STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

PO Box 47600, Olympia, WA 98504-7600 • 360-407-6000

Water Supply Availability Committee (WSAC)

Wednesday, February 28, 2024, 10 a.m. – 12:00 p.m.
Zoom: Click to join. (Call-in: 253.205.0468; Meeting ID: 879 2468 3050; Passcode: 313197)

Meeting Objectives – February:

- Share pertinent info and assess water supply conditions in Washington.
- Discuss if WSAC advises Ecology that the hydrologic threshold for drought conditions has been met or is forecasted to be met for additional geographic areas beyond the areas in the existing drought declaration.

Agenda

Time	Agenda item	Responsible
10:00 a.m.	Welcome and agenda review Drought processes and general conditions	Caroline Mellor, Ecology
10:10 a.m.	Regional Climate Setting/ ENSO	Karin Bumbaco & Nick Bond, OWSC
10:25 a.m.	Water Supply Forecasts	Amy Burke, NWRFC
10:40 a.m.	Mountain Conditions	Matt Warbritton, NRCS
10:50 a.m.	Streamflow and Groundwater	Nick Sutfin, USGS
11:05 a.m.	Yakima Project	Chris Lynch, BOR
11:15 a.m.	BREAK (5-minutes)	
11:20 a.m.	Discussion: Does WSAC advise Ecology that the hydrologic threshold for drought conditions has been or is forecasted to be met for additional geographic areas?	Presenters / Committee members
11:40 a.m.	Discussion: What conditions and concerns are folks seeing on the ground?	All participants Caroline Mellor facilitates
11:55 a.m.	Wrap-up and next steps	Caroline Mellor, Ecology

Committee Purpose

WSAC provides an important consultative and advisory role to Ecology related to current and forecasted water supply conditions and whether the hydrologic drought threshold has been

met or is forecasted to be met: seventy-five percent of normal water supply within a geographic area (RCW 43.83B.405 and WAC 173-166-050).

Resources

WSAC Website: Water Supply Availability Committee - WA State Department of Ecology
Ecology Drought homepage: Drought response - WA State Department of Ecology

Contact

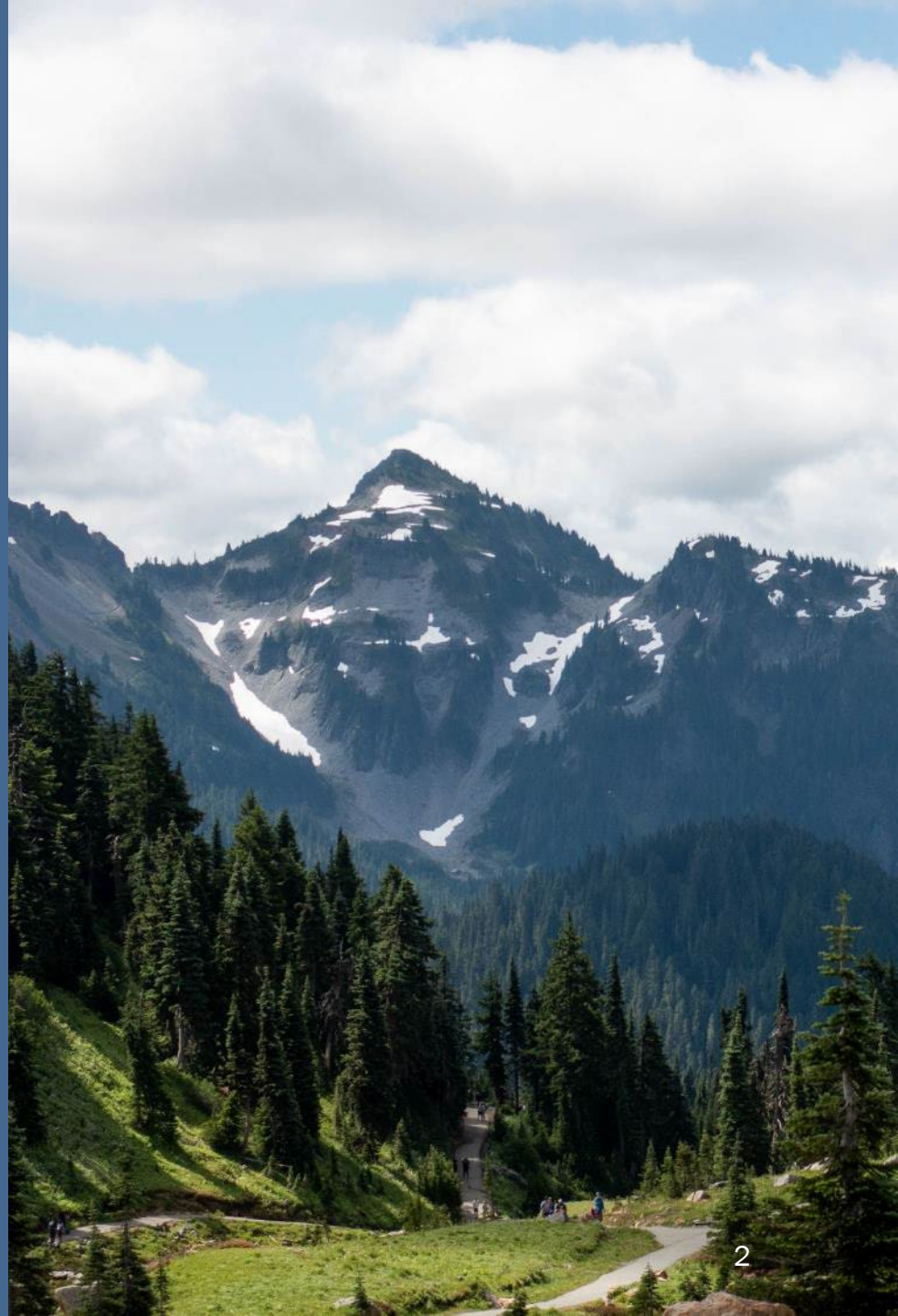
Committee Chair: Caroline Mellor, Statewide Drought Lead, WA Department of Ecology
Caroline.Mellor@ecy.wa.gov | (c) 360.628.4666

DEPARTMENT OF ECOLOGY
State of Washington

Water Supply Availability Committee

February 28, 2024

Recording!



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10:50 a.m.	Streamflow and Groundwater (not present)	Nick Sutfin, USGS
11:05 a.m.	Yakima Project	Chris Lynch, BOR
11:15 a.m.	BREAK (5-minute)	
11:20 a.m.	Discussion: Has the hydrologic threshold for drought conditions been met or is forecasted to be met for additional geographic areas?	All presenters/ Committee members
11:40 a.m.	Discussion: What conditions and concerns do folks see on the ground?	All participants
11:55 a.m.	Wrap-up and next steps	Caroline Mellor, Ecology

Committee Role

WSAC provides an important consultative and advisory role to Ecology related to:

- Current and forecasted water supply conditions;
- Whether the hydrologic drought threshold has been met or is likely to be met.

Meeting Objectives

- Share pertinent info and assess water supply conditions in Washington.

- Discuss if the hydrologic threshold for drought conditions has been met or is forecasted to be met for additional geographic areas beyond the areas in the existing drought declaration.

Drought Conditions

Drought conditions - two requirements:

1. **Hydrologic threshold** – An area is receiving, or is projected to receive, less than seventy-five percent of normal water supply.
2. **Hardship threshold** – Water users and the environment are or are expected to experience undue hardship.

This Committee advises on the hydrologic threshold.

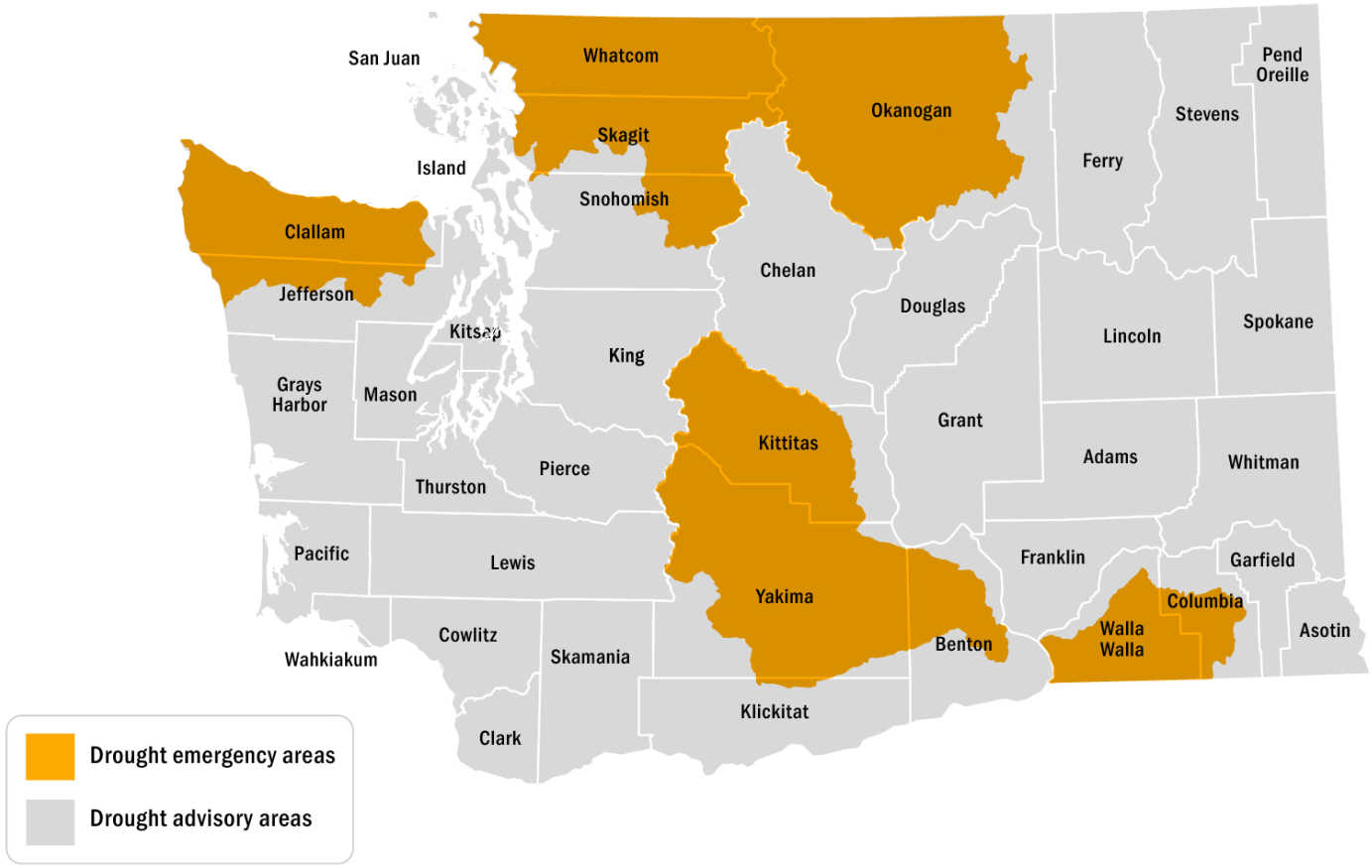
See: RCW 43.83B.405 and WAC 173-166-050.

Existing Drought Declaration Status

July 2023, Ecology declared a drought emergency for 12 watersheds in parts of Skagit, Whatcom, Clallam, Kittitas, Yakima, Snohomish, Jefferson, Walla Walla, Columbia, Okanogan, Benton, and Klickitat counties.

This is currently in effect through June 30, 2024.

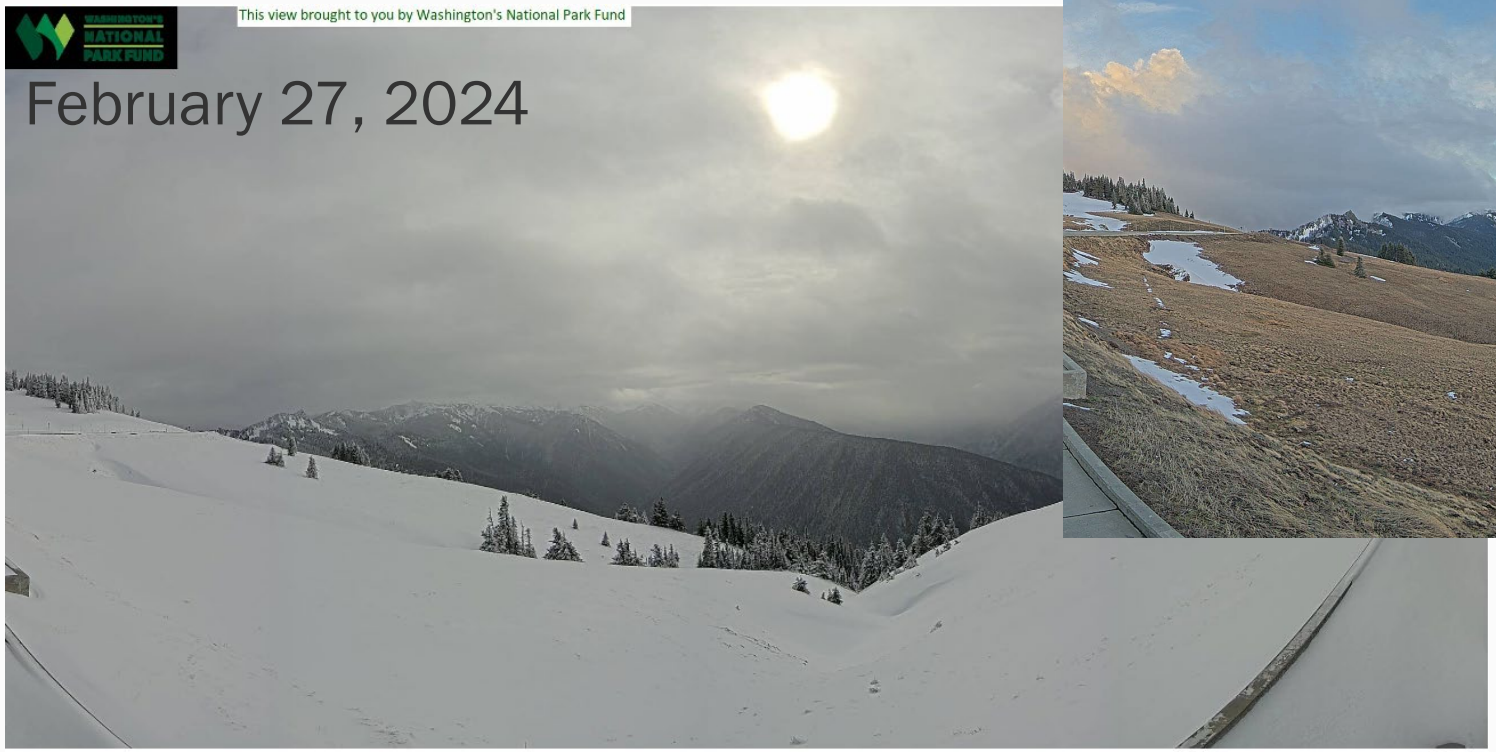
Washington Drought Declaration Areas



More info: https://ecology.wa.gov/water-shorelines/water-supply/water-availability/statewide-conditions/drought-2023

Drought conditions continue … and worsen in many areas

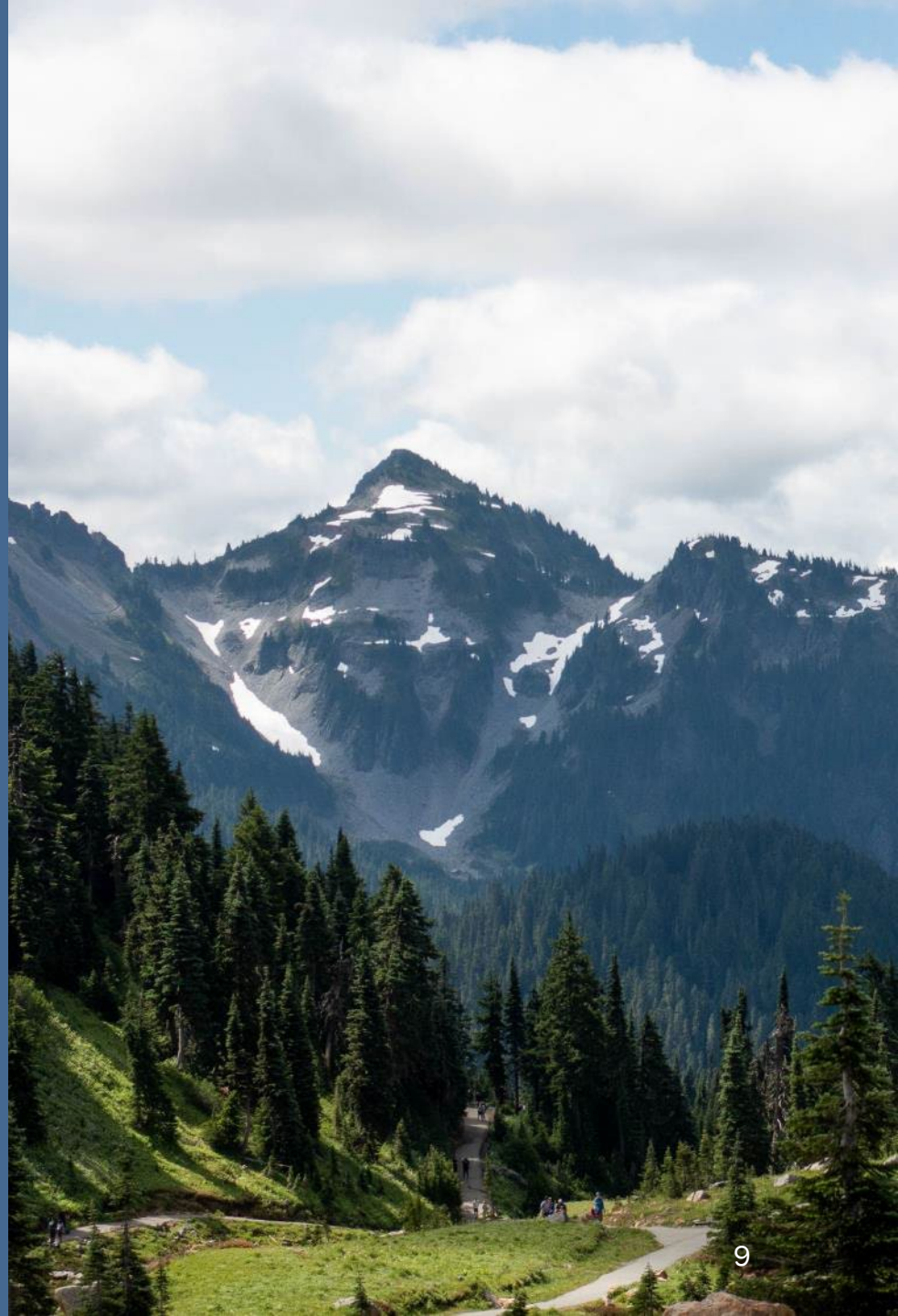
Example: Hurricane Ridge Webcam
Olympic National Park



With current deficits, even if we were to have above average precipitation, basin SWE is expected to be below normal.

Source: Hurricane Ridge Webcam (U.S. National Park Service) (nps.gov)

Presenters



Discussion Question

For Presenters/ Committee members:

Has the hydrologic threshold for drought conditions been met, or is forecasted to be met, for additional geographic areas, beyond the areas in the existing drought declaration?

Existing Drought Declaration Status

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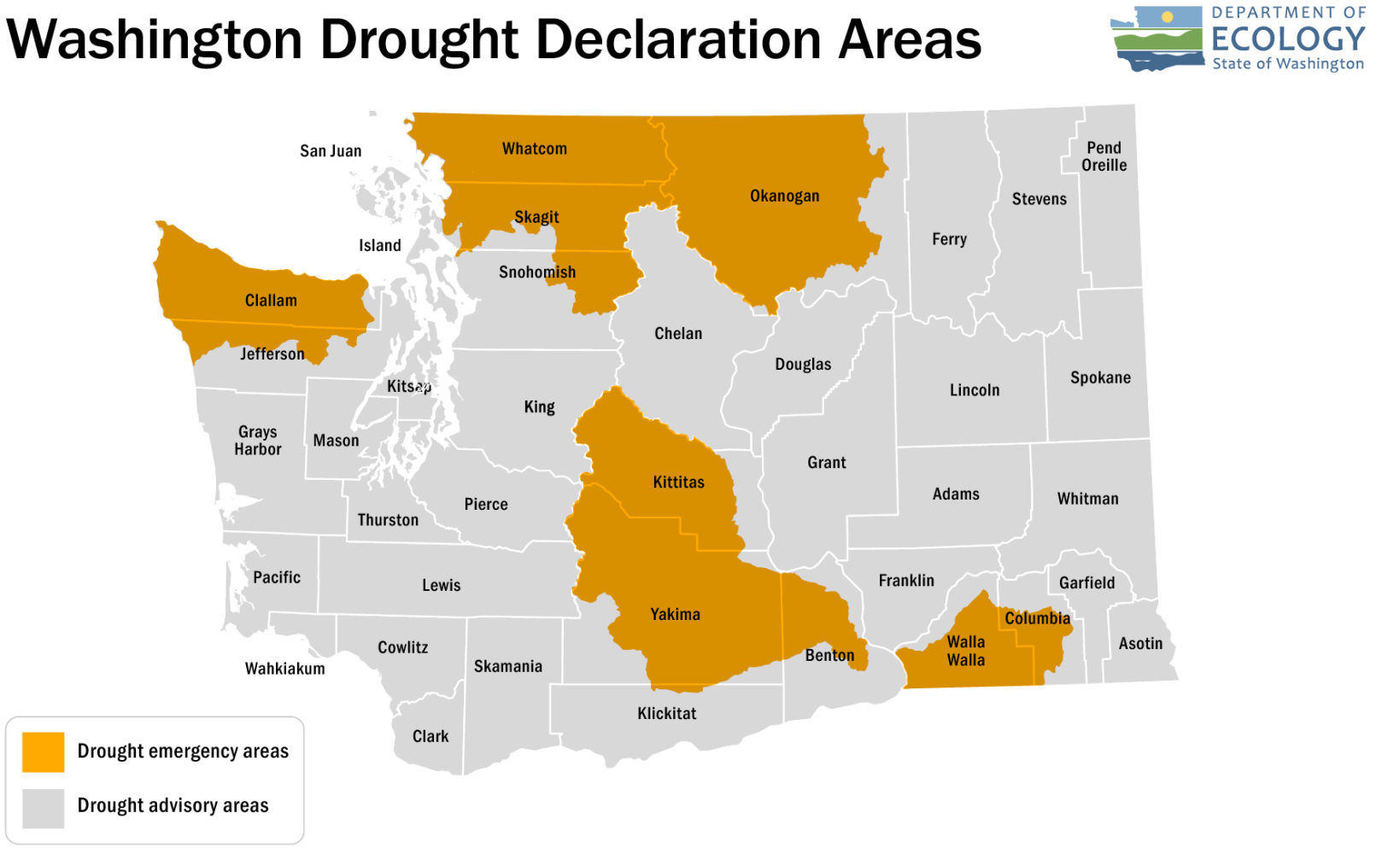


More info: https://ecology.wa.gov/water-shorelines/water-supply/water-availability/statewide-conditions/drought-2023

Discussion Question

For all meeting attendees:

What conditions and water supply concerns are folks seeing on the ground?

Next Steps

- Communications – WSAC website updated:
  - Meeting materials
  - Presentation recording
- Next meeting
  - Tentatively March 27, 2024
- Ecology is closing monitoring conditions and coordinating with partners between meetings.

Thank you

Contact: Committee Chair (acting)

Caroline Mellor

Caroline.Mellor@ecy.wa.gov

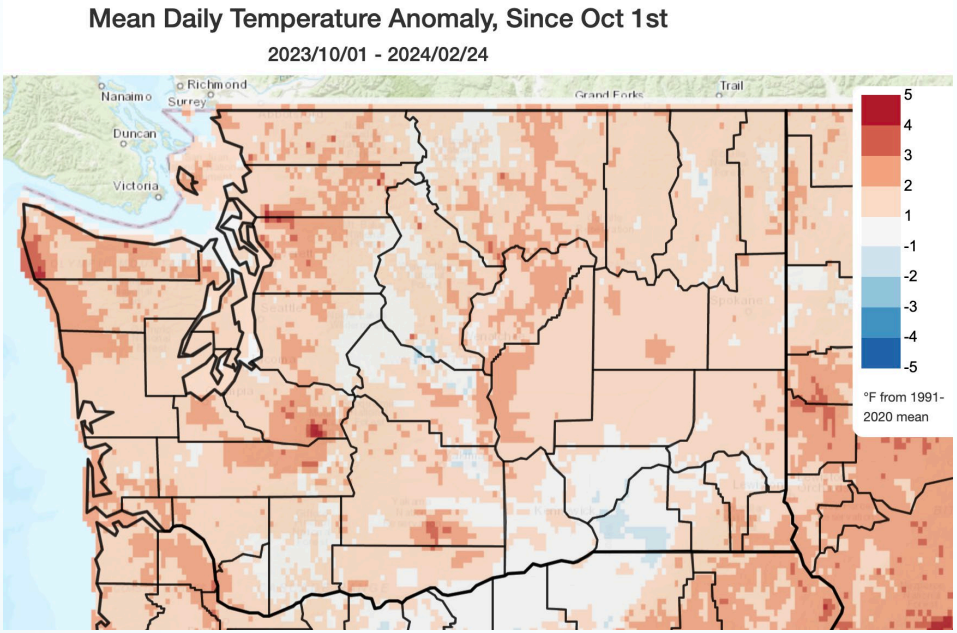
Office of the Washington State Climatologist

Current Conditions and Seasonal Outlook

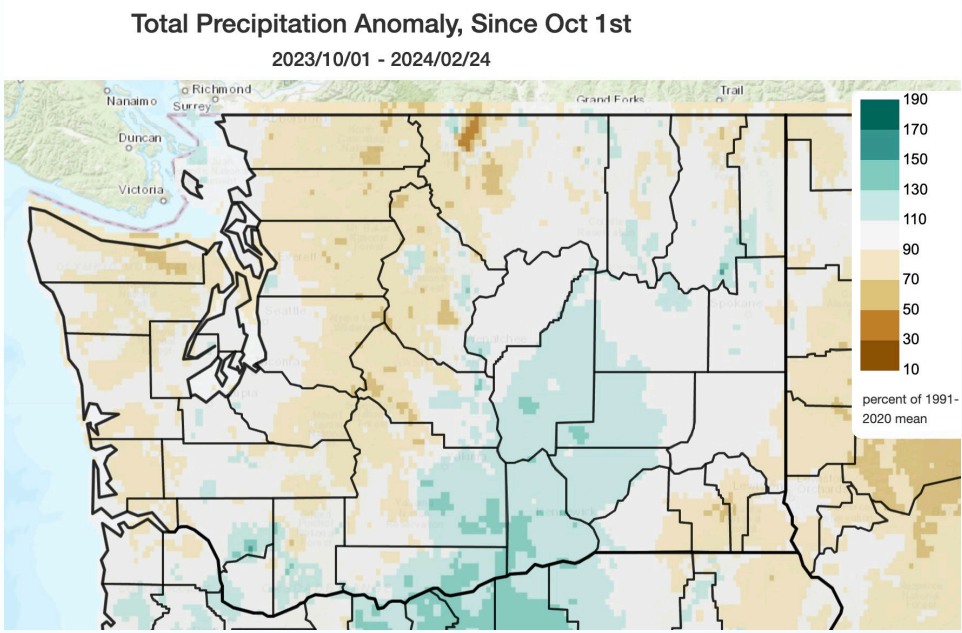
Karin Bumbaco & Nick Bond
Office of the Washington State Climatologist
Climate Impacts Group
University of Washington
28 February 2024

Water Year 2024

Temperature



Precipitation



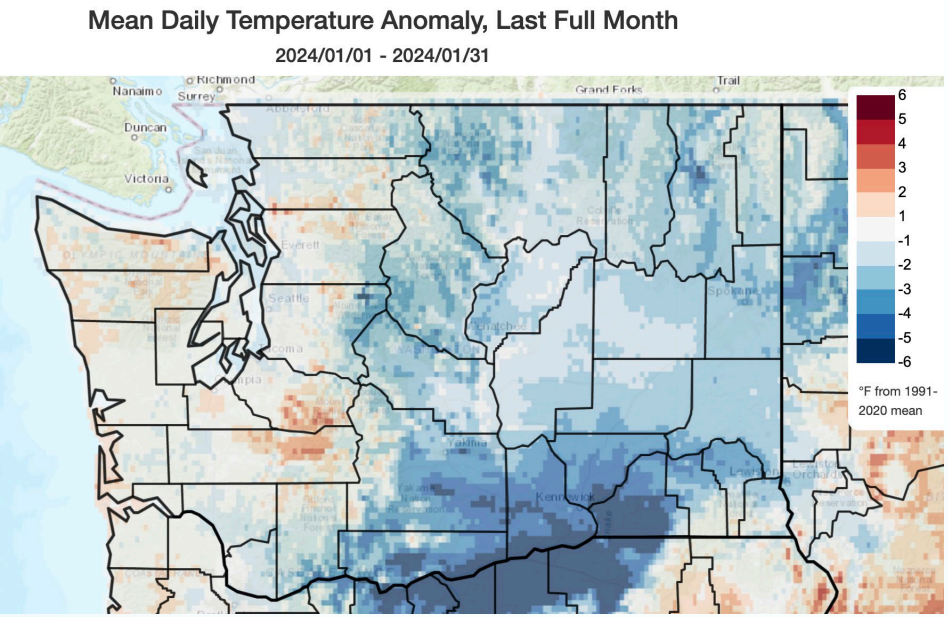
Climate Toolbox

- Averaged statewide, Oct-Jan ties as the 18th warmest (+1.4°F) start to the water year on record*
- Averaged statewide, Oct-Jan precipitation was 92% of normal (-1.83")

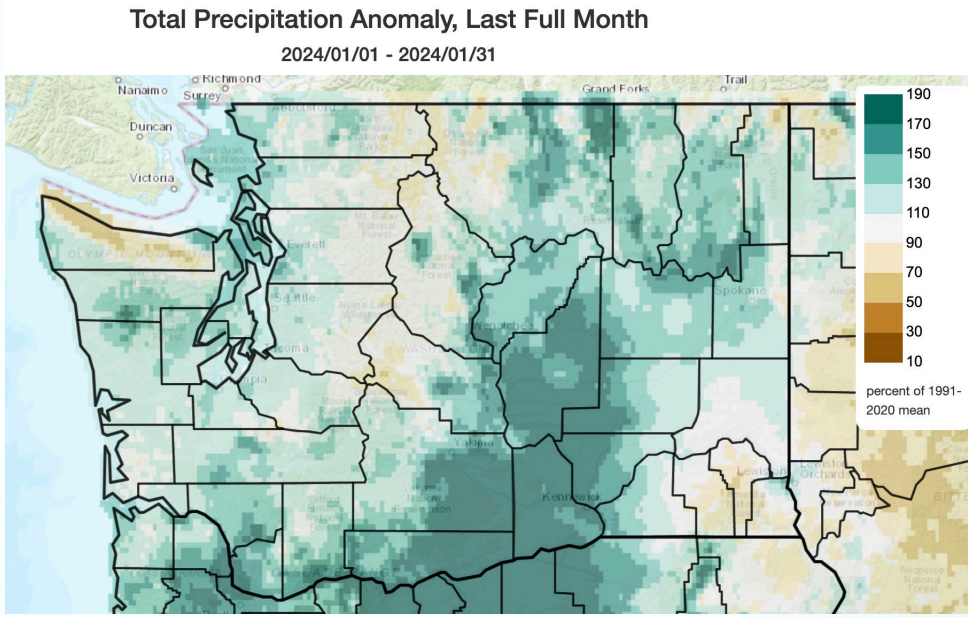
*Records since 1895; 1991-2020 normal

January 2024

Temperature



Precipitation



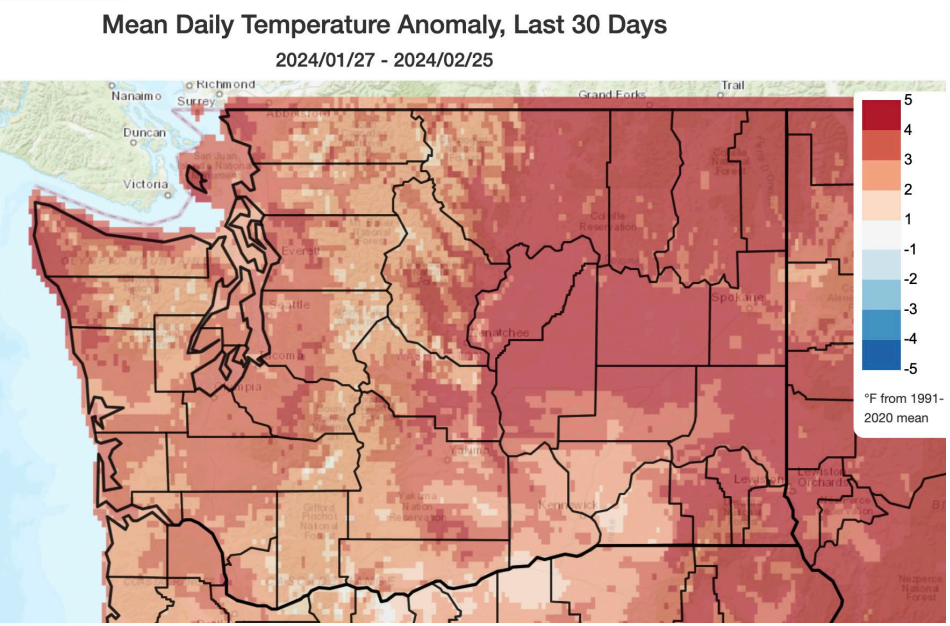
Climate Toolbox

- Averaged statewide, January was the 62nd coldest (-2.2°F) on record*
- Averaged statewide, Jan precipitation was near-normal (103% of normal; +0.19”)

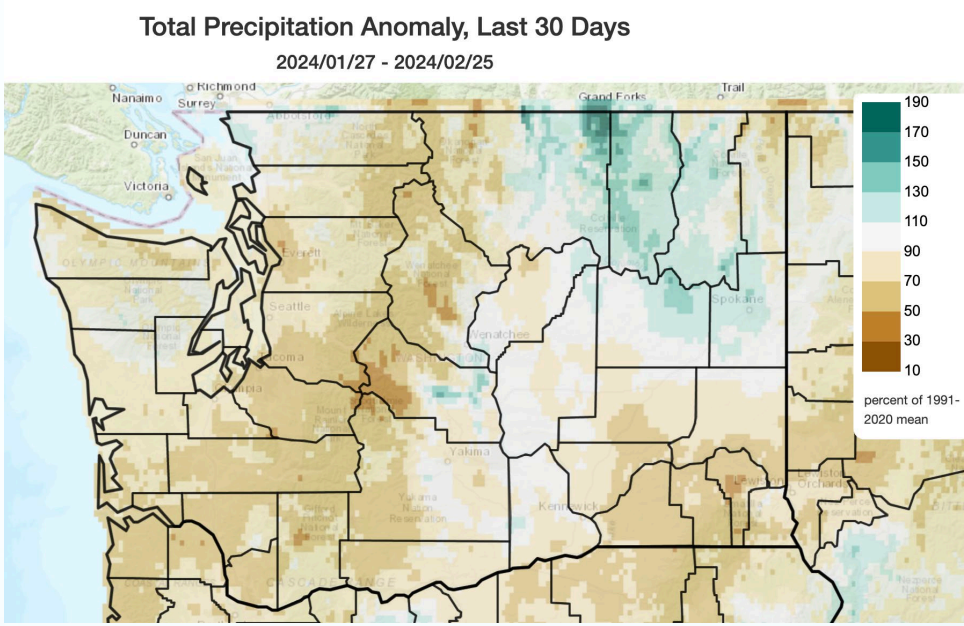
*Records since 1895; 1991-2020 normal

February 2024

Temperature

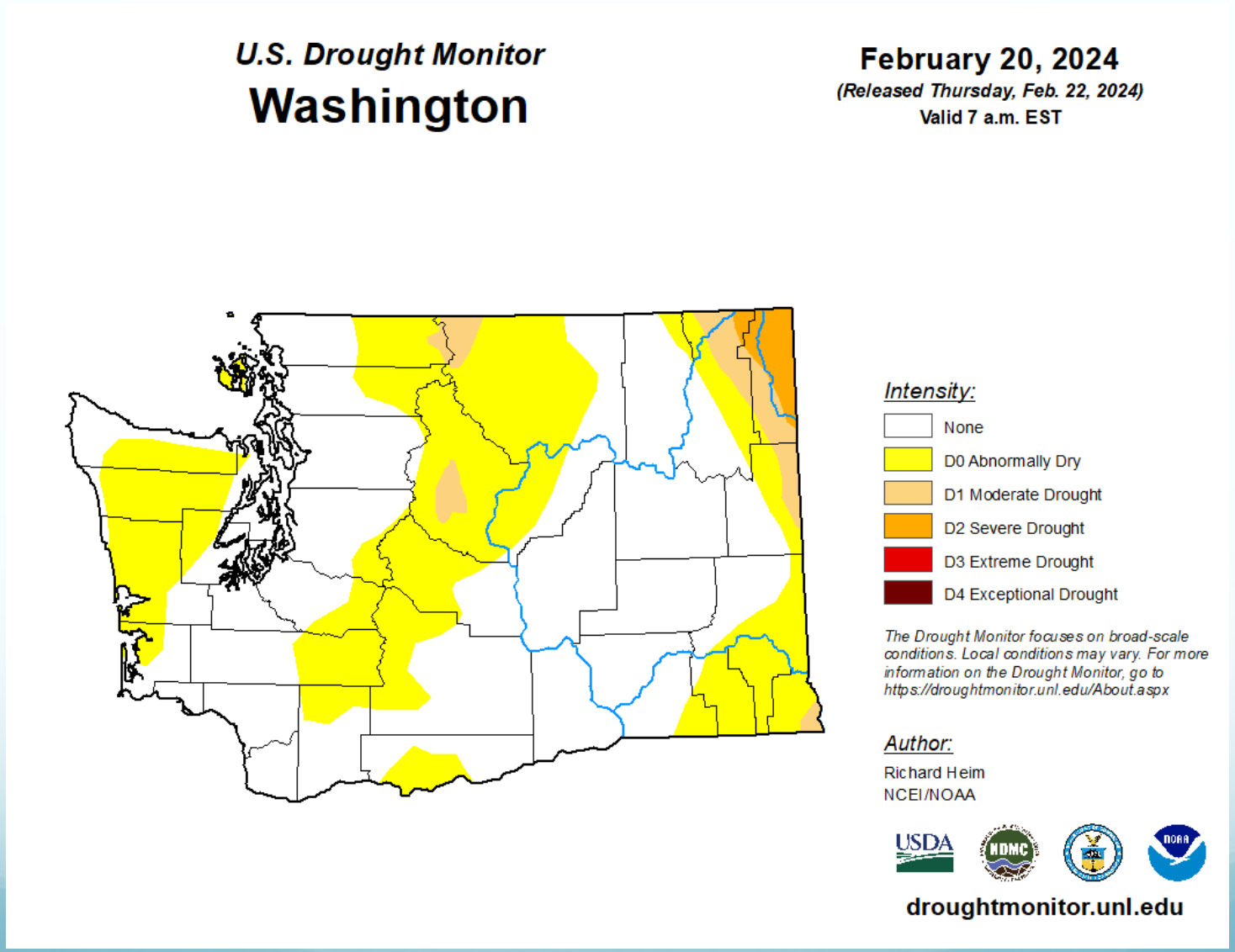


Precipitation

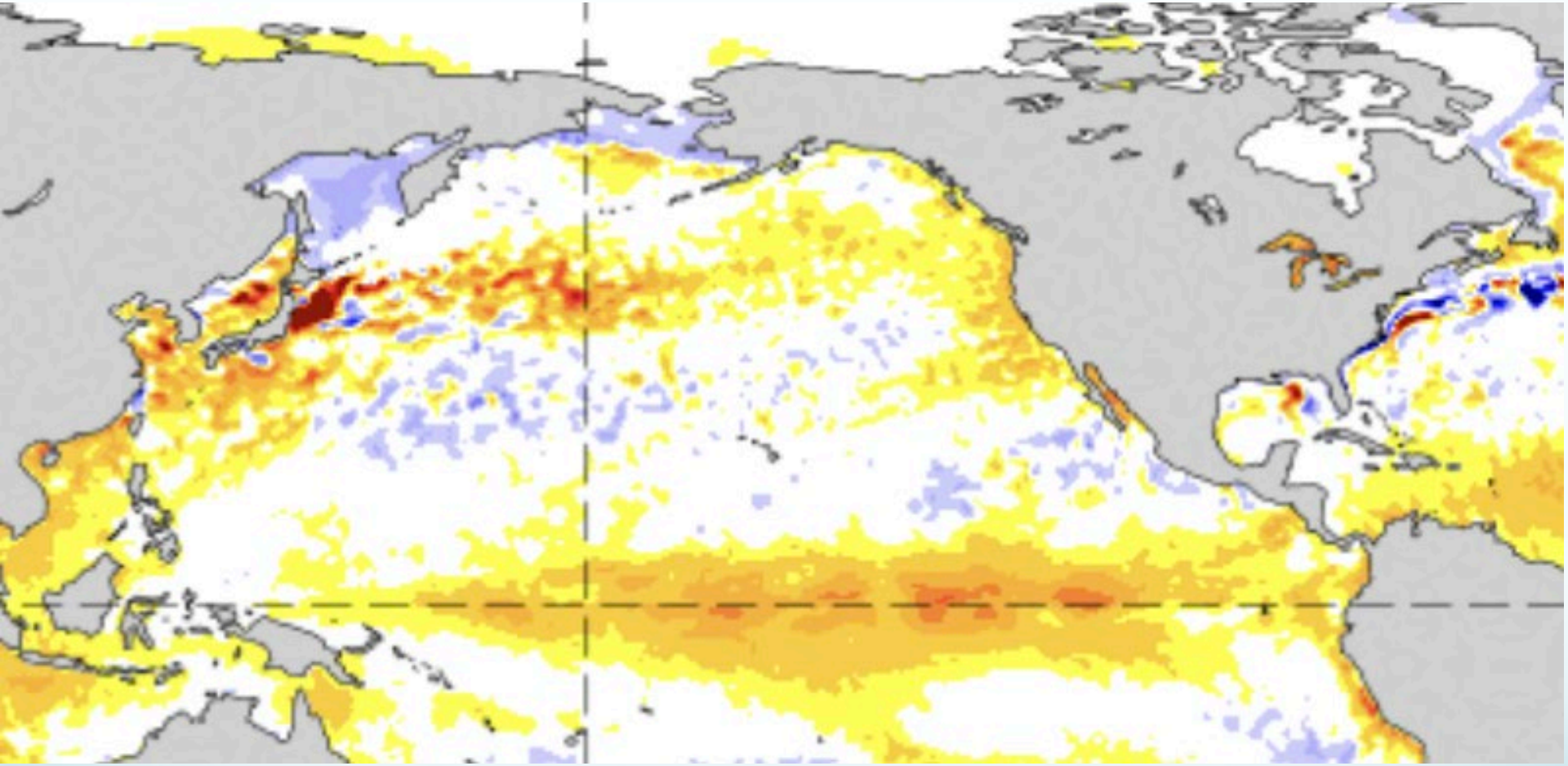


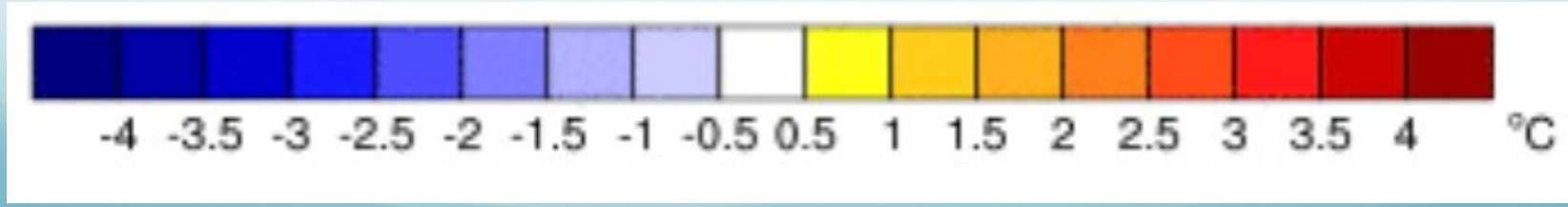
Climate Toolbox

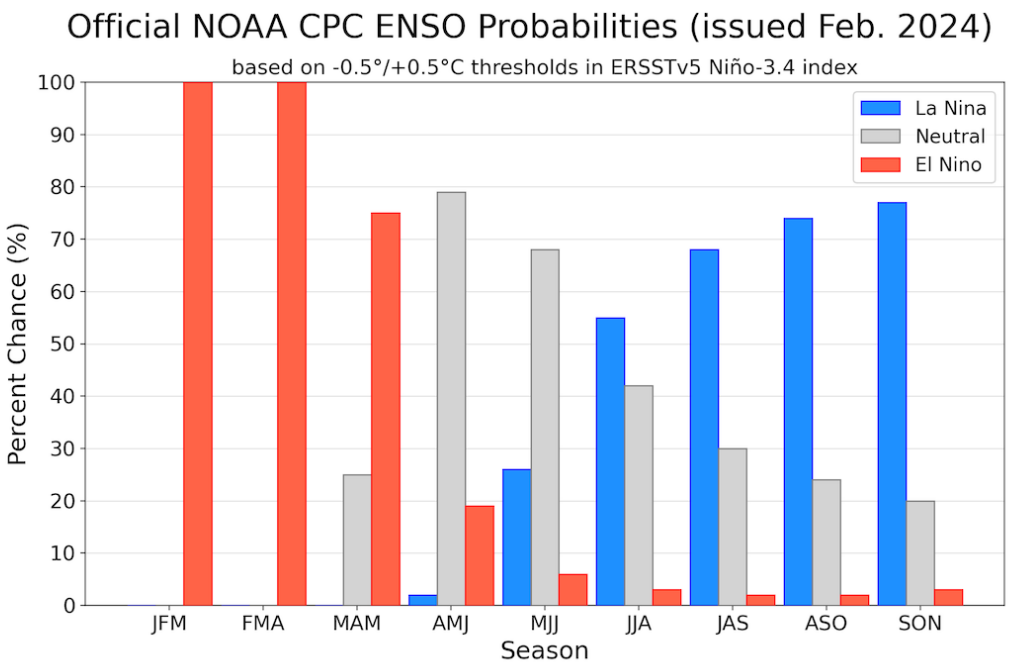
U.S. Drought Monitor



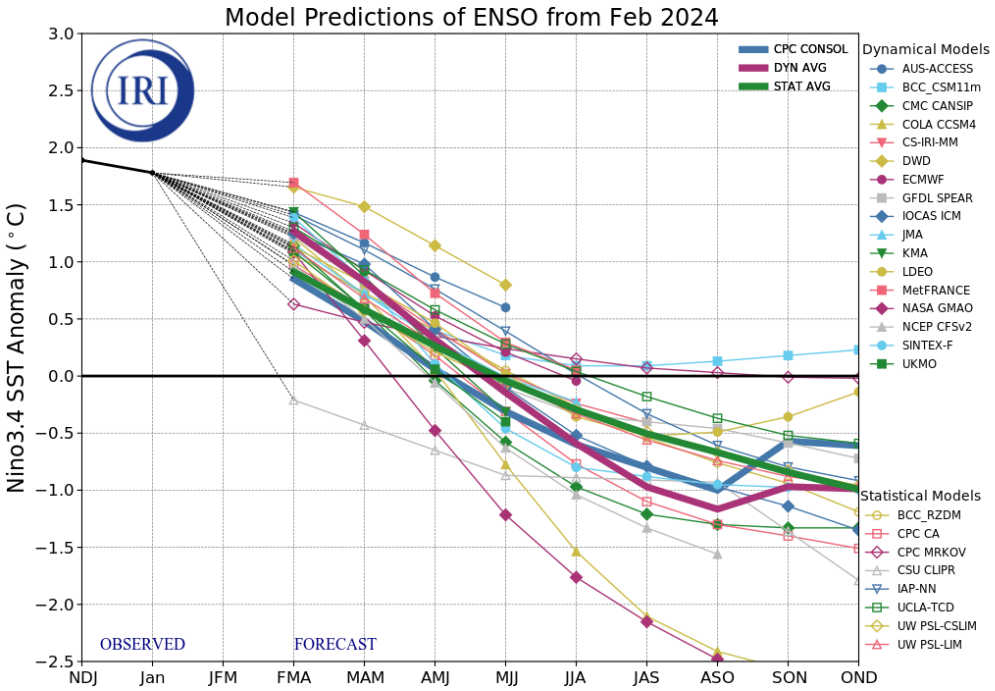
Sea Surface Temperature Anomalies: 18-24 Feb 2024



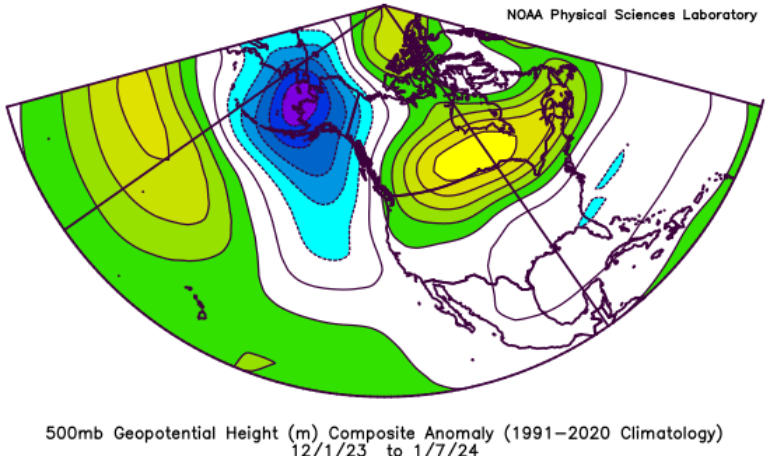




A transition from El Niño to La Niña is likely by the end of summer, which is often the case

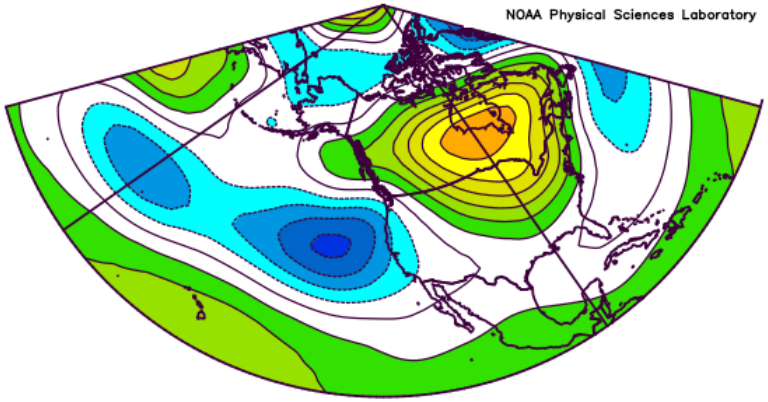


1 Dec – 7 Jan

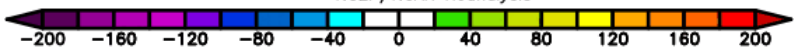


500mb Geopotential Height (m) Composite Anomaly (1991–2020 Climatology)
12/1/23 to 1/7/24

18 Jan – 23 Feb

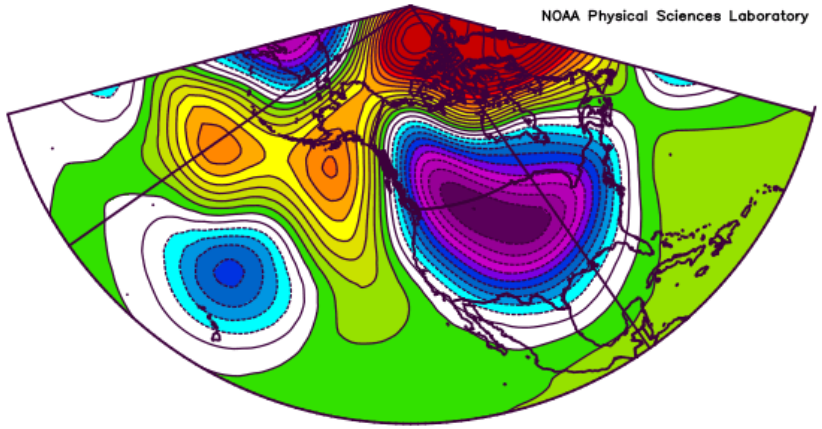


500mb Geopotential Height (m) Composite Anomaly (1991–2020 Climatology)
1/18/24 to 2/23/24
NCEP/NCAR Reanalysis

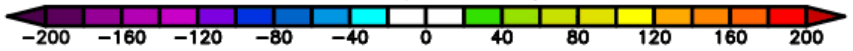


The atmospheric circulation pattern during weeks 2-3 of January 2024 was much different than that during the earlier and later portions of this winter

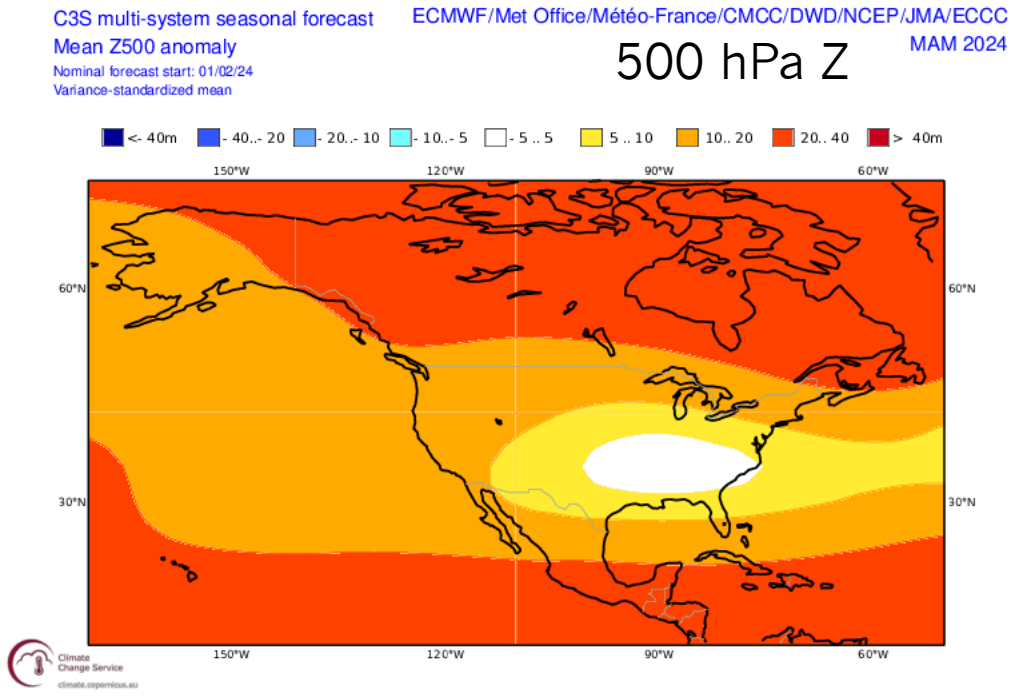
8-17 Jan

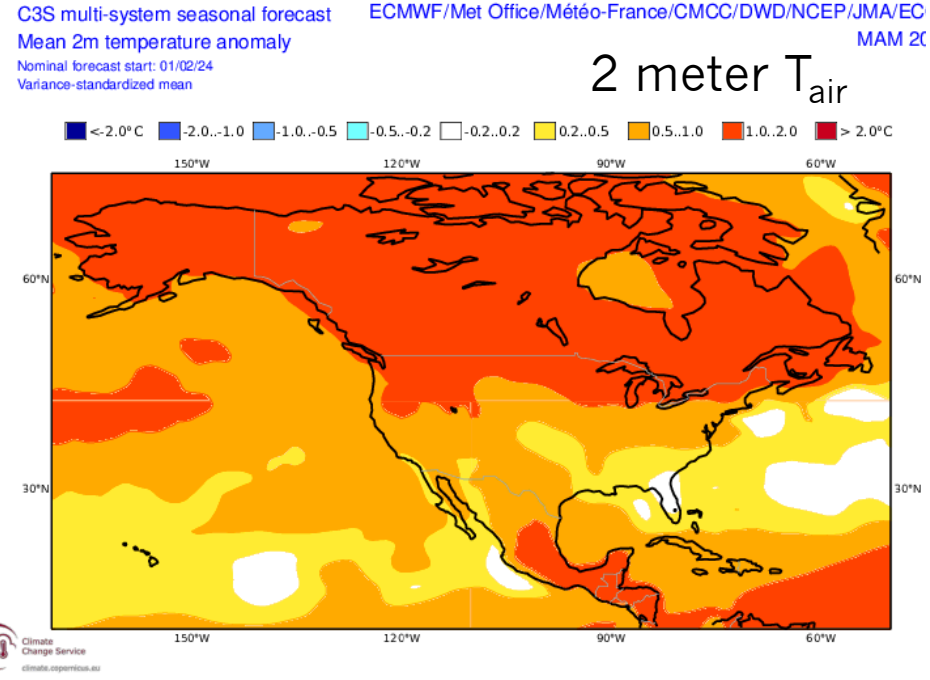


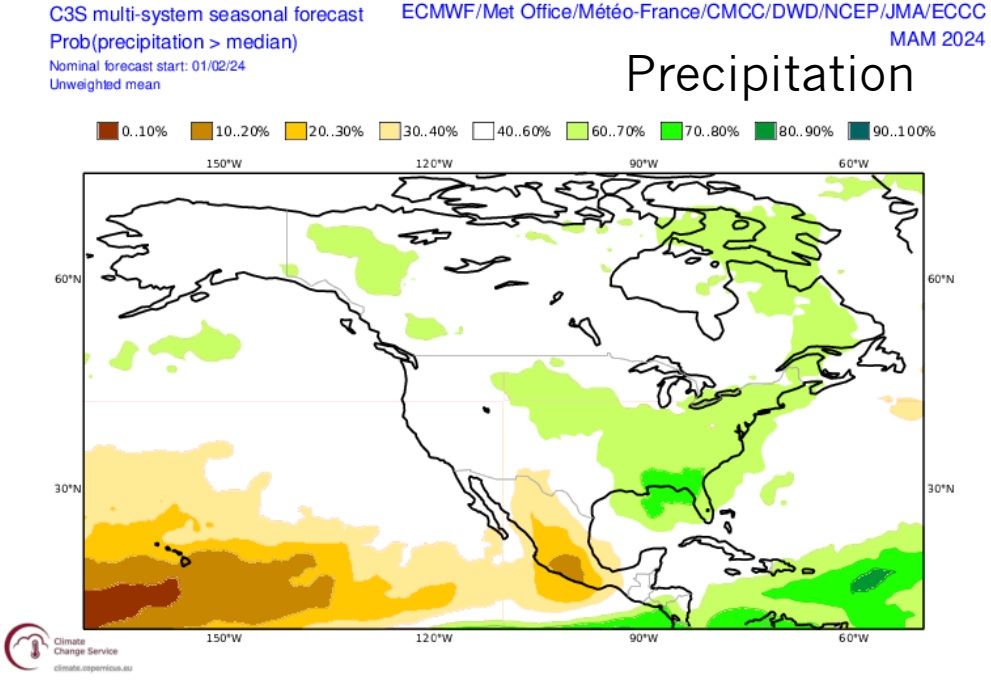
500mb Geopotential Height (m) Composite Anomaly (1991–2020 Climatology)
1/8/24 to 1/17/24
NCEP/NCAR Reanalysis

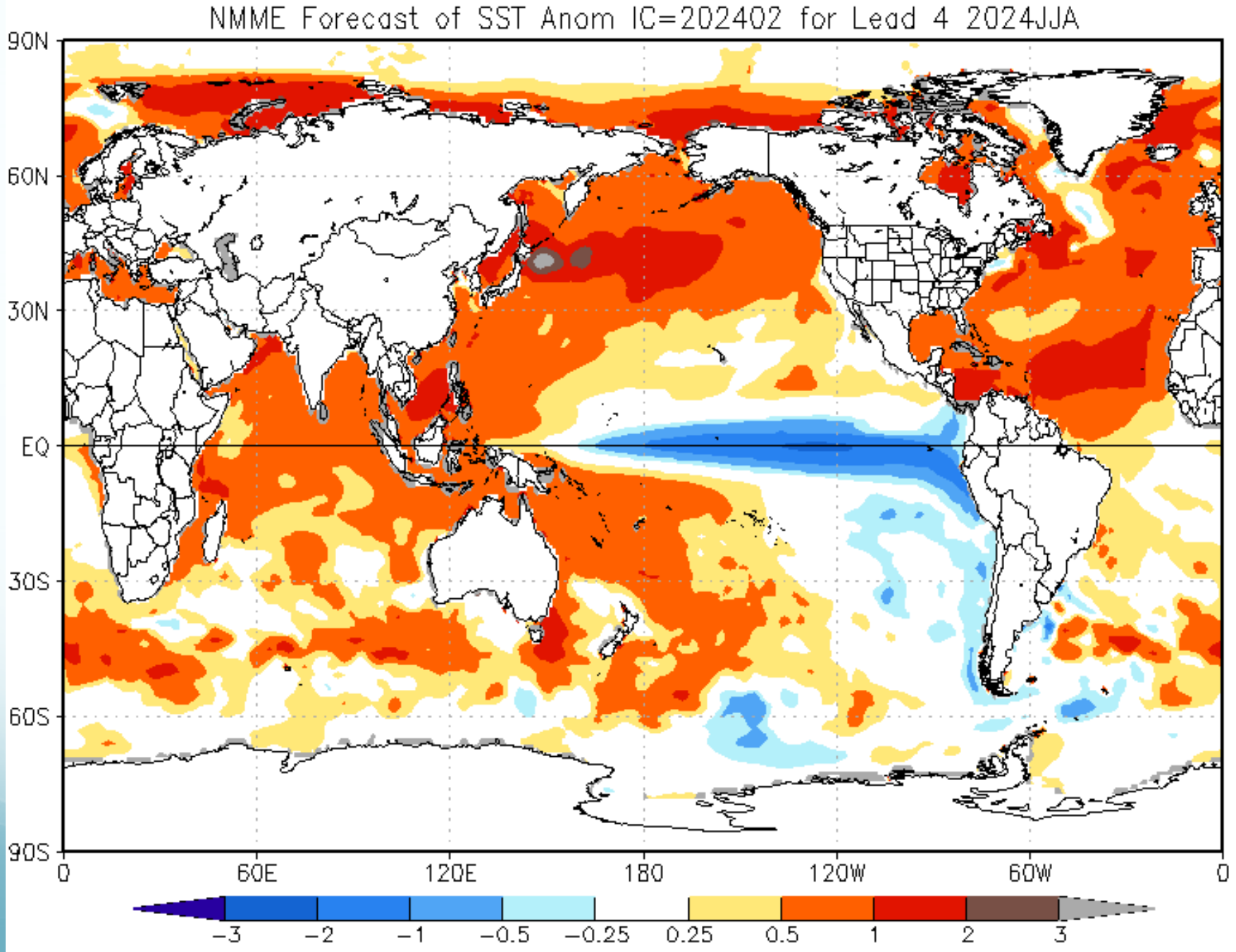


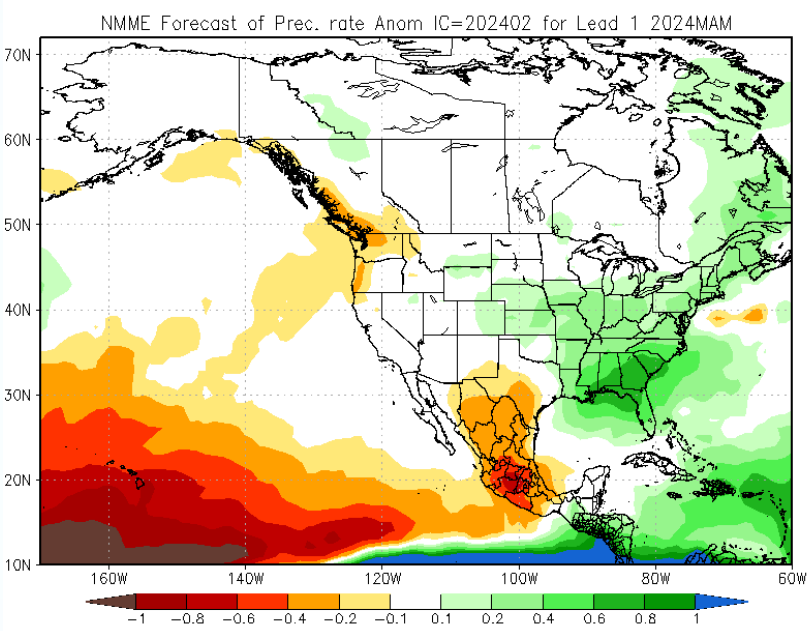
IMME Anomalies Mar-May 2024





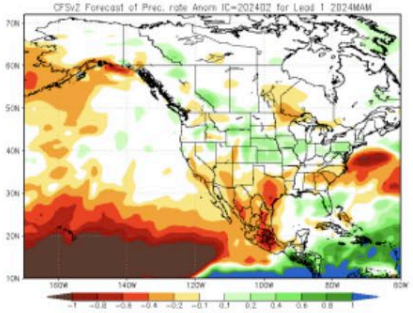



NMME Forecast of SST Anom IC=202402 for Lead 4 2024JJA
90N
60N
30N
EQ
30S
60S
90S
0
60E
120E
180
120W
60W
0
−3
−2
−1
−0.5
−0.25
0.25
0.5
1
2
3

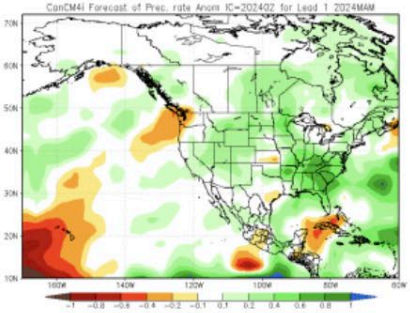


NMME Climate Model Projections for WA State during Mar-May 2024: Either Dry or Near-Neutral

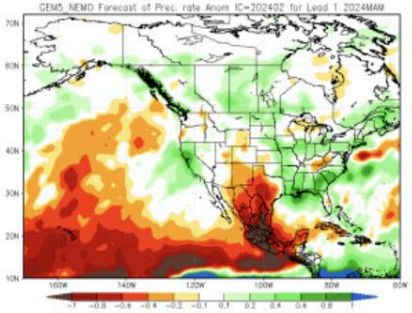
NCEP_CFSv2



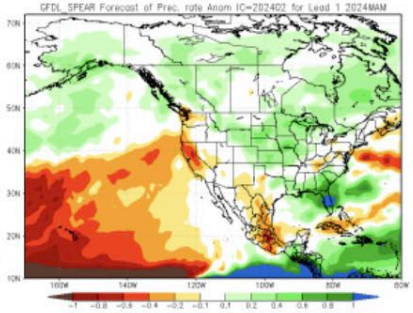
CanCM4i



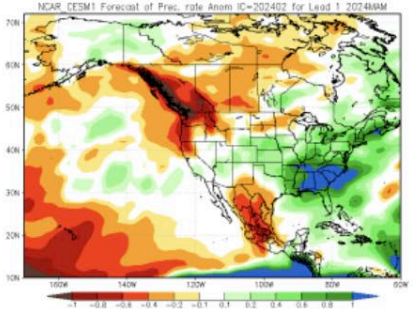
GEM5_NEMO



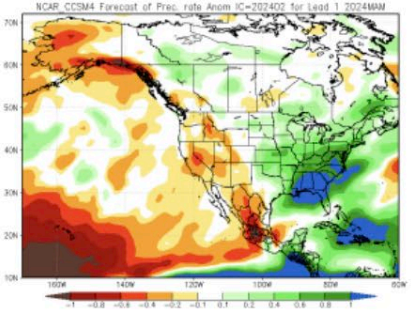
GFDL_SPEAR



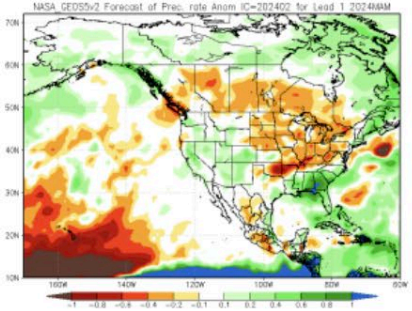
NCAR_CESM1



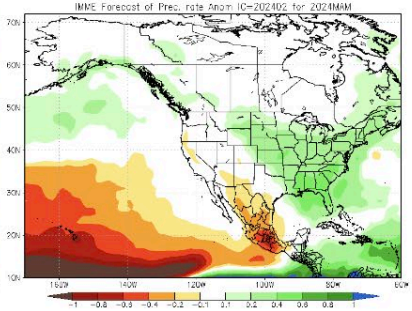
NCAR_CCSM4



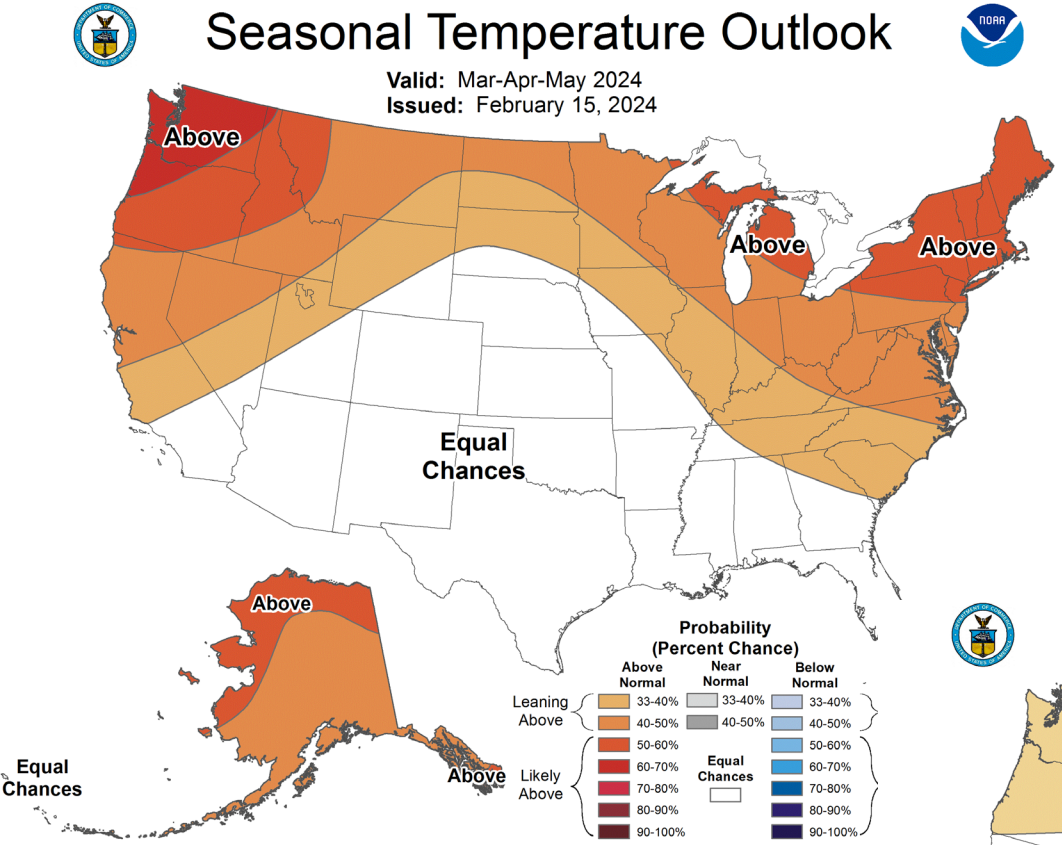
NASA_GEOS5v2

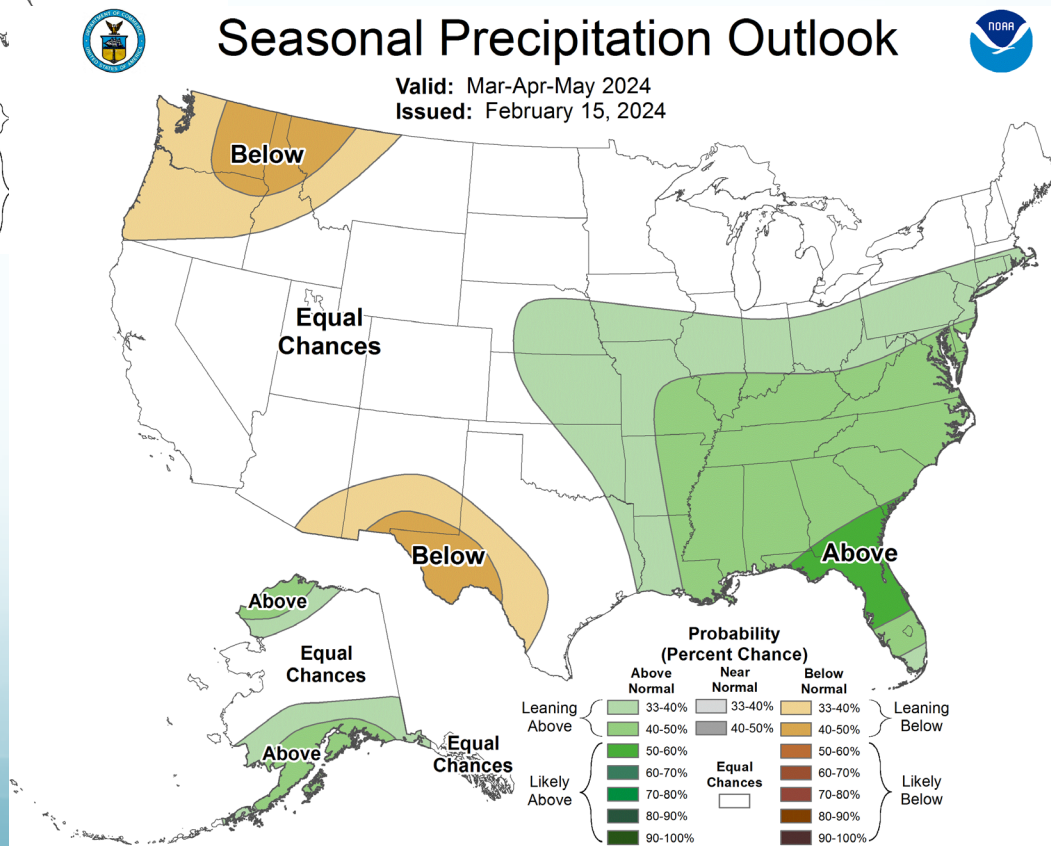


IMME



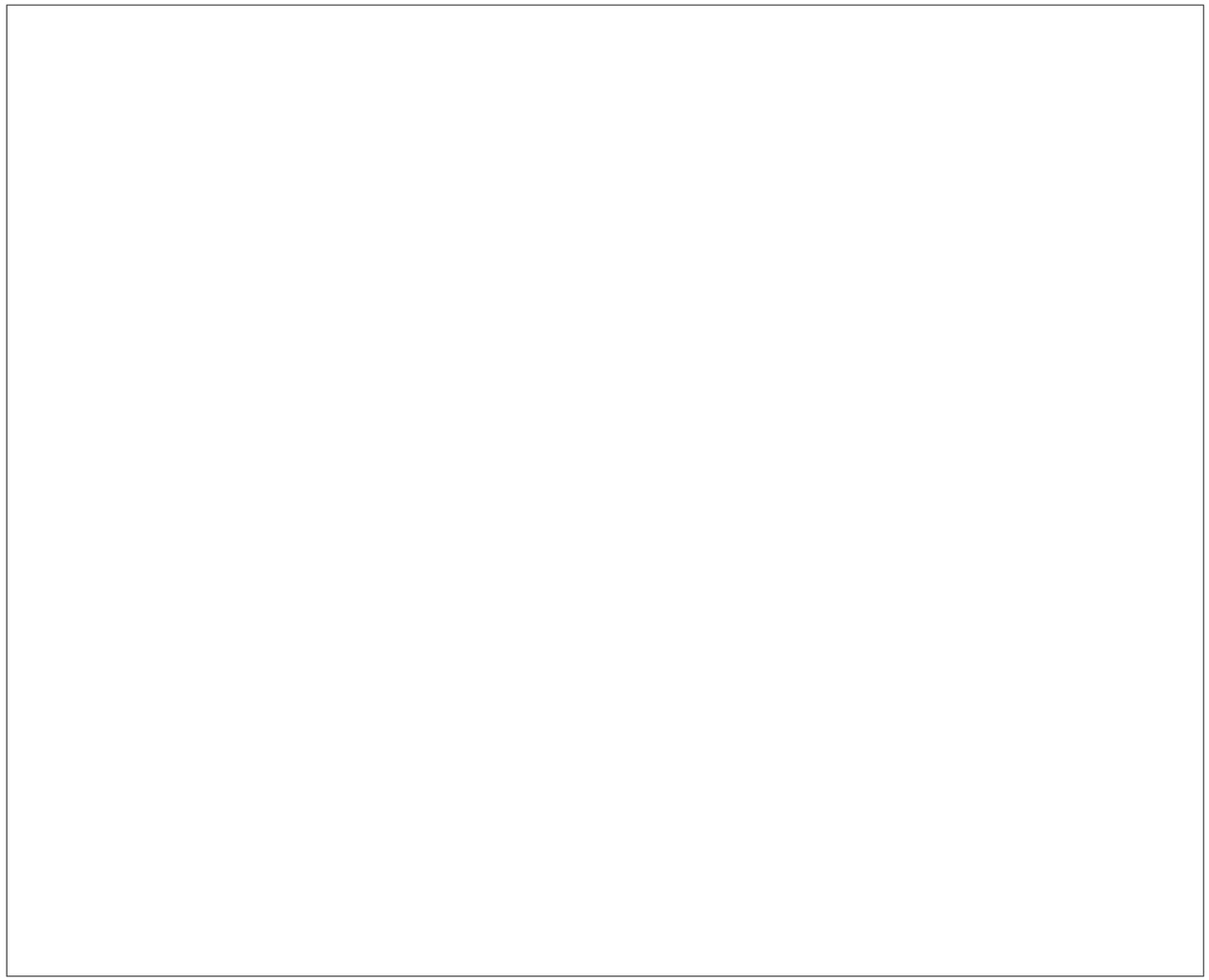
NOAA/CPC Forecasts for Mar-May 2024

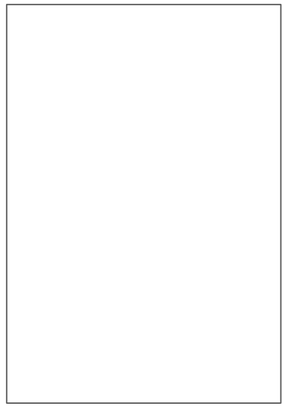


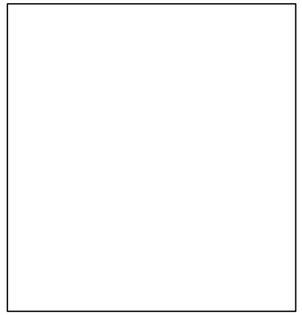


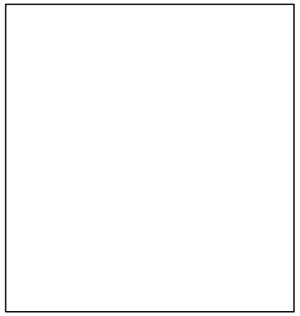
Summary

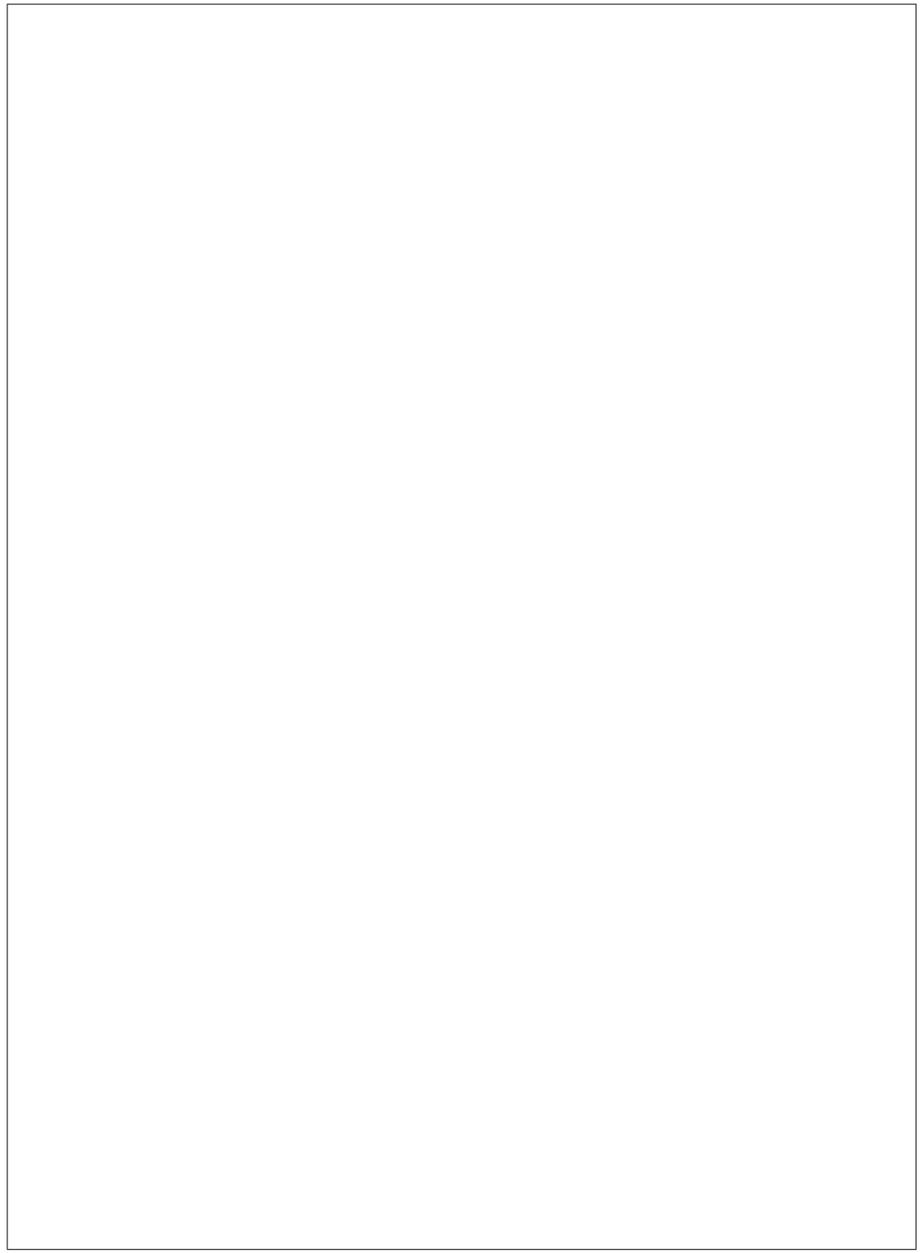
- 2024 water year has had above normal temperatures and normal to below normal precipitation for a majority of WA
- The atmospheric circulation during the past month resembles that accompanying past El Niños, but we should enjoy the temporary reprieve
- The end of winter into spring is apt be warm, and perhaps a bit dry, relative to seasonal norms
- El Niño on the way out, and good riddance. We can look forward to the return of La Niña









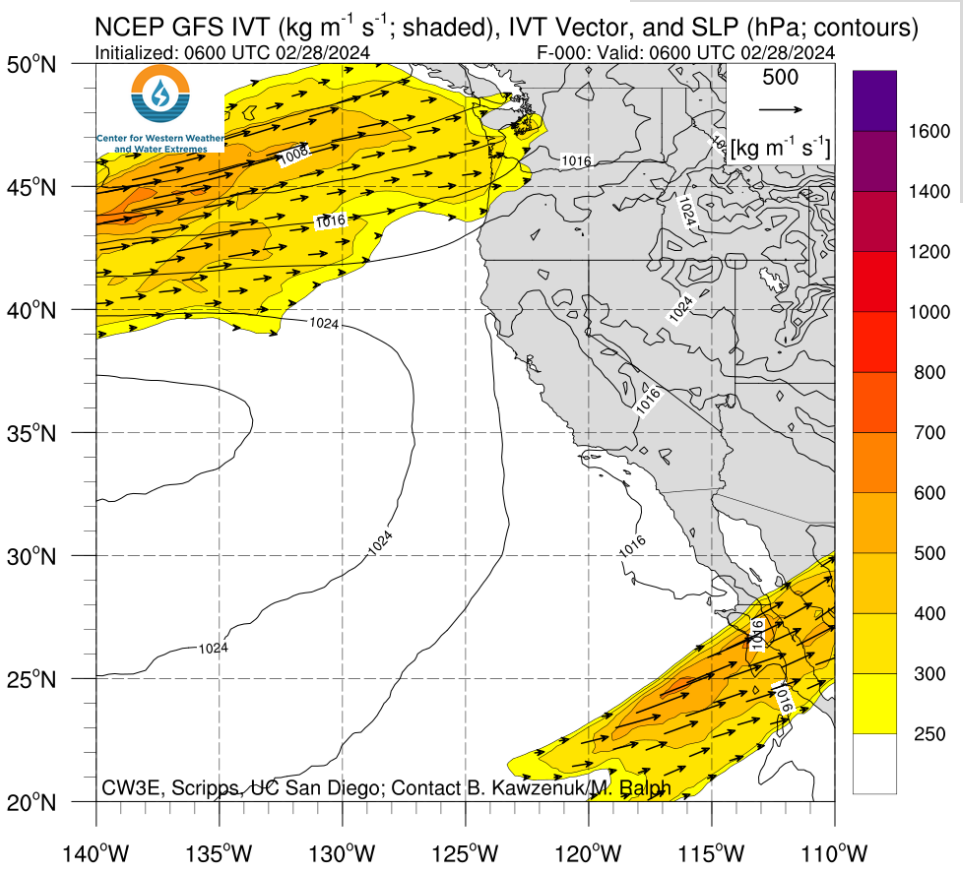


United States Department of Agriculture

Natural Resources Conservation Service

USDA Natural Resources Conservation Service

Snow Survey and Water Supply Forecasting Program



Washington

Water Supply Availability Committee

February 28, 2024

Matt Warbritton
Supervisory Hydrologist
USDA NRCS SSWSF
Portland Data Collection Office
matt.warbritton@usda.gov
503-307-2829

USDA United States Department of Agriculture

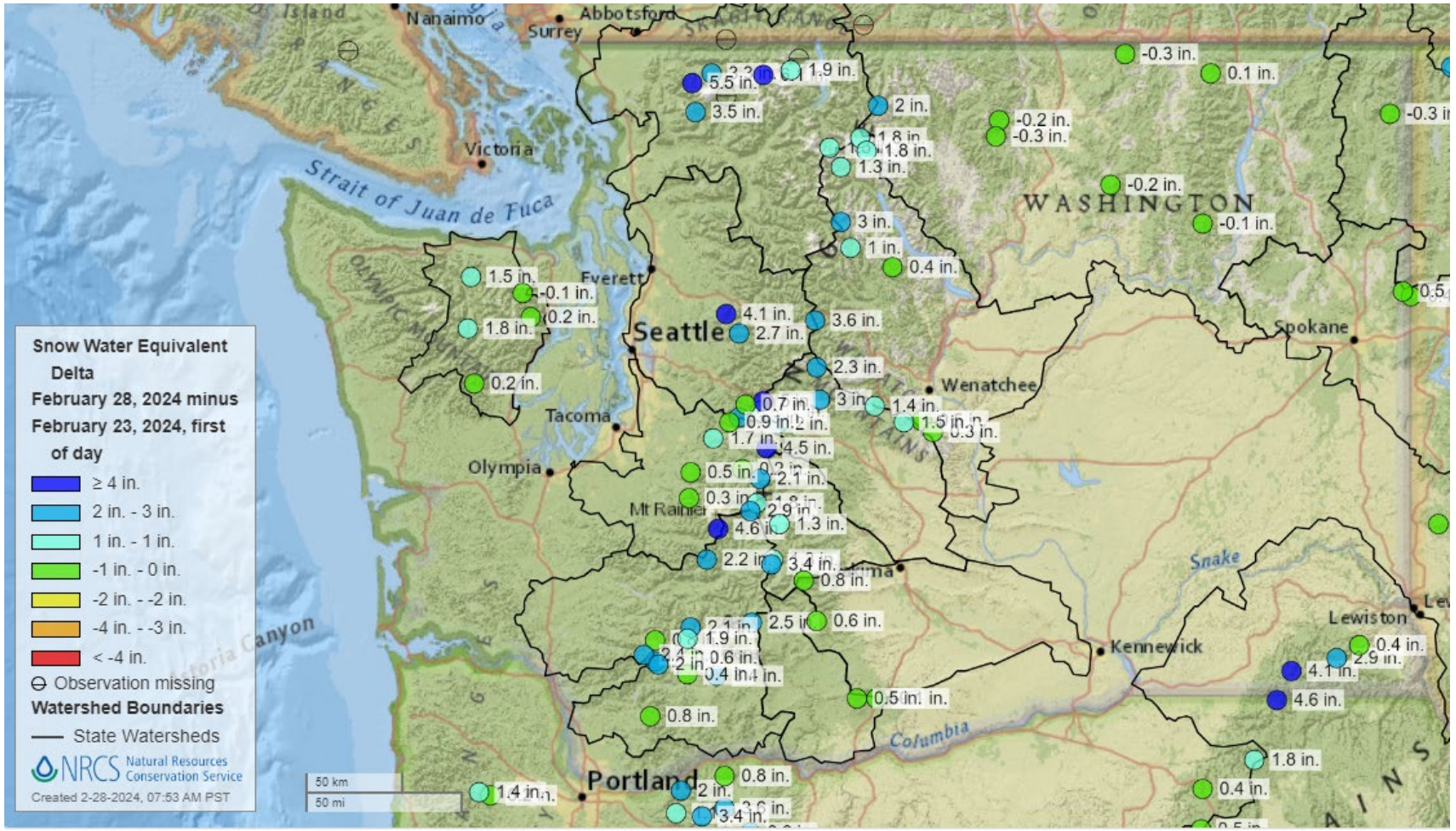
Natural Resources Conservation Service

Snowpack Conditions

Recent Storm Impact

USDA United States Department of Agriculture
Natural Resources Conservation Service

Change in snow water equivalent (SWE) from Feb. 23-28



Snow Depth

Up to 2.5+ ft in N. Cascades

Up to nearly 2 ft in S. Cascades

Snow Water Equivalent

Percentile (Normal P

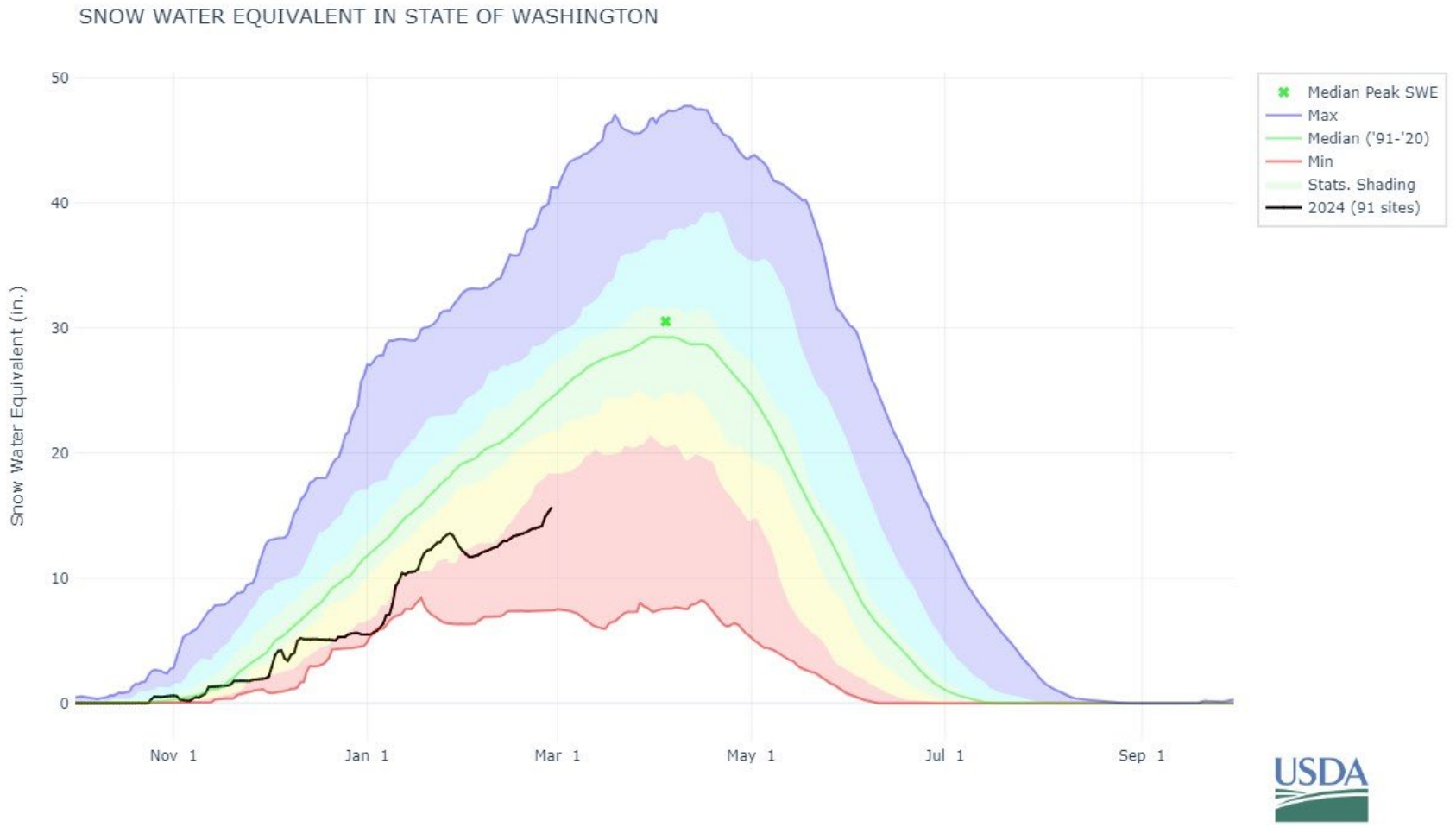
United States Department of Agriculture
Natural Resources Conservation Service

Statewide Snowpack:
64% of normal

Last meeting: 74% of normal

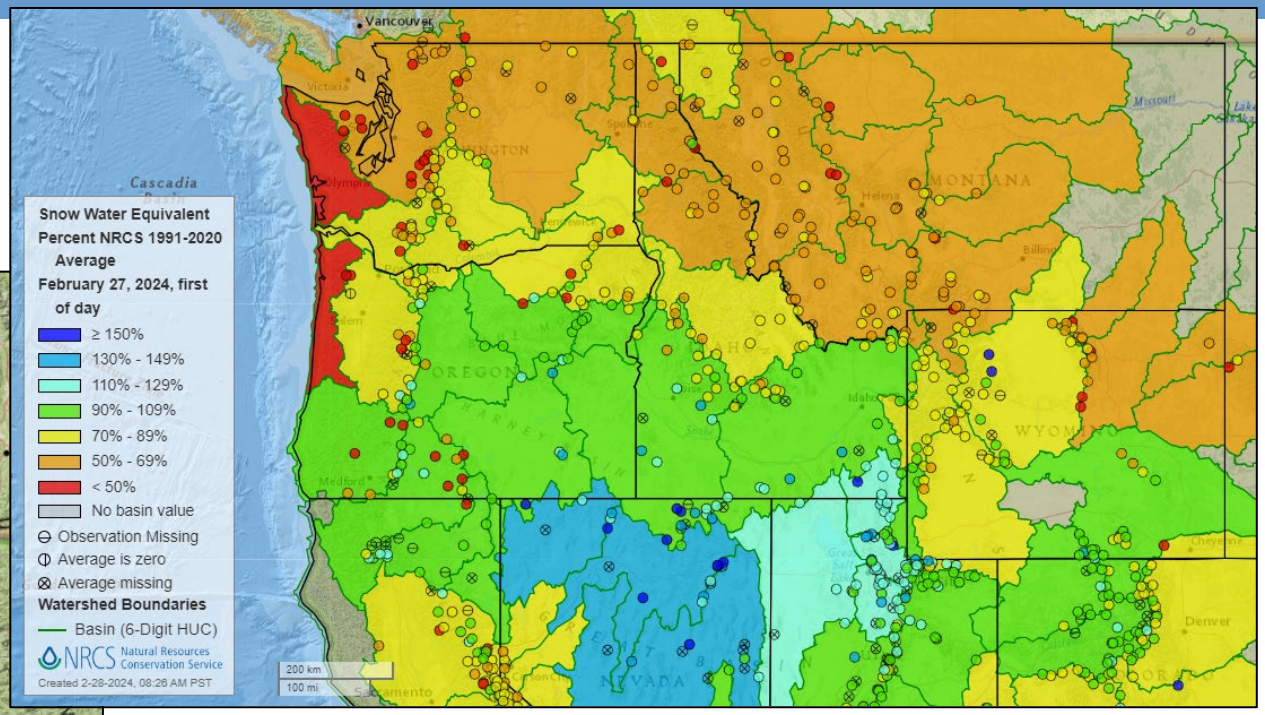
% of median peak snowpack: 51%
Days until median peak: 36

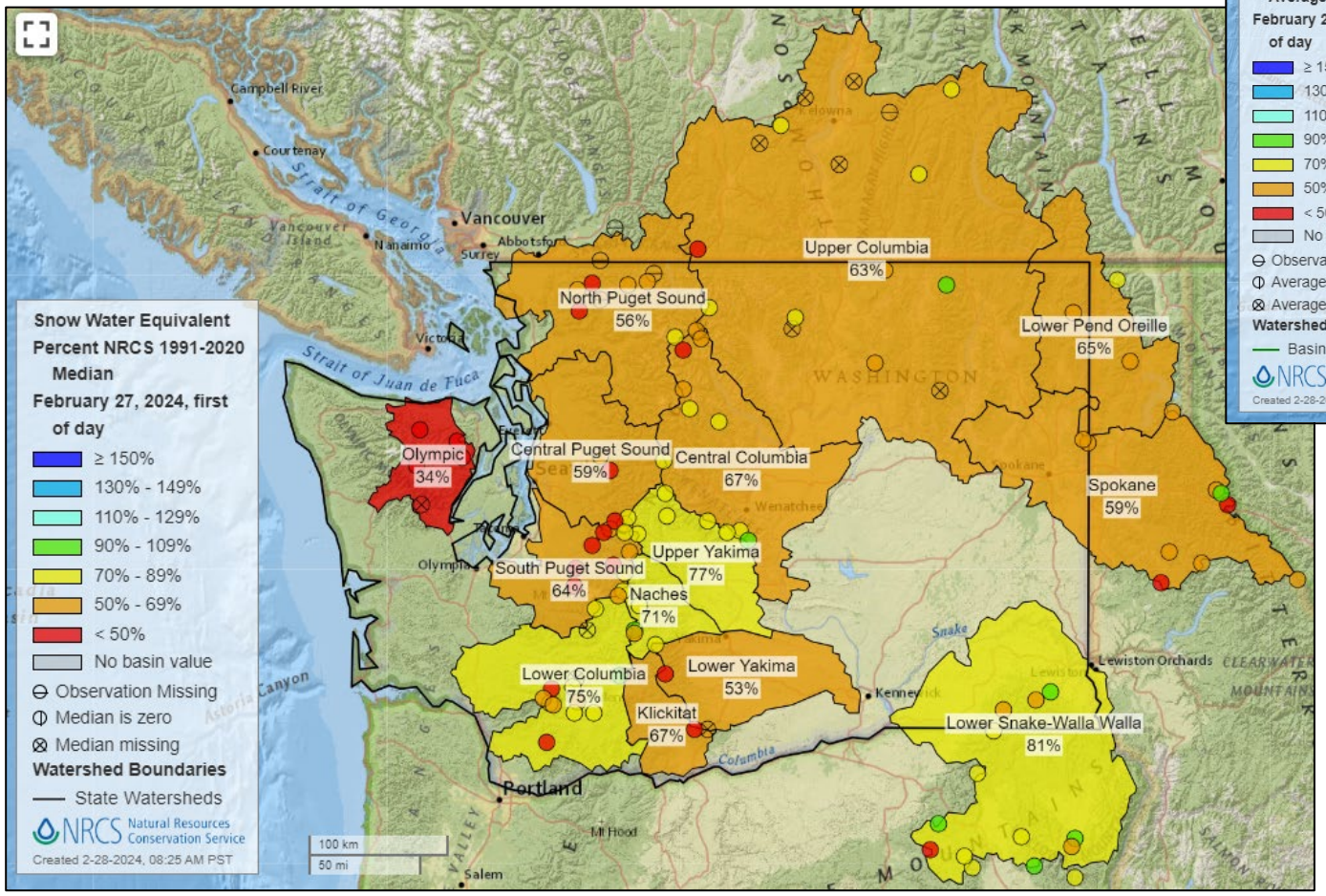
Snowpack Percentile: 8



Snowpack Basin & Site Map

United States Department of Agriculture
Natural Resources Conservation Service

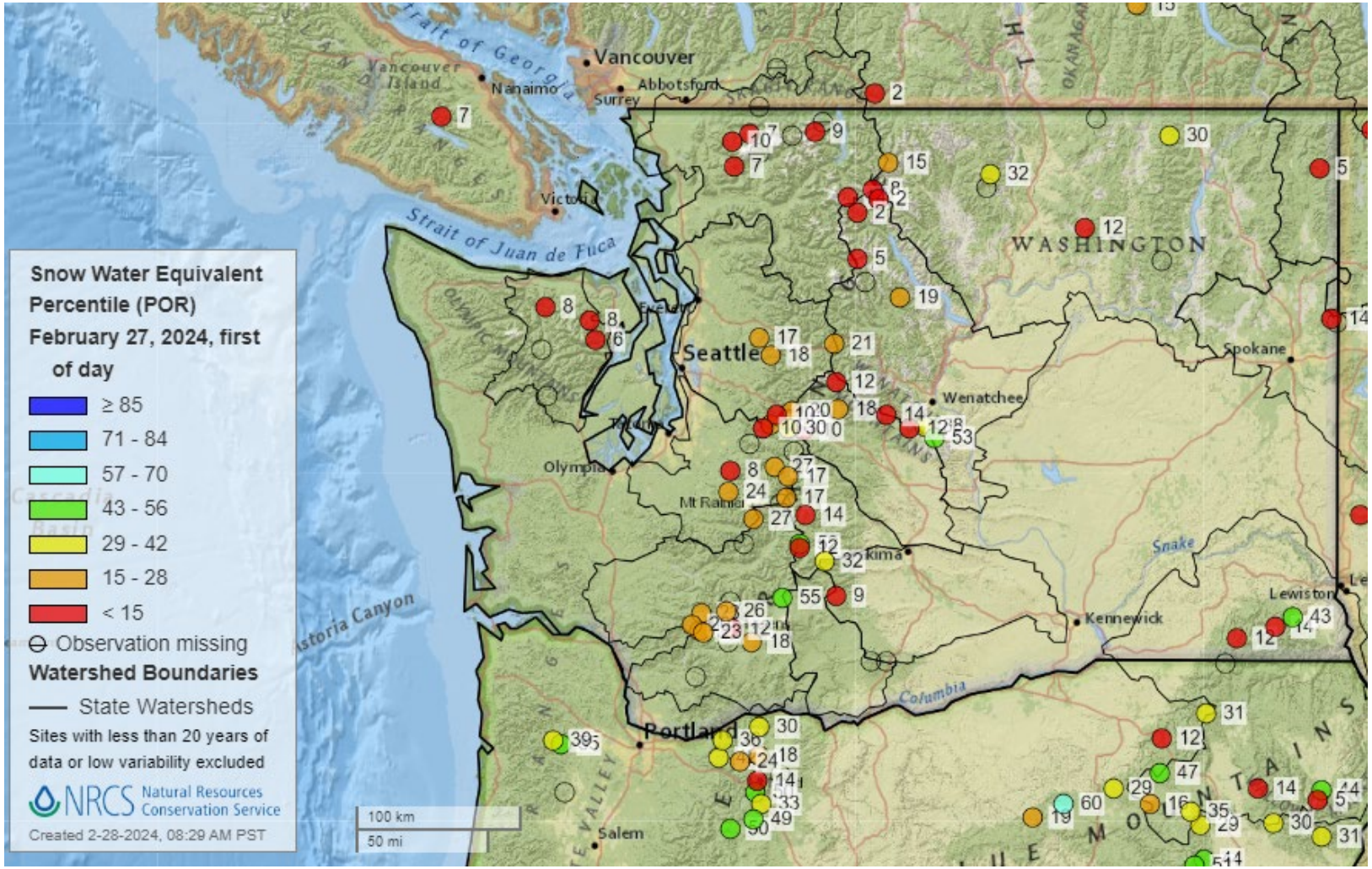




Snow Water Equivalent

Percentile (Normal Period)

USDA United States Department of Agriculture
Natural Resources Conservation Service



Snow Drought Classification

(based on SWE percentiles)

D0 – Abnormally Dry (=< 30)

D1 – Moderate Drought (=< 20)

D2 – Severe Drought (=< 10)

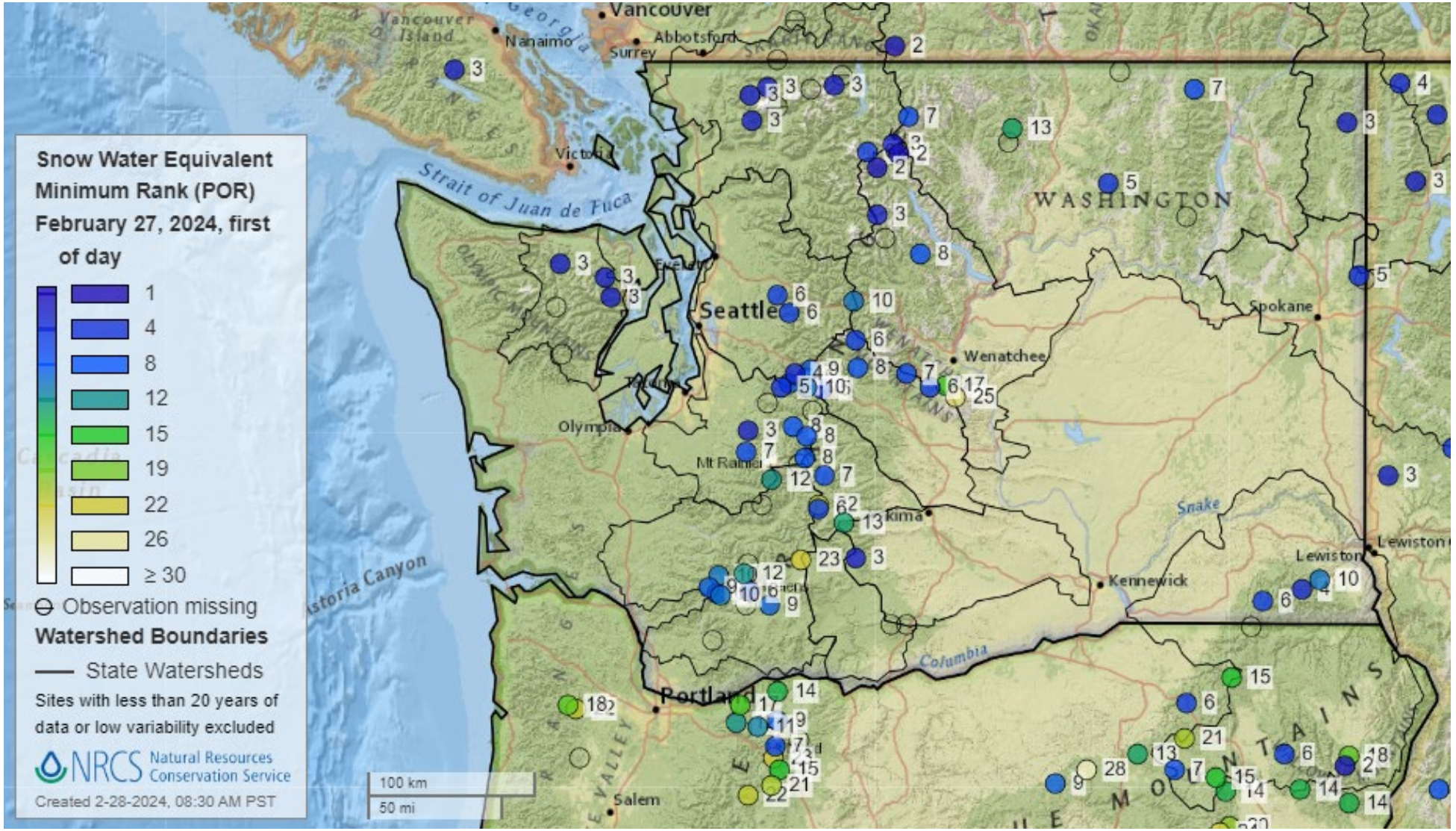
D3 – Extreme Drought (=< 5)

D4 – Exceptional Drought (=< 2)

Hatchet et al. 2022

Site Ranking of SWE

USDA United States Department of Agriculture
Natural Resources Conservation Service



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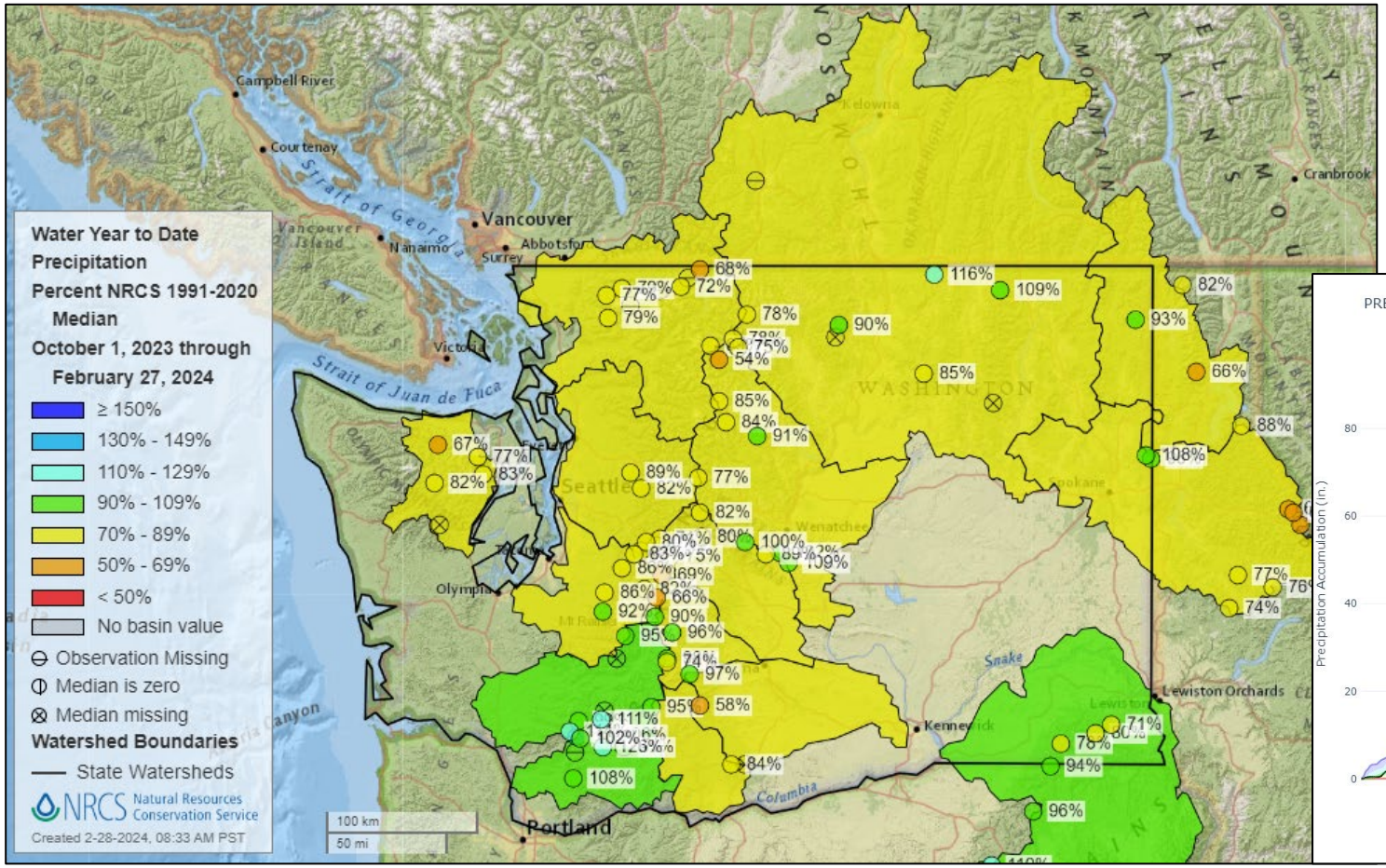
Natural Resources Conservation Service

Precipitation Conditions

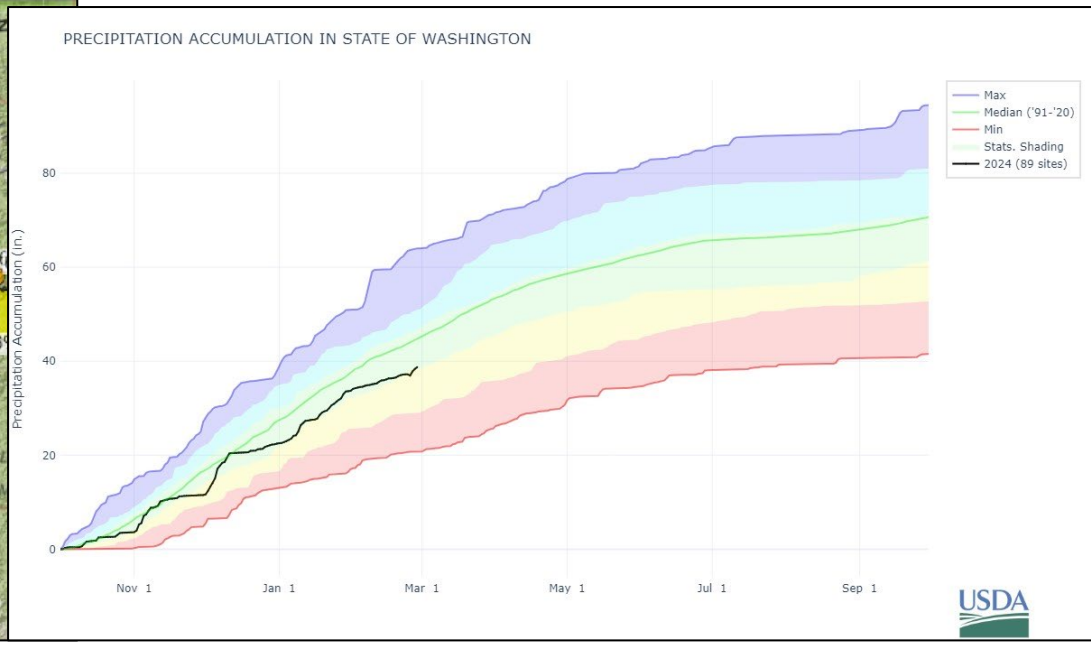
WYTD Precipitation – Basin Map

United States Department of Agriculture
Natural Resources Conservation Service



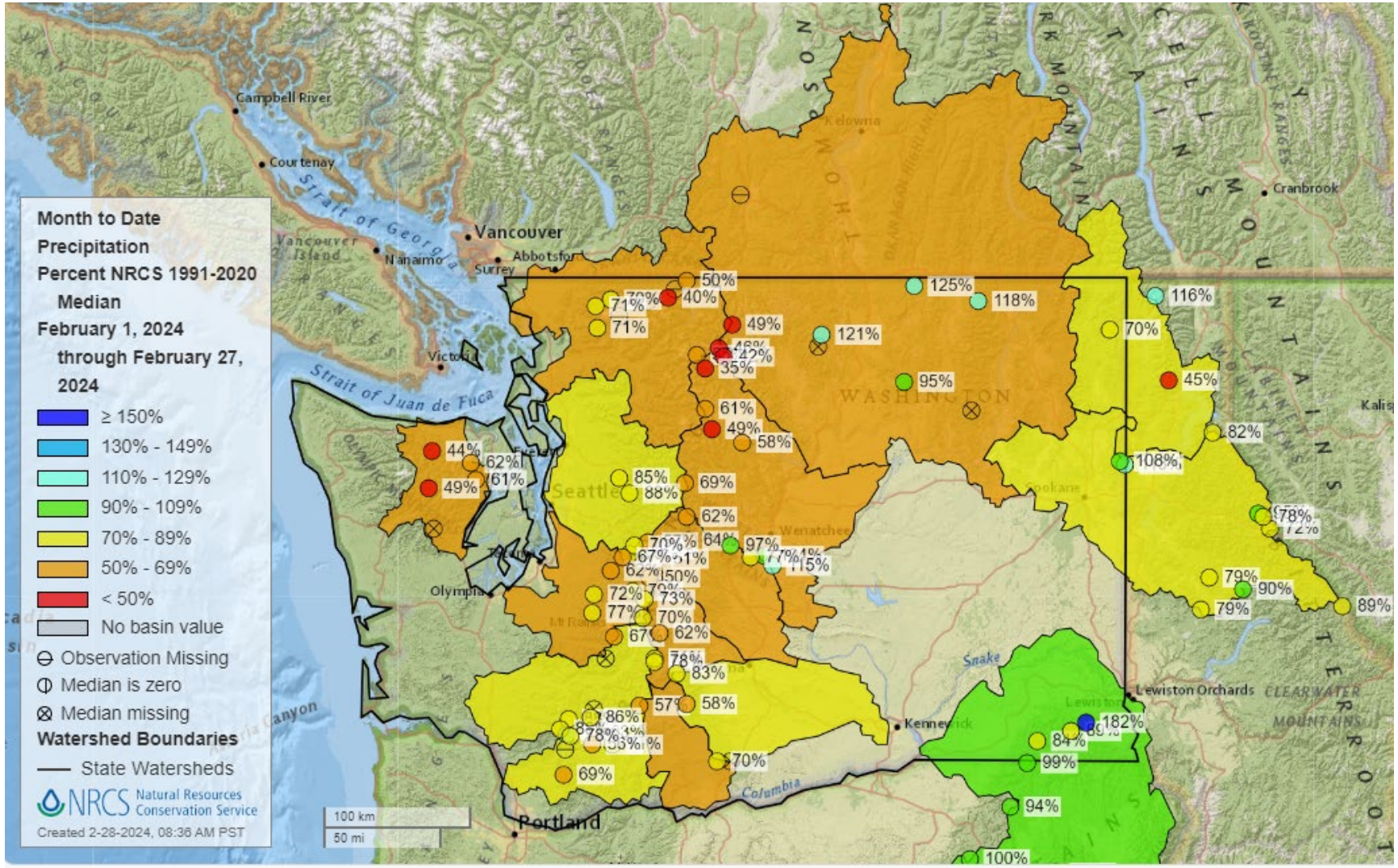
Statewide WYTD Precipitation:
89% of normal

Last meeting: 87%



Month-to-Date Precipitation – Basin and Site Map

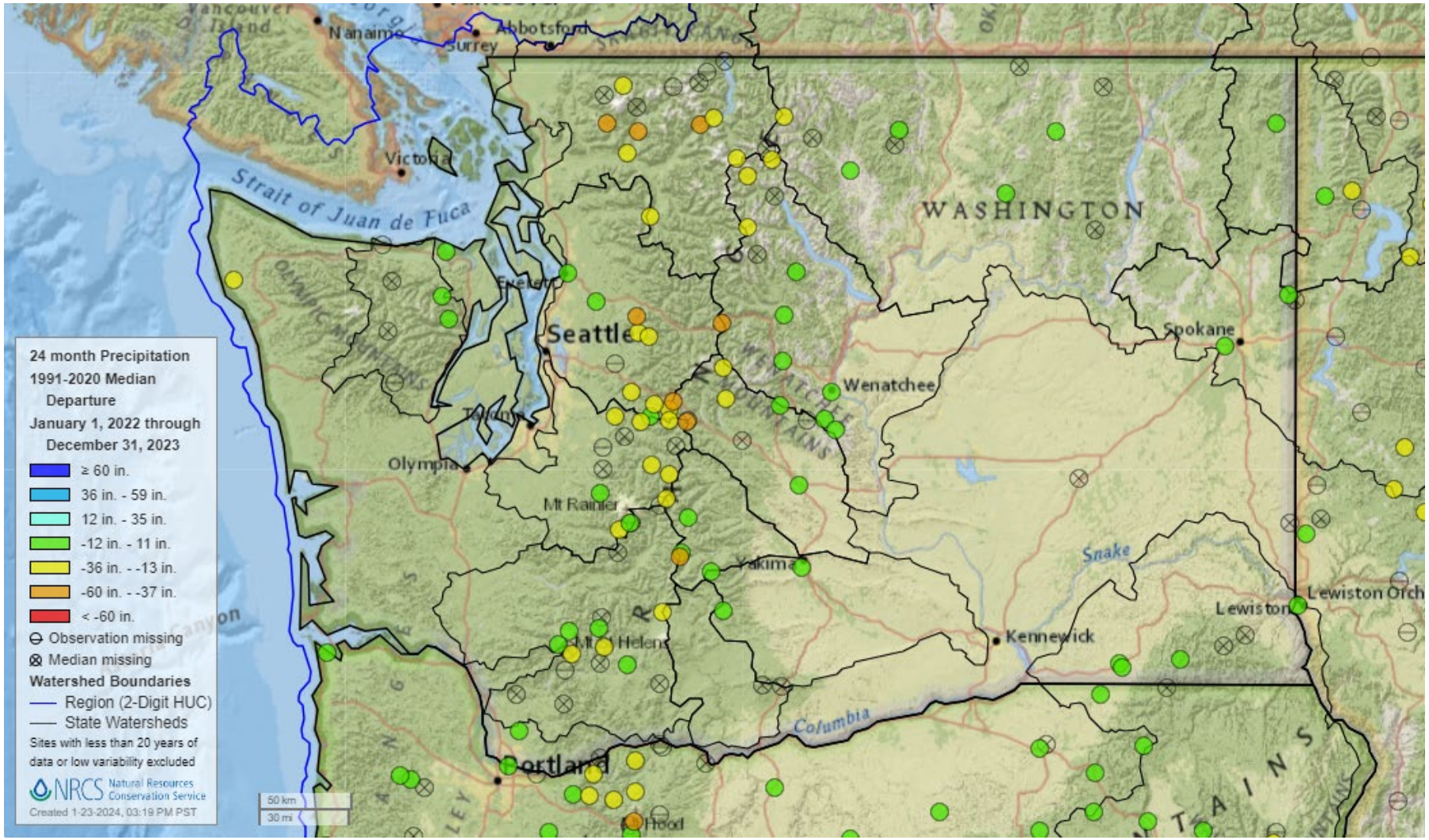
USDA United States Department of Agriculture
Natural Resources Conservation Service



Precipitation: Compounding Deficits

24-month Precipitation – Normal Departure

USDA United States Department of Agriculture
Natural Resources Conservation Service



USDA United States Department of Agriculture

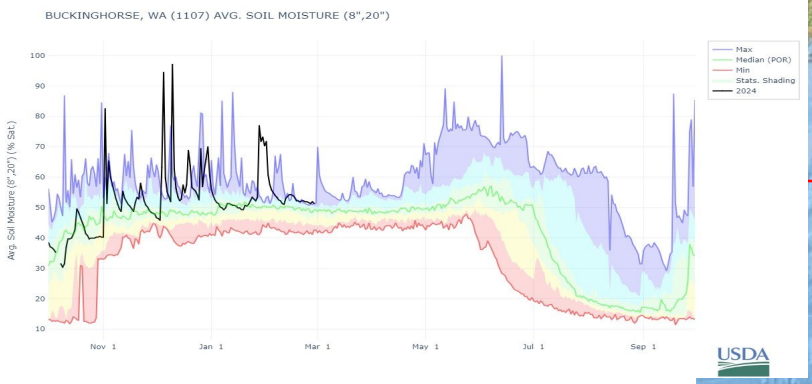
Natural Resources Conservation Service

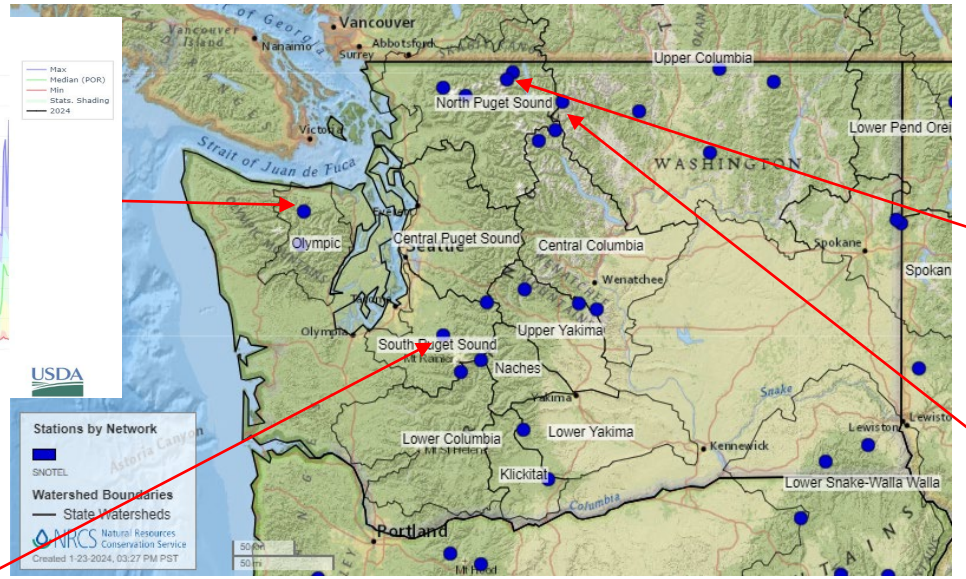
Soil Moisture

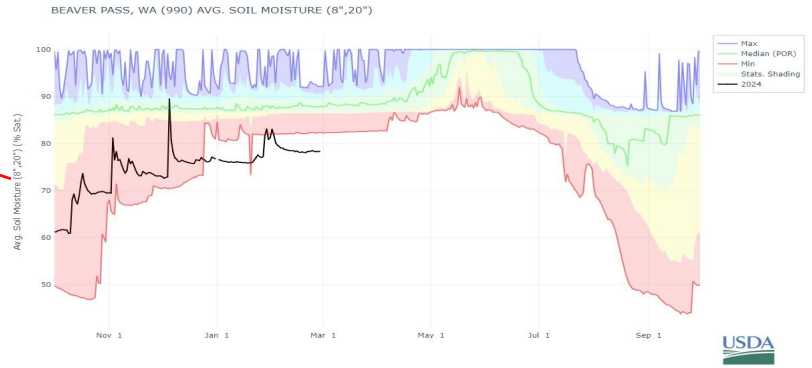
Soil Moisture

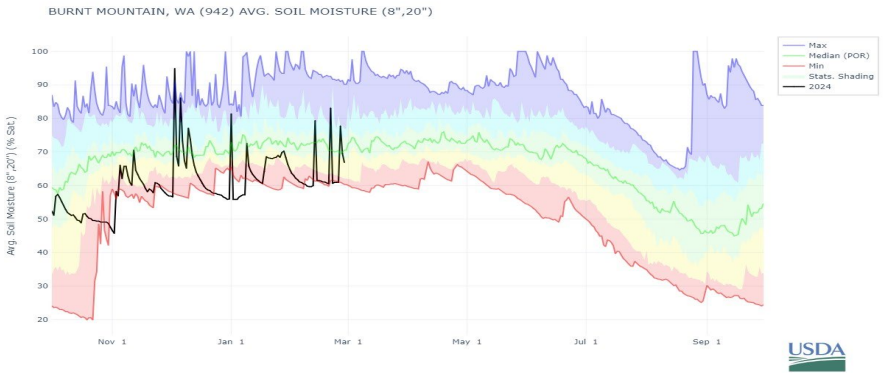
WY 2024 – Select Site Charts

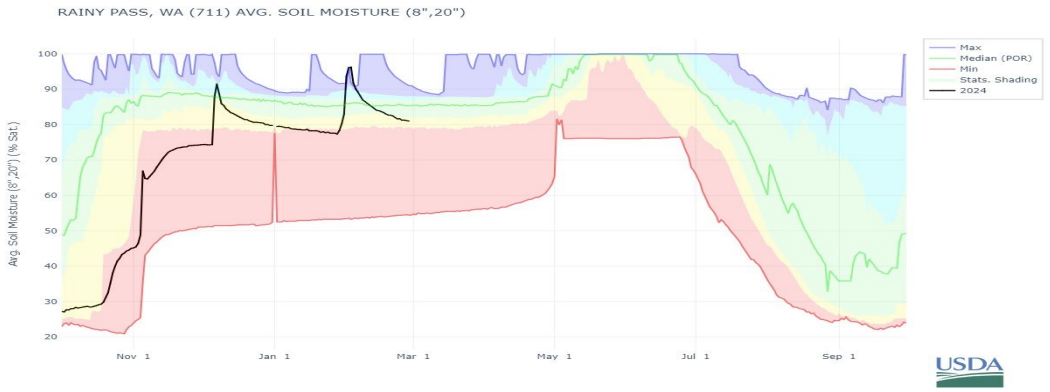
United States Department of Agriculture
Natural Resources Conservation Service







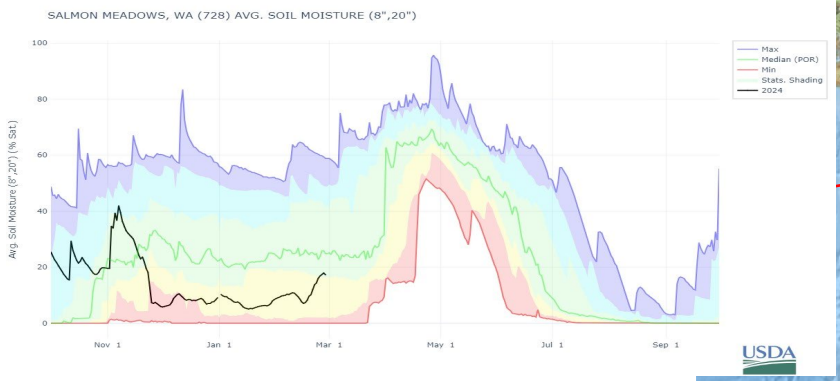


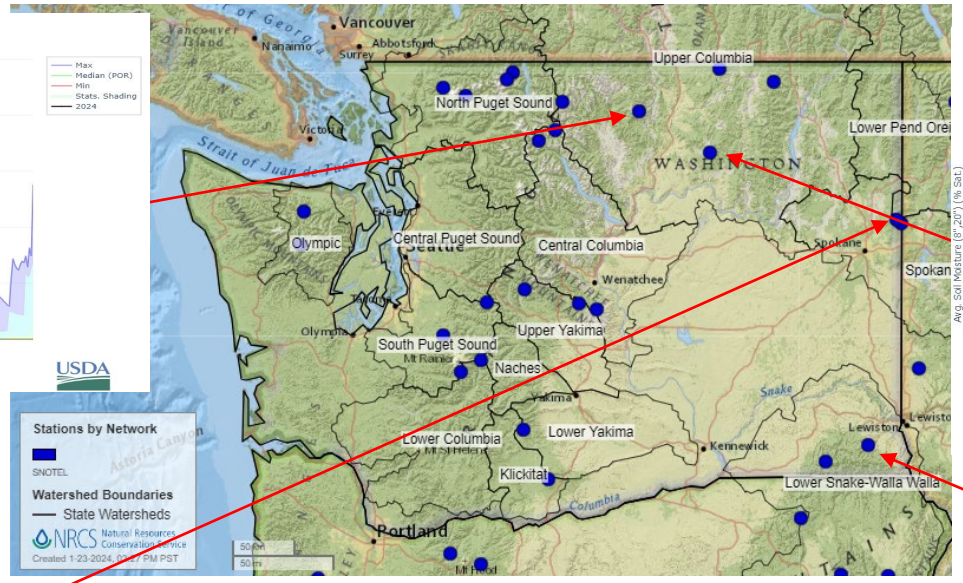


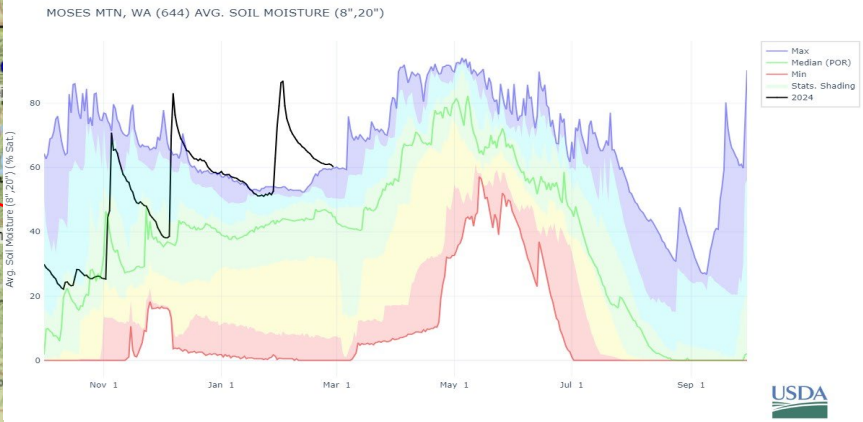
Soil Moisture

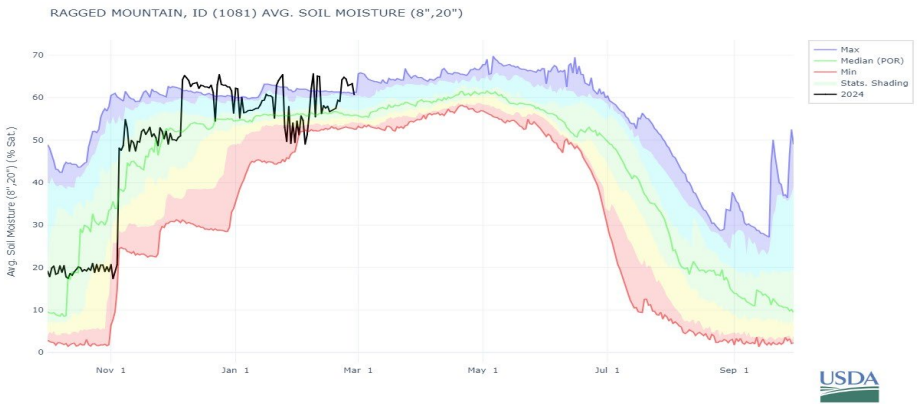
WY 2024 – Select Site Charts

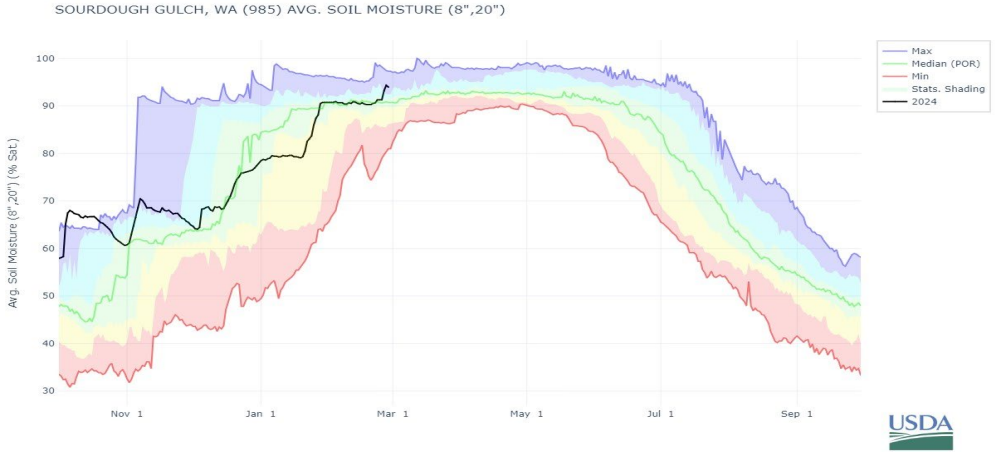
United States Department of Agriculture
Natural Resources Conservation Service









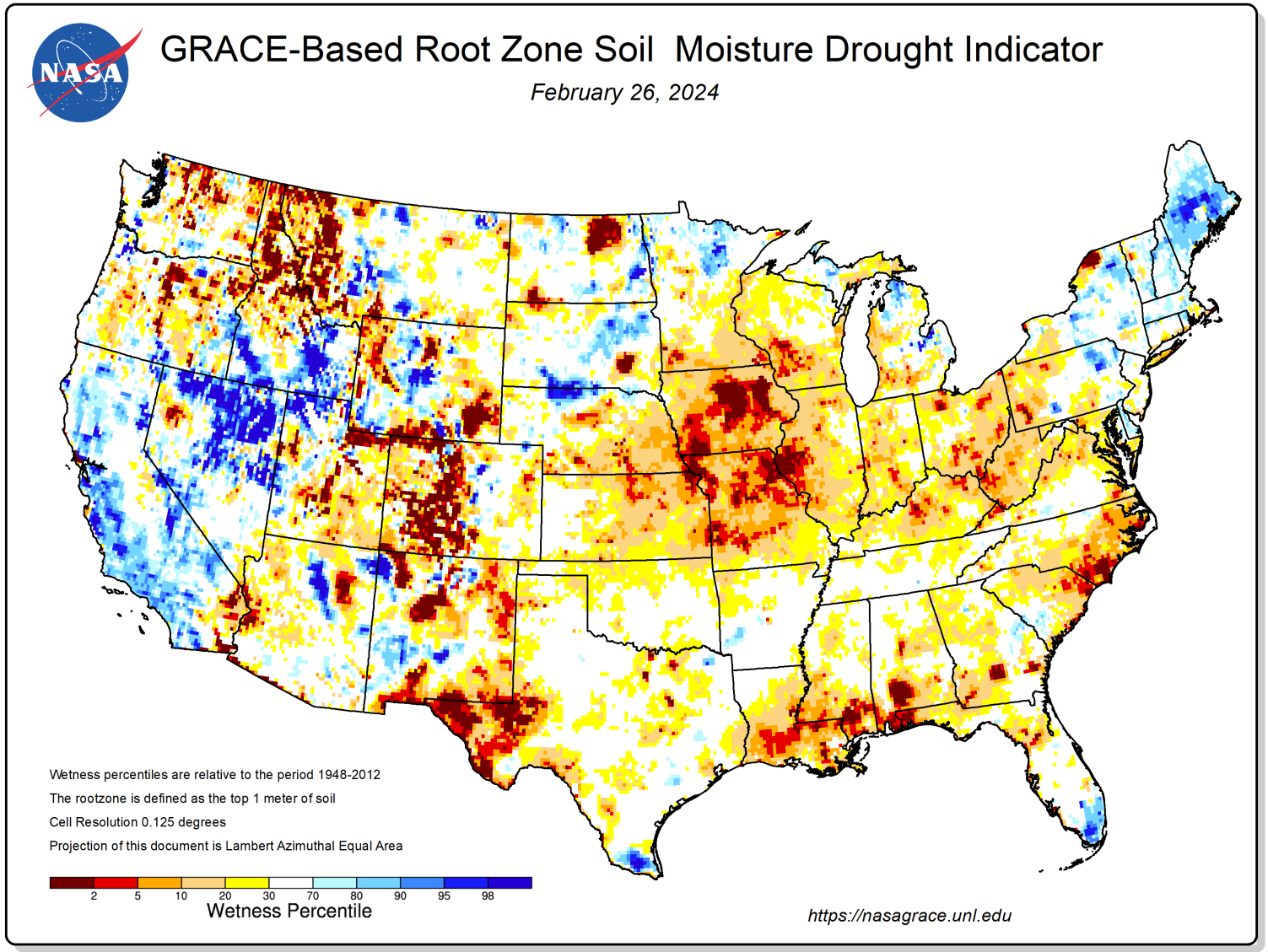


Soil Moisture

NASA GRACE

United States Department of Agriculture

Natural Resources Conservation Service



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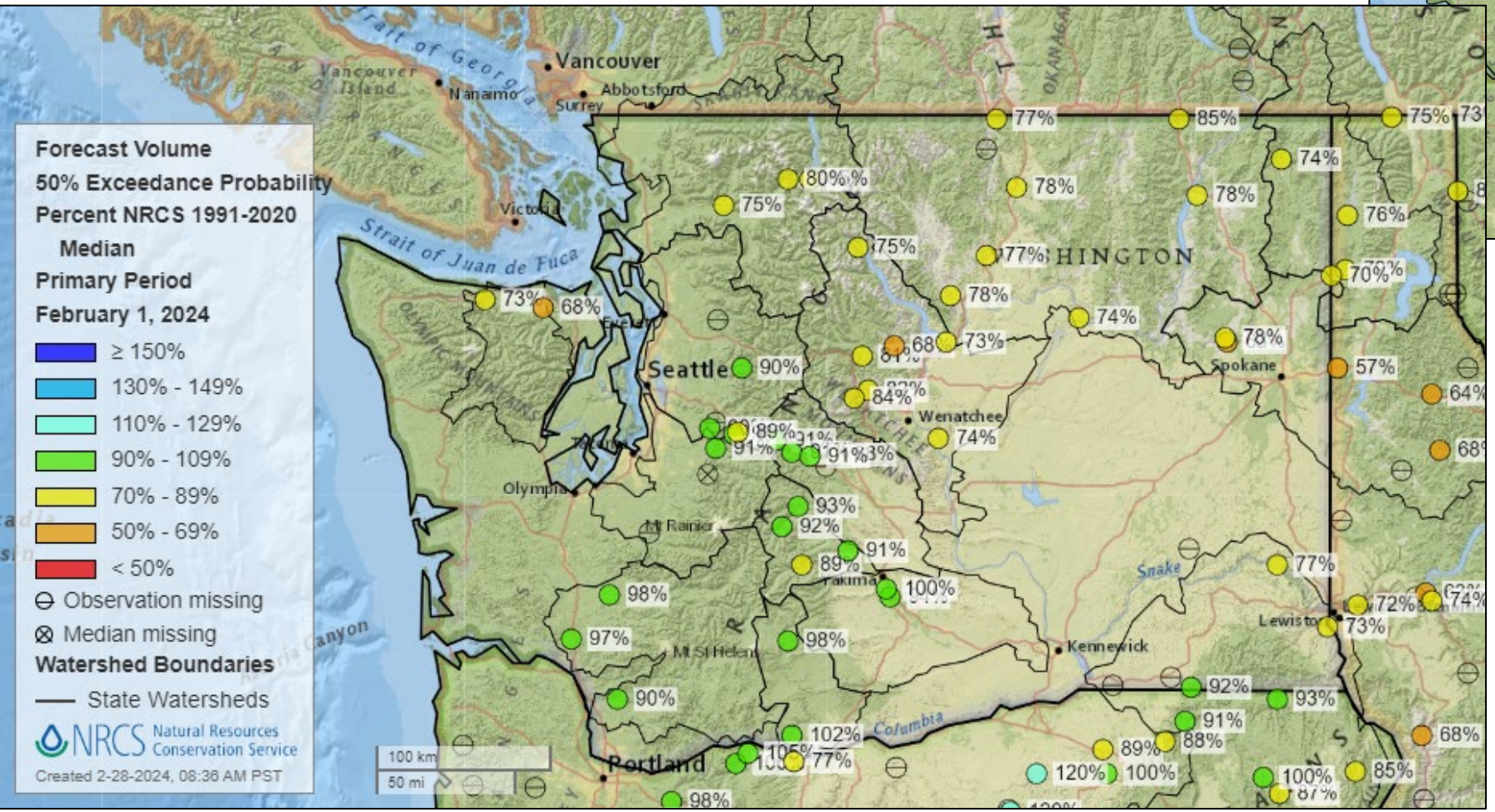
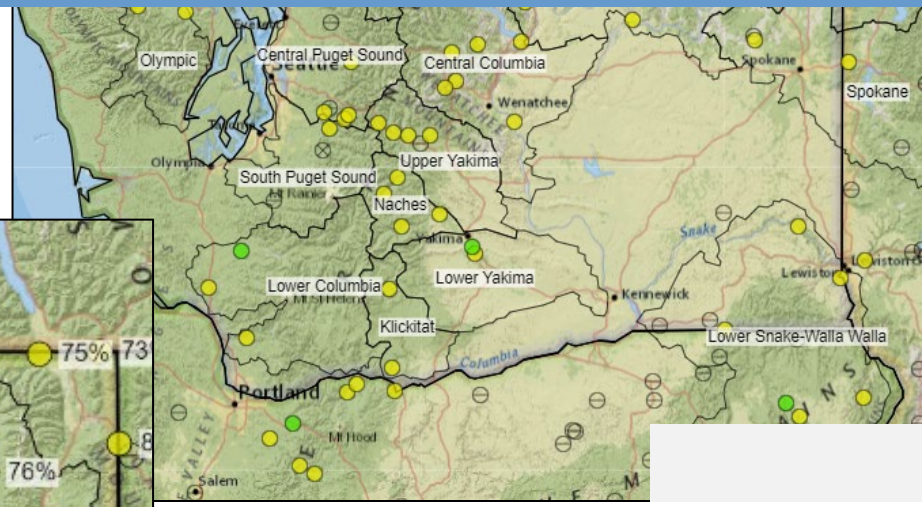
Water Supply Outlook





Next distribution: week of Mar. 4
Reports available here

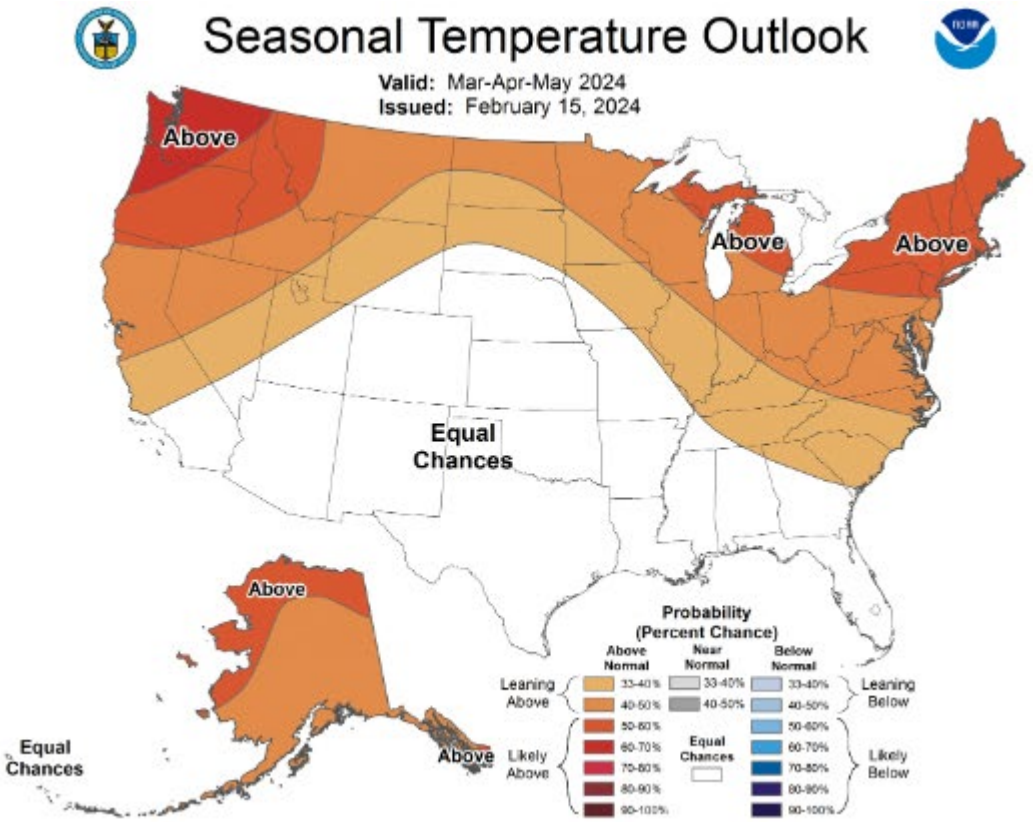
USDA United States Department of Agriculture

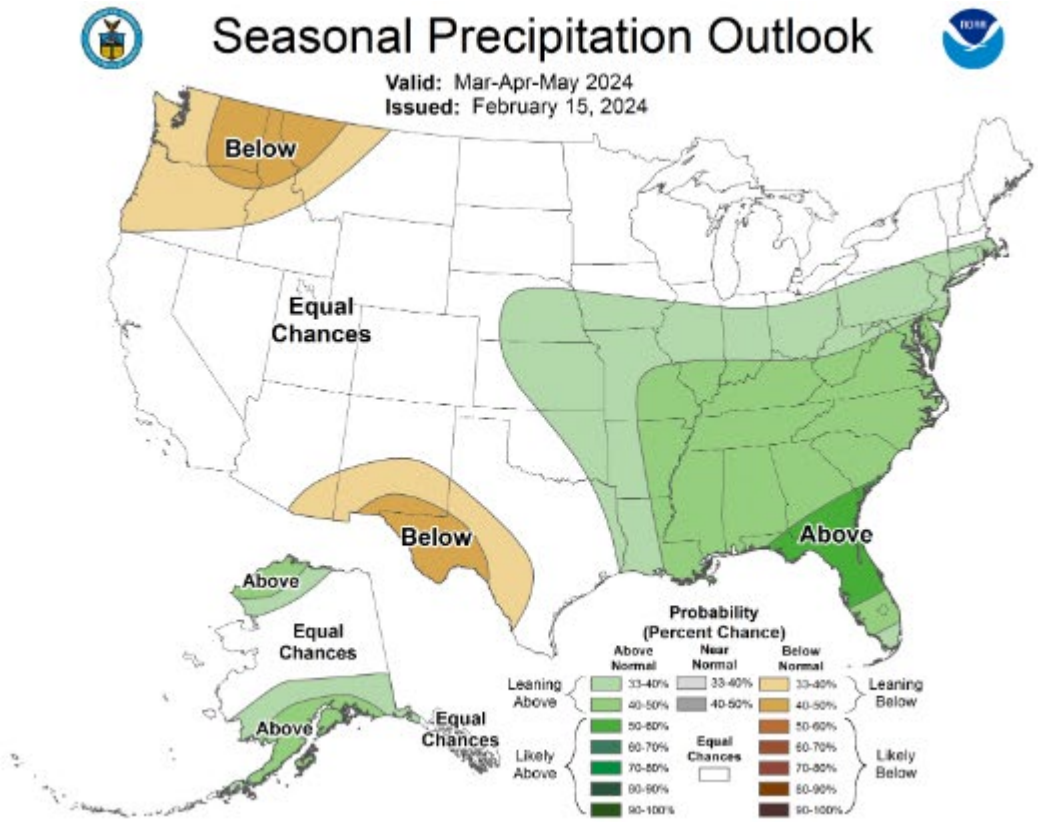
Natural Resources Conservation Service

Climatic Outlook

NOAA CPC Seasonal Outlook

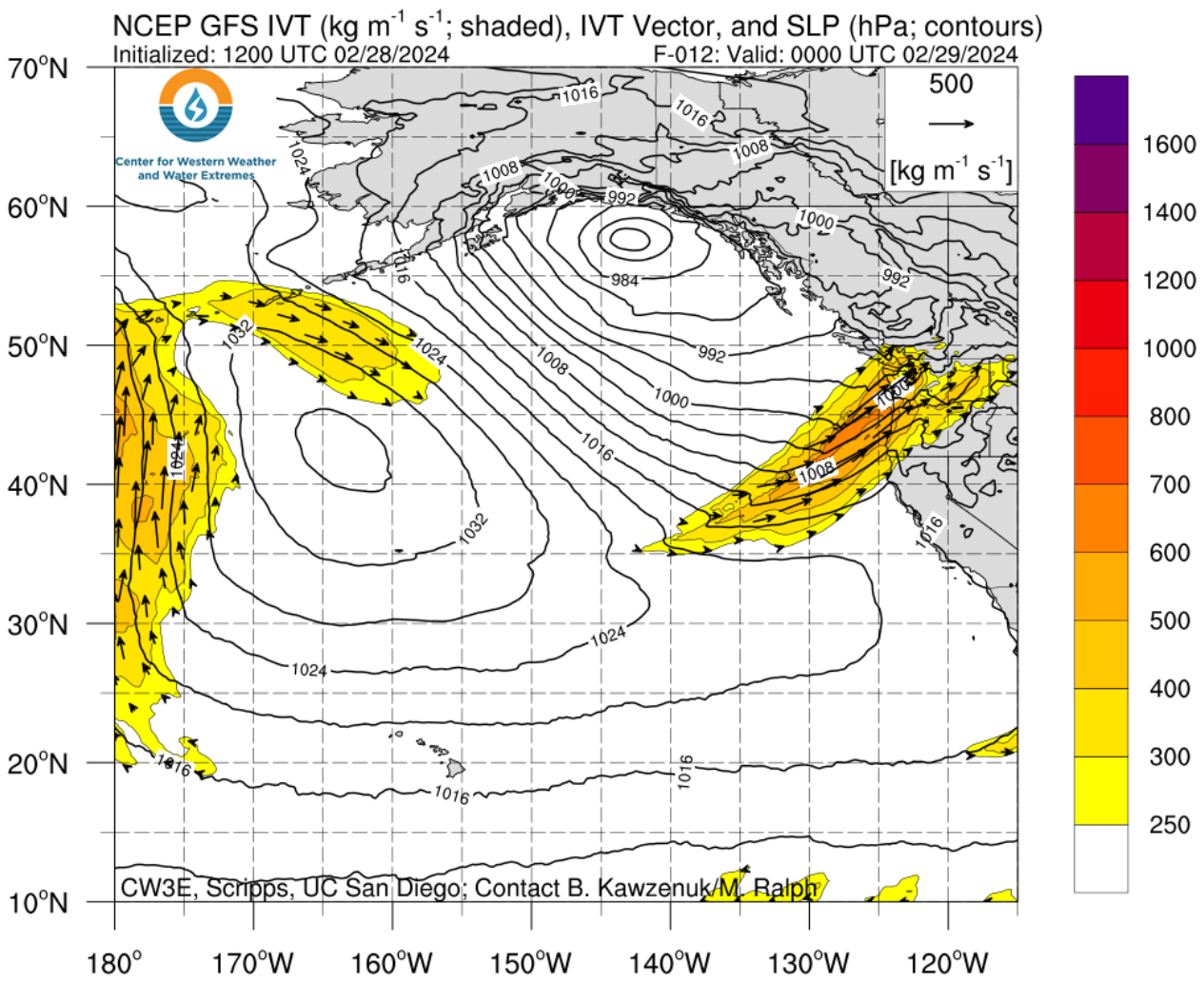
USDA United States Department of Agriculture
Natural Resources Conservation Service

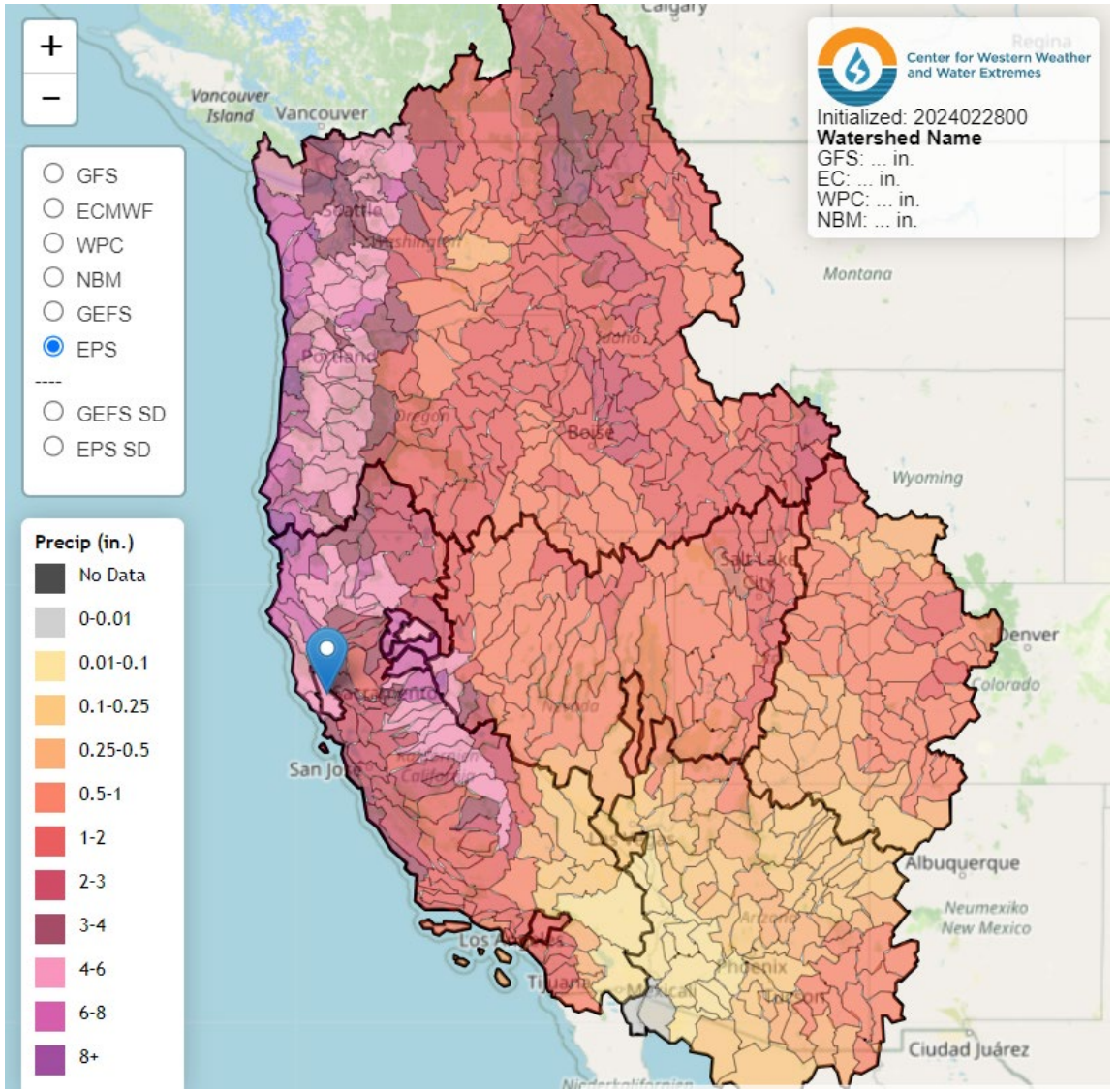




Near-term

United States Department of Agriculture
Natural Resources Conservation Service





United States Department of Agriculture

Natural Resources Conservation Service

Thank you!

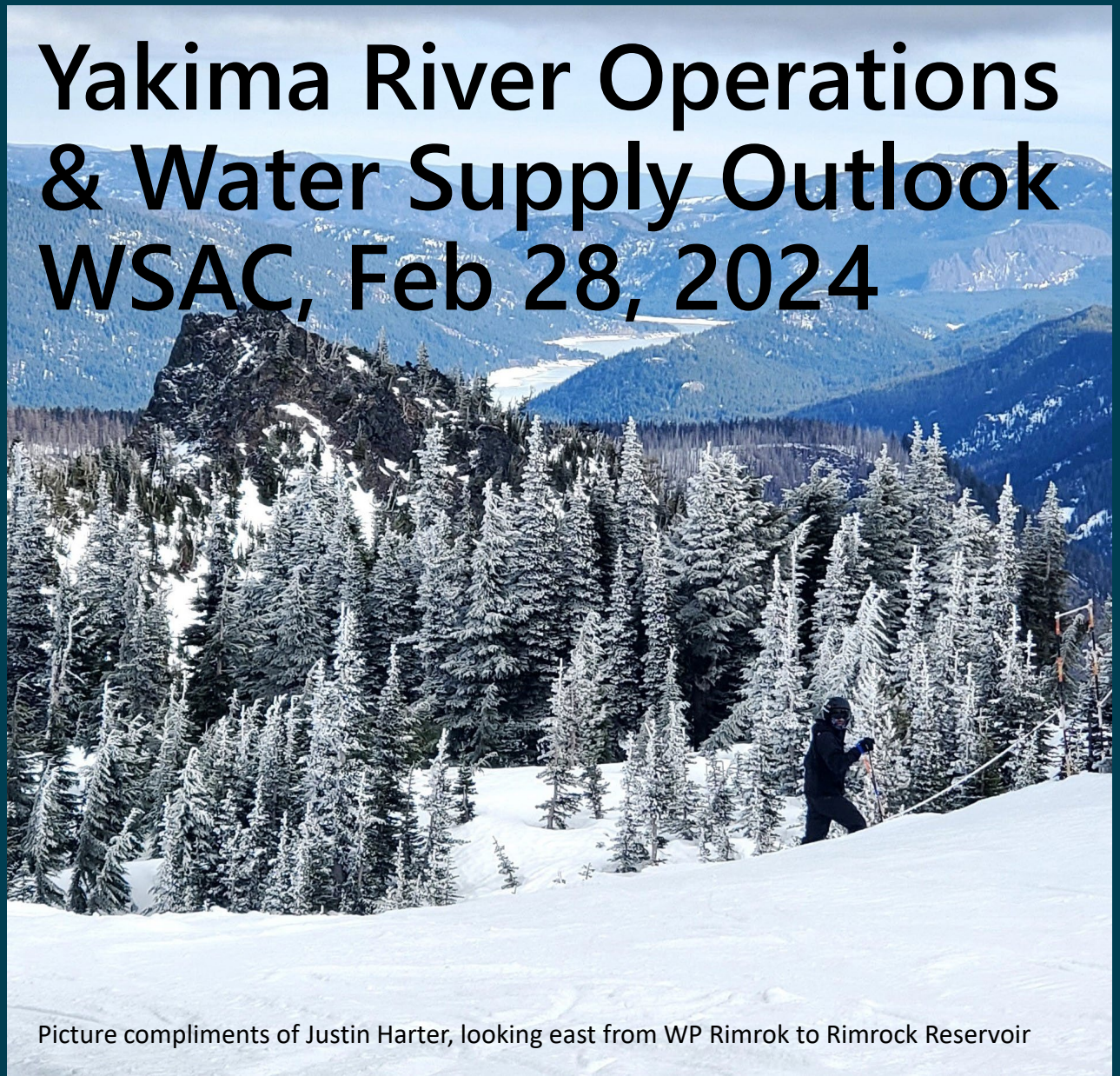
NWAC, Drew Lovell. Delancey Ridge near Mazama

Matt Warbritton
Supervisory Hydrologist
USDA NRCS SSWSF
Portland Data Collection Office
matt.warbritton@usda.gov
503-307-2829

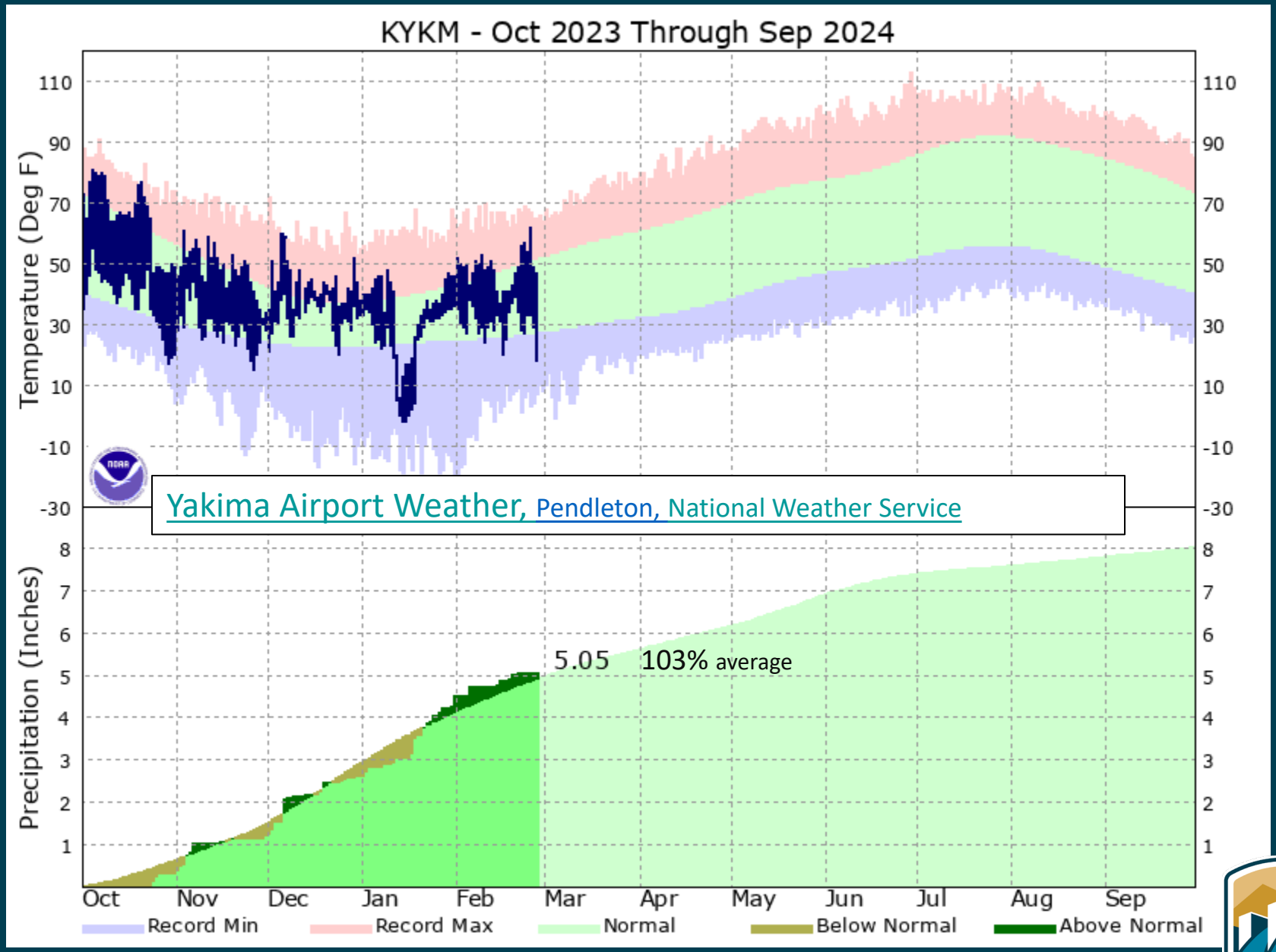
Washington Snow Survey and Water Supply Program Website

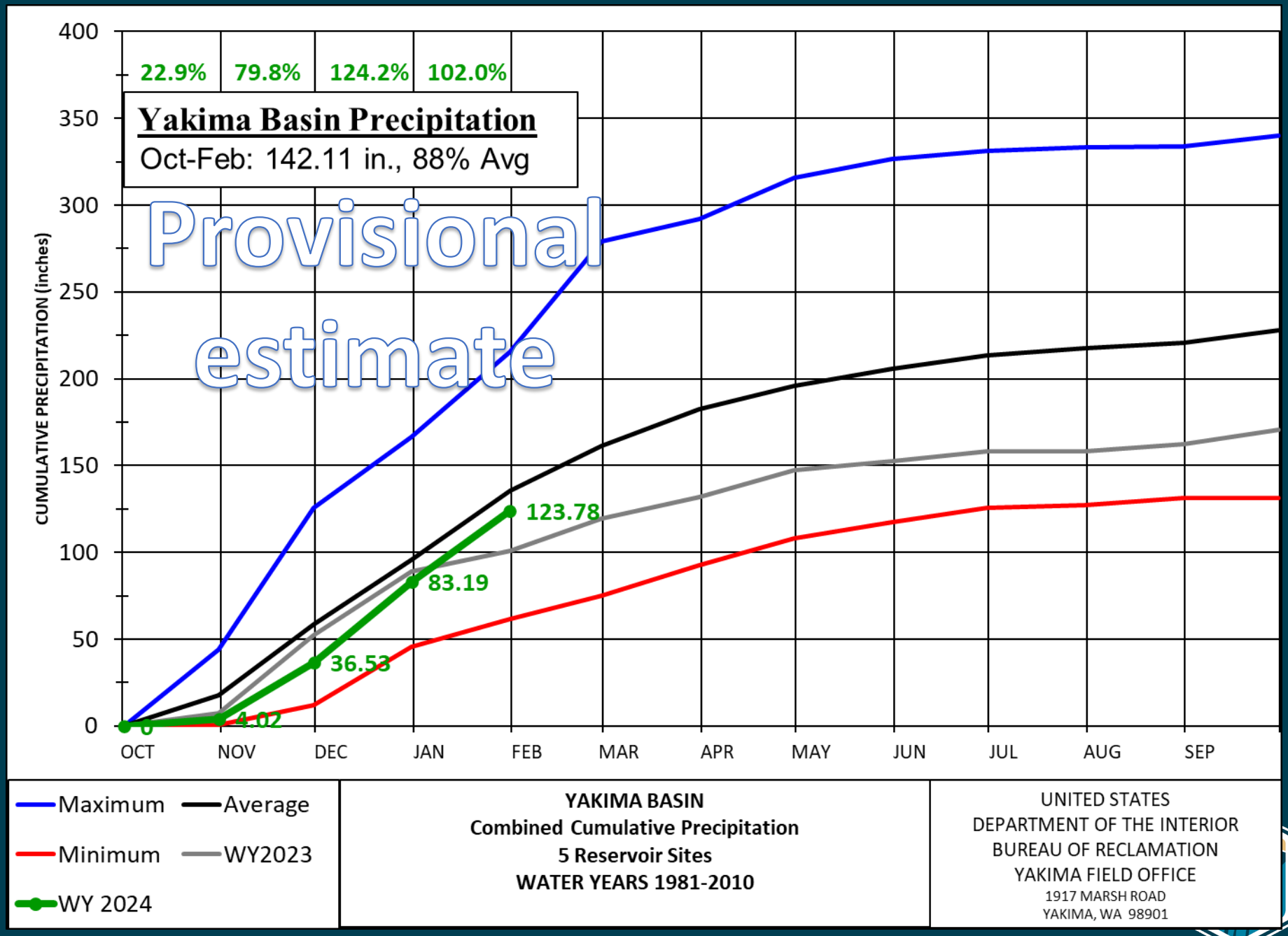
BUREAU OF RECLAMATION

Yakima River Operations & Water Supply Outlook WSAC, Feb 28, 2024

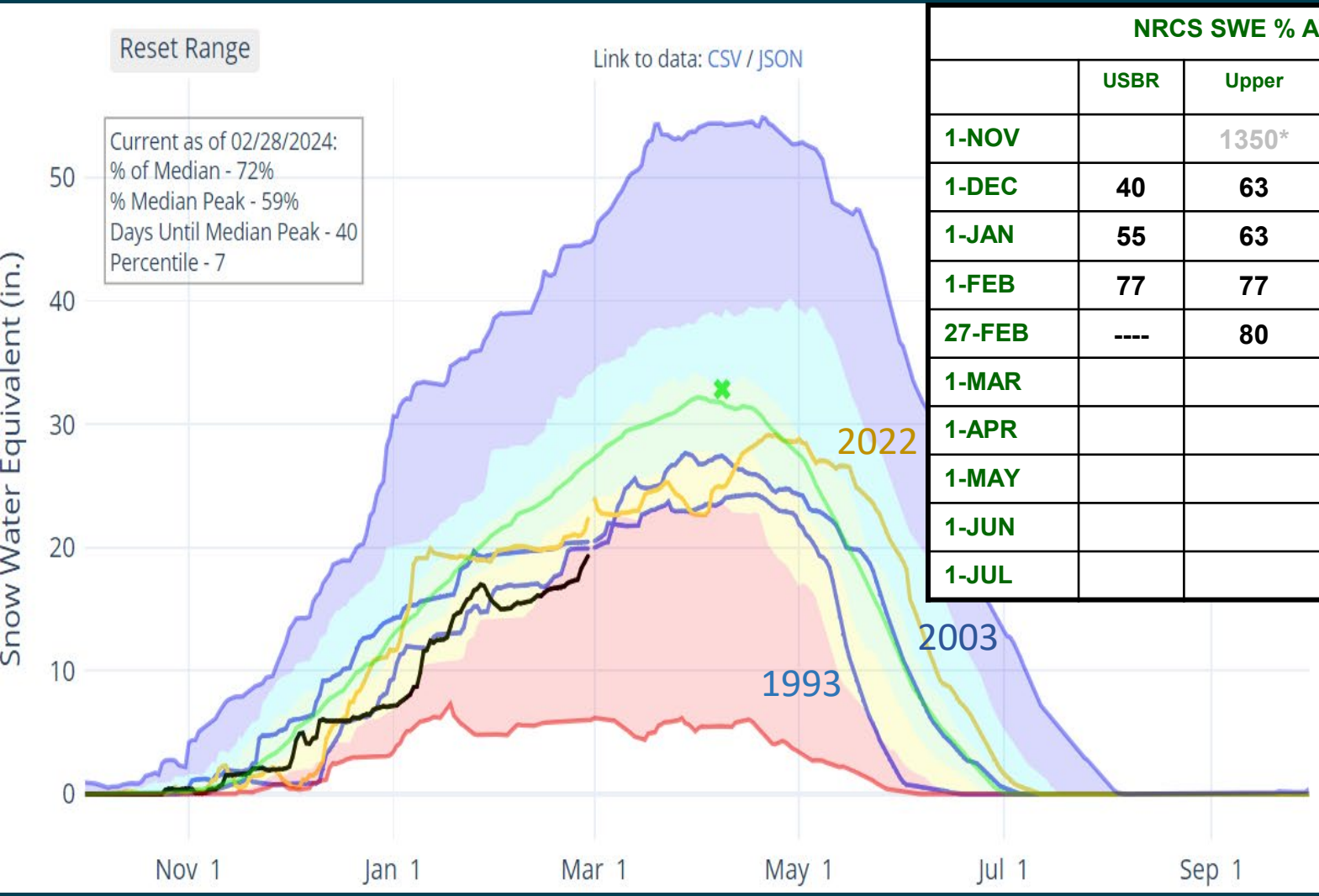


Picture compliments of Justin Harter, looking east from WP Rimrok to Rimrock Reservoir

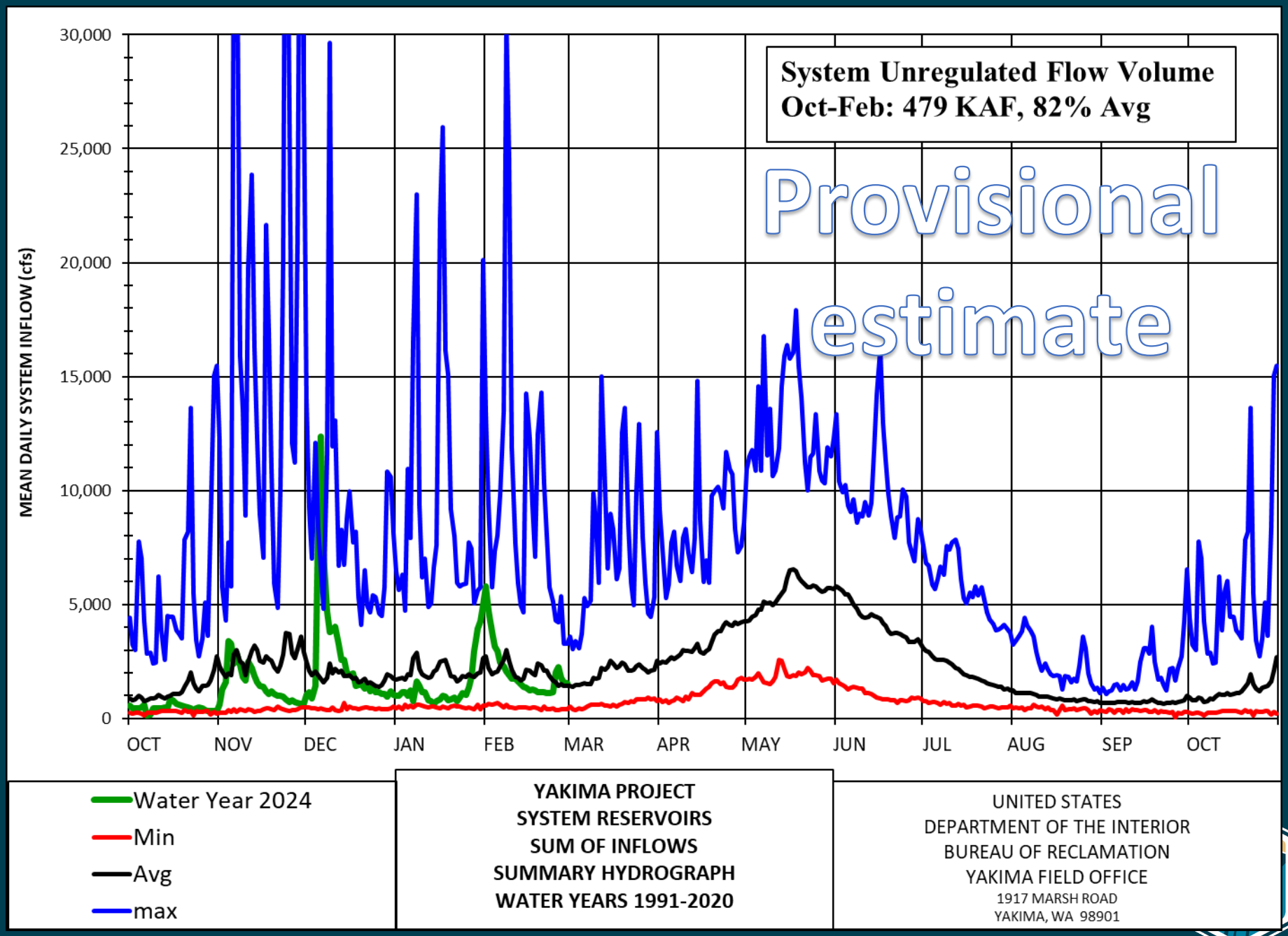

KYKM - Oct 2023 Through Sep 2024
Temperature (Deg F)
110
90
70
50
30
10
-10
-30
Yakima Airport Weather, Pendleton, National Weather Service
Precipitation (Inches)
8
7
6
5
4
3
2
1
5.05
103% average
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Record Min
Record Max
Normal
Below Normal
Above Normal

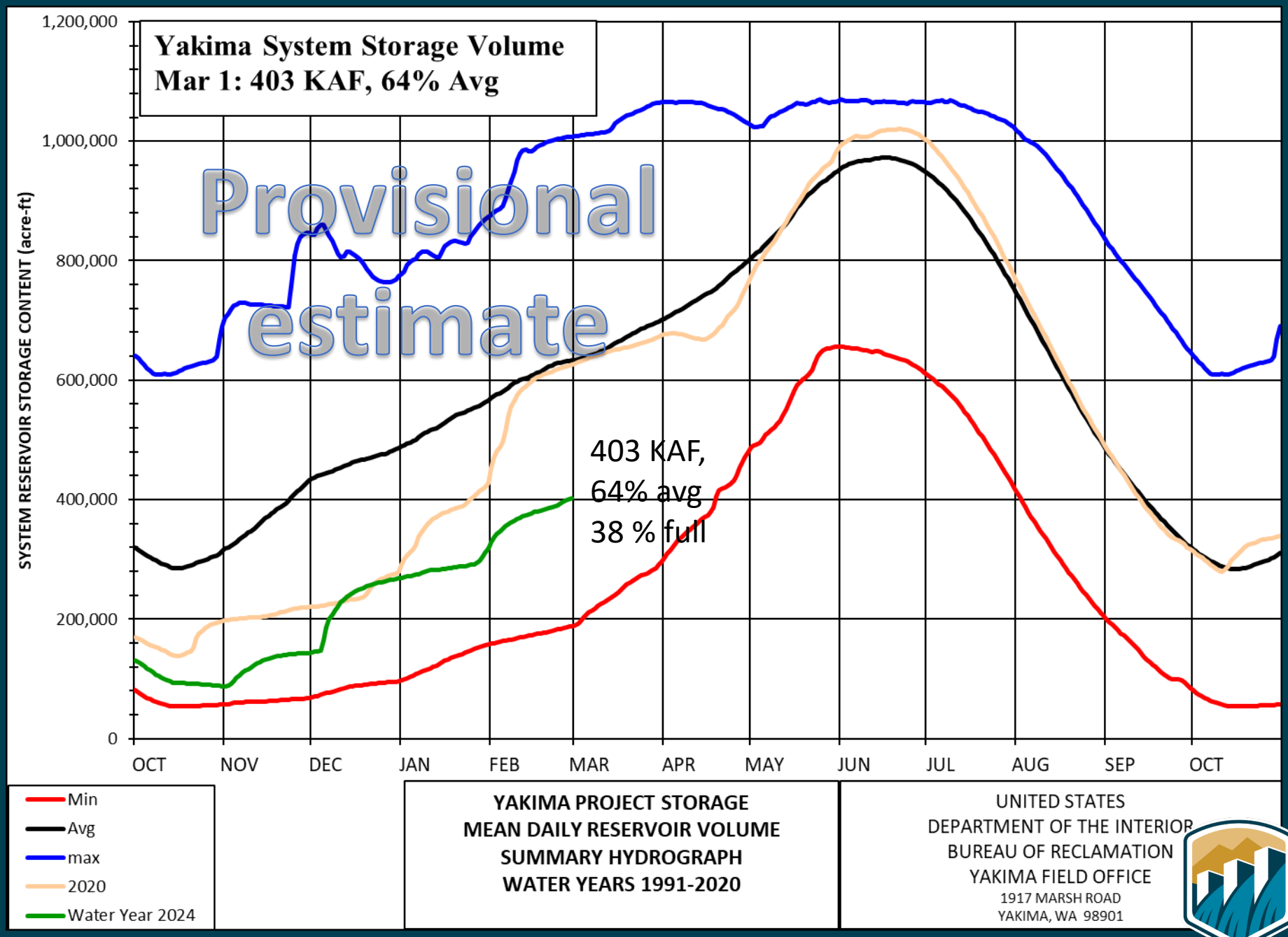

22.9%
79.8%
124.2%
102.0%
Yakima Basin Precipitation
Oct-Feb: 142.11 in., 88% Avg
Provisional estimate
CUMULATIVE PRECIPITATION (inches)
400
350
300
250
200
150
100
50
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
123.78
83.19
36.53
4.02
0
Maximum
Average
Minimum
WY2023
WY 2024
YAKIMA BASIN
Combined Cumulative Precipitation
5 Reservoir Sites
WATER YEARS 1981-2010
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
YAKIMA FIELD OFFICE
1917 MARSH ROAD
YAKIMA, WA 98901

Yakima Basin SNOTEL, Snow Water

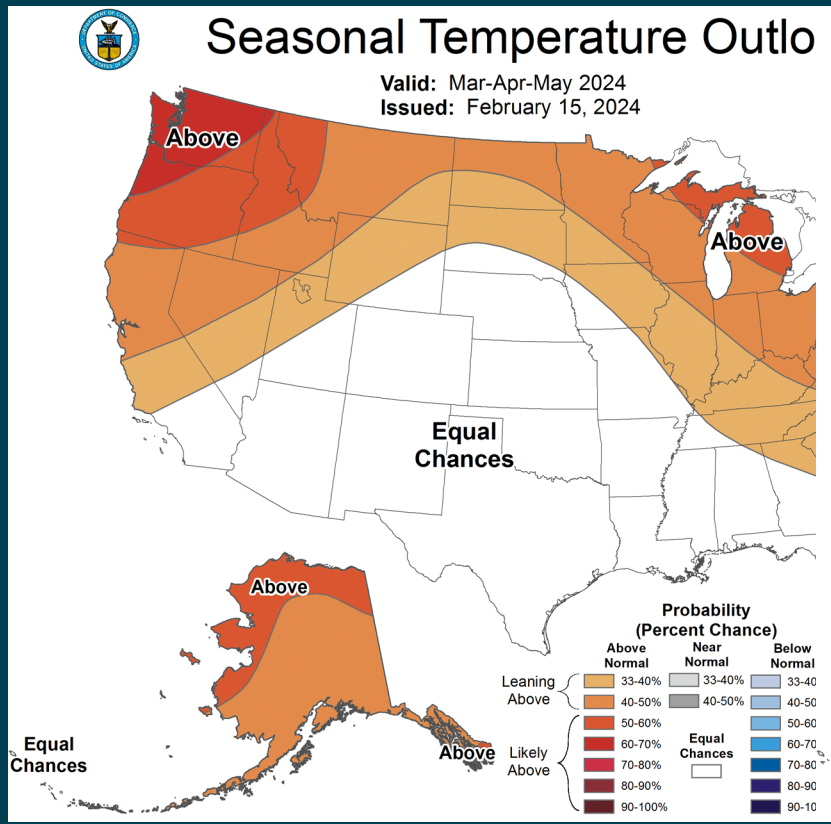


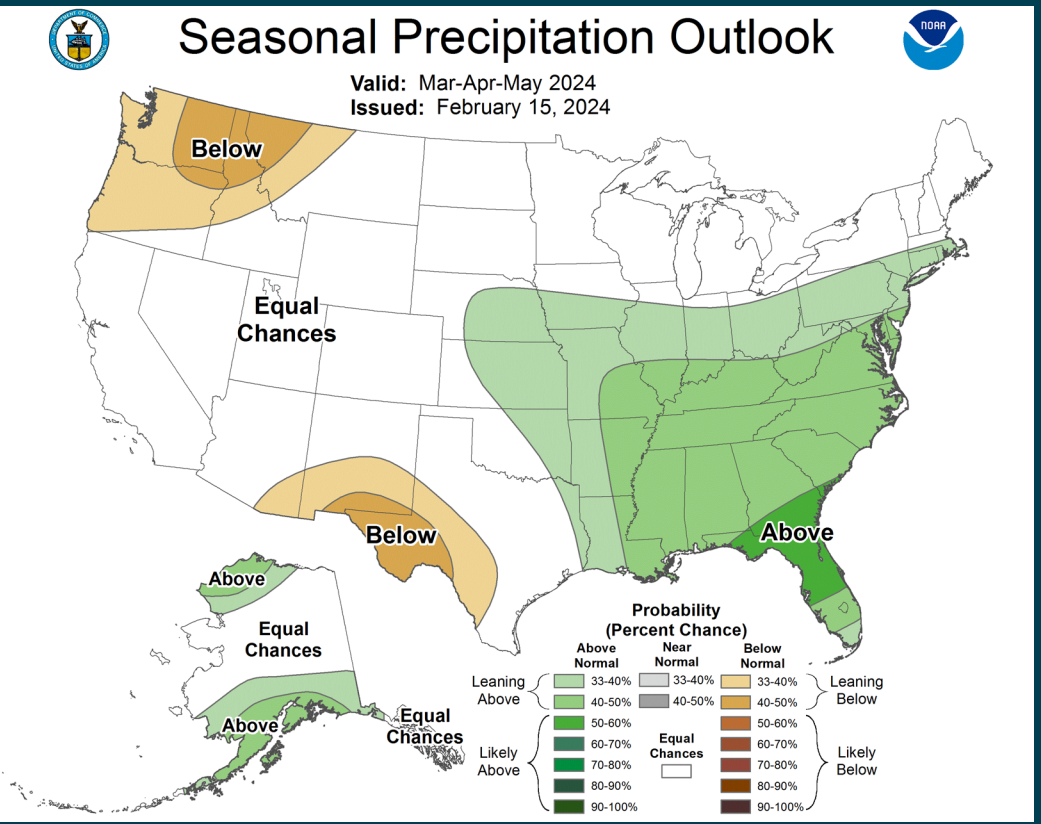
NRCS SWE % AVG				
	USBR	Upper	Naches	Lower
1-NOV		1350*	160*	950*
1-DEC	40	63	70	49
1-JAN	55	63	53	37
1-FEB	77	77	70	55
27-FEB	----	80	72	53
1-MAR				
1-APR				
1-MAY				
1-JUN				
1-JUL				


System Unregulated Flow Volume
Oct-Feb: 479 KAF, 82% Avg
Provisional estimate
MEAN DAILY SYSTEM INFLOW (cfs)
30,000
25,000
20,000
15,000
10,000
5,000
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
Water Year 2024
Min
Avg
max
YAKIMA PROJECT
SYSTEM RESERVOIRS
SUM OF INFLOWS
SUMMARY HYDROGRAPH
WATER YEARS 1991-2020
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
YAKIMA FIELD OFFICE
1917 MARSH ROAD
YAKIMA, WA 98901


Yakima System Storage Volume
Mar 1: 403 KAF, 64% Avg
Provisional estimate
403 KAF,
64% avg
38 % full
SYSTEM RESERVOIR STORAGE CONTENT (acre-ft)
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
Min
Avg
max
2020
Water Year 2024
YAKIMA PROJECT STORAGE
MEAN DAILY RESERVOIR VOLUME
SUMMARY HYDROGRAPH
WATER YEARS 1991-2020
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
YAKIMA FIELD OFFICE
1917 MARSH ROAD
YAKIMA, WA 98901

90-Day Forecast

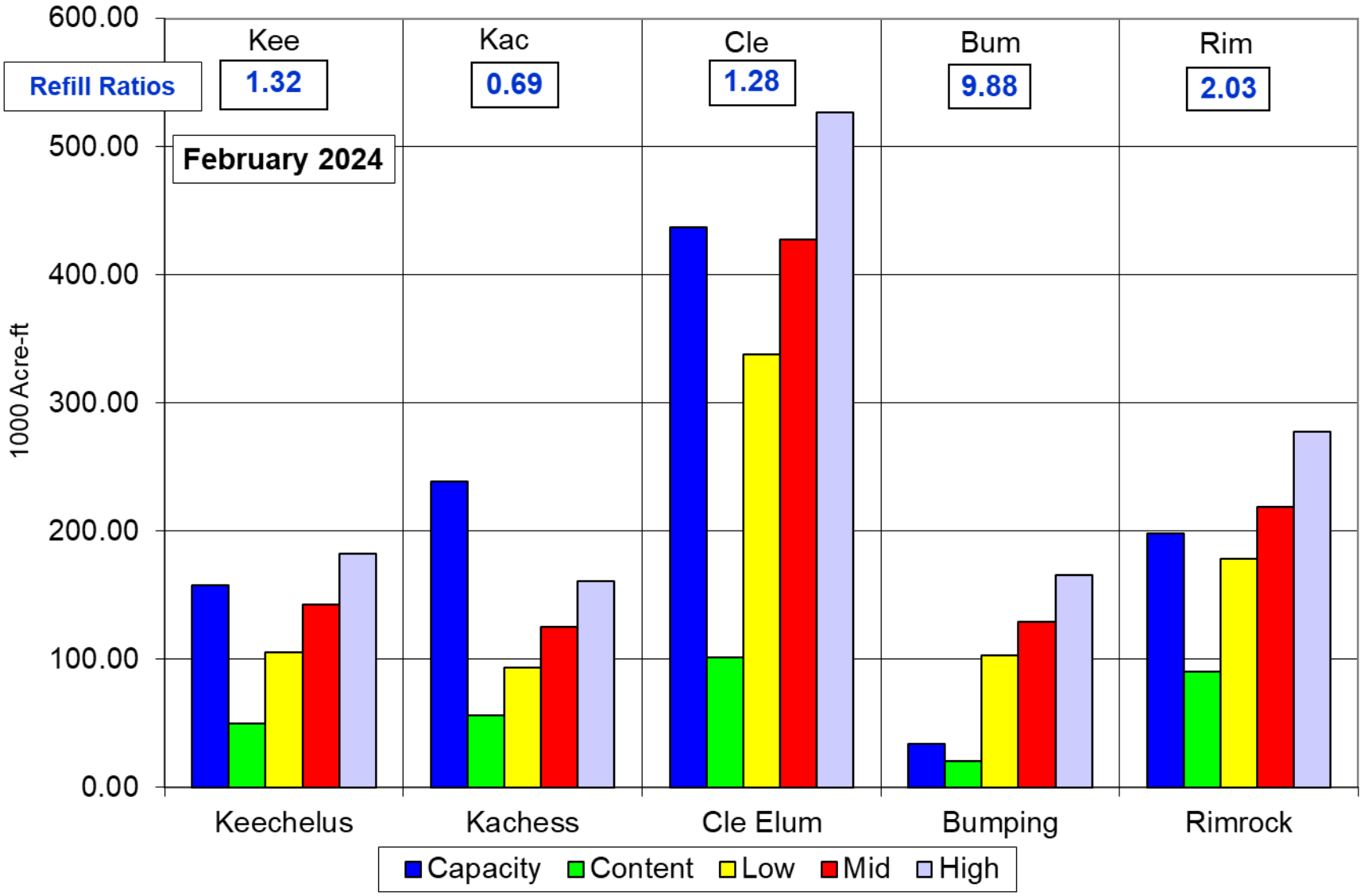




Yakima Subbasin forecasts

Yakima Basin Forecasts, Feb-Jul, AF						
Feb, 2024	Min	**Composite**	Max	Min	**Composite**	Max
Parw	1619340	**2100357**	2758951	72%	**93%**	123%
kee	105695	**142445**	182582	70%	**94%**	120%
kac	93384	**125071**	160742	68%	**91%**	116%
cle	338163	**427725**	526436	73%	**92%**	113%
bum	103320	**128943**	166016	73%	**92%**	118%
rim	178743	**218539**	277605	75%	**92%**	117%
Yumw	700996	**908345**	1137058	72%	**93%**	116%
Nacw	632785	**828361**	1103434	71%	**93%**	124%
System	779423	**1042722**	1318373	69%	**92%**	116%

Yakima Project Runoff Forecast to Reservoir Space Available



Hydrologic Summary

- Yakima Reservoir Storage is low, 372KAF, 61% avg.
- Went from 3rd lowest to 6th lowest (1971-2023).
- Fall precip and flows were low
- Winter precip and flows have been good
- YRBWEP Conservation: 22.4 KAF
- Winter flows remain at the BA minimum.
- February forecasts are not too grim 90%+ range.