2023 Snow Update & River Predictions

No signs of an early spring in sight yet… so don't put those skis away.

This talk will be posted and for more information see https://snowweatherandflow.blog/

IWA
IDAHO WHITEWATER ASSOCIATION

March 1, 2023

RIVER PREDICTIONS AND MEMBERSHIP MEETING

Where: Idaho River Sports, Boise, ID

Time: The meeting starts at 6:30

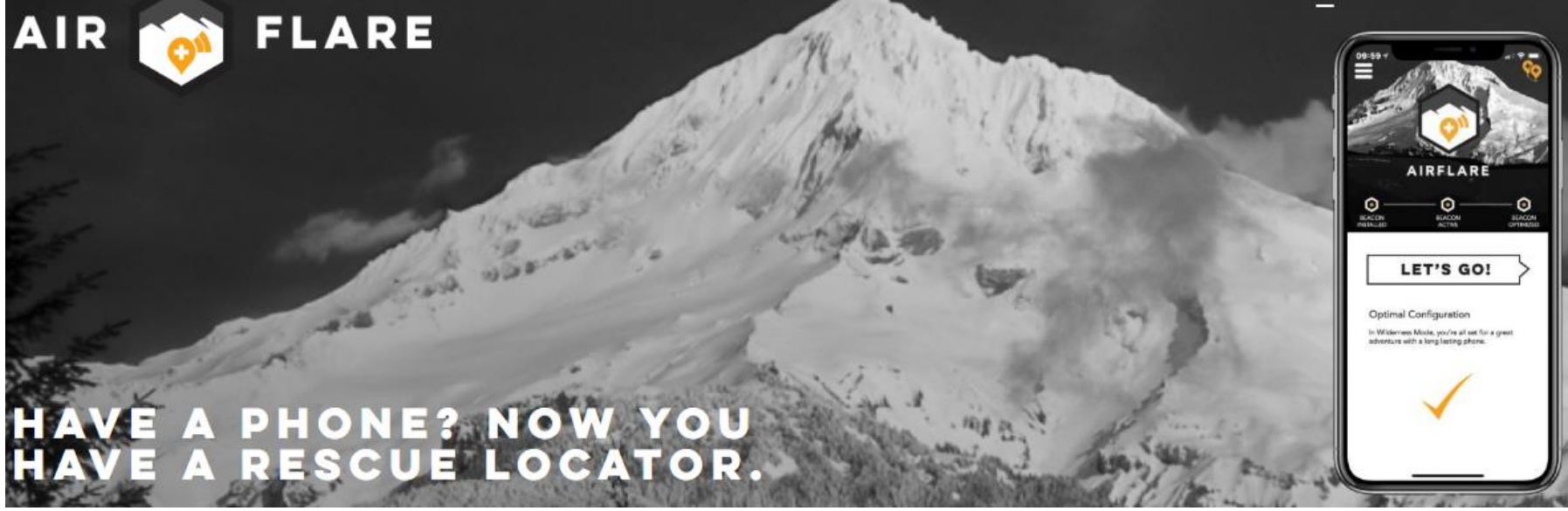
Speakers: Ron Abramovich

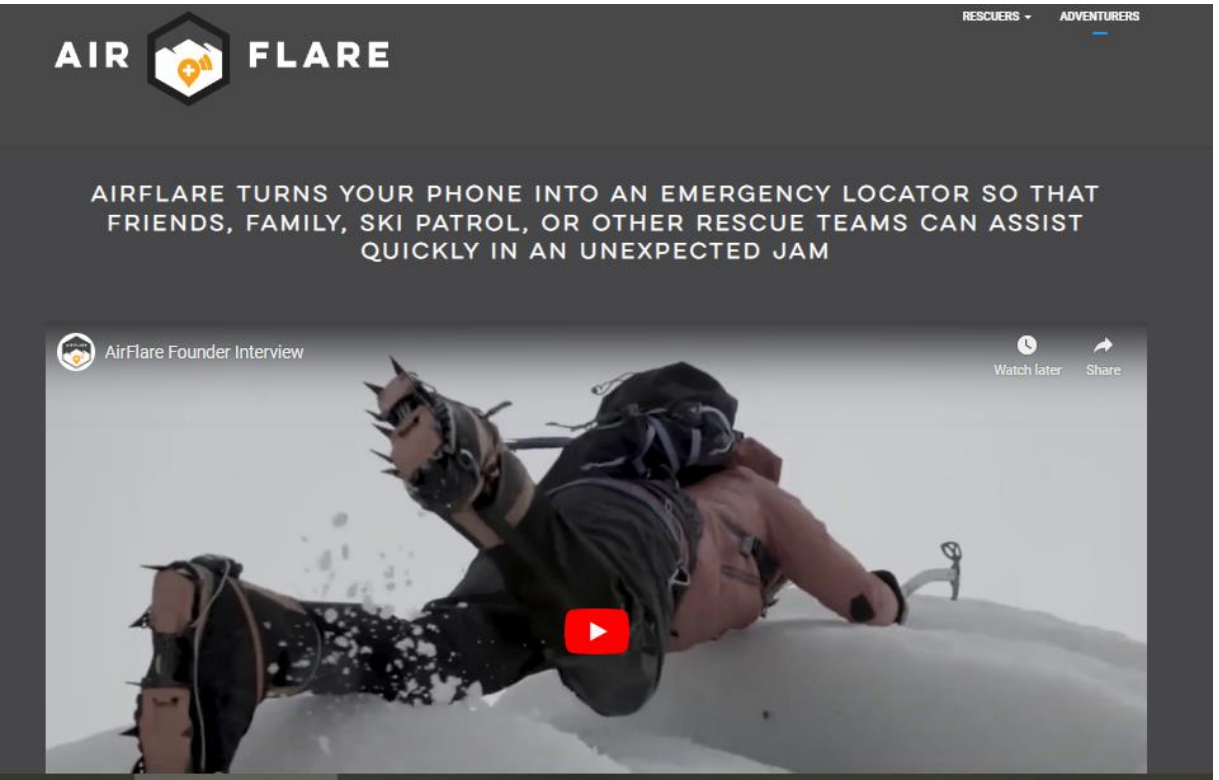
Photo Credit: Christine Riggs Photography

Idaho Whitewater Association

A Non-profit Organization for Idaho Whitewater Enthusiasts

https://airflare.com/



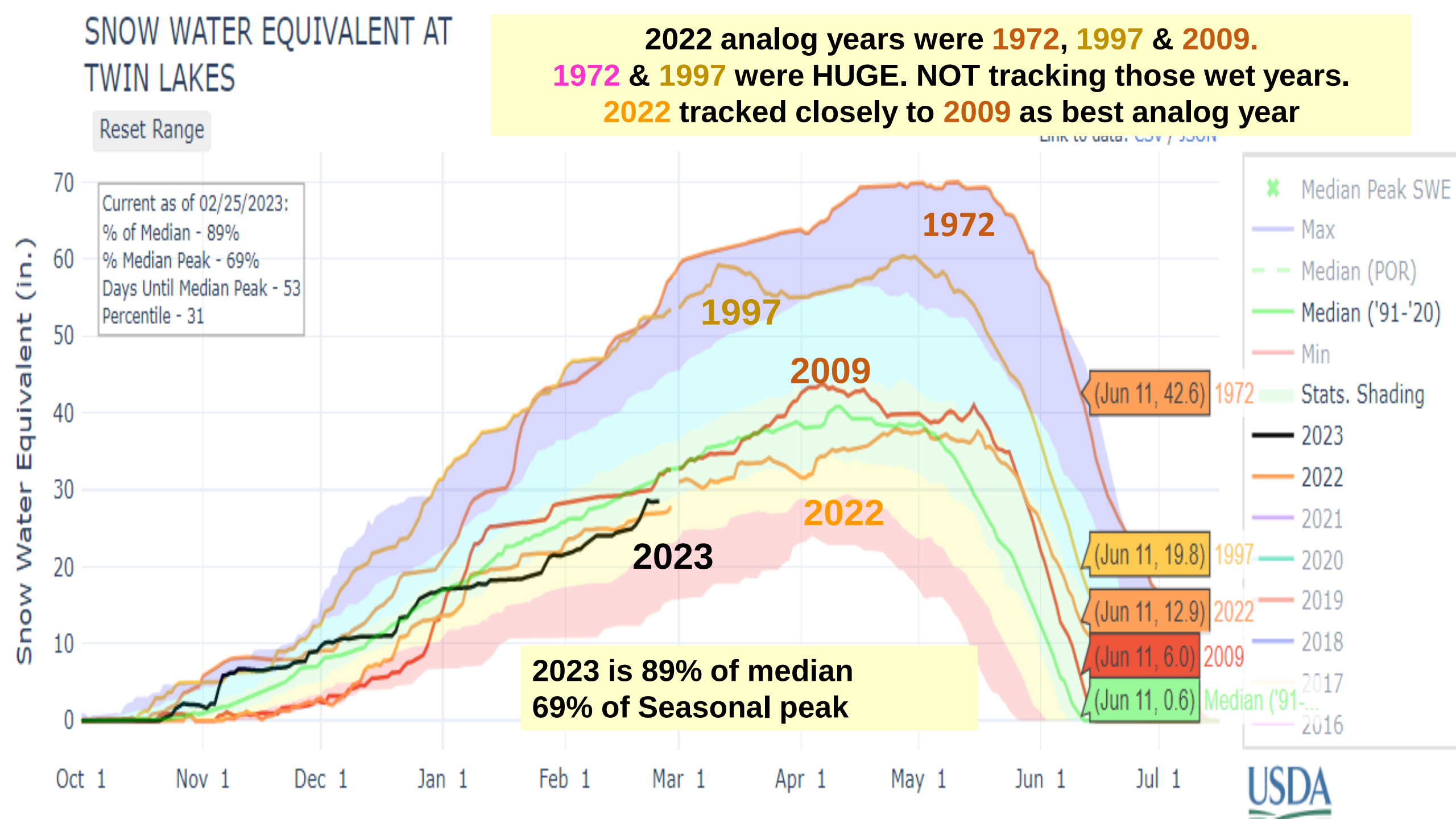


Seasonal Climate Forecast
April – June 2022
Issued: March 18, 2022

March 2022
back-to-back La Nina years

Forecast Highlights

- **The top 3 analog years (1972, 1997 & 2009)** were retained. They have had a remarkable run (since last summer).


SNOW WATER EQUIVALENT AT TWIN LAKES
Reset Range
2022 analog years were 1972, 1997 & 2009.
1972 & 1997 were HUGE. NOT tracking those wet years.
2022 tracked closely to 2009 as best analog year
Current as of 02/25/2023:
% of Median - 89%
% Median Peak - 69%
Days Until Median Peak - 53
Percentile - 31
Snow Water Equivalent (in.)
70
60
50
40
30
20
10
0
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
1972
1997
2009
2022
2023
(Jun 11, 42.6) 1972
(Jun 11, 19.8) 1997
(Jun 11, 12.9) 2022
(Jun 11, 6.0) 2009
(Jun 11, 0.6) Median ('91-...
Median Peak SWE
Max
Median (POR)
Median ('91-'20)
Min
Stats. Shading
2023
2022
2021
2020
2019
2018
2017
2016
2023 is 89% of median
69% of Seasonal peak
USDA

Forecast from March 10, 2022 - by Cliff Mass Weather Blog

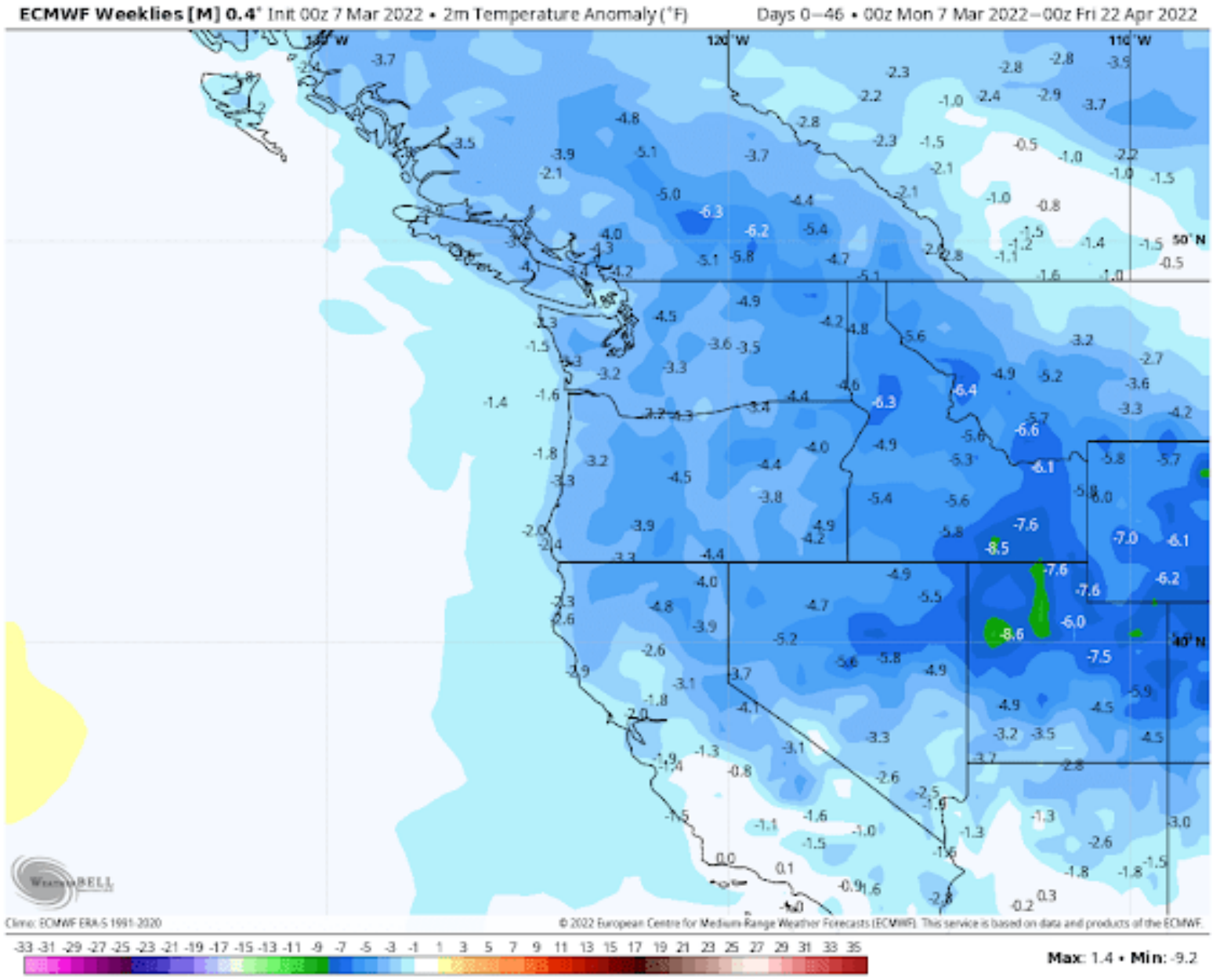
Nearly all forecast models are showing this for the next month or so. **A cool, wet spring.**

My favorite extended-period forecast model is run by the European Center and **shows its long-term (46-day) forecast below (through April 22).**

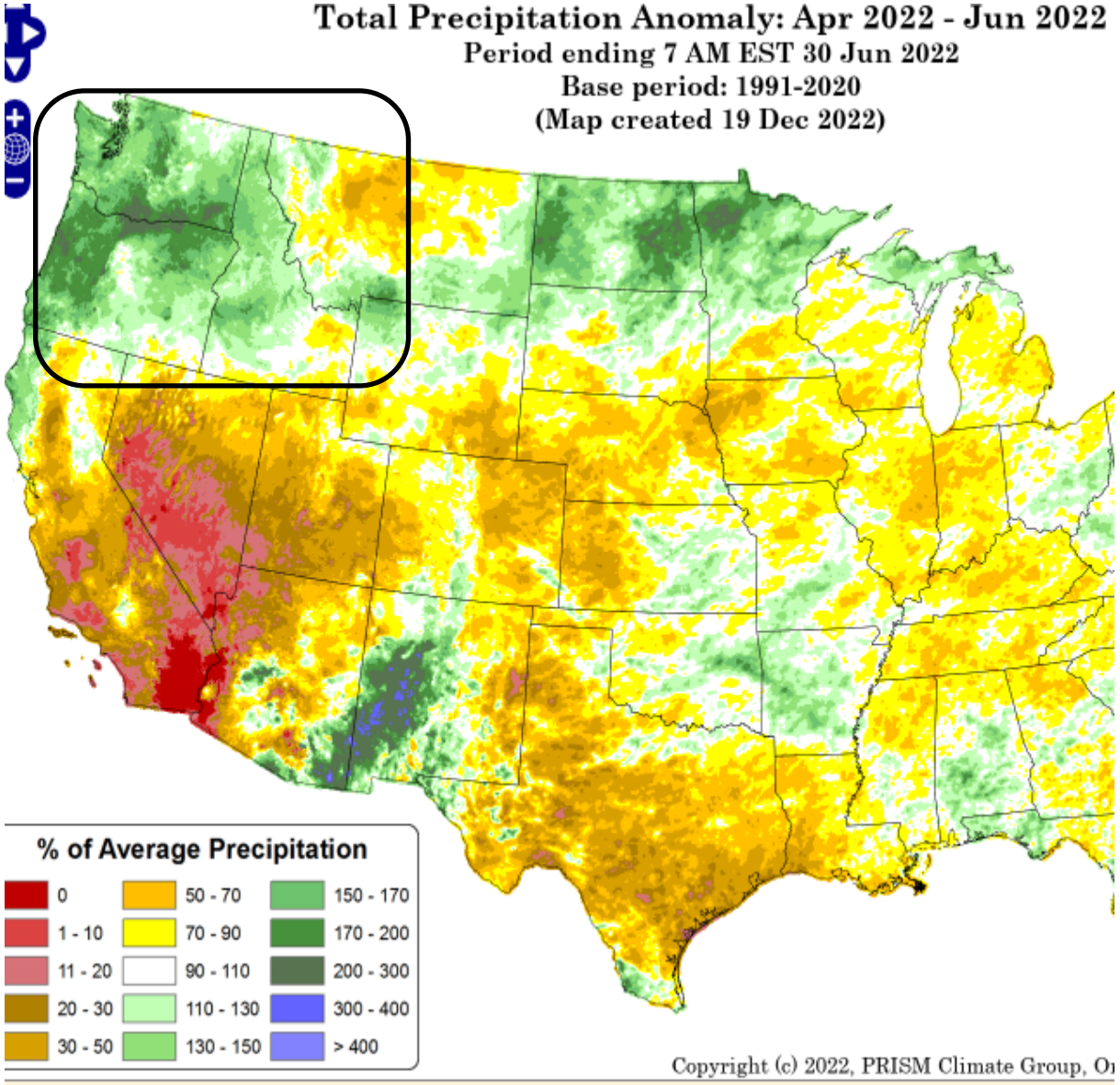
The temperature forecast difference from normal calls for colder temperatures than typical across the entire region. **(blue indicates cooler than normal temps)**

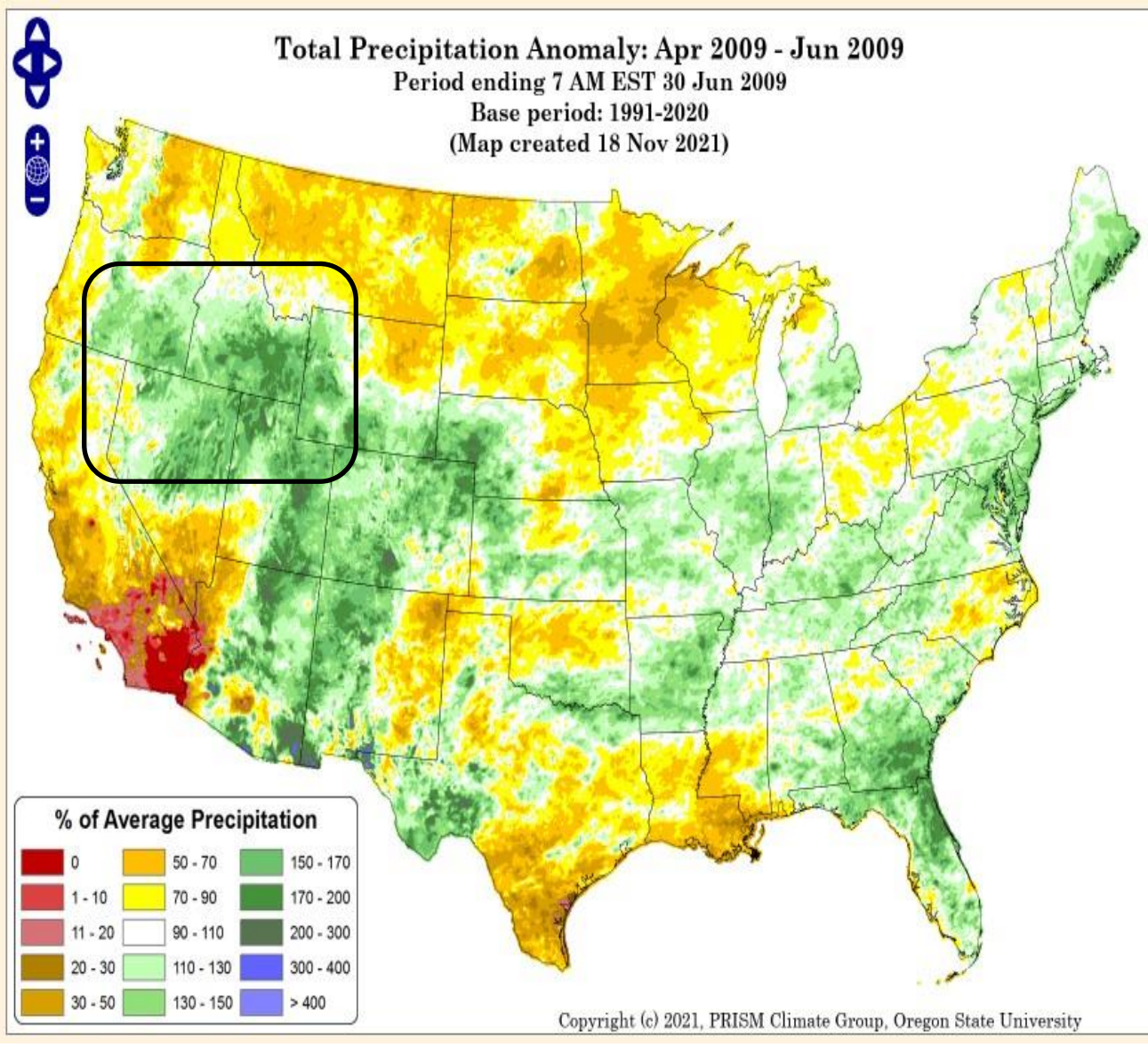
Precipitation for the same period?

Above normal precipitation in PNW.



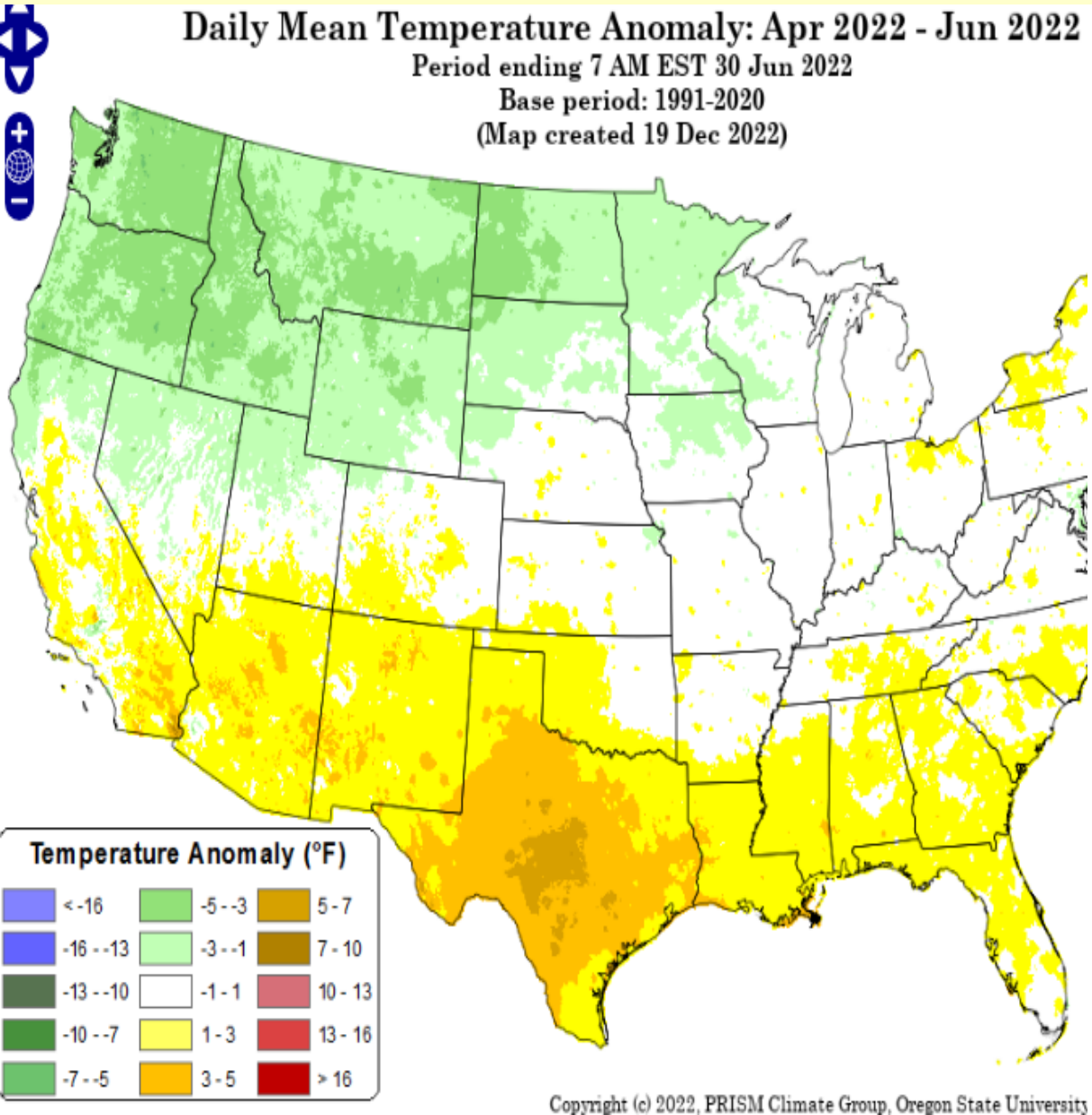
Apr - Jun Precipitation
2022 Compared to 2009

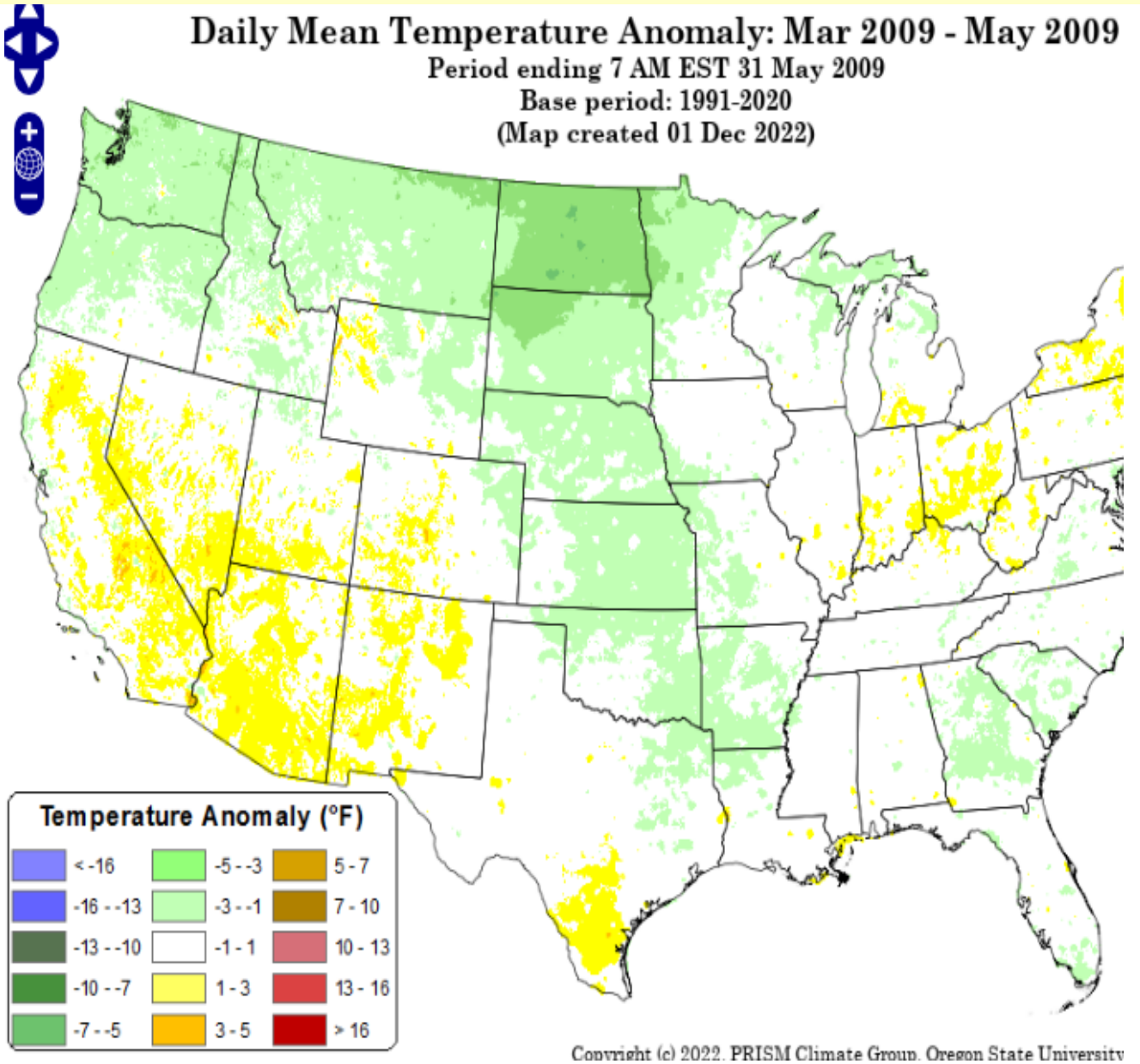




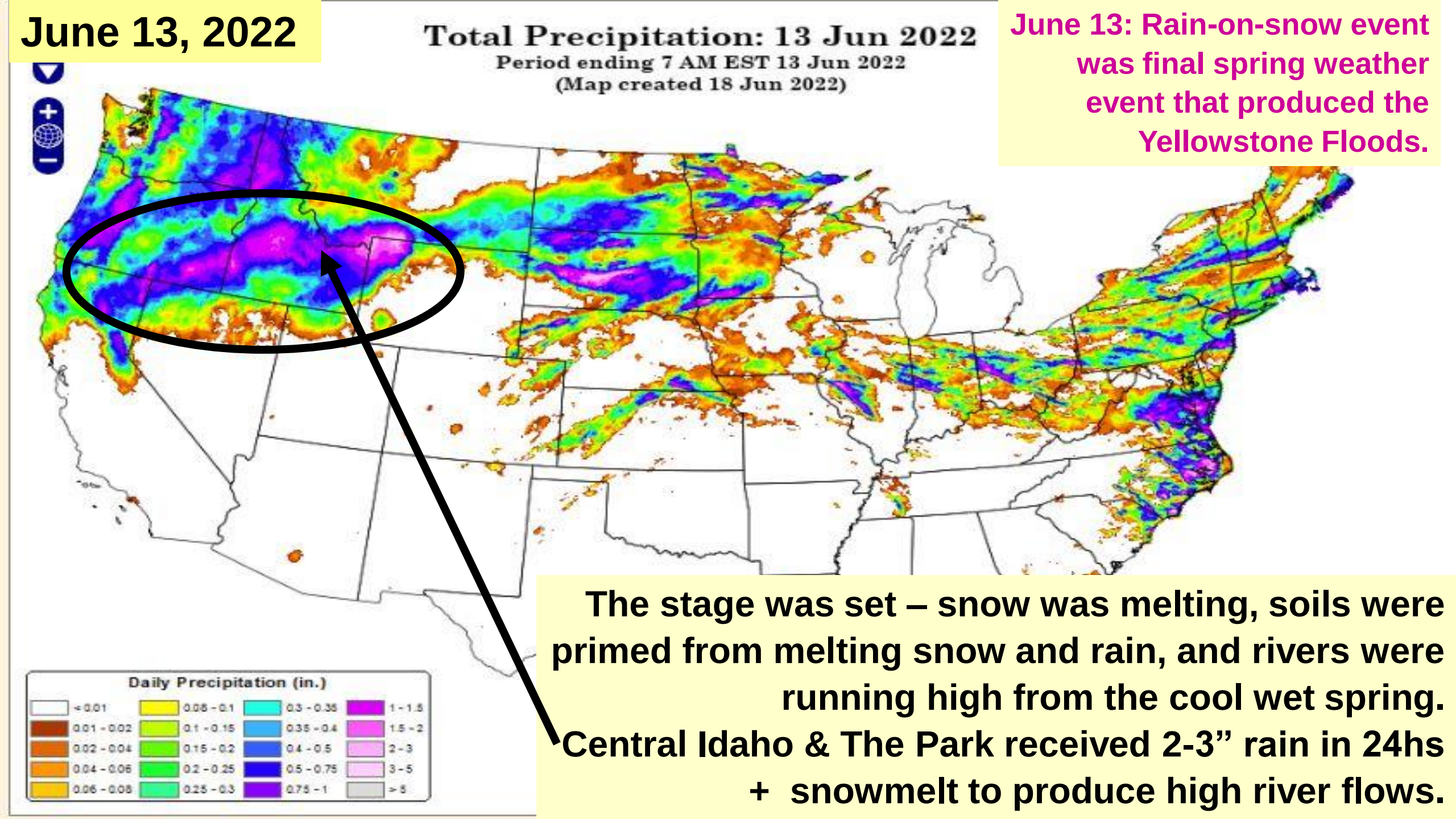
Cold Temps delayed melt and made the rivers pop late !

Apr - Jun 2022 Daily Mean Temperatures Mar - May 2009





June 13, 2022



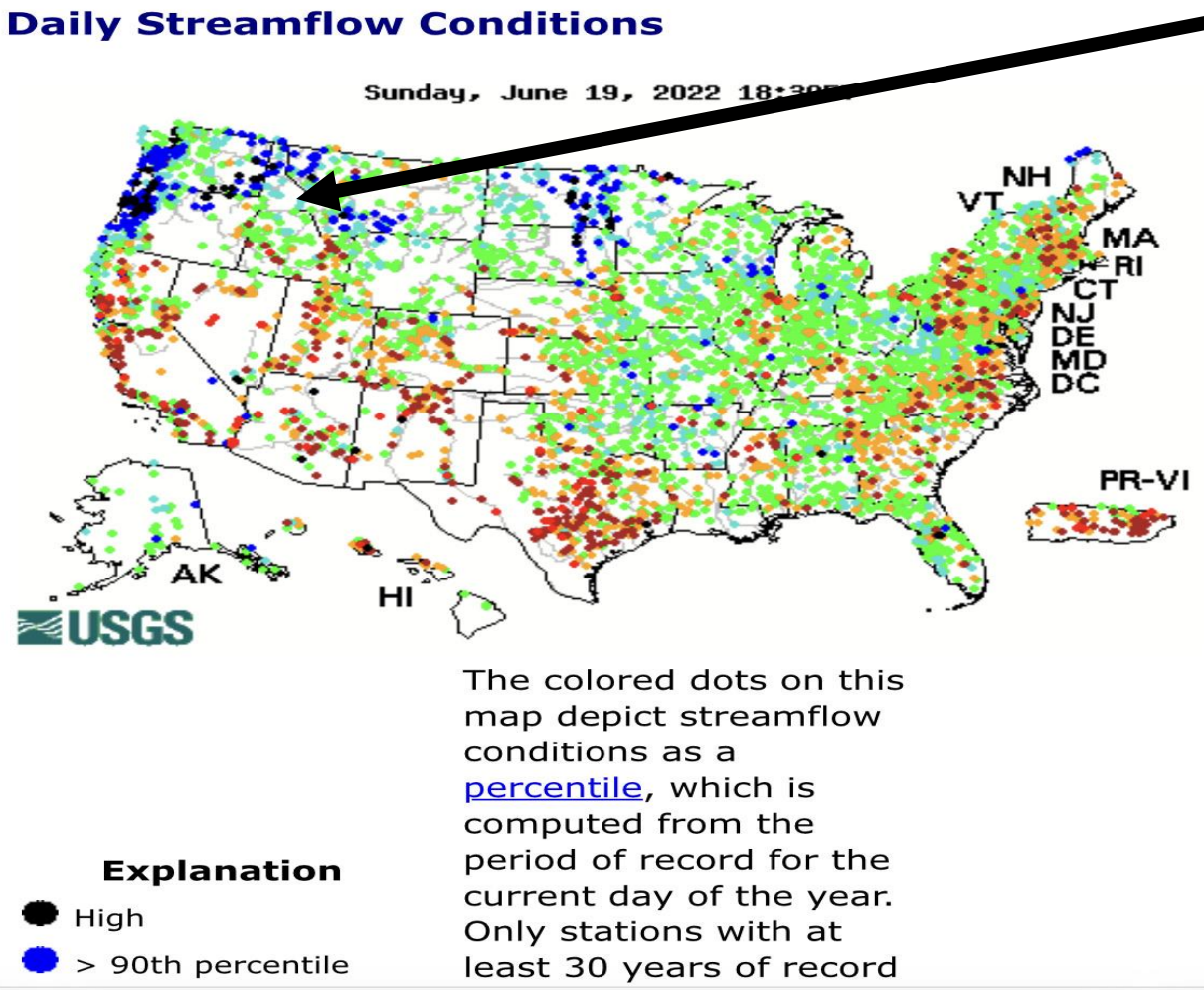
June 13: Rain-on-snow event was final spring weather event that produced the Yellowstone Floods.

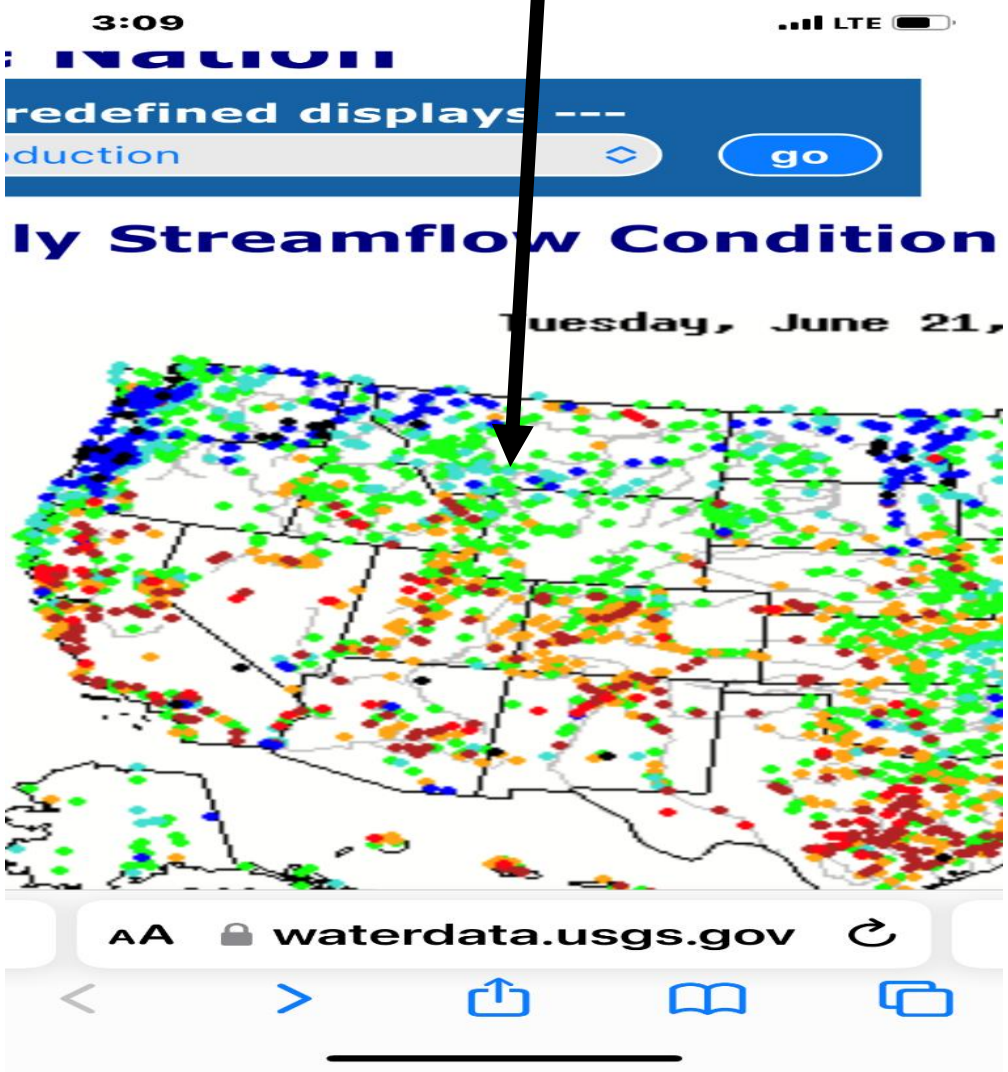
The stage was set – snow was melting, soils were primed from melting snow and rain, and rivers were running high from the cool wet spring.

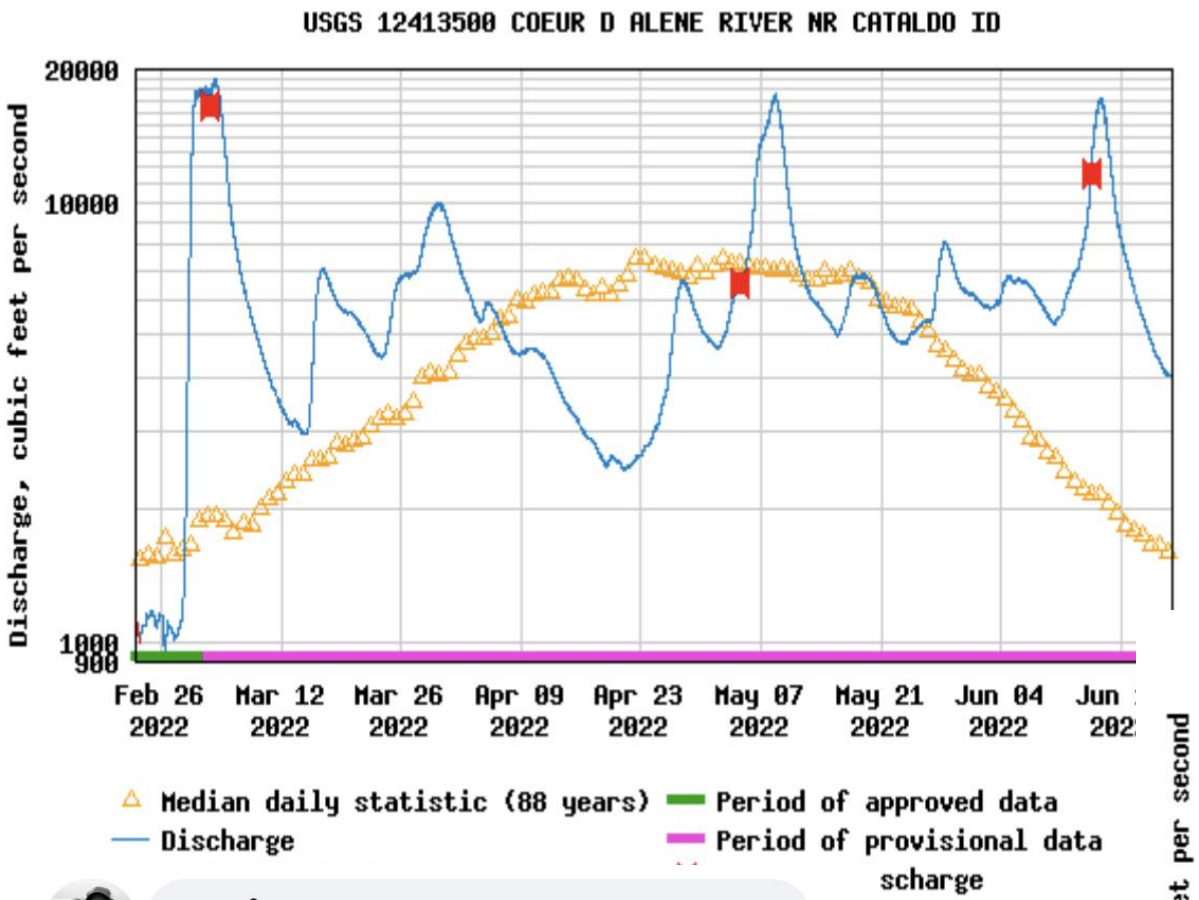
Central Idaho & The Park received 2-3” rain in 24hs + snowmelt to produce high river flows.

June 2022 Yellowstone Floods

What Happens on the Continental Divide in Yellowstone National Park, does not stay there. One creek flows into and another, and another... After the rain-on-snow runoff event, you could follow the runoff wave down both sides of Continental Divide to Pacific & Atlantic oceans.

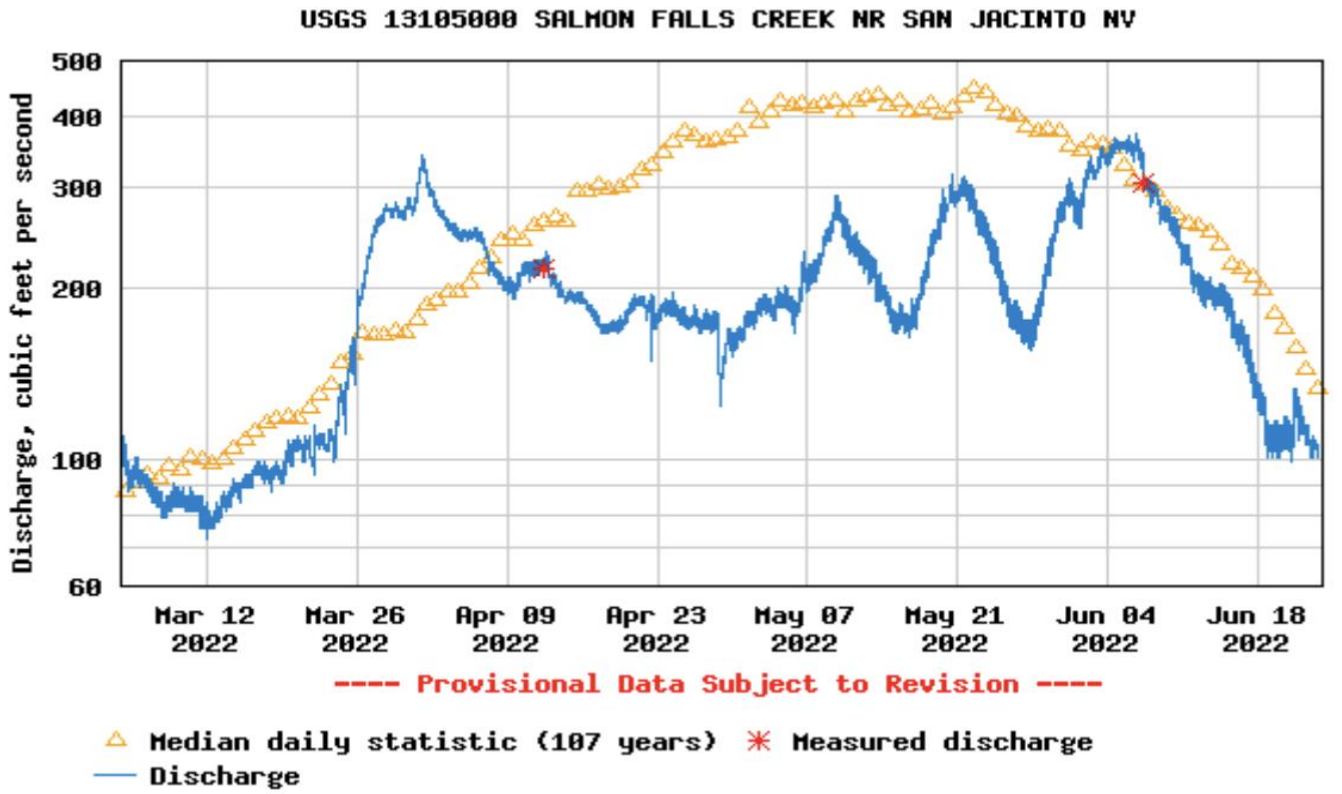






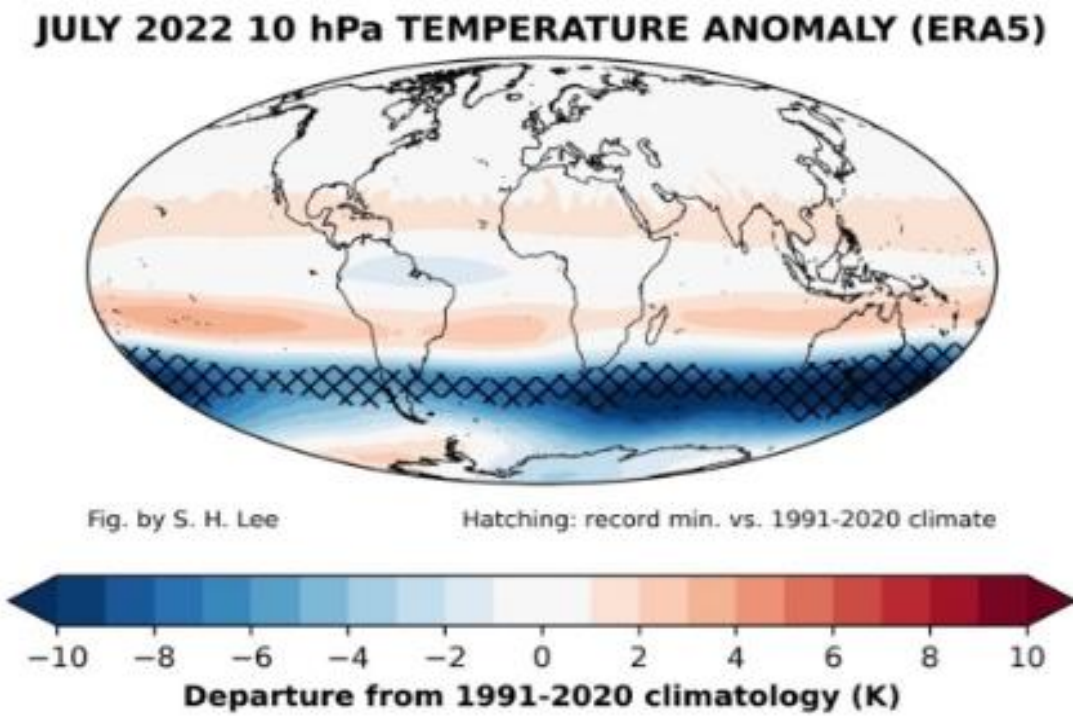
From the Coeur d'Alene to Salmon Falls – each river had an earlier peak and late peak & near record high flows in the Clearwater !

*** A wild winter with a wild runoff season ending, similar to 2009 !**



Jan 15, 2022 - Hunga Tonga Volcano exploded below & above the ocean putting a large amount of water vapor that is still circulating the southern hemisphere atmosphere.

Key is under the relationship between the southern & northern atmospheres and impacts on coming winter.



Events influencing this winter

SEVERE WEATHER EUROPE

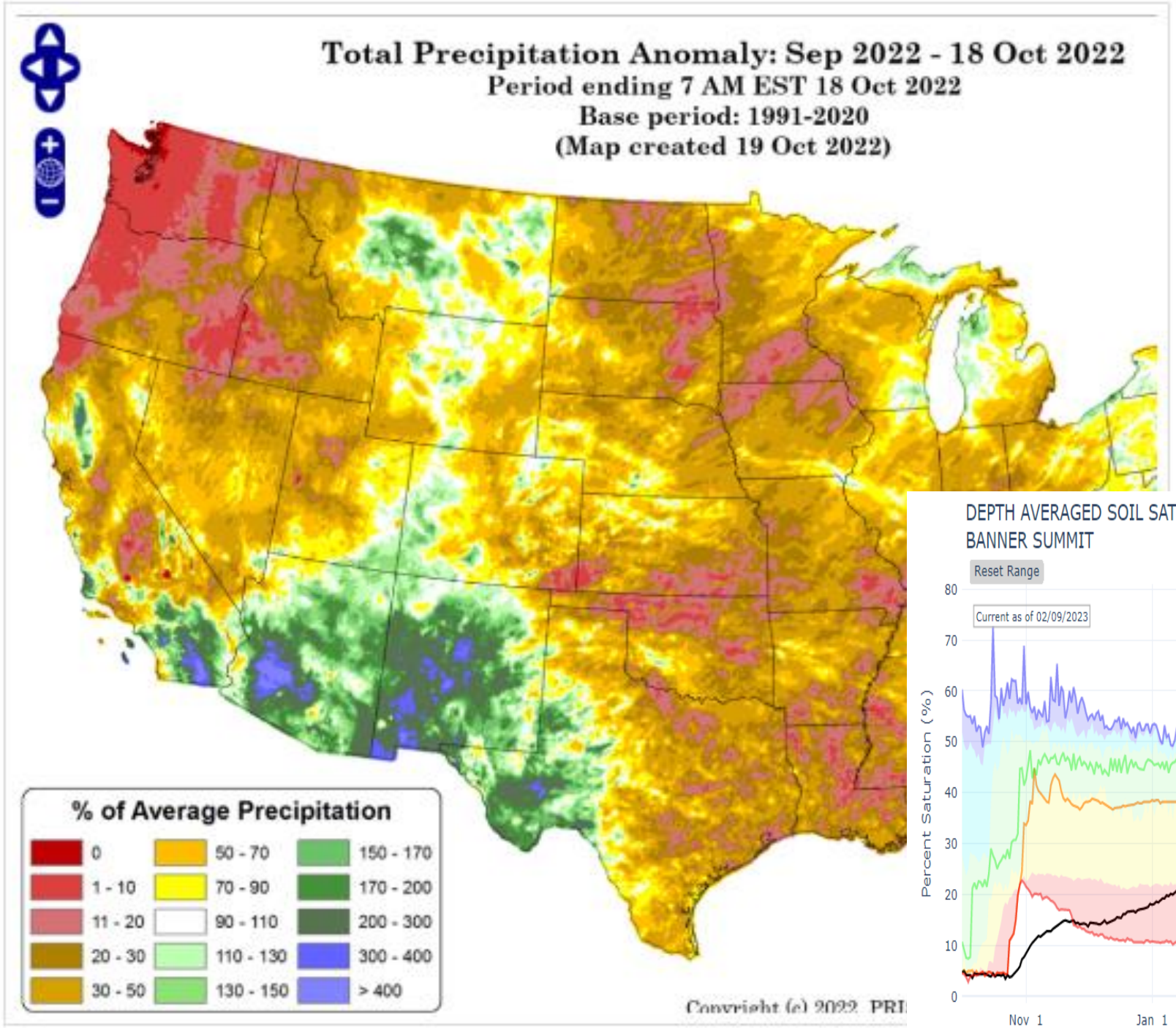
A significant cooling event continues in the Stratosphere due to the large Water Vapor cloud, but can it impact the upcoming Winter Season?

By Andrej Flis

Published: 14/11/2022

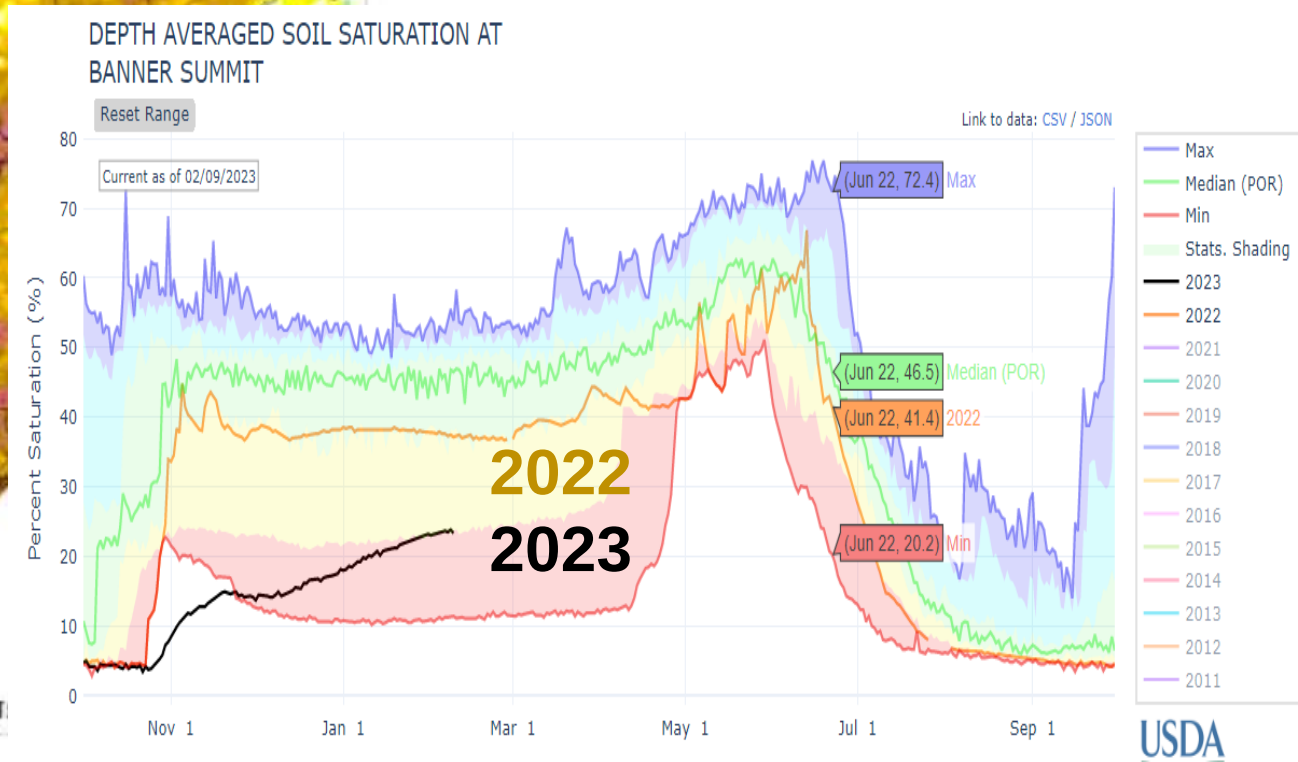
Global weather

So the main takeaway is that a large water vapor "cloud" circles the globe in the stratosphere. As you will find out, it has a strong cooling effect and is likely to impact the global weather in some way over the coming months and years.

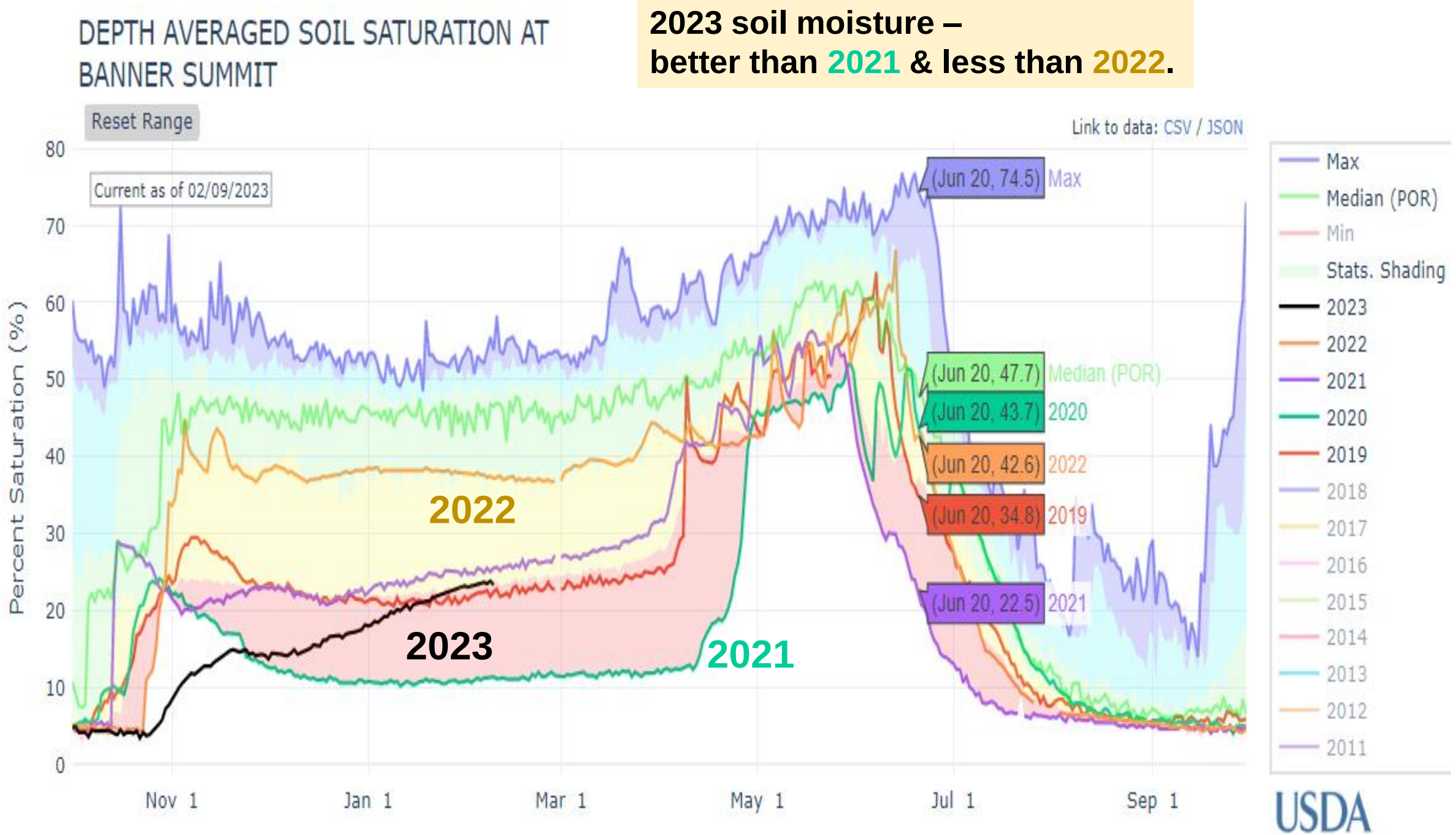


Dry summer & fall allowed mountainous soils to remain dry under the snow this winter.

Sep 1 to Oct 22 precipitation was 10 - 50% of average for most of state.

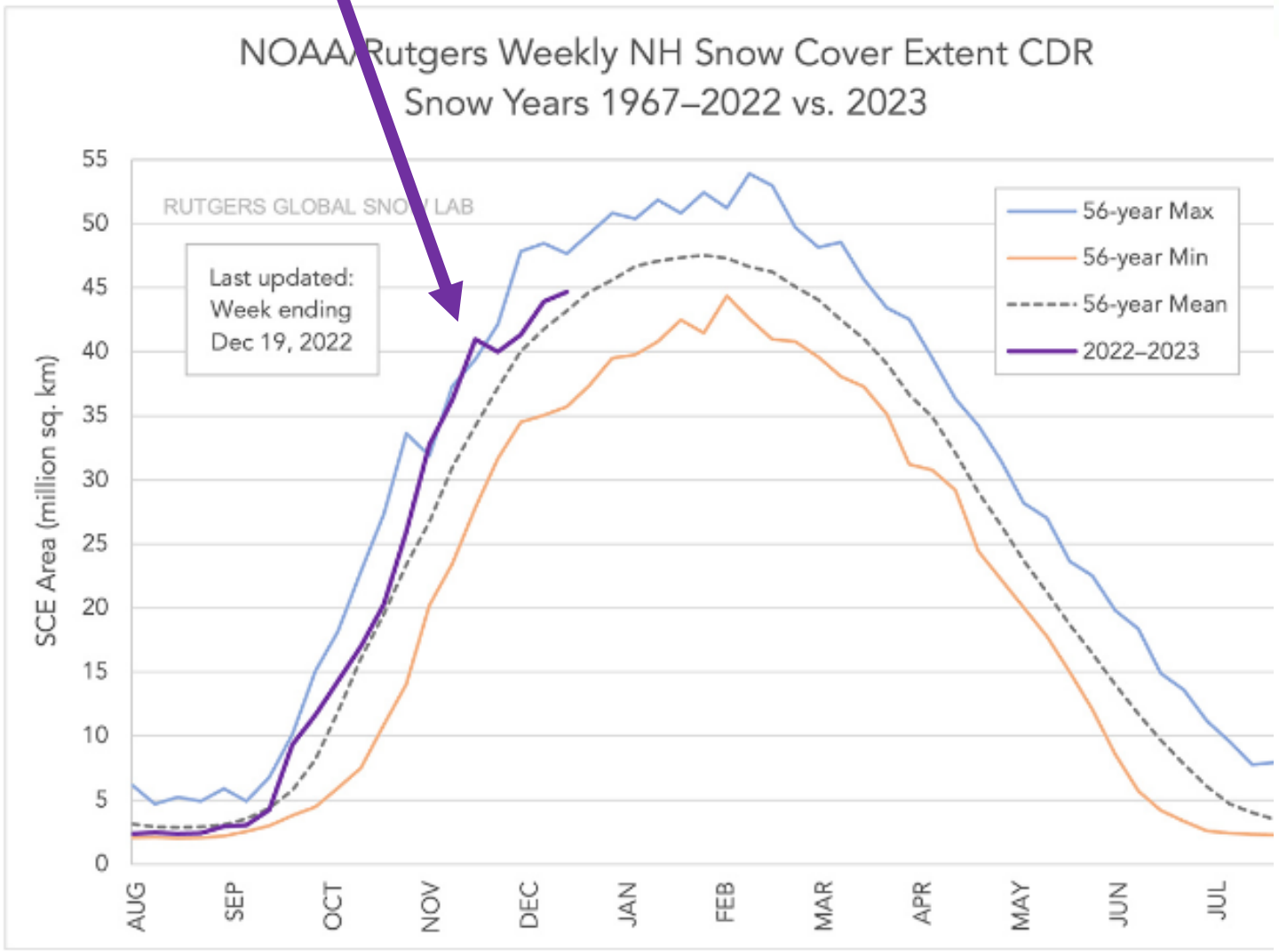


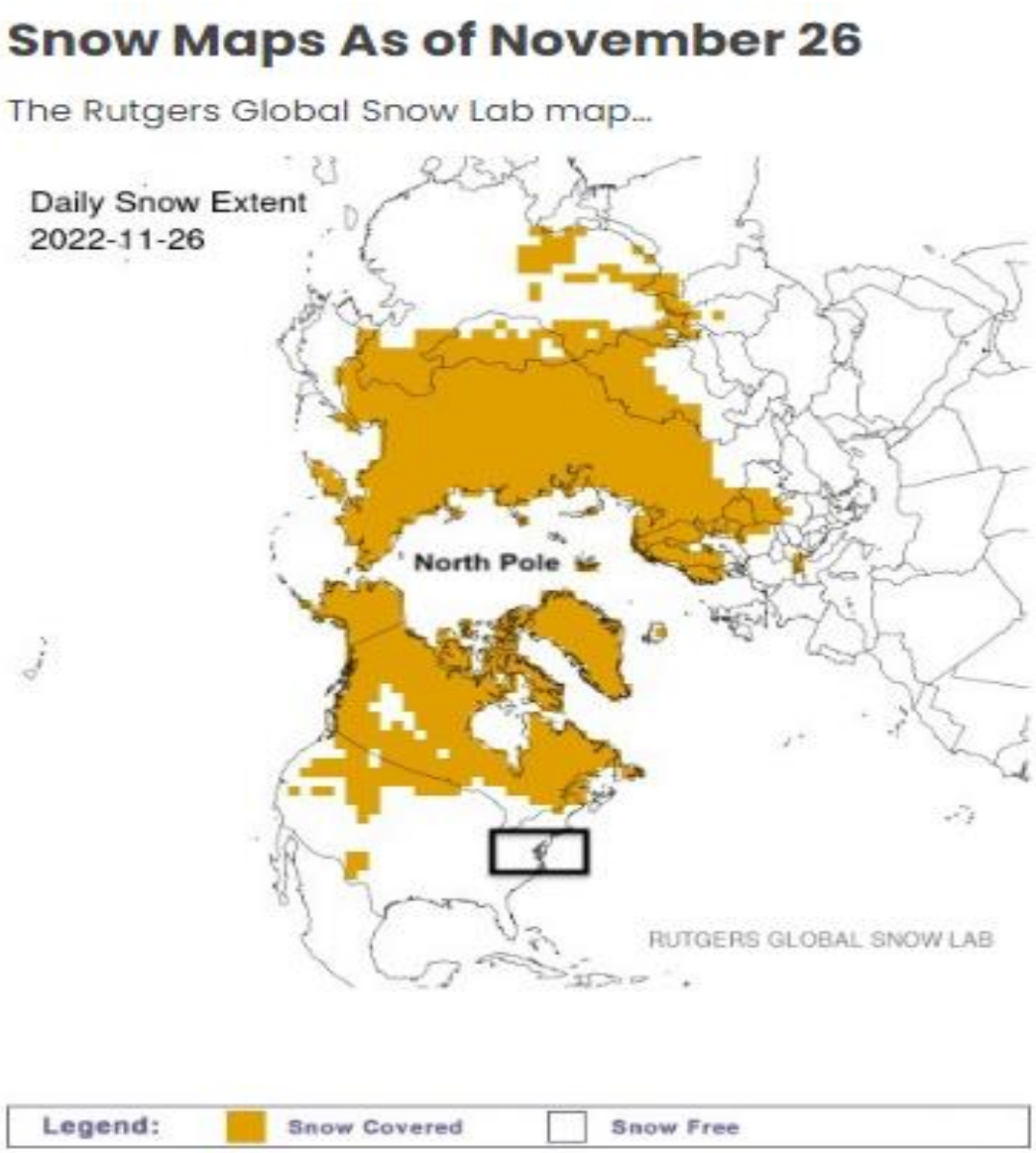
2023 soil moisture –
better than 2021 & less than 2022.



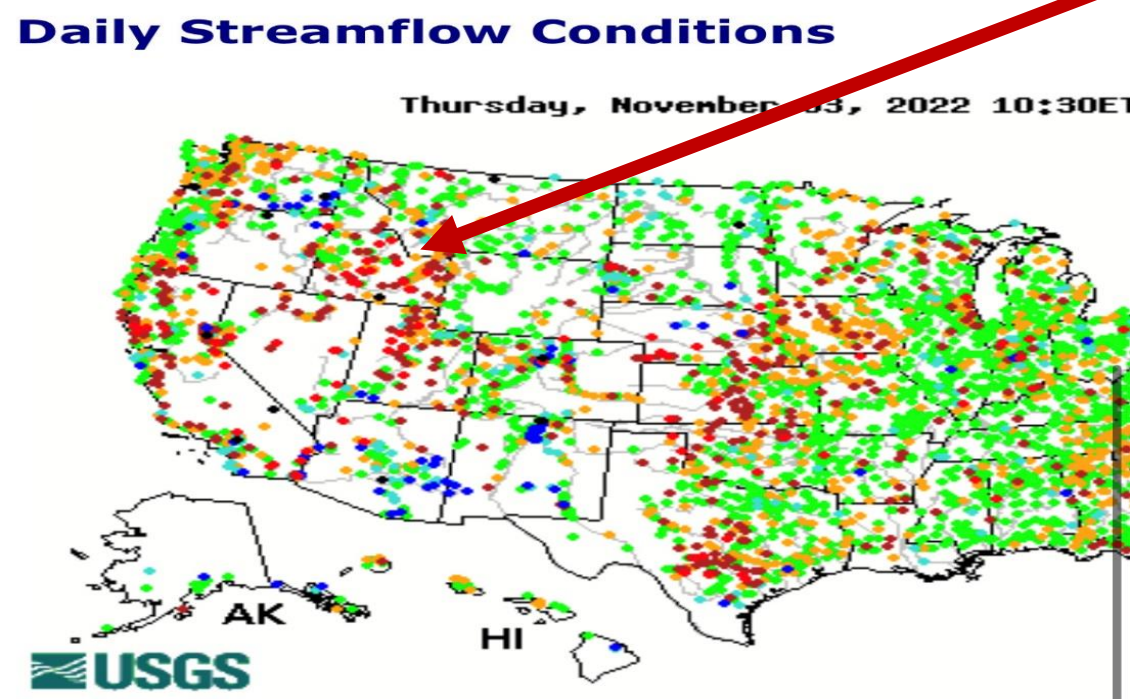
Fall 2022 – a good Siberian snow cover in Oct/Nov influences jet stream across the US/Can border from PNW to Great Lakes region and Europe.

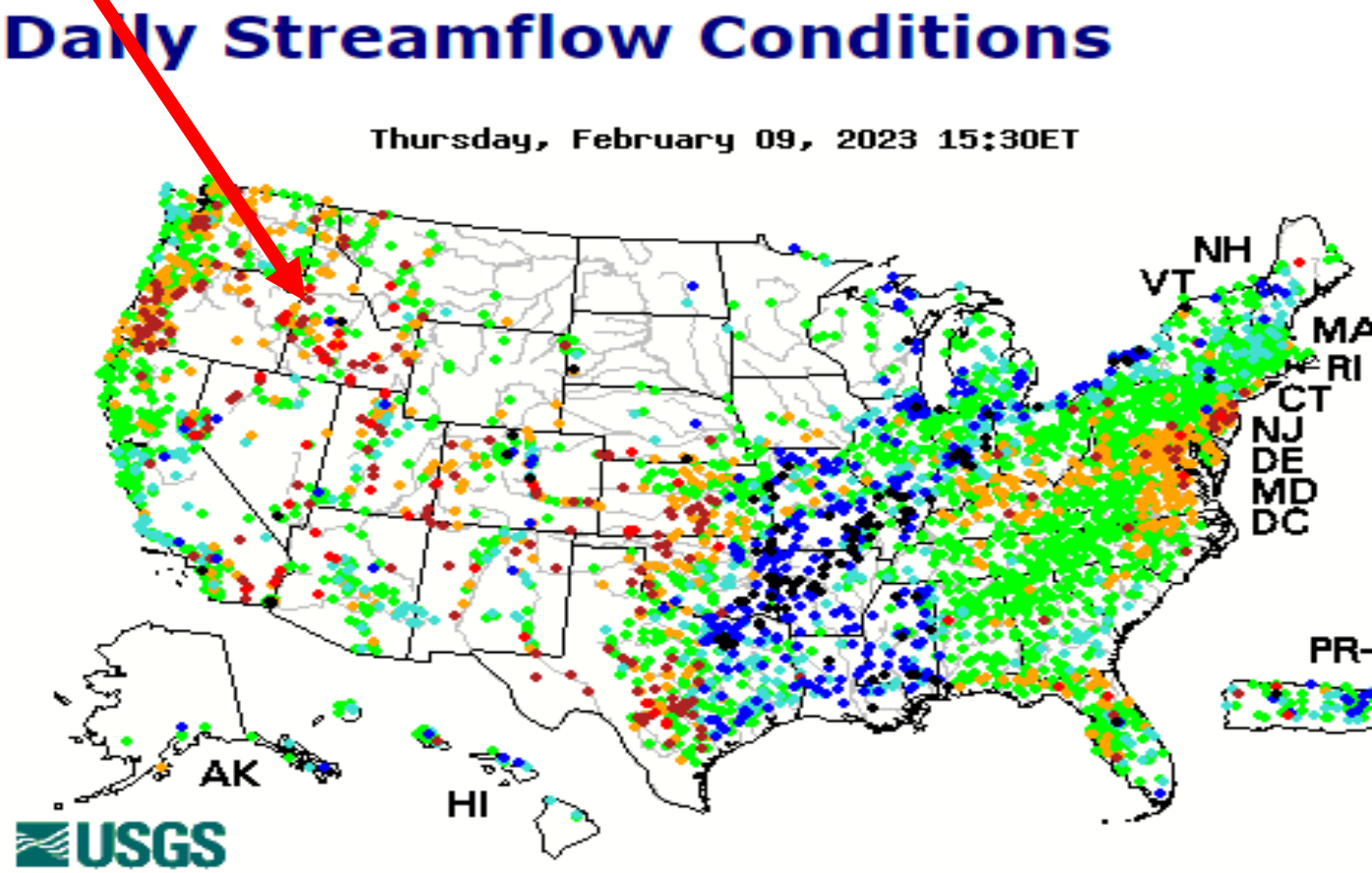
- Record high snow cover in November since records start in 1967 and remained above the long-term mean. Cold is good !





Nov 3 - many rivers near record low flows
Jan 1 - some rivers increased to near avg
Feb 9 – result of cold temps & snow not melting.





The colored dots on this map depict streamflow conditions as a percentile, which is computed from the period of record for the current day of the year. Only stations with at least 30 years of record are used.
The **gray circles** indicate other stations that were not ranked in percentiles either because they have fewer than 30 years of record or because they

Explanation

- High
- > 90th percentile
- 76th - 90th percentile
- 25th - 75th percentile
- 10th - 24th percentile
- < 10th percentile
- Low
- Not ranked

Explanation

- High
- > 90th percentile
- 76th - 90th percentile
- 25th - 75th percentile

The colored dots on this map depict s
conditions as a percentile, which is co
the period of record for the current da
Only stations with at least 30 years of
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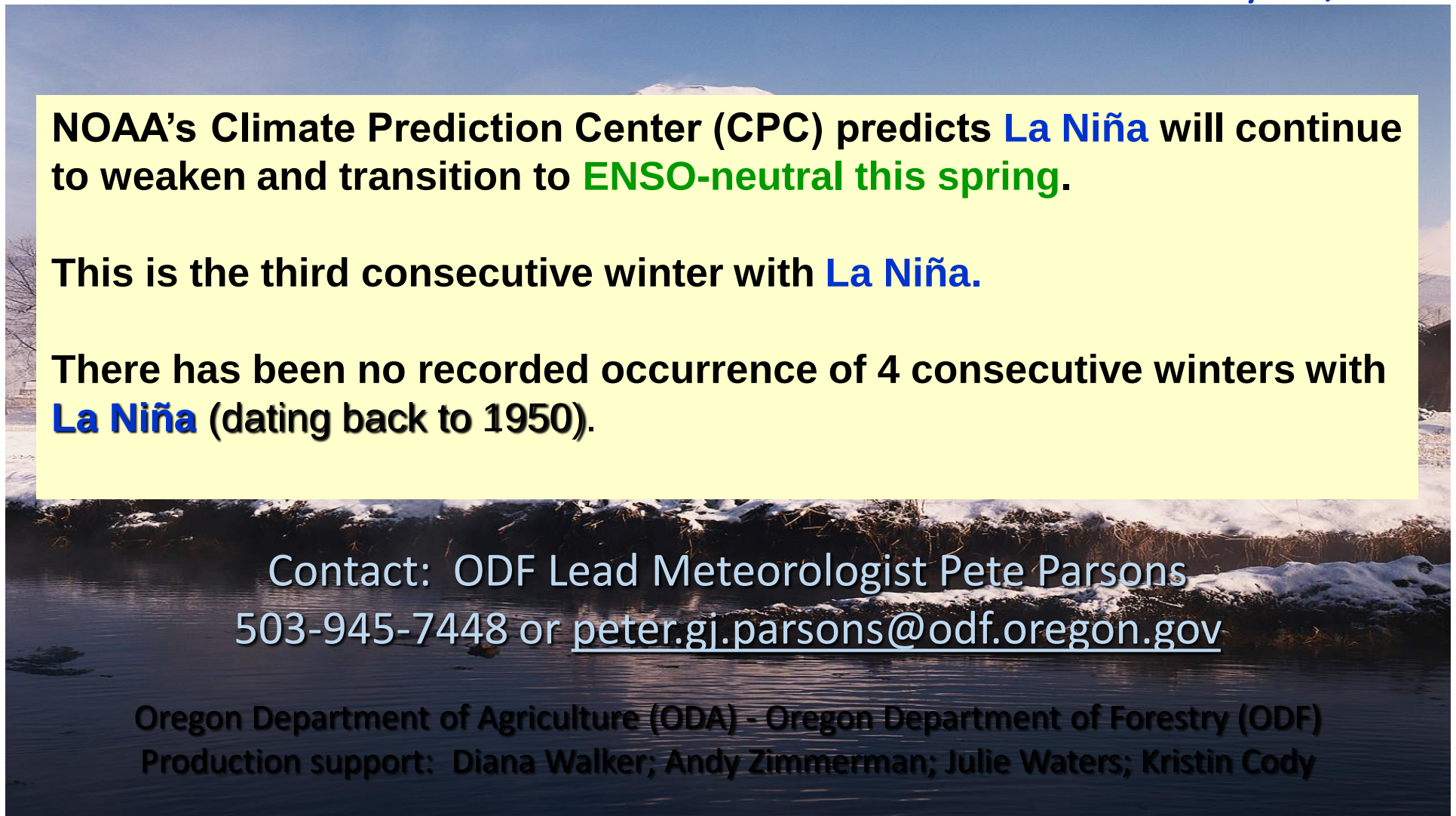
The **gray circles** indicate other static

Released Jan 19, 2023

Pete Parson's 2023 analog years based on current ocean & atmosphere conditions

Seasonal Climate Forecast
February – April 2023

Issued: January 19, 2023



NOAA's Climate Prediction Center (CPC) predicts La Niña will continue to weaken and transition to ENSO-neutral this spring.

This is the third consecutive winter with La Niña.

There has been no recorded occurrence of 4 consecutive winters with La Niña (dating back to 1950).

Contact: ODF Lead Meteorologist Pete Parsons

503-945-7448 or peter.gj.parsons@odf.oregon.gov

Oregon Department of Agriculture (ODA) - Oregon Department of Forestry (ODF)

Production support: Diana Walker; Andy Zimmerman; Julie Waters; Kristin Cody

Forecast Highlights

- La Niña is expected to transition to ENSO-Neutral this spring but expect continued highly anomalous weather to continue.

- Large month-to-month “swings” can “balance out” over a 3-month period.

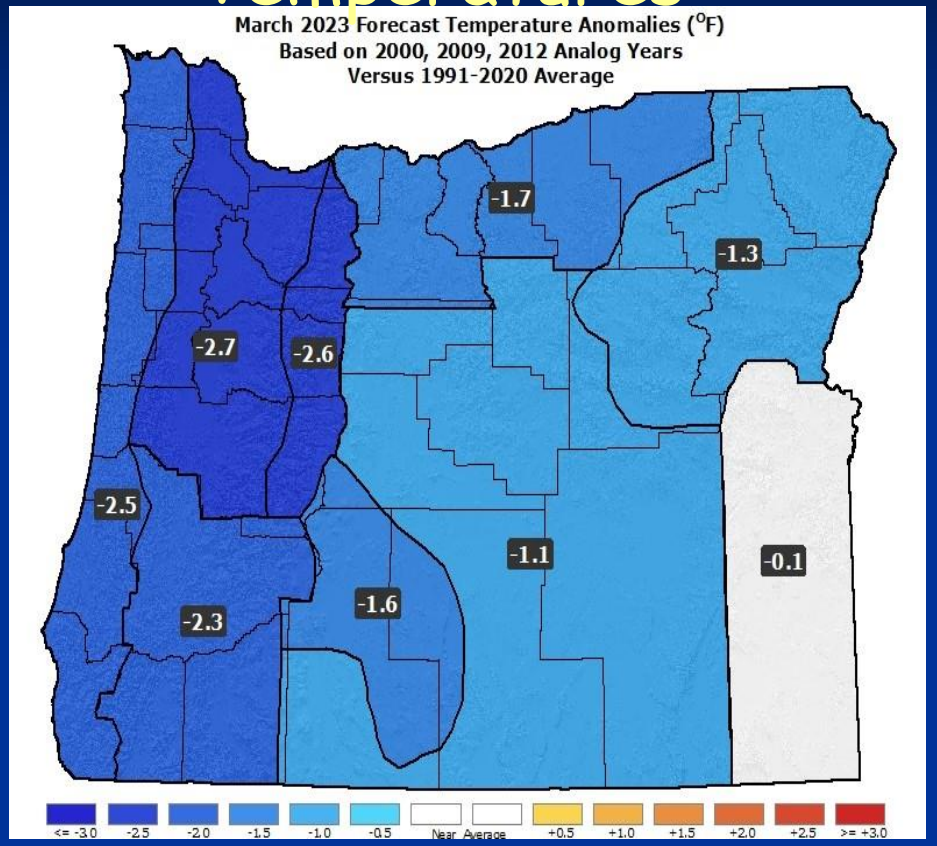
- Weather records from 2000, 2009, & 2012 were used to generate the forecast charts, but 1957 & 1972 were also considered. The more-recent years were given priority to minimize climate-change bias...see next chart.

- Big swings in monthly temperatures likely, but the 3-month period should be close to average. Good chance of cold snap in early February.

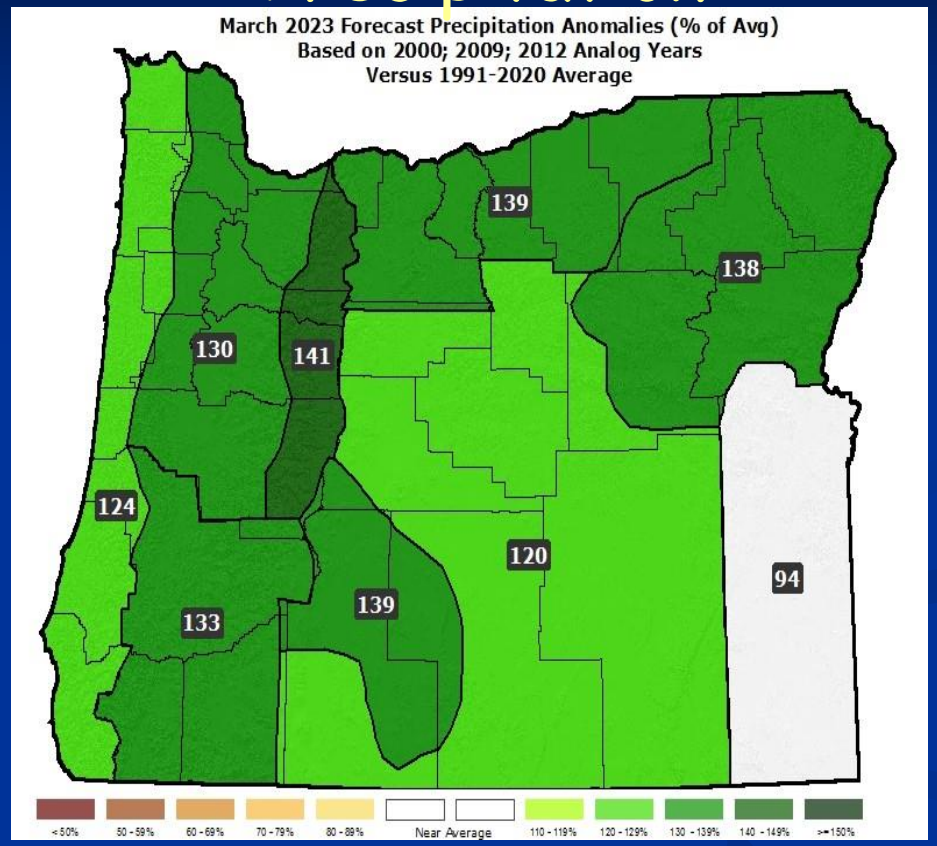
- Precipitation should be near or slightly above average, with March having the best chances for above-average rain and mountain snow.

March 2023 Forecast

Temperatures



Precipitation



- **All 3 of the top analog years had generally below-average temperatures.**
- **The 2000 analog was a drier than average, but 2009 and 2012 were stormy with ample mountain snow & at least one episode of wet snow in the western valleys.**

Seasonal Climate Forecast
March – May 2023

Issued: February 16, 2023

Contact: ODF Lead Meteorologist Pete Parsons
503-945-7448 or peter.gj.parsons@odf.oregon.gov

ODA production support: Diana Walker; Andy Zimmerman; Jenn Ambrose
ODF production support: Julie Waters; Kristin Cody

Forecast Highlights

- La Niña should transition to ENSO-neutral this spring. Look for highly anomalous weather, but large departures from average are not expected for the 3-month period.

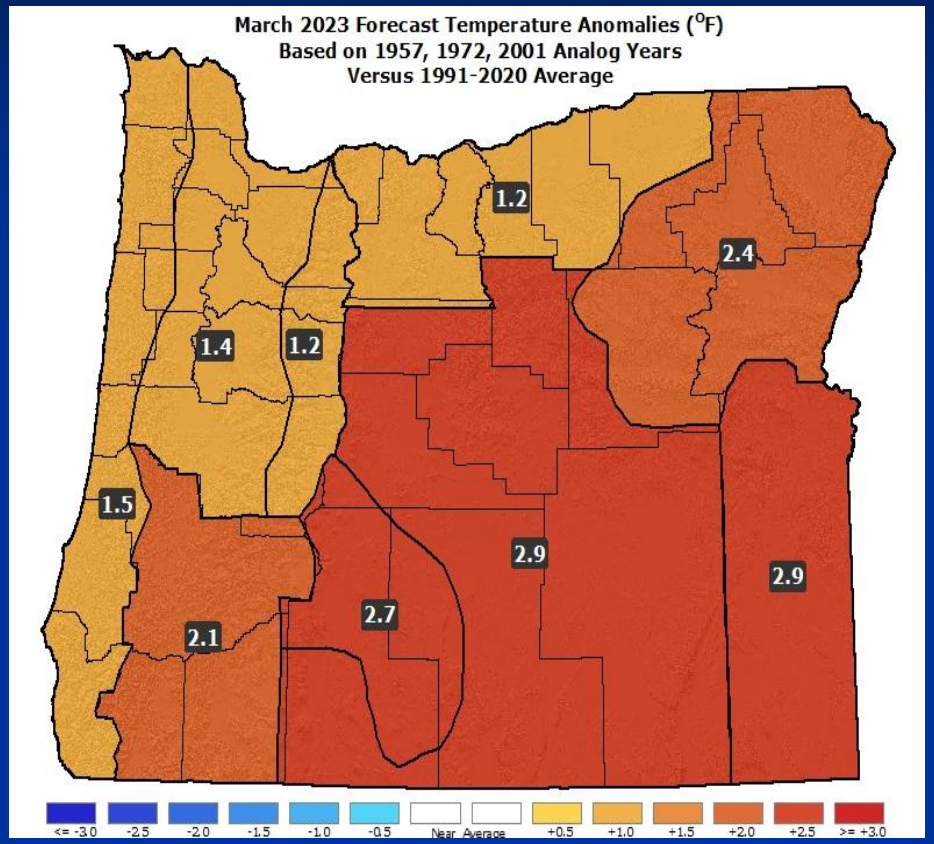
- **The analog years (1957, 1972, & 2001) were updated from last month. They have been performing well, despite the climate-change bias of using dated analogs...see next chart.**

- Big swings in monthly temperatures likely, but the 3-month period should be close to average. Watch for quite-stormy periods in April.

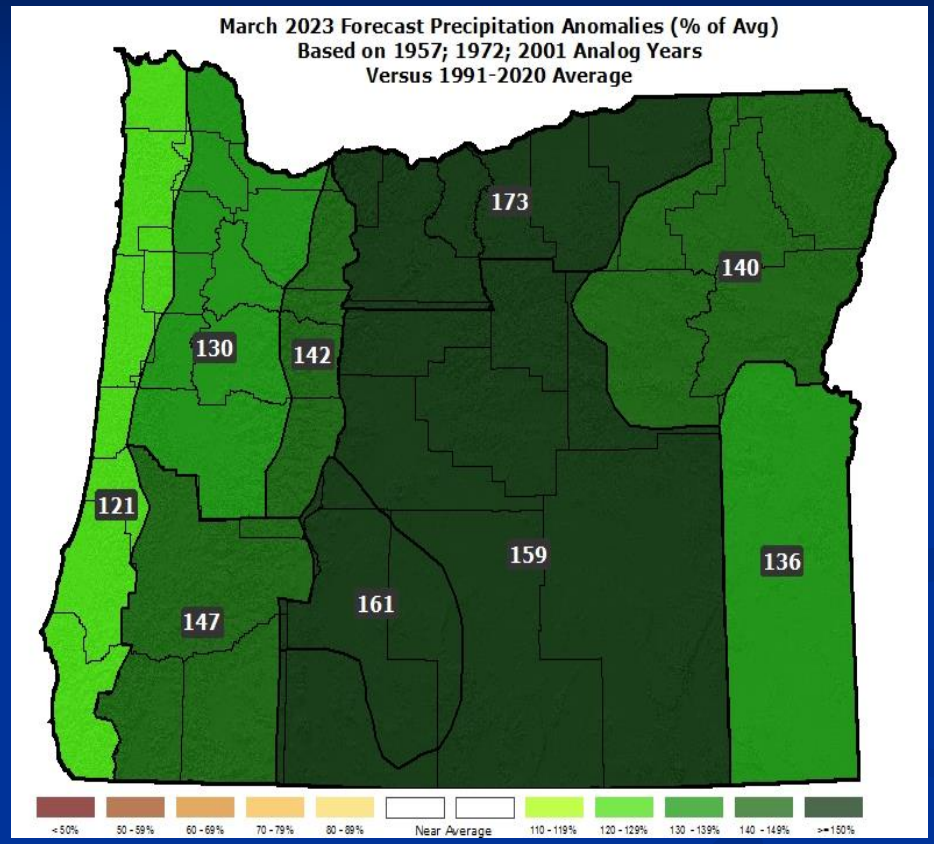
- **Precipitation should be near or slightly above average, with March having the best chances for above-average rain and mountain snow.**

March 2023 Forecast

Temperatures



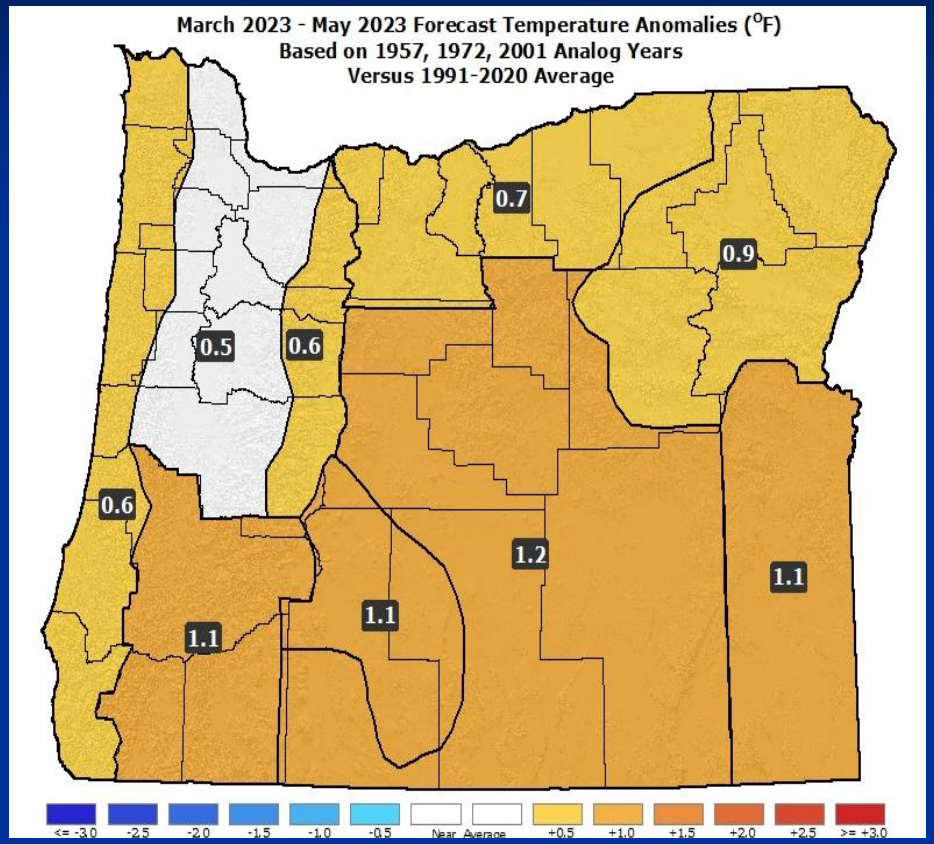
Precipitation



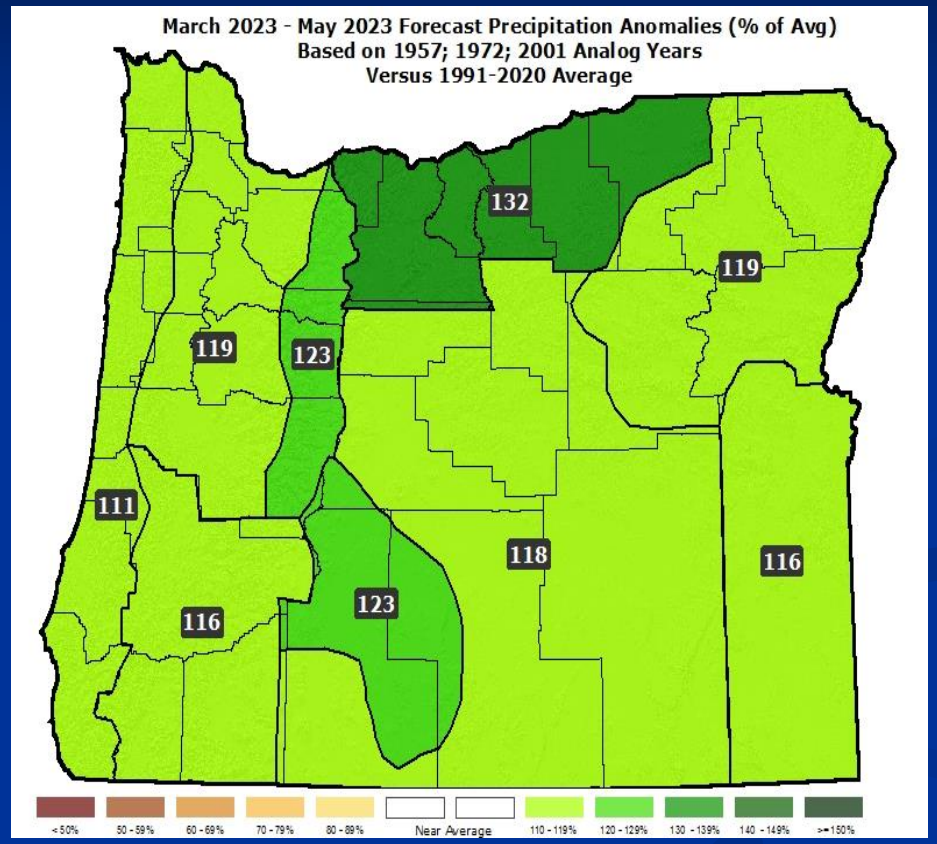
- Fair analog consensus for warmer-than-average temperatures.
- 1957 and 1972 analogs had above-average precipitation and mountain snowpacks at the end of the month...countering a much-drier 2001.

March – May 2023 Forecast

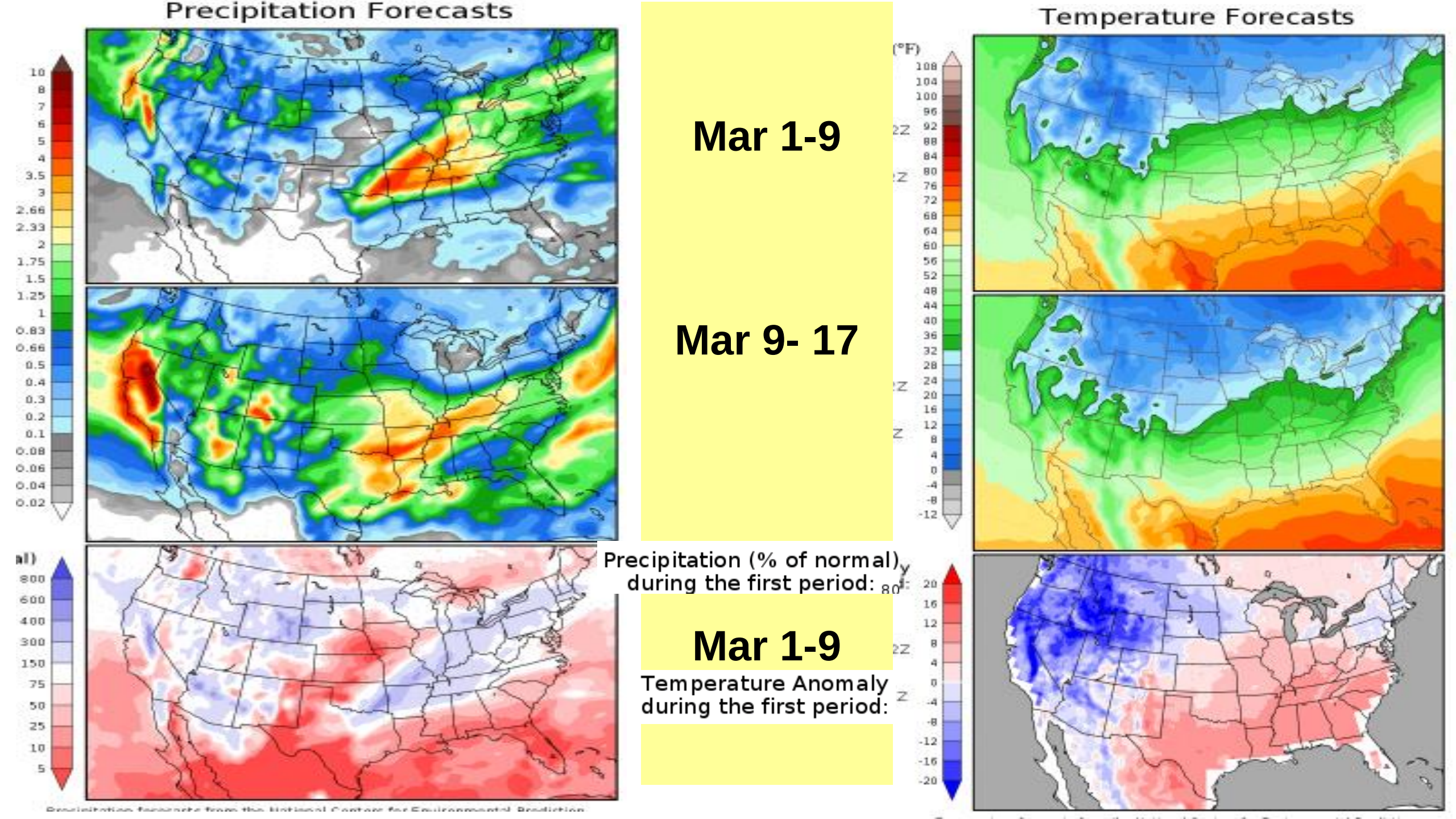
Temperatures



Precipitation

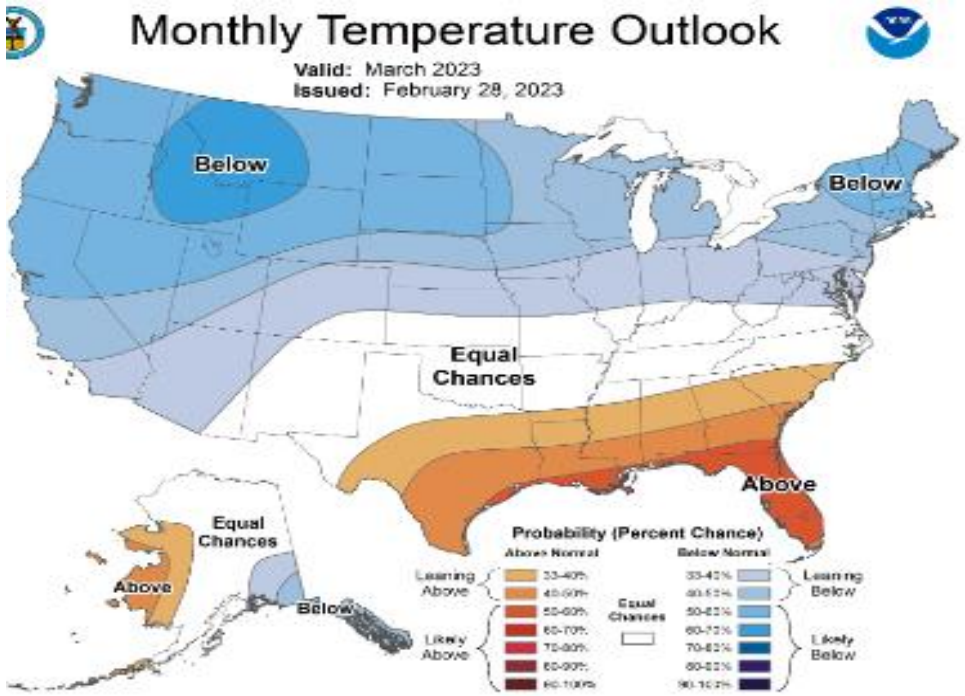


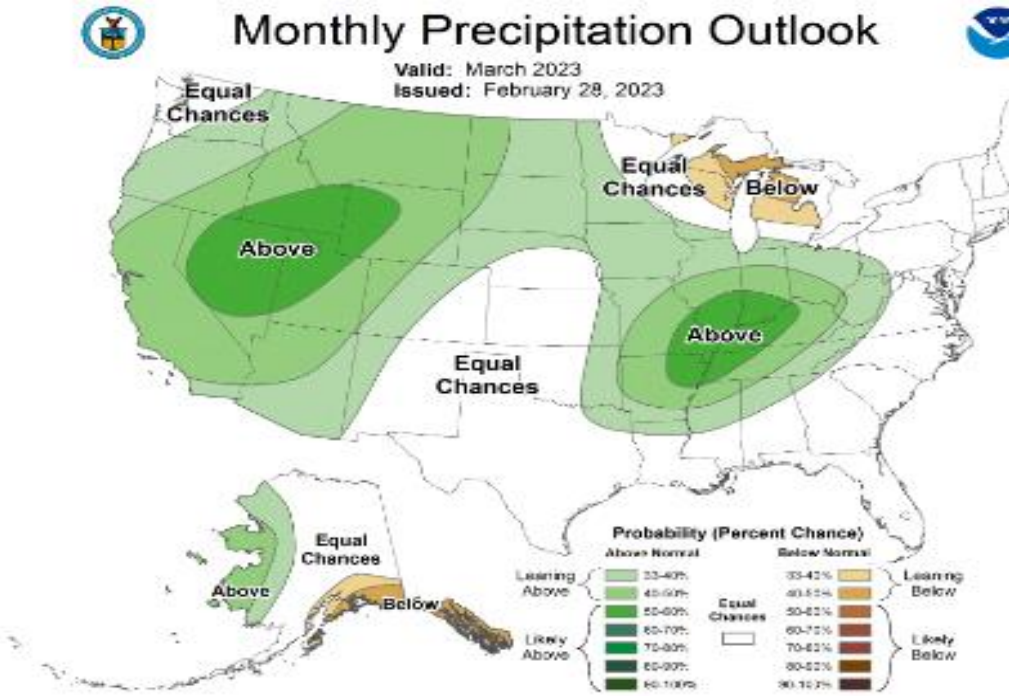
- The 3-month period may not reflect the large monthly variations expected in both temperature and precipitation.


Precipitation Forecasts
Temperature Forecasts
Mar 1-9
Mar 9- 17
Precipitation (% of normal) during the first period:
Mar 1-9
Temperature Anomaly during the first period:

March Outlook

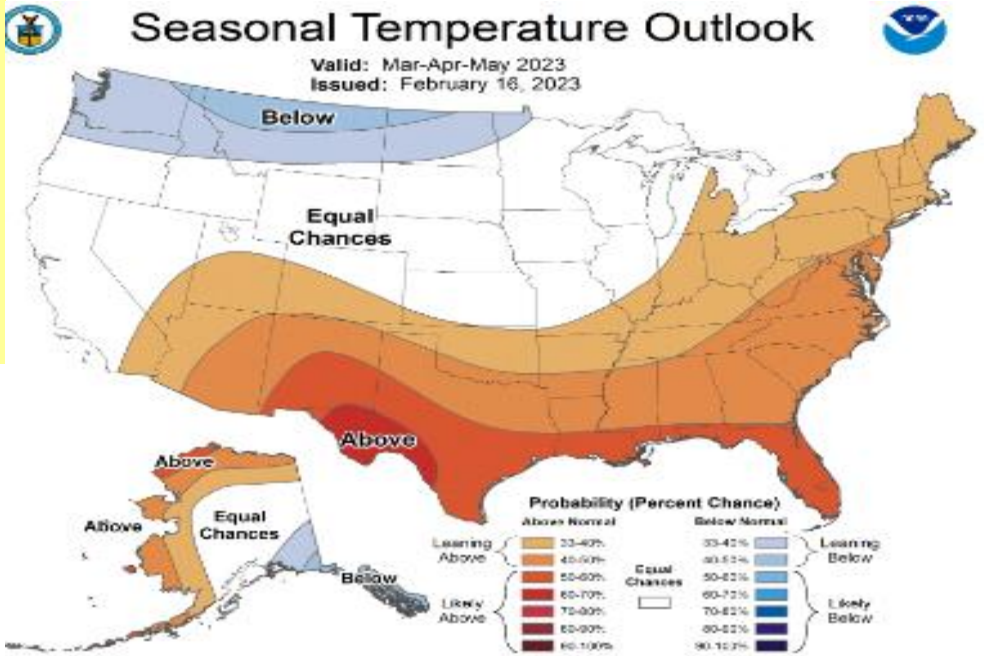
Temp & Precip

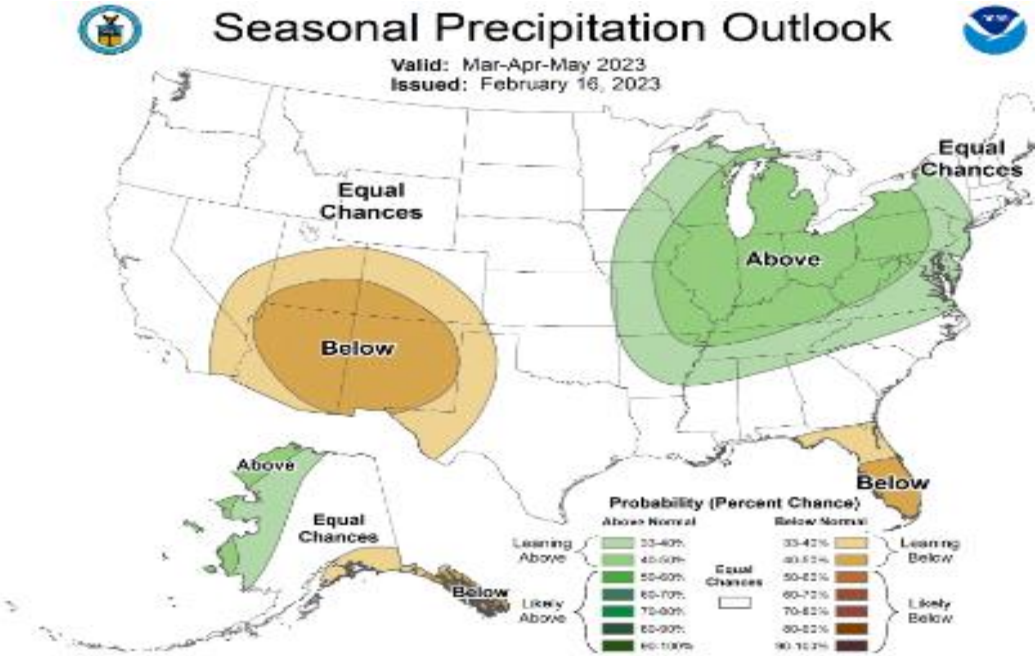




Seasonal Outlook Mar - Apr - May

Temp & Precip



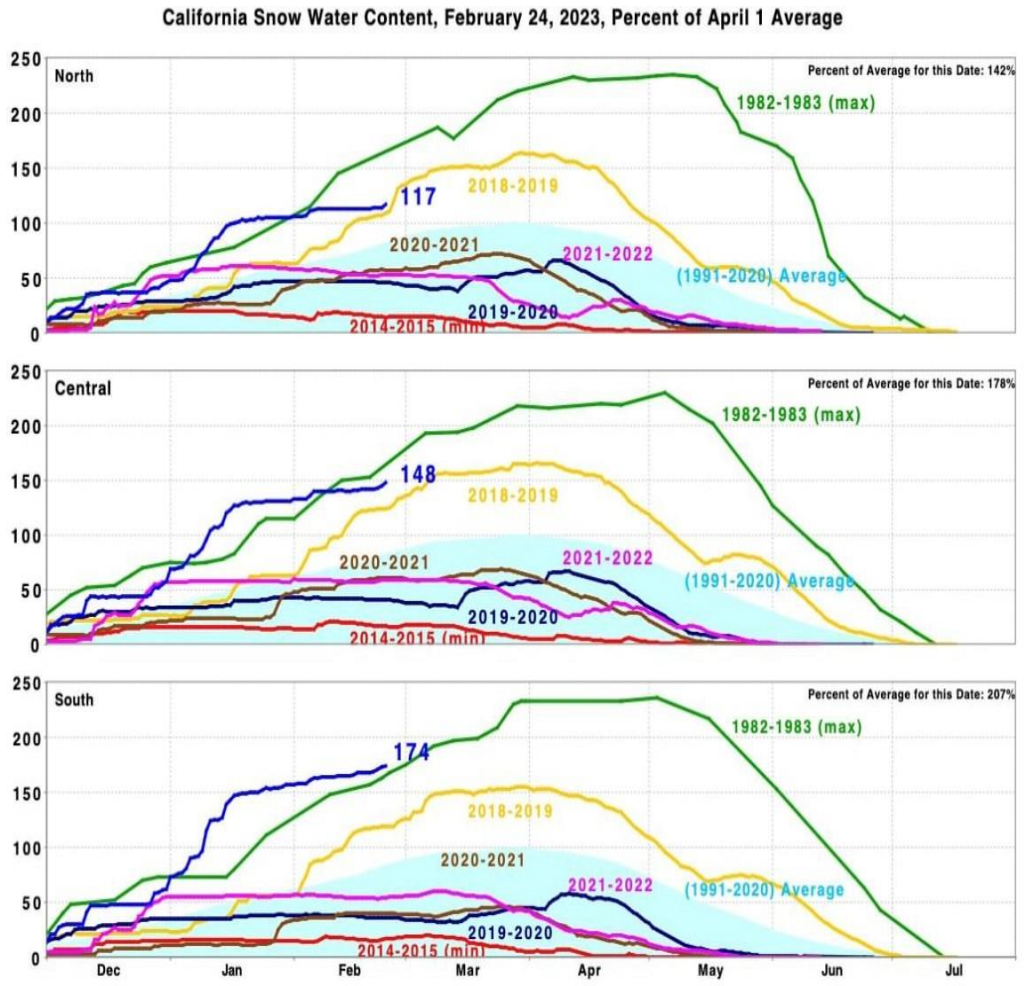


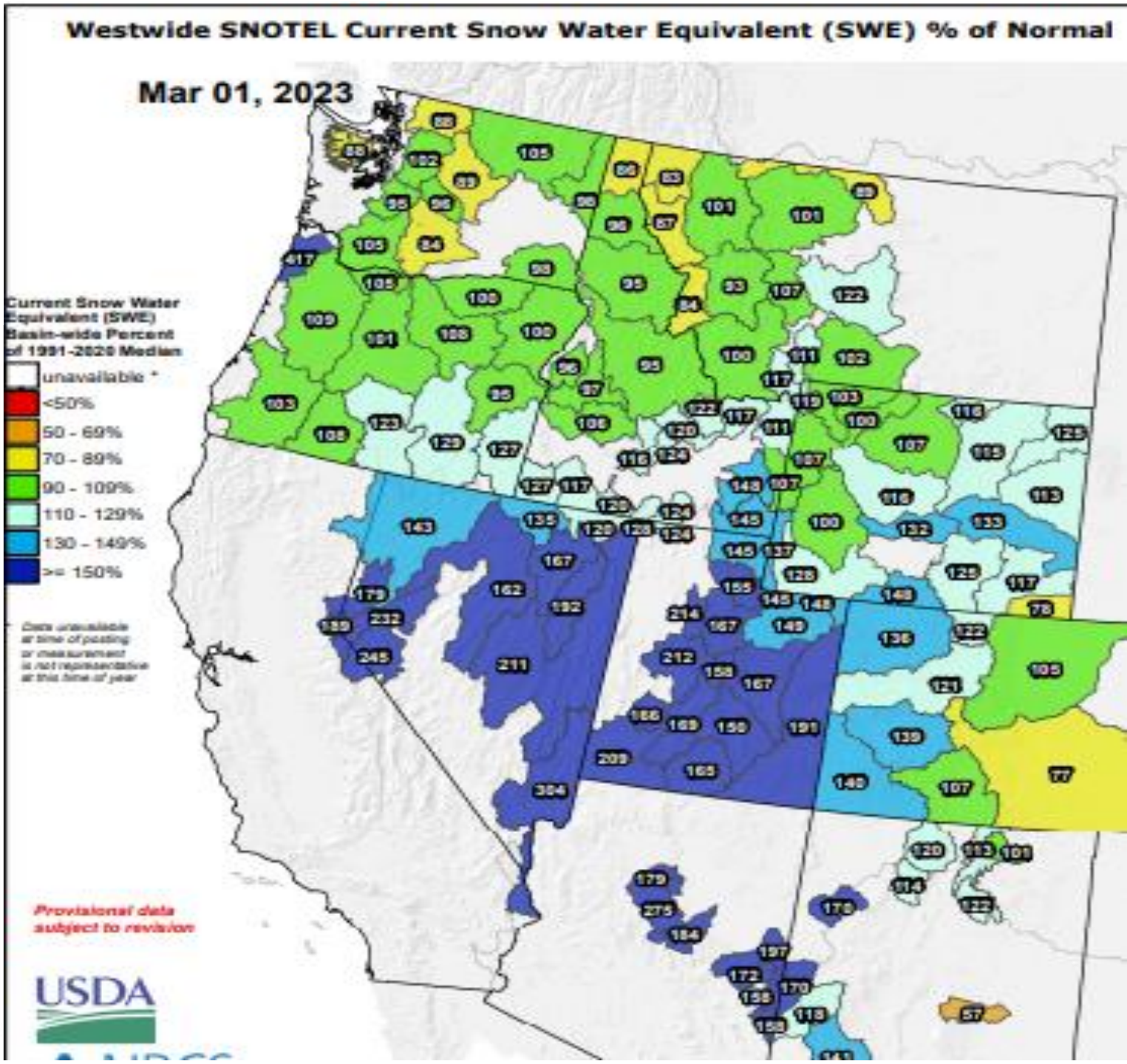
This means more days like this…

Cold is good.

Current Conditions

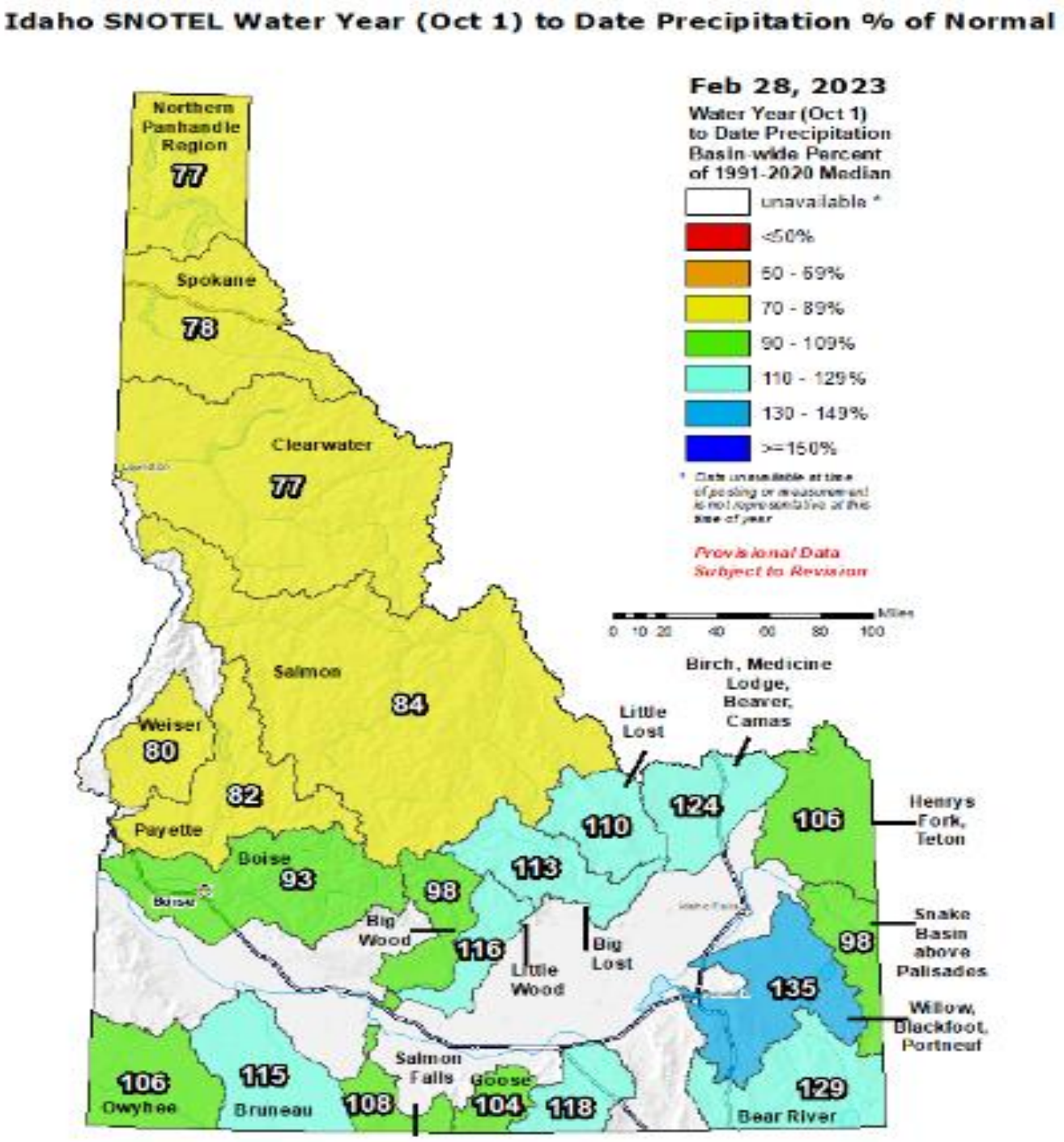
CA Snow is 117, 148 & 174% of seasonal peak for North, Central and South basins

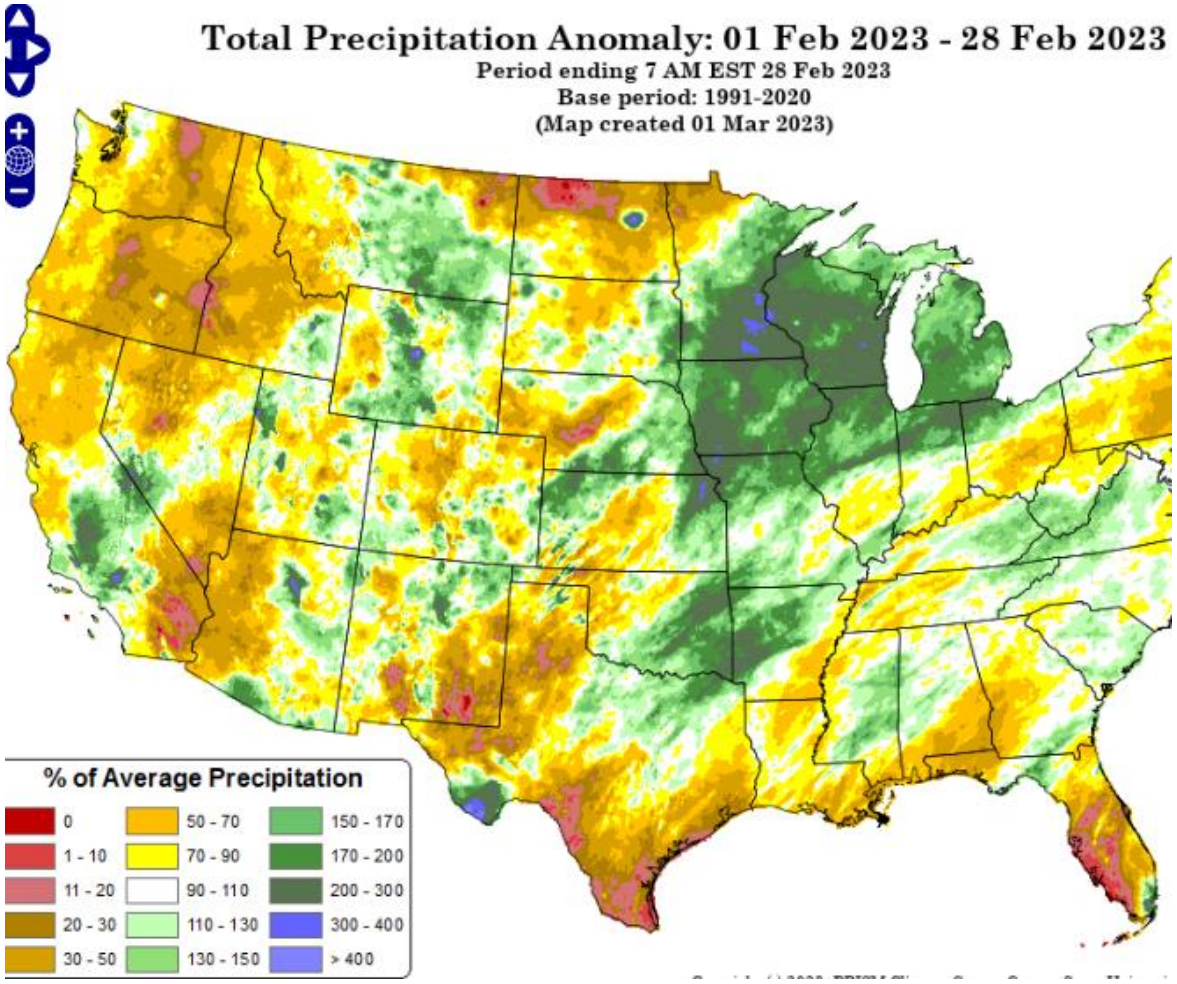


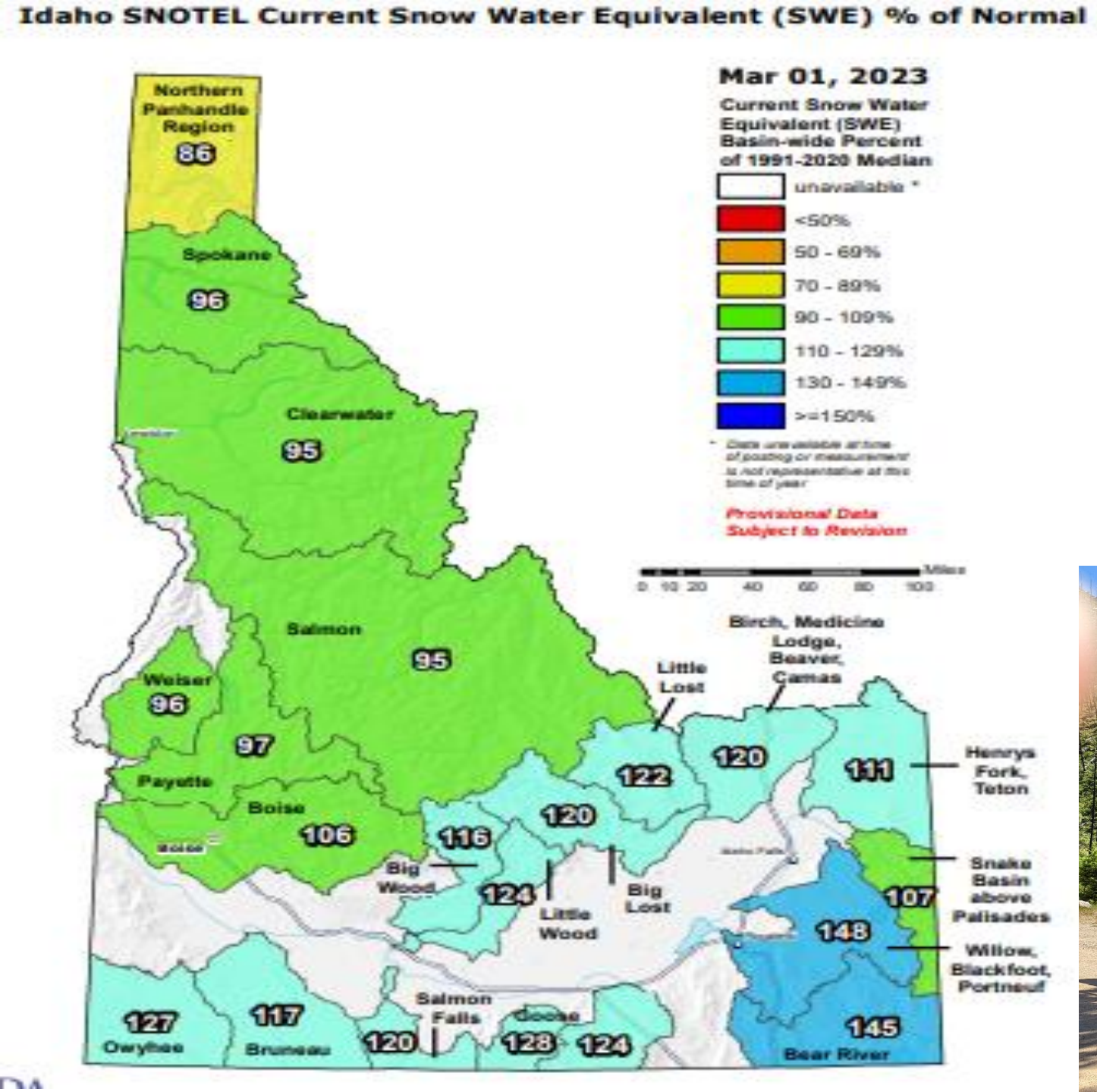


Water Year to Date Precip - below normal north - above in SE Idaho.

Feb precip below normal except in SE



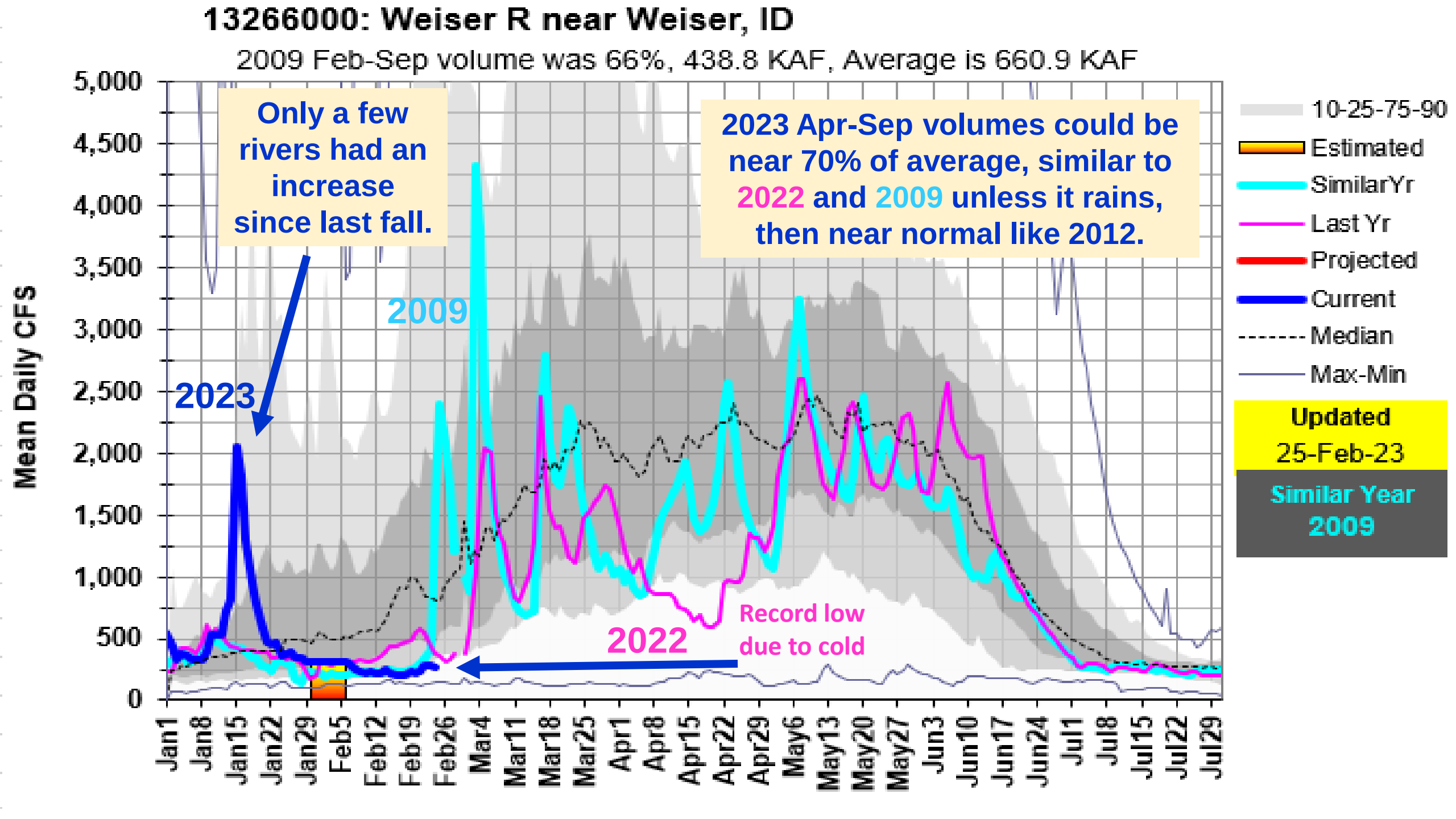


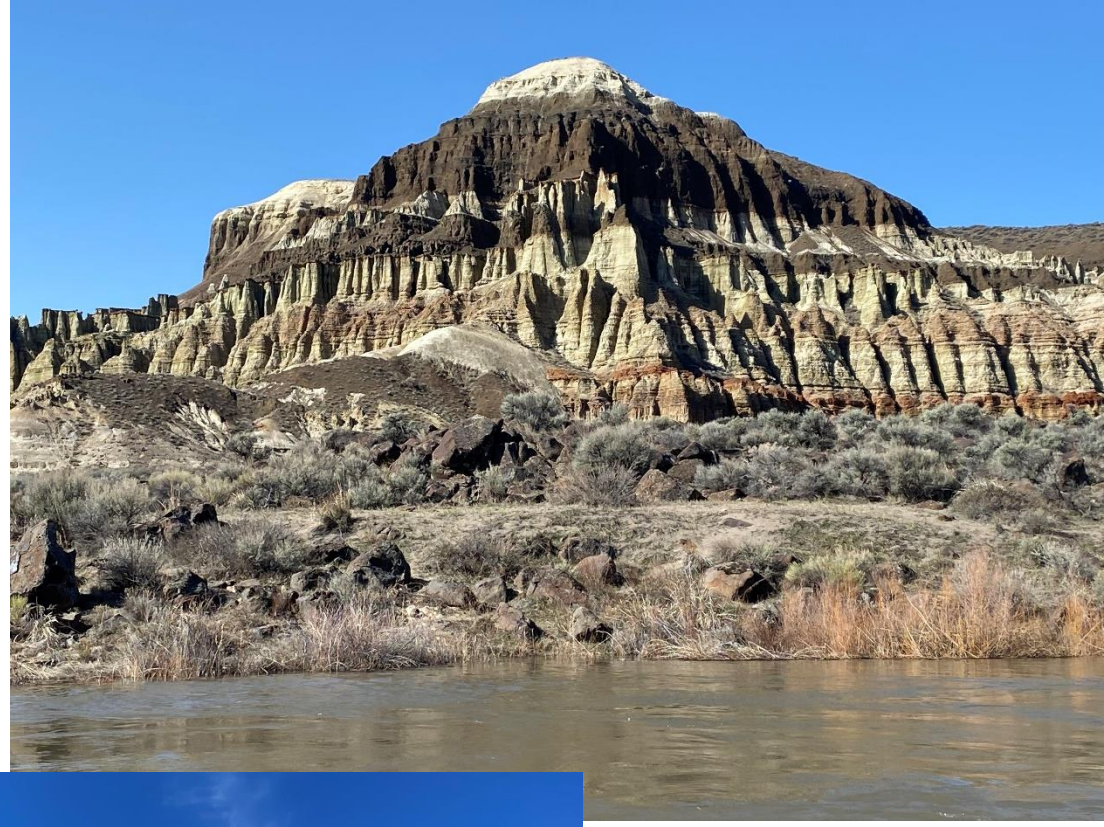


Mar 1, 2023 Snowpacks range from 85% in Panhandle to 145% in Bear River Median

Snow is 67 to 110% of seasonal peak that occur in late March to early April.

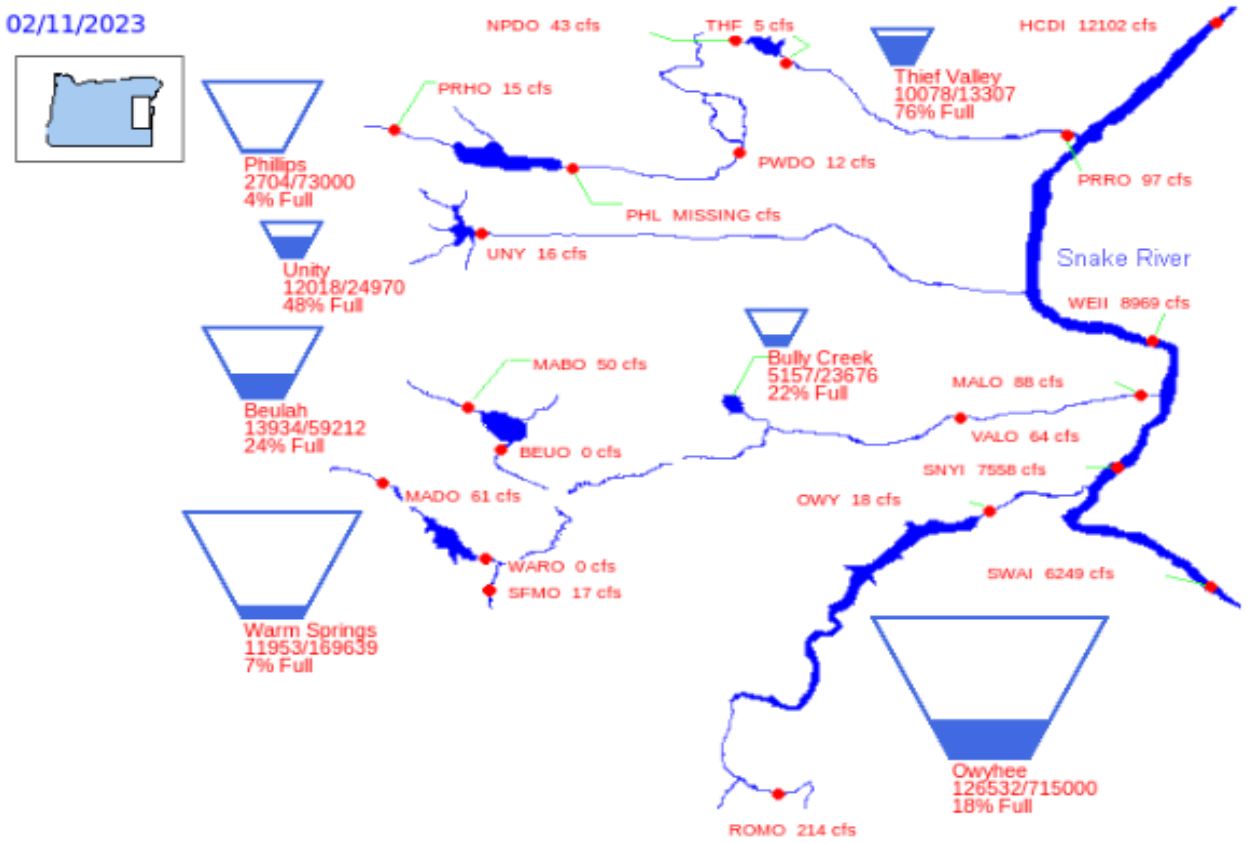
Let's get started !


13266000: Weiser R near Weiser, ID
2009 Feb-Sep volume was 66%, 438.8 KAF, Average is 660.9 KAF
Only a few rivers had an increase since last fall.
2023 Apr-Sep volumes could be near 70% of average, similar to 2022 and 2009 unless it rains, then near normal like 2012.
2009
2023
2022
Record low due to cold
Mean Daily CFS
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Jan1
Jan8
Jan15
Jan22
Jan29
Feb5
Feb12
Feb19
Feb26
Mar4
Mar11
Mar18
Mar25
Apr1
Apr8
Apr15
Apr22
Apr29
May6
May13
May20
May27
Jun3
Jun10
Jun17
Jun24
Jul1
Jul8
Jul15
Jul22
Jul29
10-25-75-90
Estimated
SimilarYr
Last Yr
Projected
Current
Median
Max-Min
Updated
25-Feb-23
Similar Year
2009



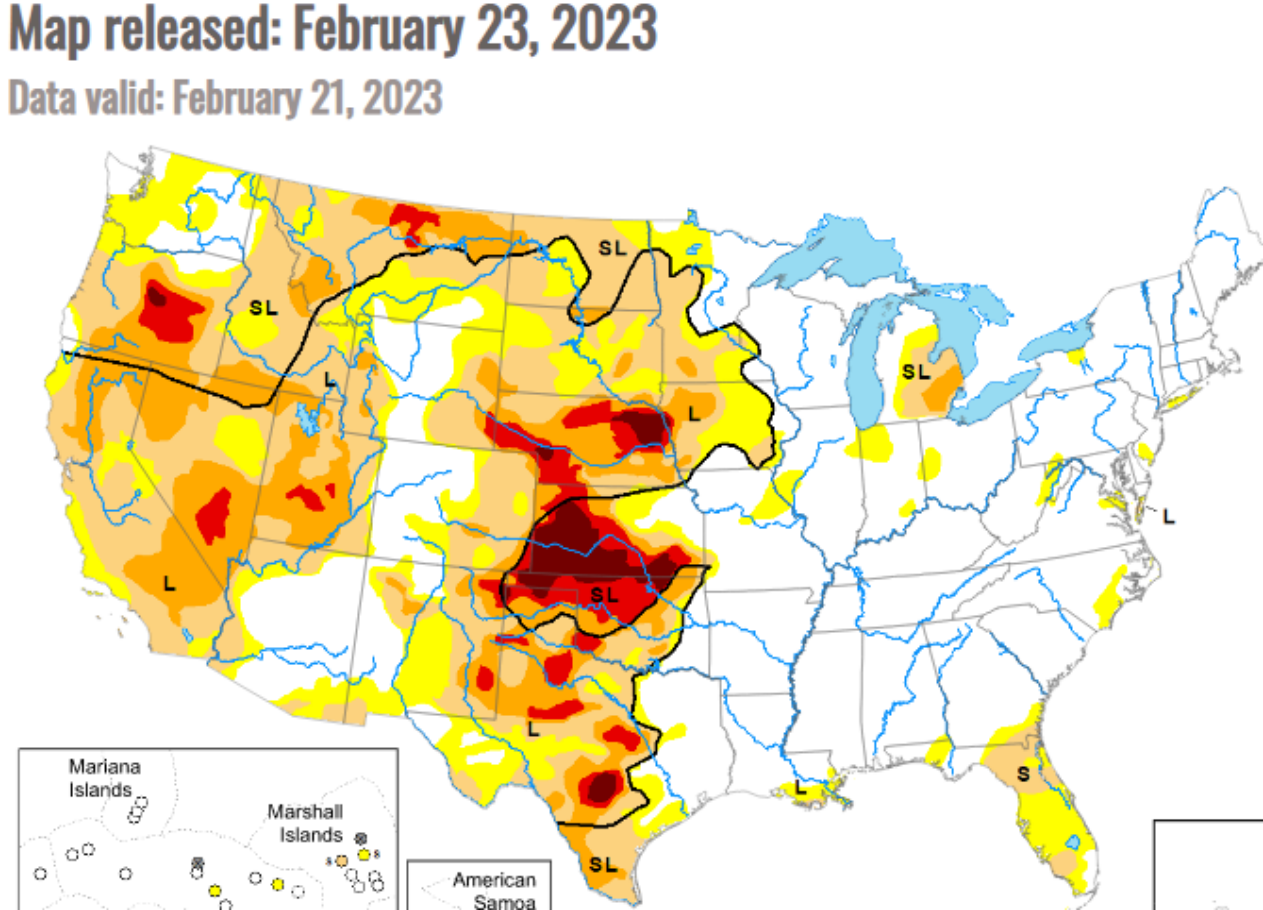
Owyhee March 2022 – flows increased from 2000 to 6000 cfs, sunny and warm, temps were in the 70s and no wind something that doesn’t happen that often ! From Steve Stuebner

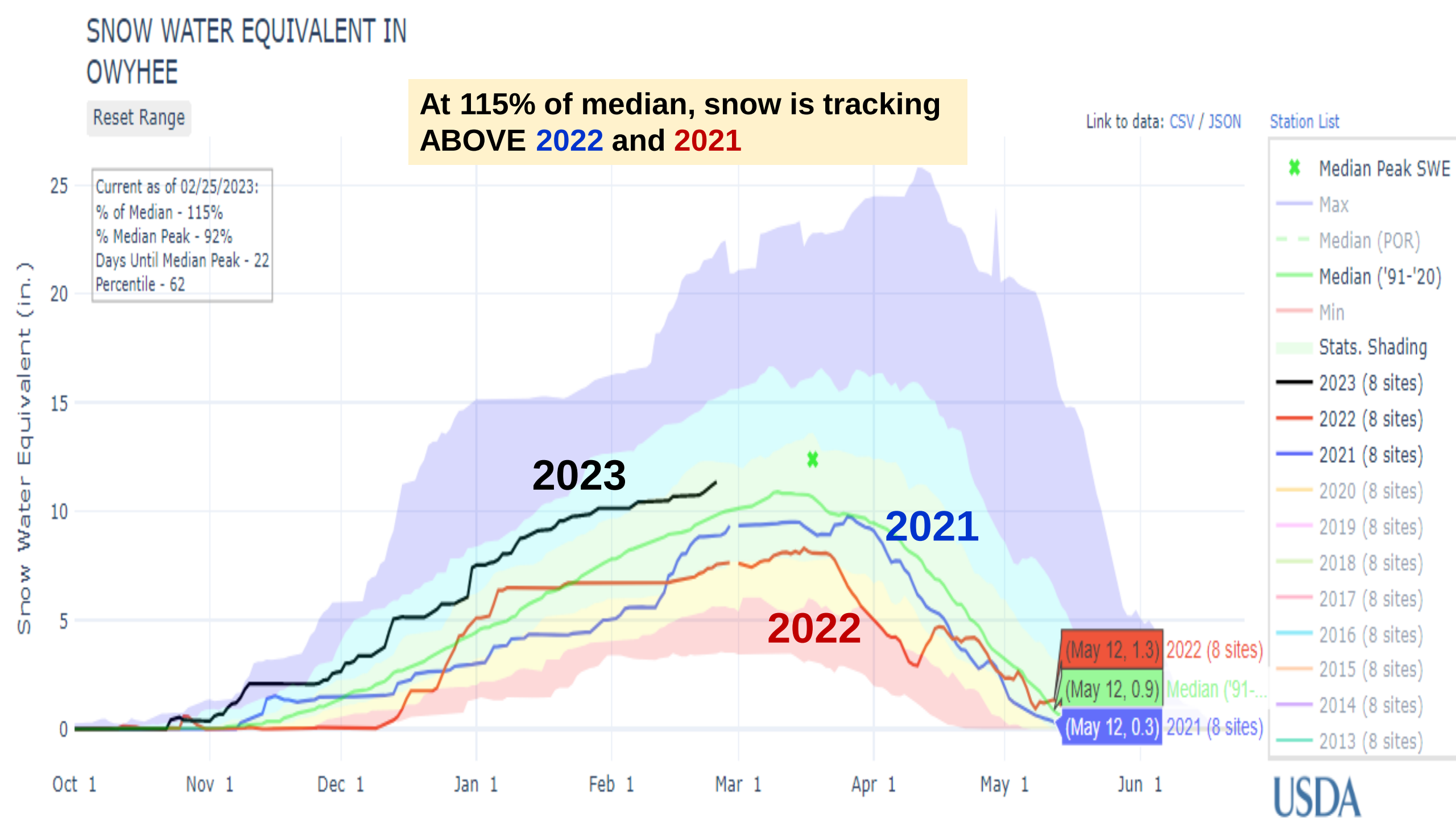
US Bureau of Reclamation, Pacific Northwest Region
Major Storage Reservoirs in Southeastern Oregon



Low Reservoirs displaying signs of previous drought years.

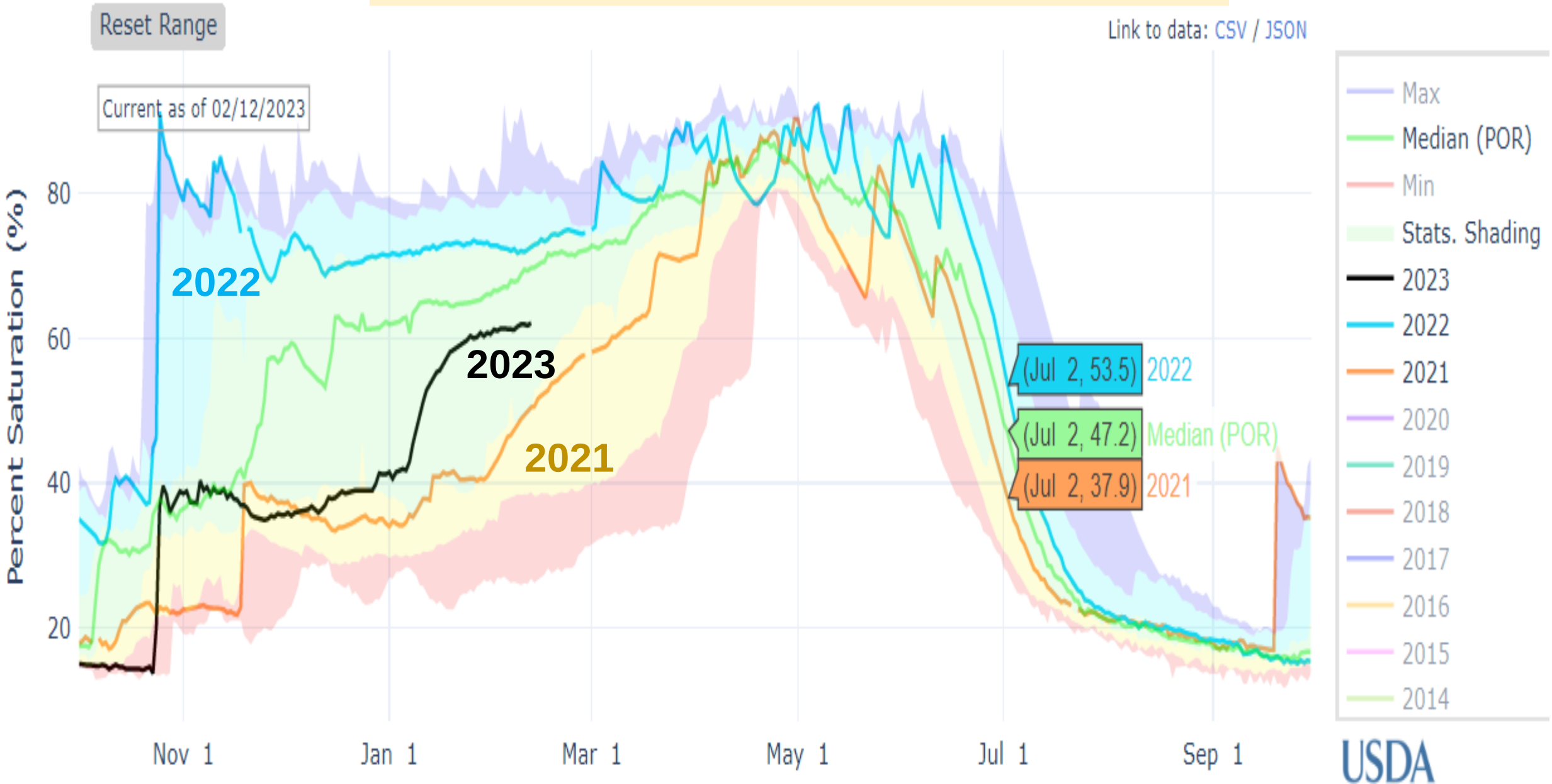
Owyhee Reservoir 18% Full




SNOW WATER EQUIVALENT IN OWYHEE
At 115% of median, snow is tracking ABOVE 2022 and 2021
Reset Range
Link to data: CSV / JSON
Station List
Current as of 02/25/2023:
% of Median - 115%
% Median Peak - 92%
Days Until Median Peak - 22
Percentile - 62
Snow Water Equivalent (in.)
25
20
15
10
5
0
2023
2021
2022
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
(May 12, 1.3) 2022 (8 sites)
(May 12, 0.9) Median ('91-...
(May 12, 0.3) 2021 (8 sites)
Median Peak SWE
Max
Median (POR)
Median ('91-'20)
Min
Stats. Shading
2023 (8 sites)
2022 (8 sites)
2021 (8 sites)
2020 (8 sites)
2019 (8 sites)
2018 (8 sites)
2017 (8 sites)
2016 (8 sites)
2015 (8 sites)
2014 (8 sites)
2013 (8 sites)
USDA

DEPTH AVERAGED SOIL SATURATION AT SOUTH MTN.

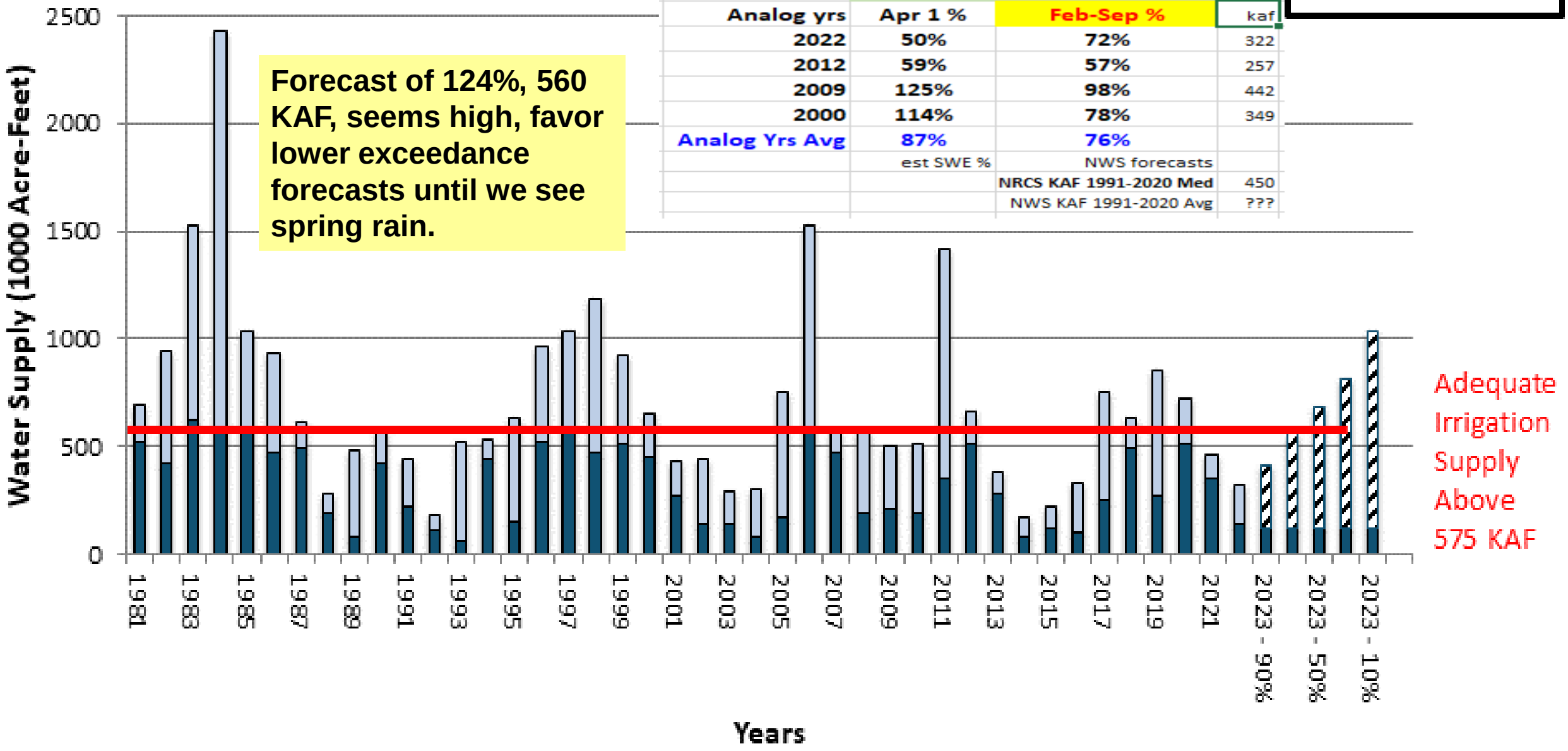
Soil moisture is better than 2021 and less than 2022.

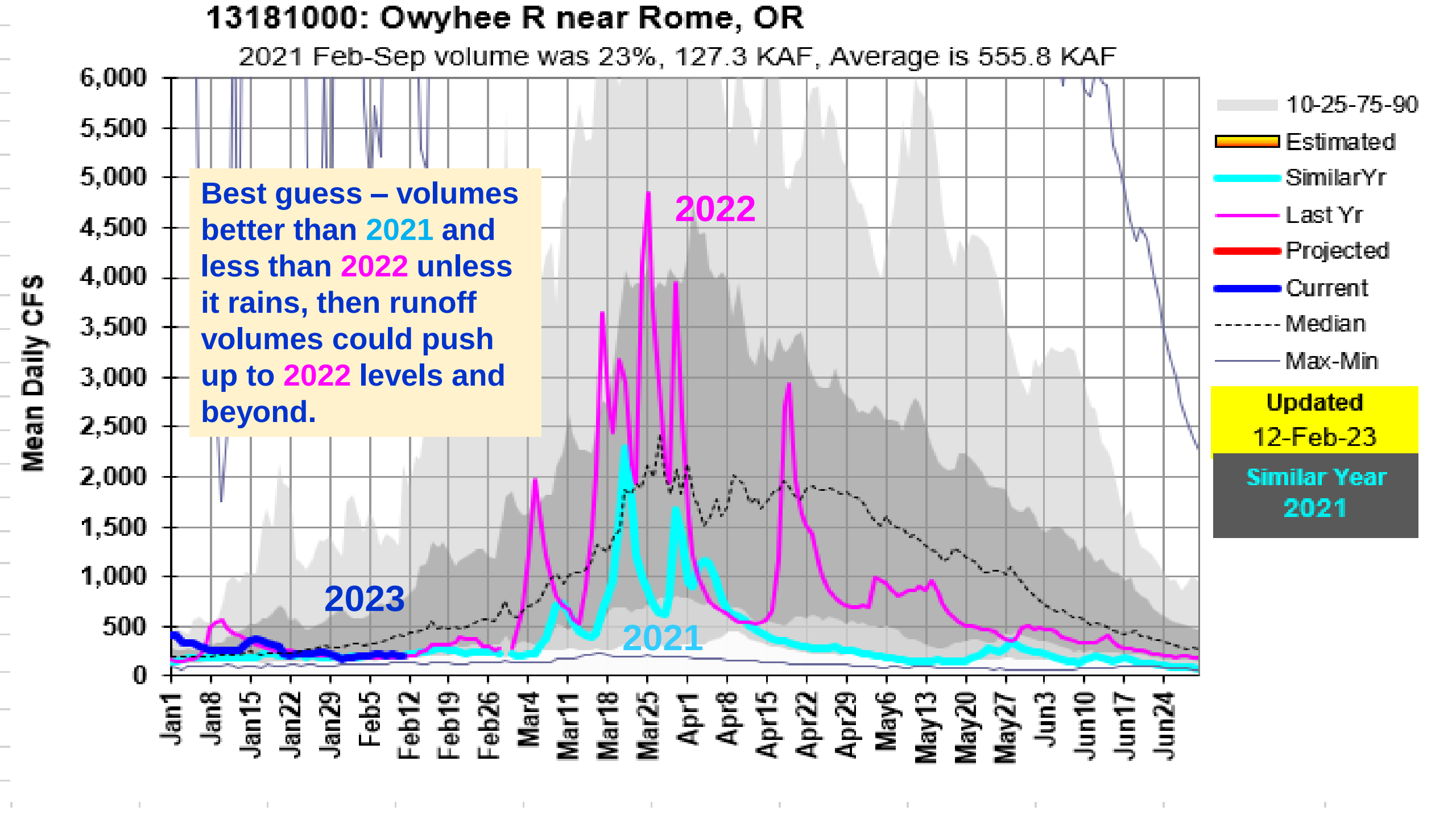


Feb 1 Historic and Forecasted Surface W
Owyhee Basin

	12-Feb-23	NRCS Fcst Feb 1 2023	
Owyhee blw Owy Dam	Snow % of Med / % of Peak	Streamflow Exceedance FCSTs 90% 50% 10%	
	118 / 82	66% 124% 203%	560
Analog yrs	Apr 1 %	Feb-Sep %	kaf
2022	50%	72%	322
2012	59%	57%	257
2009	125%	98%	442
2000	114%	78%	349
Analog Yrs Avg	87%	76%	
	est SWE %	NWS forecasts	
		NRCS KAF 1991-2020 Med	450
		NWS KAF 1991-2020 Avg	???

Forecast of 124%, 560 KAF, seems high, favor lower exceedance forecasts until we see spring rain.

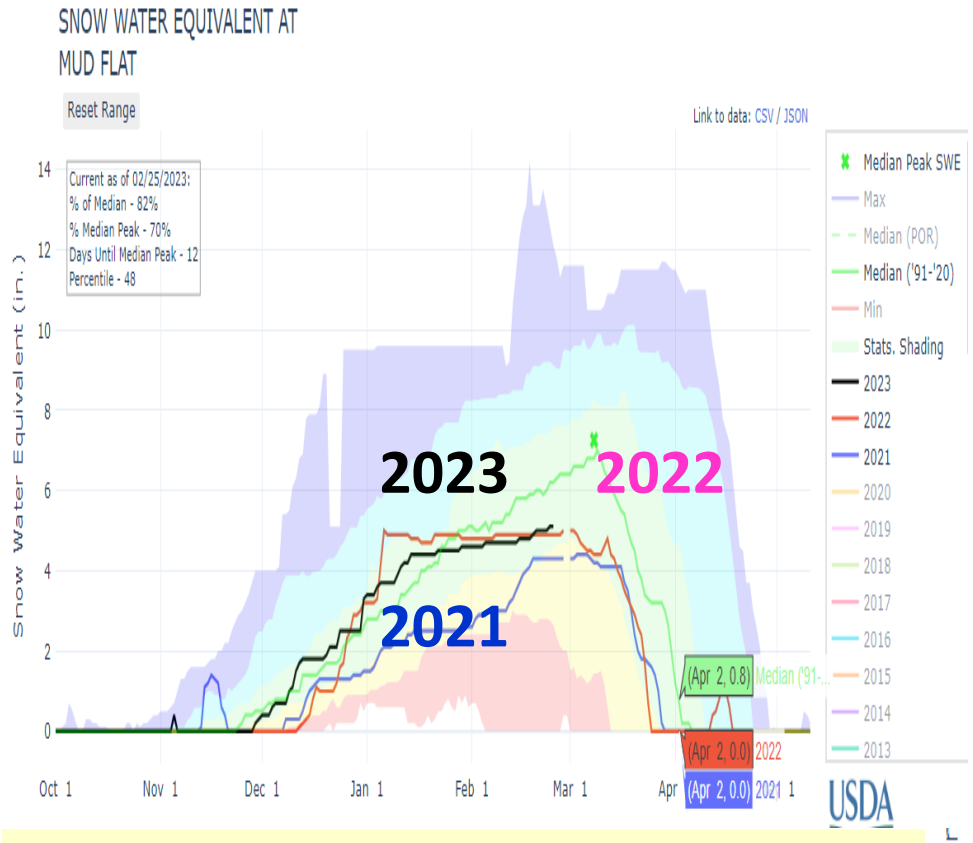


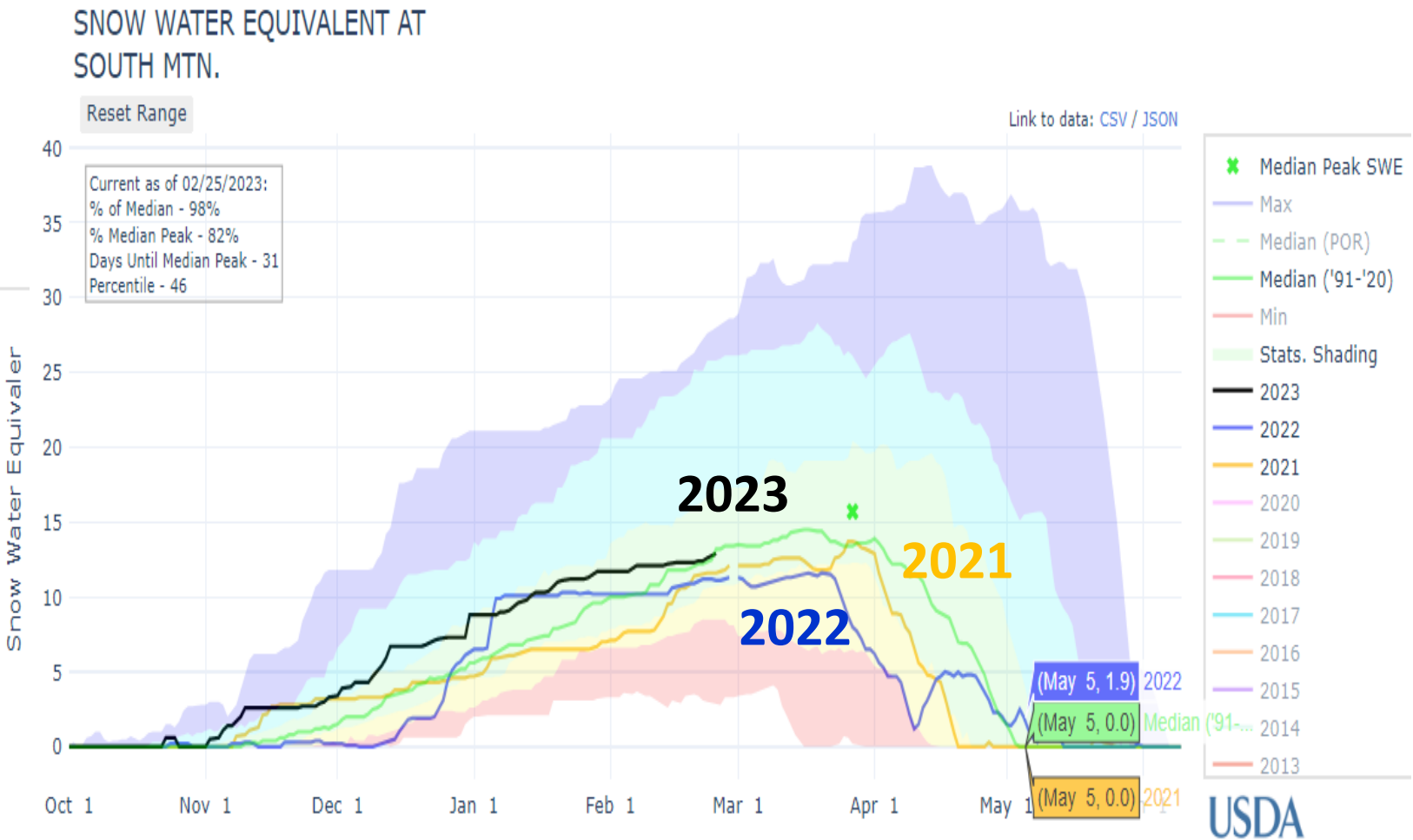

13181000: Owyhee R near Rome, OR
2021 Feb-Sep volume was 23%, 127.3 KAF, Average is 555.8 KAF
Mean Daily CFS
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Jan1
Jan8
Jan15
Jan22
Jan29
Feb5
Feb12
Feb19
Feb26
Mar4
Mar11
Mar18
Mar25
Apr1
Apr8
Apr15
Apr22
Apr29
May6
May13
May20
May27
Jun3
Jun10
Jun17
Jun24
Best guess – volumes better than 2021 and less than 2022 unless it rains, then runoff volumes could push up to 2022 levels and beyond.
2022
2023
2021
10-25-75-90
Estimated
SimilarYr
Last Yr
Projected
Current
Median
Max-Min
Updated
12-Feb-23
Similar Year
2021

From Kara Ferguson BSU Thesis

Owyhee River snowmelt peak occurs when:

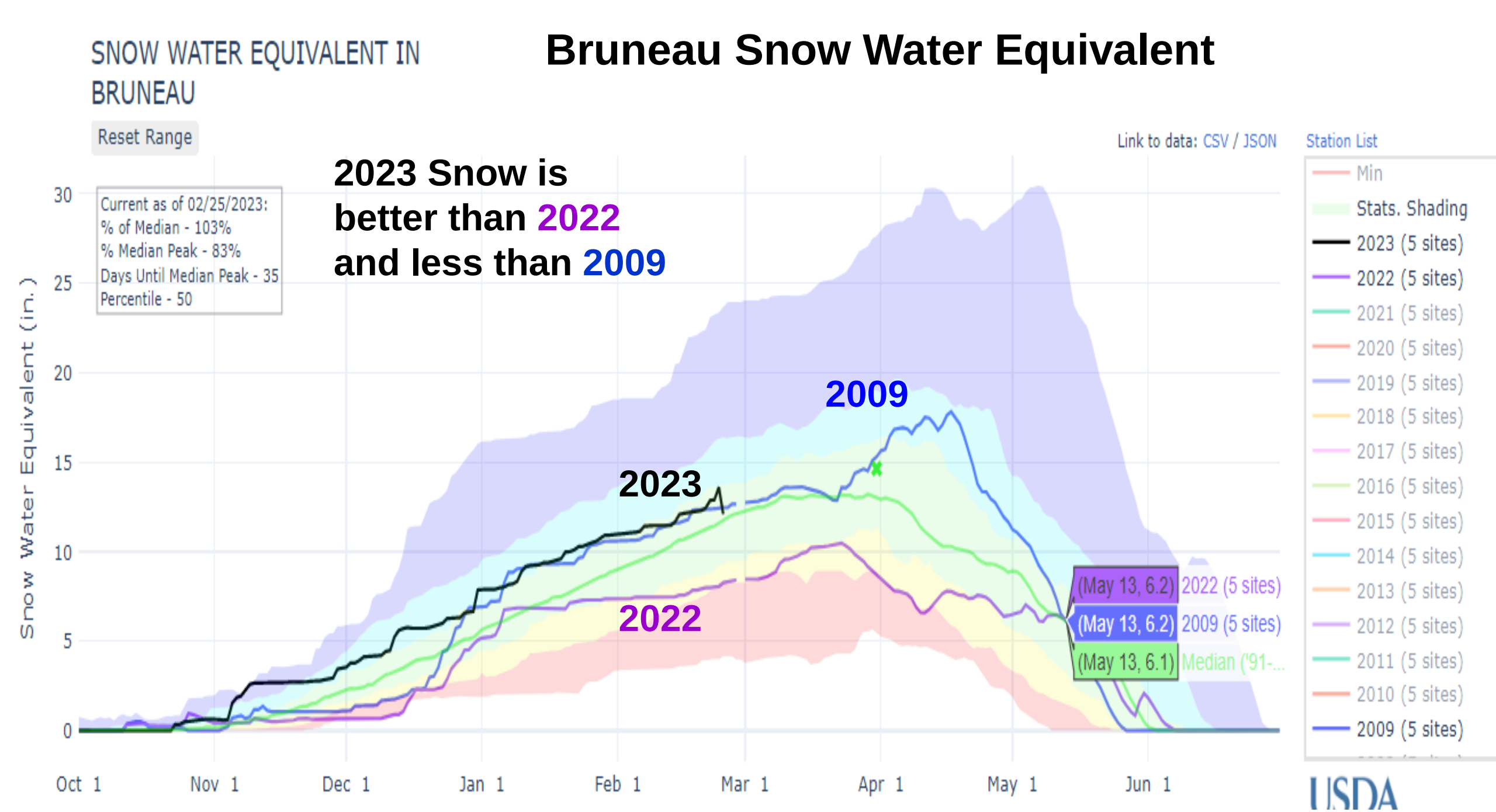
- **Mud Flat is ~15% melted (canopy changed)**
  and / or
- **South Mnt is ~30% melted (BETTER to USE)**

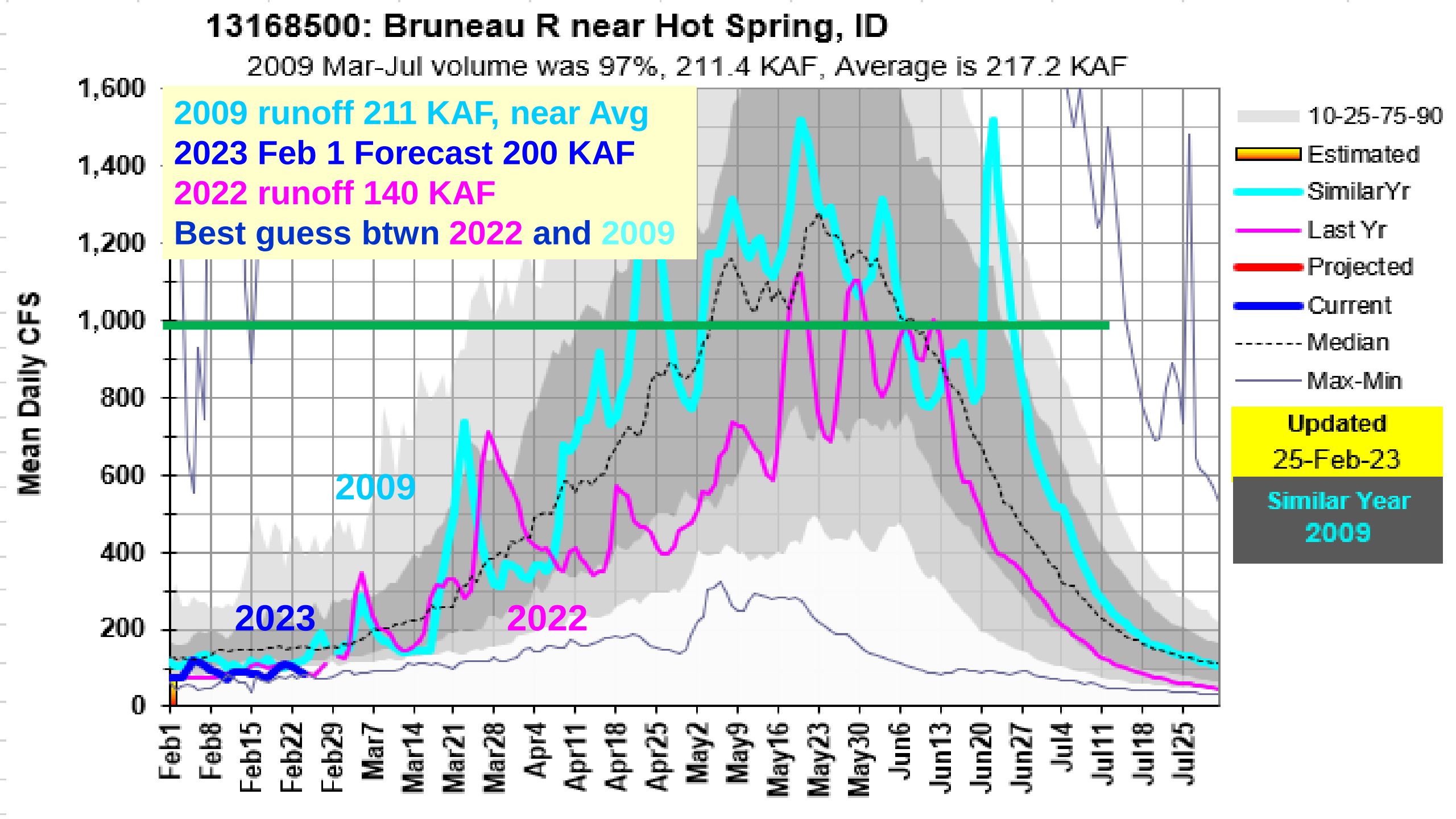




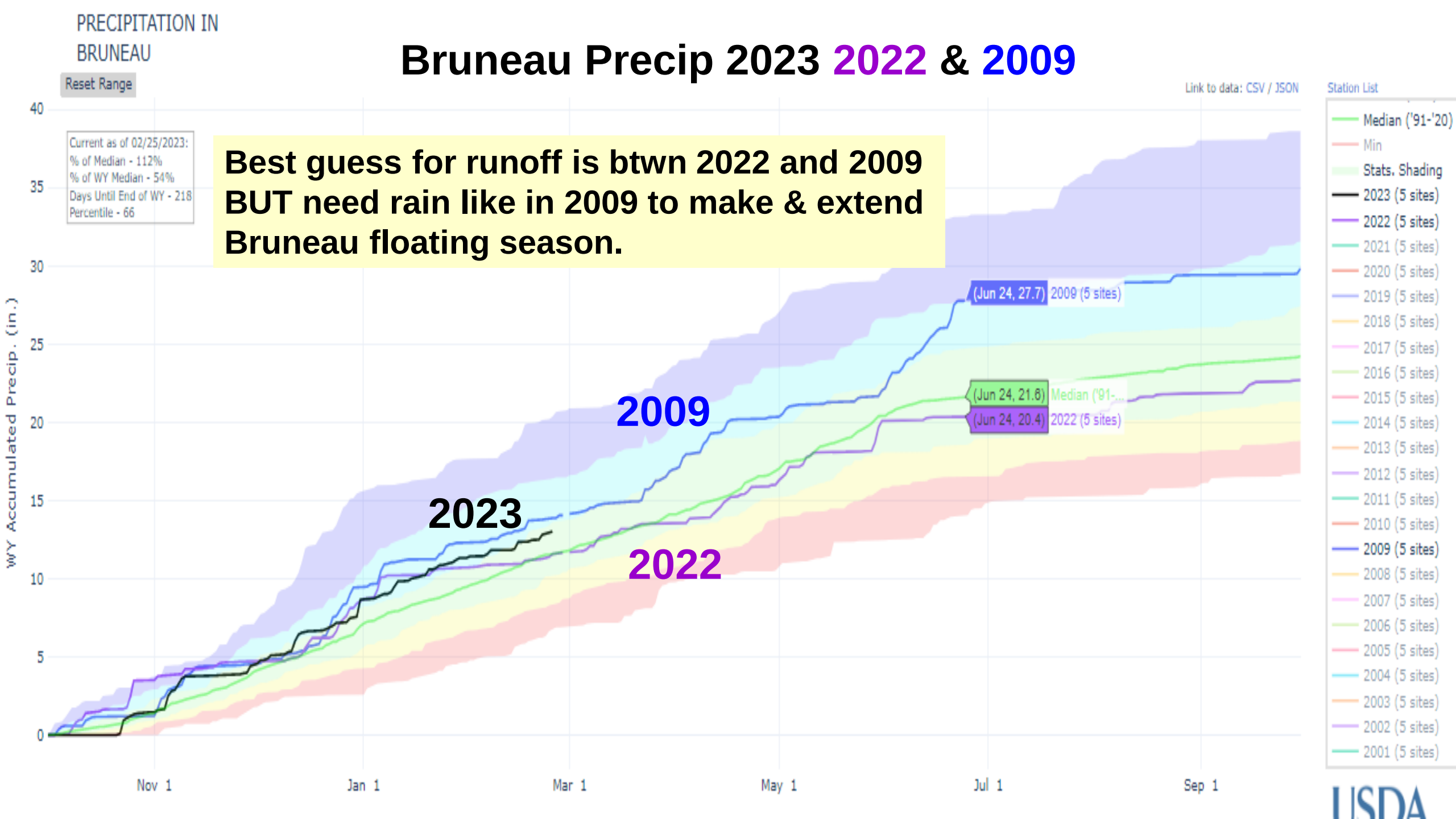
Basin is ready to flow:
Cold temps has kept all snow in place. When warm temps arrive, it could melt fast producing rapid flow increases like last year.
Adding rain, will extend high water season.

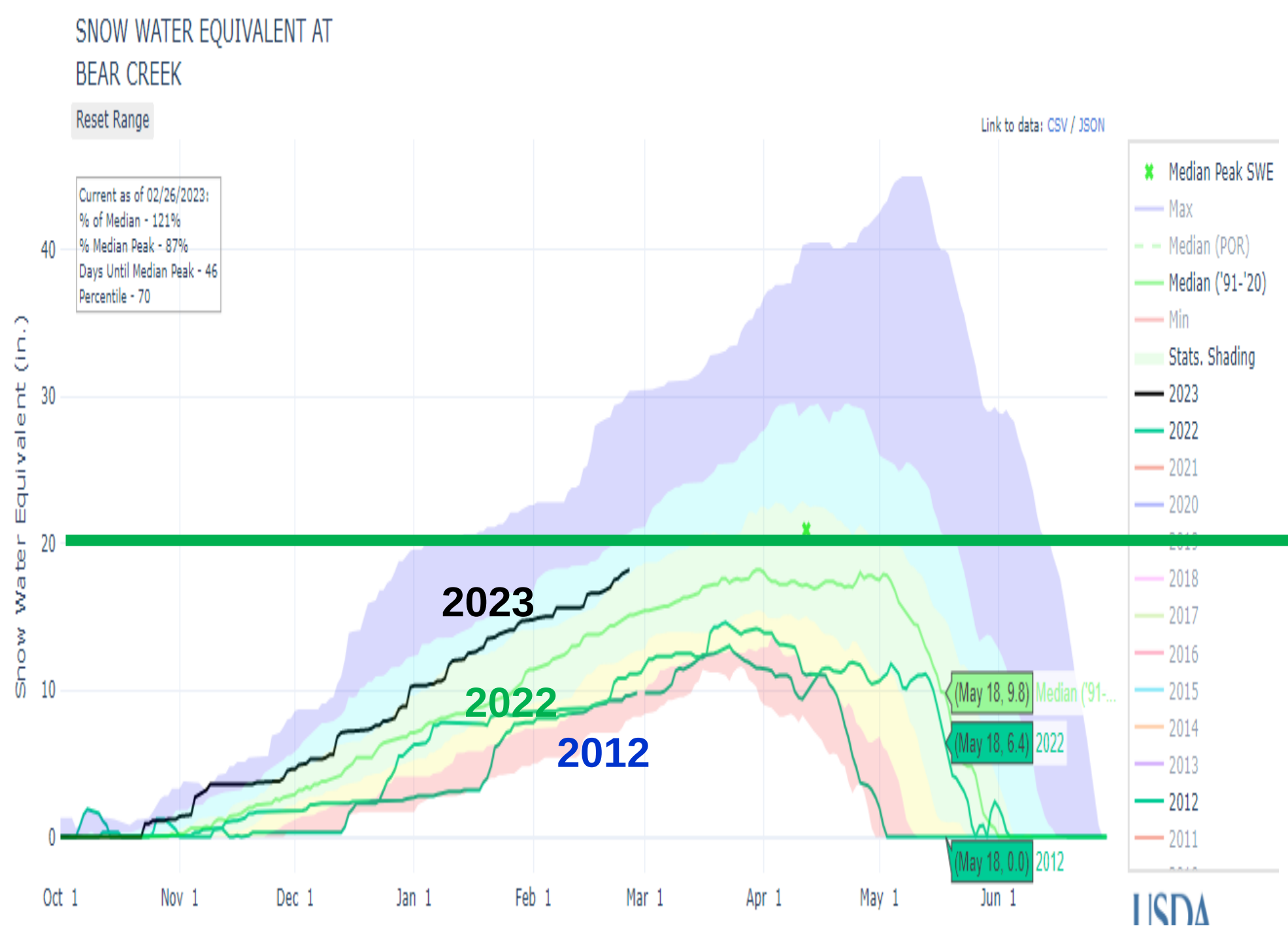
Bruneau Snow Water Equivalent




13168500: Bruneau R near Hot Spring, ID
2009 Mar-Jul volume was 97%, 211.4 KAF, Average is 217.2 KAF
2009 runoff 211 KAF, near Avg
2023 Feb 1 Forecast 200 KAF
2022 runoff 140 KAF
Best guess btwn 2022 and 2009
2009
2023
2022
Mean Daily CFS
1,600
1,400
1,200
1,000
800
600
400
200
0
Feb1
Feb8
Feb15
Feb22
Feb29
Mar7
Mar14
Mar21
Mar28
Apr4
Apr11
Apr18
Apr25
May2
May9
May16
May23
May30
Jun6
Jun13
Jun20
Jun27
Jul4
Jul11
Jul18
Jul25
10-25-75-90
Estimated
SimilarYr
Last Yr
Projected
Current
Median
Max-Min
Updated
25-Feb-23
Similar Year
2009

Bruneau Precip 2023 2022 & 2009





Lessons Learned from Peter Palmer & others:

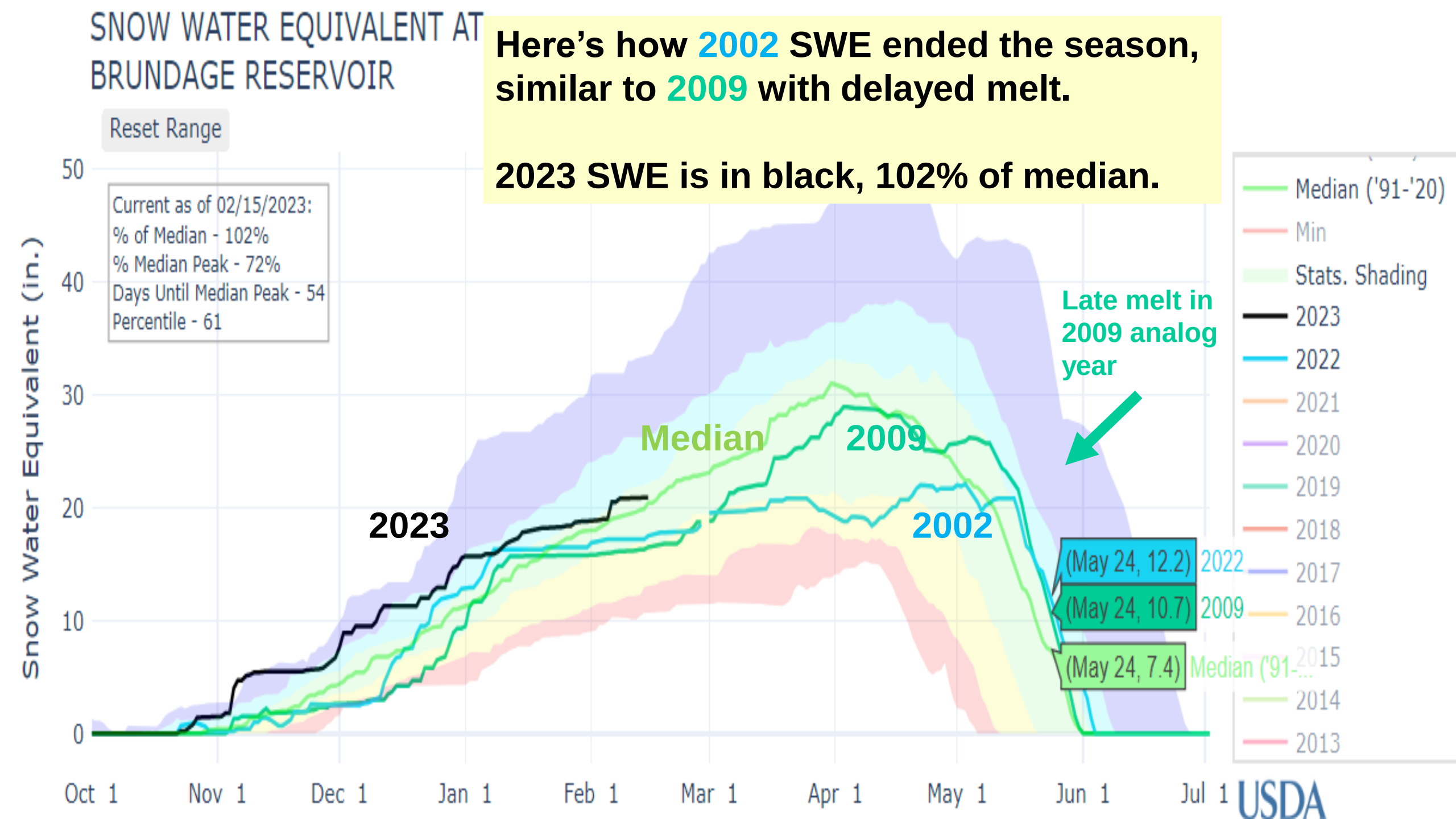
Bear Creek usually needs about 20” of SWE to have an adequate floating season or wet spring.

Need more storms to improve runoff season.

* Payette will be fun like always and runnable year around for some…

Feb 15, 2023

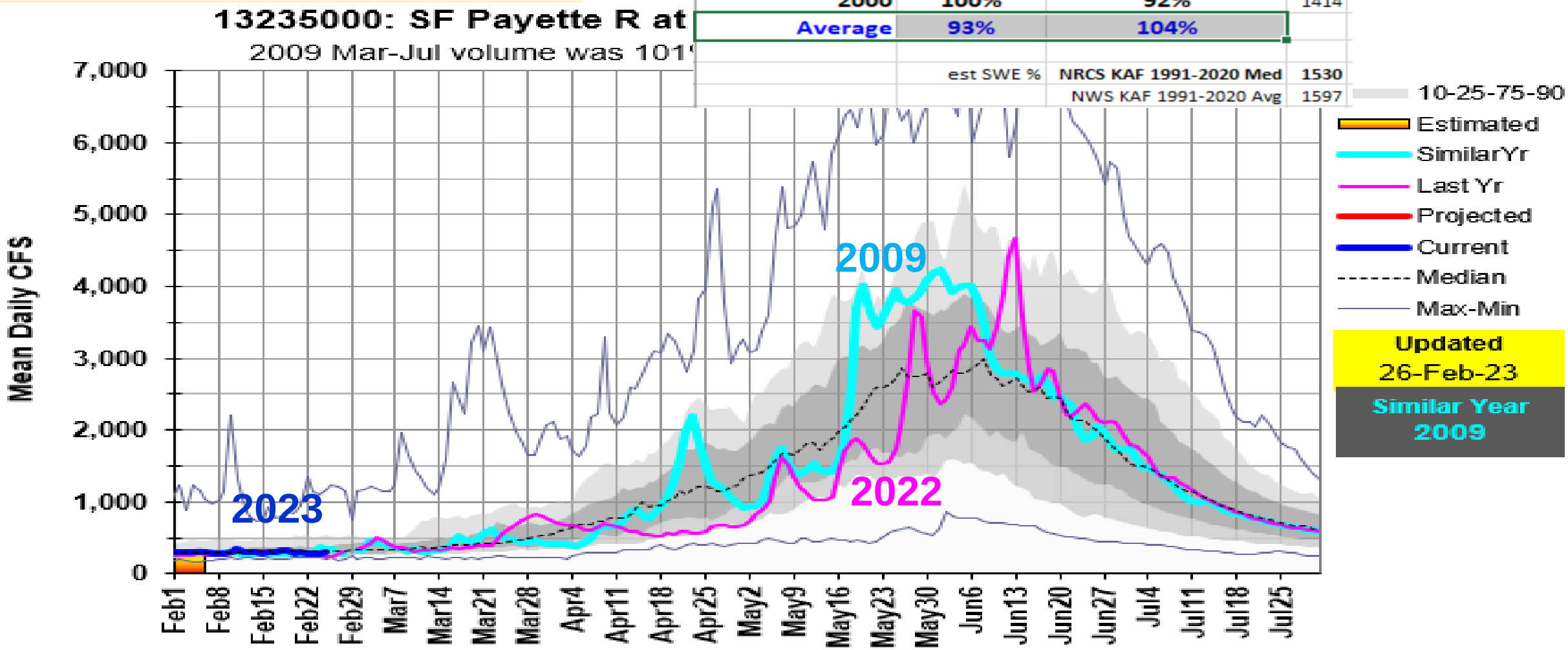
* 62nd consecutive months running Staircase Section for Matt, Harlan & Ted


SNOW WATER EQUIVALENT AT BRUNDAGE RESERVOIR
Here's how 2002 SWE ended the season, similar to 2009 with delayed melt.
2023 SWE is in black, 102% of median.
Reset Range
Current as of 02/15/2023:
% of Median - 102%
% Median Peak - 72%
Days Until Median Peak - 54
Percentile - 61
Snow Water Equivalent (in.)
50
40
30
20
10
0
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
Late melt in 2009 analog year
Median
2009
2002
2023
(May 24, 12.2) 2022
(May 24, 10.7) 2009
(May 24, 7.4) Median ('91-...
Median ('91-'20)
Min
Stats. Shading
2023
2022
2021
2020
2019
2018
2017
2016
2015
2014
2013
USDA

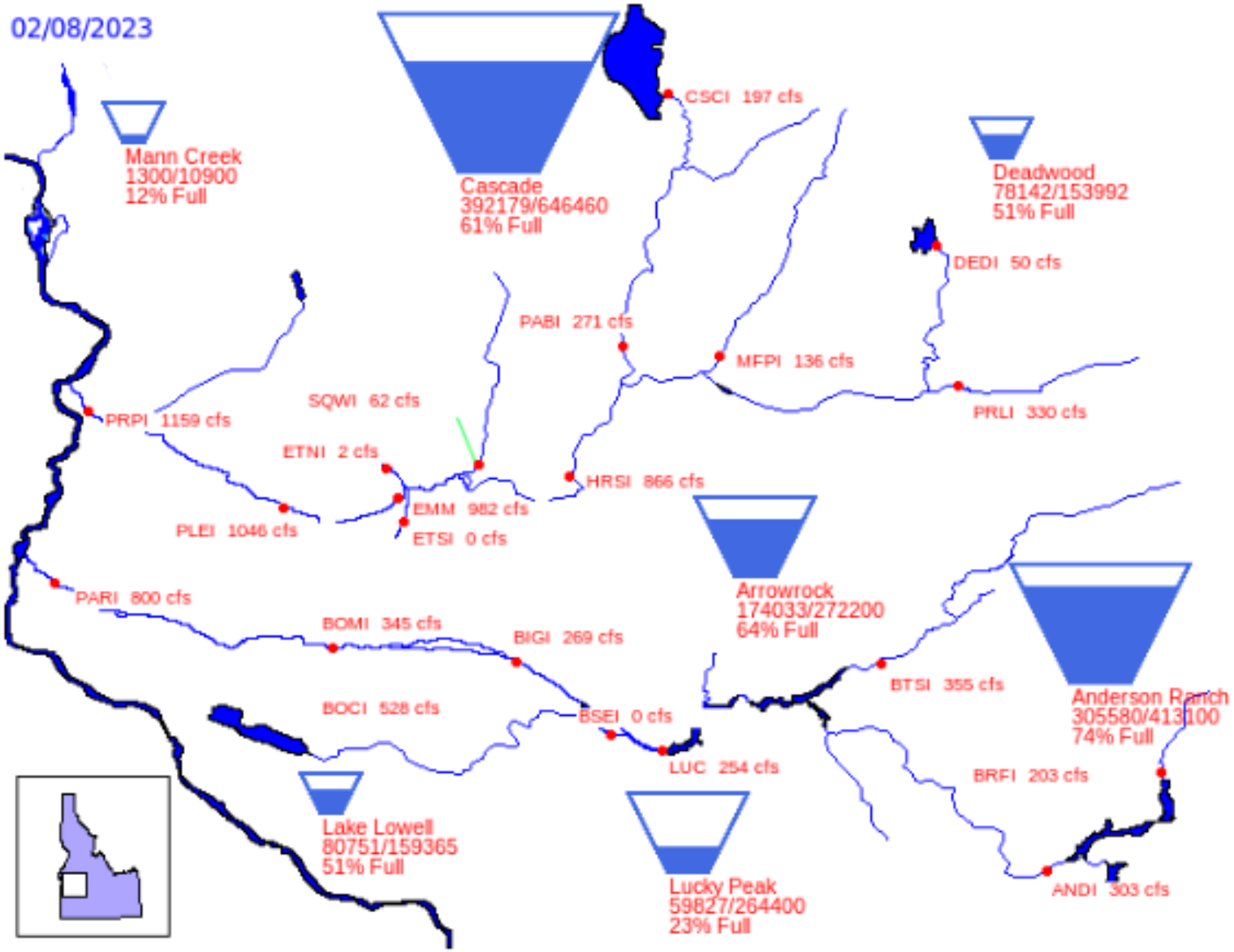
Snow is 97% of median, 75% of seasonal peak.

Based on Analog Years and near normal forecast is best guess with near normal summer volumes.

	1-Mar-23	NRCS Fcst Feb 1 2023	
Payette Horseshoe Bend	Snow % of Med / % of Peak 97 / 75	Streamflow Exceedance FCSTs 90% 50% 10% 59% 99% 139%	
Analog yrs	Apr 1 %	Apr-Sep %	kaf
2022	65%	90%	1382
2012	112%	128%	1960
2009	96%	104%	1597
2000	100%	92%	1414
Average	93%	104%	
	est SWE %	NRCS KAF 1991-2020 Med	1530
		NWS KAF 1991-2020 Avg	1597



Bureau of Reclamation, Pacific Northwest Region
Major Storage Reservoirs in the Boise & Payette River Basins



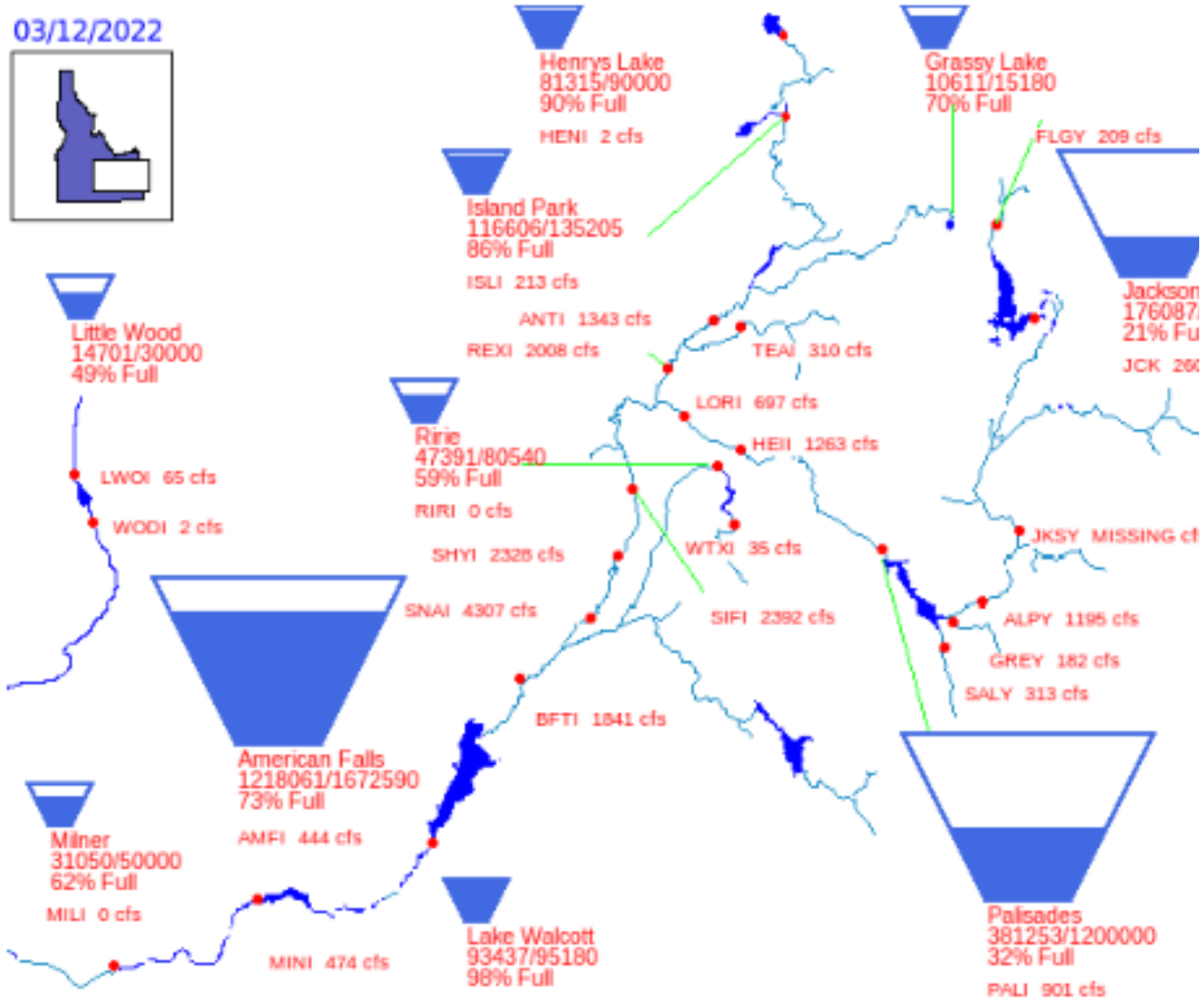
Reservoir Systems

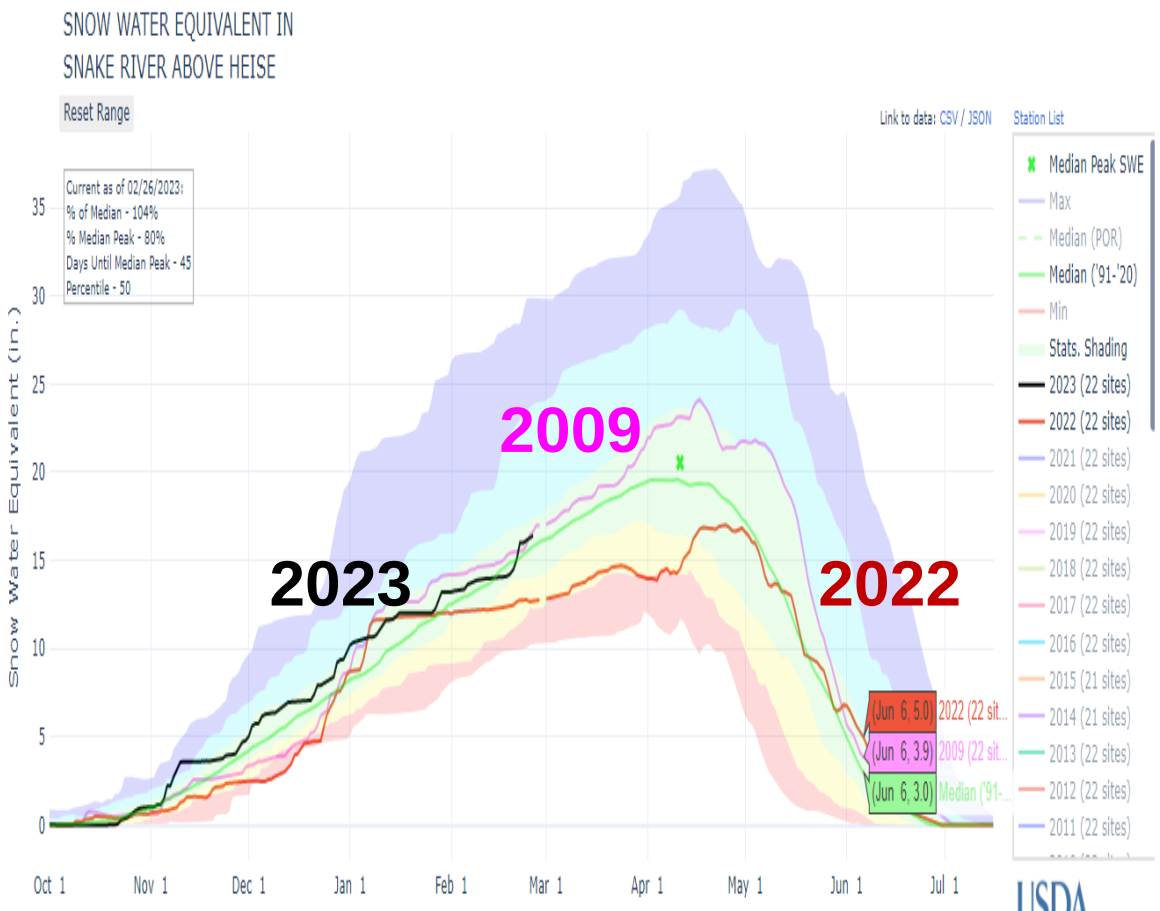
Payette 59% Full

Boise 57% Full

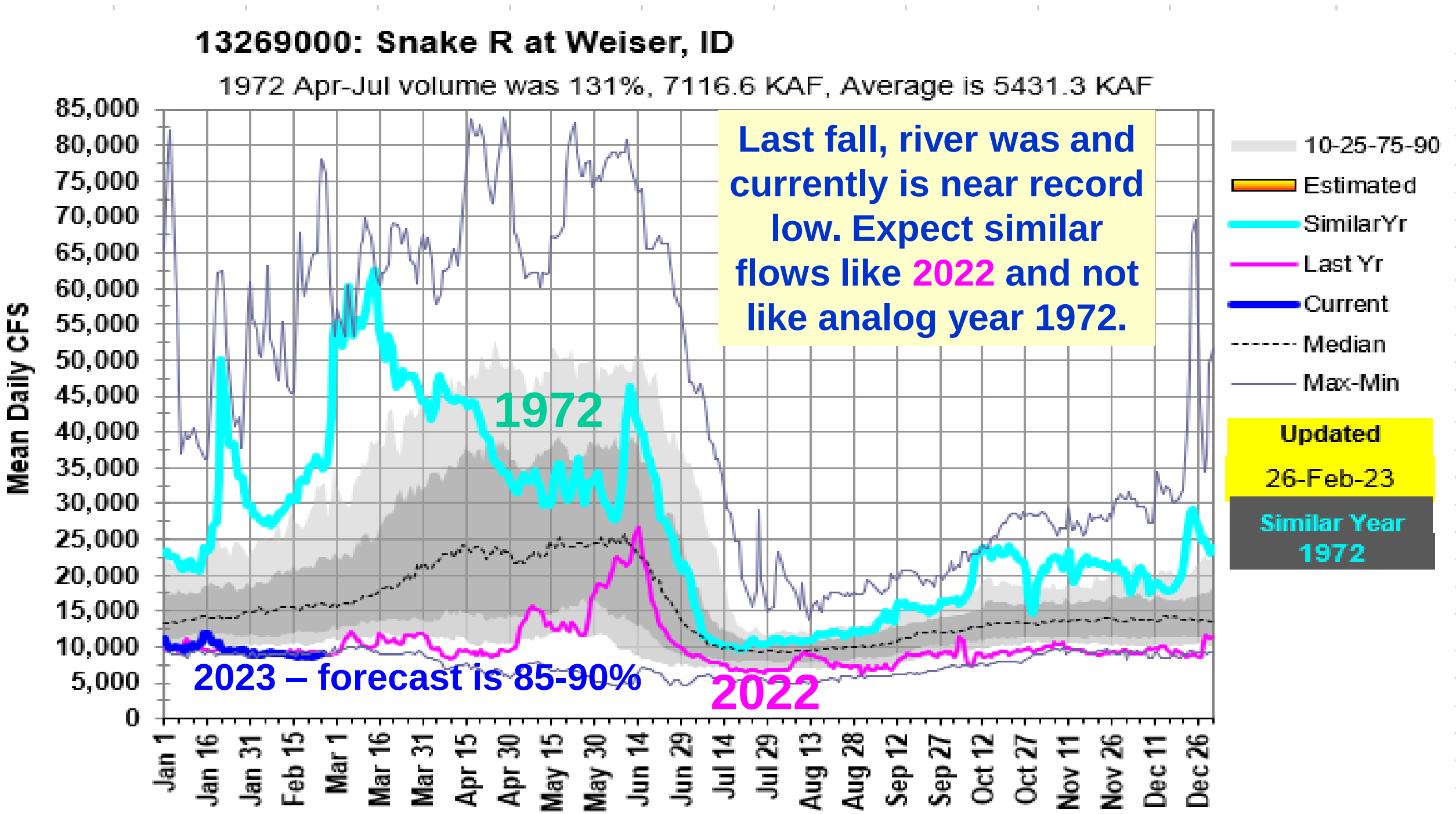
Upper Snake is 51% of capacity

Snow is 104% of normal, 80% of seasonal peak, better than 2022 and tracking 2009





Moving into Hells Canyon…
Volume Forecast is about 85-90% of median

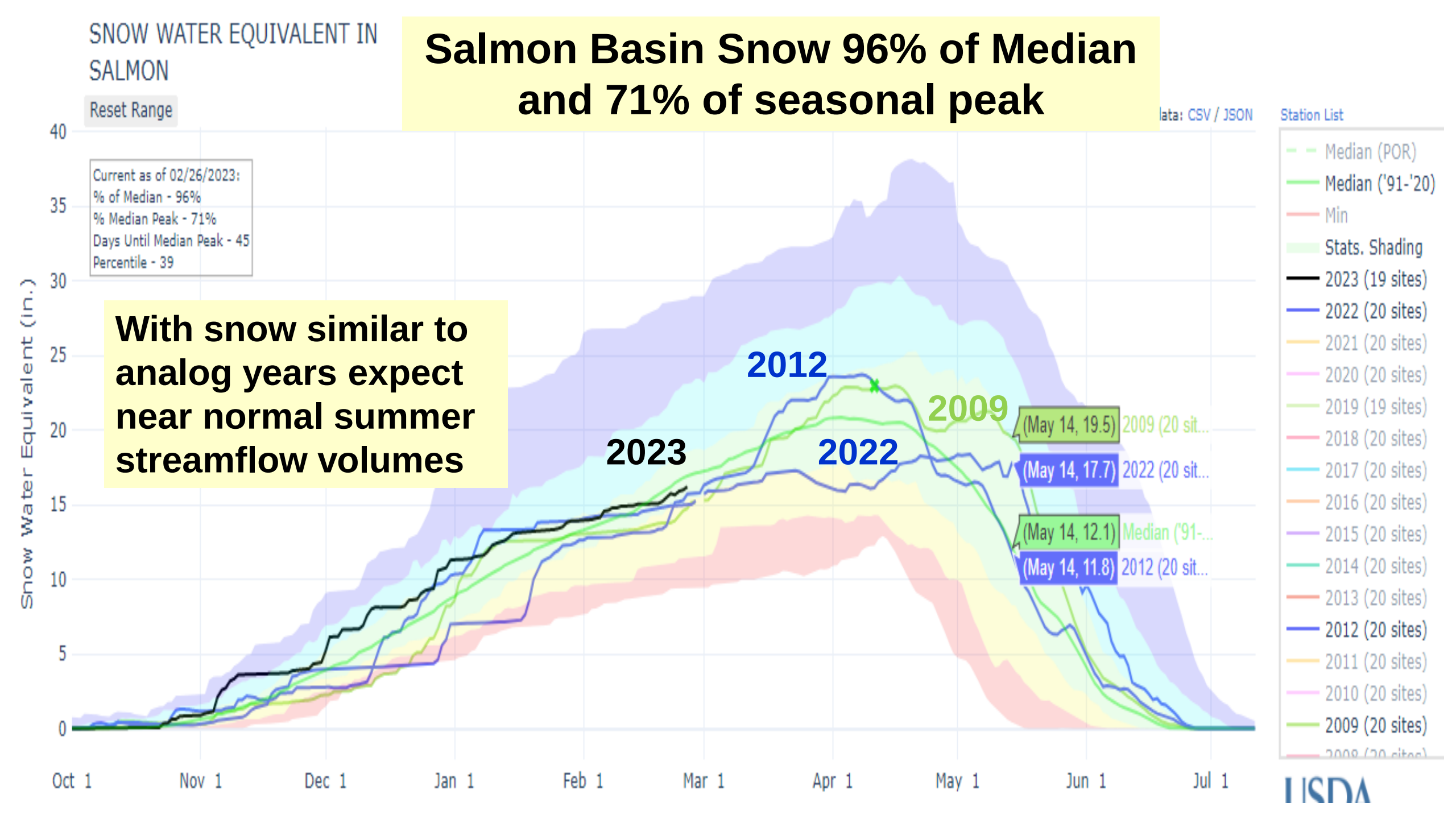

13269000: Snake R at Weiser, ID
1972 Apr-Jul volume was 131%, 7116.6 KAF, Average is 5431.3 KAF
Mean Daily CFS
85,000
80,000
75,000
70,000
65,000
60,000
55,000
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Jan 1
Jan 16
Jan 31
Feb 15
Mar 1
Mar 16
Mar 31
Apr 15
Apr 30
May 15
May 30
Jun 14
Jun 29
Jul 14
Jul 29
Aug 13
Aug 28
Sep 12
Sep 27
Oct 12
Oct 27
Nov 11
Nov 26
Dec 11
Dec 26
Last fall, river was and currently is near record low. Expect similar flows like 2022 and not like analog year 1972.
1972
2022
2023 – forecast is 85-90%
10-25-75-90
Estimated
SimilarYr
Last Yr
Current
Median
Max-Min
Updated
26-Feb-23
Similar Year
1972

The Salmon

Don’t let a little smoke on the water keep you home…

Sept 12, 2022 2:12pm Day 1

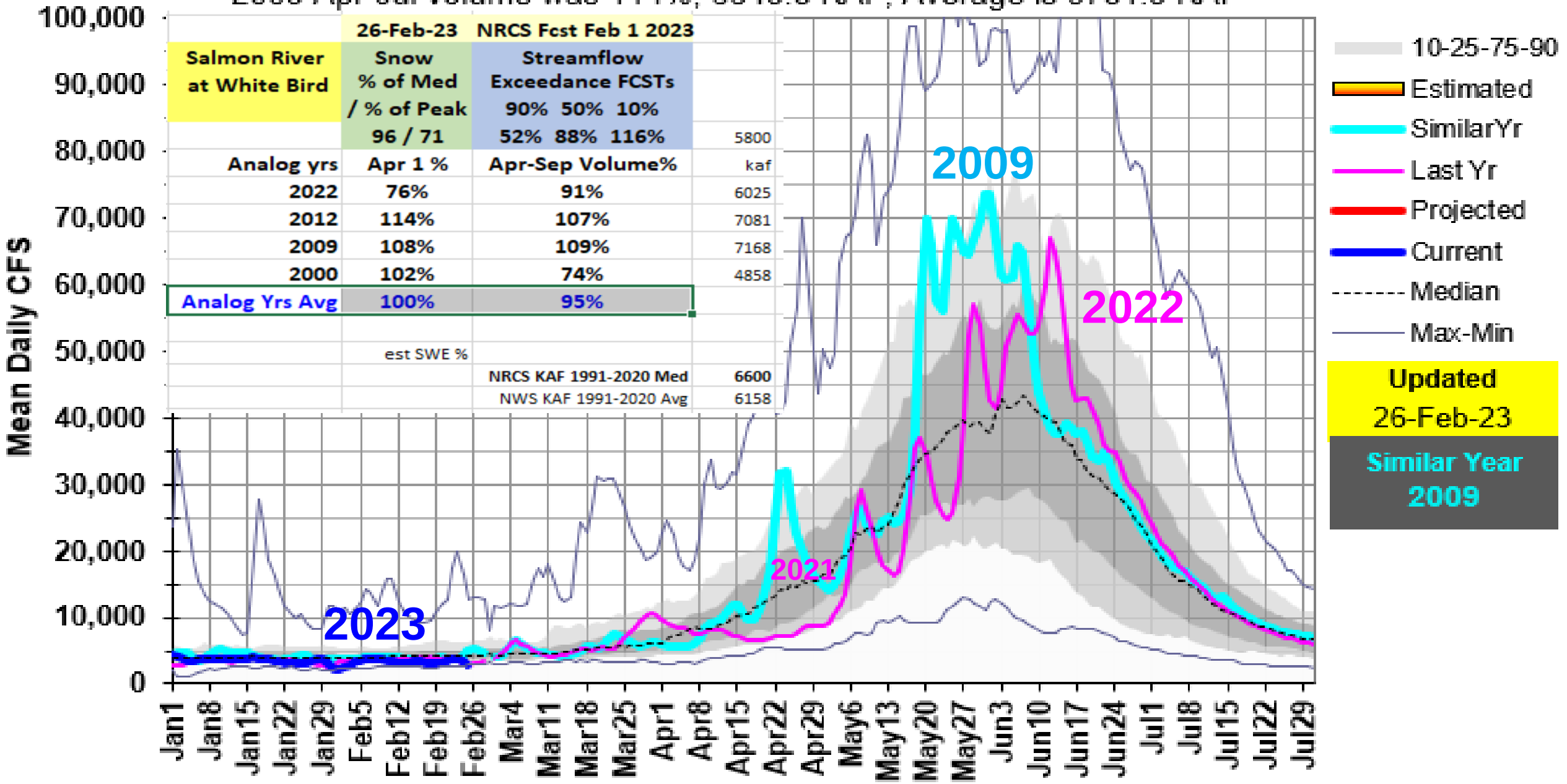
Salmon Basin Snow 96% of Median and 71% of seasonal peak

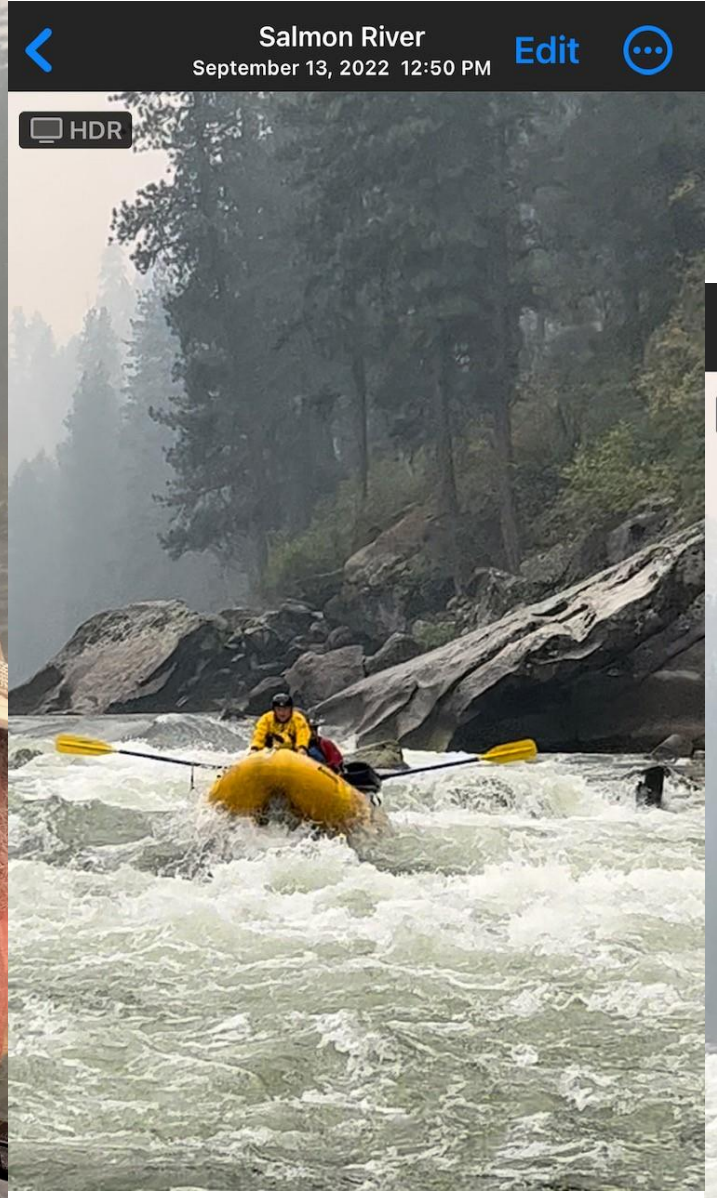


13317000: Salmon R at White Bird, ID

2009 Apr-Jul volume was 114%, 6545.3 KAF, Average is 5731.9 KAF

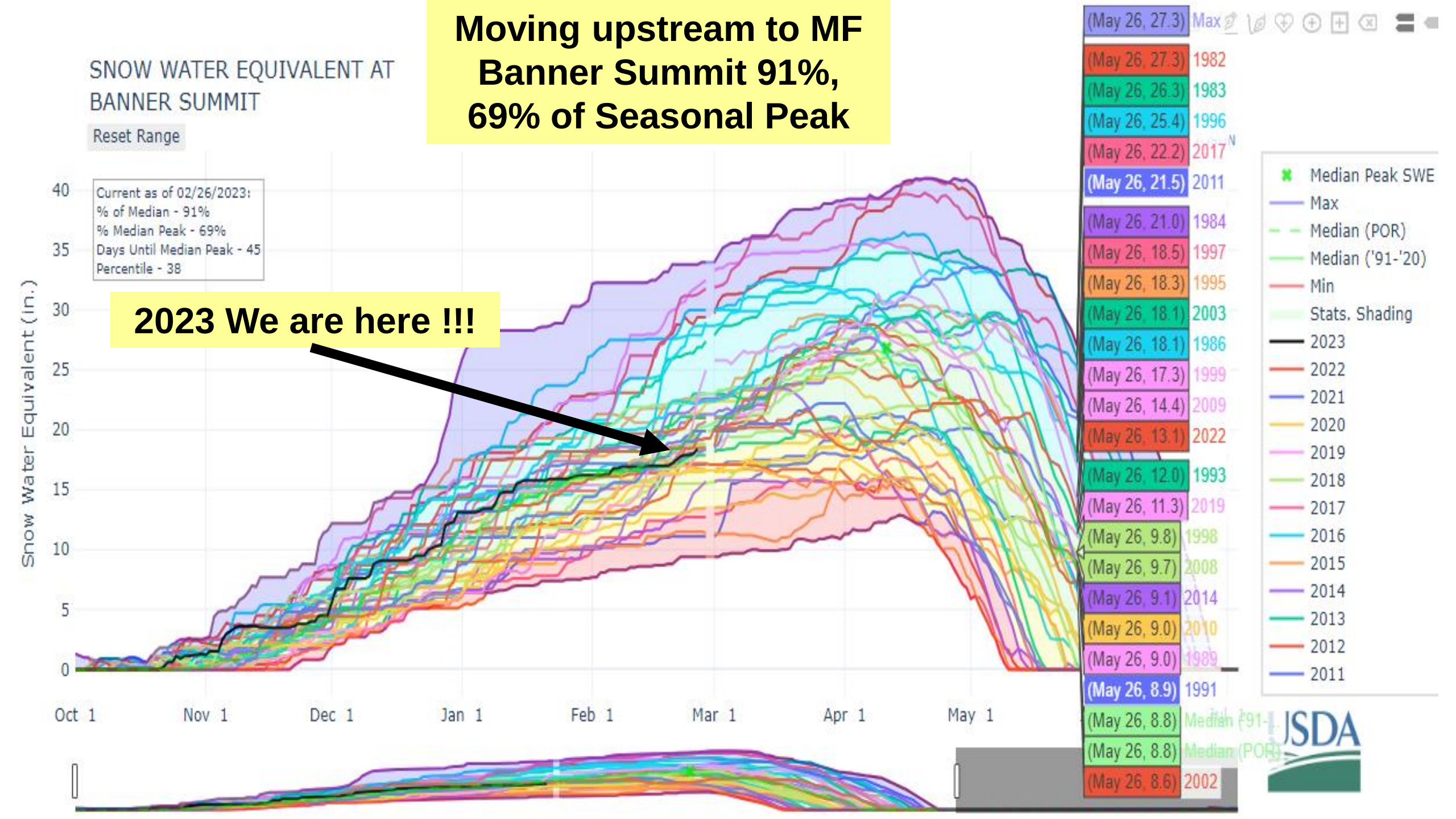
Salmon River at White Bird	26-Feb-23 Snow % of Med / % of Peak	NRCS Fcst Feb 1 2023 Streamflow Exceedance FCSTs 90% 50% 10%	
	96 / 71	52% 88% 116%	5800
Analog yrs	Apr 1 %	Apr-Sep Volume%	kaf
2022	76%	91%	6025
2012	114%	107%	7081
2009	108%	109%	7168
2000	102%	74%	4858
Analog Yrs Avg	100%	95%	
	est SWE %		
		NRCS KAF 1991-2020 Med	6600
		NWS KAF 1991-2020 Avg	6158

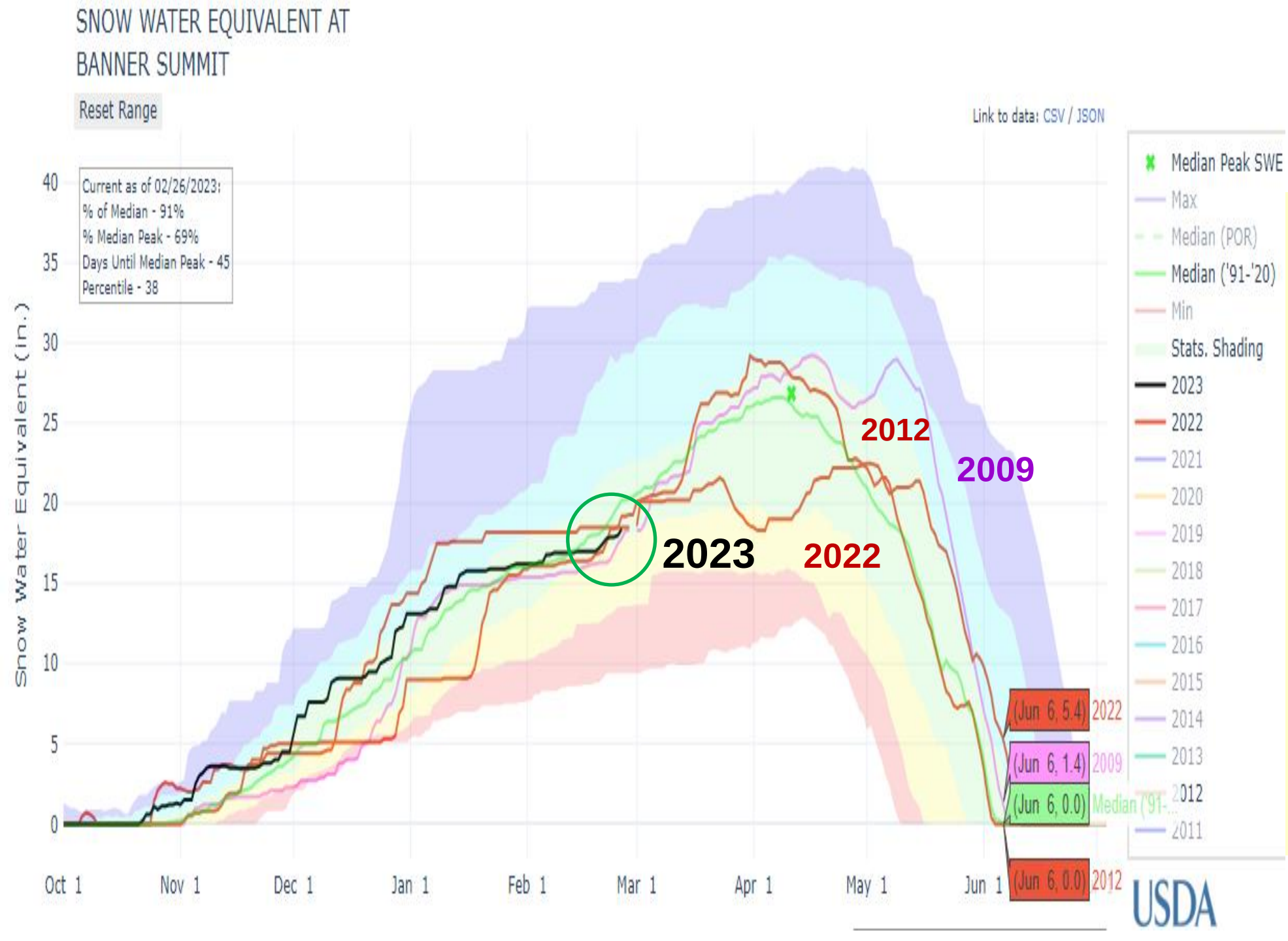




It felt like we were run the river blind… except for scouting Blacks Creek

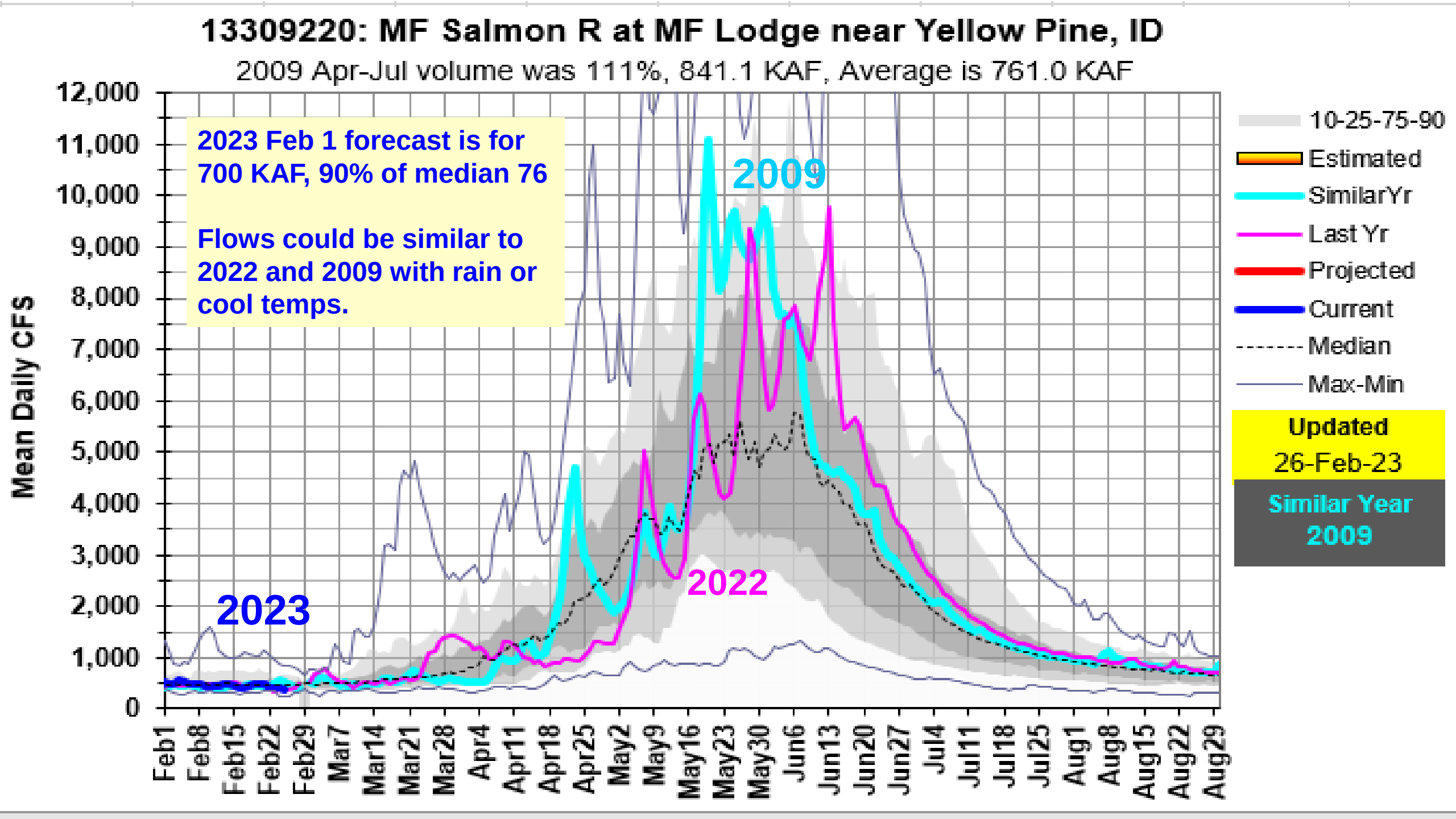
Moving upstream to MF Banner Summit 91%, 69% of Seasonal Peak

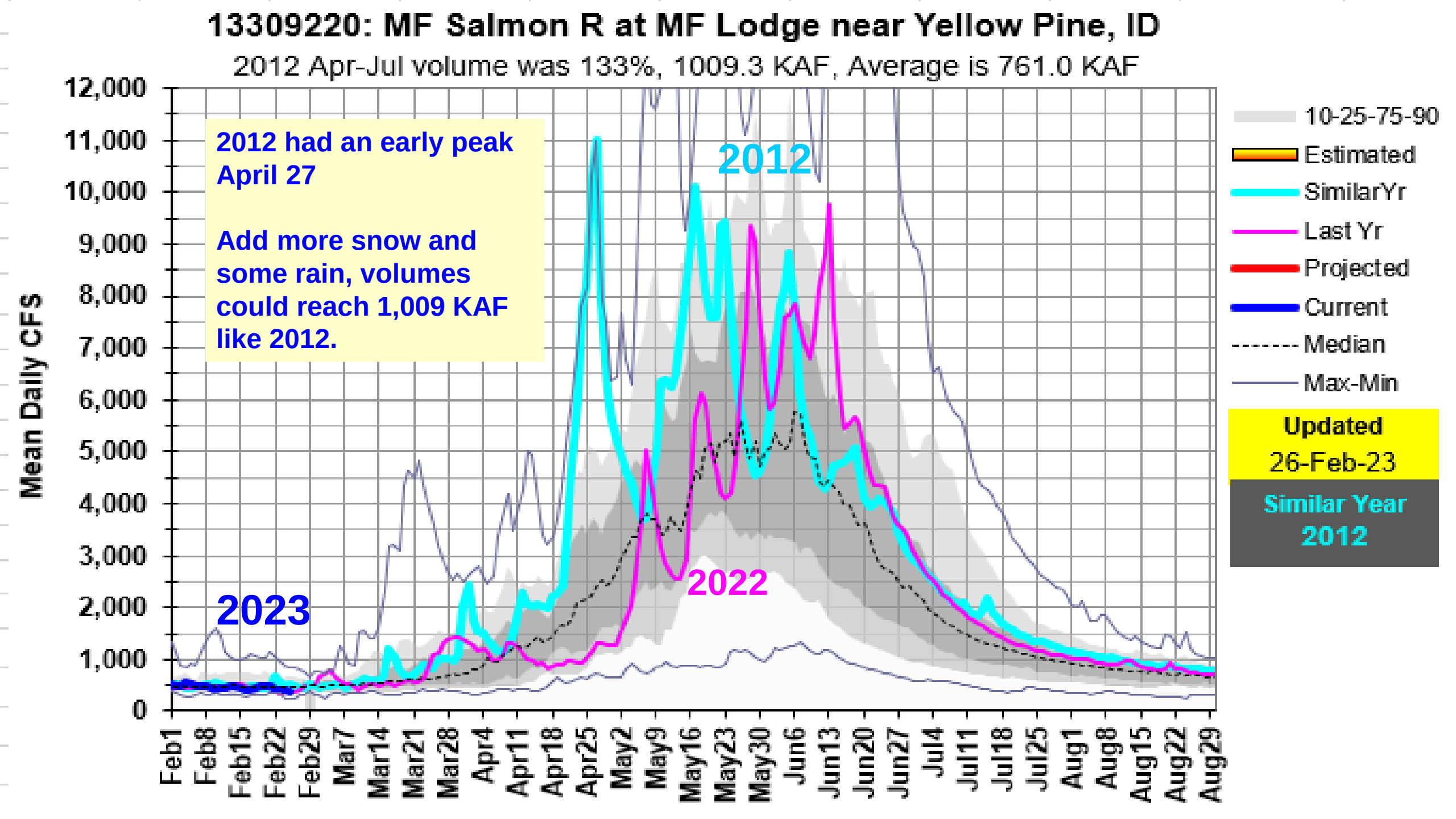




Today Banner Summit is 95% of Median same as 22, 12 & 09

On average, MF peaks when Banner is about 61% melted.


13309220: MF Salmon R at MF Lodge near Yellow Pine, ID
2009 Apr-Jul volume was 111%, 841.1 KAF, Average is 761.0 KAF
2023 Feb 1 forecast is for 700 KAF, 90% of median 76
Flows could be similar to 2022 and 2009 with rain or cool temps.
2009
2022
2023
Mean Daily CFS
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Feb1
Feb8
Feb15
Feb22
Feb29
Mar7
Mar14
Mar21
Mar28
Apr4
Apr11
Apr18
Apr25
May2
May9
May16
May23
May30
Jun6
Jun13
Jun20
Jun27
Jul4
Jul11
Jul18
Jul25
Aug1
Aug8
Aug15
Aug22
Aug29
10-25-75-90
Estimated
SimilarYr
Last Yr
Projected
Current
Median
Max-Min
Updated
26-Feb-23
Similar Year
2009


13309220: MF Salmon R at MF Lodge near Yellow Pine, ID
2012 Apr-Jul volume was 133%, 1009.3 KAF, Average is 761.0 KAF
Mean Daily CFS
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Feb1
Feb8
Feb15
Feb22
Feb29
Mar7
Mar14
Mar21
Mar28
Apr4
Apr11
Apr18
Apr25
May2
May9
May16
May23
May30
Jun6
Jun13
Jun20
Jun27
Jul4
Jul11
Jul18
Jul25
Aug1
Aug8
Aug15
Aug22
Aug29
2012 had an early peak April 27
Add more snow and some rain, volumes could reach 1,009 KAF like 2012.
2012
2022
2023
10-25-75-90
Estimated
SimilarYr
Last Yr
Projected
Current
Median
Max-Min
Updated
26-Feb-23
Similar Year
2012

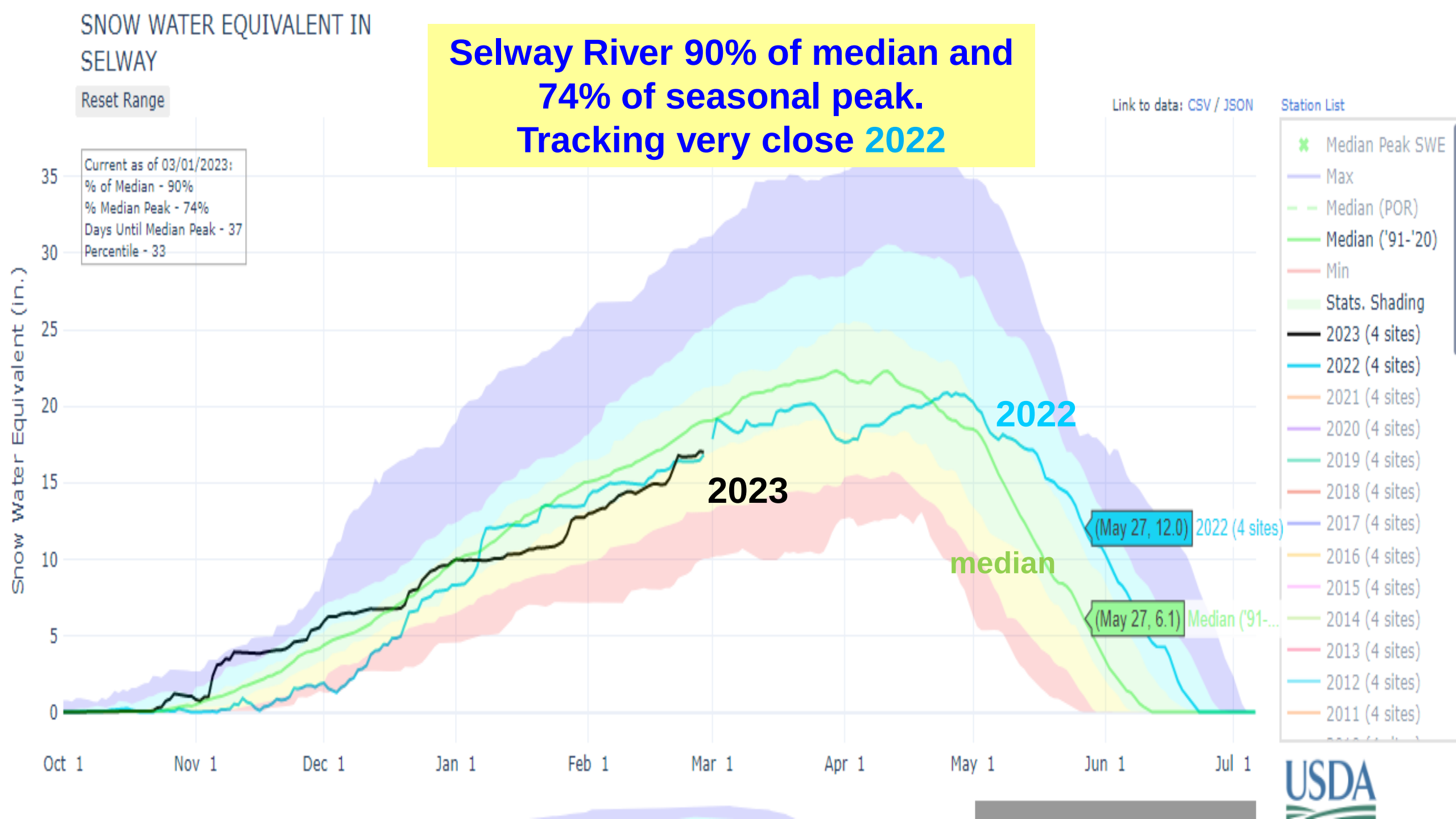
MF Salmon River blowout August 17, 2022

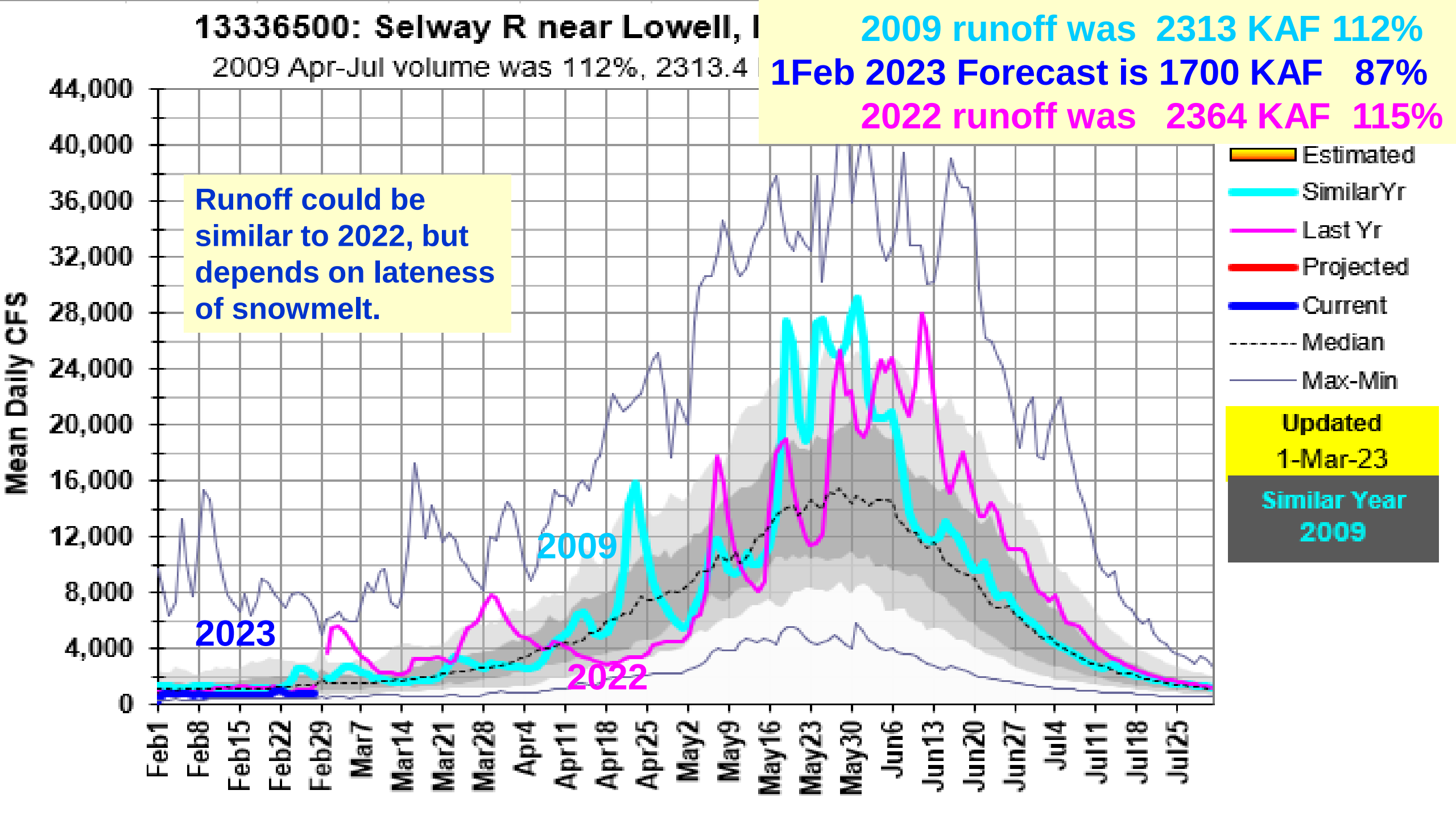
Velvet Falls and near Ramshorn Creek

Selway & Lochsa Rivers

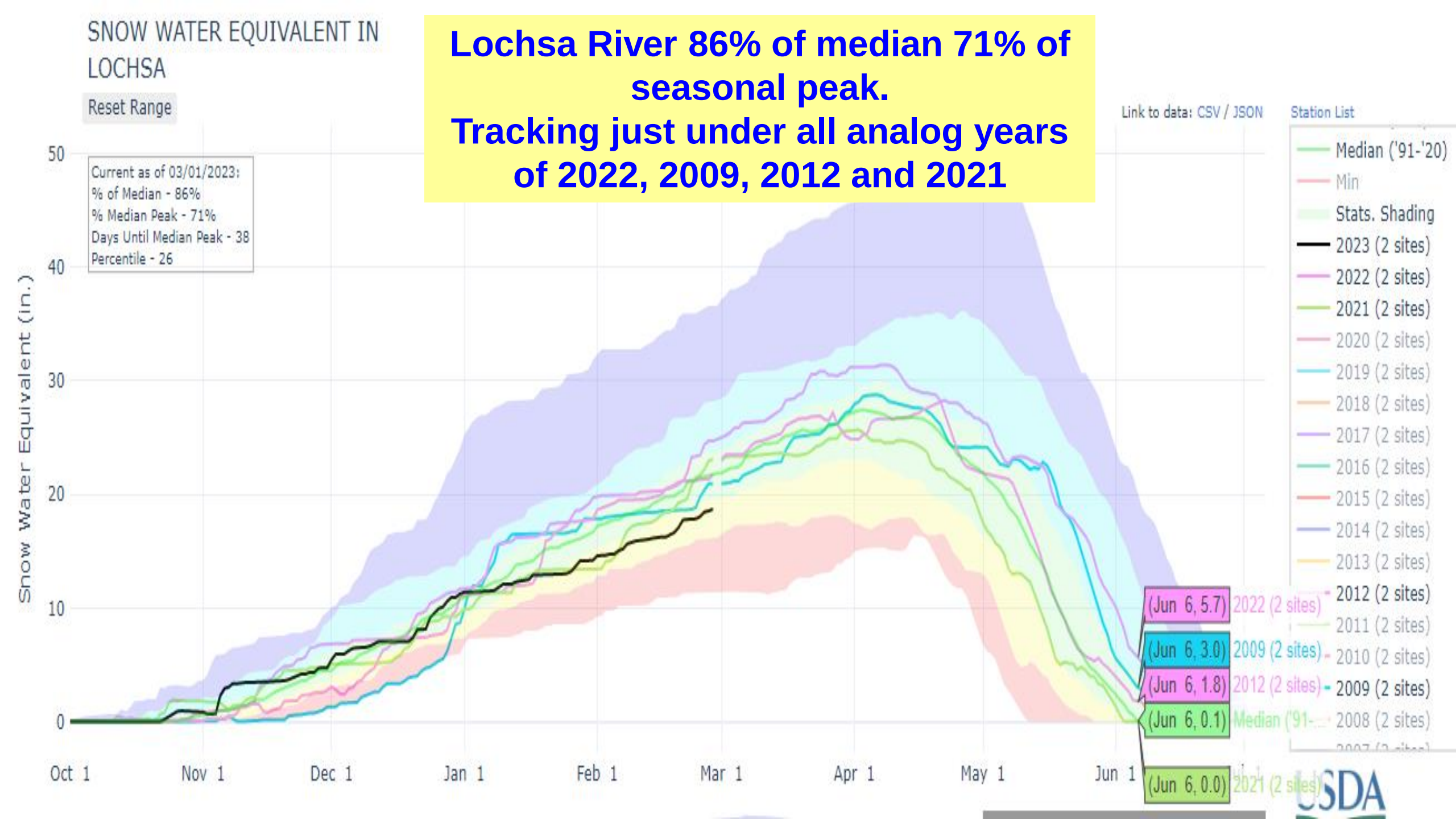
Selway Falls
June 14, 2022
about 20,000 CFS

Selway Falls
May 19, 2006
30,000 CFS

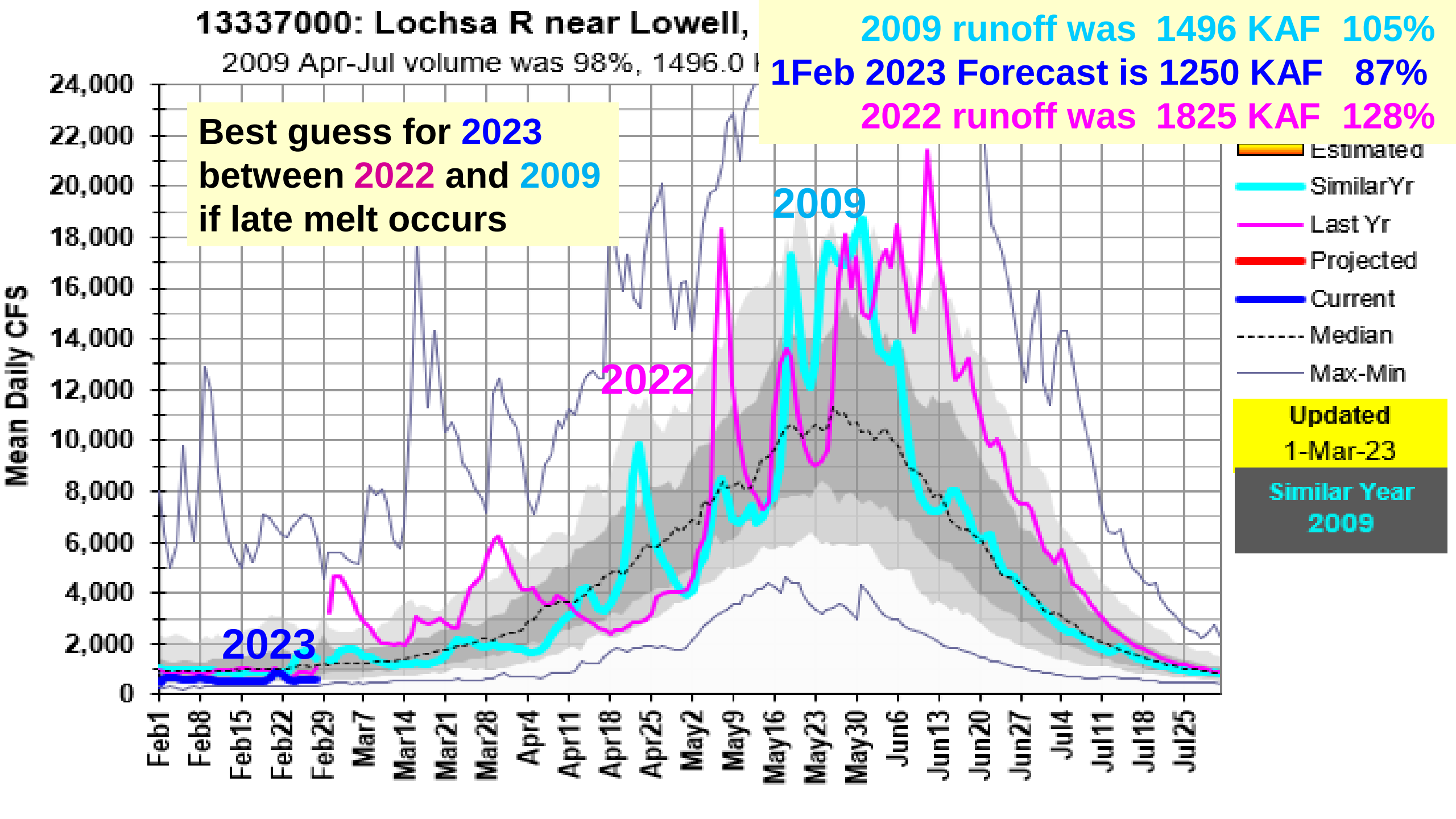

SNOW WATER EQUIVALENT IN SELWAY
Reset Range
Selway River 90% of median and 74% of seasonal peak.
Tracking very close 2022
Link to data: CSV / JSON
Station List
Current as of 03/01/2023:
% of Median - 90%
% Median Peak - 74%
Days Until Median Peak - 37
Percentile - 33
Snow Water Equivalent (in.)
35
30
25
20
15
10
5
0
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
2022
2023
median
(May 27, 12.0) 2022 (4 sites)
(May 27, 6.1) Median ('91-...
Median Peak SWE
Max
Median (POR)
Median ('91-'20)
Min
Stats. Shading
2023 (4 sites)
2022 (4 sites)
2021 (4 sites)
2020 (4 sites)
2019 (4 sites)
2018 (4 sites)
2017 (4 sites)
2016 (4 sites)
2015 (4 sites)
2014 (4 sites)
2013 (4 sites)
2012 (4 sites)
2011 (4 sites)
USDA


13336500: Selway R near Lowell, I
2009 Apr-Jul volume was 112%, 2313.4
2009 runoff was 2313 KAF 112%
1Feb 2023 Forecast is 1700 KAF 87%
2022 runoff was 2364 KAF 115%
Runoff could be similar to 2022, but depends on lateness of snowmelt.
Mean Daily CFS
44,000
40,000
36,000
32,000
28,000
24,000
20,000
16,000
12,000
8,000
4,000
0
Feb1
Feb8
Feb15
Feb22
Feb29
Mar7
Mar14
Mar21
Mar28
Apr4
Apr11
Apr18
Apr25
May2
May9
May16
May23
May30
Jun6
Jun13
Jun20
Jun27
Jul4
Jul11
Jul18
Jul25
2009
2023
2022
Estimated
SimilarYr
Last Yr
Projected
Current
Median
Max-Min
Updated
1-Mar-23
Similar Year
2009

Fish Creek below Lochsa put-in June 14, 2022

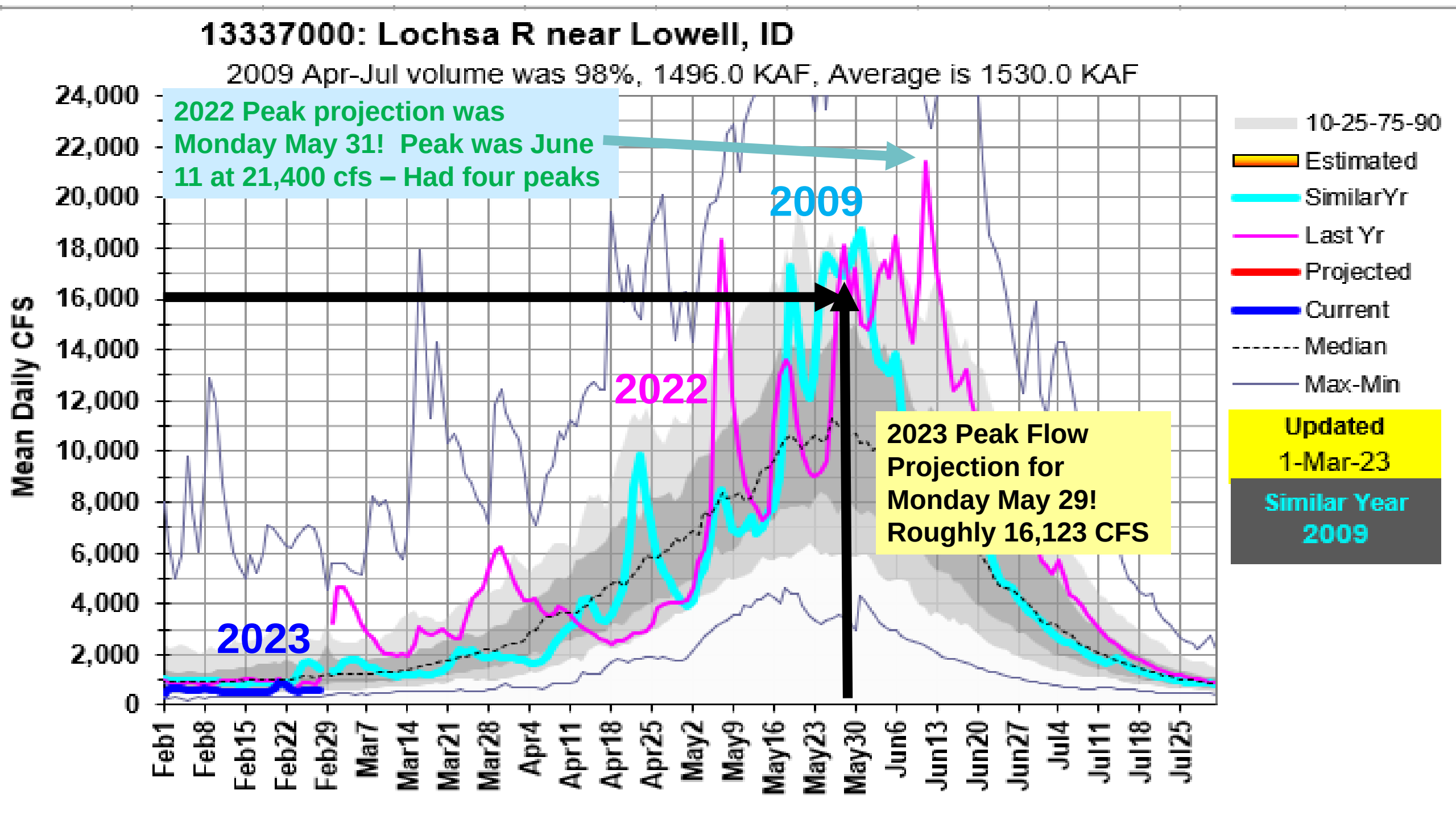


Lochsa River 86% of median 71% of seasonal peak.
Tracking just under all analog years of 2022, 2009, 2012 and 2021


13337000: Lochsa R near Lowell,
2009 Apr-Jul volume was 98%, 1496.0 K
2009 runoff was 1496 KAF 105%
1Feb 2023 Forecast is 1250 KAF 87%
2022 runoff was 1825 KAF 128%
Best guess for 2023
between 2022 and 2009
if late melt occurs
2009
2022
2023
Mean Daily CFS
24,000
22,000
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Feb1
Feb8
Feb15
Feb22
Feb29
Mar7
Mar14
Mar21
Mar28
Apr4
Apr11
Apr18
Apr25
May2
May9
May16
May23
May30
Jun6
Jun13
Jun20
Jun27
Jul4
Jul11
Jul18
Jul25
Estimated
SimilarYr
Last Yr
Projected
Current
Median
Max-Min
Updated
1-Mar-23
Similar Year
2009

Kayaking Lochsa June 14, 2022 at about 16,000

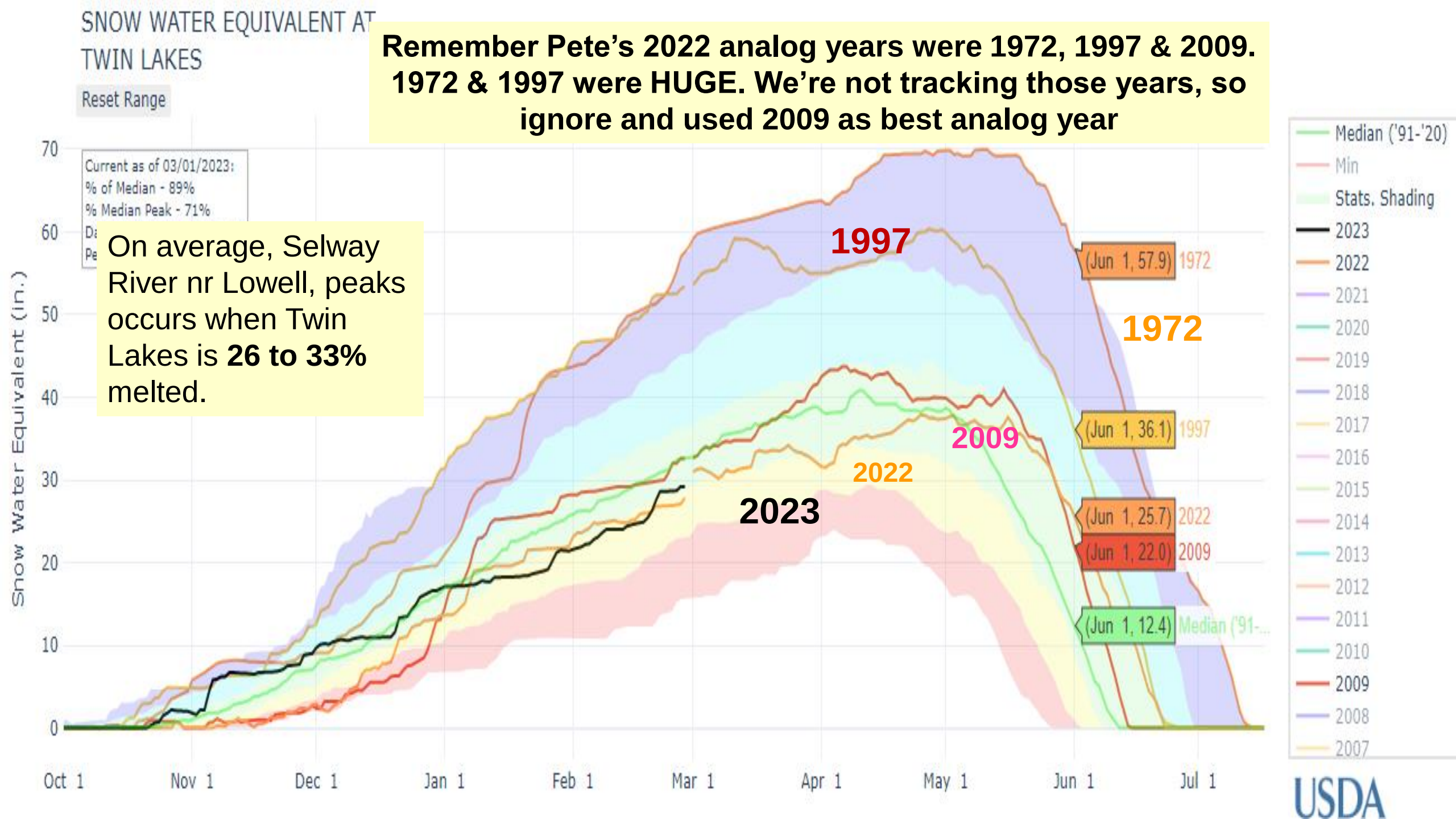
2023 Lochsa peak flow and date is…


13337000: Lochsa R near Lowell, ID
2009 Apr-Jul volume was 98%, 1496.0 KAF, Average is 1530.0 KAF
2022 Peak projection was Monday May 31! Peak was June 11 at 21,400 cfs – Had four peaks
2009
2022
2023
2023 Peak Flow Projection for Monday May 29! Roughly 16,123 CFS
Mean Daily CFS
24,000
22,000
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Feb1
Feb8
Feb15
Feb22
Feb29
Mar7
Mar14
Mar21
Mar28
Apr4
Apr11
Apr18
Apr25
May2
May9
May16
May23
May30
Jun6
Jun13
Jun20
Jun27
Jul4
Jul11
Jul18
Jul25
10-25-75-90
Estimated
SimilarYr
Last Yr
Projected
Current
Median
Max-Min
Updated
1-Mar-23
Similar Year
2009


Be safe and find
the right line…

…to enjoy beach time !

Enjoy and have a fun & safe floating season wherever you float your boat…


SNOW WATER EQUIVALENT AT TWIN LAKES
Reset Range
Remember Pete's 2022 analog years were 1972, 1997 & 2009. 1972 & 1997 were HUGE. We're not tracking those years, so ignore and used 2009 as best analog year
Current as of 03/01/2023:
% of Median - 89%
% Median Peak - 71%
On average, Selway River nr Lowell, peaks occurs when Twin Lakes is 26 to 33% melted.
1997
1972
2009
2022
2023
(Jun 1, 57.9) 1972
(Jun 1, 36.1) 1997
(Jun 1, 25.7) 2022
(Jun 1, 22.0) 2009
(Jun 1, 12.4) Median ('91-...
Snow Water Equivalent (in.)
70
60
50
40
30
20
10
0
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
Median ('91-'20)
Min
Stats. Shading
2023
2022
2021
2020
2019
2018
2017
2016
2015
2014
2013
2012
2011
2010
2009
2008
2007
USDA