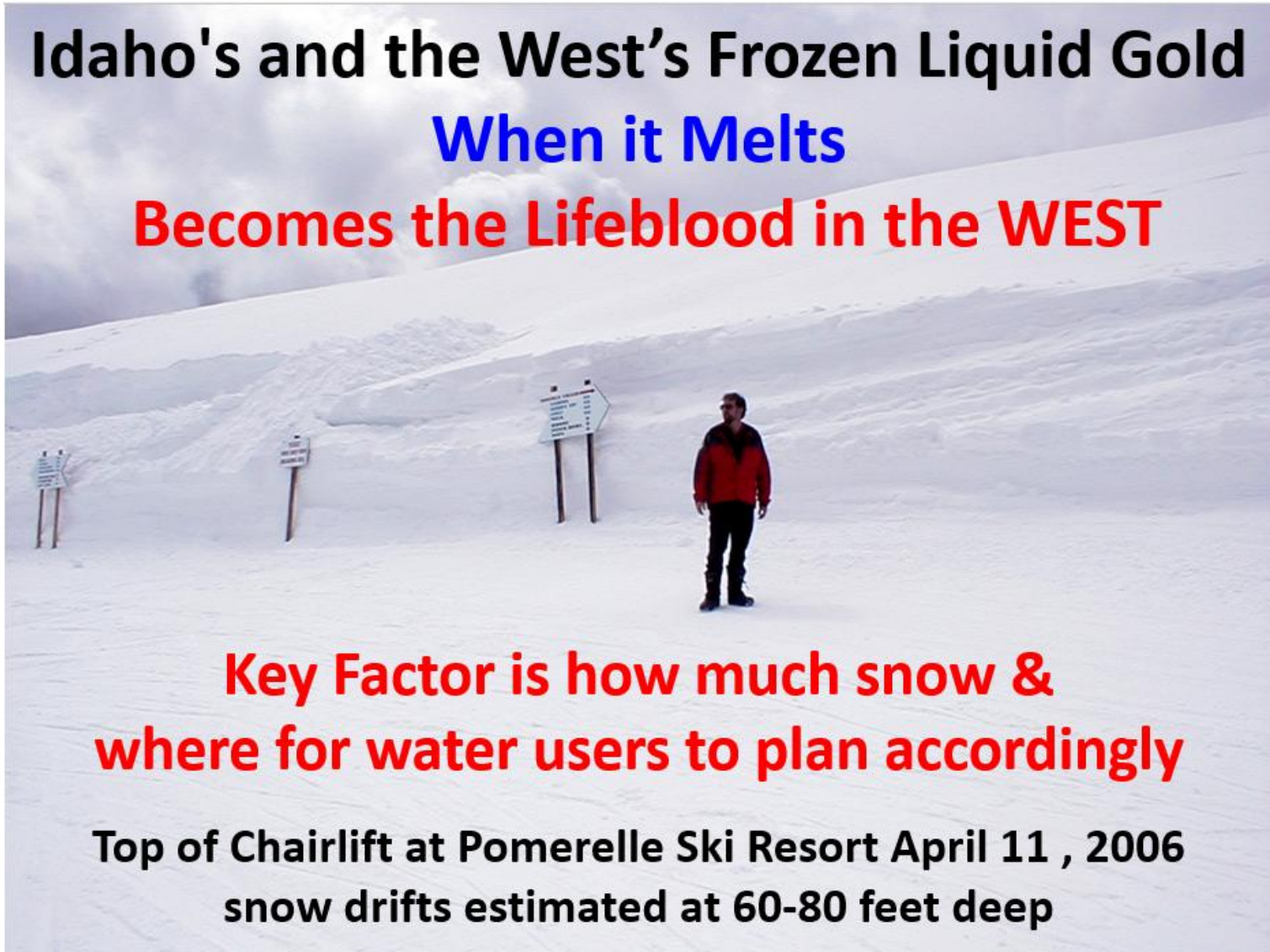
Snow: Idaho’s Frozen Liquid Gold
April 21, 2026



This talk & more posted at:
https://snowweatherandflow.blog/

Ron Abramovich
Mostly retired
and still watching
the weather…

Topics:

- History of Snow Surveys
- Measuring the Snow & Types of Snow Sites
- Morley Nelson's Snow Survey Work
- Precipitation Maps Illustrate Importance of Winter Snowfall
- Uses of Snow Survey & Water Supply Information and Relationships
- 2026 Winter – Current Snow & Water Supply Outlook and the Boise River Basin
- El Nino Watch for 2026-2027 Winter

June 20, 2023 Mt McGowan & Stanley Lake

Dr. Church started the first snow surveys in Lake Tahoe area in early 1900s.

After development of successful techniques to measure snow and provide water supply forecasts - Snow Courses were installed throughout the West.

Typical Snow Course:

- **Snow Depth & Snow Water Equivalent (SWE) were measured.**
- **Typical snow course had 5 or more measurement points spaced 10 to 50 foot apart that were averaged together for one value.**
- **Generally, in high elevation areas.**
- **Measured once or twice monthly.**

Morley Nelson, right, Columbia Basin Snow Survey Supervisor 1948-1972, located many of the snow sites still used in Idaho.

SUNDAY, JANUARY 12, 1958

Breakdown of Mountain Transportation M

A mountain top repair service went into action when this Sno-Cat failed near snow survey course on top of a mountain 19 miles from Jarbidge, Nev. The difficulty was diagnosed as a broken piston rod. Using tools carried in the Sno-Cat the men took the piston out of the motor and intended to drive it without the piston, but it failed to start because of a low battery. The engine was started later by pulling with another Sno-Cat and the Sno-Cat driven down the mountain. Working on the motor are Ellis Fuller, left, and Glenn Nelson, right. (Staff photo-engraving)

* * * *

Measuring Snow to Figure Irrigation Water Is Developing as Exact Science

(From Page 15)

[illegible] the four-wheel drive truck up the hill proved quite a chore.

After lunch, provisions and sleeping bags were stored in the ranger station and the party struck out

of the slant of the road, the cat kept turning to the right, and a cliff almost 1,500 feet straight down in some places.

Time and again the [illegible]

with the high altitude and the deep snow, a dozen steps were tiring. Skis were used to travel the snow measuring course.

TIMES-NEWS, TWIN FALLS, IDAHO

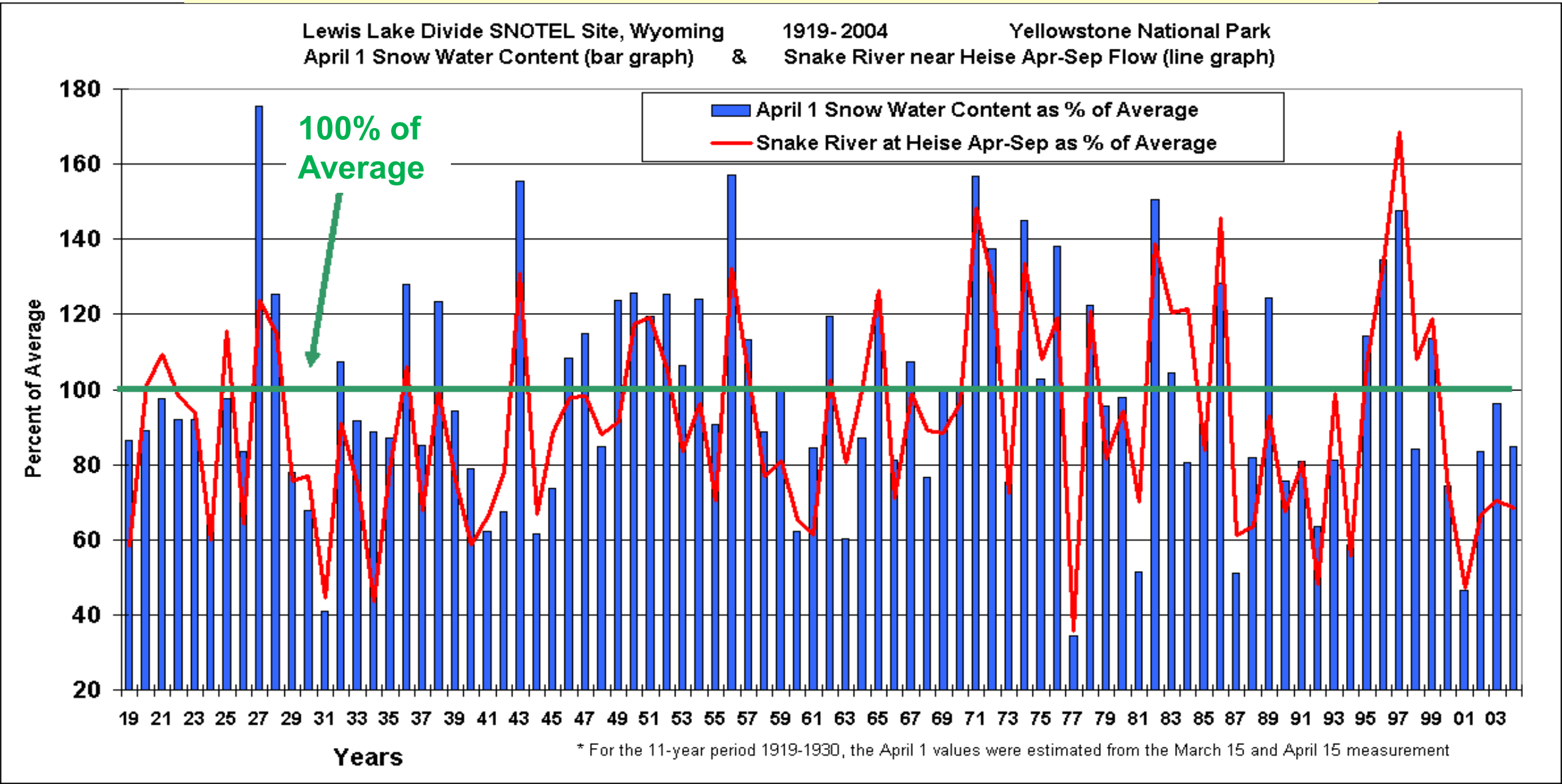
...ortation Marred Trip to Measure Snow Depth on High Watershed

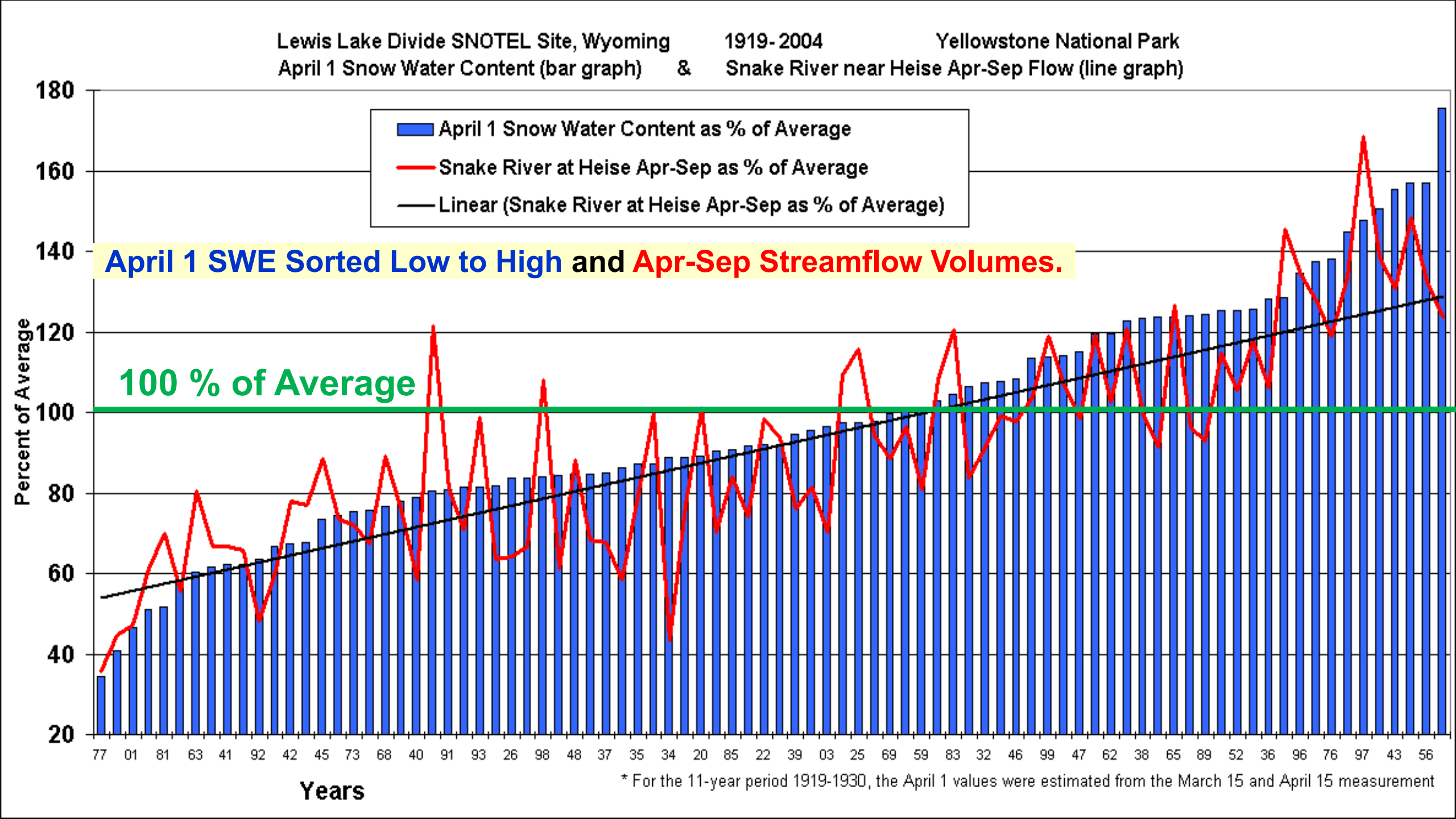
Skiing behind the Sno-Cat is part of the trip for snow survey crews ... measure snow for the soil conservation service. Ellis Fuller, left, ... Glenn Nelson, both Salmon Tract farmers who helped on the snow survey, ski behind the Sno-Cat on the way to the measuring course. Skis are necessary equipment for snow measuring courses because it's virtually impossible to walk in deep snow. (Staff photo-engraving)

A Federal Snow Sampler is used pull a snow core out of the snowpack that is weighed to determine the amount of Snow Water Equivalent (SWE).

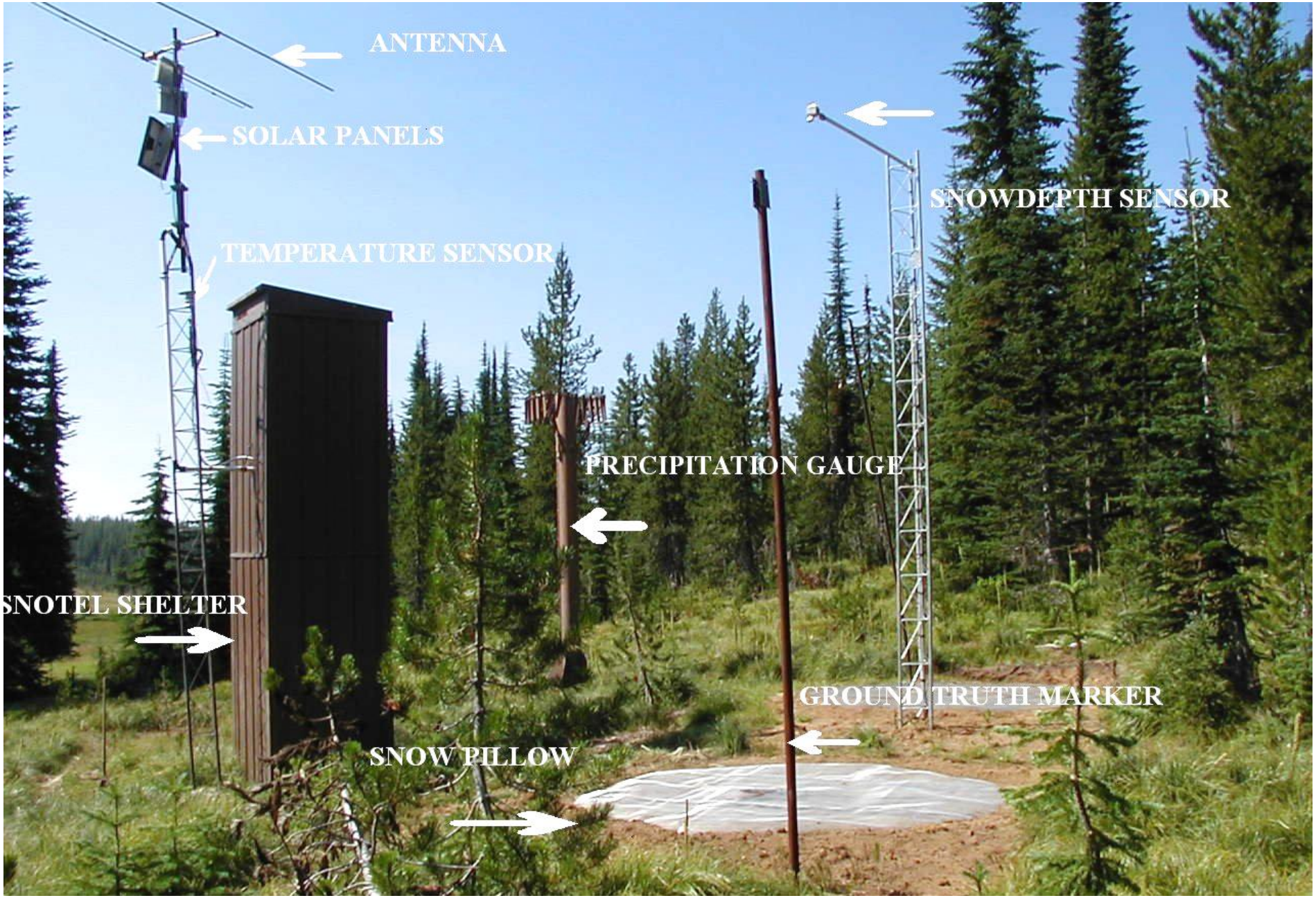
SWE is the amount of water in the snowpack if the snow was melted, inches of water in the snowpack.

Historic snow data provided the foundation and ability to forecast streams.
Lewis Lake Divide Snow Course in Yellowstone NP started in 1919.

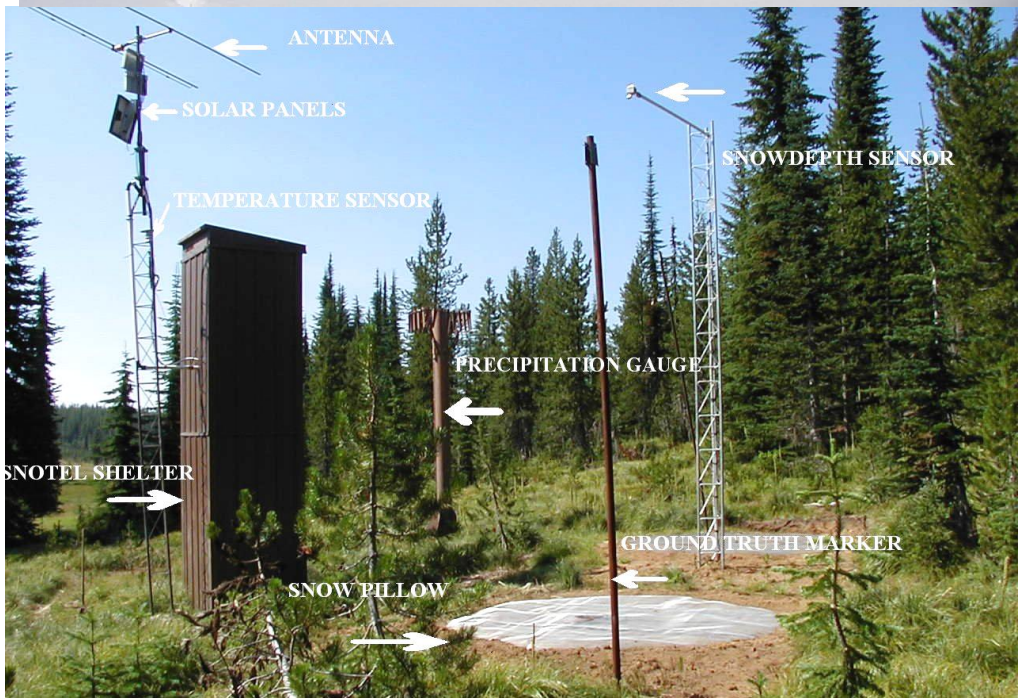



Lewis Lake Divide SNOTEL Site, Wyoming 1919- 2004 Yellowstone National Park
April 1 Snow Water Content (bar graph) & Snake River near Heise Apr-Sep Flow (line graph)
April 1 Snow Water Content as % of Average
Snake River at Heise Apr-Sep as % of Average
Linear (Snake River at Heise Apr-Sep as % of Average)
April 1 SWE Sorted Low to High and Apr-Sep Streamflow Volumes.
100 % of Average
Percent of Average
180
160
140
120
100
80
60
40
20
77 01 81 63 41 92 42 45 73 68 40 91 93 26 98 48 37 35 34 20 85 22 39 03 25 69 59 83 32 46 99 47 62 38 65 89 52 36 96 76 97 43 56
Years
* For the 11-year period 1919-1930, the April 1 values were estimated from the March 15 and April 15 measurement

Typical SNOTEL Site: Crater Meadows, Clearwater Basin



Crater Meadows – Summer & Winter

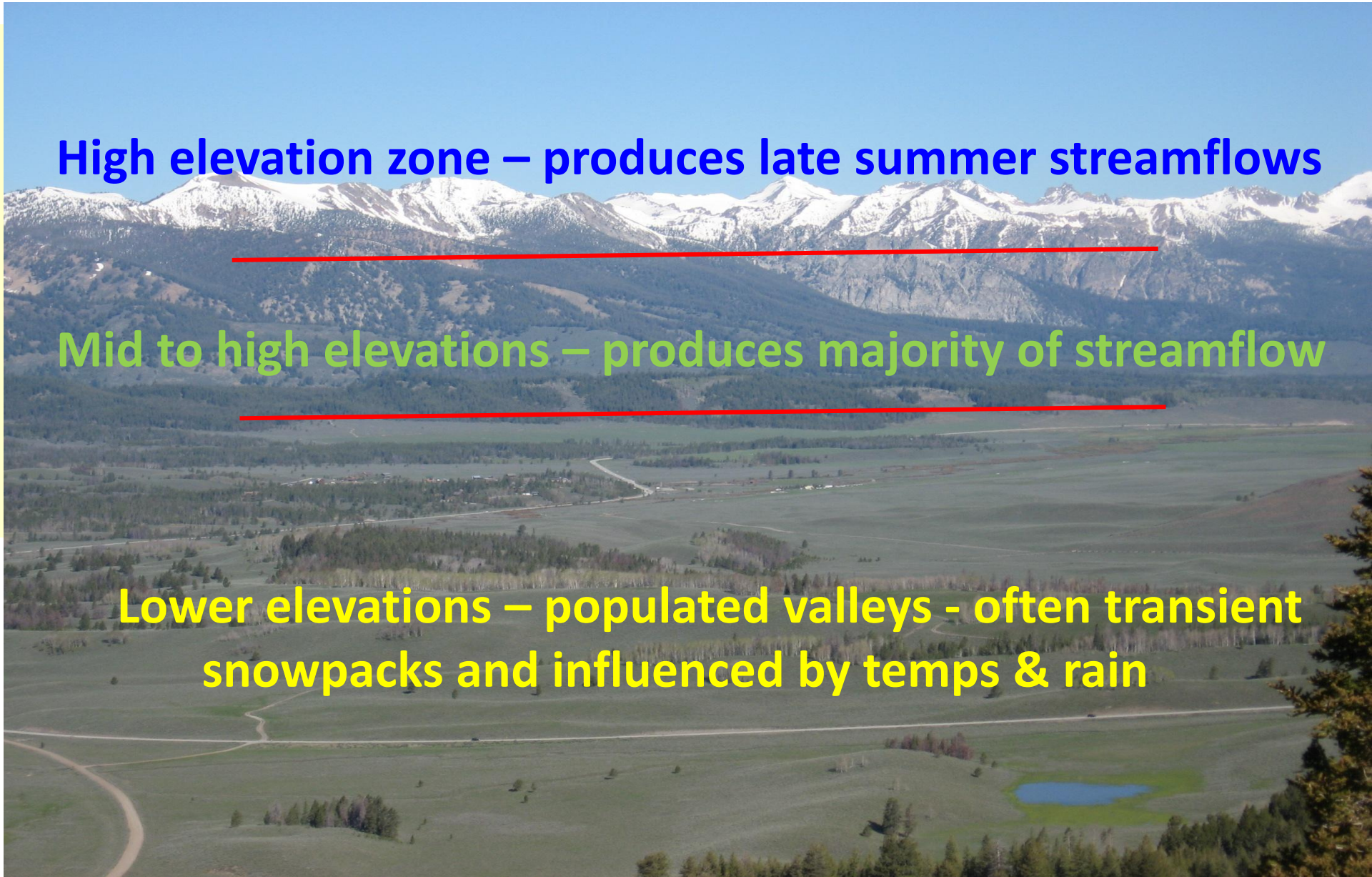


Looking into the Salmon River Headwaters June 12, 2008

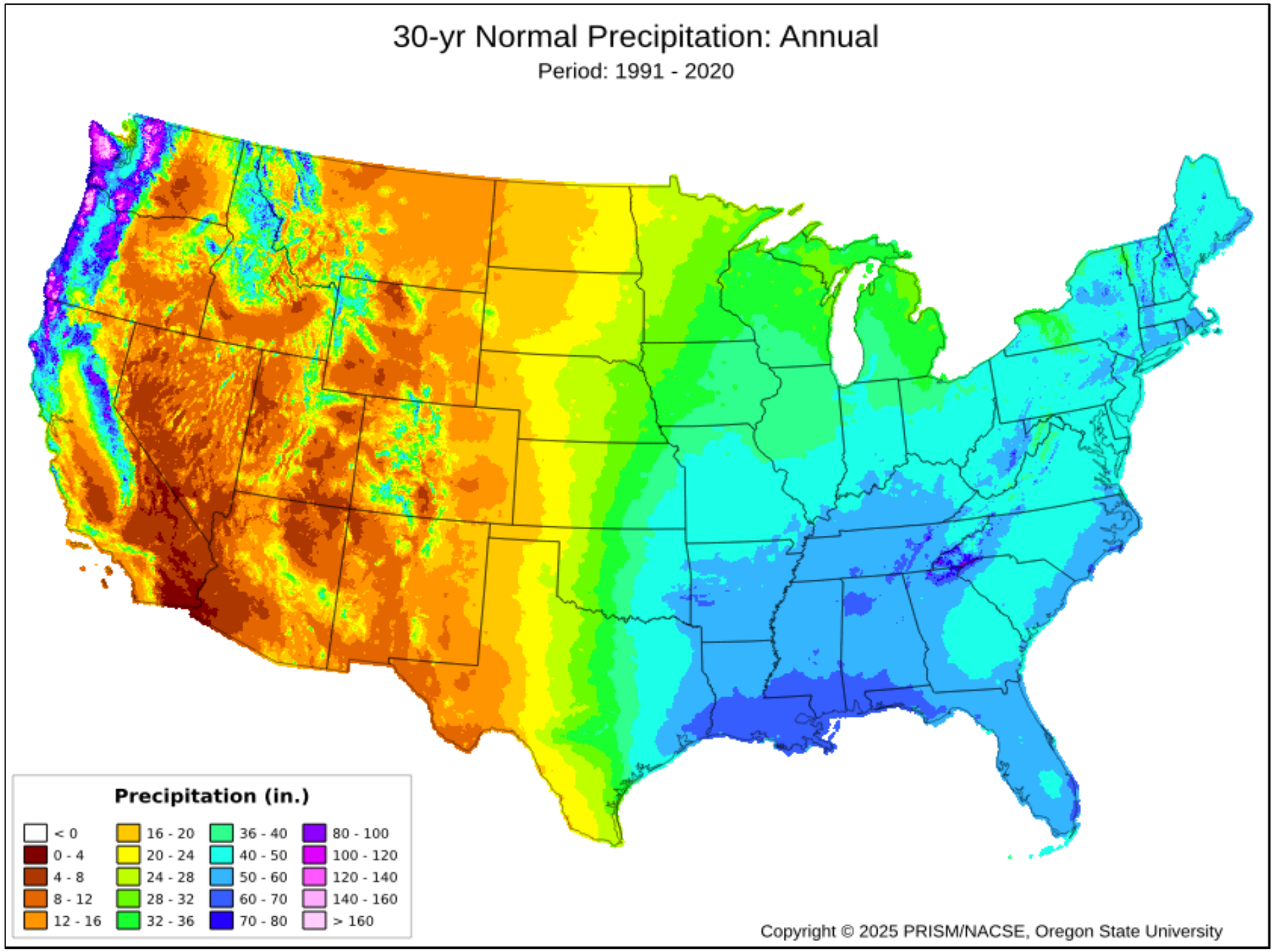
Typical Idaho snow sites are 6,000 - 8,500 feet in elevation.

This is the snow accumulation zone that stores the greatest snow water and provides our water supply.

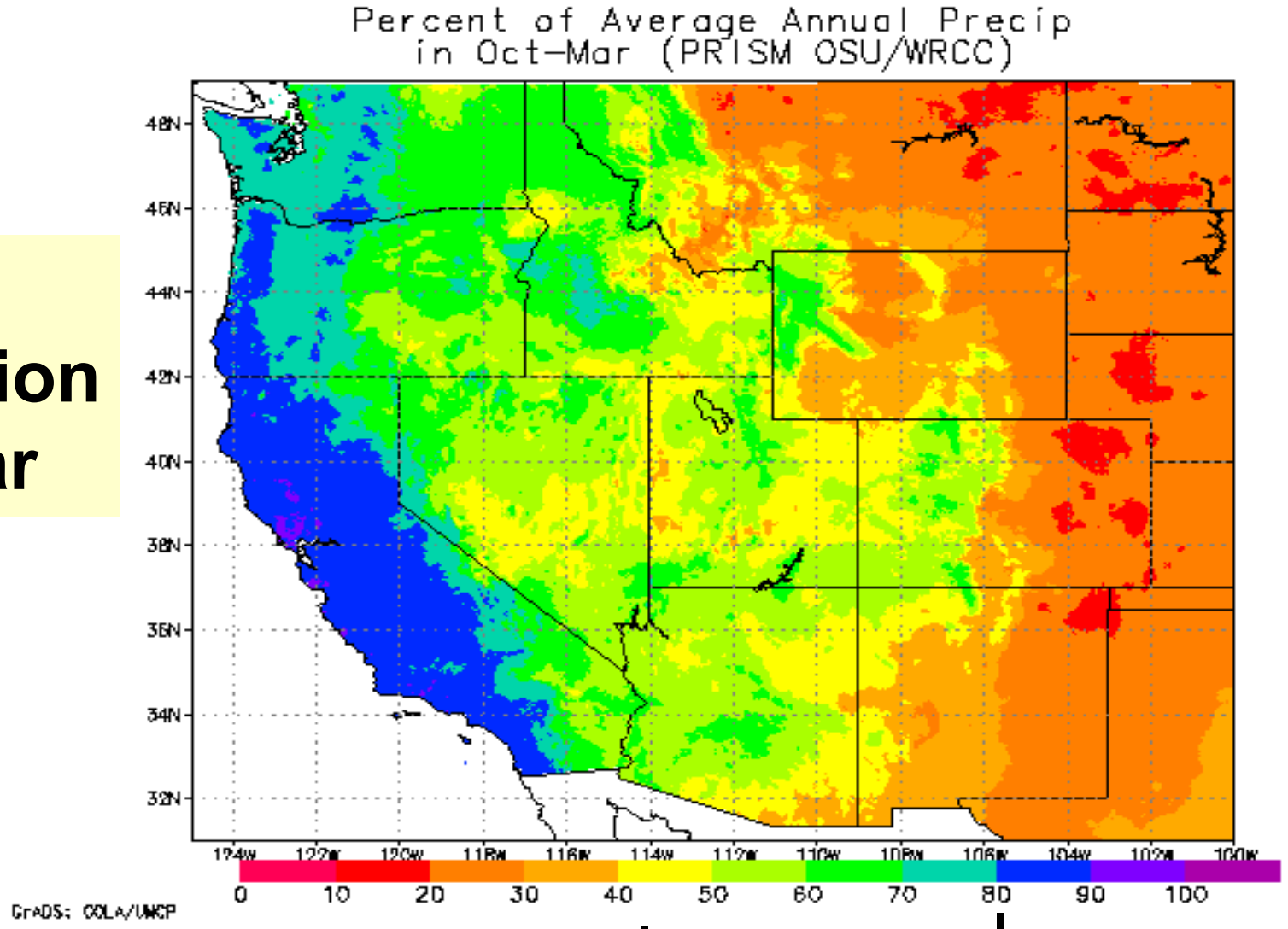
Weather happens above & below these elevations



Average Annual Precipitation for US



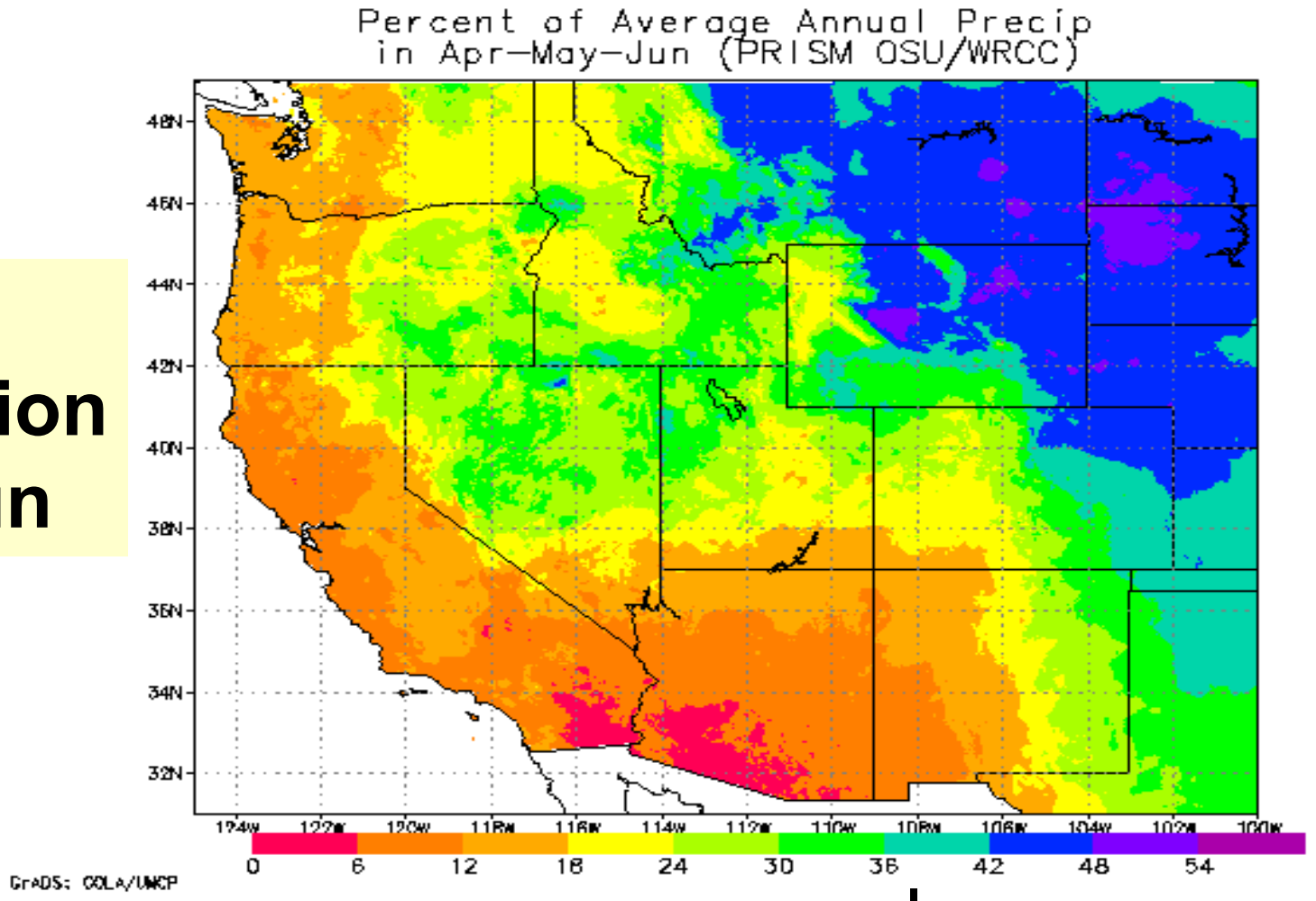
Winter Precipitation Oct - Mar



40 - 80%

Oct - Mar

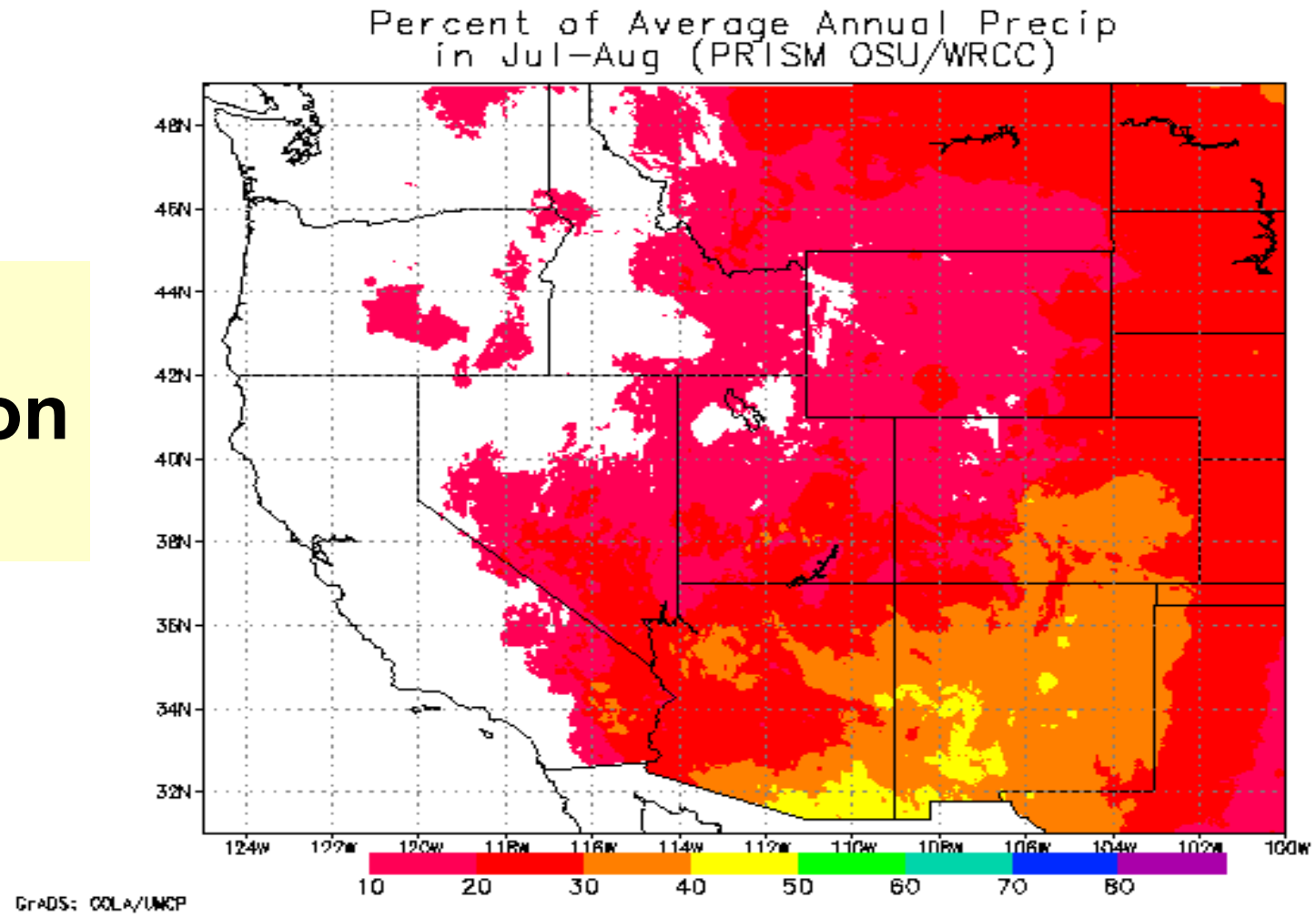
Spring Precipitation Apr – Jun



15 - 40%

Apr - Jun

Summer Precipitation Jul - Aug



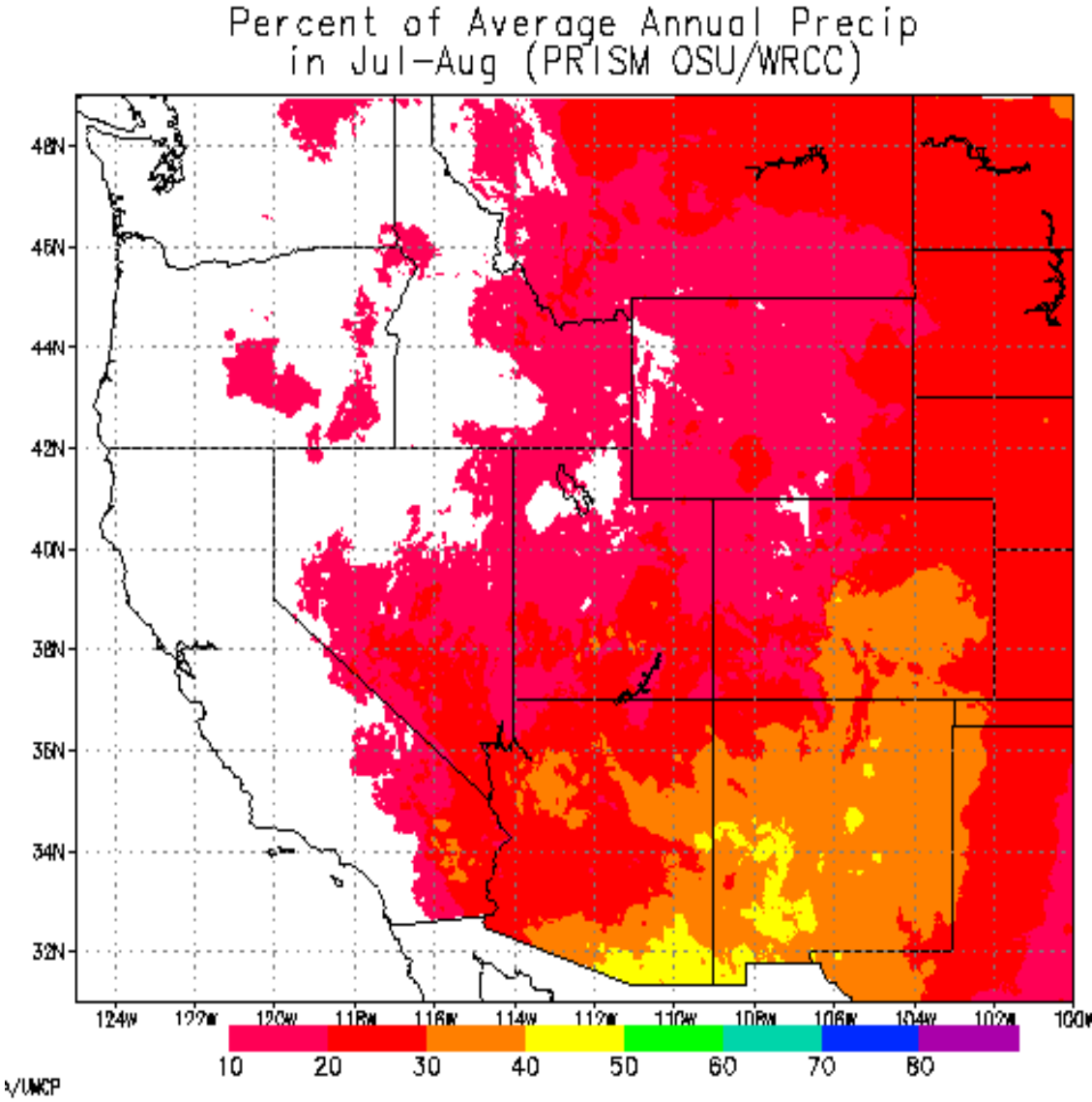
0 – 10%

Jul - Aug

Summertime in Idaho!

The lack of summer precipitation is the reason our winter snowfall is so important!

- **Streams have receded from snowmelt.**
- **Monthly precipitation amounts are <1” in the valleys and 1-2” in the mountains.**
- **This is enough for dryland farming to squeeze by, but not for irrigated crops.**



Uses of Snow Survey & Water Supply Information

Winter Recreation: skiing & snowmobiling
Signs of a Snow Drought - moving ski races to locations with better snow

Snow Depth and Snowfall Data used for:

- Animal Migration
- Elk Feeding
- Avalanche Forecasting
- Roof Snow Loads
- & More

Avalanche Forecast January 14, 2014 Big Wood Basin

Use of Snow Survey & Water Supply Forecast Products for Financial Decisions:

Irrigation, Crop Planting Decisions and Many More.

Farmers start making decisions and signing contracts. Streamflow Forecasts help guide their decisions.

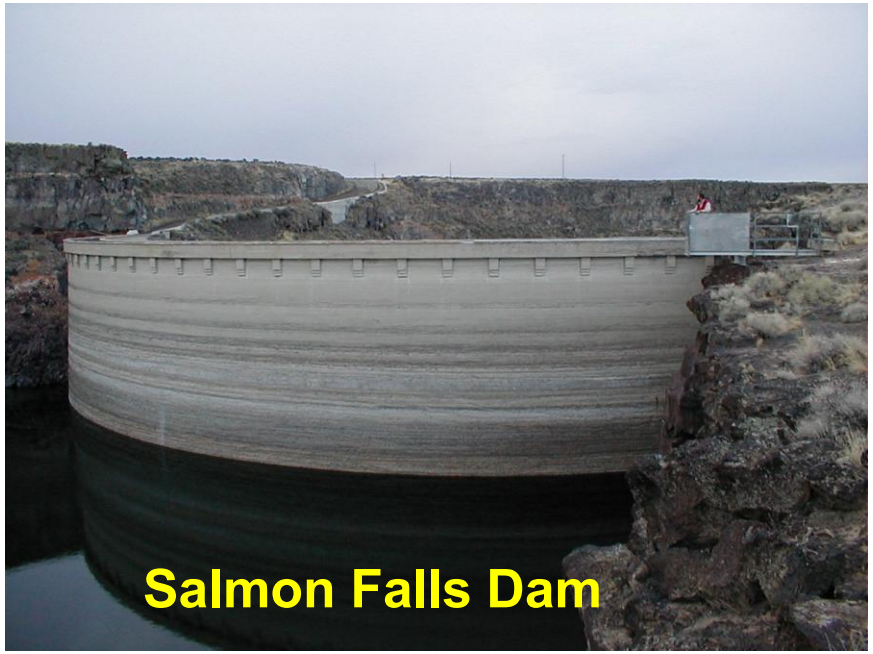
Full water supply or not – is the question often asked, but decision must be made about what to plant and how much.

Some irrigators are lucky and can put decisions off until May to decide which crops to plant or higher money producing crops and number of acres.

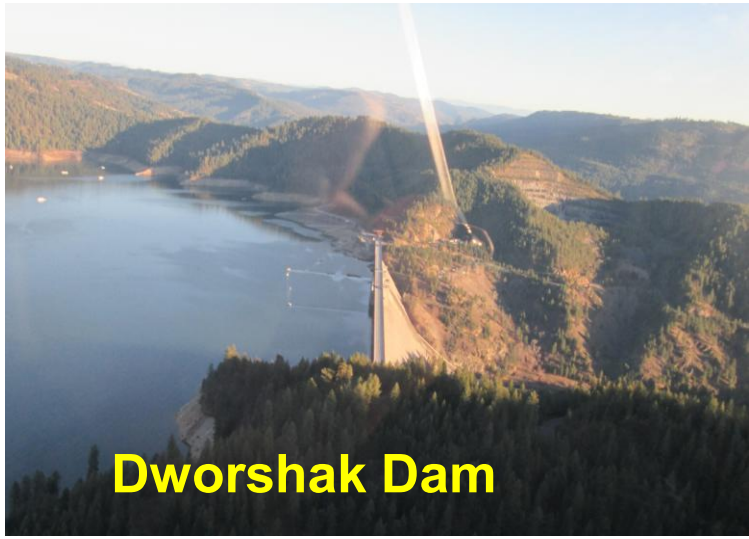
Little Wood Reservoir spillway May 18, 2005 after 2” of rain fell in one day on top of a ripe snowpack.

Hydropower Production & Reservoir Storage Management

- Each spring, Idaho Power requests Power Cost Adjustments from Public Utilities Commission (PUC) based on the April 1 water supply forecasts, contracts, and 'true up' which is based last year’s streamflow forecast accuracy.



Salmon Falls Dam



Dworshak Dam

Breweries…….


Budweiser
KING OF BEERS
BUD LIGHT
BEER
Brewed with the Finest Ingredients for a Refreshingly Smooth Taste
Anheuser-Busch, Inc.
St. Louis, Mo.
12 Fl. Oz.
Budweiser
SELECT


ANHEUSER-BUSCH

Anheuser-Busch in St Louis use of data to determine Barley and Hops Outlook in many western US states & Canada.

Brewery Water Supply Update

April 28, 2006

CURRENT WATER SUPPLY

Brewery	Status*	Brewery	Status*
Baldwinsville		Jacksonville	
Cartersville		Los Angeles	
Columbus		Merrimack	
Fairfield		Newark	
Ft. Collins		St. Louis	
Houston		Williamsburg	
		Stag	

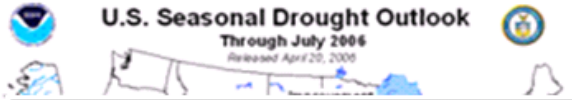
> 90 % of normal
50 – 90 % of normal
< 50 % of normal

**Status is based on current precipitation, reservoir level and stream flow compared to 30-yr average.*

Discussion of yellow and red status

- Precipitation is below normal in Houston, Jacksonville, Newark, St. Louis and Williamsburg. No impact to the brewery water supply is expected.

DROUGHT FORECAST



Agricultural Water Supply Update

April 28, 2006

CURRENT WATER SUPPLY

Barley	Status'	Rice	Status
Idaho		Arkansas	
N. Montana		California	
Wyoming/S. Montana		**Hops**	**Status**
MonDak		Washington	

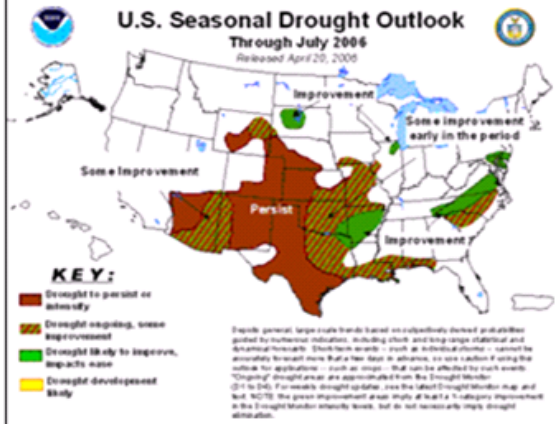
> 90 % of normal
50 – 90 % of normal
< 50 % of normal

**Status is based on current precipitation, reservoir level and stream flow compared to 30-yr average.*

Discussion of yellow and red status

- All locations are in the green status.

DROUGHT FORECAST



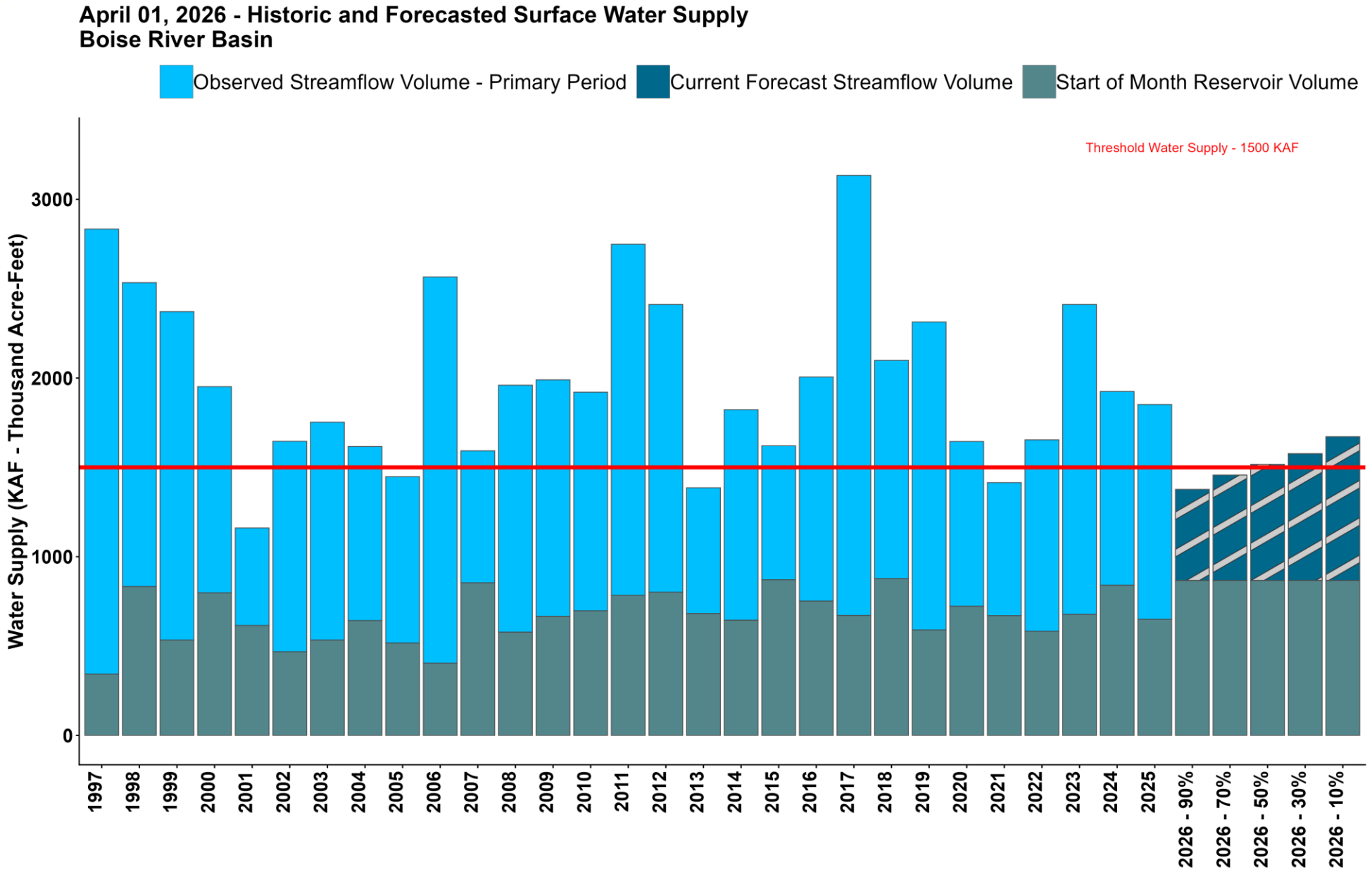
KEY NEWS HEADLINES

No key headlines to report.

Use of Combined Index:
Reservoir Storage + Forecasted Volume = Surface Water Supply Index (SWSI)

Uses:

- Crop Insurance
- Bank Loans
- Mint Contractors
- Water Banks
- Surplus Water for Recharge
- Cloud Seeding Suspension Criteria



Summer Recreation:

Annual River Runners Questions:

- Have the peaks occurred,
- How high & low will the rivers be?

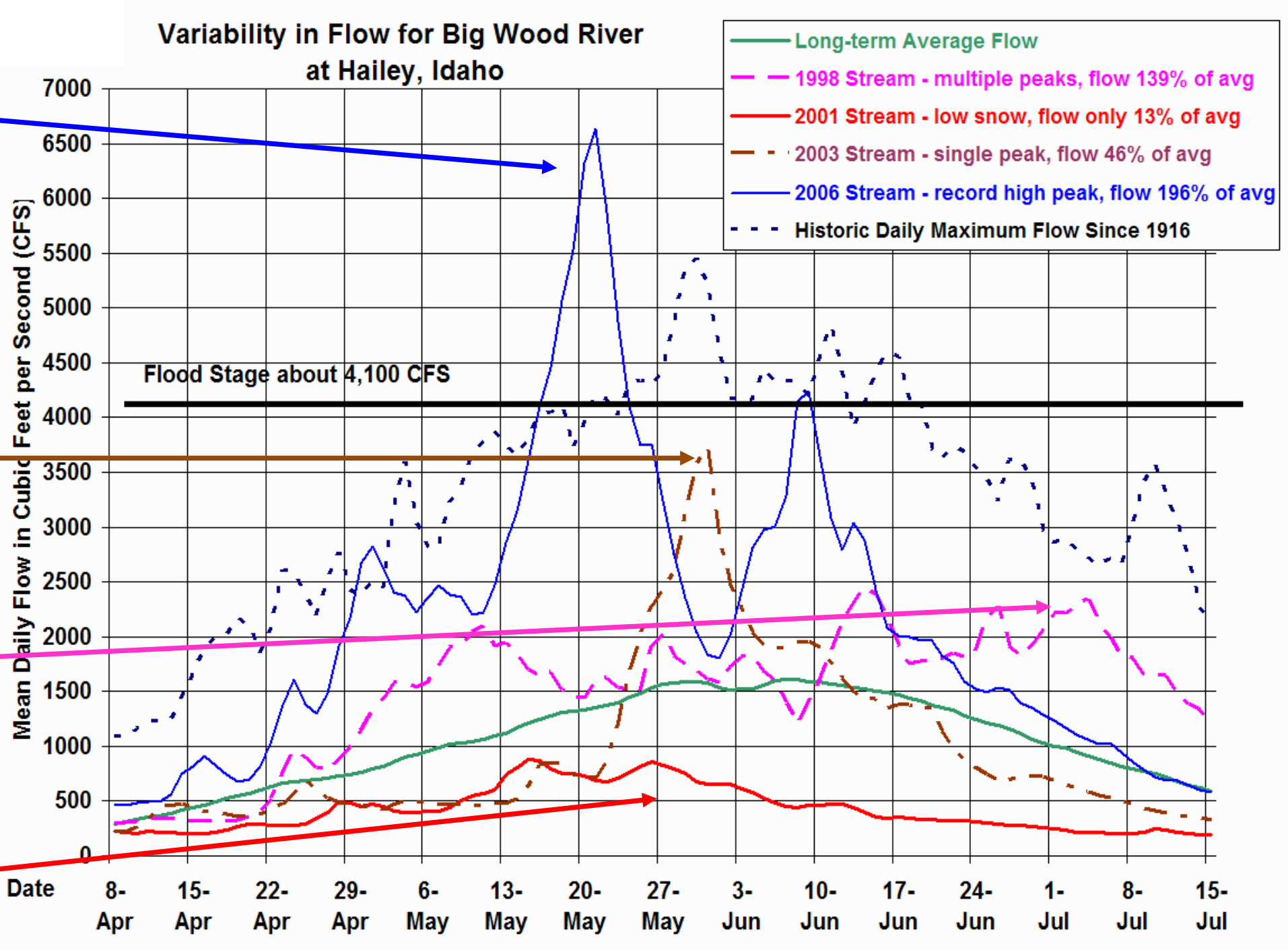
Have the rivers peaked?

2006 – two peaks
Can we close the gates on the reservoir and do final fill?

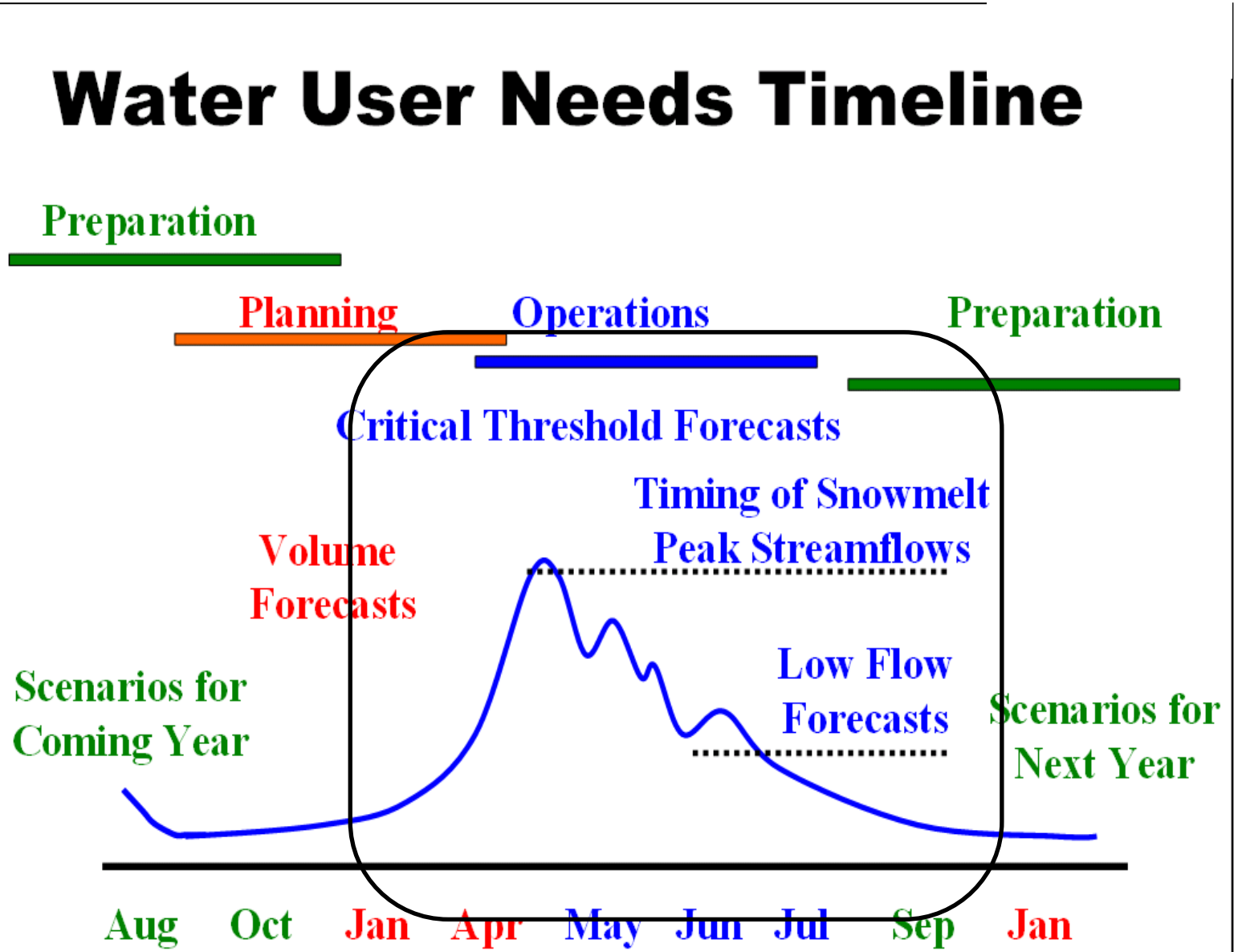
1998 – one single peak
Is there enough snow up there to produce one more peak?

2003 - 6 peaks
Will the next peak be higher than the last peak?

2001 – hardly a peak
Is that all there is?



Historically - snow surveys were made to provide spring/summer volume forecasts to plan & plant accordingly.



Over time, it was learned that water users are interested in more than just Volume Forecasts.

Operational Tools & Products were researched & developed to help fine tune water user's operations.

- SWSI
- Critical Flows:
  - Peak Flow Forecasts
  - Duration of High flows
  - Day of Allocation
  - Low Flow Forecasts

Lessons learned – predicting points on the hydrograph is very useful to meet most needs and much simpler than producing daily streamflow models.

Other Users:

- Power Boat Sales / Restaurant Owners
- Hunters / Tire Sales
- Windshield Repair Business
- School Bus Drivers & Highway Departments - SNOW DAY!
- Winter Wildlands Alliance Snow School
- Ski Stores / Roof Loads
- Fire Weather Forecasters
- Range Management
- Pizza Sales
- Coal & Natural Gas Producers
- Federal Reserve Board
- Huckleberry / Morel Pickers
- Fish Migration / Glacier Recession
- Navigation on Columbia & Missouri Rivers
- Climatic Change - Liz Claiborne - hires Climatologist / Target - has a "climate team"
- Weekly US Drought Monitor

2026 Where's the Snow ?

April 6, 2026

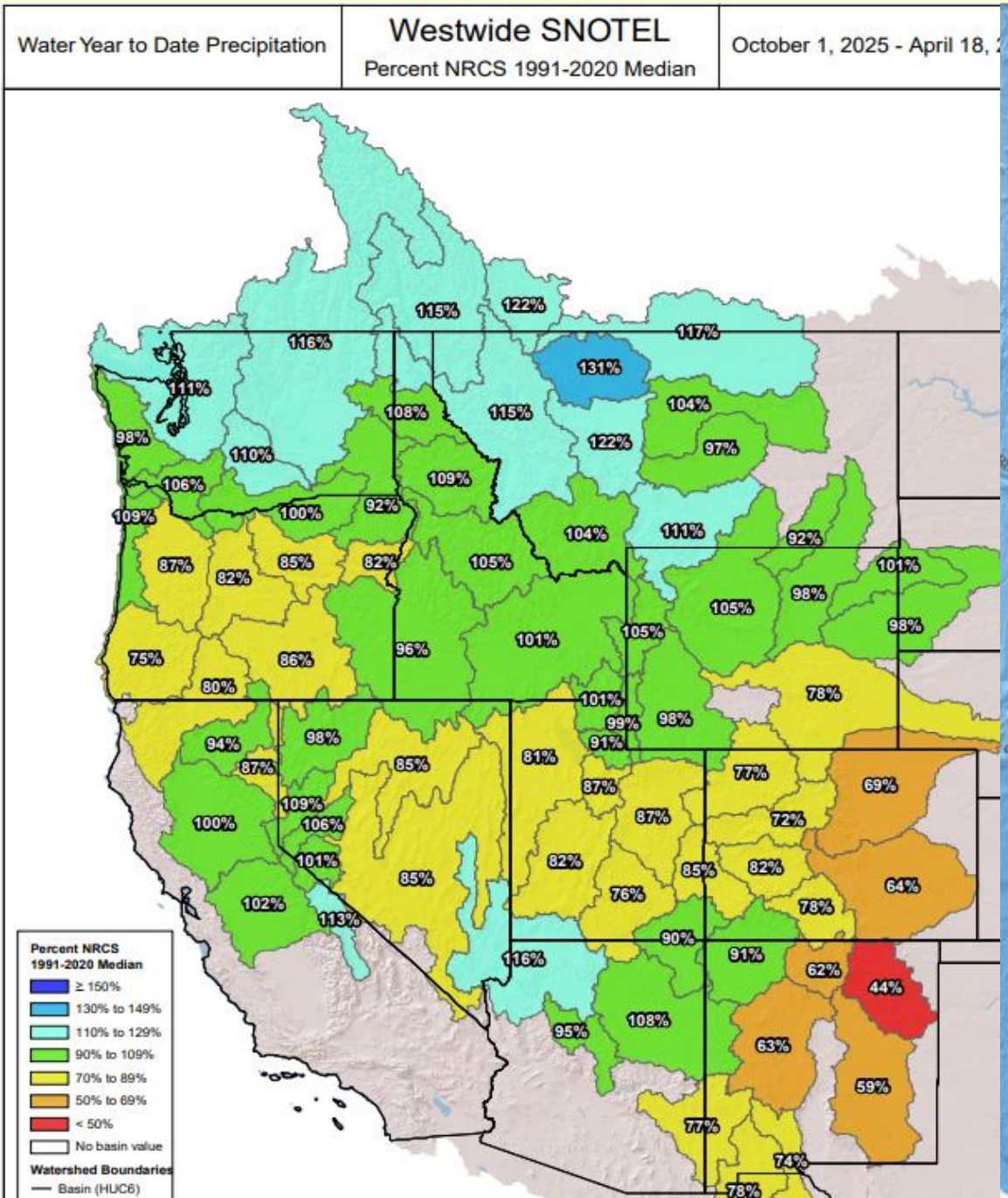
Cat Creek
Summit
Highway 20

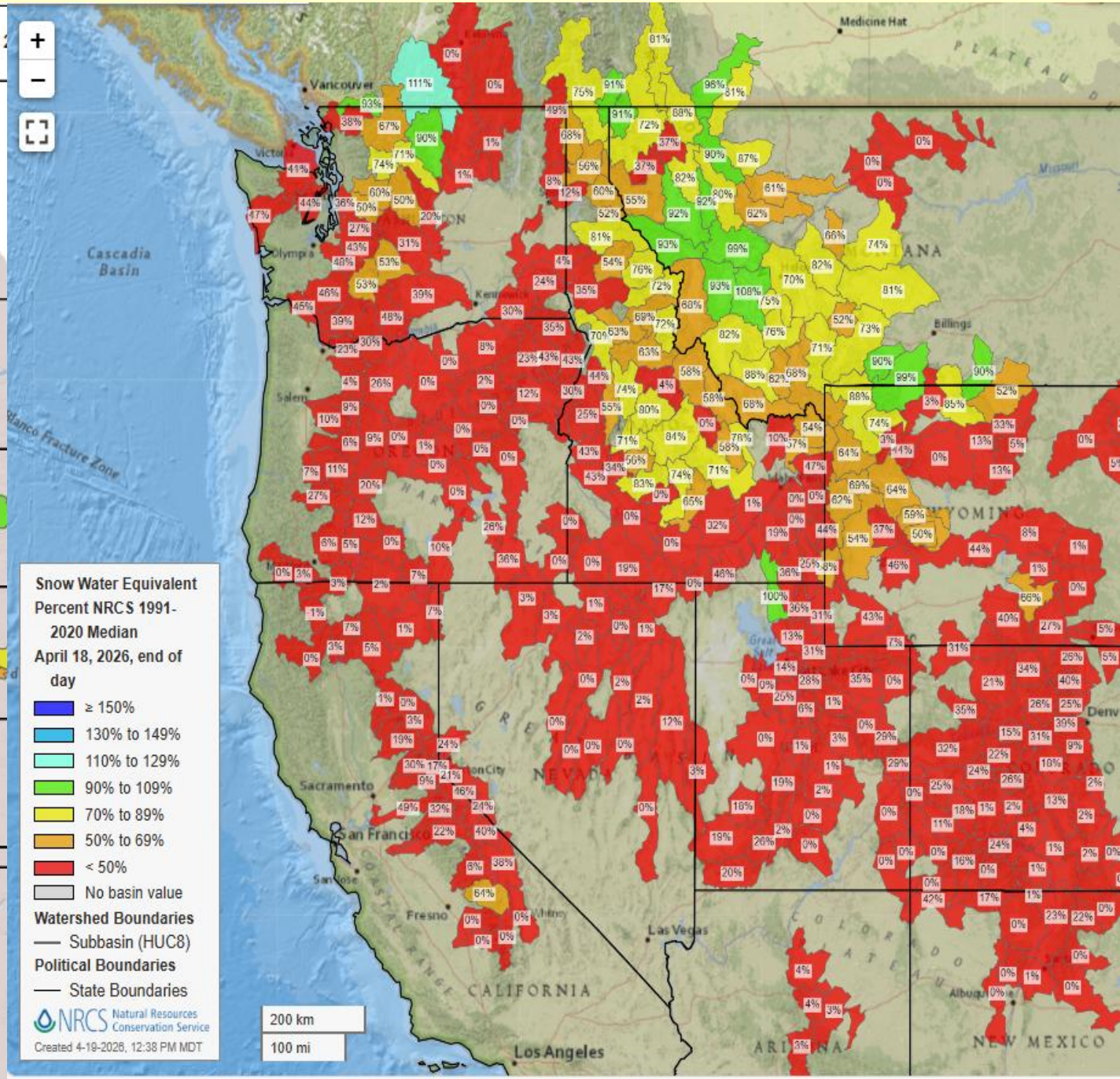
February 6, 2026

February 8, 2026
Sun Valley Resort

Westwide Water Year to Date Precipitation Oct 1 – Apr 18

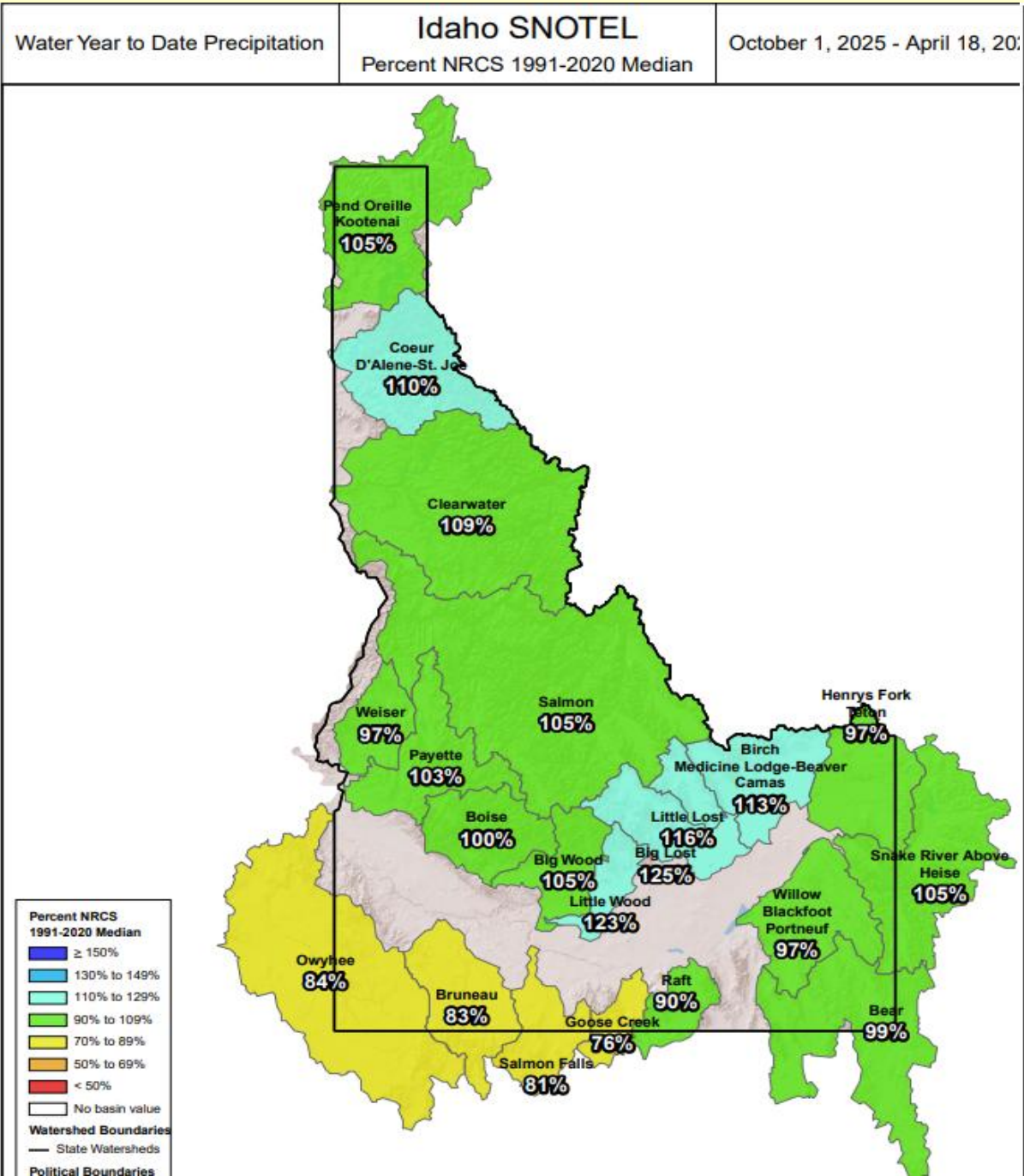
Snowpack April 18, 2026

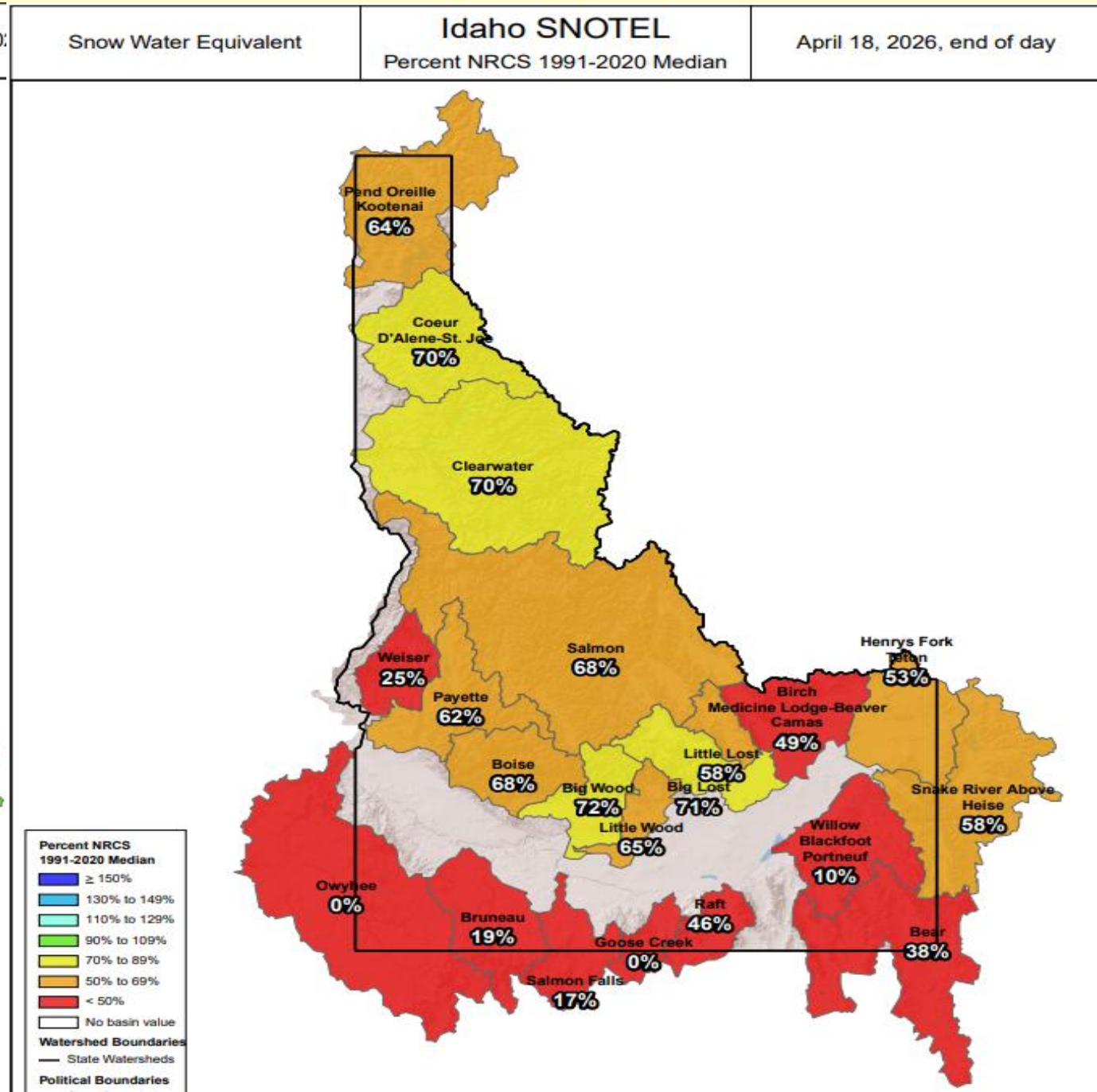




Idaho Water Year to Date Precipitation Oct 1 - Mar 7

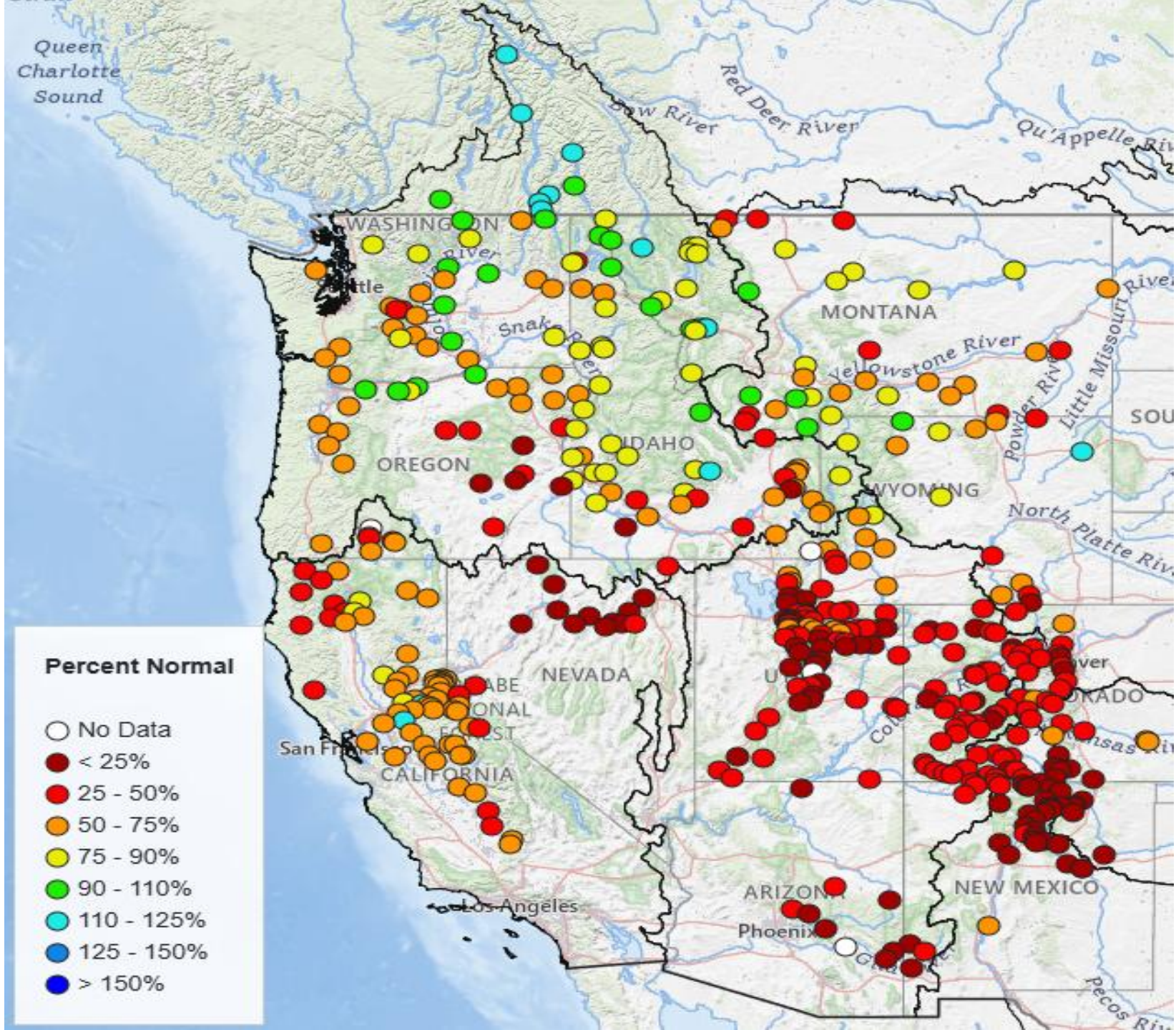
Snowpack Apr 18, 2026





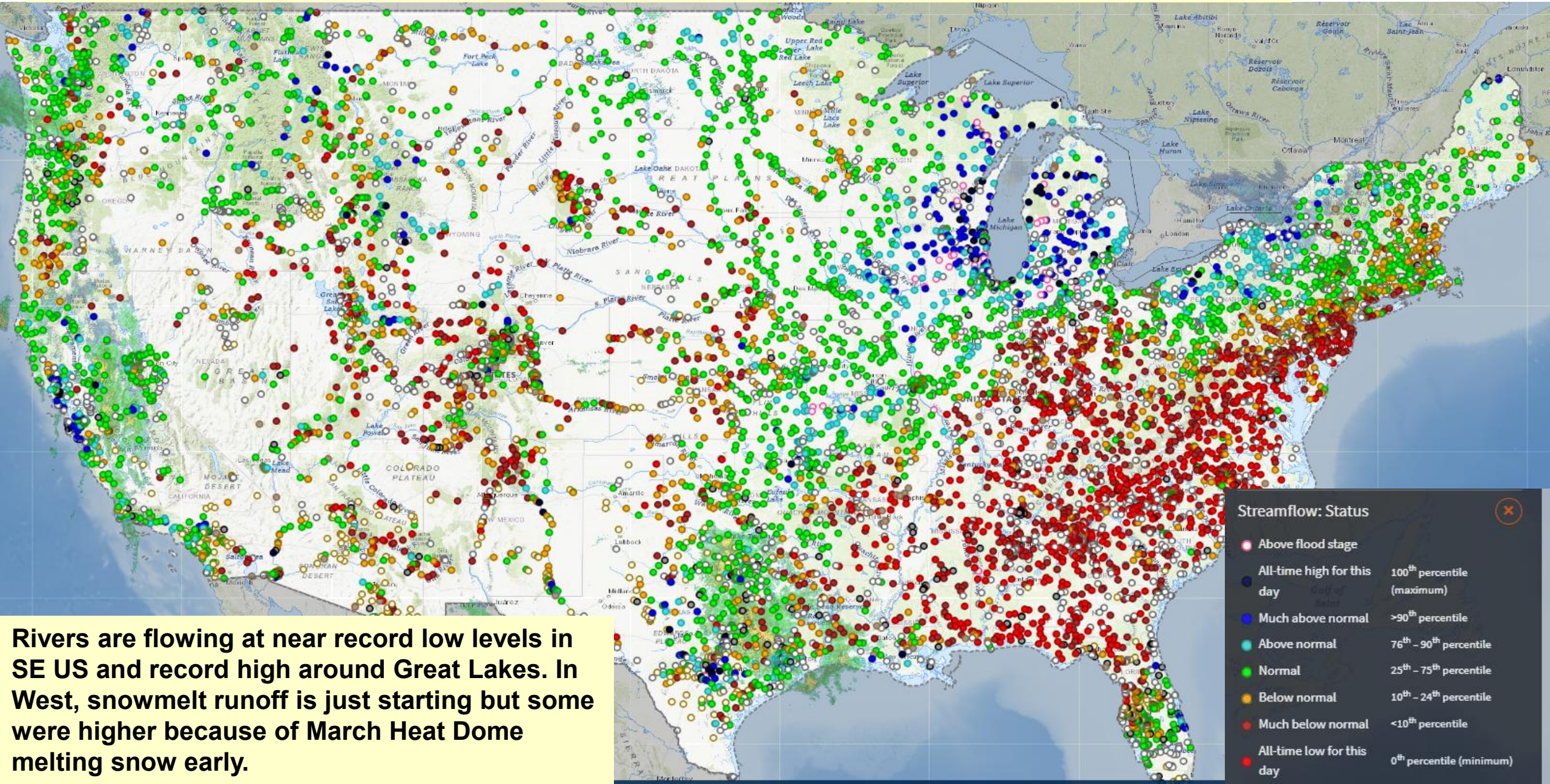
April 19, 2026

Streamflow Forecasts for Apr-Sep as % of Normal

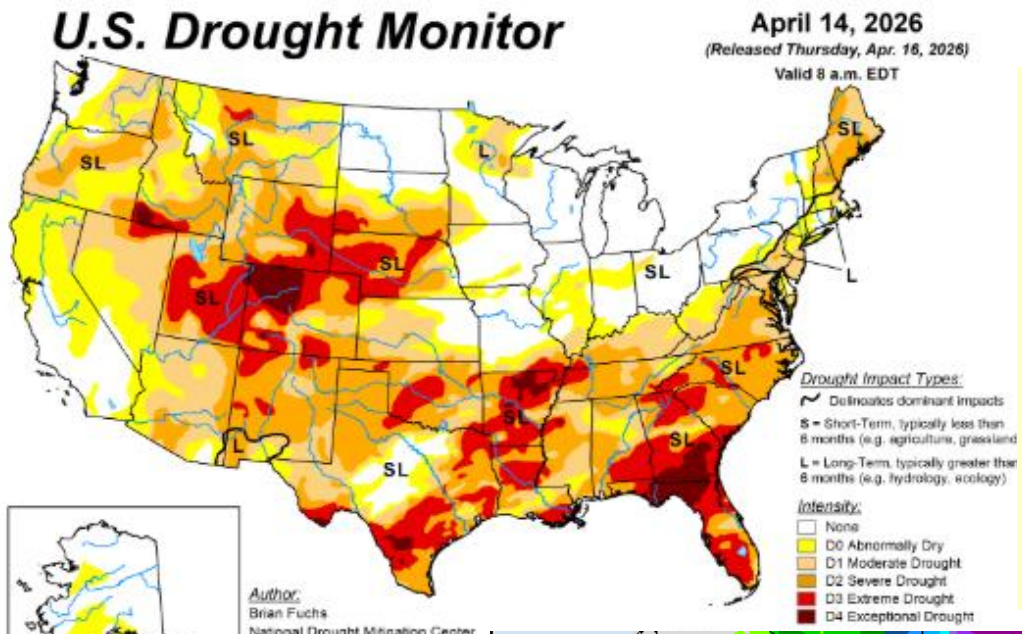


Snapshot of Current River Flow for April 21, 2026

Red Much Below or Record Low --- Blue Much Above Avg --- Black Record High



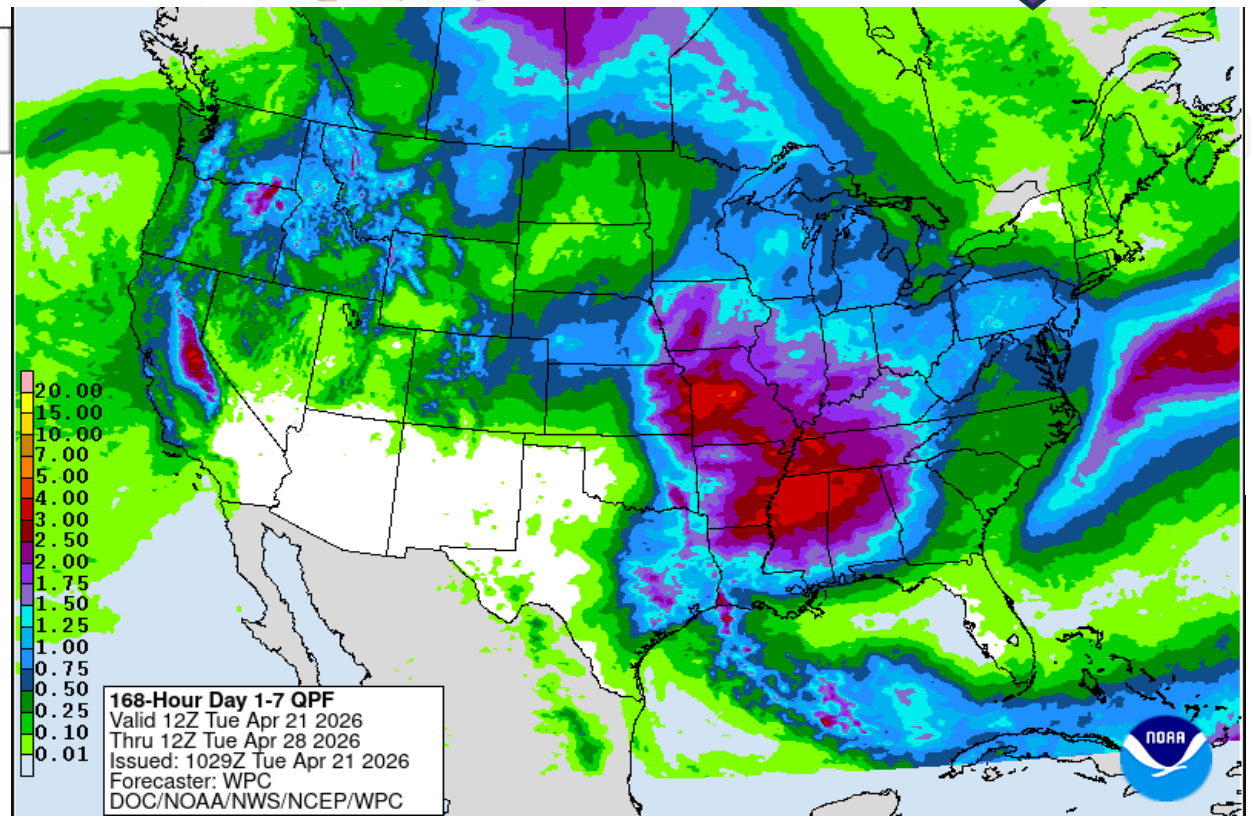
Rivers are flowing at near record low levels in SE US and record high around Great Lakes. In West, snowmelt runoff is just starting but some were higher because of March Heat Dome melting snow early.



Current Drought Monitor

Snow this week !

7-Day Total Precipitation below



Bogus Basin
6,604 ft • Idaho • United States

Tue 21	Wed 22	Thu 23	Fri 24	Sat 25
0"	10-14"	0-1"	0-1"	0"
59 °F	32 °F	34 °F	32 °F	36 °F
1-2"	5-9"	0"	0-1"	0"
32 °F	28 °F	29 °F	28 °F	33 °F

Brundage
6,650 ft • Idaho • United States

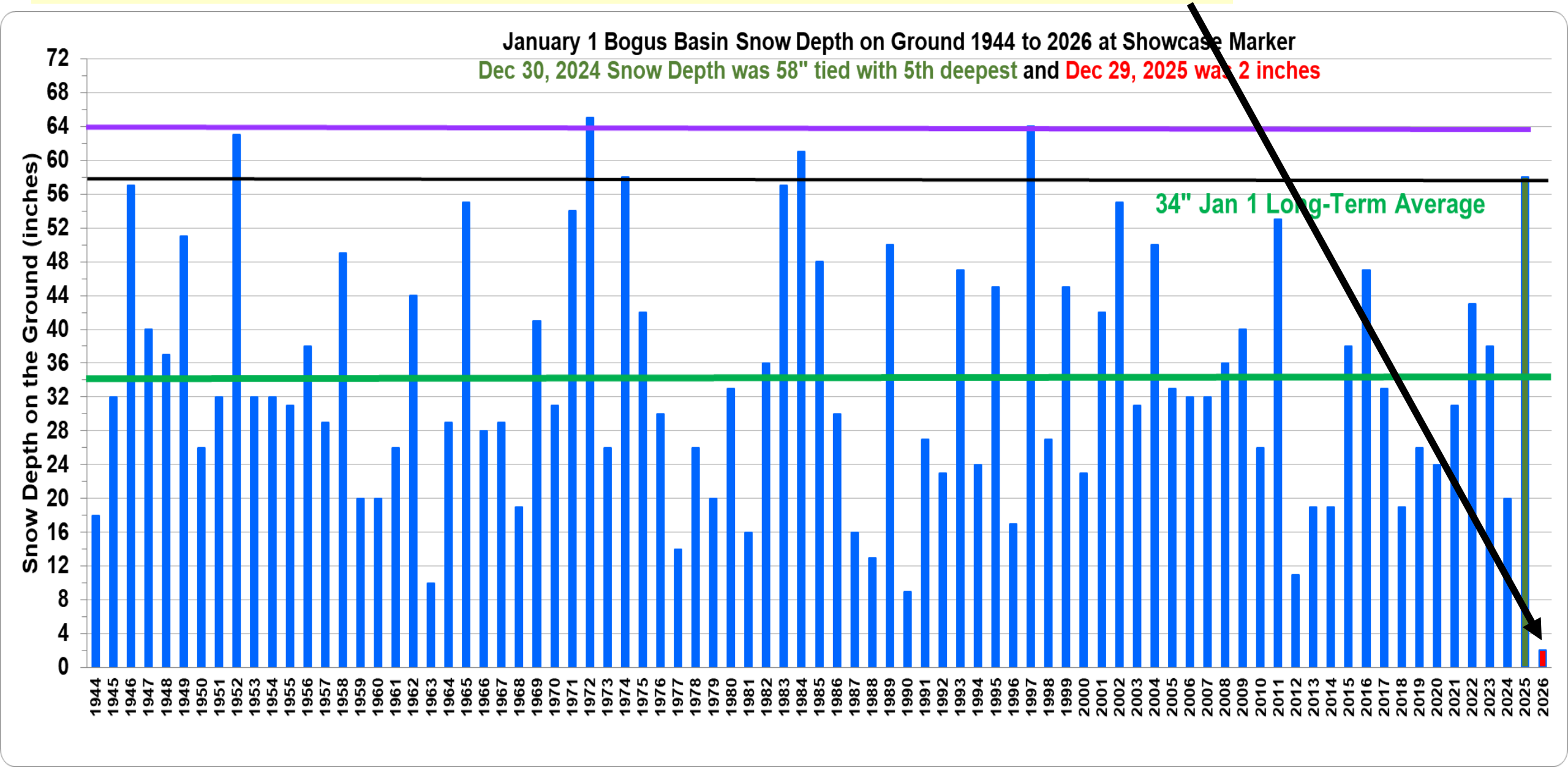
Tue 21	Wed 22	Thu 23	Fri 24	Sat 25
0"	5-9"	1-2"	0-1"	0-1"
57 °F	32 °F	32 °F	30 °F	35 °F
0-1"	4-8"	0-1"	0-1"	0-1"
33 °F	28 °F	24 °F	21 °F	26 °F

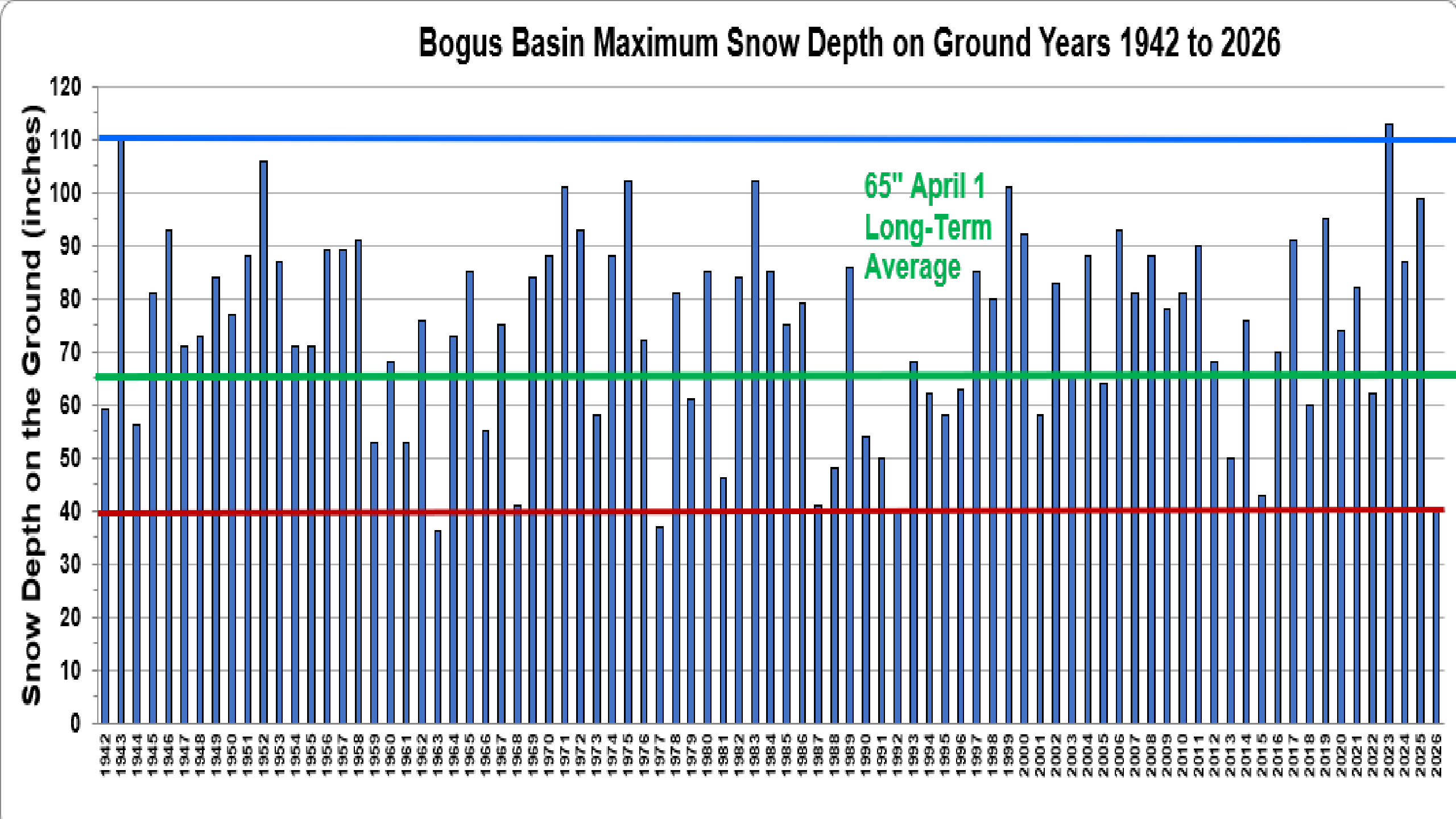
Tamarack
6,709 ft • Idaho • United States

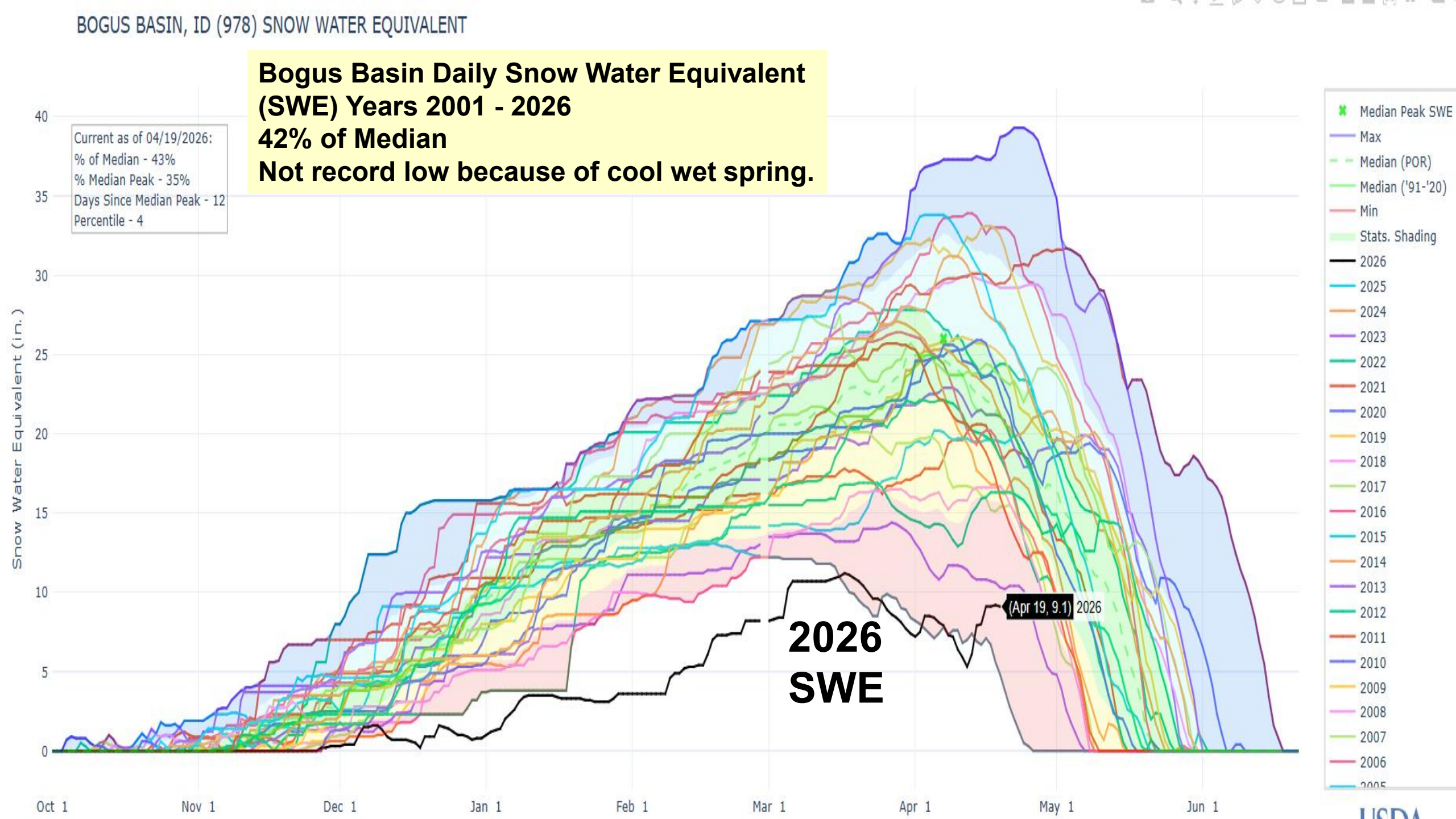
Tue 21	Wed 22	Thu 23	Fri 24	Sat 25
0"	5-9"	1-2"	0-1"	0-1"
58 °F	31 °F	32 °F	30 °F	35 °F
0-1"	3-5"	0-1"	0-1"	0"
32 °F	28 °F	25 °F	23 °F	29 °F

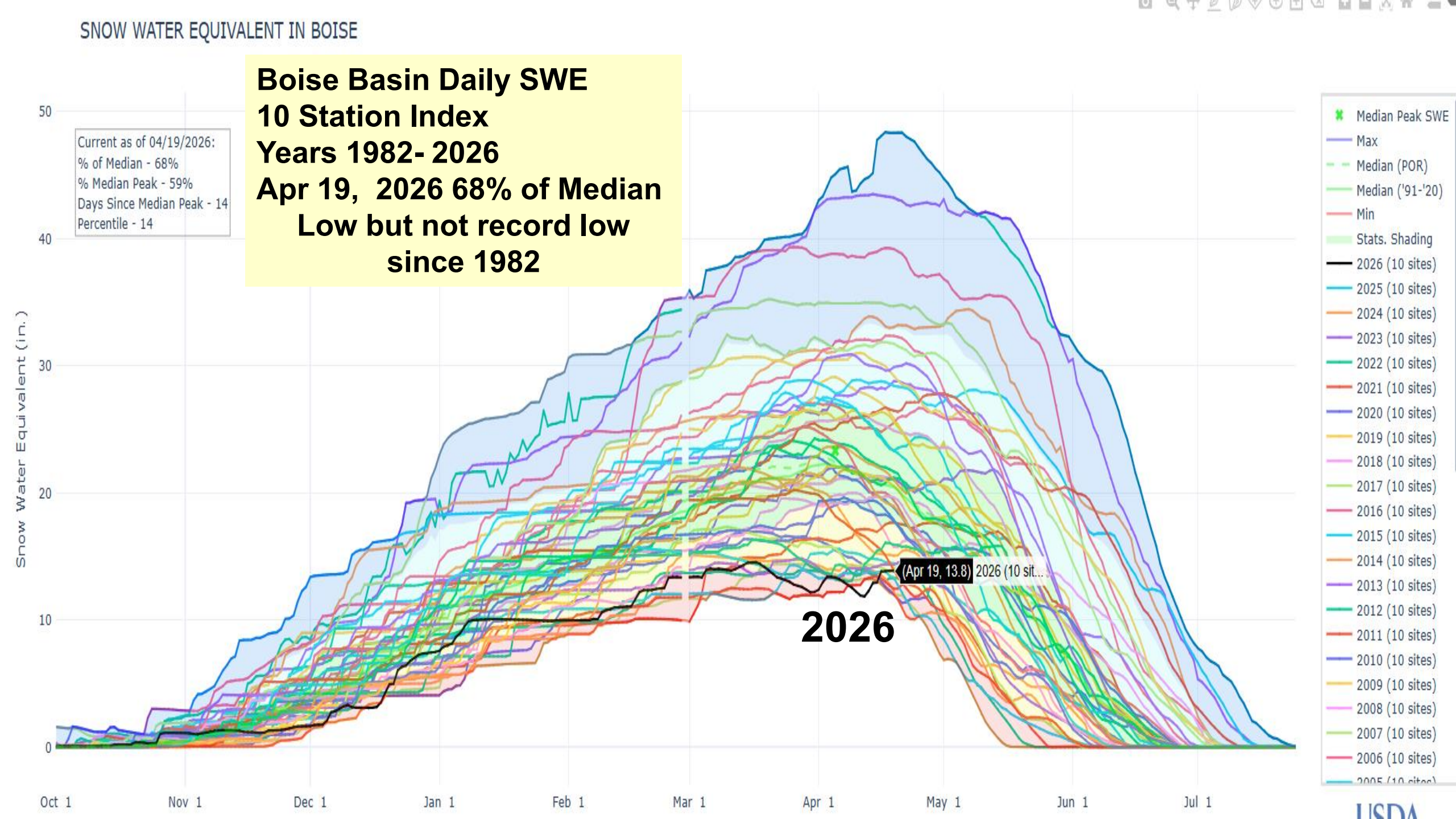
April 2025 - Bogus Basin reached 100” of snow depth for the 8th time since 1942.

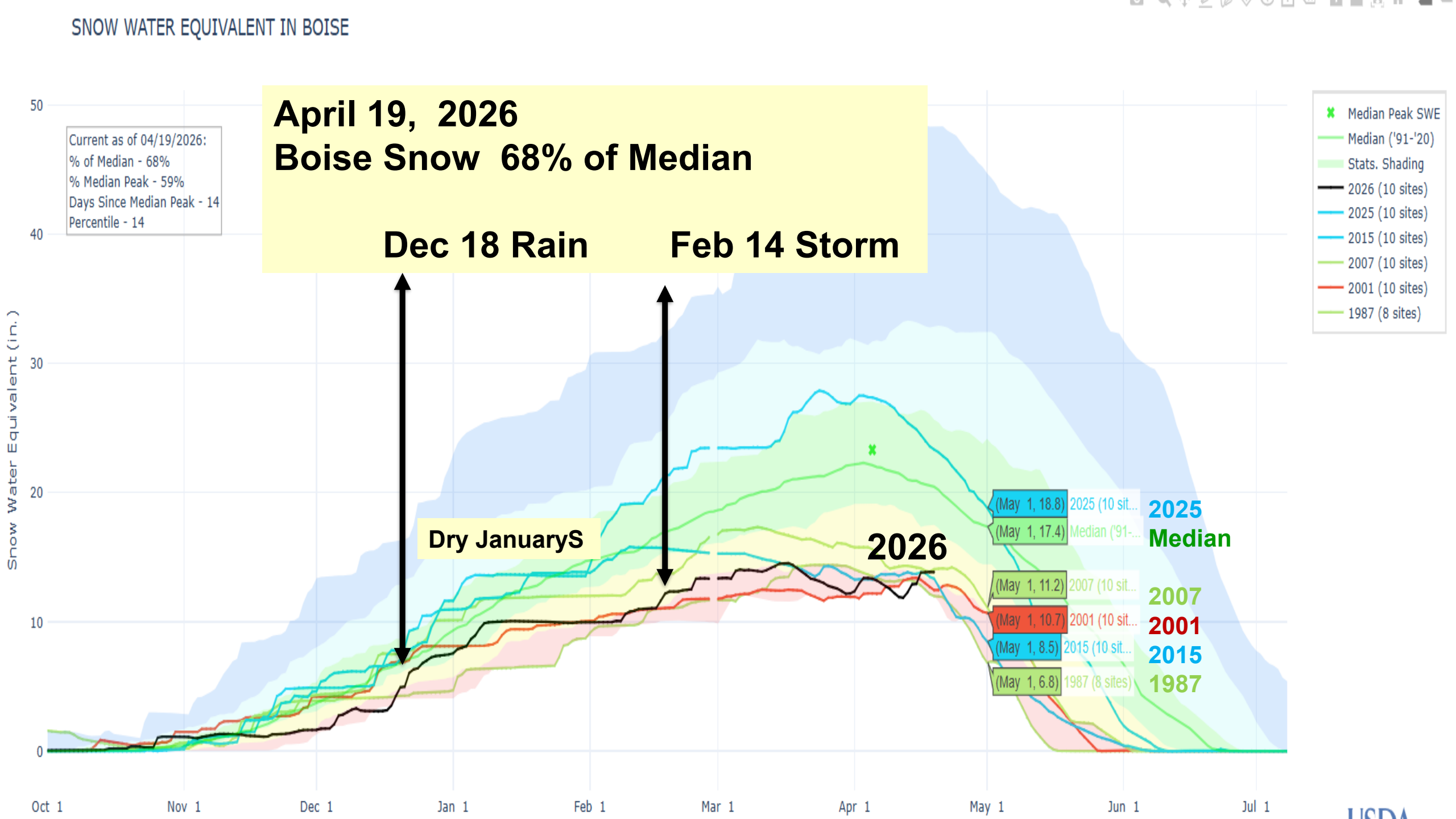
What a difference a year makes – Jan 2026 Bogus Basin Snow Depth was 2 Inches




Bogus Basin Maximum Snow Depth on Ground Years 1942 to 2026
Snow Depth on the Ground (inches)
0
10
20
30
40
50
60
70
80
90
100
110
120
65" April 1
Long-Term
Average
1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026

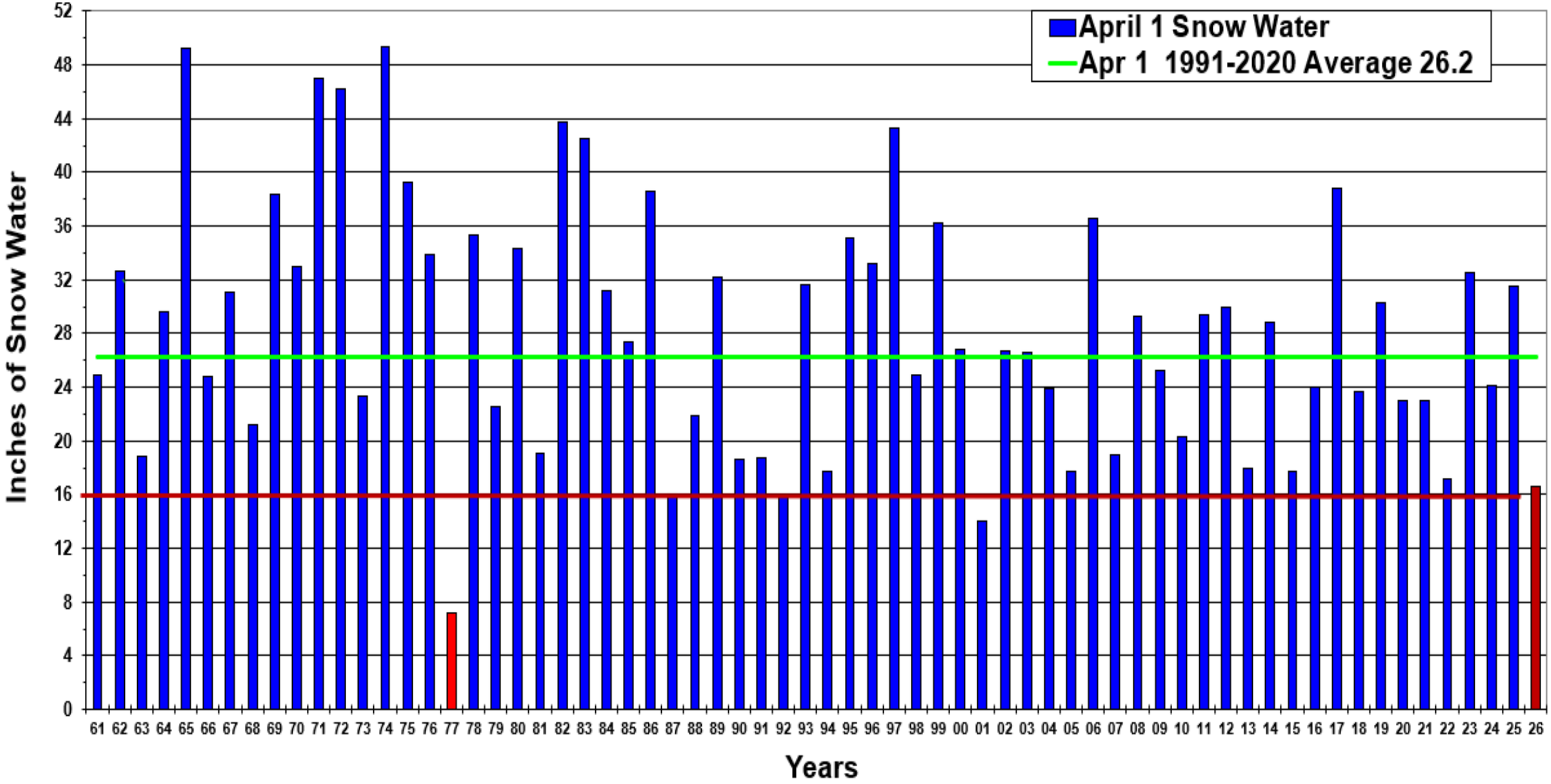

BOGUS BASIN, ID (978) SNOW WATER EQUIVALENT
Bogus Basin Daily Snow Water Equivalent (SWE) Years 2001 - 2026
42% of Median
Not record low because of cool wet spring.
Current as of 04/19/2026:
% of Median - 43%
% Median Peak - 35%
Days Since Median Peak - 12
Percentile - 4
Snow Water Equivalent (in.)
40
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
(Apr 19, 9.1) 2026
2026 SWE
Median Peak SWE
Max
Median (POR)
Median ('91-'20)
Min
Stats. Shading
2026
2025
2024
2023
2022
2021
2020
2019
2018
2017
2016
2015
2014
2013
2012
2011
2010
2009
2008
2007
2006

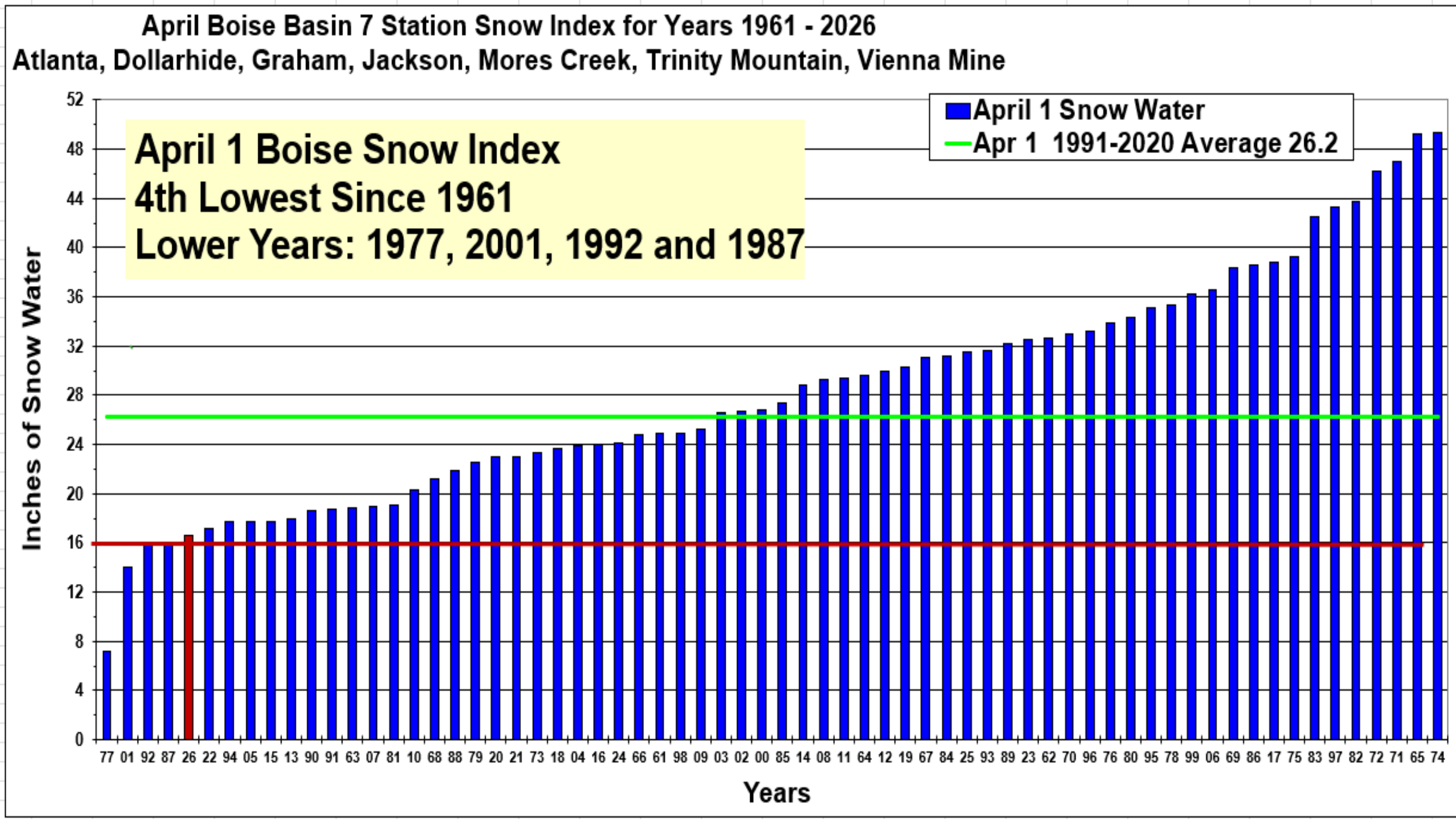

SNOW WATER EQUIVALENT IN BOISE
Boise Basin Daily SWE
10 Station Index
Years 1982- 2026
Apr 19, 2026 68% of Median
Low but not record low
since 1982
Current as of 04/19/2026:
% of Median - 68%
% Median Peak - 59%
Days Since Median Peak - 14
Percentile - 14
Snow Water Equivalent (in.)
50
40
30
20
10
0
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
(Apr 19, 13.8) 2026 (10 sit...
2026
Median Peak SWE
Max
Median (POR)
Median ('91-'20)
Min
Stats. Shading
2026 (10 sites)
2025 (10 sites)
2024 (10 sites)
2023 (10 sites)
2022 (10 sites)
2021 (10 sites)
2020 (10 sites)
2019 (10 sites)
2018 (10 sites)
2017 (10 sites)
2016 (10 sites)
2015 (10 sites)
2014 (10 sites)
2013 (10 sites)
2012 (10 sites)
2011 (10 sites)
2010 (10 sites)
2009 (10 sites)
2008 (10 sites)
2007 (10 sites)
2006 (10 sites)


SNOW WATER EQUIVALENT IN BOISE
April 19, 2026
Boise Snow 68% of Median
Dec 18 Rain
Feb 14 Storm
Dry JanuaryS
2026
Current as of 04/19/2026:
% of Median - 68%
% Median Peak - 59%
Days Since Median Peak - 14
Percentile - 14
Median Peak SWE
Median ('91-'20)
Stats. Shading
2026 (10 sites)
2025 (10 sites)
2015 (10 sites)
2007 (10 sites)
2001 (10 sites)
1987 (8 sites)
(May 1, 18.8) 2025 (10 sit...
(May 1, 17.4) Median ('91-...
(May 1, 11.2) 2007 (10 sit...
(May 1, 10.7) 2001 (10 sit...
(May 1, 8.5) 2015 (10 sit...
(May 1, 6.8) 1987 (8 sites)
2025
Median
2007
2001
2015
1987
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

April Boise Basin 7 Station Snow Index for Years 1961 - 2026

Atlanta, Dollarhide, Graham, Jackson, Mores Creek, Trinity Mountain, Vienna Mine




April Boise Basin 7 Station Snow Index for Years 1961 - 2026
Atlanta, Dollarhide, Graham, Jackson, Mores Creek, Trinity Mountain, Vienna Mine
April 1 Boise Snow Index
4th Lowest Since 1961
Lower Years: 1977, 2001, 1992 and 1987
April 1 Snow Water
Apr 1 1991-2020 Average 26.2
Inches of Snow Water
0
4
8
12
16
20
24
28
32
36
40
44
48
52
77 01 92 87 26 22 94 05 15 13 90 91 63 07 81 10 68 88 79 20 21 73 18 04 16 24 66 61 98 09 03 02 00 85 14 08 11 64 12 19 67 84 25 93 89 23 62 70 96 76 80 95 78 99 06 69 86 17 75 83 97 82 72 71 65 74
Years

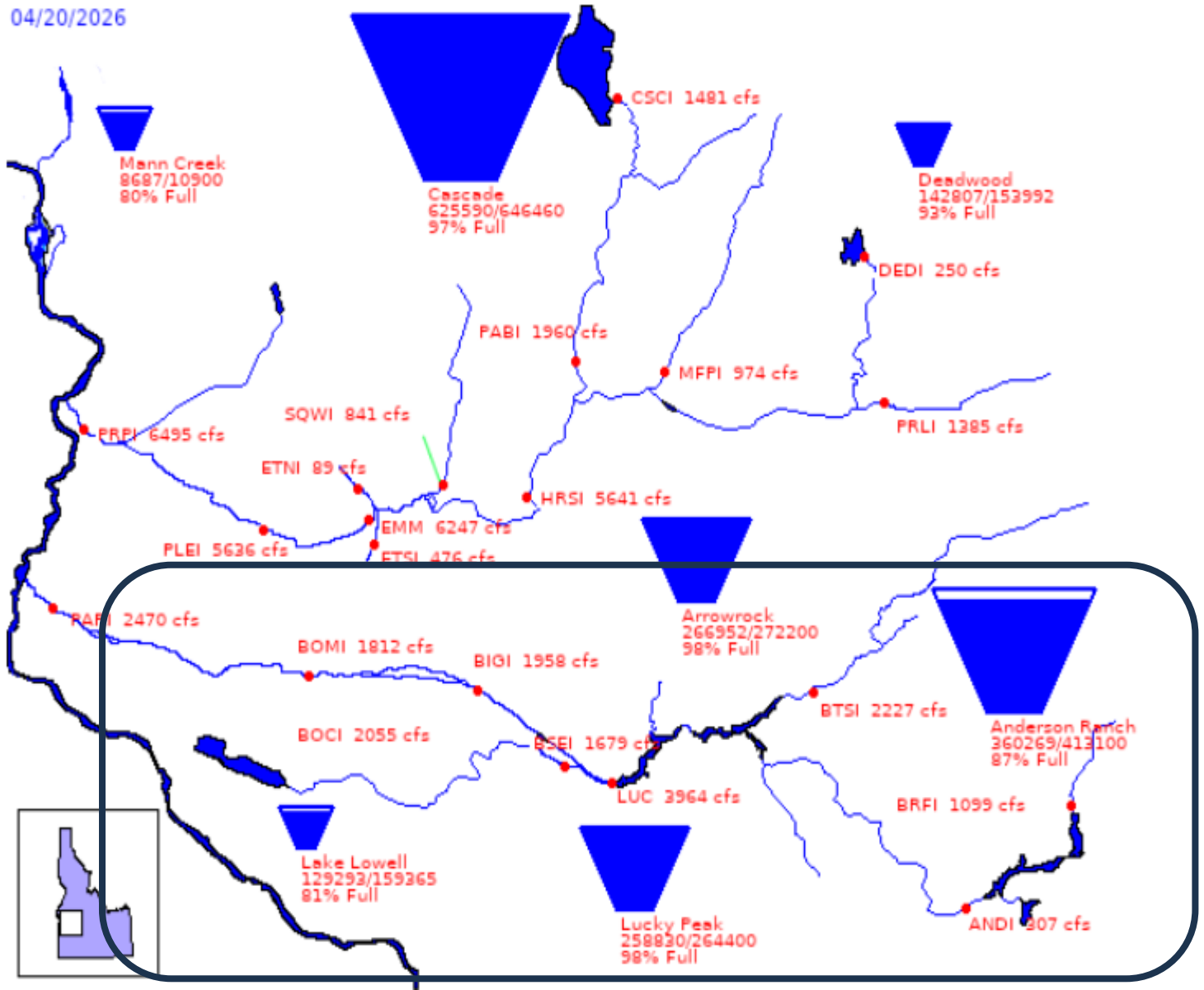
Boise Reservoir System Anderson, Arrowrock and Lucky Peak are 93% Full

Releasing 4530 CFS from Lucky Peak

Diversions above Glenwood 2030 CFS
Glenwood Bridge 2500 CFS

Question is:
Will additional water releases be needed based on remaining snow and future precipitation ??

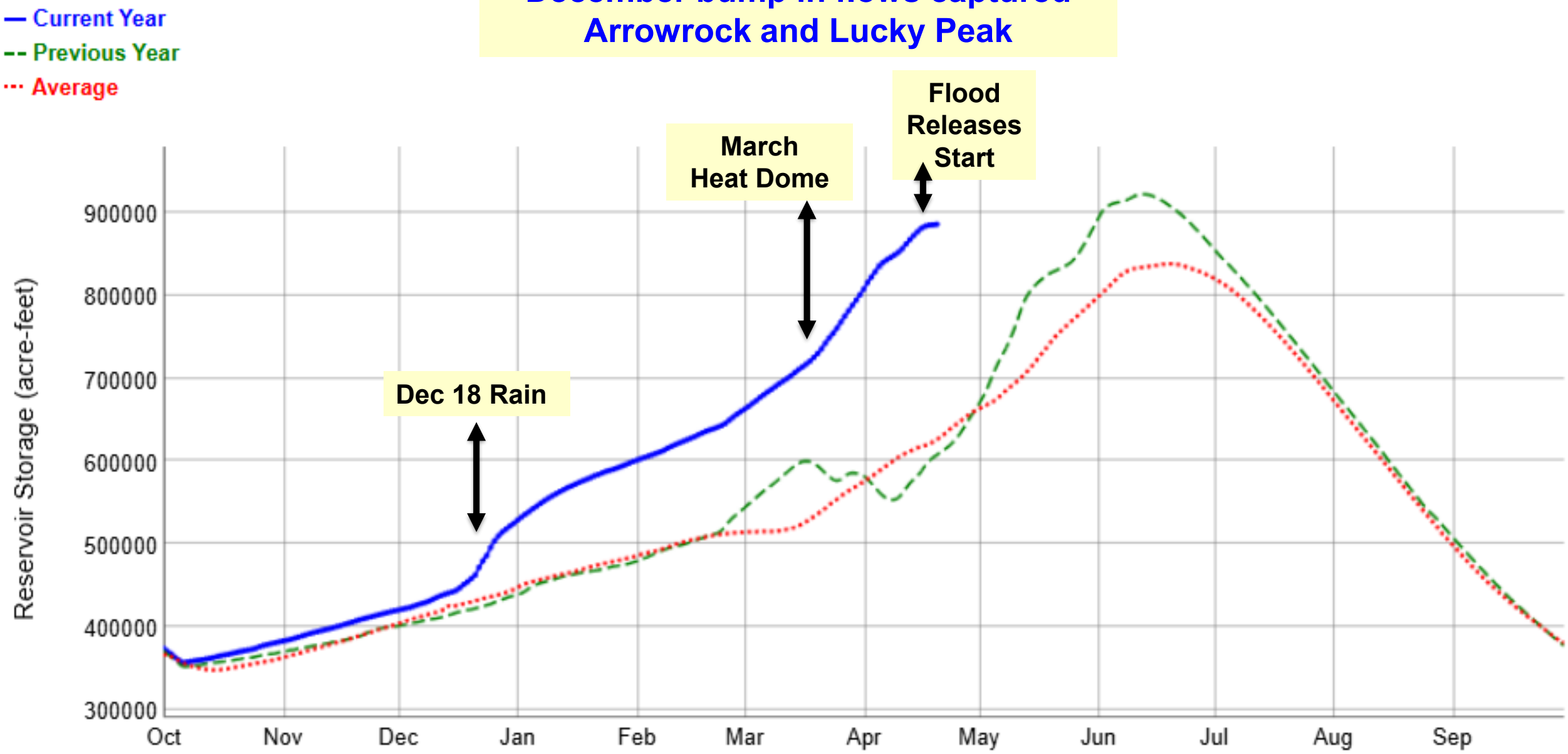
Bureau of Reclamation, Pacific Northwest Region
Major Storage Reservoirs in the Boise & Payette River Basins



Water Year Graph

Boise River System Reservoir Storage

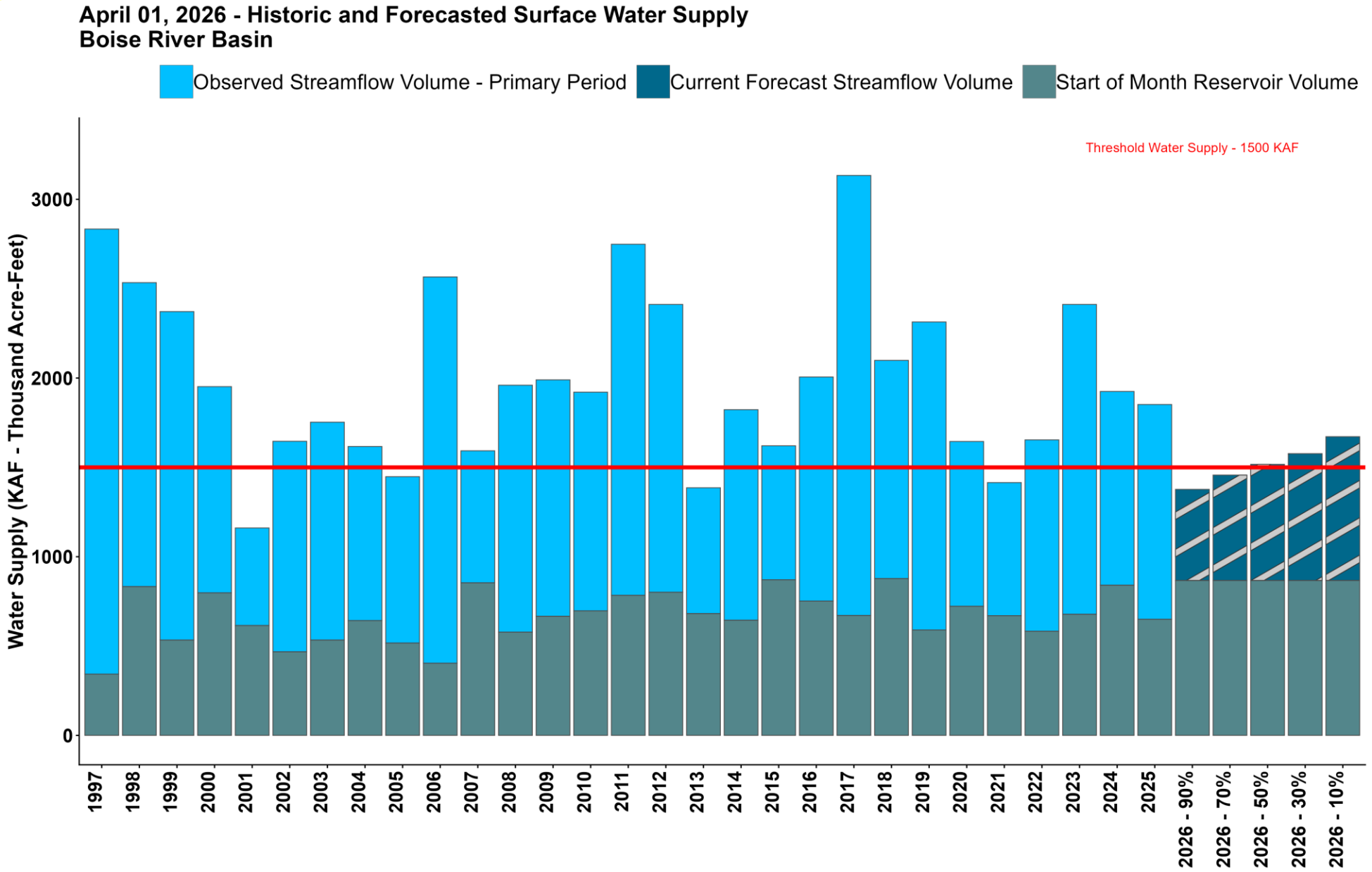
December bump in flows captured Arrowrock and Lucky Peak



Use of Combined Index:
Reservoir Storage + Forecasted Volume = Surface Water Supply Index (SWSI)

Uses:

- Crop Insurance
- Bank Loans
- Mint Contractors
- Water Banks
- Surplus Water for Recharge
- Cloud Seeding Suspension Criteria



Relationships have been around a long time…

June 1806, Nez Perce told Lewis & Clark you can't get over Lolo Pass until the rivers come up for 2 weeks, then the snow at Lola Pass will be melted.

From Vernon Preston book published by the American Meteorological Society
***Lewis & Clark, Weather and Climate Data from the Expedition Journals*, 2006**

June 17, 1806 ***A skier's dream vacation - an expedition's curse - heavy snows in the bitterroots***

The Expedition is forced to retrograde back towards the Weippe Prairie in Idaho as the numerous storms during the winter of 1805-1806 dumped upwards of 10-18 feet of snow. [3, 4, 5]

The party had to request assistance from Nez Perce guides and wait until June 24 to continue their trek over the Lolo Trail.

Relationships have been around a long time…

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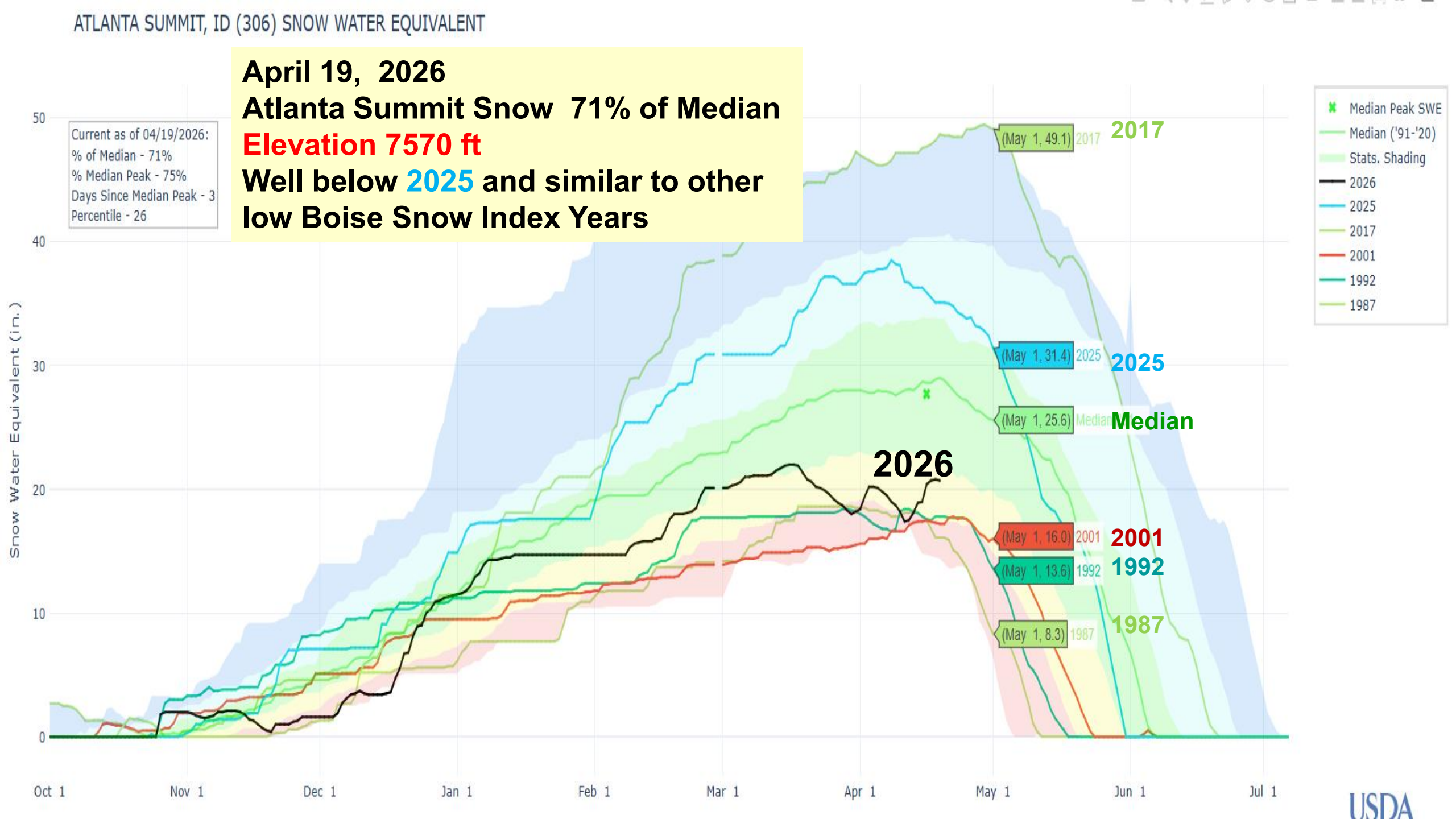
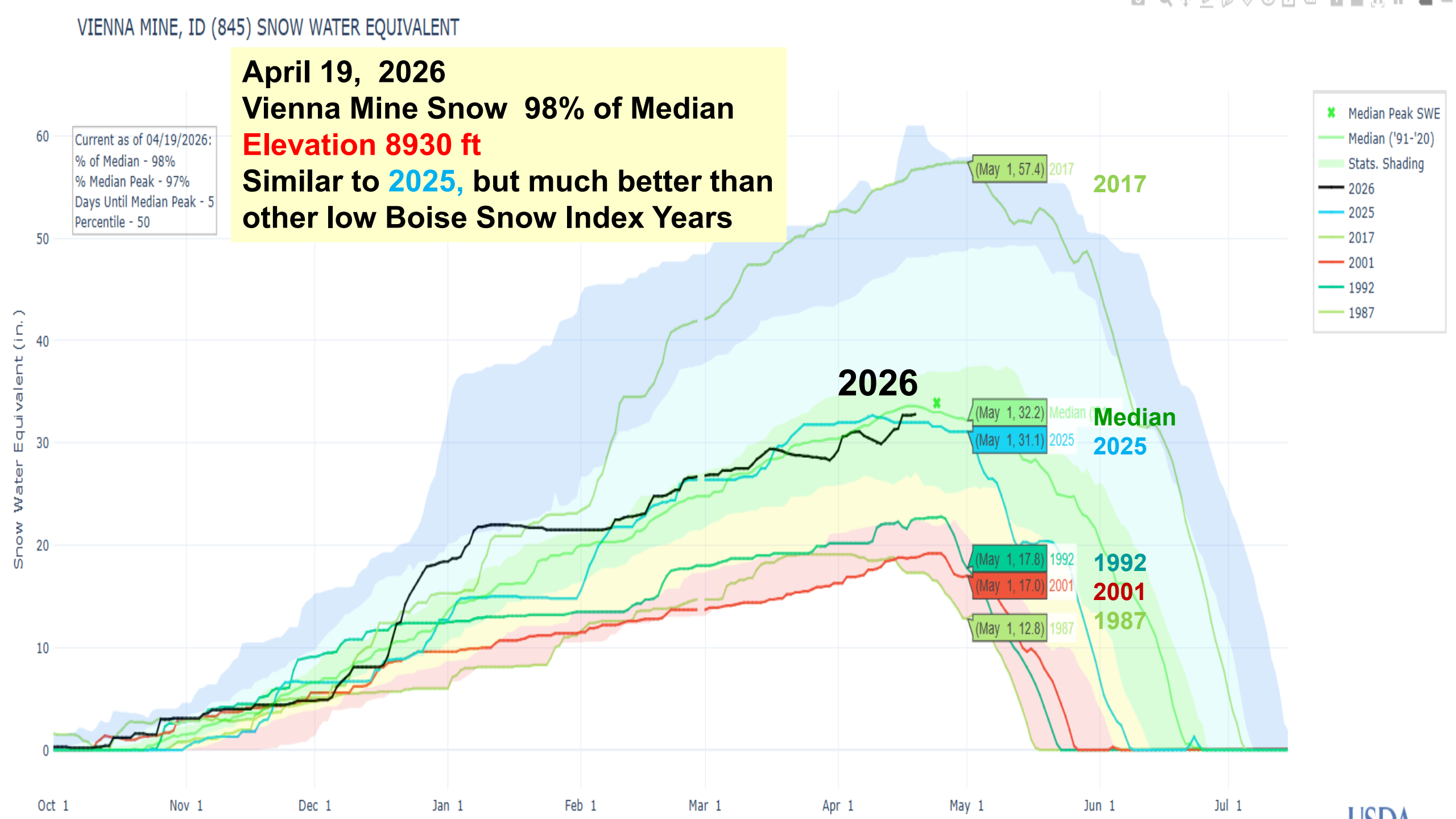
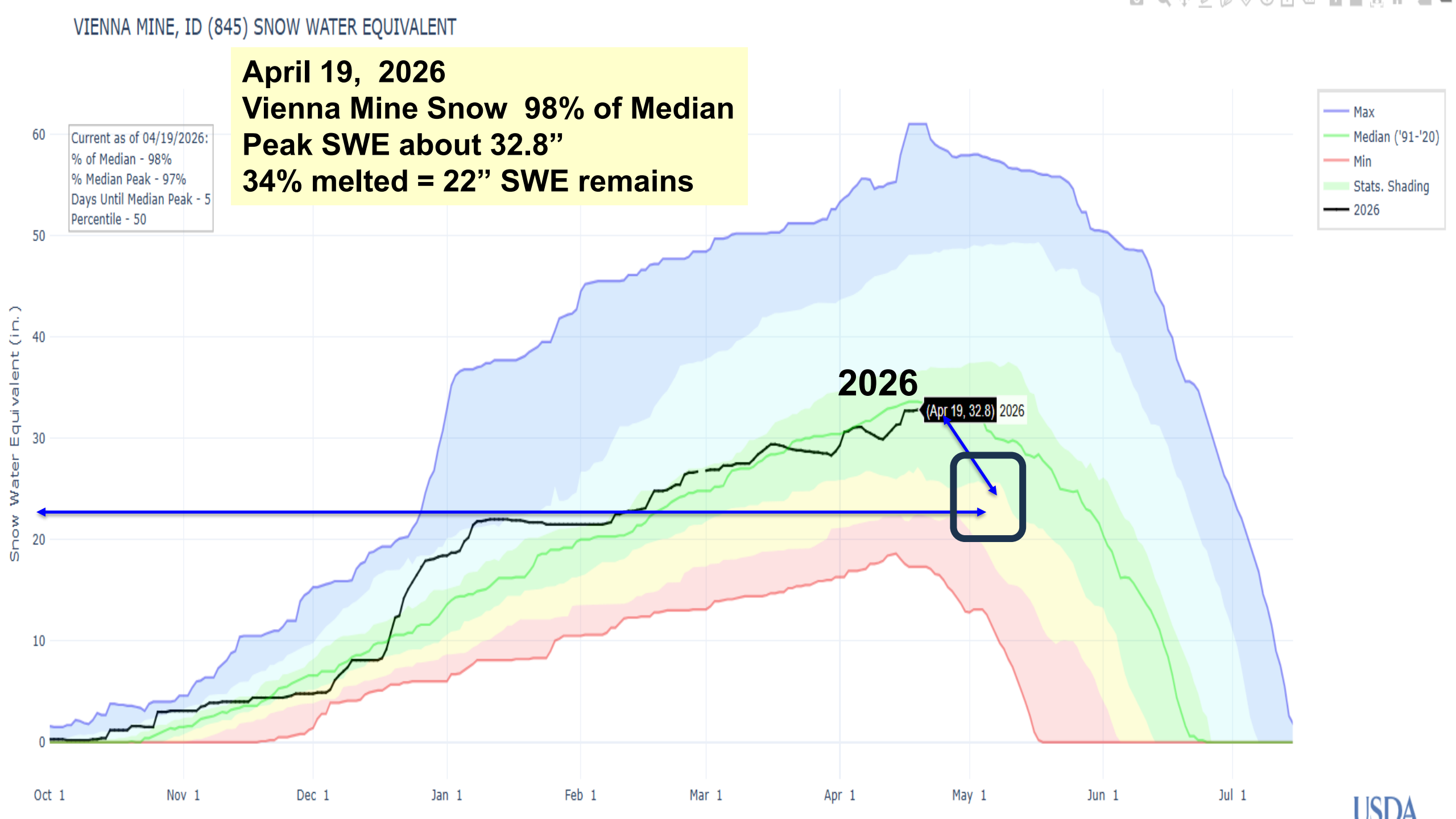
The party had to request assistance from Nez Perce guides and wait until June 24 to continue their trek over the Lolo Trail.

Lewis & Clark and crew had an extended stay in Idaho before heading home.

Deepest snow NRCS measured at Lolo Pass was 10.5 ft deep.


ATLANTA SUMMIT, ID (306) SNOW WATER EQUIVALENT
April 19, 2026
Atlanta Summit Snow 71% of Median
Elevation 7570 ft
Well below 2025 and similar to other low Boise Snow Index Years
Current as of 04/19/2026:
% of Median - 71%
% Median Peak - 75%
Days Since Median Peak - 3
Percentile - 26
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
Median Peak SWE
Median ('91-'20)
Stats. Shading
2026
2025
2017
2001
1992
1987
(May 1, 49.1) 2017
2017
(May 1, 31.4) 2025
2025
(May 1, 25.6) Median
Median
2026
(May 1, 16.0) 2001
2001
(May 1, 13.6) 1992
1992
(May 1, 8.3) 1987
1987
USDA


VIENNA MINE, ID (845) SNOW WATER EQUIVALENT
April 19, 2026
Vienna Mine Snow 98% of Median
Elevation 8930 ft
Similar to 2025, but much better than other low Boise Snow Index Years
Current as of 04/19/2026:
% of Median - 98%
% Median Peak - 97%
Days Until Median Peak - 5
Percentile - 50
Median Peak SWE
Median ('91-'20)
Stats. Shading
2026
2025
2017
2001
1992
1987
Snow Water Equivalent (in.)
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
(May 1, 57.4) 2017
(May 1, 32.2) Median (
(May 1, 31.1) 2025
(May 1, 17.8) 1992
(May 1, 17.0) 2001
(May 1, 12.8) 1987
2017
2026
Median
2025
1992
2001
1987


VIENNA MINE, ID (845) SNOW WATER EQUIVALENT
April 19, 2026
Vienna Mine Snow 98% of Median
Peak SWE about 32.8”
34% melted = 22” SWE remains
Current as of 04/19/2026:
% of Median - 98%
% Median Peak - 97%
Days Until Median Peak - 5
Percentile - 50
Max
Median ('91-'20)
Min
Stats. Shading
2026
Snow Water Equivalent (in.)
60
50
40
30
20
10
0
2026
(Apr 19, 32.8) 2026
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
USDA

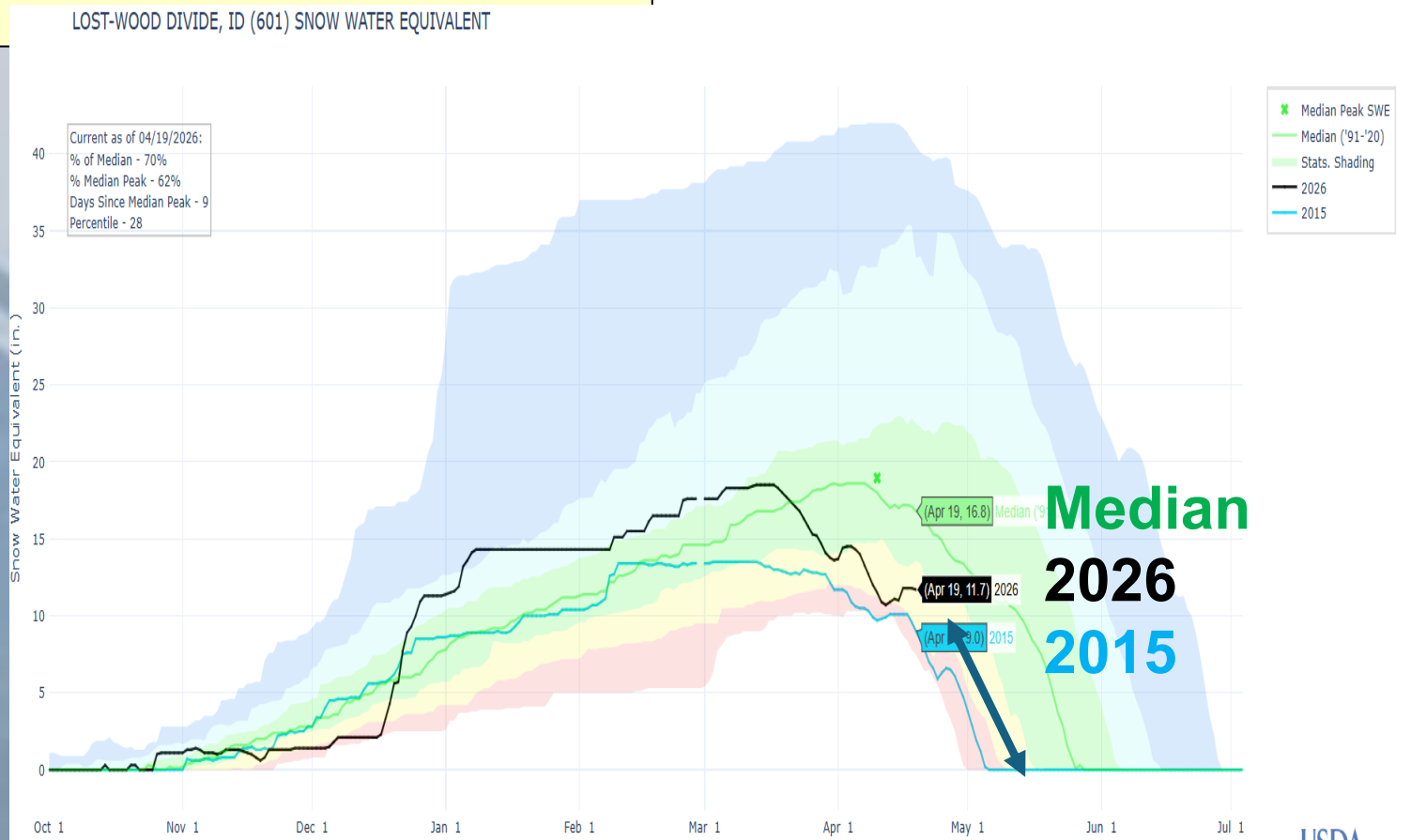
Old Timer Relationships
What do you see in the snow?

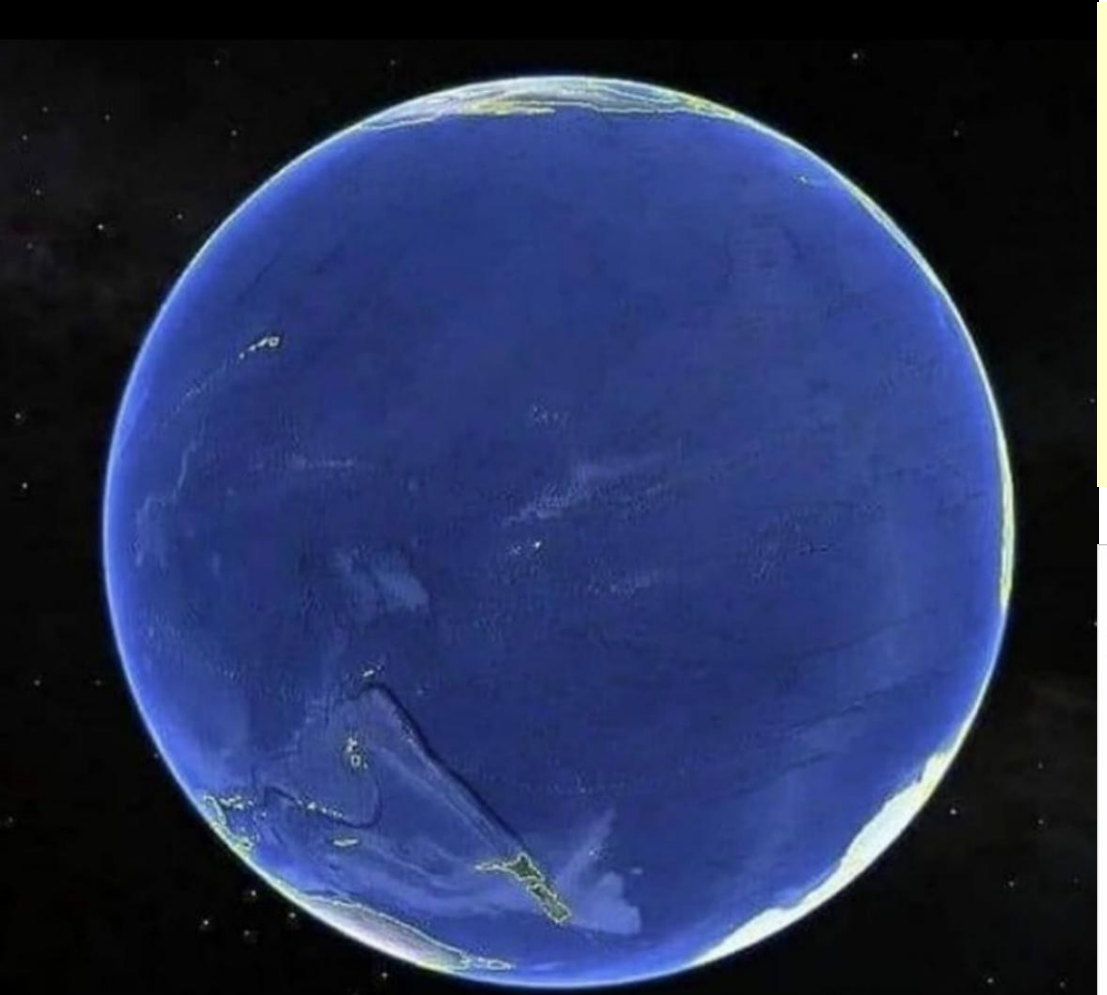
Hint – it is Not a blue BSU Bronco

It’s the Big Lost White Stallion

And when you see it, means the peak flow has occurred.

Picture taken June 8, 2006
- First day melted out
- Lost-Wood Divide had SWE of 0.0”
- Snow2 Flow Relationship shows Big Lost River snowmelt peak flow occurs just after melt out.





The Earth is almost never shown like this. This is our planet from the side of the Pacific Ocean.

SOU

Why we study the Pacific Ocean ? It's Huge!
Pacific Ocean view you don't always see.

SOI Correlation Map with spring /summer runoff.
Same relationship can be found with Sea Surface Temps.

Key is – what happens during July-Nov correlates with our winter snowfall and summer streamflow in Western US.

Southern Oscillation Index (SOI) measure of the Pacific Atmosphere

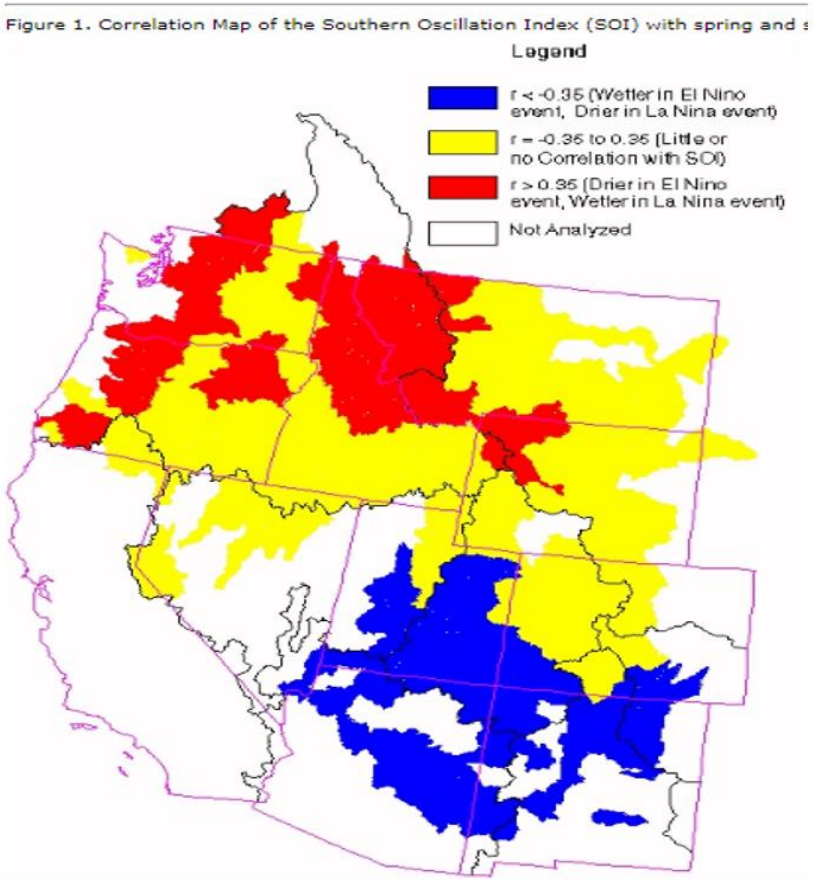
Correlation Map of SOI with Spring-Summer Streamflow

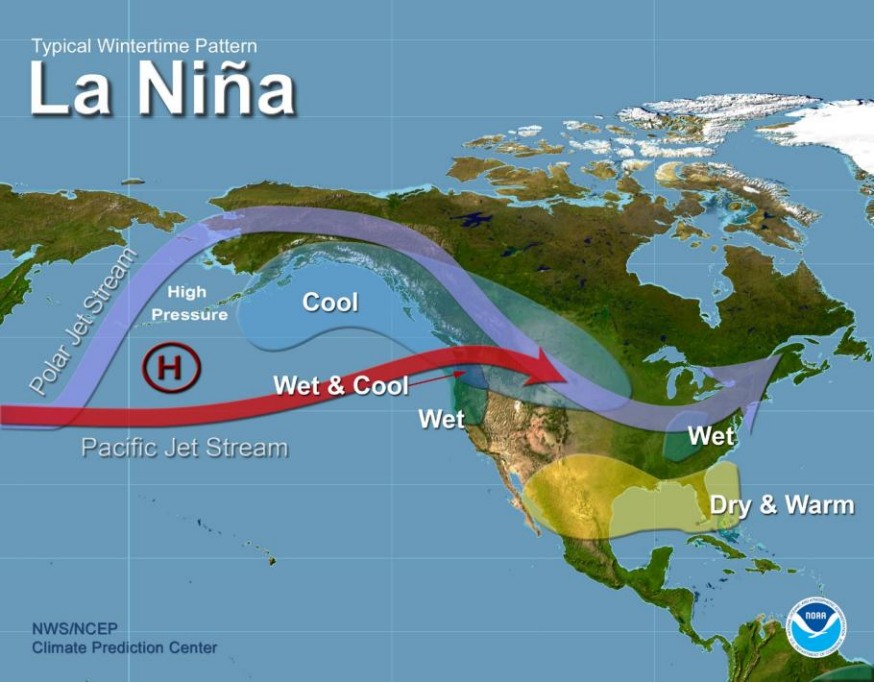
Red wetter in La Nina years.

Blue wetter in El Nino years.

Key is – what happens July-Nov in Pacific correlates with snowfall and summer streamflow in Western US.

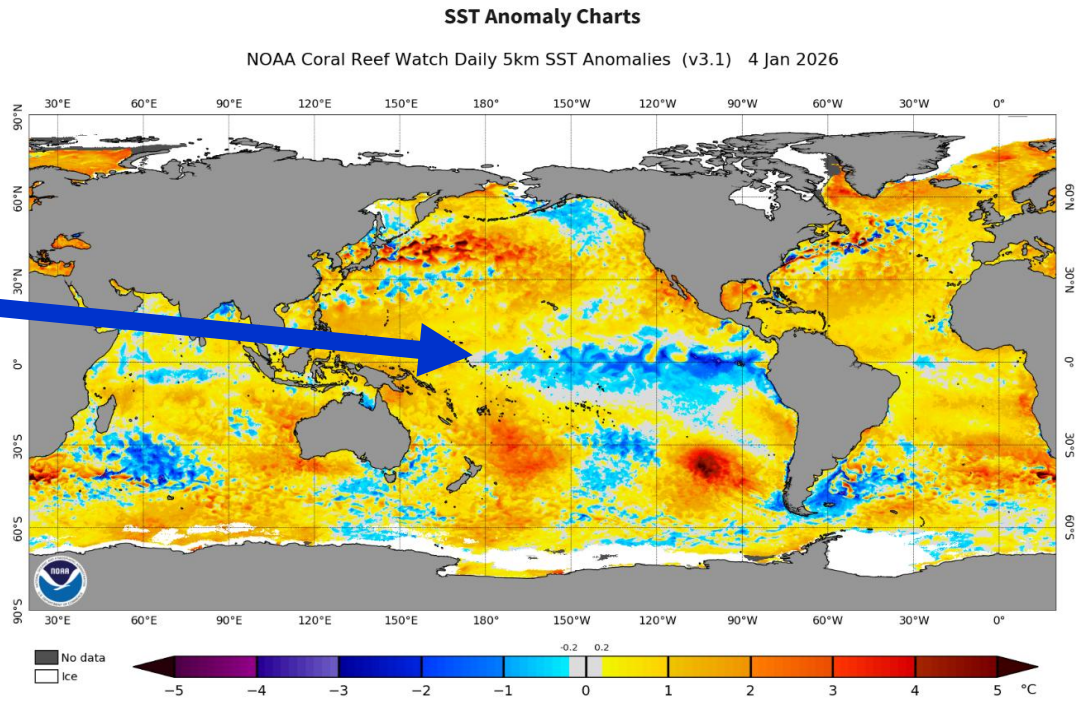
Clearwater Basin has correlation value of 0.67

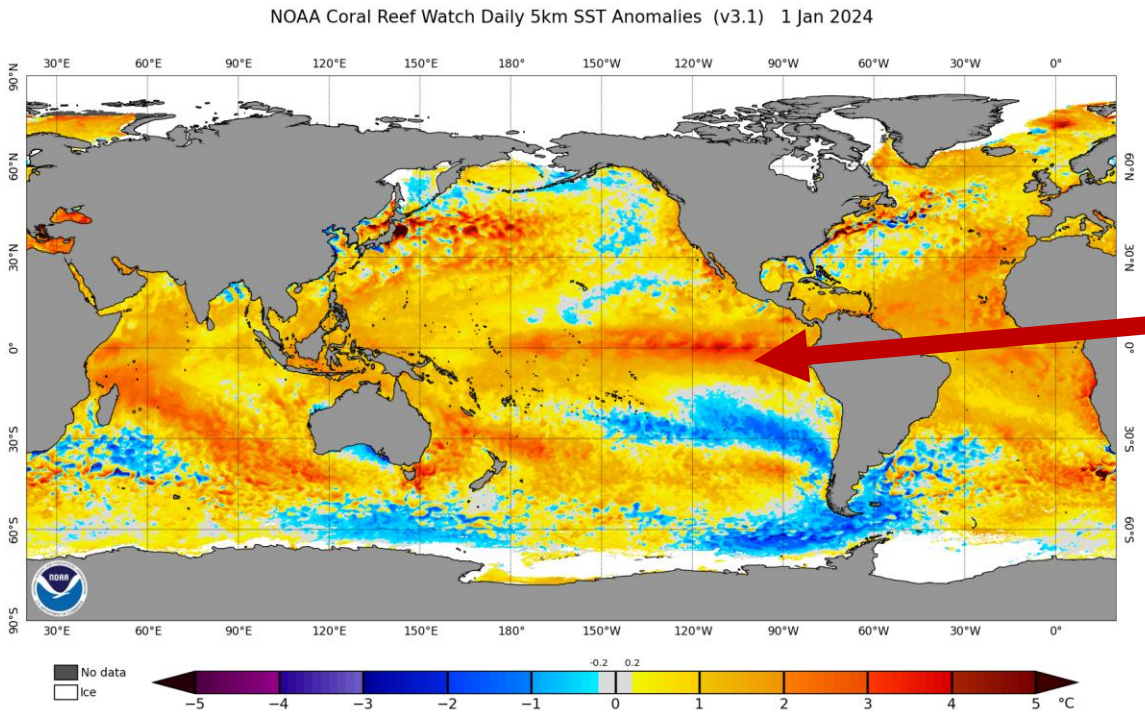




Sea Surface Temperatures

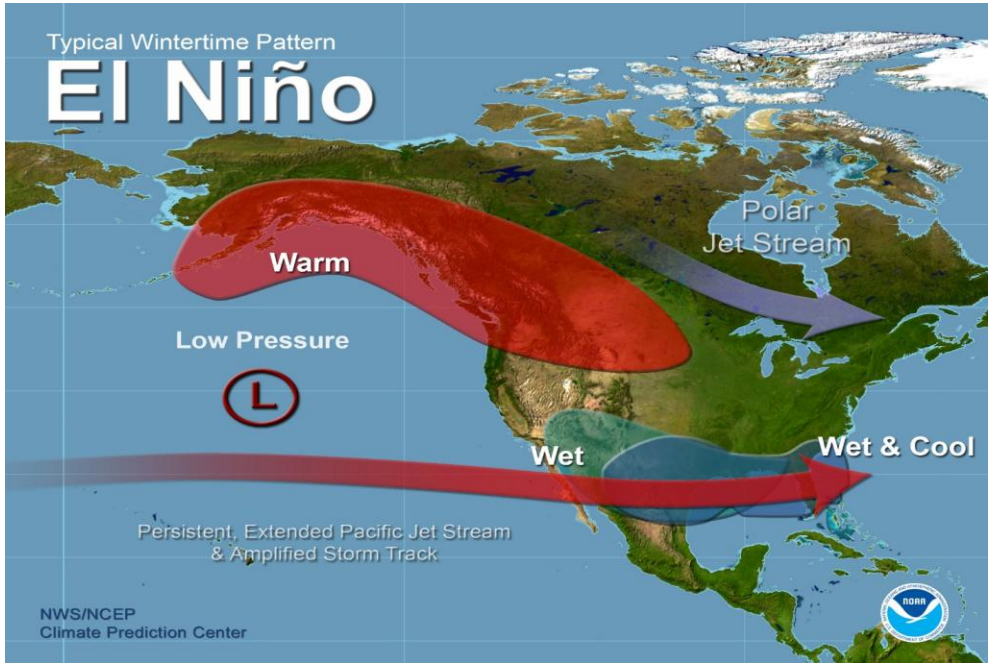
La Nina Conditions Jan 4, 2026





El Nino Conditions Jan 1, 2024

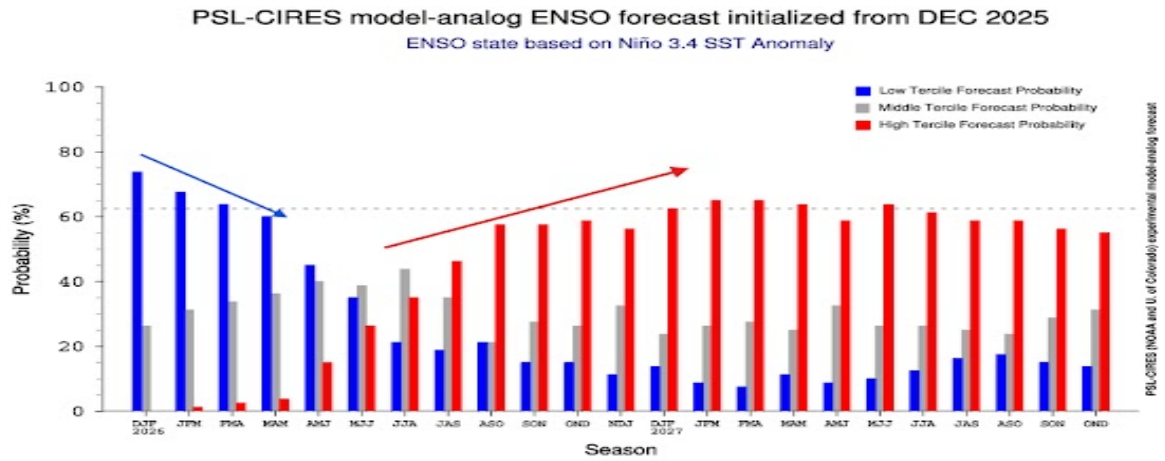
El Nino brewing for 2026-27 Winter



Sep 2025

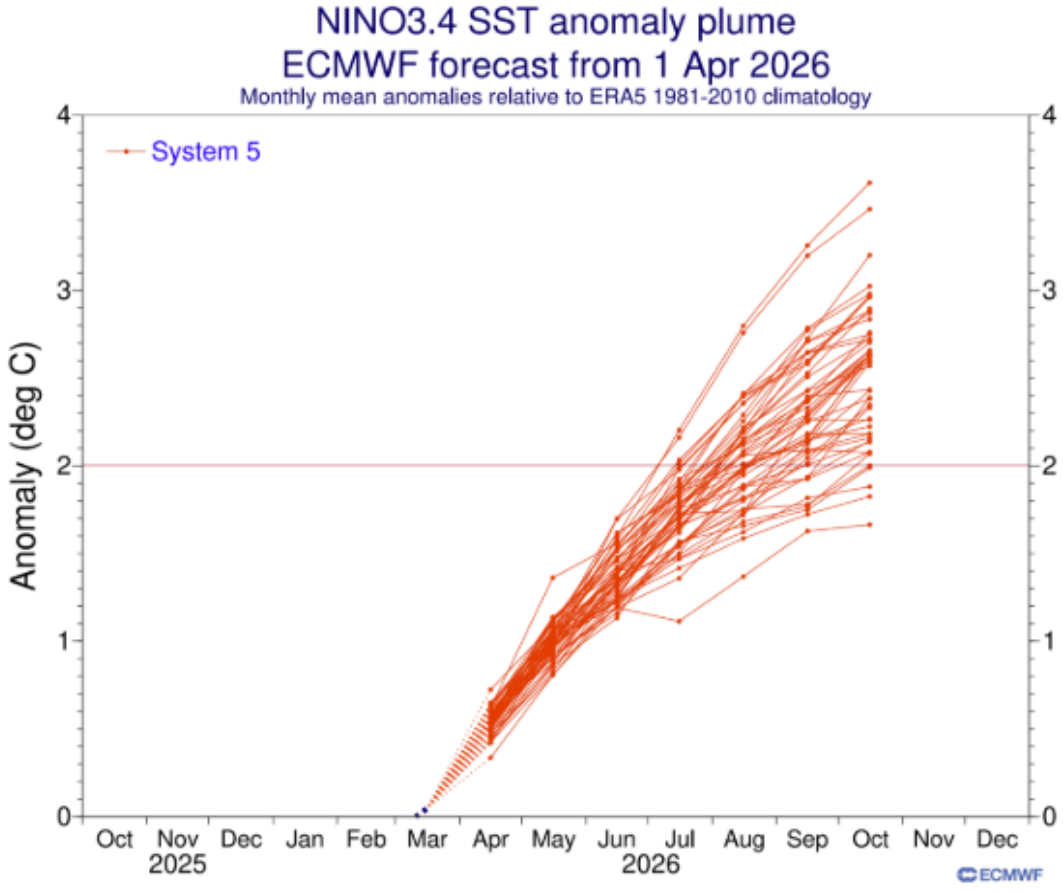
El Nino is setting up for Winter 2026-27. I've never seen them calling this out so early, so must be feeling confident.

The CPC official probabilistic ENSO forecast shows a clear shift into El Niño mode for 2026/2027, giving a full El Niño state by early Fall 2026. This shows the event peaking during Winter, potentially lasting for a second year. You can also see the rapid decline of the current La Niña event.



A Super El Niño is scientifically recognized when sea surface temperature anomalies in the Niño3.4 region exceed a threshold of **+2.0 or higher** above the long-term average. This identifies events of high intensity in which atmospheric coupling is strong enough to shift global weather patterns into a **high-impact state**.

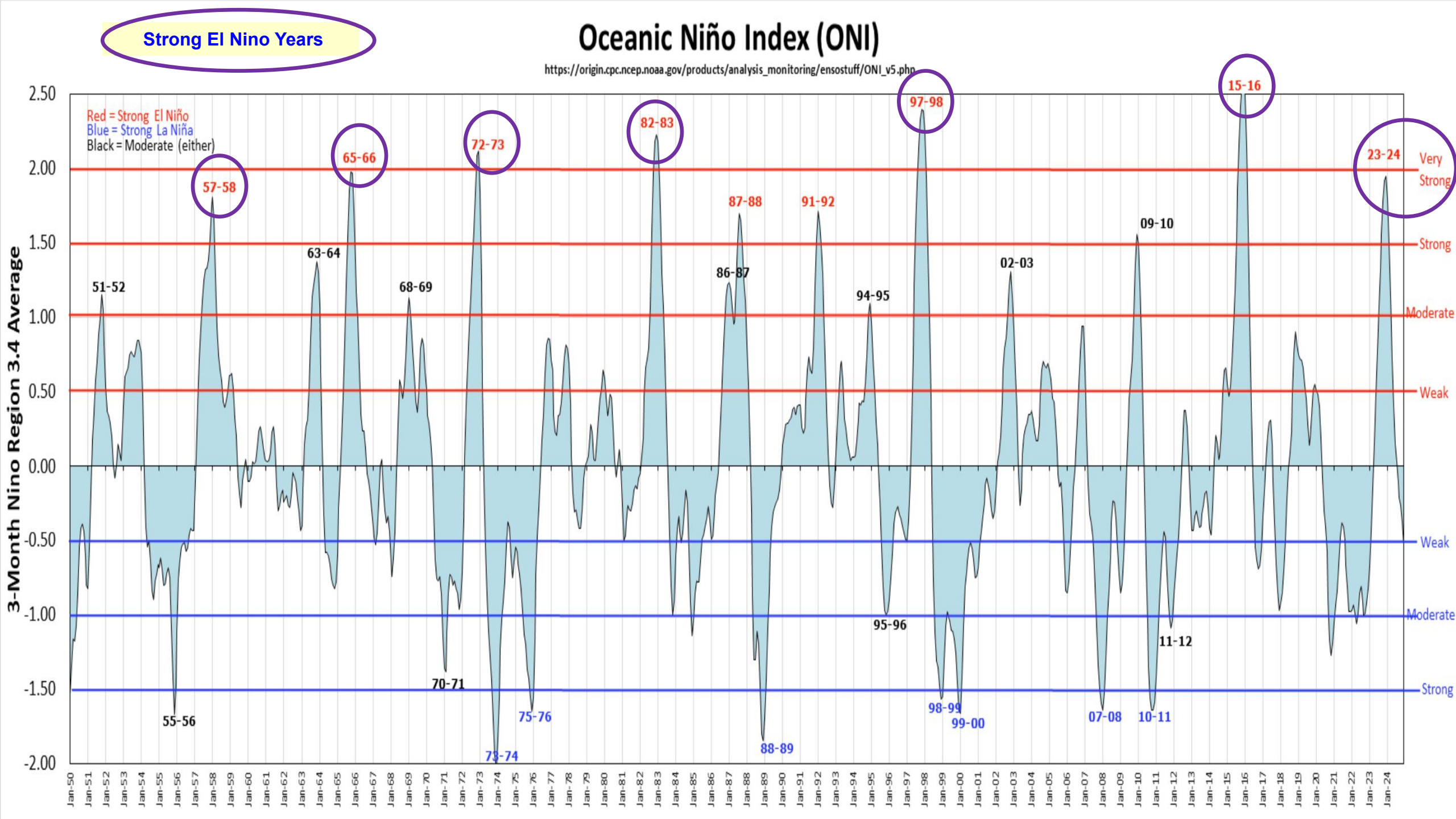
Below is also the latest ECMWF model forecast for the next few months. This also shows a strong El Niño developing into 2026, easily exceeding the +2 degrees threshold and pushing it into the Super event category. Most ensemble members exceed this boundary, aiming even higher for the later peak.



Strong El Nino Years

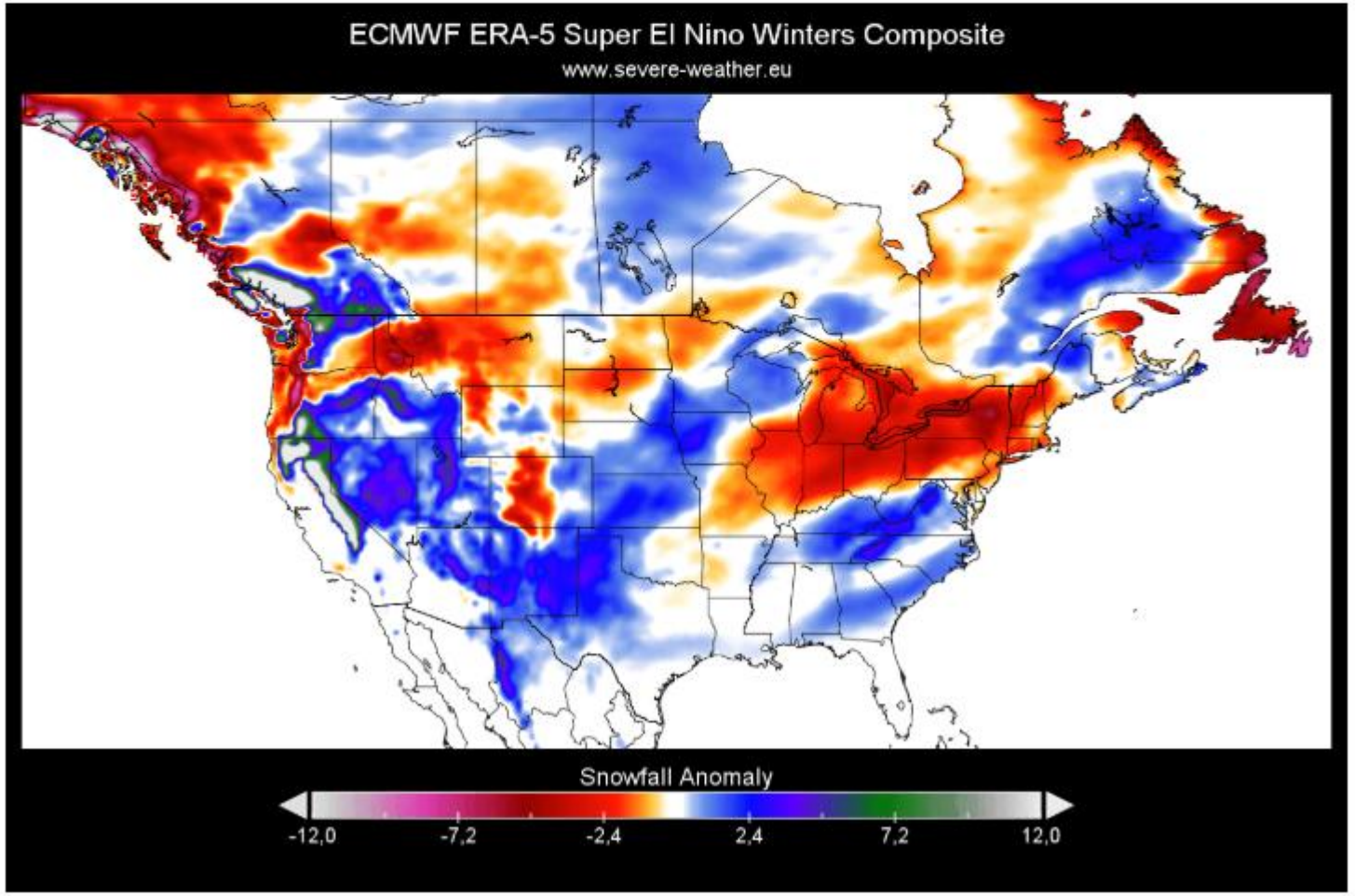
Oceanic Niño Index (ONI)

https://origin.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/ONI_v5.php



El Niño events happen every few years. But Super events tend to occur once per decade or less. The last three such events were in 2015/16, 1997/98, and 1982/83.

An El Niño event also significantly alters **snowfall patterns**. Below is a snowfall analysis of all recent Super El Niño winters, combining their data to produce an average snowfall pattern for such winters. You can see increased snowfall in the western and southern United States during a Super El Niño, as well as over parts of the Southeast.



Discussion, Questions, Comments, Corrections

April, 2 2026 Spring Weather in Boise

Extra slides

Snow2Flow for SF Boise River

Boise River / West Central Idaho Basins

SF BOISE RIVER AND VIENNA MINE SNOTEL SITE

On average, peak streamflow for the SF Boise River near Featherville, Idaho occurs when Vienna Mine SNOTEL is between **13 and 35%** melted.

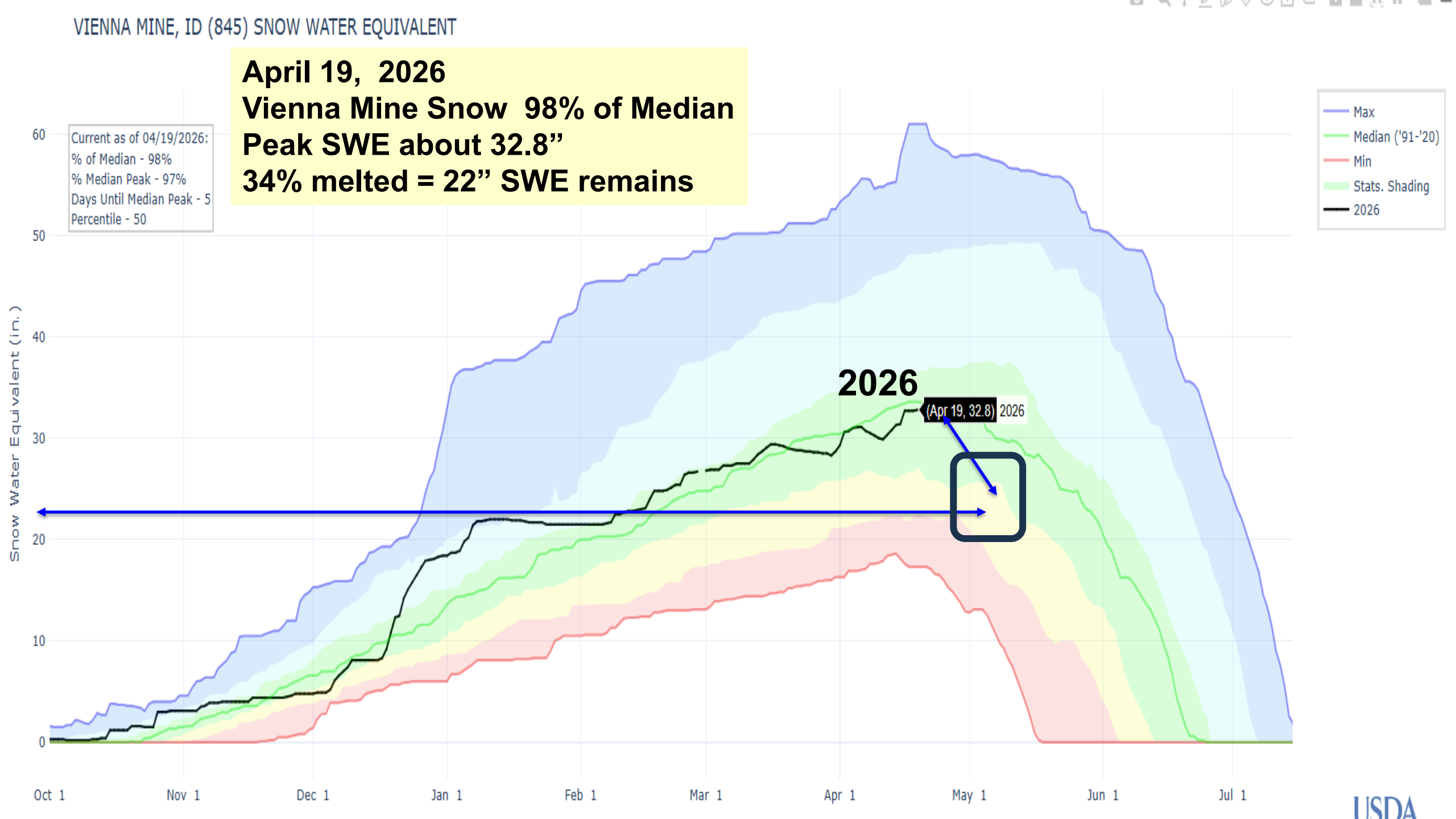
Summary by max SWE magnitude

Max SWE Category	Max SWE Magnitude (inches)	Number of Years in Analysis	**Average percent melted at time of peak streamflow**
Below average	<28	8	**35**
Average	27 - 42	17	**34**
Above average	>41	8	**13**

Note - this analysis uses all years available and did not eliminate potential non-snowmelt peaks

The average percent melted for the full 33-year period of record is 29% melted.

2026 Vienna Mine Peak SWE is about 32.8" which indicates snowmelt peak occurs when about 34% melted, or about 22" of SWE remains.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Peak SWE about 32.8”
34% melted = 22” SWE remains
Current as of 04/19/2026:
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% Median Peak - 97%
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(Apr 19, 32.8) 2026
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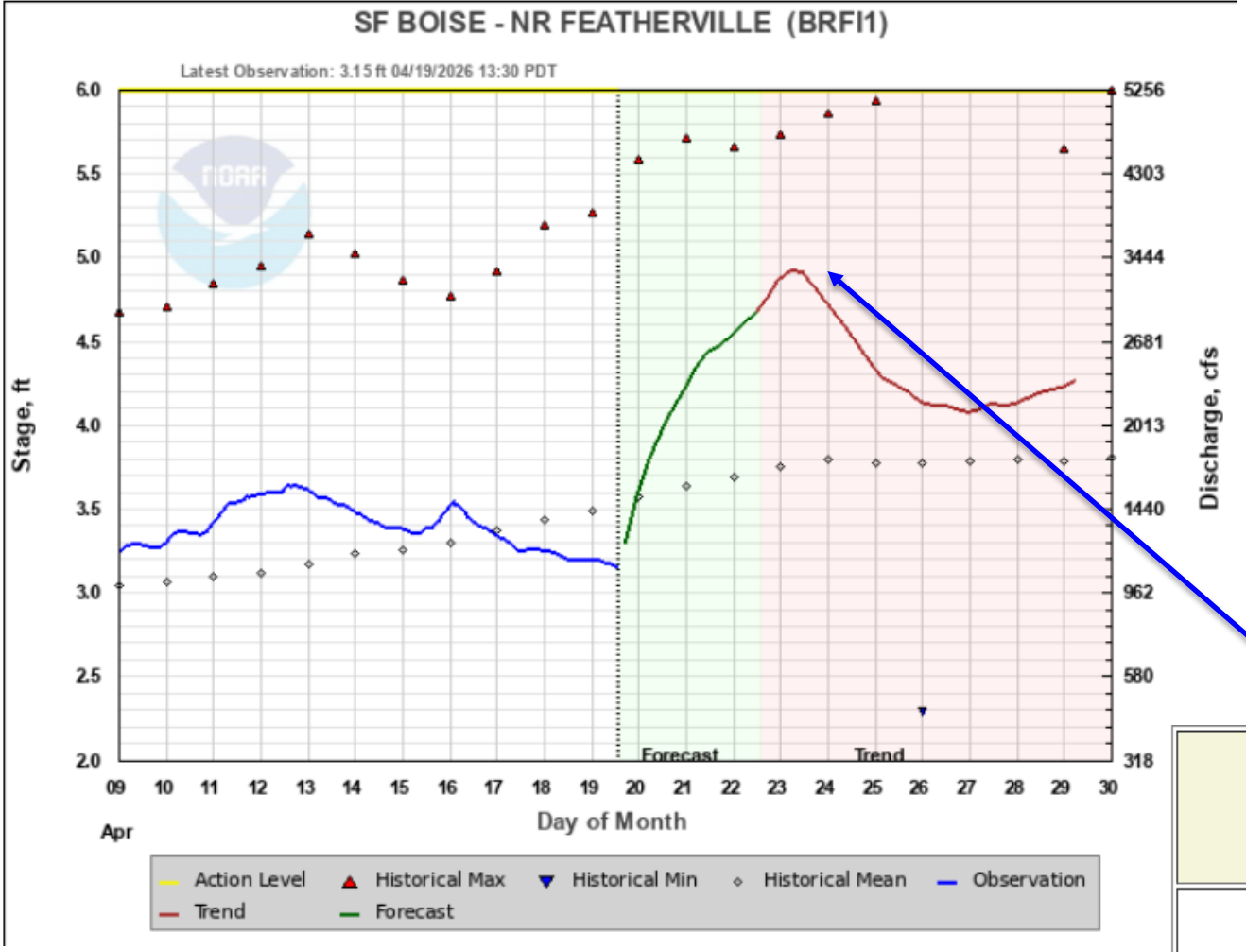
Jul 1
USDA



Northwest River Forecast Center

Peak Flow Forecasts

SF BOISE--NR FEATHERVILLE (BRFI1)
Forecasts for Water Year 2026
Ensemble Date: 2026-04-19
Forecast Period: April 19 to August 1

Exceedence Probability	Stage feet	Discharge CFS	Probable Date of Peak
95 %	4.92	3310	2026-04-23
90 %	4.92	3310	2026-04-23
70 %	4.92	3310	2026-04-23
50 %	4.92	3310	2026-04-23
30 %	4.92	3310	2026-04-23
10 %	4.94	3348	2026-05-03
05 %	5.06	3545	2026-05-25

Snow2Flow for Boise River near Twin Springs

NORTH AND MIDDLE FORKS BOISE RIVERS ATLANTA SUMMIT SNOTEL

On average, peak streamflow for the Boise River near Twin Springs, Idaho occurs when Atlanta Summit SNOTEL is between **22 and 62%** melted.

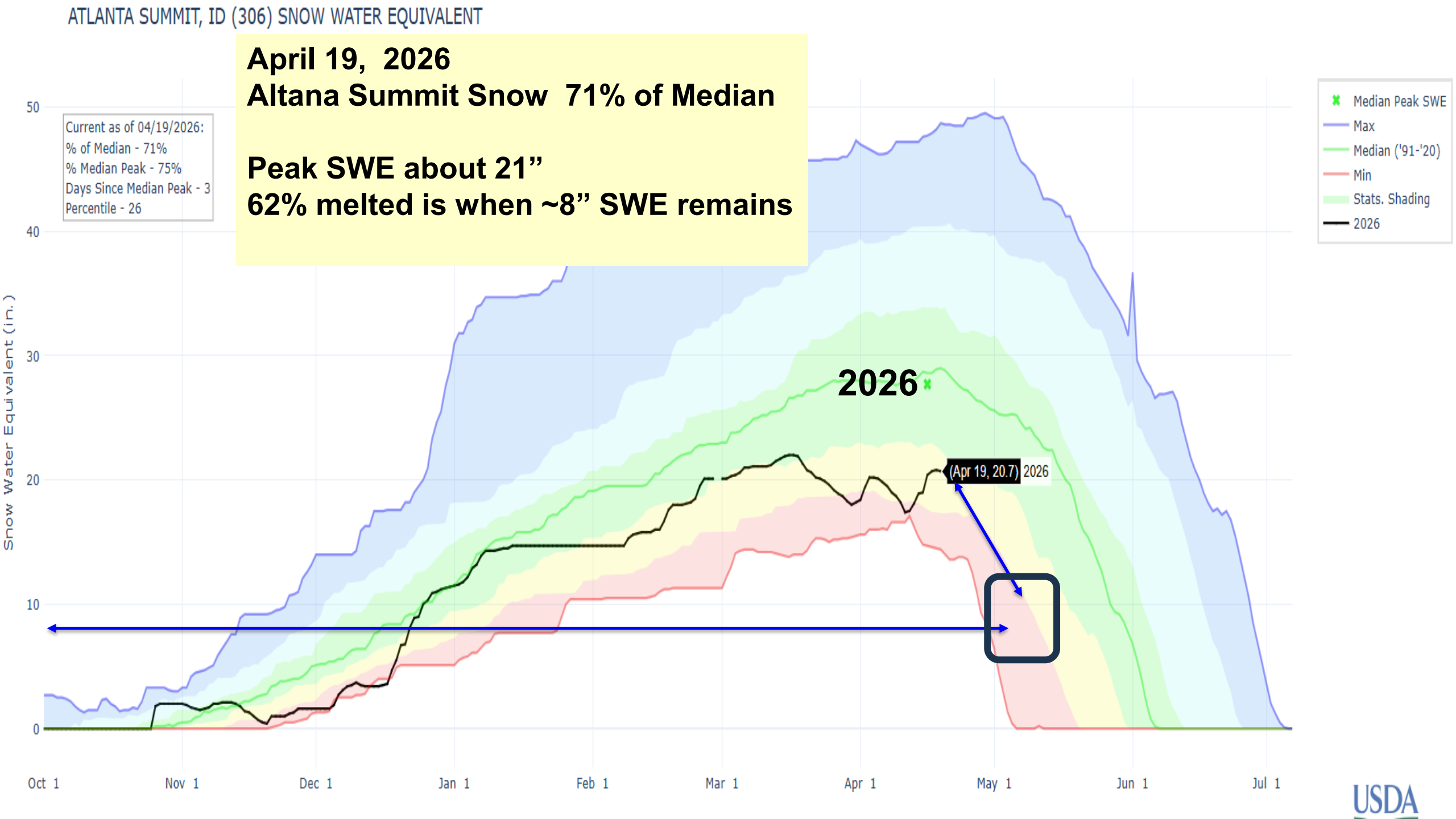
2026 Atlanta Sumit Peak SWE about 21" which indicates snowmelt peak flow occurs when about 62% melted, or about 8" of SWE remains.

Summary by max SWE magnitude

Max SWE Category	Max SWE Magnitude (inches)	Number of Years in Analysis	**Average percent melted at time of peak streamflow**
Below average	<23	8	**62**
Average	22 – 38	17	**43**
Above average	>37	8	**22**

Note - this analysis uses all years available and did not eliminate potential non-snowmelt peaks, however, elimination of non-snowmelt peaks did not change the average percent melted

The average percent melted for the full 33-year period of record is 45% melted.


ATLANTA SUMMIT, ID (306) SNOW WATER EQUIVALENT
April 19, 2026
Altana Summit Snow 71% of Median
Peak SWE about 21”
62% melted is when ~8” SWE remains
Current as of 04/19/2026:
% of Median - 71%
% Median Peak - 75%
Days Since Median Peak - 3
Percentile - 26
Median Peak SWE
Max
Median ('91-'20)
Min
Stats. Shading
2026
Snow Water Equivalent (in.)
50
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30
20
10
0
2026
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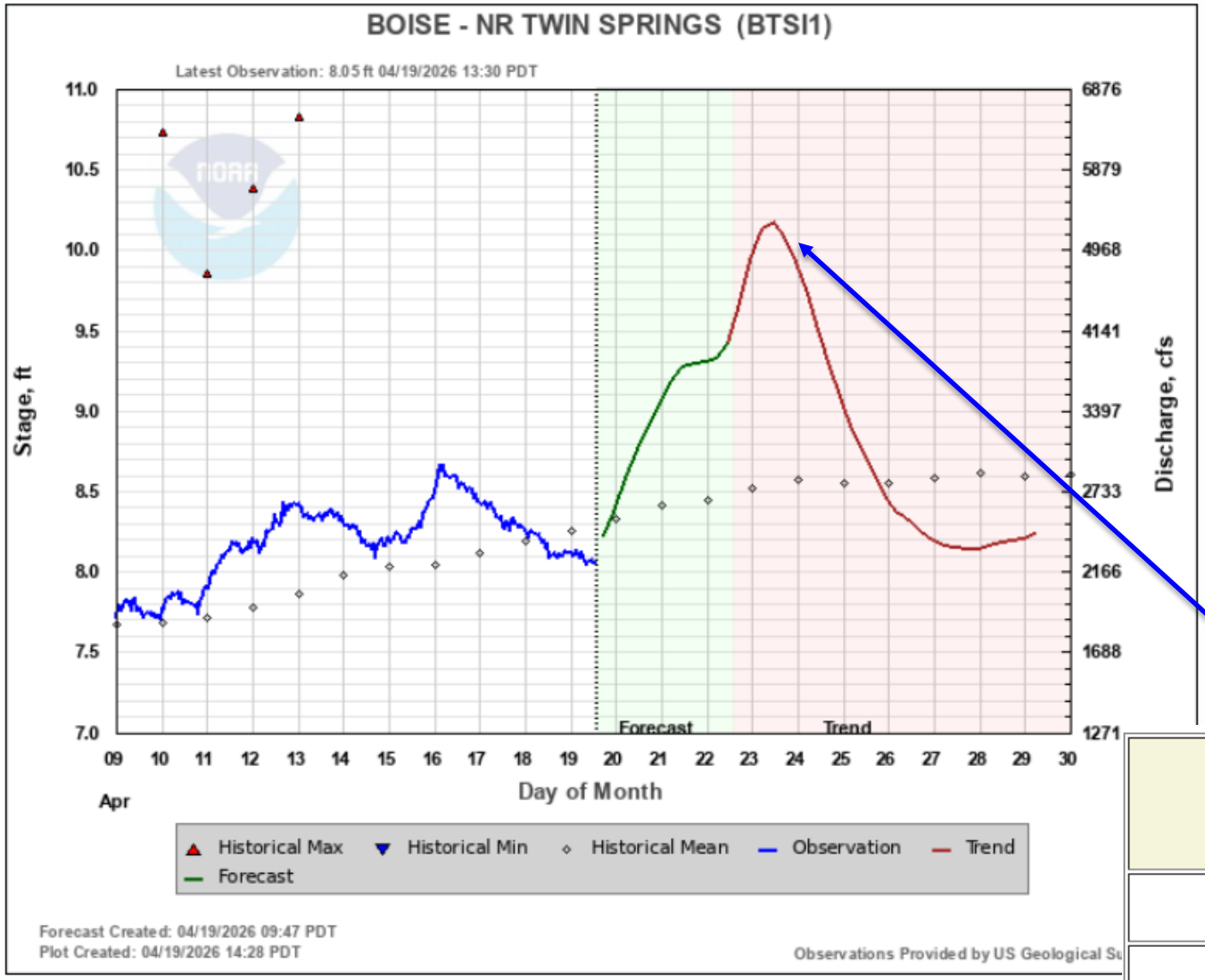
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
USDA



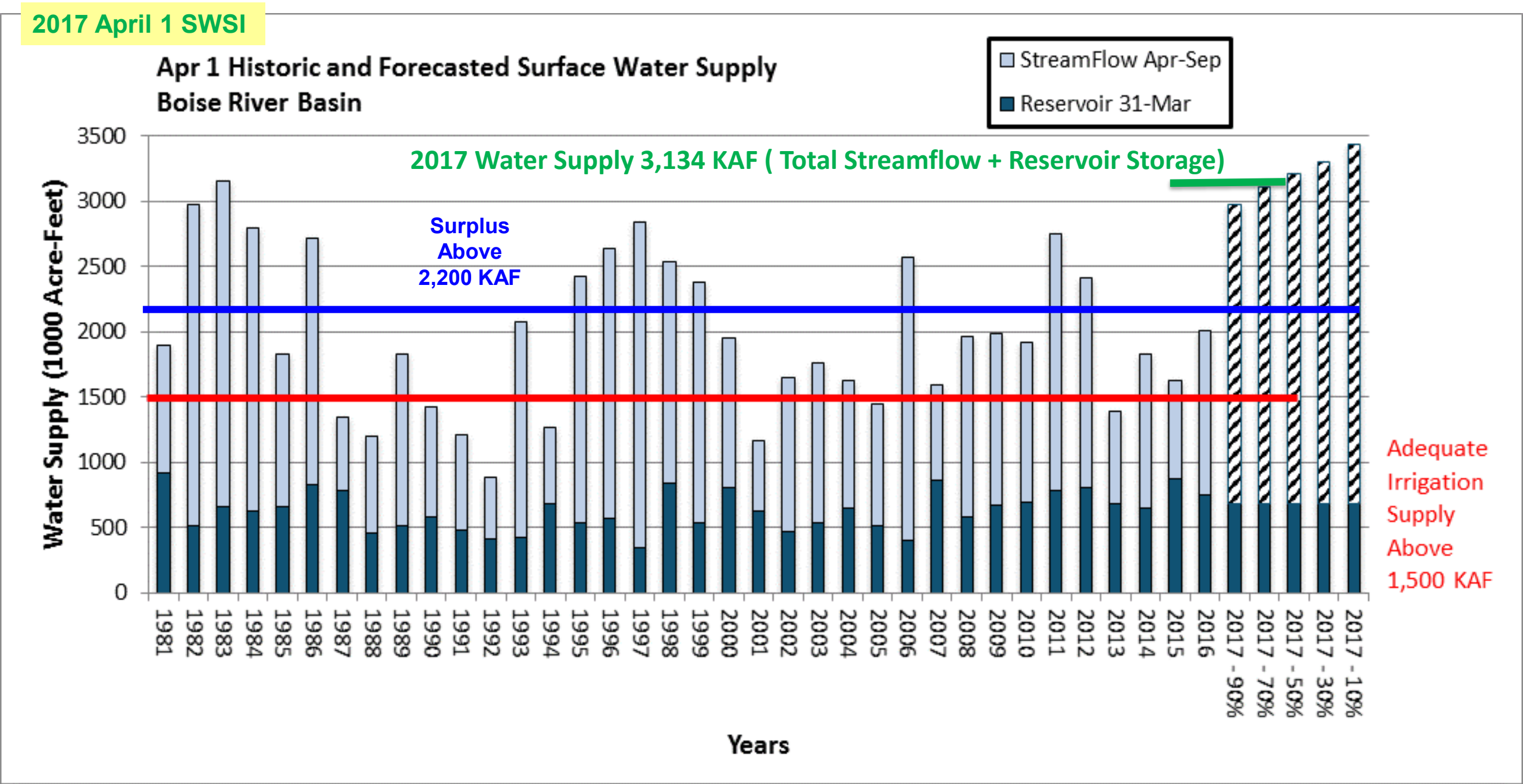
NOAA Northwest River Forecast Center

Peak Flow Forecasts

BOISE--NR TWIN SPRINGS (BTSI1)
Forecasts for Water Year 2026
Ensemble Date: 2026-04-19
Forecast Period: April 19 to August 1

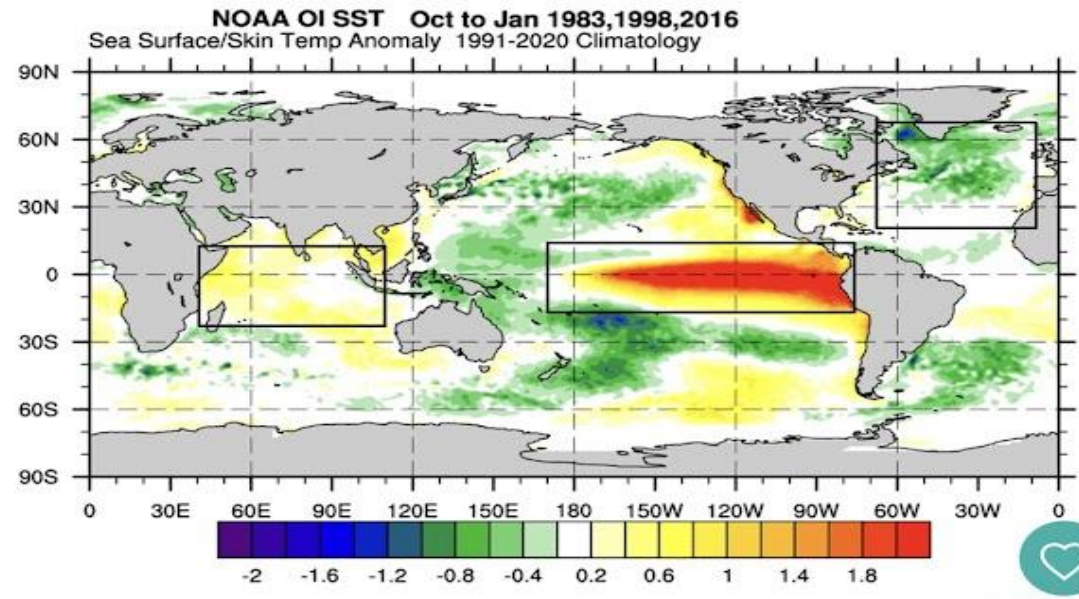
Exceedence Probability	Stage feet	Discharge CFS	Probable Date of Peak
95 %	10.17	5272	2026-04-23
90 %	10.17	5272	2026-04-23
70 %	10.17	5272	2026-04-23
50 %	10.17	5272	2026-04-23
30 %	10.17	5272	2026-04-23
10 %	10.22	5360	2026-05-03
05 %	10.61	6090	2026-05-25

Figure 2. Surface Water Supply Index with Shortage and Surplus Thresholds.



El Niño events happen every few years. But Super events tend to occur once per decade or less. The last three such events were in 2015/16, 1997/98, and 1982/83.

Below is the combined analysis image of the last 3 Super El Niño events, showing ocean temperature anomalies. You can see a strong warm anomaly in the ENSO region in the Pacific. But also note the cooler North Atlantic and another anomaly in the Indian Ocean.



March 9 Streamflow Forecasts for Apr-Sep as % of Avg