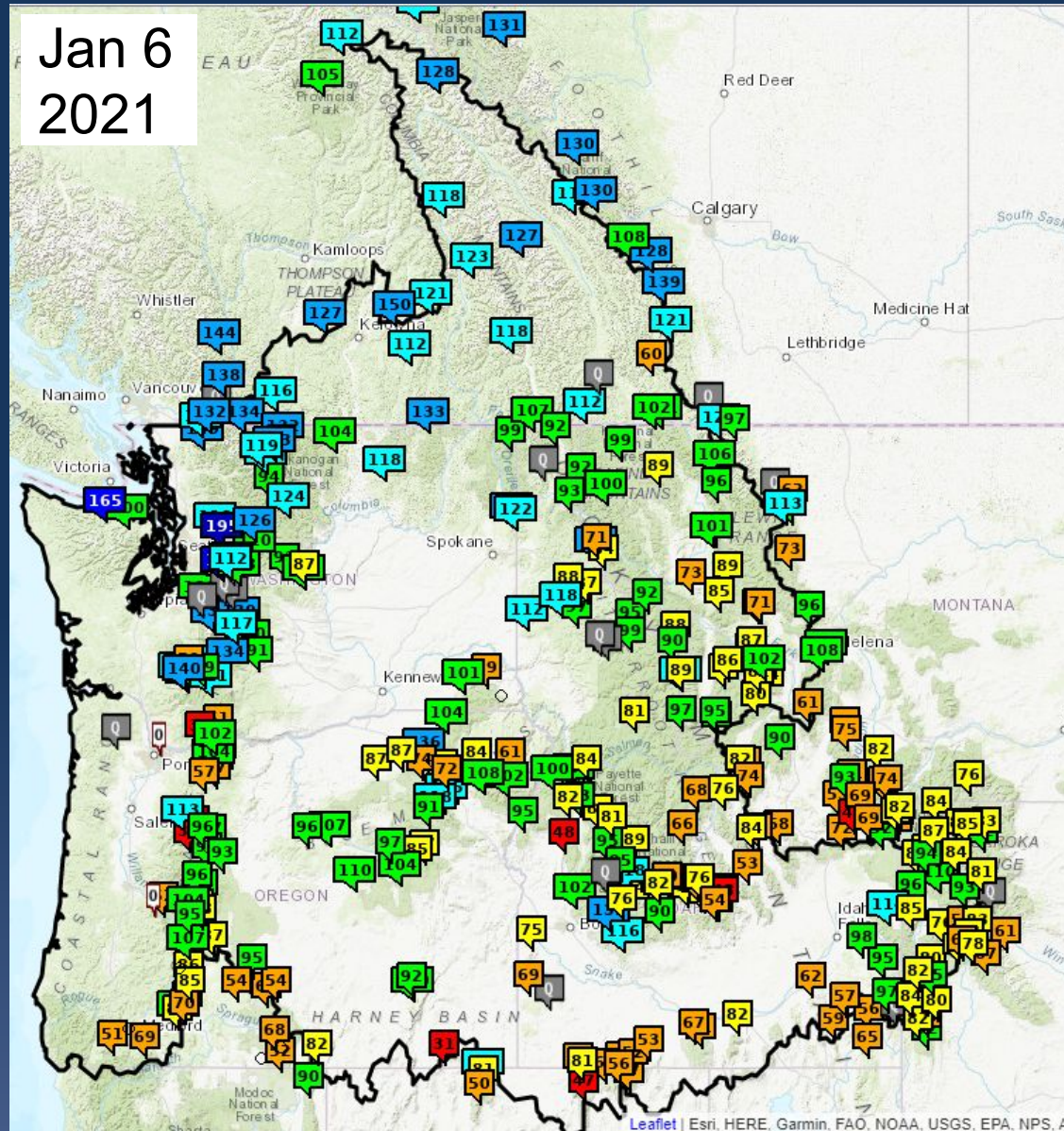
Creation Time: Mon Feb 1 15:53:08 UTC 2021

Northwest River Forecast Center
Forecast Snow Level, Ending 12Z, 02/02/21



Creation Time: Mon Feb 1 22:32:47 UTC 2021

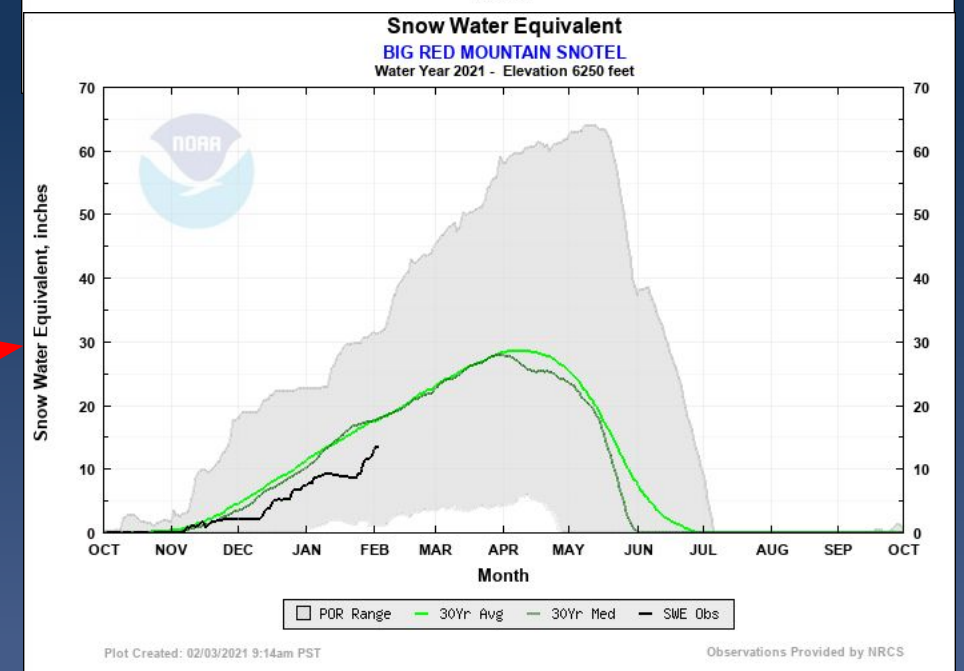
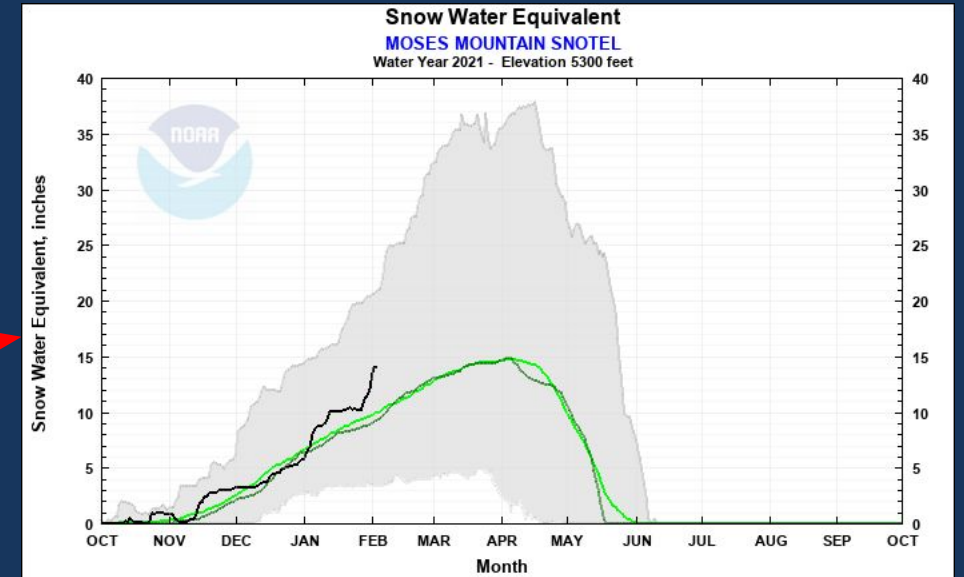
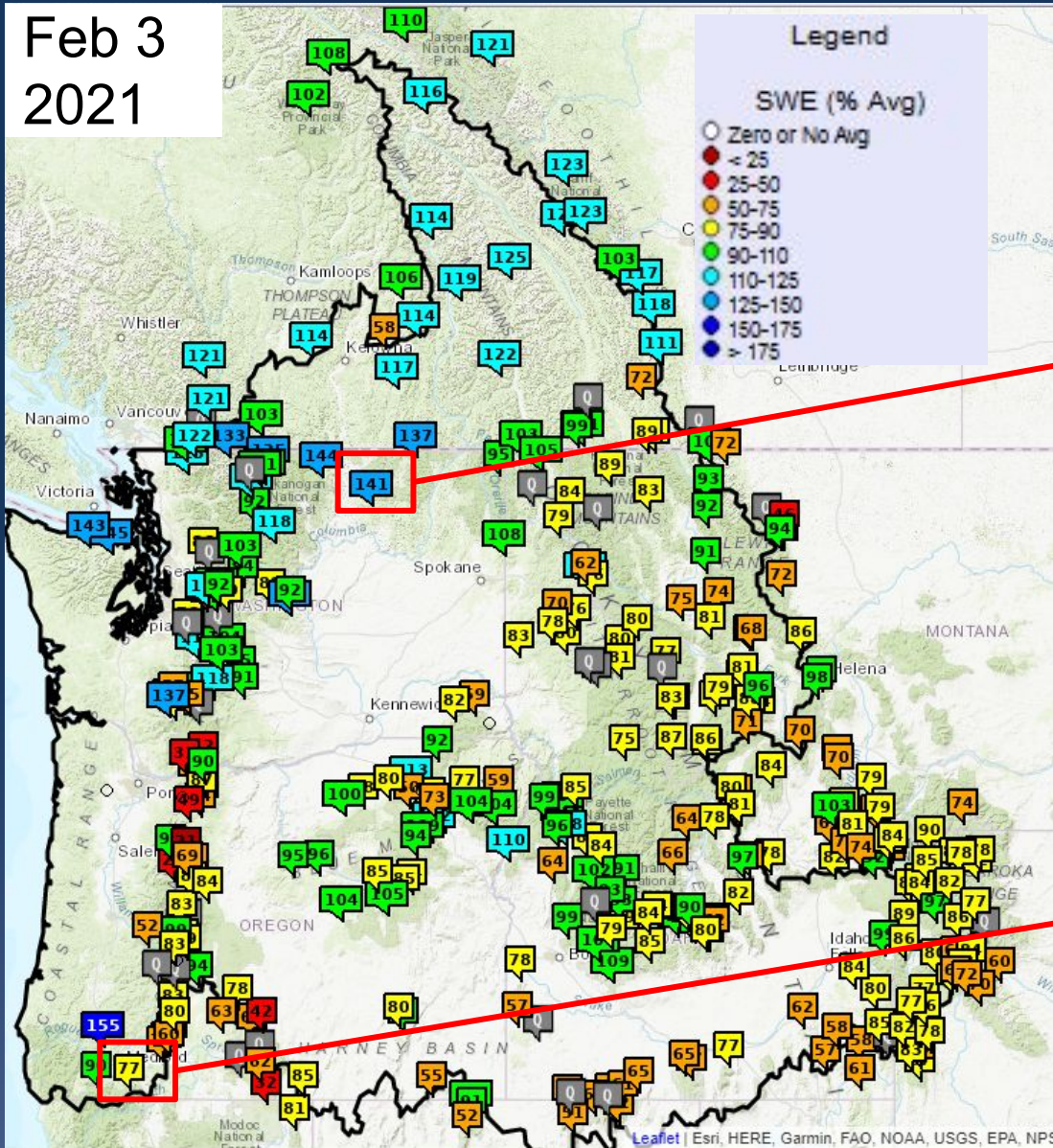
Snowpack



Snow data from NRCS, BC Hydro, and Alberta EP.

Snowpack

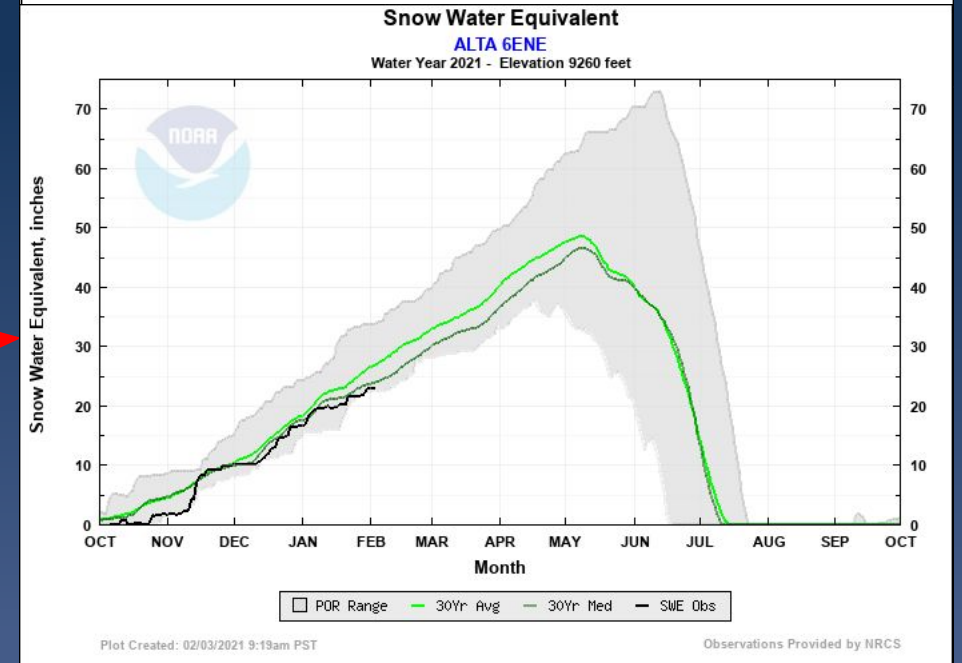
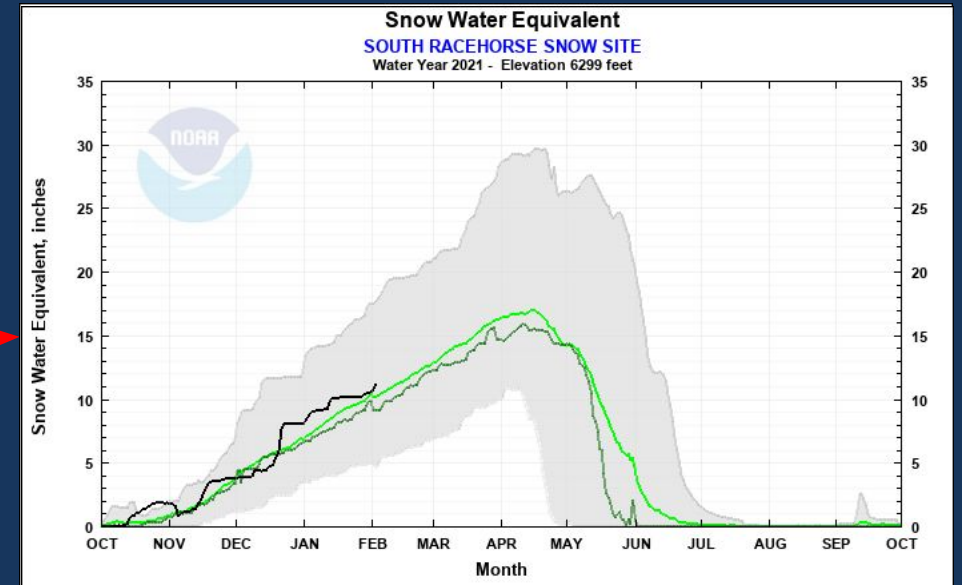
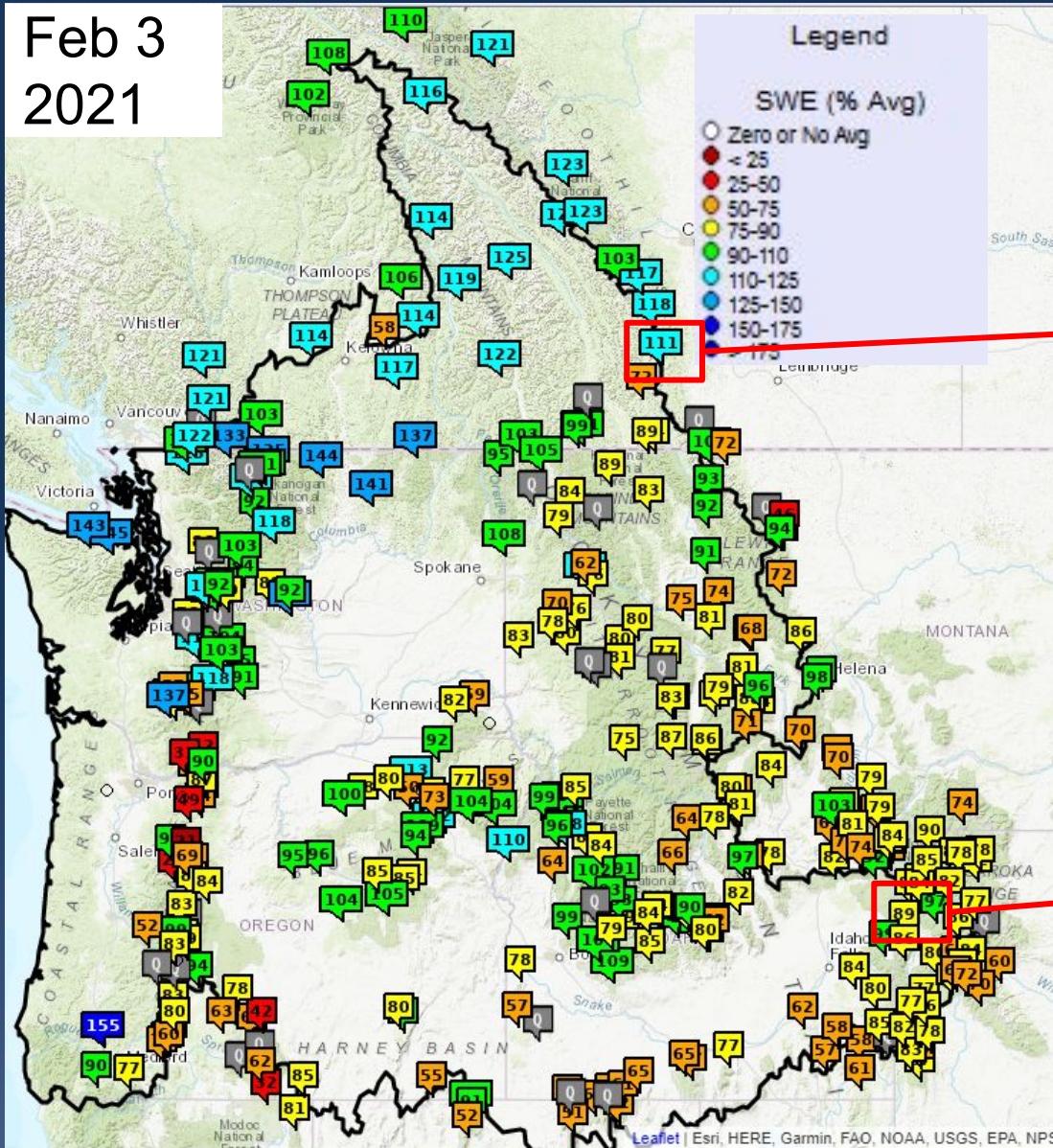
Feb 3
2021



Snow data from NRCS, BC Hydro, and Alberta EP.

Snowpack

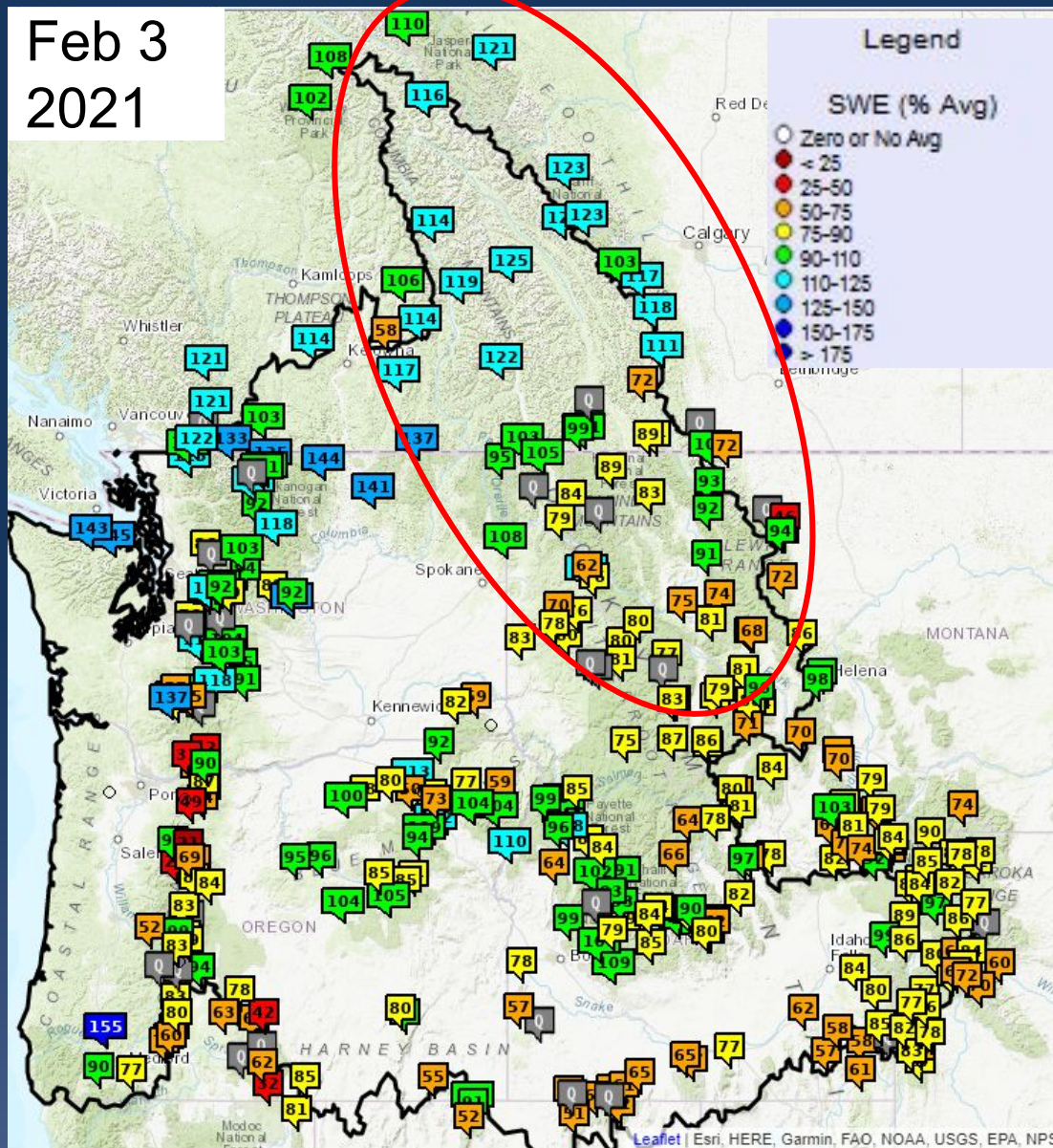
Feb 3
2021



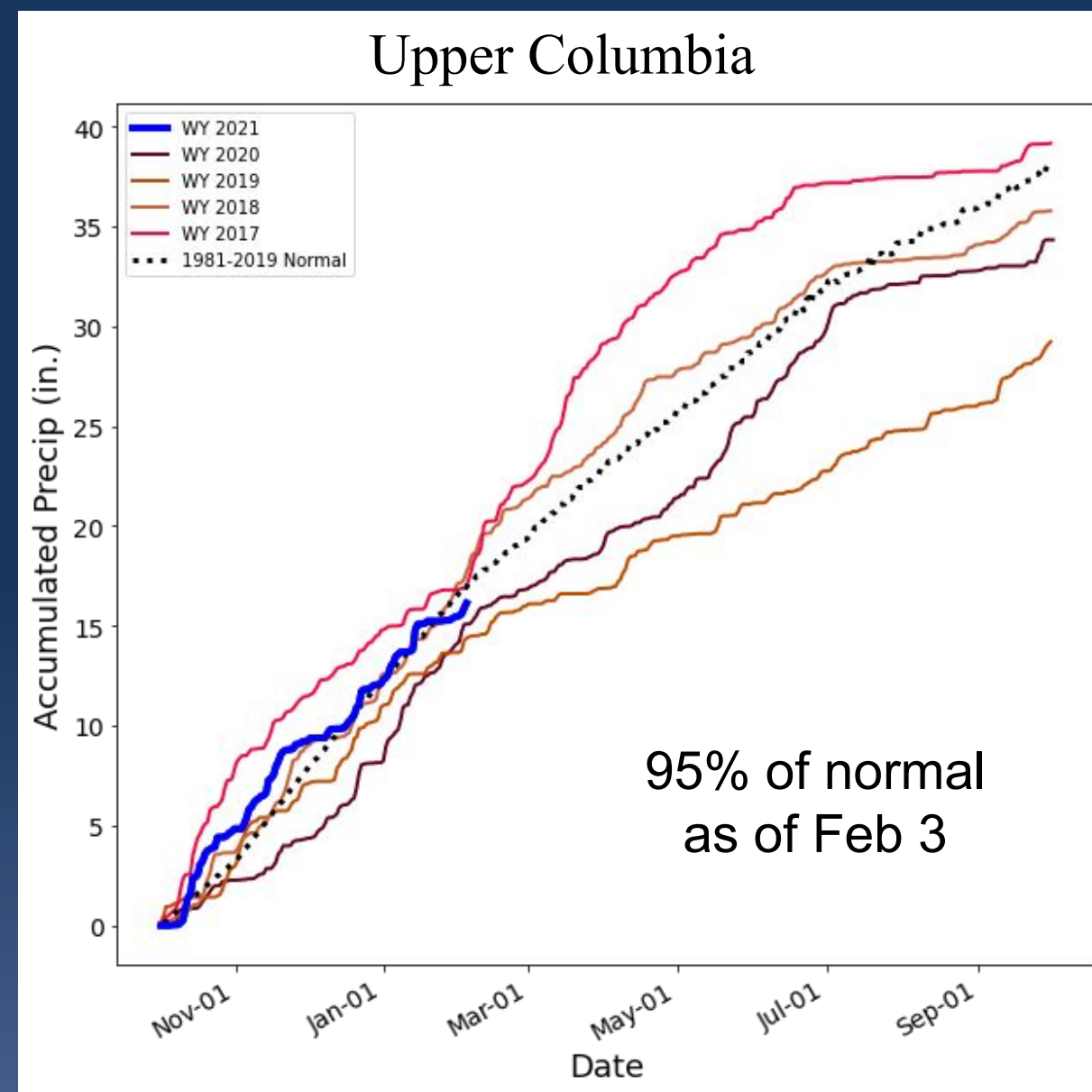
Snow data from NRCS, BC Hydro, and Alberta EP.



Snowpack and Seasonal Precipitation

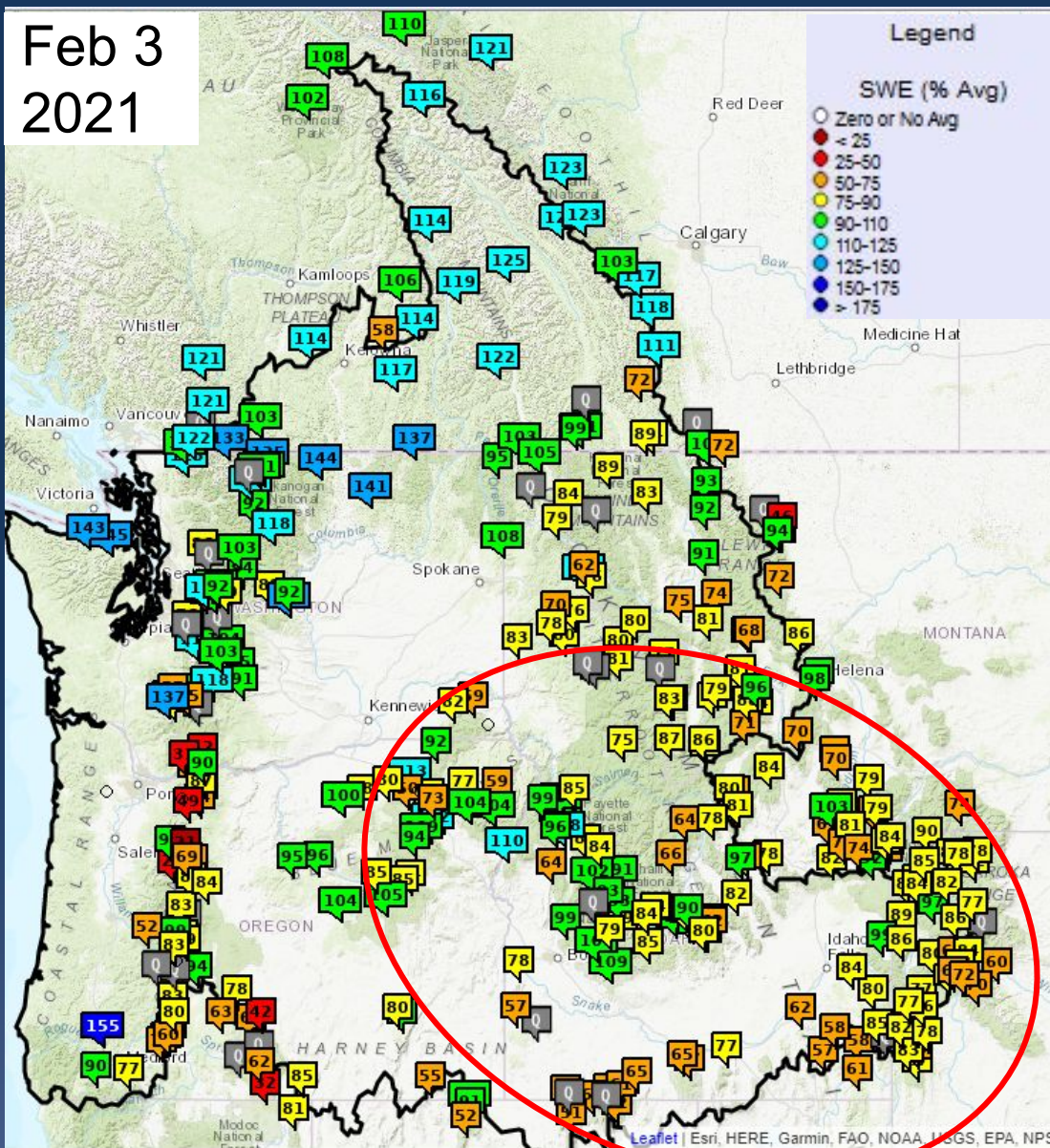


Snow data from NRCS, BC Hydro, and Alberta EP.

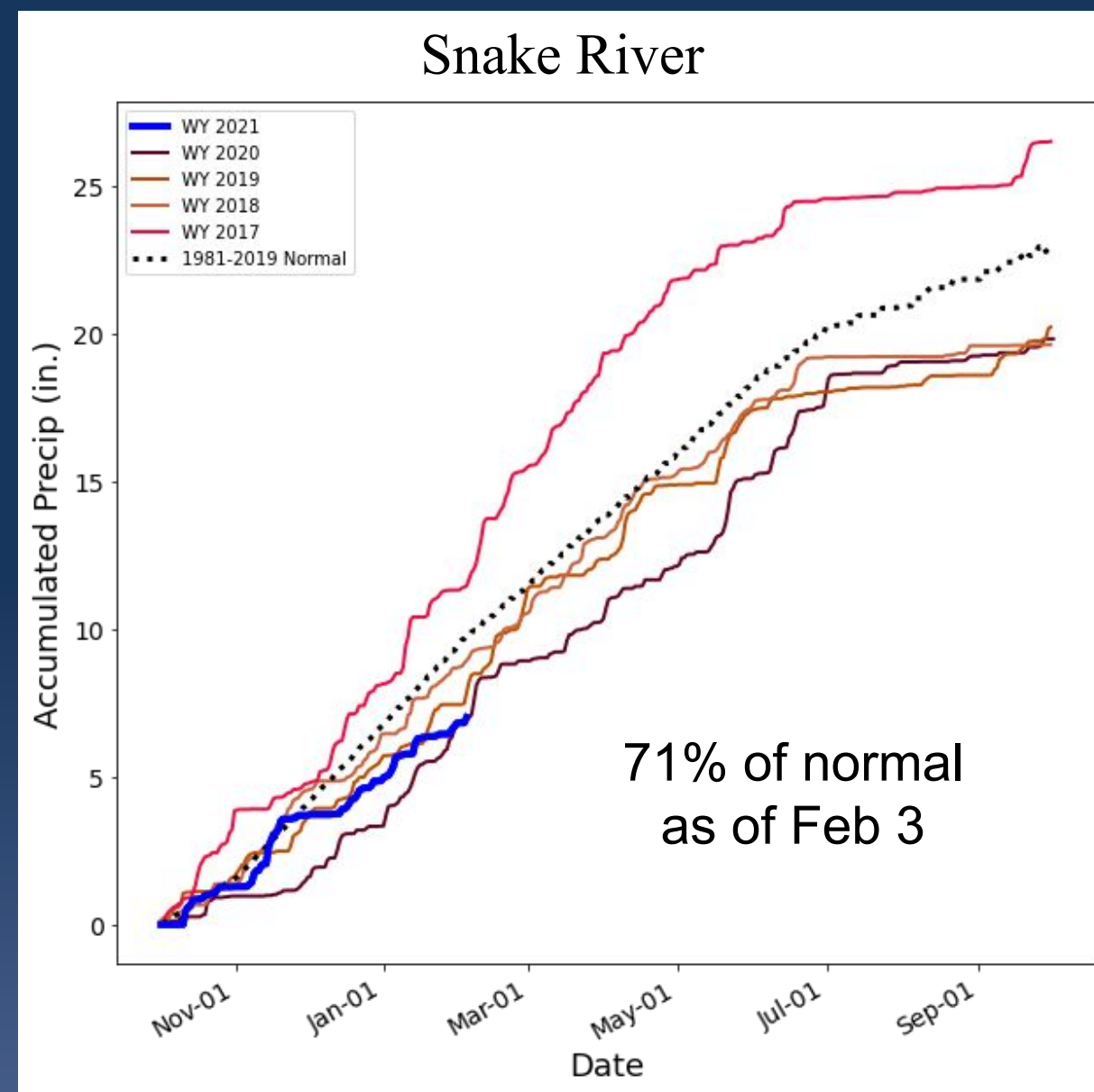




Snowpack and Seasonal Precipitation

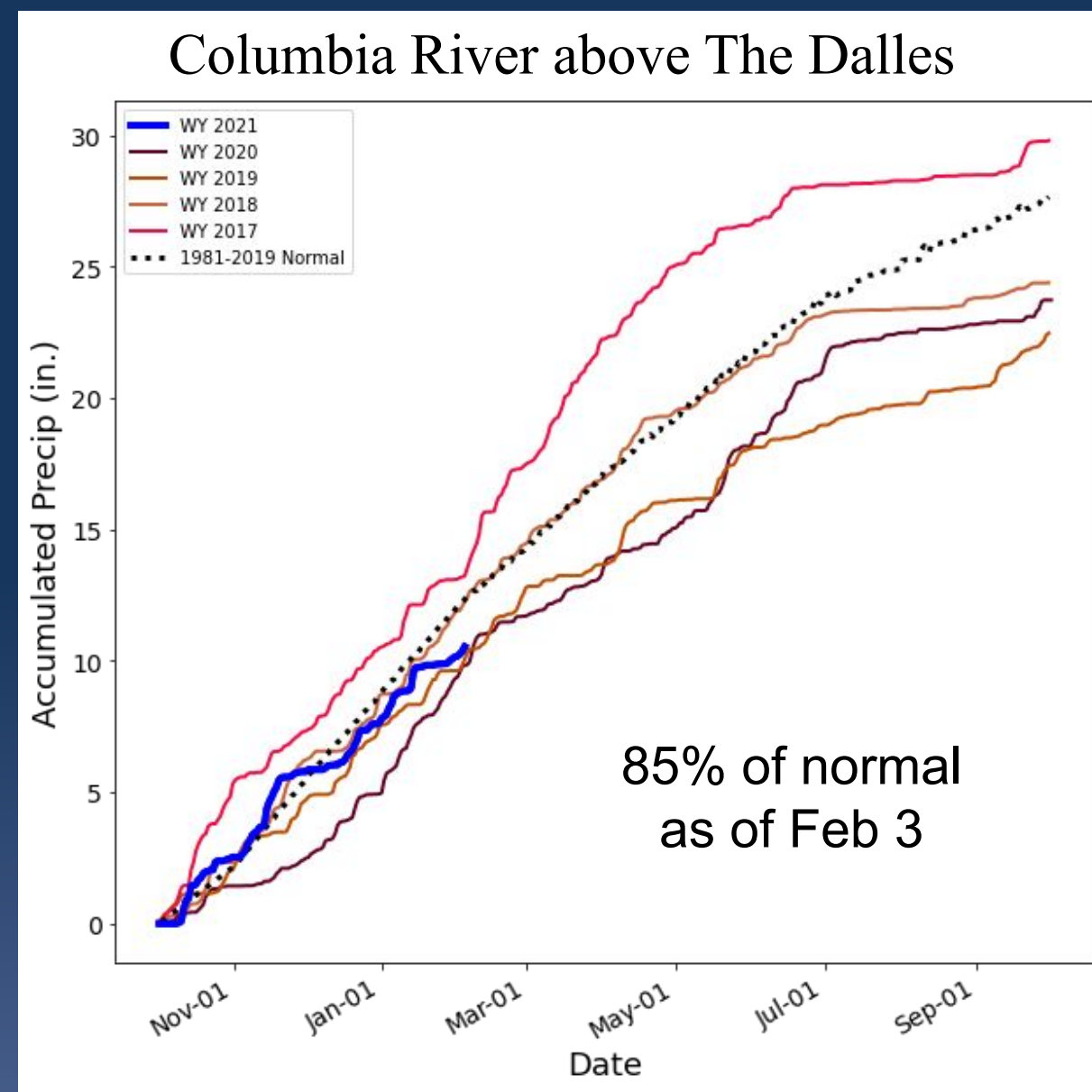
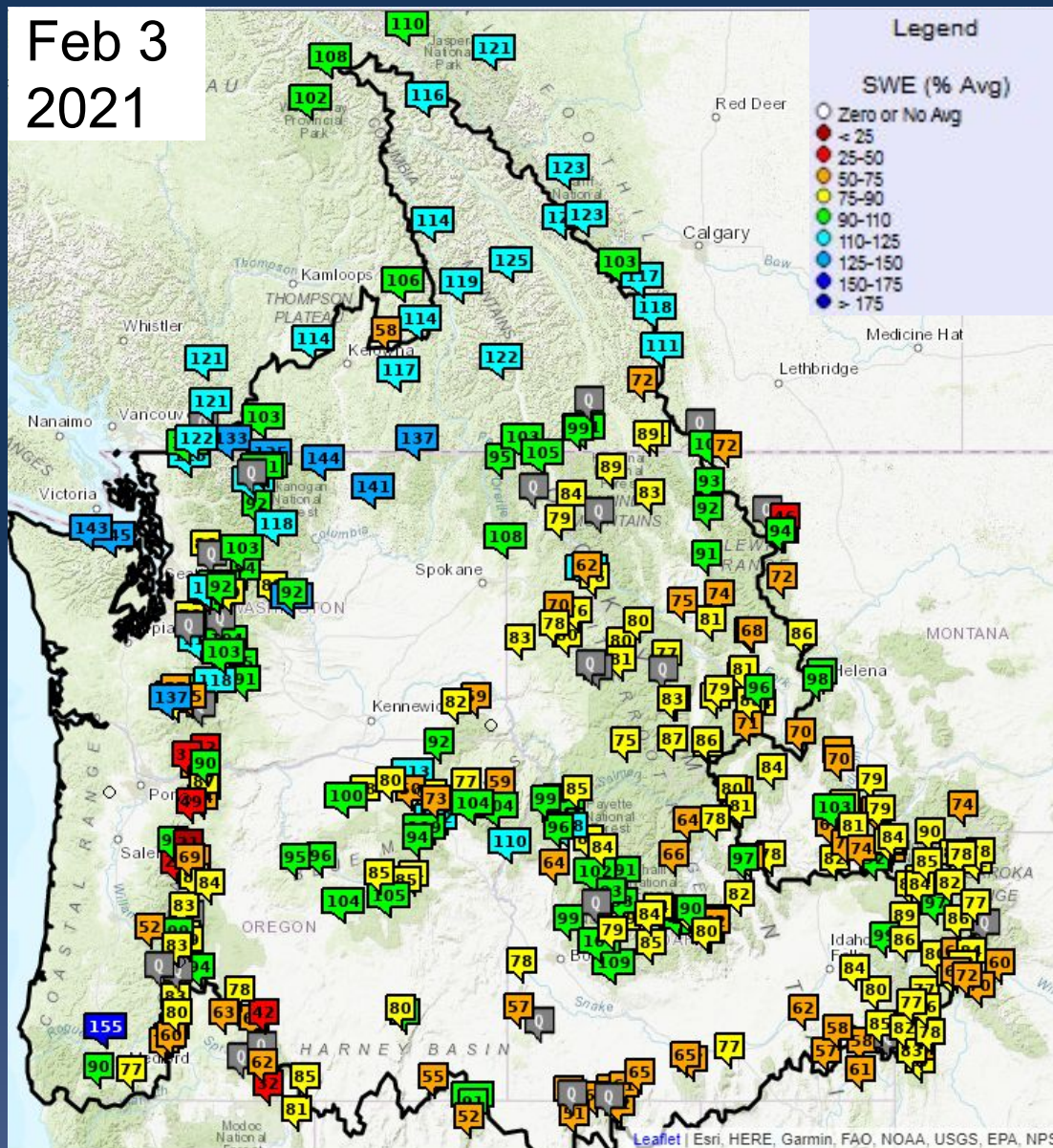


Snow data from NRCS, BC Hydro, and Alberta EP.





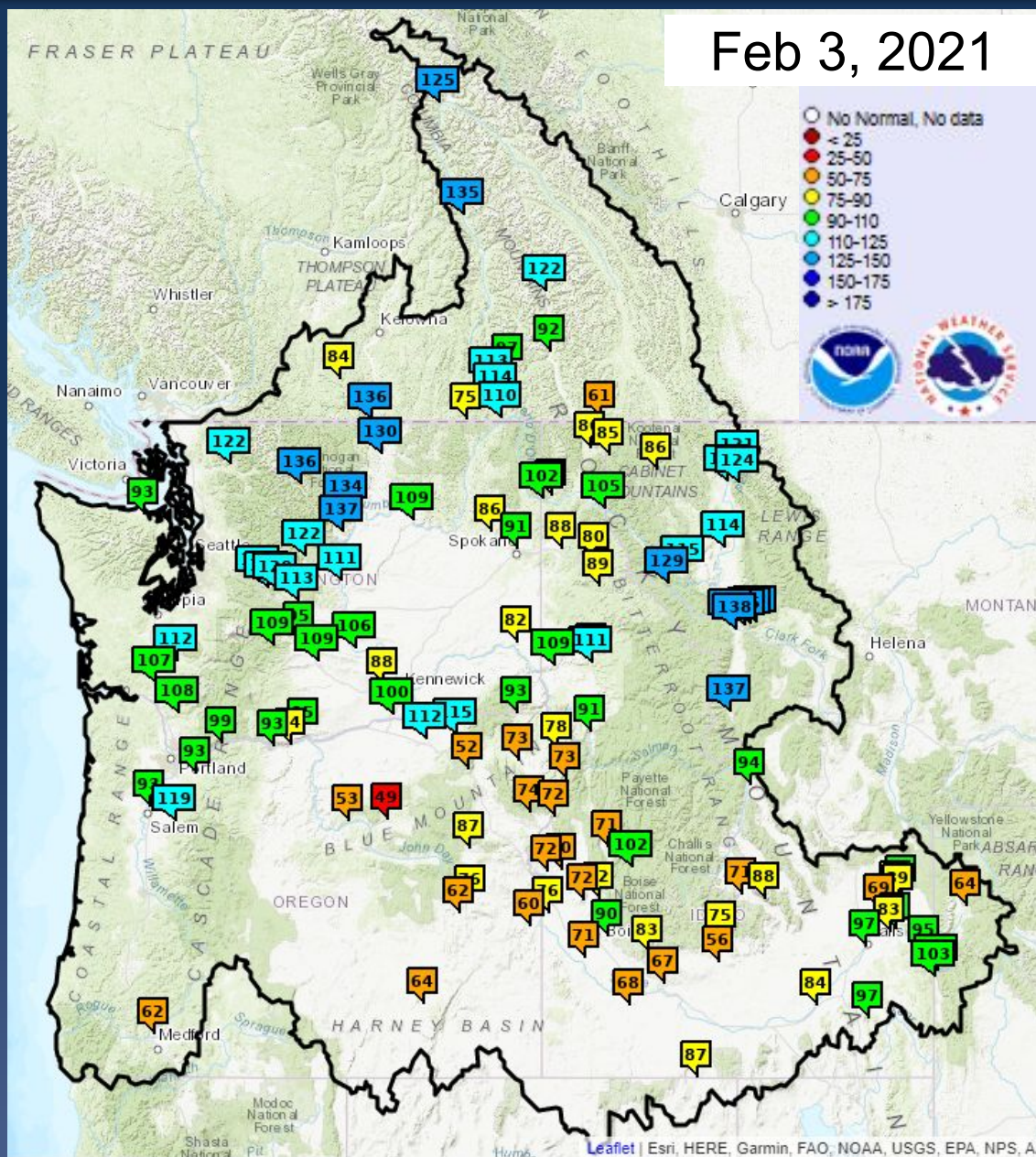
Snowpack and Seasonal Precipitation



Snow data from NRCS, BC Hydro, and Alberta EP.



YTD Adjusted Runoff - East



% Normal Runoff Oct 1- Feb 3

Upper Columbia Basin

Δ (since Jan 1)

Mica	125	-5
Duncan	122	+1
Queens Bay	92	+2
Libby	86	-1
Hungry Horse	124	+2
Grand Coulee	109	0

Snake River Basin

American Falls	84	+3
Lucky Peak	90	-6
Dworshak	98	+2
Lower Granite	82	-3

Lower Columbia Basin

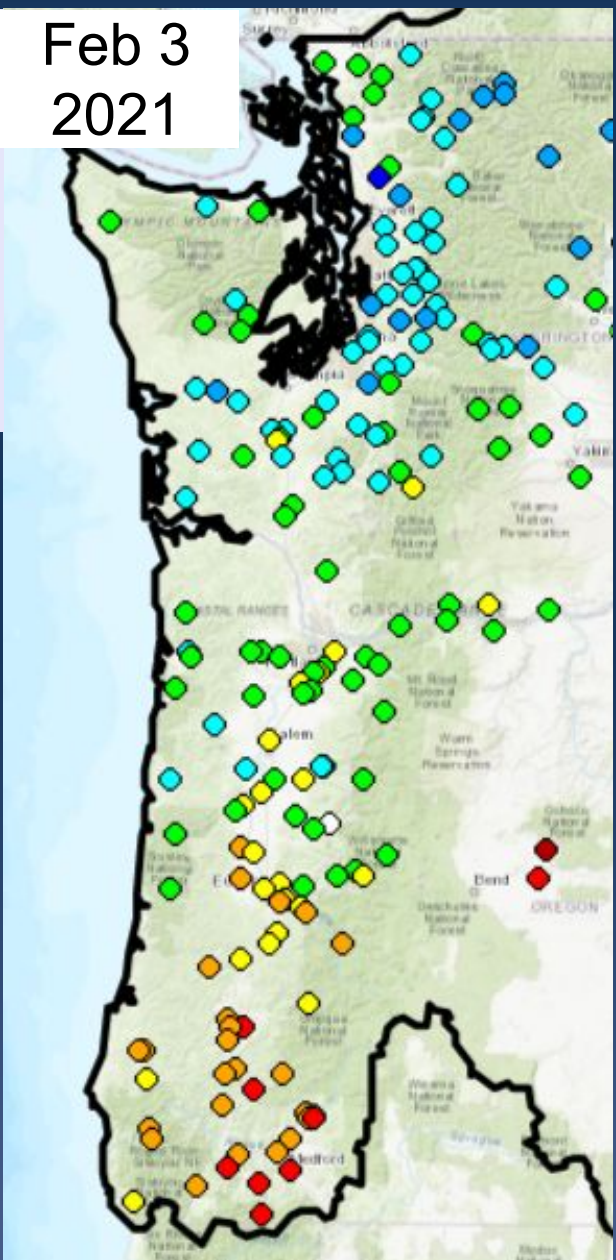
The Dalles	93	0
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YTD Adjusted Natural Runoff - West

Feb 3
2021

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



% Normal Runoff Oct 1- Feb 3

West Side

Δ (since Jan 1)

Skagit nr Concrete	122	+2
Dungeness nr Sequim	93	+16
Cowlitz Mayfield Res	110	+11
Willamette at Salem	81	+6
Rogue at Raygold	62	+2



Water Supply Forecast Briefing

Observed Conditions:

- Temperature
- Precipitation
- Snowpack
- Runoff

Model States

Future Conditions:

- 10 days of quantitative forecast precipitation (QPF)
- 10 days of quantitative forecast temperature (QTF)
- Historical climate forcings appended thereafter
- Water Supply Forecasts

Model Forcings

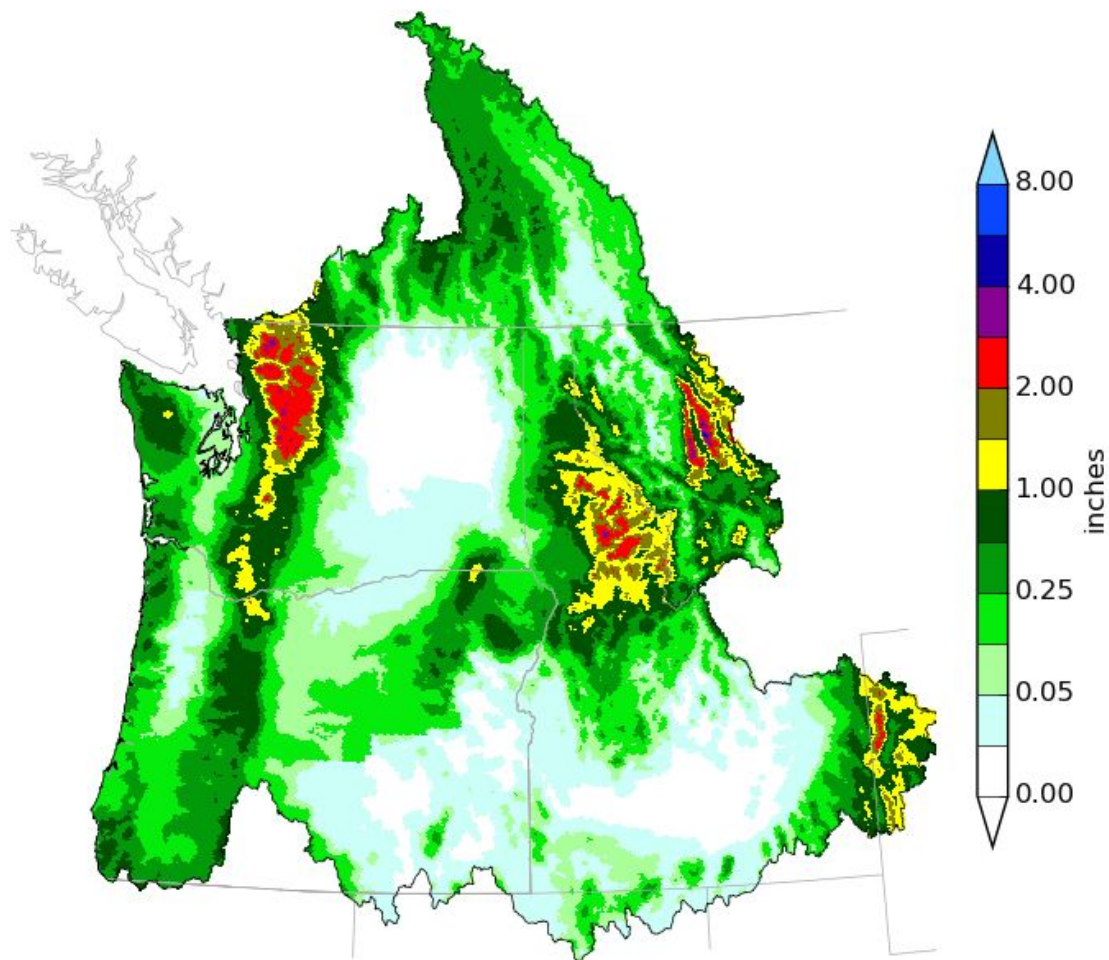
Model Inputs



Precipitation Forecast (Feb 4 -13)



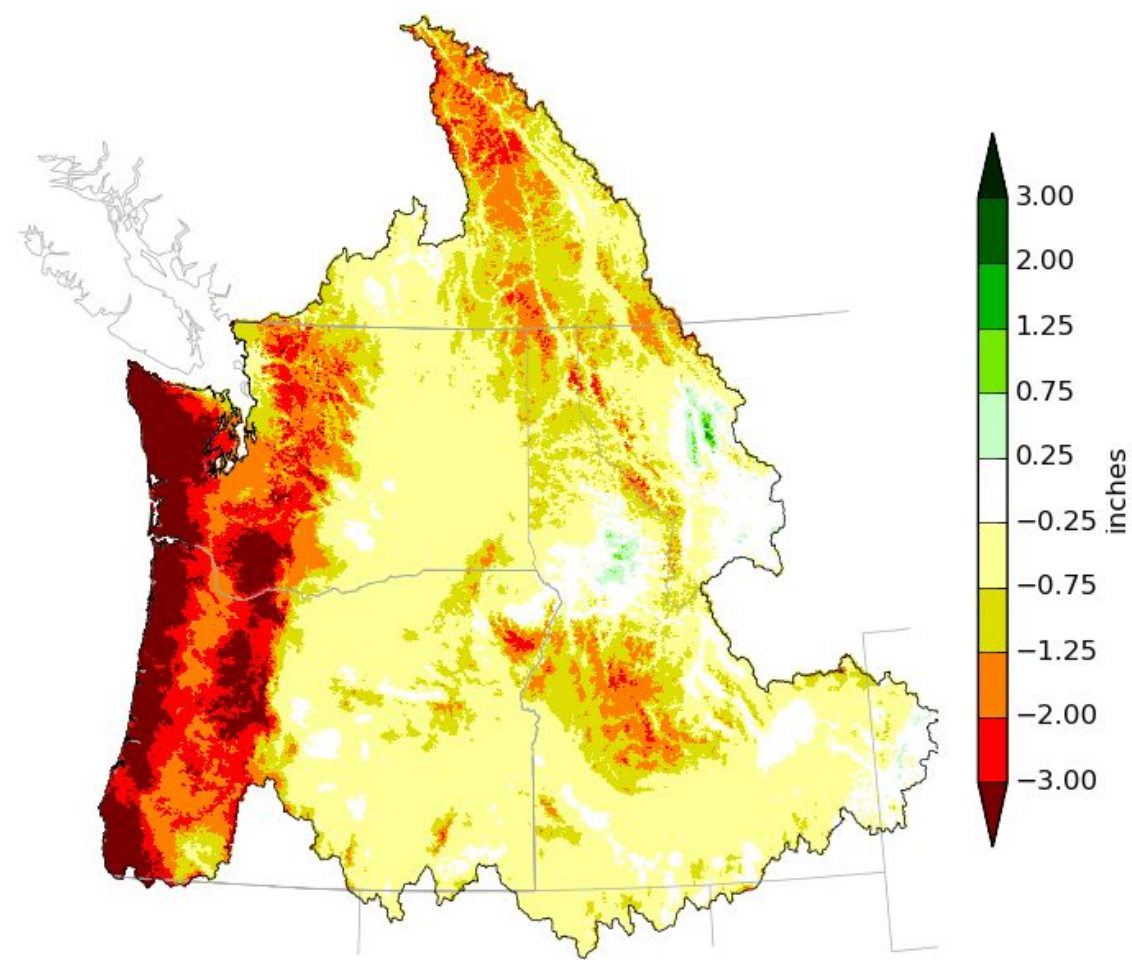
Northwest River Forecast Center
10 Day QPF, Ending 12Z, 02/13/21



Creation Time: Wed Feb 3 14:38:05 UTC 2021



Northwest River Forecast Center
10 Day QPF (Deviation from Climatology), Ending 12Z, 02/13/21



Creation Time: Wed Feb 3 14:39:25 UTC 2021



Δ (since Jan 1)

Mica	108	+1
Duncan	106	+4
Queens Bay	100	+2
Libby	98	0
Hungry Horse	97	+2
Grand Coulee	101	+1

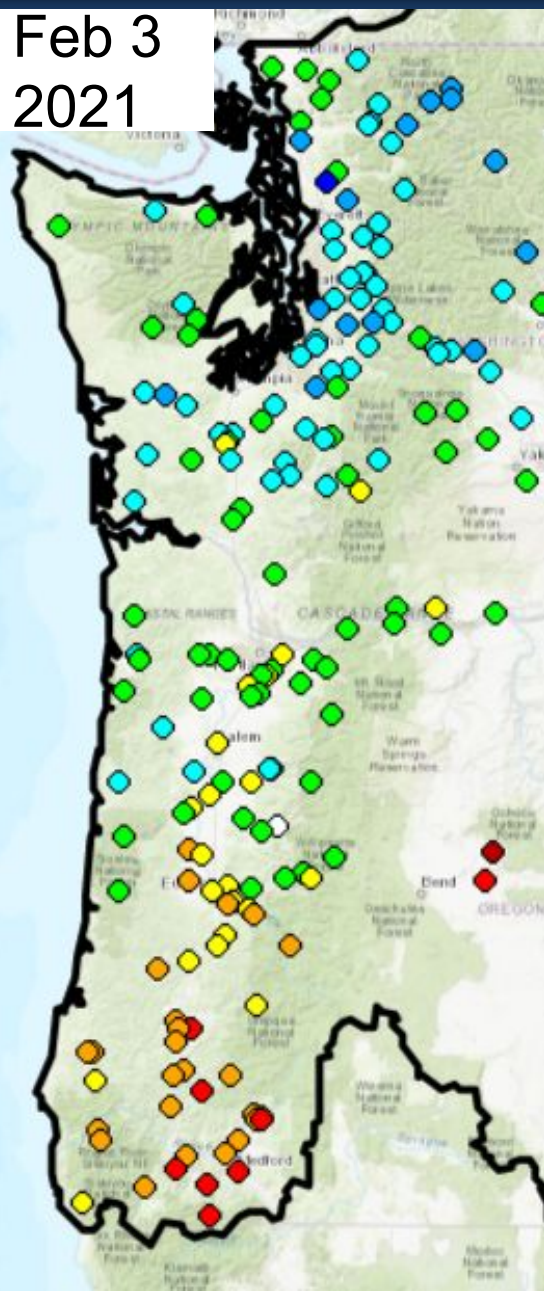
American Falls	68	-6
Lucky Peak	79	-7
Dworshak	90	-4
Lower Granite	82	-4

The Dalles	96	0
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ESP10 Natural Forecasts - West

Feb 3
2021



% Normal Apr-Sep Volume

West Side

Δ (since Jan 1)

Skagit nr Concrete	100	-3
Dungeness nr Sequim	107	+7
Cowlitz Mayfield Res	96	-2
Willamette at Salem	84	-4
Rogue at Raygold	83	-9



ESP10 Apr-Sep Water Supply Forecasts

COLUMBIA - GRAND COULEE DAM (GCDW1) Forecasts for Water Year 2021

Official Water Supply

ESP with 10 Days QPF Ensemble: 2021-02-03 Issued: 2021-02-03

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	52786	60853	101	68634	60110
APR-JUL	43532	51423	101	58015	51015
APR-AUG	49282	57326	101	65061	56763
JAN-SEP	61765	69252	101	79460	68694
JAN-JUL	53068	60668	102	67221	59599
OCT-SEP	70551	78038	102	88246	76824

Experimental Water Supply

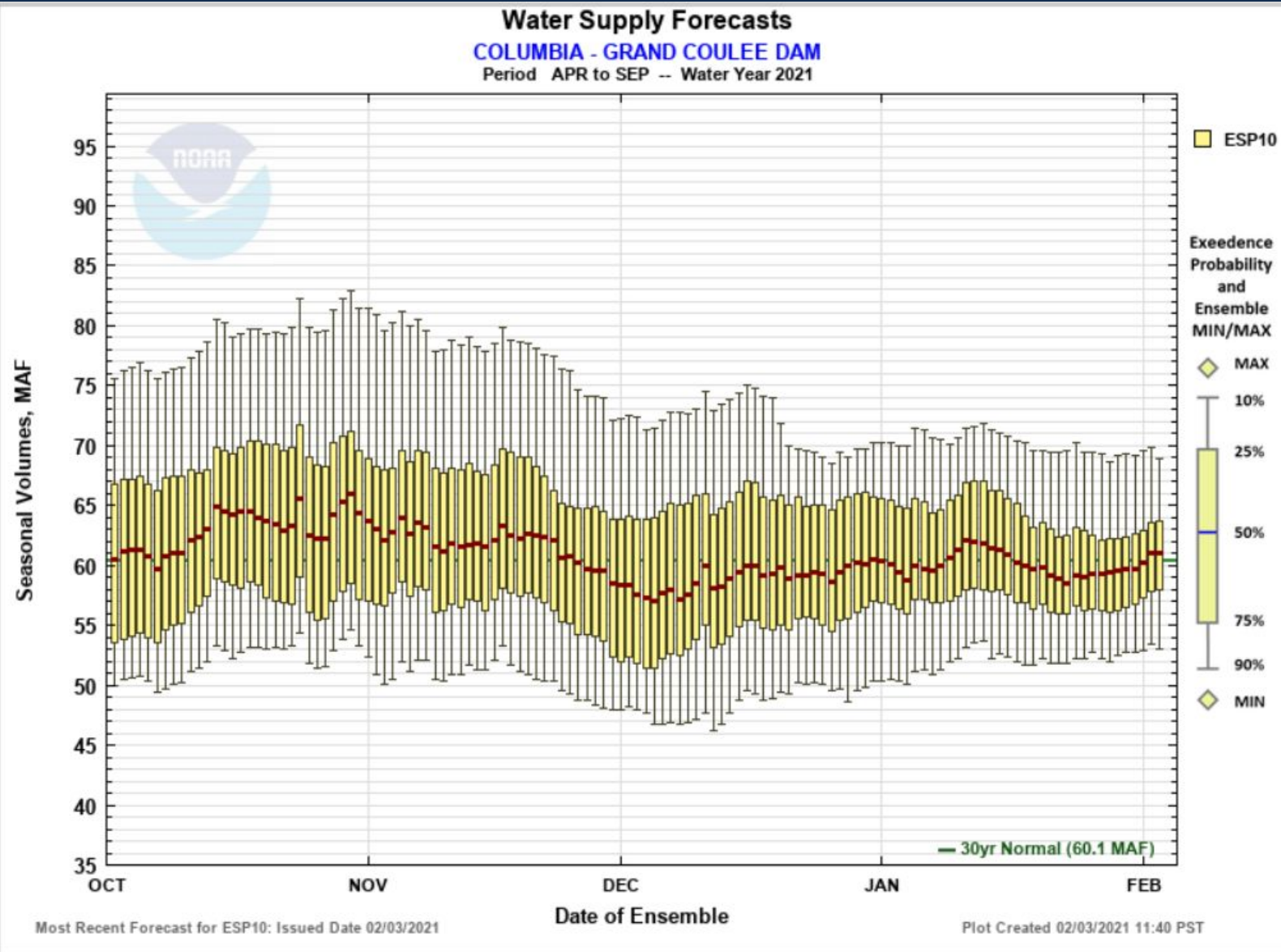
HEFS with 15 days EQPF Ensemble: 2021-02-03 Issued: 2021-02-03

APR-SEP	55574	62388	104	73034	60110
APR-JUL	46157	53182	104	60907	51015
APR-AUG	51459	59138	104	68568	56763
JAN-SEP	64257	71053	103	81175	68694
JAN-JUL	54763	61201	103	69038	59599
OCT-SEP	73043	79839	104	89961	76824

Reference

ESP with 0 Days QPF Ensemble: 2021-02-03 Issued: 2021-02-03

APR-SEP	54780	61793	103	72912	60110
APR-JUL	45431	53098	104	60739	51015
APR-AUG	50721	58564	103	68446	56763
JAN-SEP	63561	71214	104	81426	68694
JAN-JUL	54159	61495	103	69210	59599
OCT-SEP	72347	80000	104	90212	76824



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



ESP10 Apr-Sep Water Supply Forecasts

SNAKE - LOWER GRANITE DAM (LGDW1) Forecasts for Water Year 2021

Official Water Supply

ESP with 10 Days QPF Ensemble: 2021-02-03 Issued: 2021-02-03

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	14395	18222	82	22000	22279
APR-JUL	12414	15990	81	19184	19848
APR-AUG	13371	17118	81	20688	21091
JAN-SEP	20021	23942	80	28404	29872
JAN-JUL	17987	21686	79	26050	27440
OCT-SEP	24118	28039	81	32501	34667

Experimental Water Supply

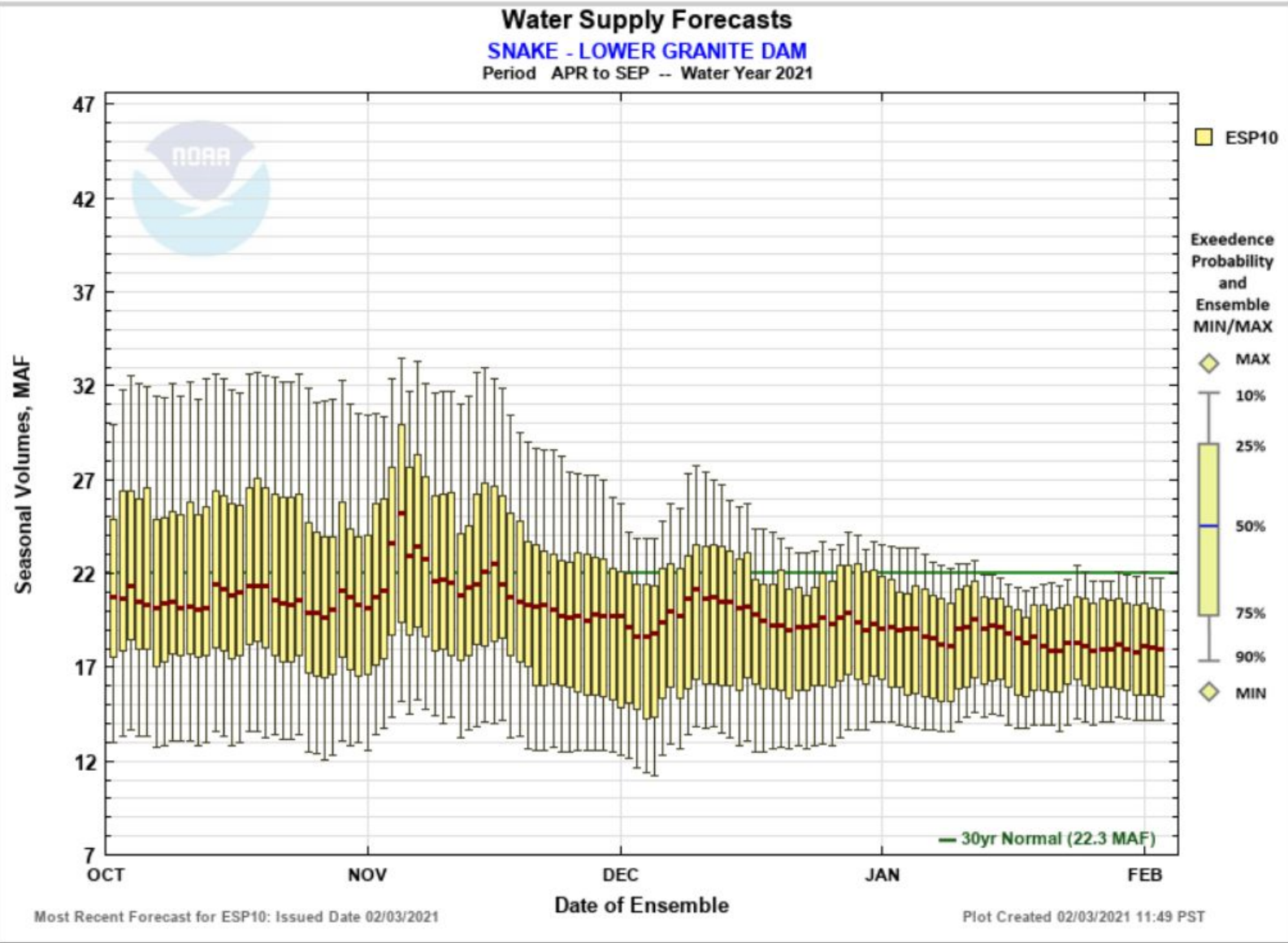
HEFS with 15 days EQPF Ensemble: 2021-02-03 Issued: 2021-02-03

APR-SEP	14644	18562	83	22443	22279
APR-JUL	12681	16319	82	19911	19848
APR-AUG	13637	17477	83	21170	21091
JAN-SEP	20125	24470	82	29044	29872
JAN-JUL	18208	22215	81	26628	27440
OCT-SEP	24222	28567	82	33142	34667

Reference

ESP with 0 Days QPF Ensemble: 2021-02-03 Issued: 2021-02-03

APR-SEP	14148	18174	82	22075	22279
APR-JUL	12216	15899	80	19422	19848
APR-AUG	13162	17022	81	20881	21091
JAN-SEP	19817	24034	80	28919	29872
JAN-JUL	17858	21798	79	26424	27440
OCT-SEP	23914	28131	81	33016	34667



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



ESP10 Apr-Sep Water Supply Forecasts

COLUMBIA - THE DALLES DAM (TDAO3) Forecasts for Water Year 2021

Official Water Supply

ESP with 10 Days QPF Ensemble: 2021-02-03 Issued: 2021-02-03

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	76043	88671	96	100714	92704
APR-JUL	63465	74690	94	86635	79855
APR-AUG	70809	83271	95	94162	87532
JAN-SEP	92224	105920	93	124073	114216
JAN-JUL	80703	93176	92	107979	101368
OCT-SEP	107394	121089	93	139242	130518

Experimental Water Supply

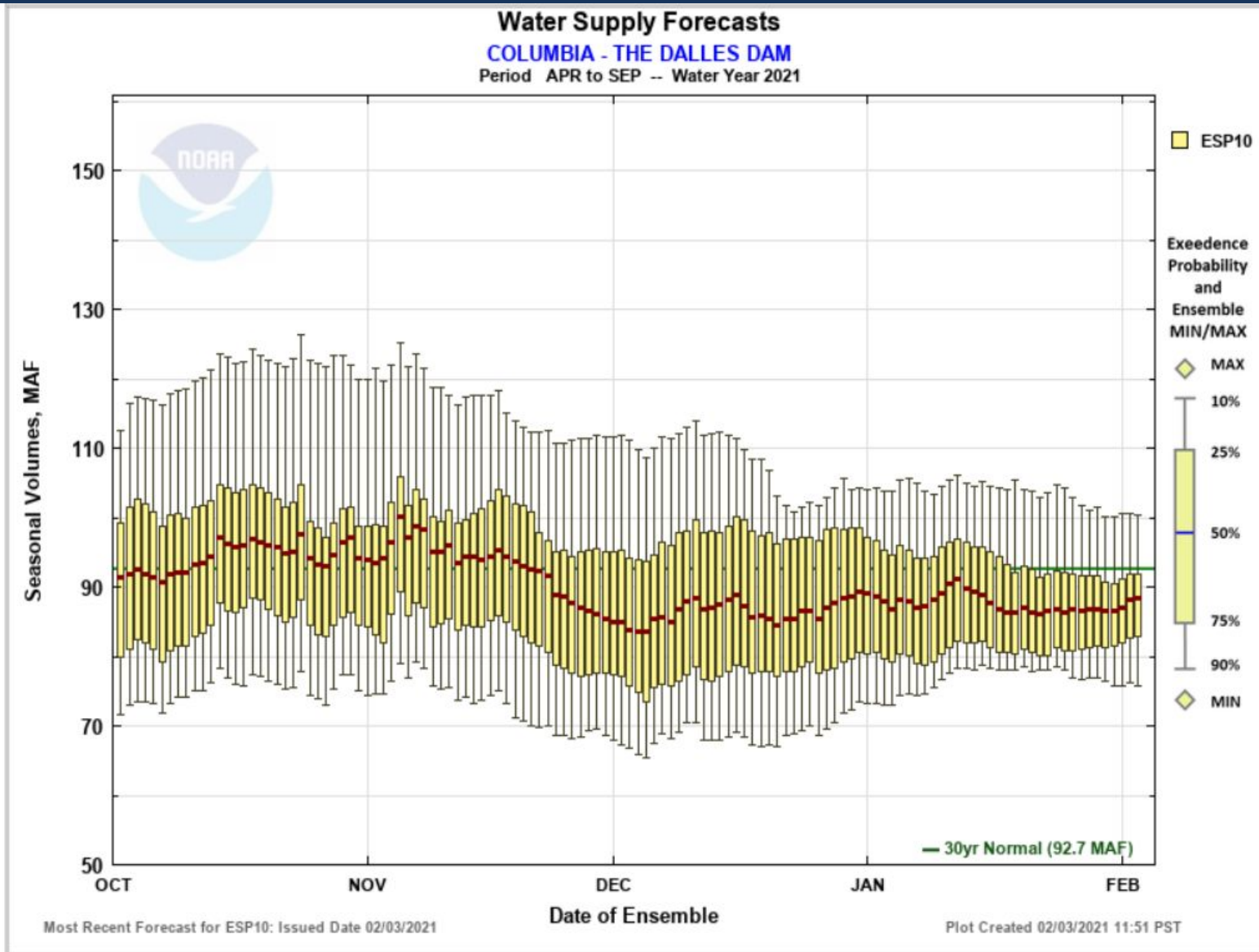
HEFS with 15 days EQPF Ensemble: 2021-02-03 Issued: 2021-02-03

APR-SEP	82375	90852	98	108524	92704
APR-JUL	69829	76856	96	93600	79855
APR-AUG	77140	85724	98	102938	87532
JAN-SEP	98882	108525	95	130540	114216
JAN-JUL	86353	95692	94	114322	101368
OCT-SEP	114052	123694	95	145709	130518

Reference

ESP with 0 Days QPF Ensemble: 2021-02-03 Issued: 2021-02-03

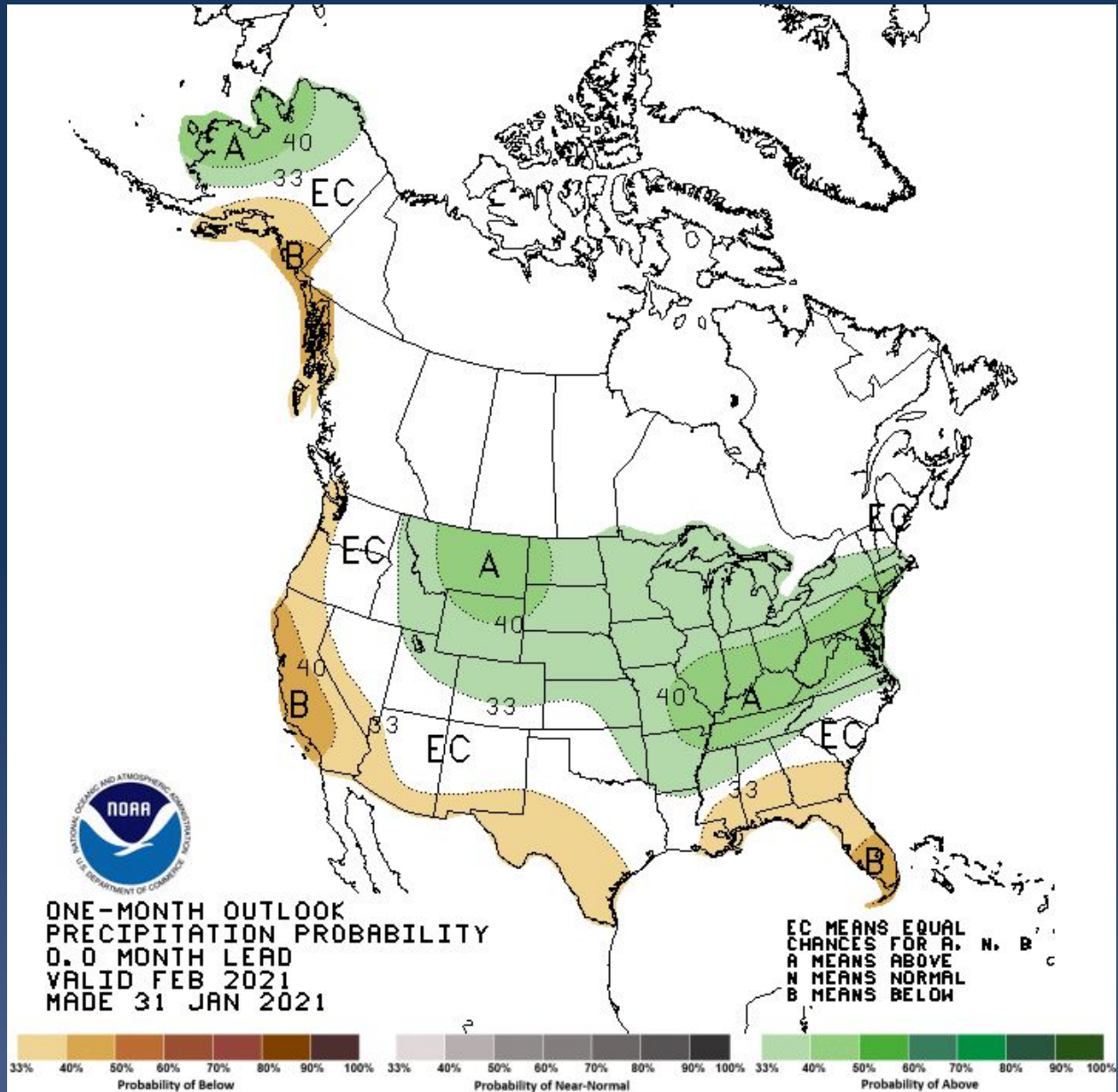
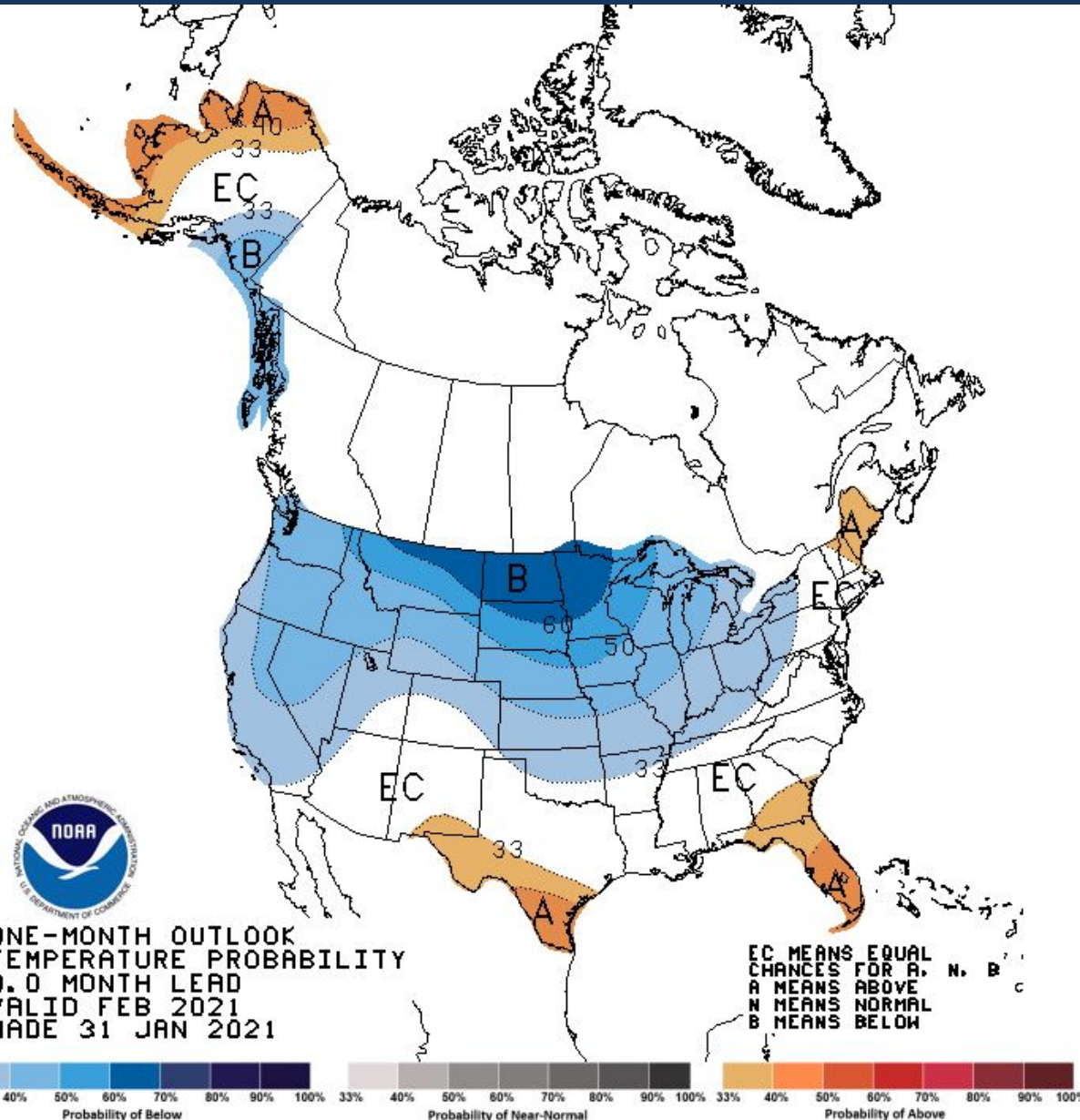
APR-SEP	81641	89622	97	108037	92704
APR-JUL	68905	75529	95	92107	79855
APR-AUG	76161	84614	97	101408	87532
JAN-SEP	99355	108940	95	129697	114216
JAN-JUL	86048	95566	94	112694	101368
OCT-SEP	114525	124110	95	144866	130518



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



CPC One-Month Outlook



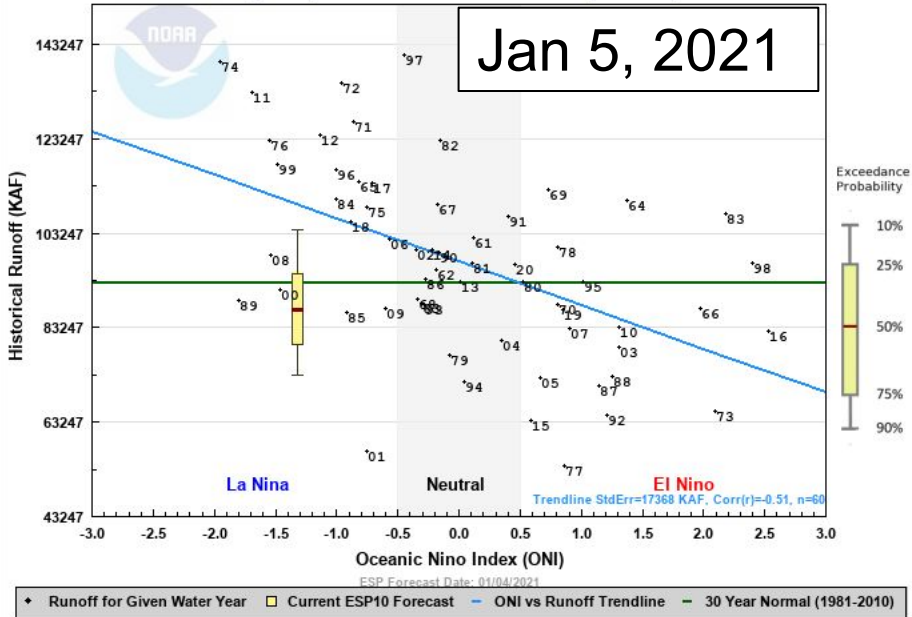


Oceanic Nino Index vs Runoff

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

(TDAO3) COLUMBIA - THE DALLES DAM (1961-2020)

Jan 5, 2021



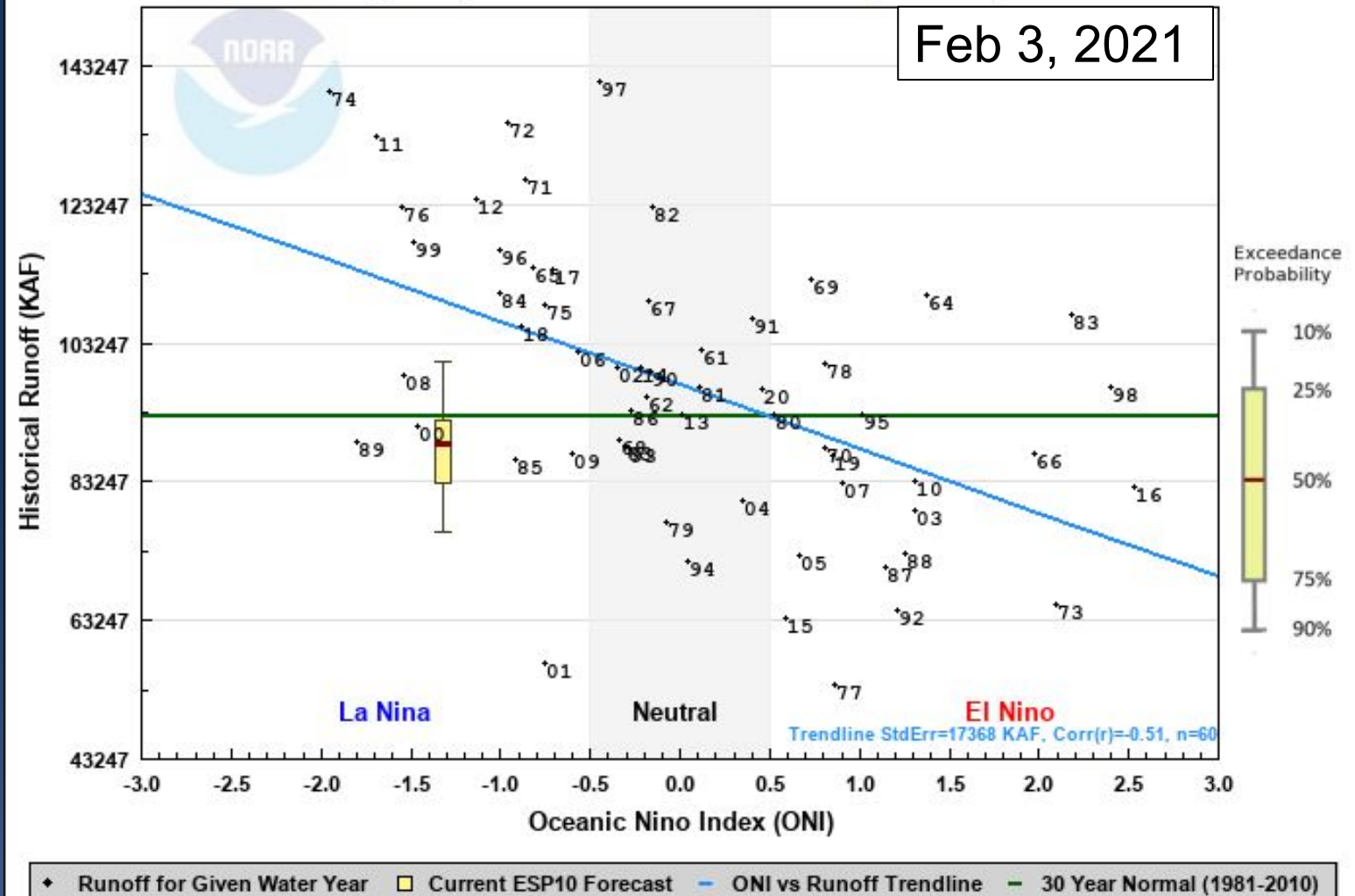
ONI Index Date: 11/01/2020

Created: 01/05/2021 05:06 PST

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

(TDAO3) COLUMBIA - THE DALLES DAM (1961-2020)

Feb 3, 2021



ONI Index Date: 11/01/2020

ESP Forecast Date: 02/03/2021

Created: 02/03/2021 11:54 PST



Take Home Messages

Water year precipitation thus far

- Near normal in the north
- Below normal in south

Snowpack

- Melt in lower elevations, building at higher elevation
- Percent normal higher in the north and west
- Percent normal lower in the south and east

Water supply forecasts for Apr-Sep

- Near normal in the north
- Below normal in south

Additional Guidance

- CPC calling for below normal temps but mixed precip
- La Nina weakly correlated to higher runoff



WY2021 Schedule for Live Water Supply Briefings

Mar	Apr	May
4	1	6
All presentations held at 10:00 am PST/PDT unless noted otherwise		

Telephone Conference Call Number
(same for each month's brief):
(415) 930 - 5321

Pass Code :
524-795-021#



Links to NWRFC Water Supply Products

Water supply forecasts:

<https://www.nwrfc.noaa.gov/ws/index.html>

Snow pack:

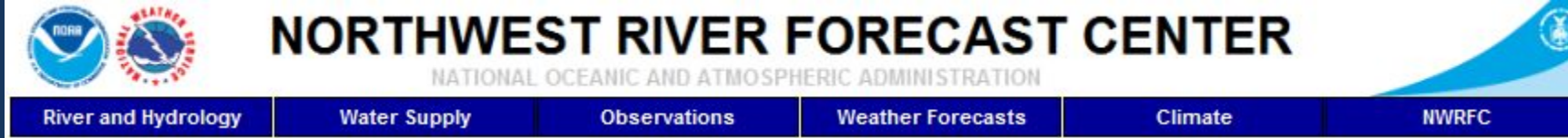
<https://www.nwrfc.noaa.gov/snow/index.html>

10 day forecast:

https://www.nwrfc.noaa.gov/weather/10_day.cgi

Precip forecast trend tool:

<https://www.nwrfc.noaa.gov/weather/trend/>



Questions?

In order to ask questions using your phone, you will need to enter the **AUDIO PIN** followed by the **#** sign using your phone keypad. The **AUDIO PIN** was provided when you logged into the webinar. If you need to enter the PIN after you are connected, try **#PIN#**

You will be muted until the presenter unmutes you. If you have a question, use the 'Raise Hand' function to let us know to unmute your phone.

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