A June Atmospheric River June 5, 2024

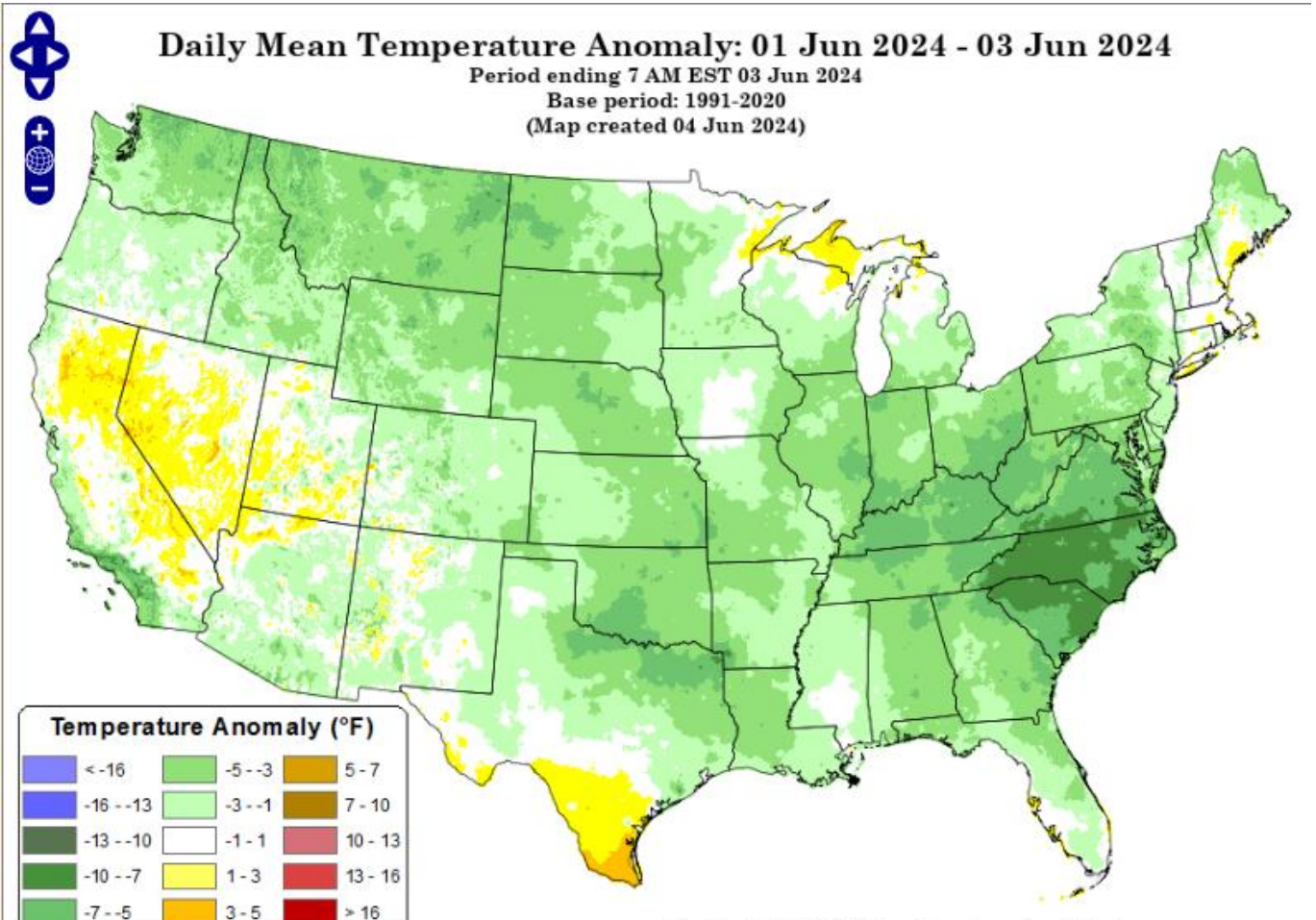
A winter Atmospheric River in June ! What an event it was that added much needed moisture to many Idaho rivers. Following is a statewide summary about the impacts of this early June Atmospheric River Event. This rain on snow event increased streamflow in many rivers across the state that will push recession flows out a bit.

Combining daily rainfall and snowmelt resulted in 2.5 to 3.0” of Total Runoff Available at a few SNOTEL sites. The cool May temps delayed snowmelt allowing snow to remain in higher elevations that provided a runoff boost with the falling rain.

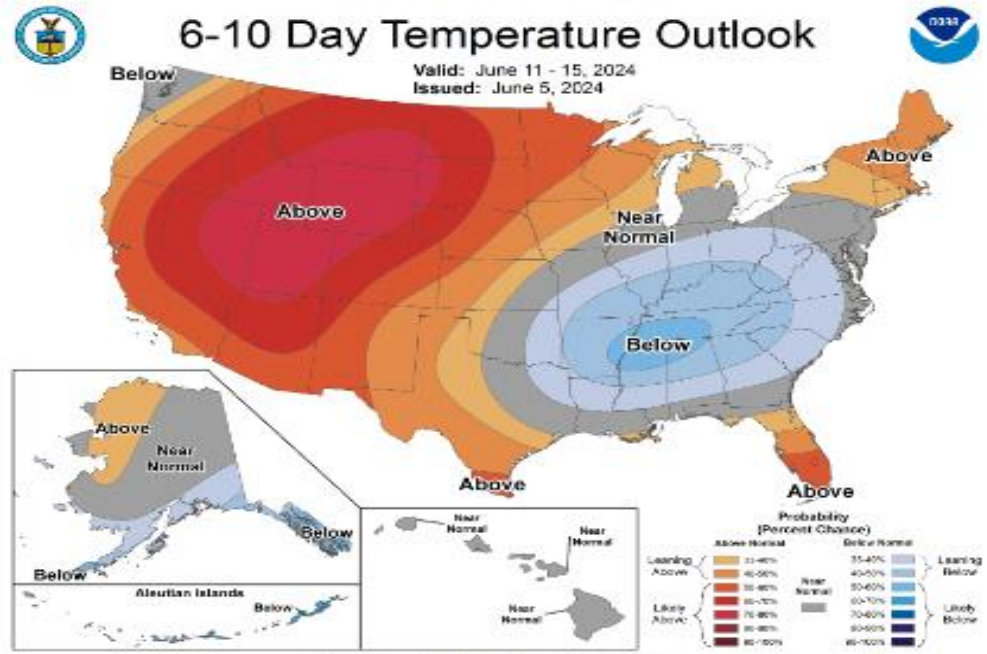
What a storm it was - who do you thank ?
Those benefiting include fish, wildlife, river runners, salmon flows, hydropower production and more. The streamflow boost created another flow increase that will keep recession flows higher longer. However, some basins missed the positive impacts from this event. See the following streamflow hydrographs to see which rivers benefited while others continued with their downward recession trend.

Benefits include assisting with final fill of some reservoirs, delayed irrigation water use that may even result in better reservoir carryover storage for next year. Impacts include challenges for those on rapid rising rivers especially for those adventuring on the MF Salmon River and experiencing the New Velvet Rapid up close.

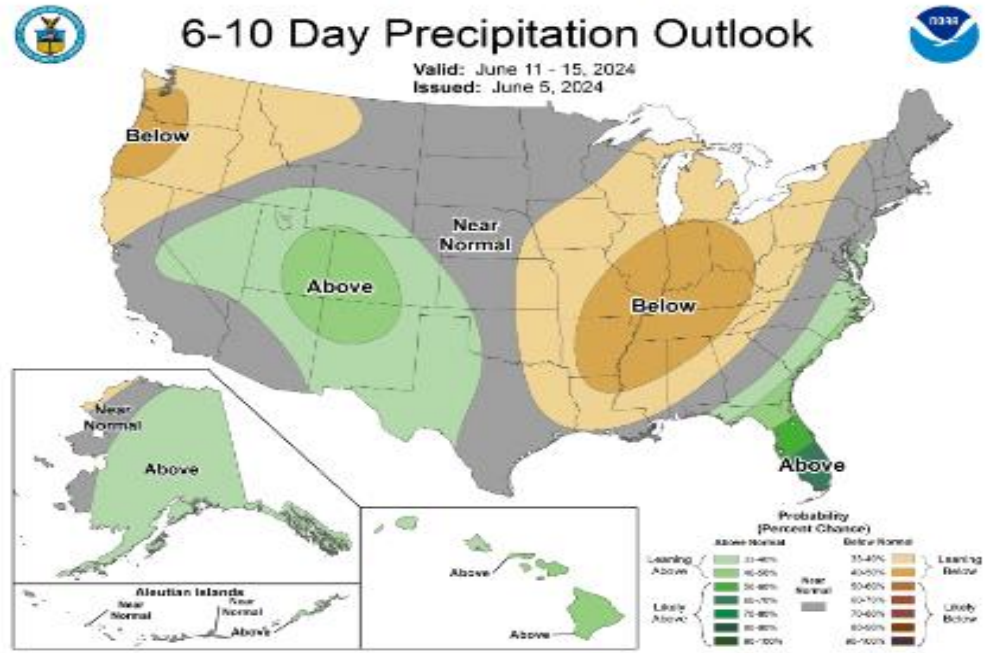
Below normal temps Jun 1-3 will flip in next few days with arrival of near record high temps that will push the remaining snow out of the mountains to generate another increase or sustain flows.



Temperature Probability



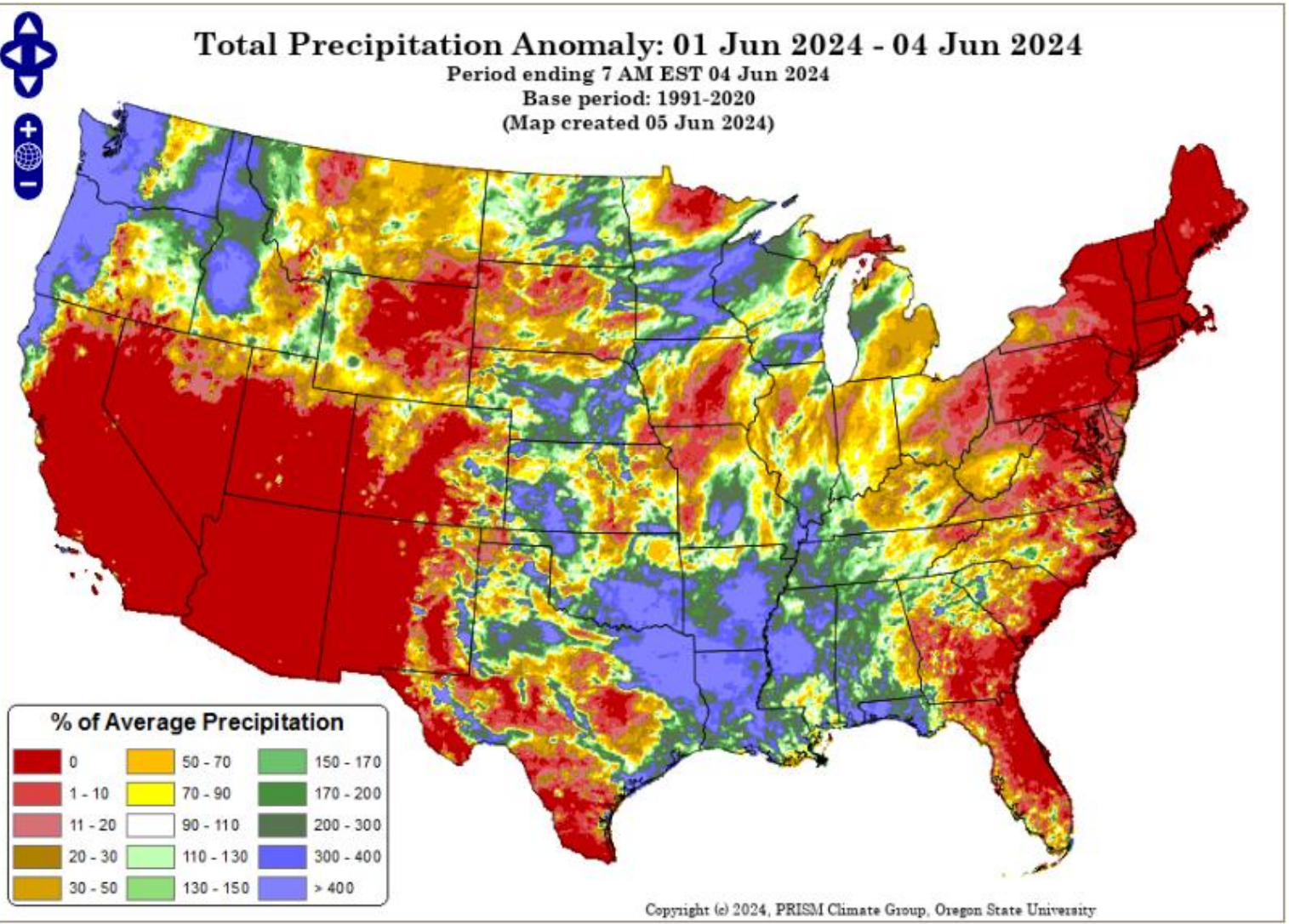
Precipitation Probability

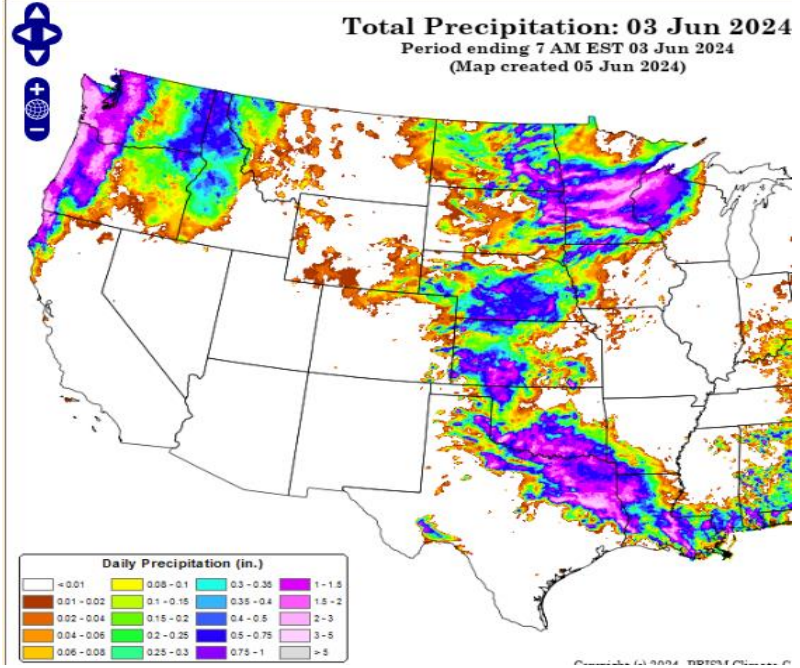


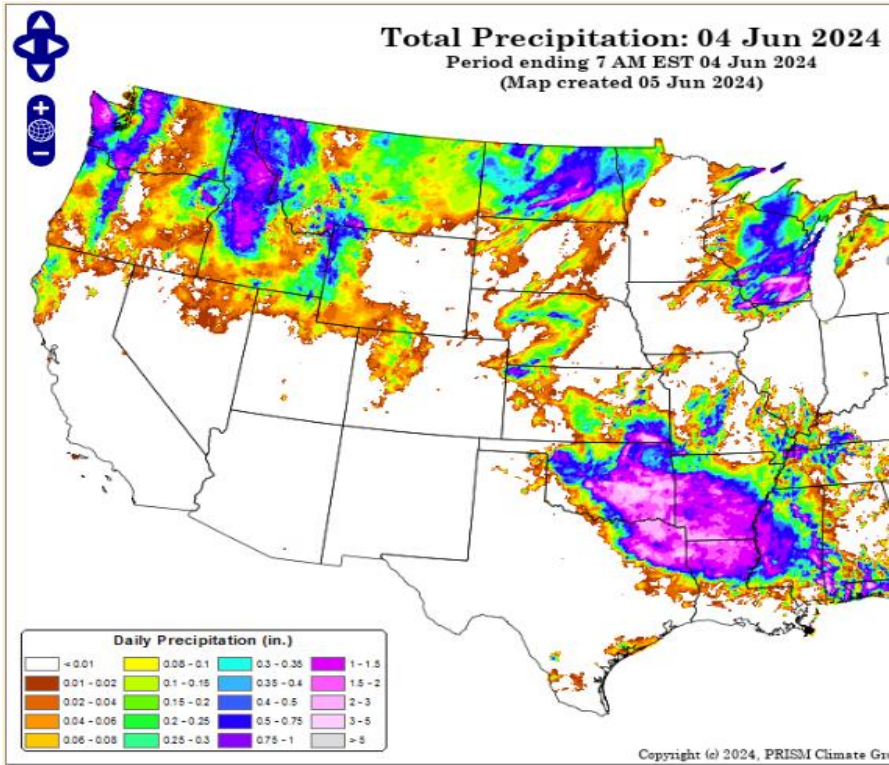
Map of Total Precipitation that fell Jun 1, 2, 3 and Jun 4 thru 7AM EST.

Daily Totals thru 7AM EST on June 3 and Jun 4.

24-hour amounts ending at 7AM EST each morning.







Idaho SNOTEL Precipitation Summary Update Report

Based on Mountain Data from NRCS SNOTEL Sites

Provisional data, subject to revision

Data based on the first reading of the day (typically 00:00) for Tuesday, June 04, 2024

Basin Site Name	Elev (ft)	Month to Date Precipitation (in)	Median Monthly Total (in)	Pct of Monthly Total	Water Year to Date Precipitation (in)	Median Annual Total (in)	Pct of Annual Total
NORTHERN PANHANDLE REGION							
Basin Index (%)				57			77
COEUR D'ALENE-ST. JOE RIVER BASIN							
Basin Index (%)				40			69
CLEARWATER BASIN							
Basin Index (%)				49			73
SALMON BASIN							
Basin Index (%)				38			76
WEISER BASIN							
Basin Index (%)				66			80
PAYETTE BASIN							
Basin Index (%)				76			81
BOISE BASIN							
Basin Index (%)				100			85
BIG WOOD BASIN							
Basin Index (%)				29			75
LITTLE WOOD BASIN							
Basin Index (%)				5			71
BIG LOST BASIN							
Basin Index (%)				13			73
LITTLE LOST							
Basin Index (%)				2			69

Here's another way to look at rainfall amounts from this event. The Boise Basin received 100% of its Monthly Total for June the first 3 days of the month.

Payette received 76% of it's Pct of Monthly Total while the Little Wood and Little Lost received 5% or less.

Key Point – for rain on snow events like this, need to combined daily snow melt and precipitation amounts.

Daily Snowmelt Amount + Daily Precip Amount = Total Runoff Available

Reporting Frequency: Daily; Date Range: 2024-05-31 to 2024-

(As of: Tue Jun 04 18:36:00 GMT-08:00 2024)
Provisional data, subject to revision

Date	Station Name	Elevation (ft)	Snow Water Equivalent (in) Start of Day Values	Change In Snow Water Equivalent (in)	Precipitation Accumulation (in) Start of Day Values	Change In Precipitation Accumulation (in)	
2024-06-04	Bear Mountain	5400	23.2	-0.5	70.0	2.4	2.9
2024-06-04	Lost Lake	6110	26.1	-0.2	59.0	2.0	2.2
2024-06-04	Crater Meadows	5960	16.9	-1.0	54.7	1.9	2.9
2024-06-04	Hidden Lake	5040	3.9	-1.3	59.6	1.7	3.0
2024-06-04	Hemlock Butte	5810	0.7	-0.3	37.9	1.6	1.9
2024-06-04	Schweitzer Basin	6090	19.1	-1.0	39.4	1.6	2.6
2024-06-04	Cool Creek	6280	25.2	-1.3	49.0	1.5	2.8
2024-06-04	Hoodoo Basin	6050	17.9	-0.6	42.5	1.5	2.1
2024-06-04	Touchet	5530	0.0	0.0	43.1	1.4	1.4
2024-06-04	Twin Lakes	6400	7.4	-0.9	47.3	1.4	2.3
2024-06-04	Hawkins Lake	6450	1.5	-0.3	37.9	1.3	
2024-06-04	Shanghi Summit	4600	0.0	0.0	39.5	1.3	
2024-06-04	Elk Butte	5690	0.1	0.1	37.9	1.2	
2024-06-04	Lookout	5190	0.1	0.1	31.5	1.2	

Looking only precipitation totals provides only part of the answer for water available that fed the rivers during this event.

Those below normal May temps delayed snowmelt and allowed snow to remain in the higher elevations, ripe and ready to melt in early June.

This table of northern Idaho SNOTEL sites is sorted by the greatest Daily Precipitation amounts. Adding the Daily Snowmelt Amount (SWE change) to Daily Precip Amount shows Total Runoff Available from each site for the day. These precipitation amounts fell on June 3.

Below is the 5-Day Delta Report for Bear Mountain that shows the daily snowmelt and total precipitation amount 3.3".

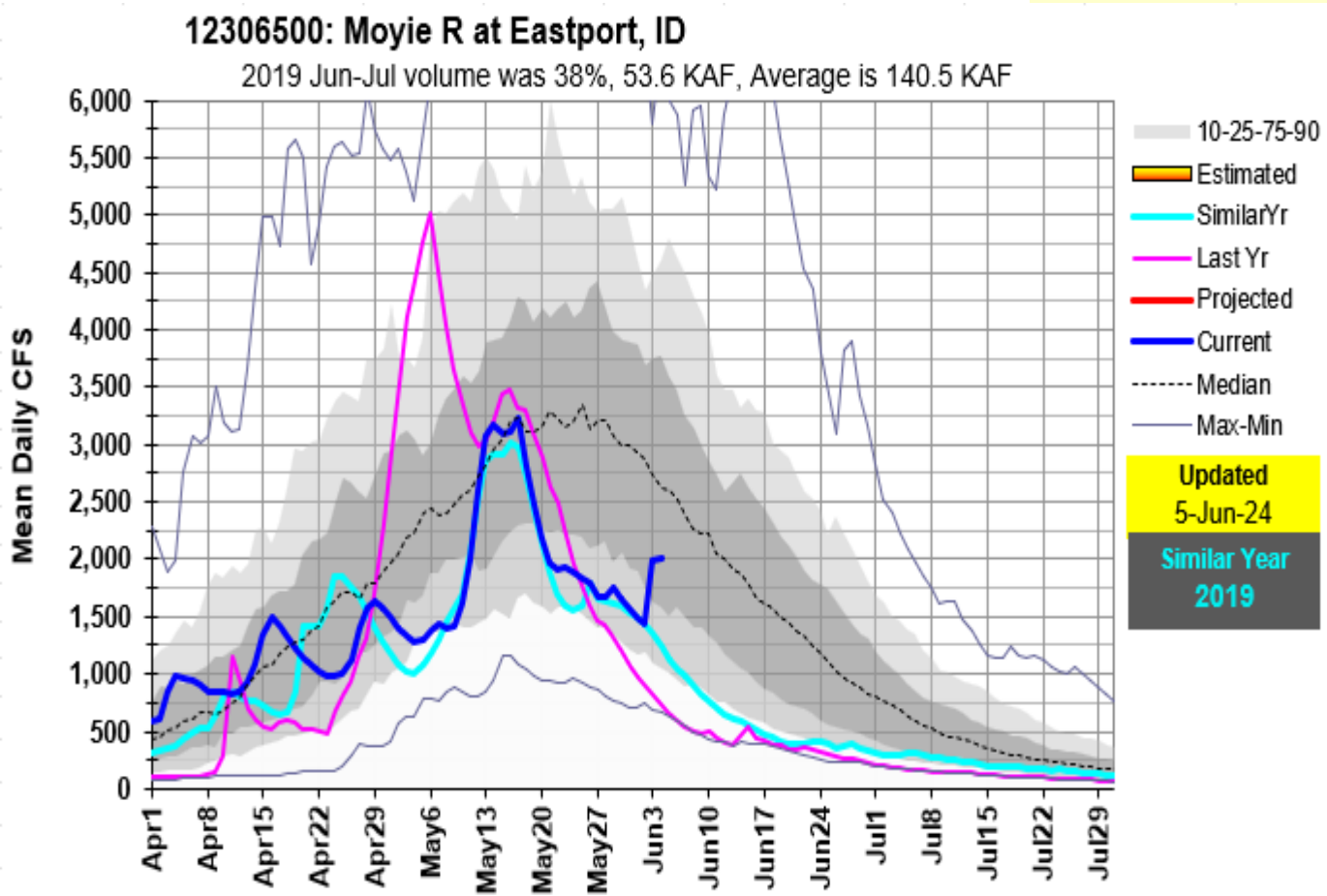
Reporting Frequency: Daily; Date Range: 2024-05-31 to 2024-06-04

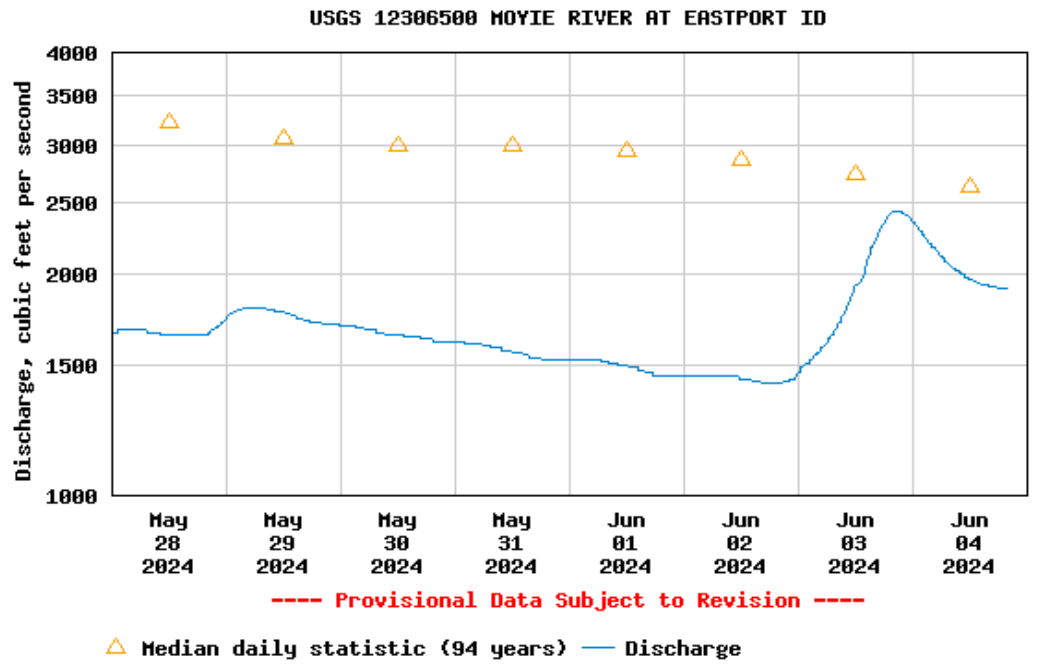
(As of: Tue Jun 04 18:39:35 GMT-08:00 2024)
Provisional data, subject to revision

Date	Station Name	Elevation (ft)	Snow Water Equivalent (in) Start of Day Values	Change In Snow Water Equivalent (in)	Precipitation Accumulation (in) Start of Day Values	Change In Precipitation Accumulation (in)
2024-05-31	Bear Mountain	5400	26.6	-1.0	66.7	0.0
2024-06-01	Bear Mountain	5400	25.5	-1.1	66.7	0.0
2024-06-02	Bear Mountain	5400	24.5	-1.0	66.7	0.0
2024-06-03	Bear Mountain	5400	23.7	-0.8	67.6	0.9
2024-06-04	Bear Mountain	5400	23.2	-0.5	70.0	2.4

Now let's look at the rivers to see what happened starting in northern Idaho.

The Moyie was flowing low, in the 25%tile before the event. The event bumped flows up and will push recession falls out a bit. This is great news for many northern Idaho rivers including Priest River and more.





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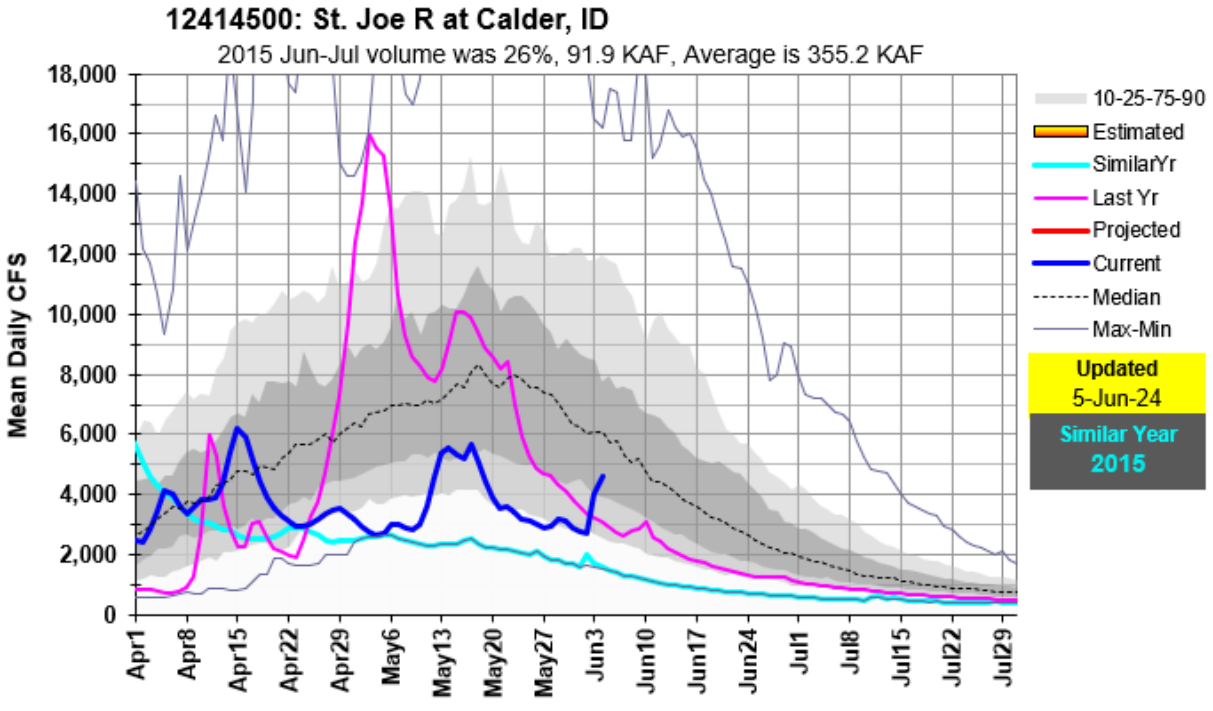
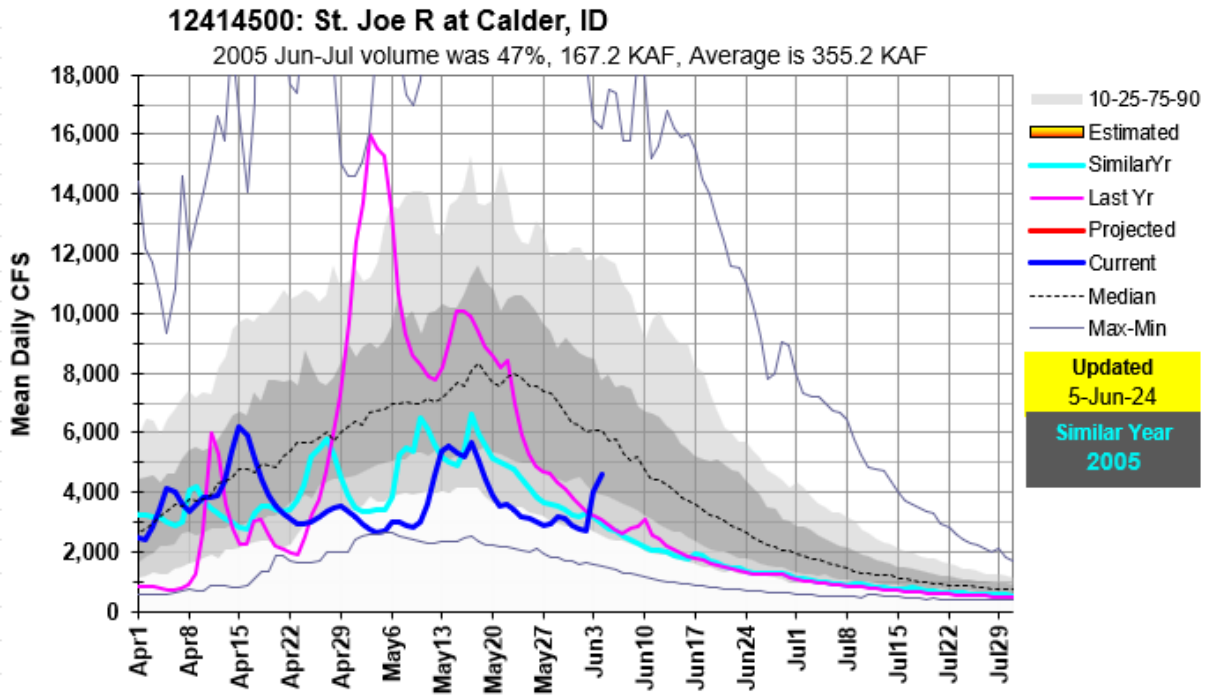
Daily discharge, cubic feet per second -- statistics for Jun 4 based on 94 water years of record more

Min (1992)	25th percen-tile	Most Recent Instantaneous Value Jun 4	Median	Mean	75th percen-tile	Max (1974)
667	1590	1910	2630	2780	3770	6470

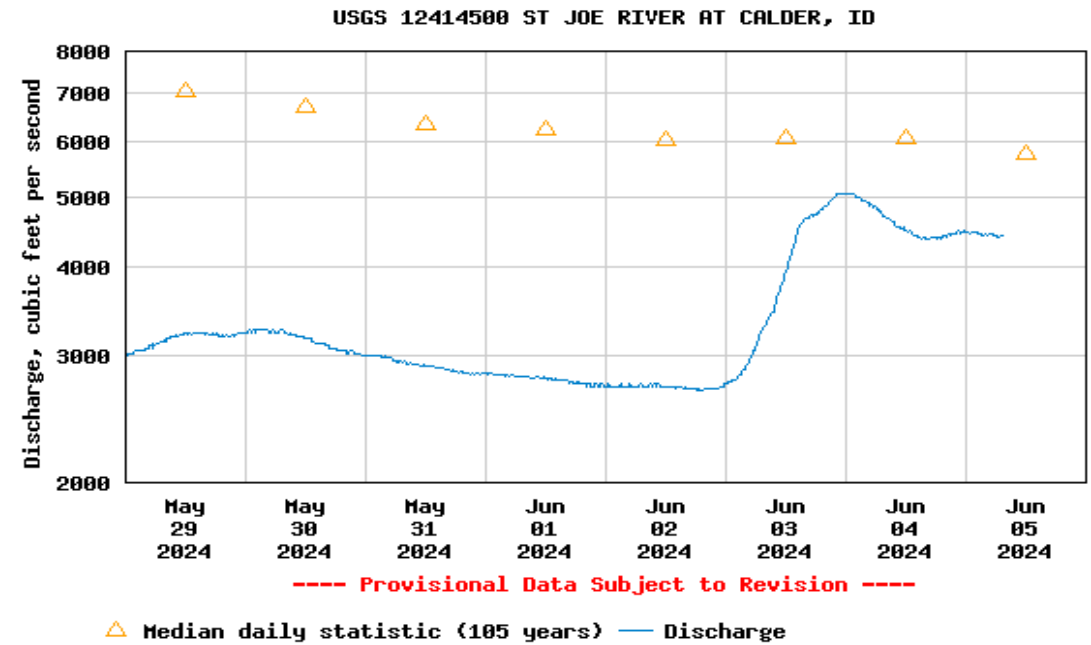
Similar Year are selected by Closest Pattern that matches this year's runoff.

(yes, it's a cool spreadsheet that does this analysis)





Unfortunately, one of Idaho's wetter and rainier basin, the CDA, didn't receive as much rain. The St Joe and Spokane Rivers were flowing at the 25%tile and soon will be there again.



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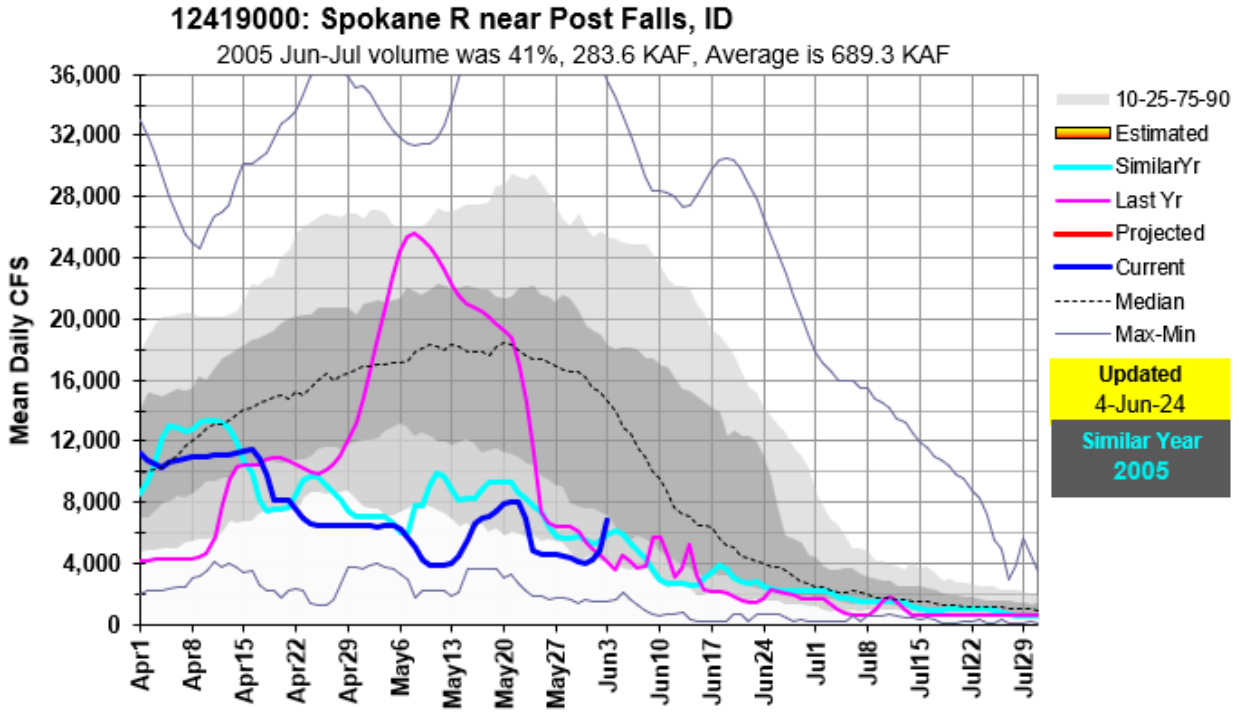
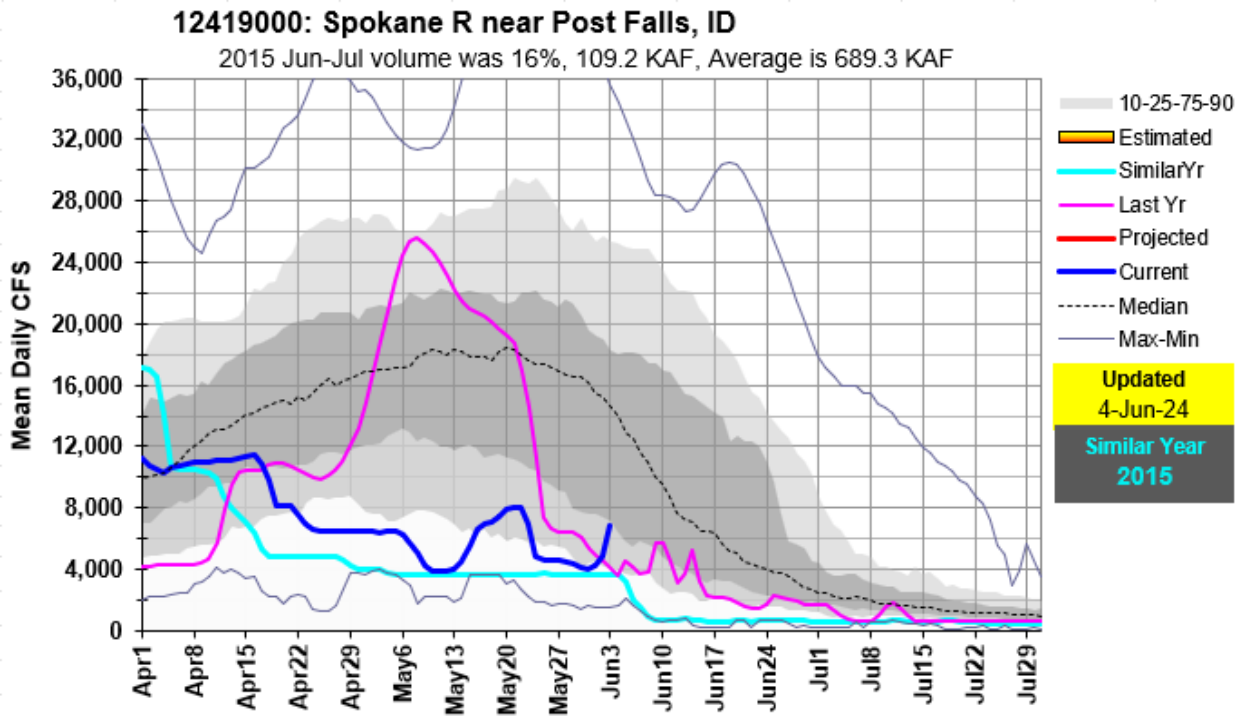
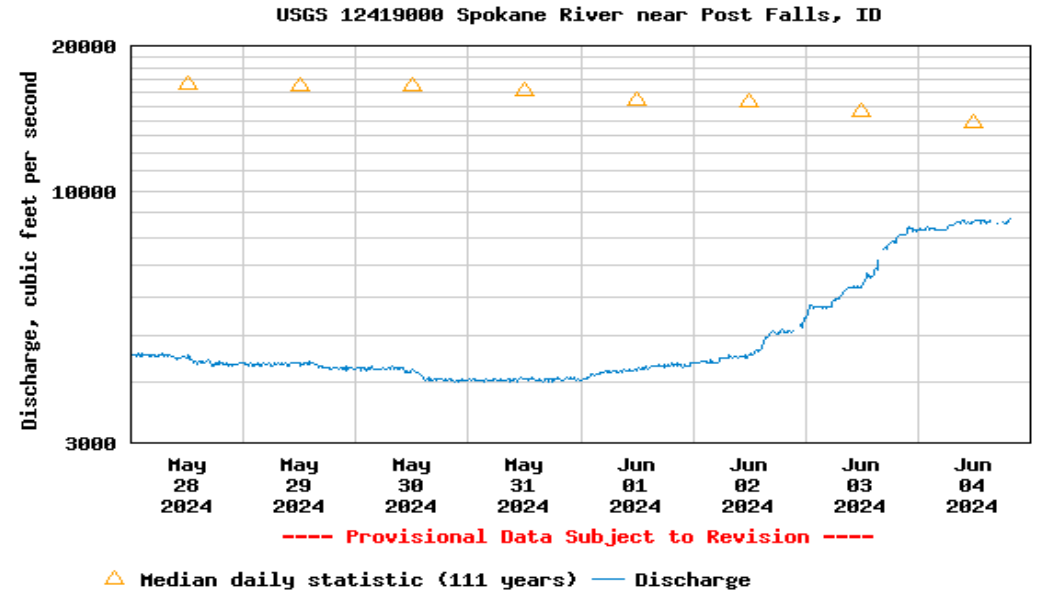
Daily discharge, cubic feet per second -- statistics for Jun 5 based on 105 water years of record more

Min (2015)	25th percen-tile	Most Recent Instantaneous Value Jun 5	Median	Mean	75th percen-tile	Max (1974)
1470	3870	4430	5760	6290	7930	17500





Current flow in Spokane River is about the same as 2005. Who remembers 2015 and how low the rivers got. Hopefully, rivers won't go that low, but the dry summer season is upon us.



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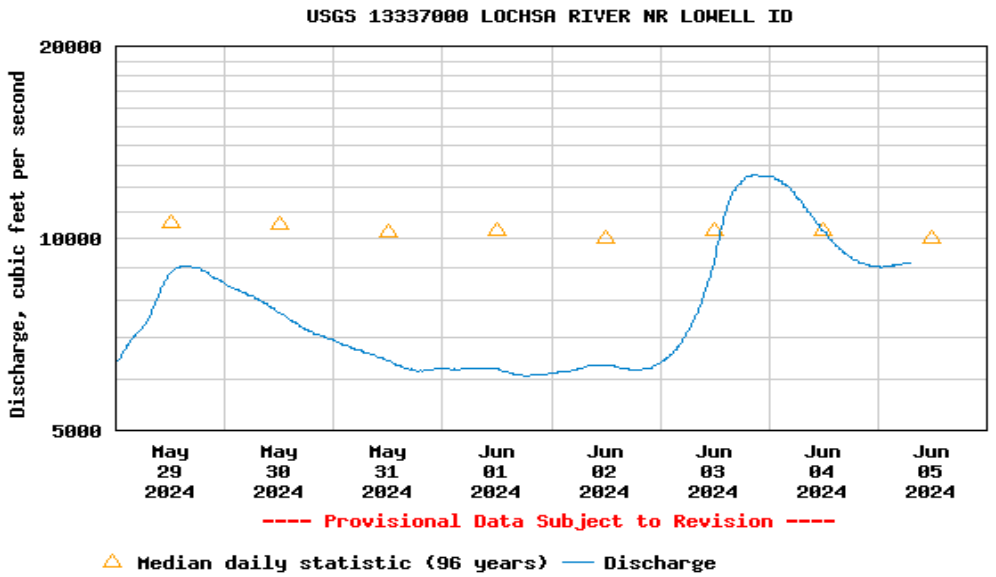
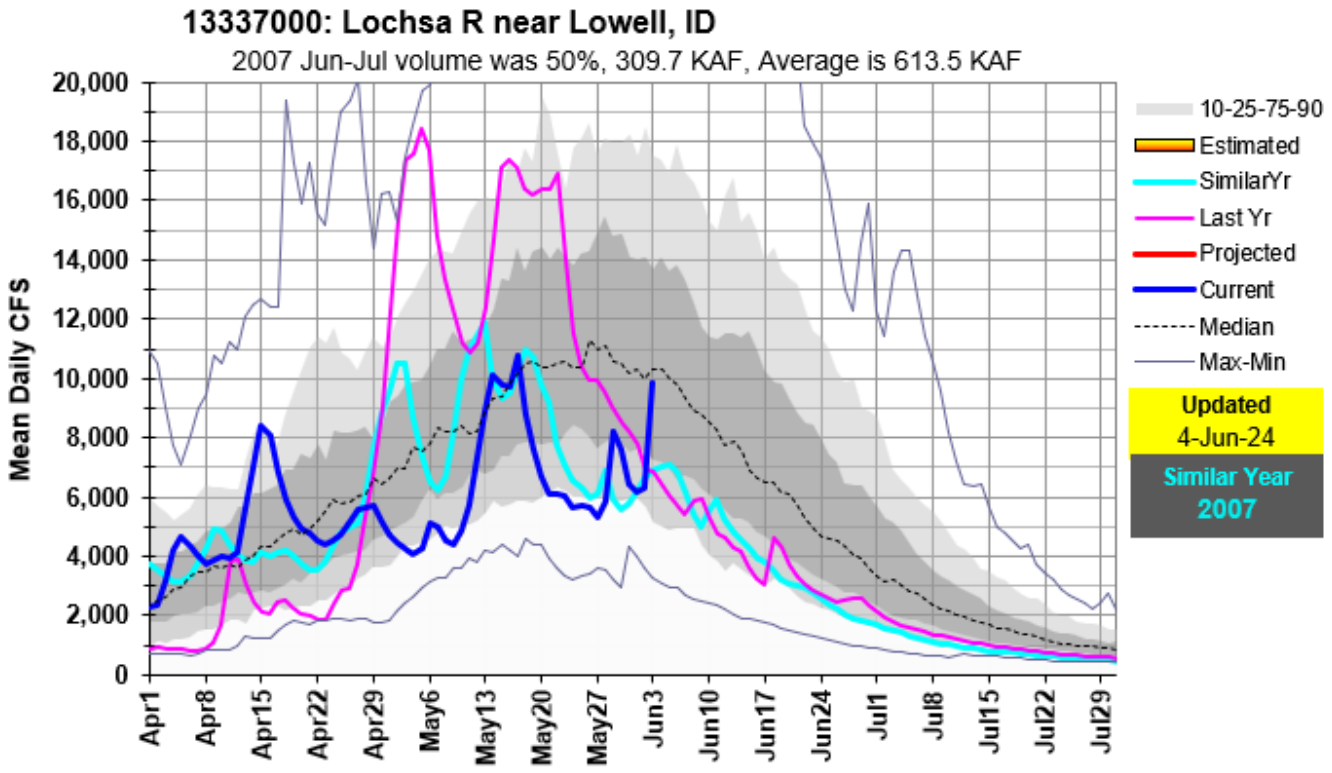
Daily discharge, cubic feet per second -- statistics for Jun 4 based on 111 water years of record more

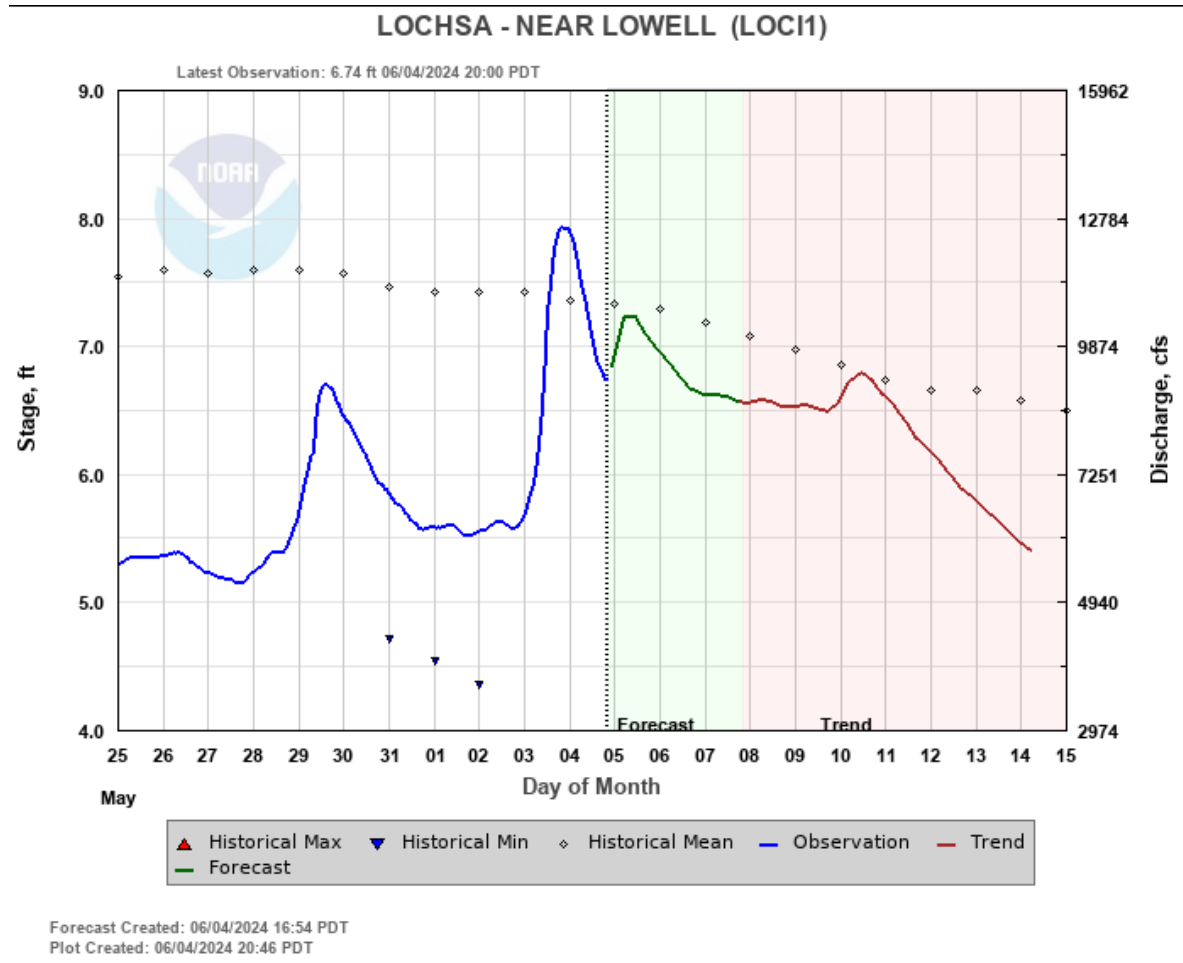
Min (1926)	25th percen-tile	Most Recent Instantaneous Value Jun 4	Mean	Median	75th percen-tile	Max (1917)
1600	6430	8760	13700	13900	18000	34400

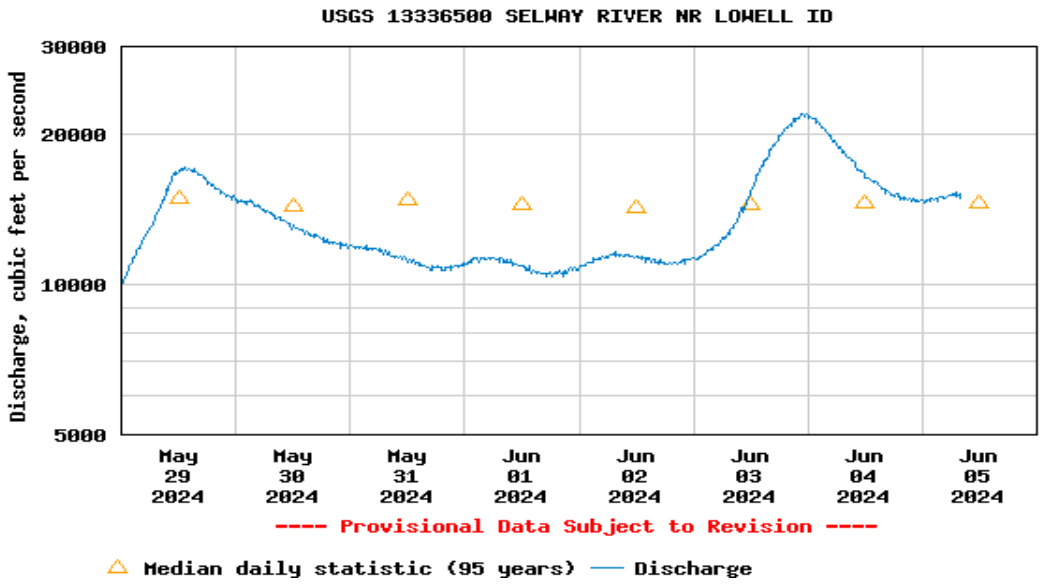
The rains came to the Lochsa. The river peaked and NWS Forecast & trend shows slight increase from warm temps and the river plateauing as hot temps bleed the rest of the snow from the pack before full recession begins.

2007 was a similar snow year and illustrates the benefits of this moisture and it will keep flows higher, longer.



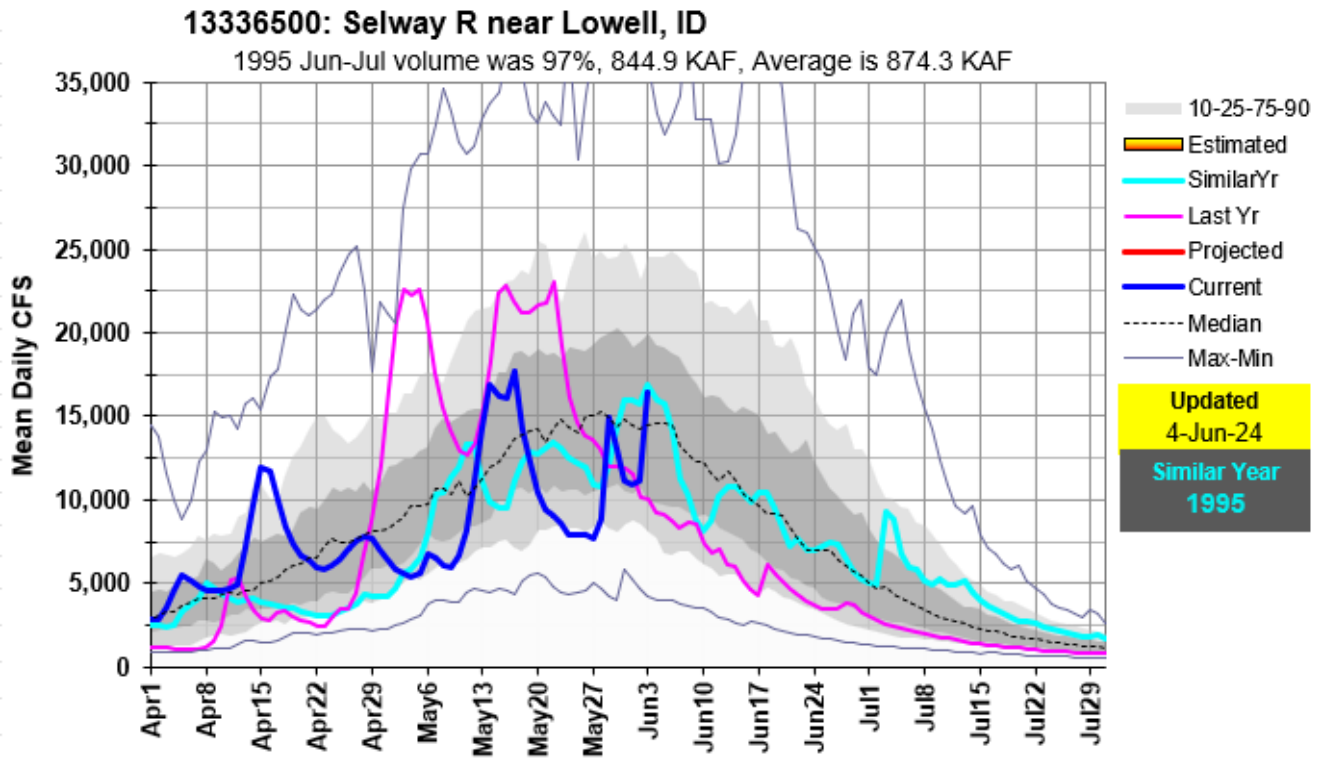


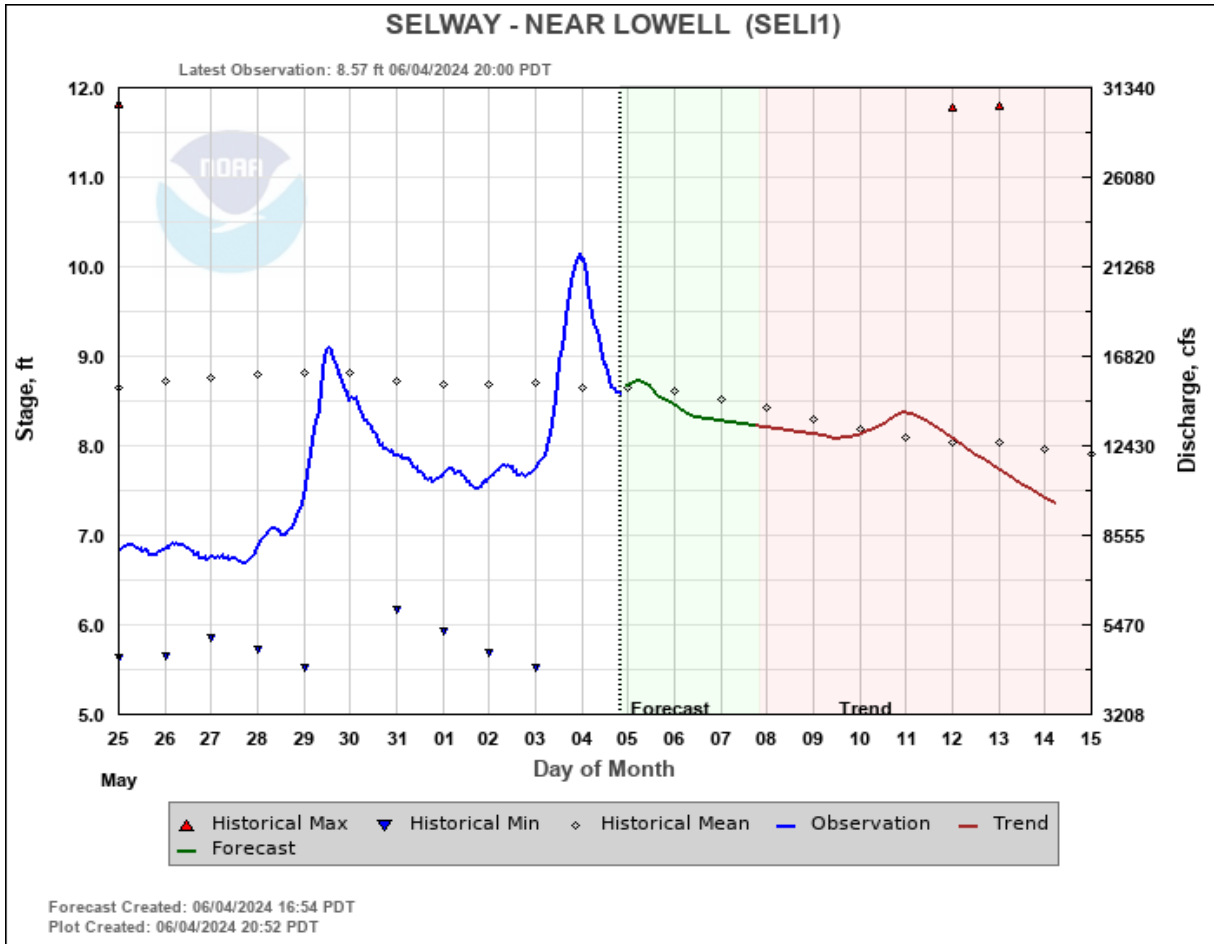


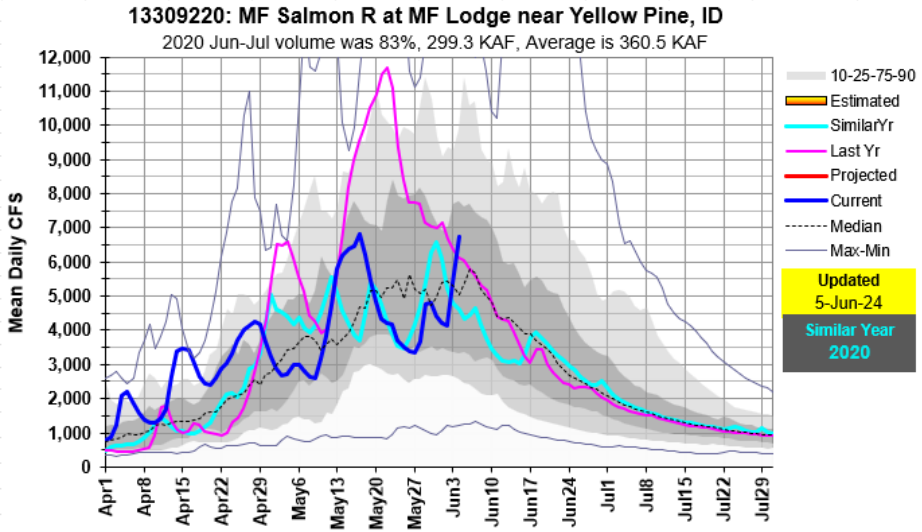


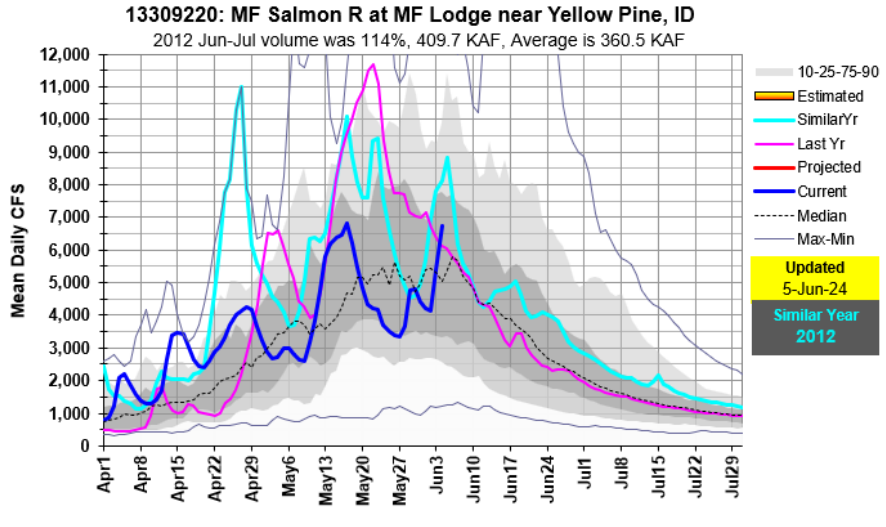
The Selway peaked at 21,000 cfs, not at 26,000 cfs like one NWS run had it. This shows the challenge of predicting runoff from rain on snow events when precip is several days out, varying rainfall intensities & snowmelt rates, and rain falling on snow verse melted out areas in the basin.

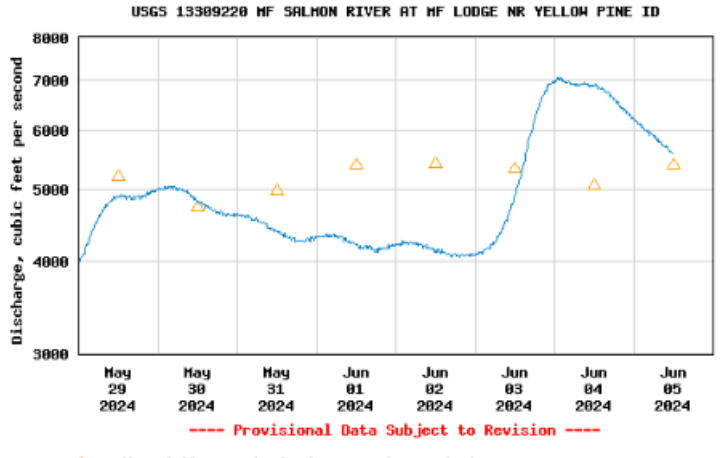
1995 must have been a wet summer with a high recession flow like that. We'll pick a similar year another soon











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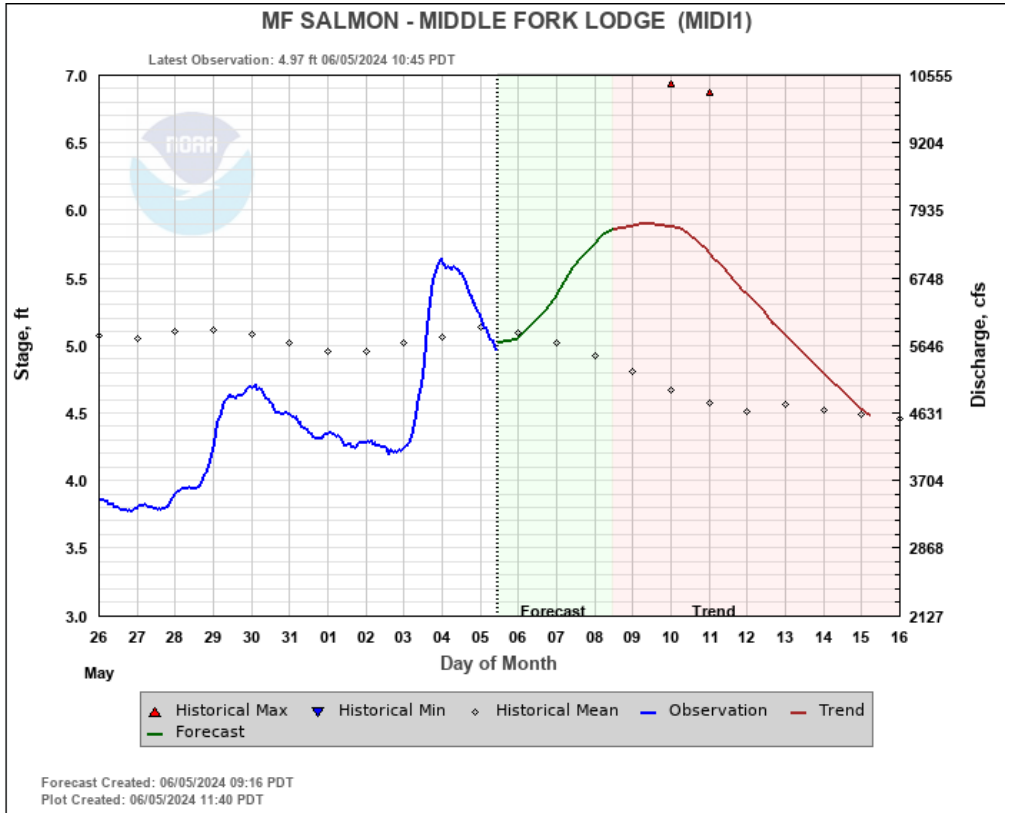


MF peaked at 7000 cfs, not 6+ ft like some runs showed. NWS Forecast & Trend shows another increase from record high temps pushing the remaining snow out. If daytime highs were closer to normal and not 20F degrees above normal, we would probably see the typically downward recession as the remaining snow gradually melts. Time will tell if this next increase will exceed the previous peak.

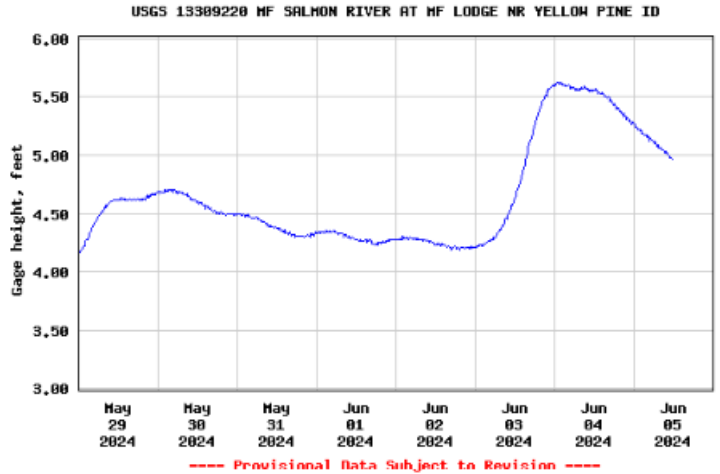
2020 & 2012 are years to watch for now until we see when full recession starts.

Daily discharge, cubic feet per second -- statistics for Jun 5 based on 34 water years of record more

Min (1977)	25th percen-tile	Median	Most Recent Instantaneous Value Jun 5	Mean	75th percen-tile	Max (2010)
1240	3350	5380	5580	5940	7610	15000

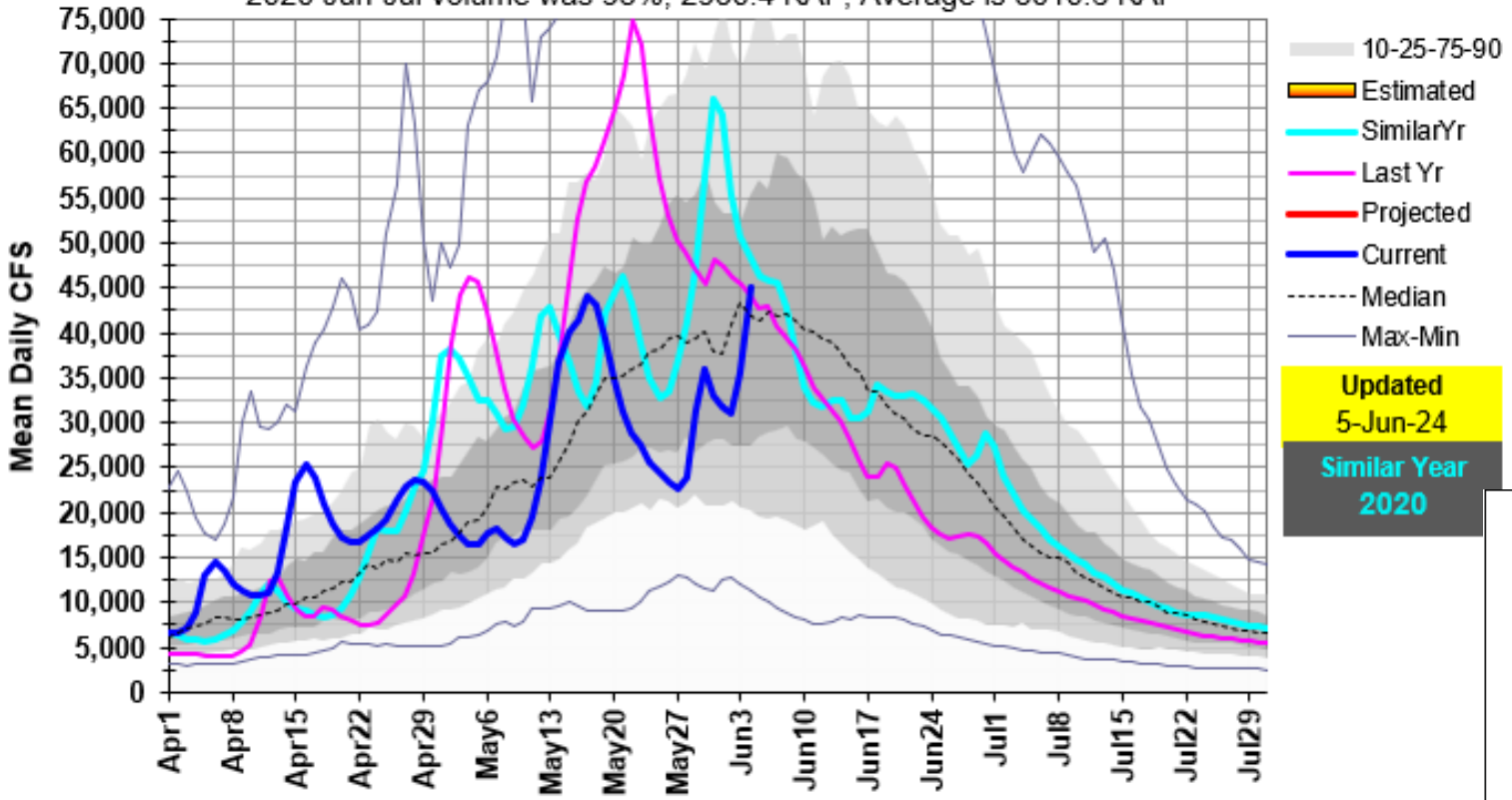
ge height, feet

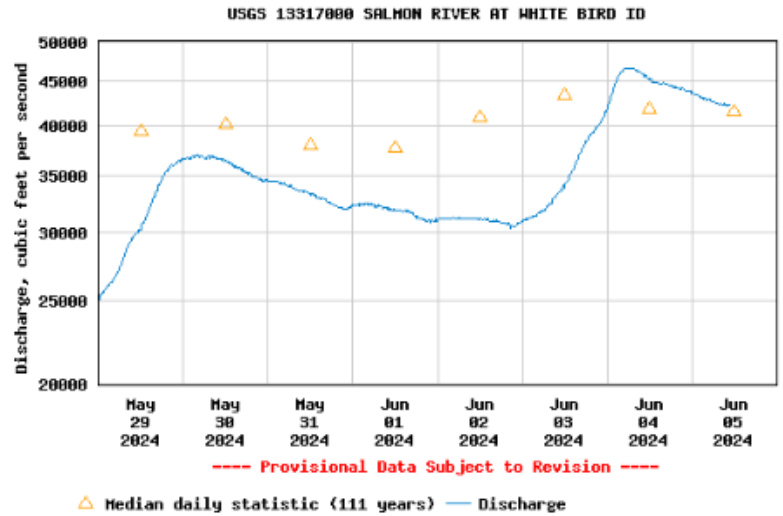
Most recent instantaneous value: 4.97 06-05-2024 11:45 MDT

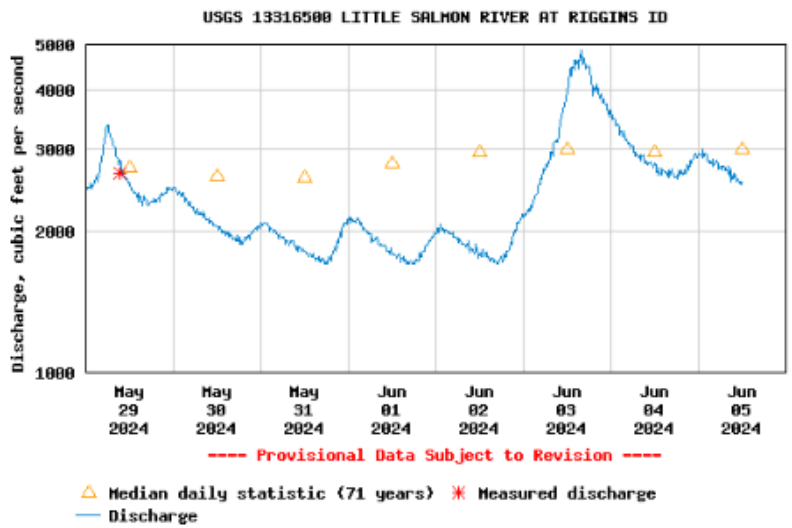


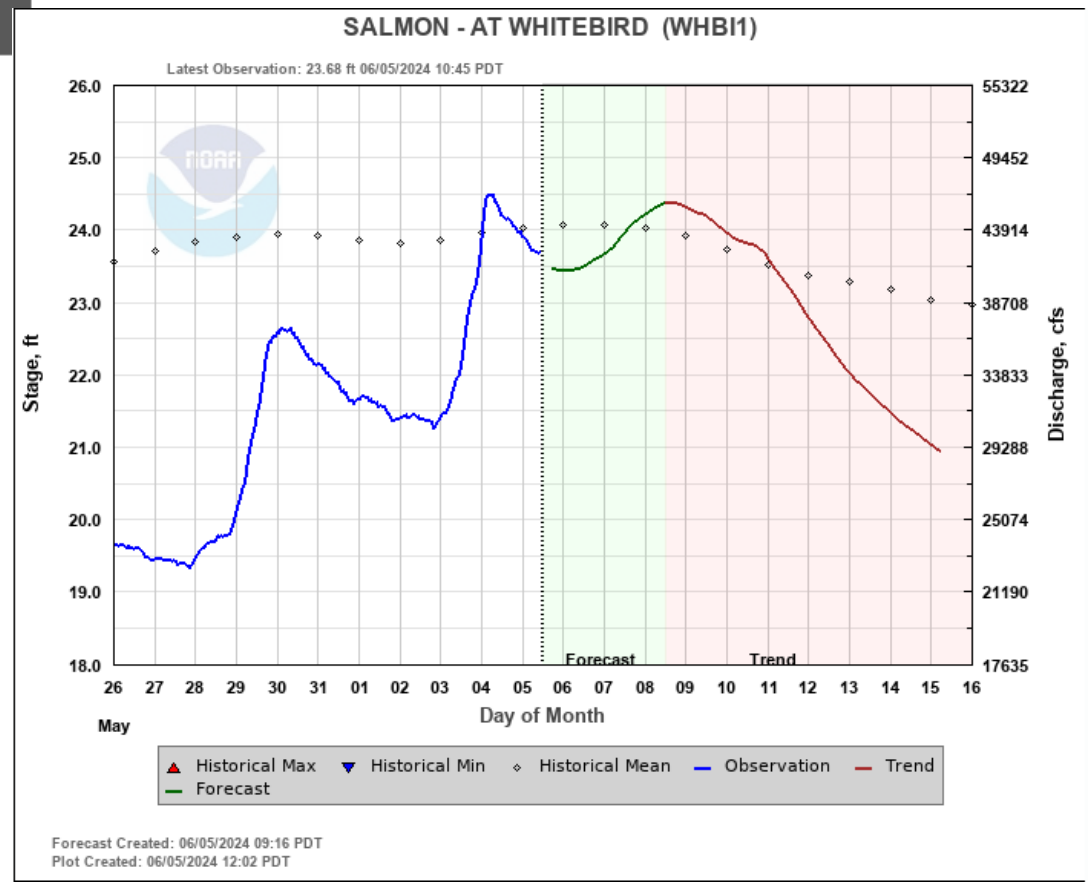
13317000: Salmon R at White Bird, ID

2020 Jun-Jul volume was 98%, 2950.4 KAF, Average is 3010.6 KAF









Moving to central Idaho, let's see where the precip fell and snow was available to melt.

Reporting Frequency: Daily; Date Range: 2024-05-31 to 2024-

(As of: Tue Jun 04 20:18:35 GMT-08:00 2024)
Provisional data, subject to revision

Daily Snowmelt Amount + Daily Precip Amount = Total Runoff Available

Date	Elevation (ft)	Station Name	Snow Water Equivalent (in) Start of Day Values	Change In Snow Water Equivalent (in)	Precipitation Accumulation (in) Start of Day Values	Change In Precipitation Accumulation (in)	
2024-06-04	7770	Trinity Mtn.	6.1	-1.4	37.9	2.1	3.5
2024-06-04	7580	Atlanta Summit	0.0	0.0	33.5	1.7	1.7
2024-06-04	6240	Puhi Flat	0.1	0.1	36.5	1.7	1.7
2024-06-04	6860	Deadwood Summit	12.3	-0.9	42.1	1.5	2.4
2024-06-04	6560	Big Creek Summit	0.9	-1.4	33.6	1.4	2.8
2024-06-04	5400	Cozy Cove	0.0	0.0	25.3	1.4	1.4
2024-06-04	6100	Mores Creek Summit			38.3	1.4	1.4
2024-06-04	7040	Banner Summit	0.2	0.2	32.3	1.3	1.5
2024-06-04	5690	Graham Guard Sta.	0.0	-0.1	24.6	1.2	1.3
2024-06-04	8960	Vienna Mine	8.3	-1.1	34.3	1.1	2.2
2024-06-04	4890	Long Valley	0.0	0.0	19.7	0.9	0.9
2024-06-04	6250	Brundage Reservoir	0.4	0.4	37.7	0.9	1.3
2024-06-04	6540	Secesh Summit			36.5	0.9	
2024-06-04	5350	Bear Basin	0.0	0.0	27.4	0.8	
2024-06-04	6340	Bogus Basin	0.5	0.5	33.5	0.8	
2024-06-03	6250	Brundage Reservoir	0.0	0.0	36.8	0.7	
2024-06-04	4800	Prairie			20.6	0.7	
2024-06-04	5740	Soldier R.S.	0.0	0.0	15.8	0.6	
2024-06-04	8420	Dollarhide Summit	0.2	0.2	21.2	0.6	
2024-06-04	5710	Camas Creek Divide			20.3	0.6	

Same as in northern Idaho, this table of SNOTEL sites is sorted by the greatest Daily Precipitation amounts. Luckily for this analysis, most of the precip fell from midnight to midnight on June 3. For total event precip, need to look over several days.

Adding the Daily Snowmelt Amount (SWE decrease) to Daily Precip Amount provides the Total Runoff Available from these sites. Better check my math.

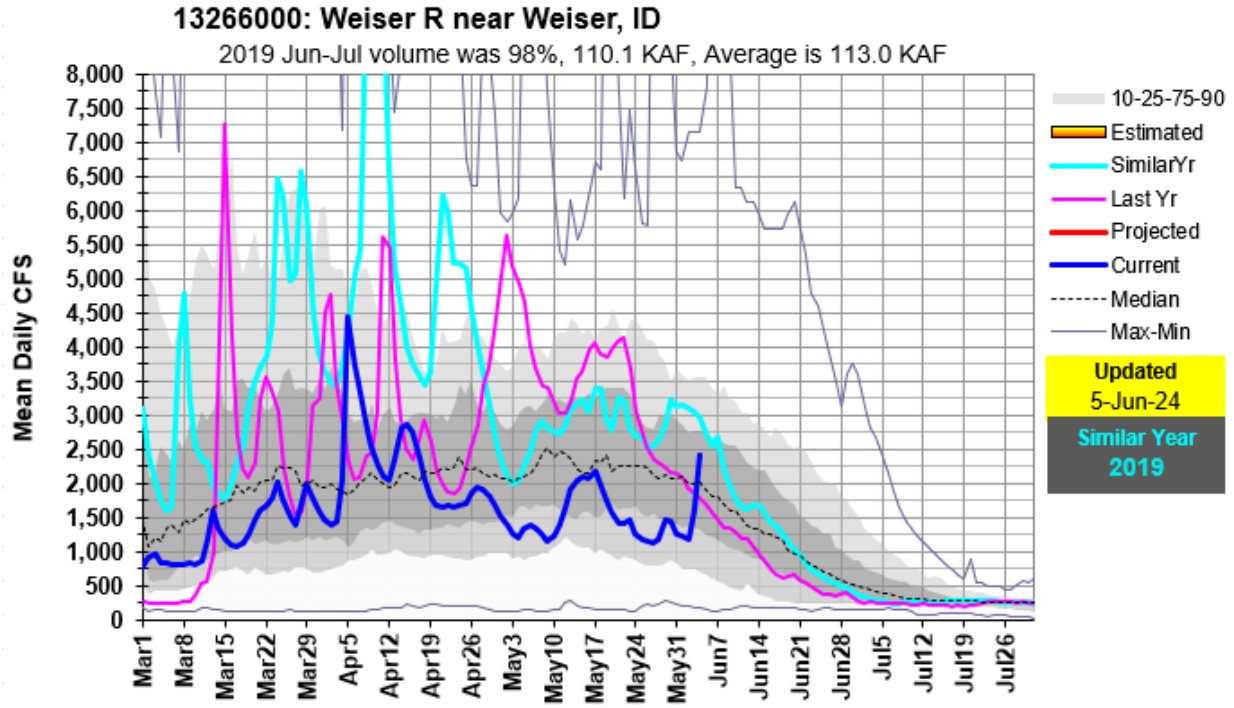
Interesting, snow at Atlanta Summit, which burned in early 2000s, was melted out. Past observations showed this site melts out 7-14 days earlier after the fires. So, would peak flows been higher if more snow remained from less of the watershed burning?

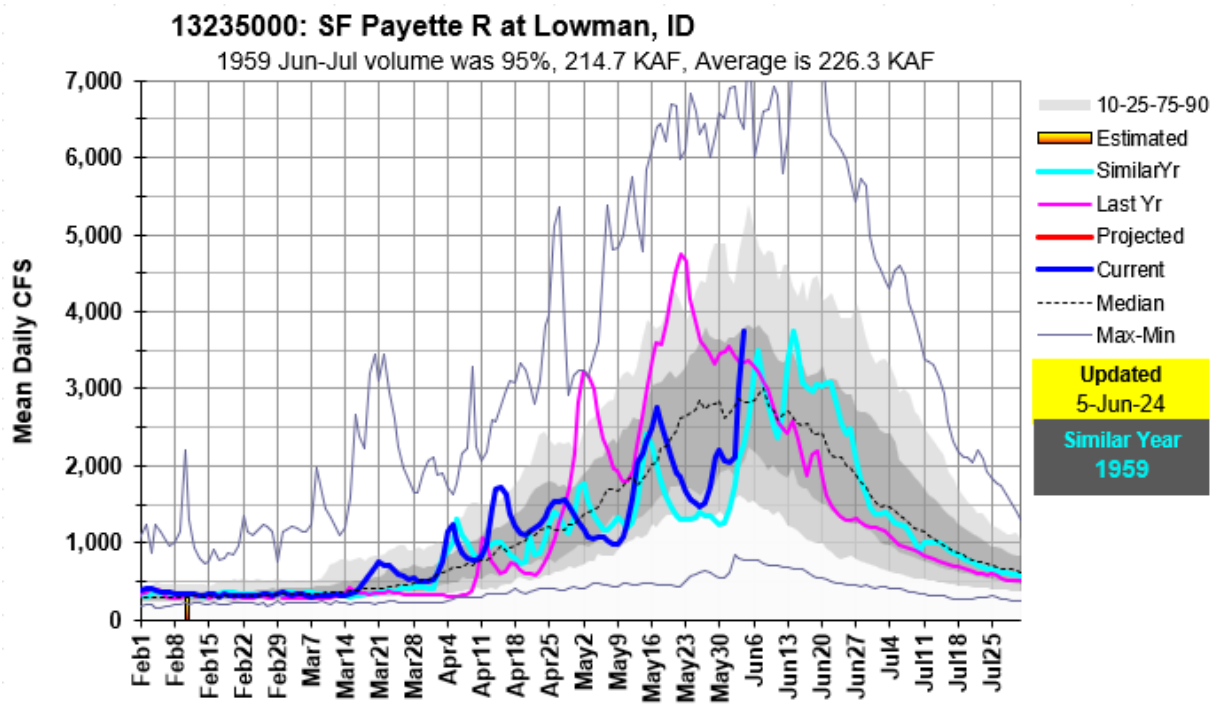
Below is the 5-Day Delta Report for Trinity Mtn. that shows total precipitation for event was 2.3 inches.

Reporting Frequency: Daily; Date Range: 2024-05-31 to 2024-06-04

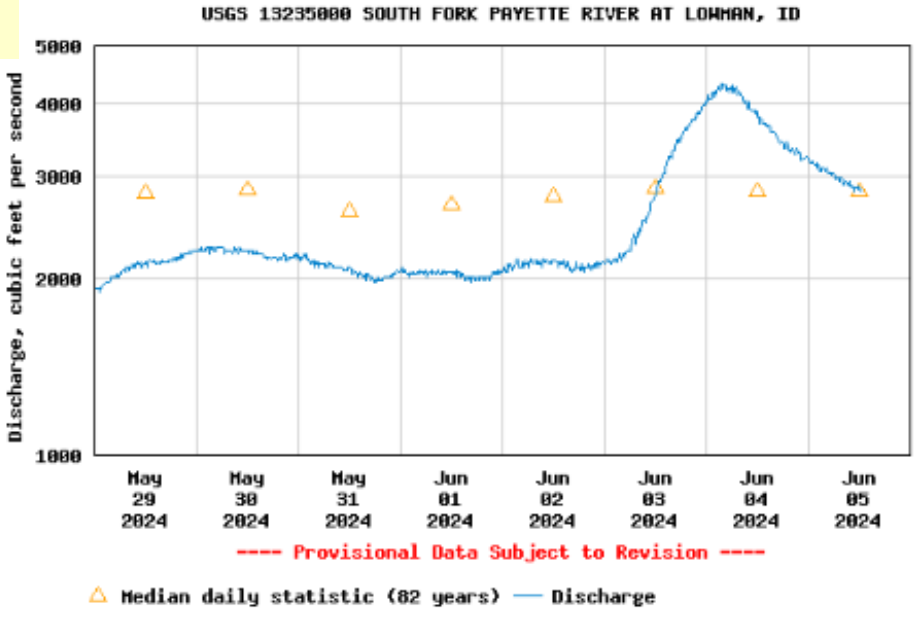
(As of: Tue Jun 04 18:39:35 GMT-08:00 2024)
Provisional data, subject to revision

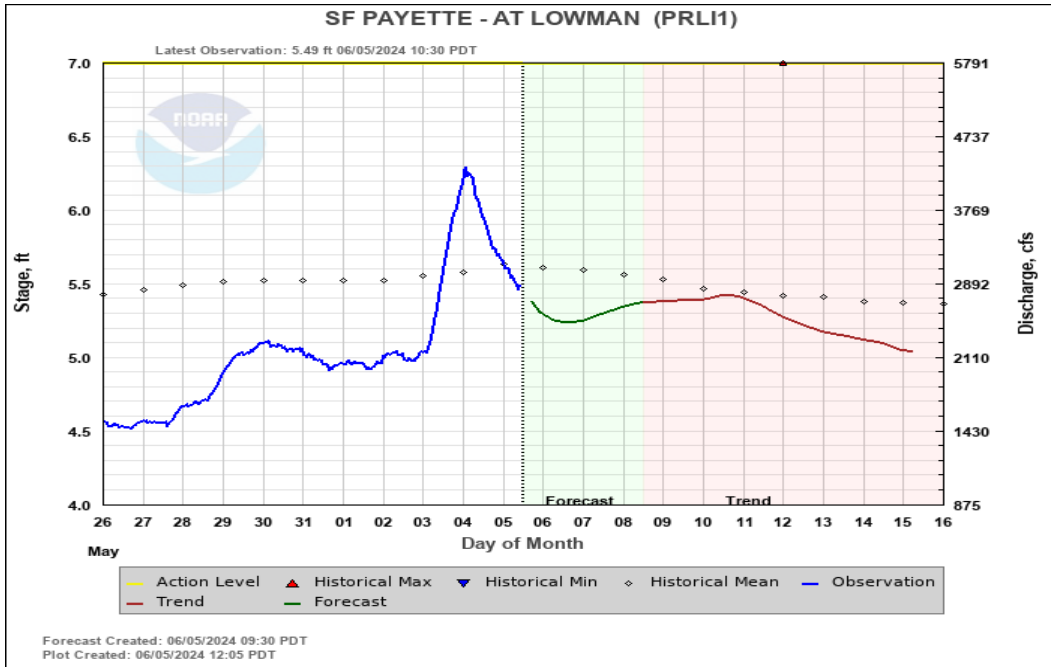
Date	Station Name		Elevation (ft)	Snow Water Equivalent (in) Start of Day Values	Change In Snow Water Equivalent (in)	Precipitation Accumulation (in) Start of Day Values	Change In Precipitation Accumulation (in)
2024-05-31	7770	Trinity Mtn.		10.9	-0.8	35.6	0.0
2024-06-01	7770	Trinity Mtn.		10.0	-0.9	35.6	0.0
2024-06-02	7770	Trinity Mtn.		8.6	-1.4	35.6	0.0
2024-06-03	7770	Trinity Mtn.		7.5	-1.1	35.8	0.2
2024-06-04	7770	Trinity Mtn.		6.1	-1.4	37.9	2.1

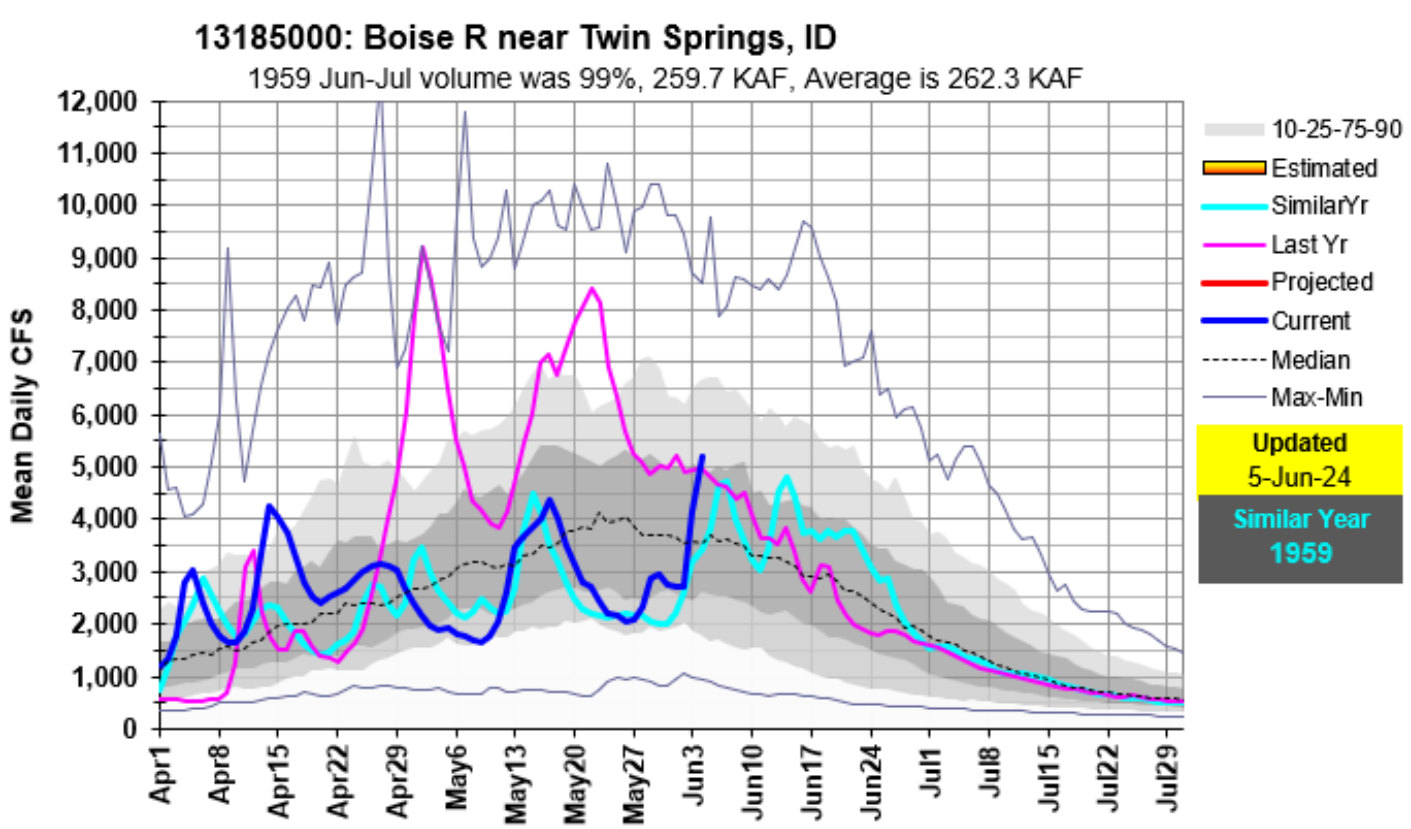


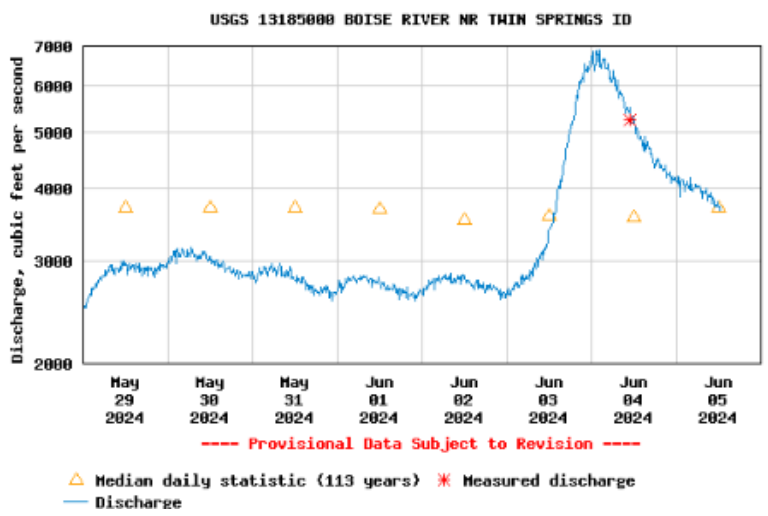


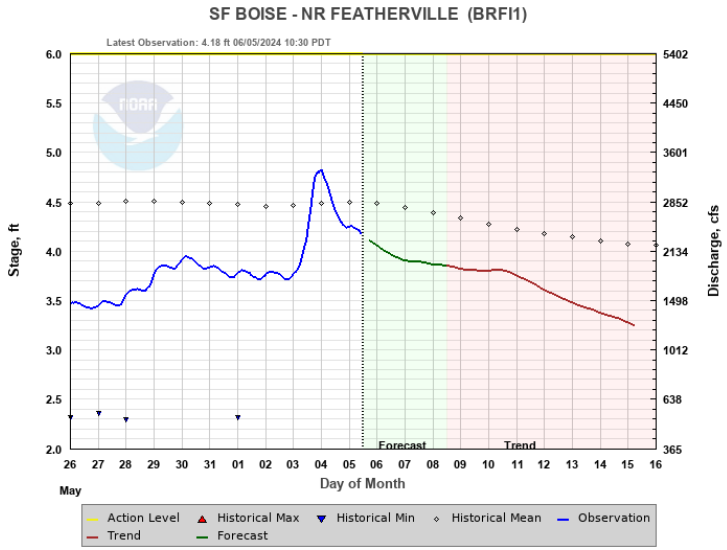
Weiser River and SF Payette River

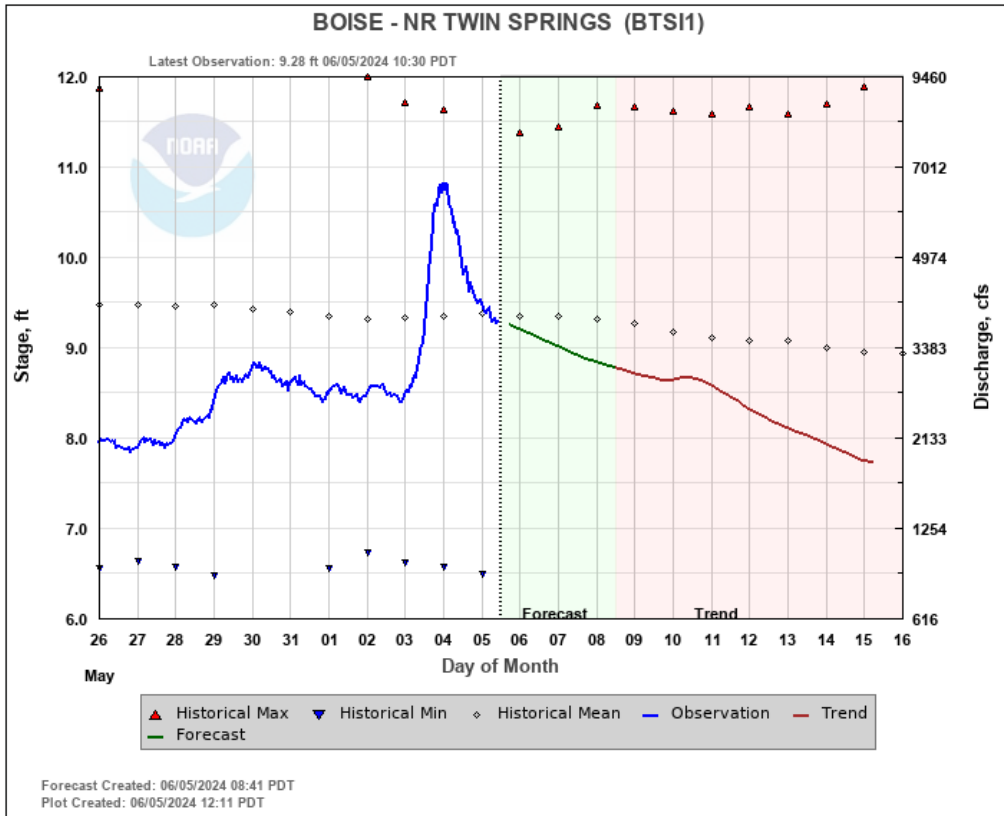


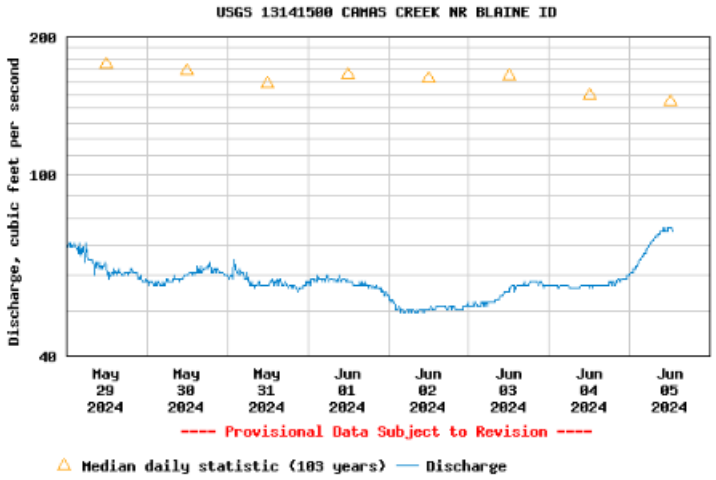


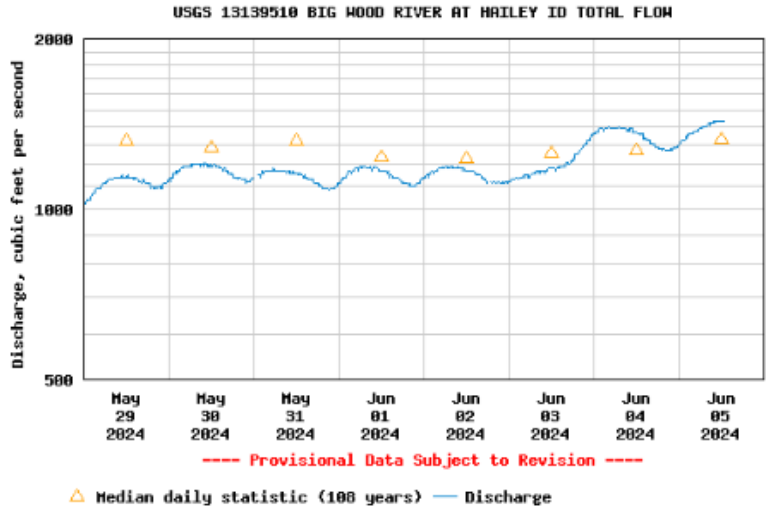

13185000: Boise R near Twin Springs, ID
1959 Jun-Jul volume was 99%, 259.7 KAF, Average is 262.3 KAF
Mean Daily CFS
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Apr1
Apr8
Apr15
Apr22
Apr29
May6
May13
May20
May27
Jun3
Jun10
Jun17
Jun24
Jul1
Jul8
Jul15
Jul22
Jul29
10-25-75-90
Estimated
SimilarYr
Last Yr
Projected
Current
Median
Max-Min
Updated
5-Jun-24
Similar Year
1959

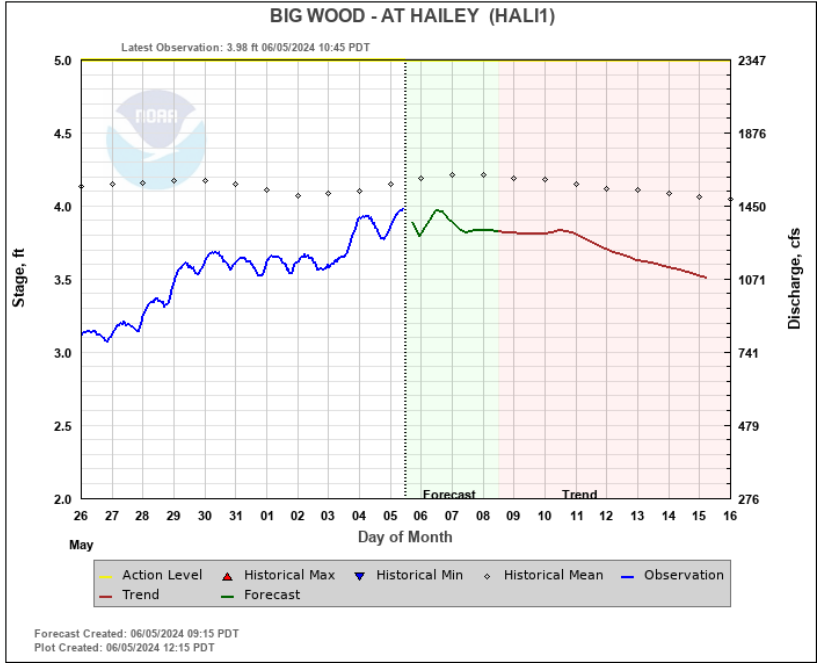

USGS 13185000 BOISE RIVER NR TWIN SPRINGS ID
Discharge, cubic feet per second
7000
6000
5000
4000
3000
2000
May 29 2024
May 30 2024
May 31 2024
Jun 01 2024
Jun 02 2024
Jun 03 2024
Jun 04 2024
Jun 05 2024
---- Provisional Data Subject to Revision ----
Median daily statistic (113 years)
Measured discharge
Discharge

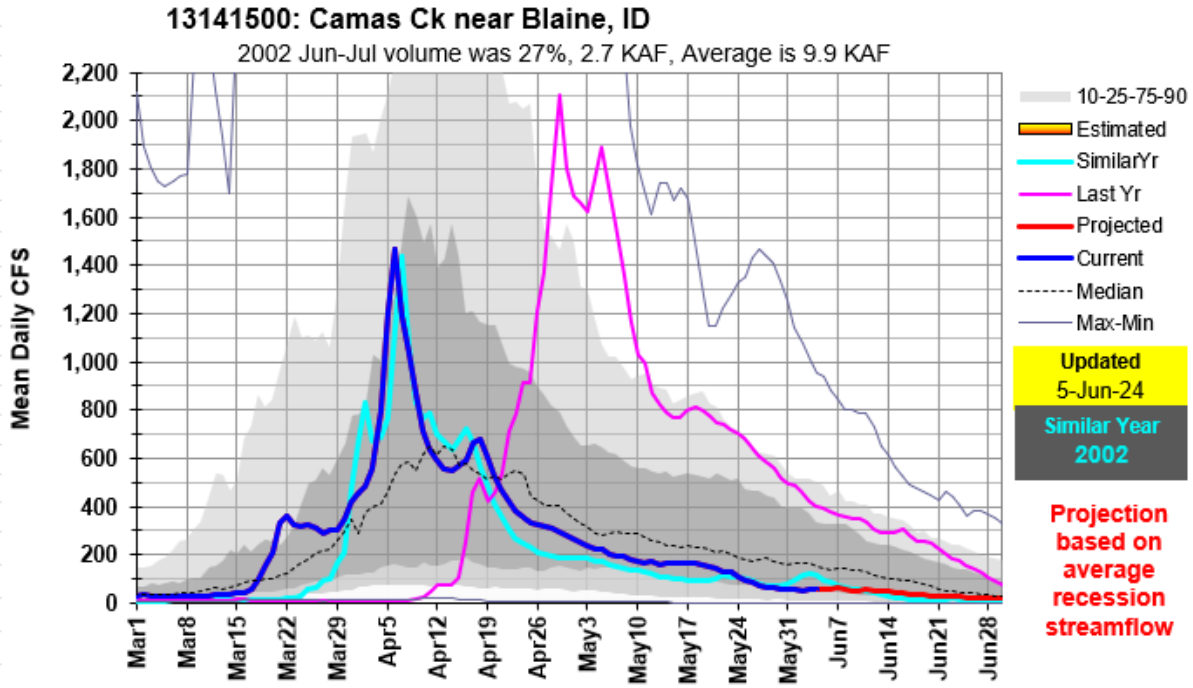

SF BOISE - NR FEATHERVILLE (BRFI1)
Latest Observation: 4.18 ft 06/05/2024 10:30 PDT
Stage, ft
Discharge, cfs
Forecast
Trend
Day of Month
May
Action Level
Historical Max
Historical Min
Historical Mean
Observation
Trend
Forecast
Forecast Created: 06/05/2024 08:41 PDT
Plot Created: 06/05/2024 12:14 PDT

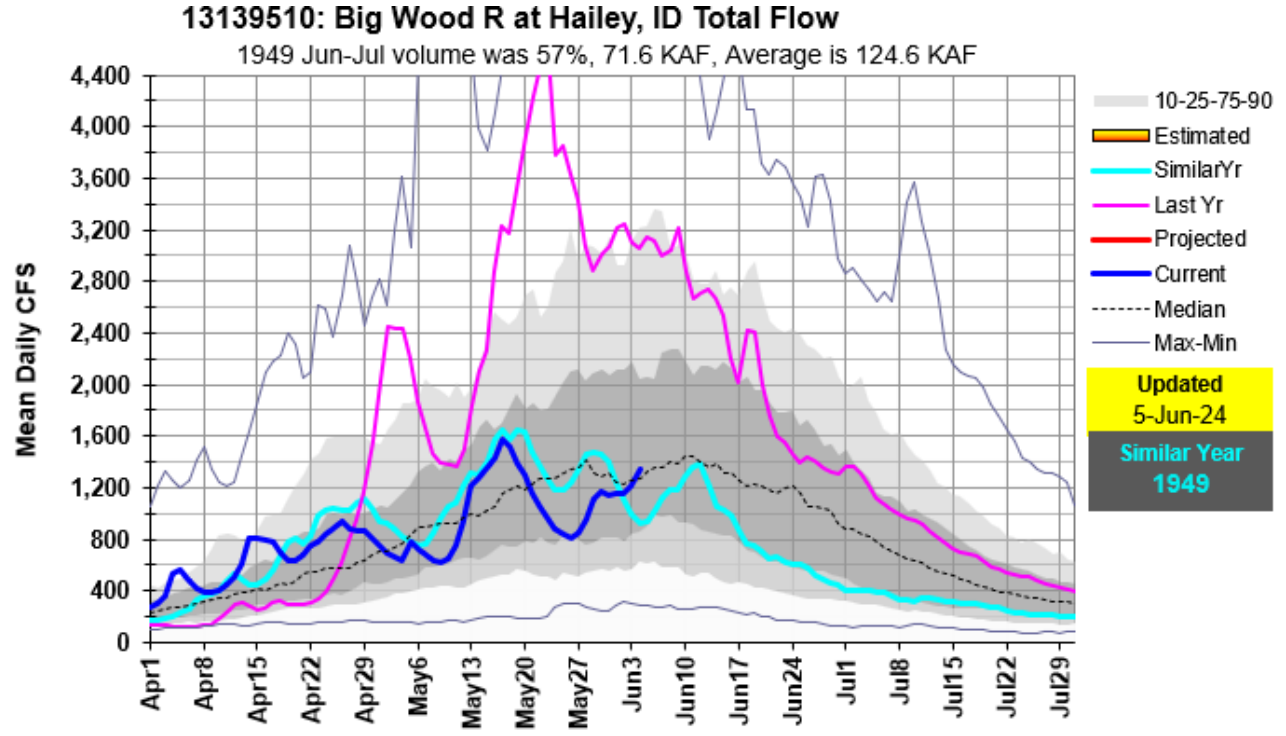

BOISE - NR TWIN SPRINGS (BTSI1)
Latest Observation: 9.28 ft 06/05/2024 10:30 PDT
Stage, ft
Discharge, cfs
Forecast
Trend
Day of Month
May
Historical Max
Historical Min
Historical Mean
Observation
Trend
Forecast
Forecast Created: 06/05/2024 08:41 PDT
Plot Created: 06/05/2024 12:11 PDT

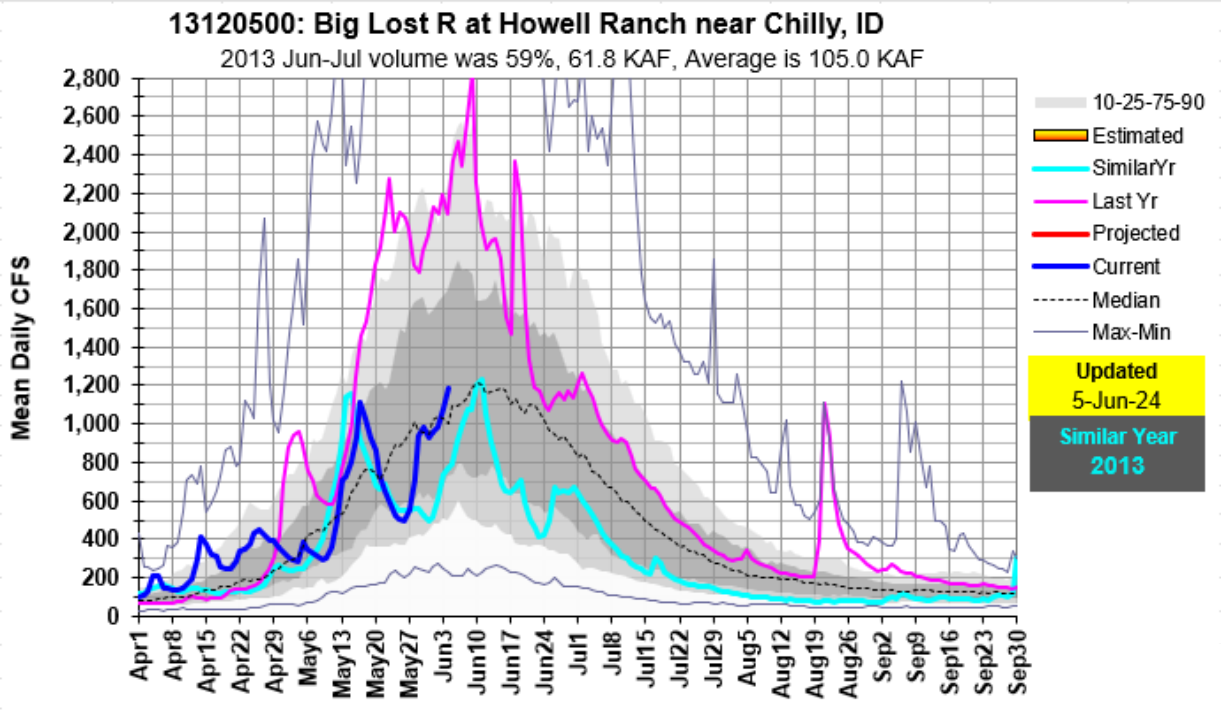

USGS 13141500 CAMAS CREEK NR BLAINE ID
Discharge, cubic feet per second
200
100
40
May 29 2024
May 30 2024
May 31 2024
Jun 01 2024
Jun 02 2024
Jun 03 2024
Jun 04 2024
Jun 05 2024
---- Provisional Data Subject to Revision ----
Median daily statistic (103 years)
Discharge

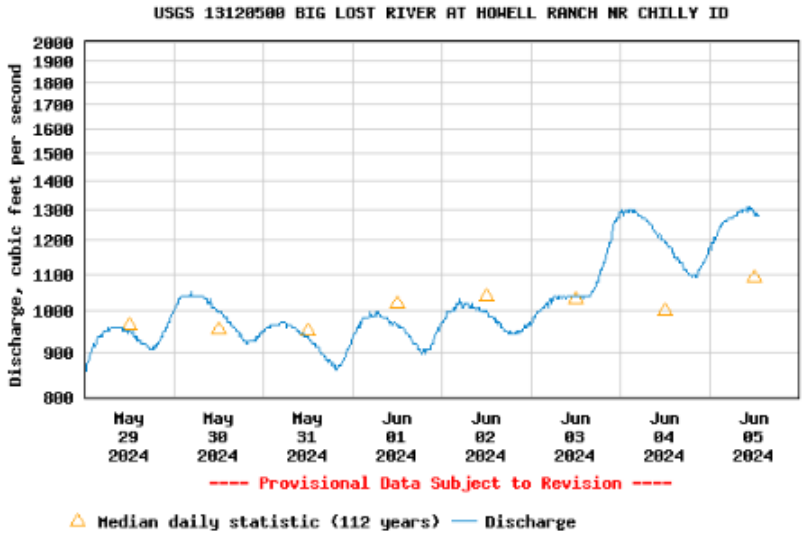

USGS 13139510 BIG WOOD RIVER AT HAILEY ID TOTAL FLOW
Discharge, cubic feet per second
2000
1000
500
May 29 2024
May 30 2024
May 31 2024
Jun 01 2024
Jun 02 2024
Jun 03 2024
Jun 04 2024
Jun 05 2024
---- Provisional Data Subject to Revision ----
Median daily statistic (108 years)
Discharge

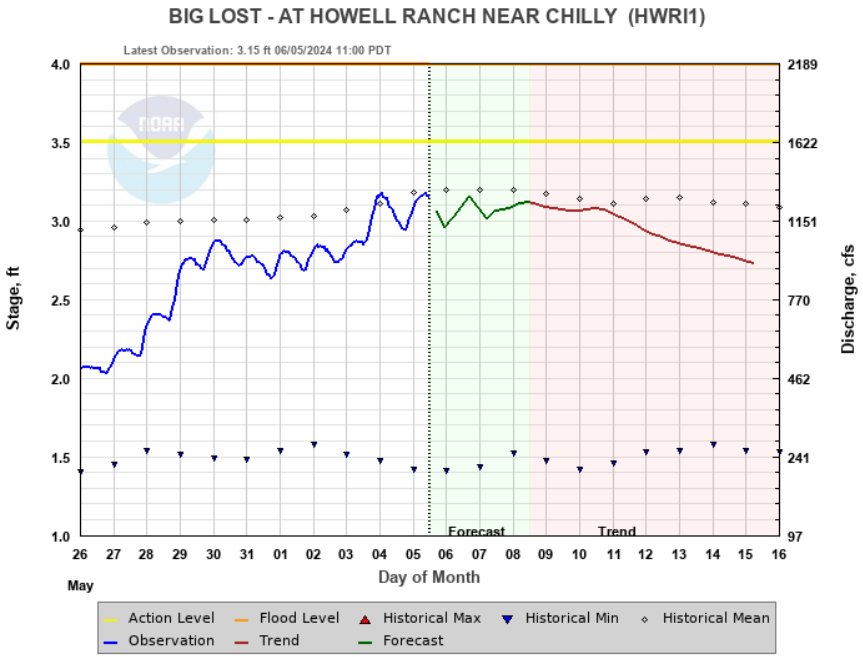

BIG WOOD - AT HAILEY (HALI1)
Latest Observation: 3.98 ft 06/05/2024 10:45 PDT
Stage, ft
Discharge, cfs
Forecast
Trend
Day of Month
May
Action Level
Historical Max
Historical Min
Historical Mean
Observation
Trend
Forecast
Forecast Created: 06/05/2024 09:15 PDT
Plot Created: 06/05/2024 12:15 PDT

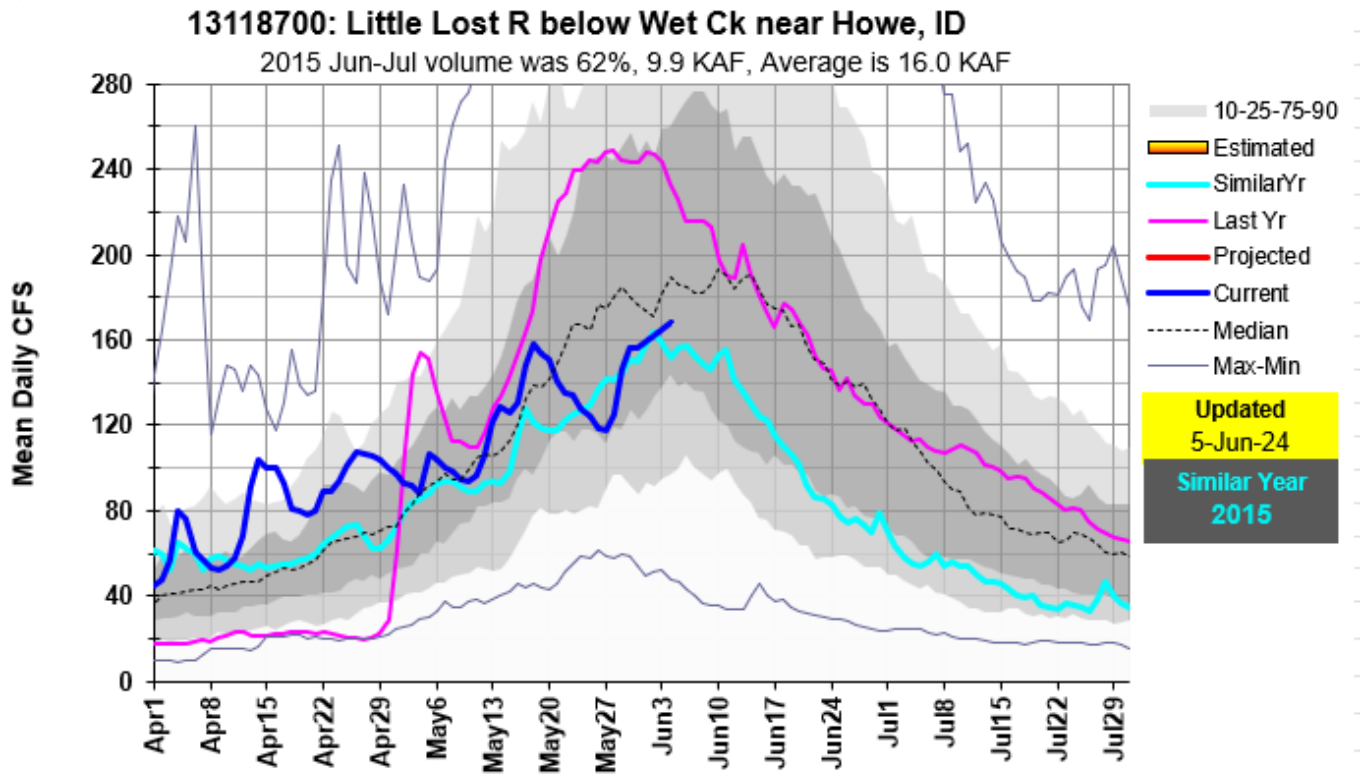

13141500: Camas Ck near Blaine, ID
2002 Jun-Jul volume was 27%, 2.7 KAF, Average is 9.9 KAF
Mean Daily CFS
10-25-75-90
Estimated
SimilarYr
Last Yr
Projected
Current
Median
Max-Min
Updated
5-Jun-24
Similar Year
2002
Projection based on average recession streamflow


13139510: Big Wood R at Hailey, ID Total Flow
1949 Jun-Jul volume was 57%, 71.6 KAF, Average is 124.6 KAF
Mean Daily CFS
10-25-75-90
Estimated
SimilarYr
Last Yr
Projected
Current
Median
Max-Min
Updated
5-Jun-24
Similar Year
1949


13120500: Big Lost R at Howell Ranch near Chilly, ID
2013 Jun-Jul volume was 59%, 61.8 KAF, Average is 105.0 KAF
Mean Daily CFS
10-25-75-90
Estimated
SimilarYr
Last Yr
Projected
Current
Median
Max-Min
Updated
5-Jun-24
Similar Year
2013


USGS 13120500 BIG LOST RIVER AT HOWELL RANCH NR CHILLY ID
Discharge, cubic feet per second
---- Provisional Data Subject to Revision ----
Median daily statistic (112 years)
Discharge


BIG LOST - AT HOWELL RANCH NEAR CHILLY (HWRI1)
Latest Observation: 3.15 ft 06/05/2024 11:00 PDT
Stage, ft
Discharge, cfs
Forecast
Trend
Day of Month
May
Action Level
Flood Level
Historical Max
Historical Min
Historical Mean
Observation
Trend
Forecast
Forecast Created: 06/05/2024 09:15 PDT
Plot Created: 06/05/2024 12:20 PDT


13118700: Little Lost R below Wet Ck near Howe, ID
2015 Jun-Jul volume was 62%, 9.9 KAF, Average is 16.0 KAF
Mean Daily CFS
10-25-75-90
Estimated
SimilarYr
Last Yr
Projected
Current
Median
Max-Min
Updated
5-Jun-24
Similar Year
2015

Moving to southern Idaho – not much precip fell nor much snow left to melt, so rivers continued their downward recession trend.

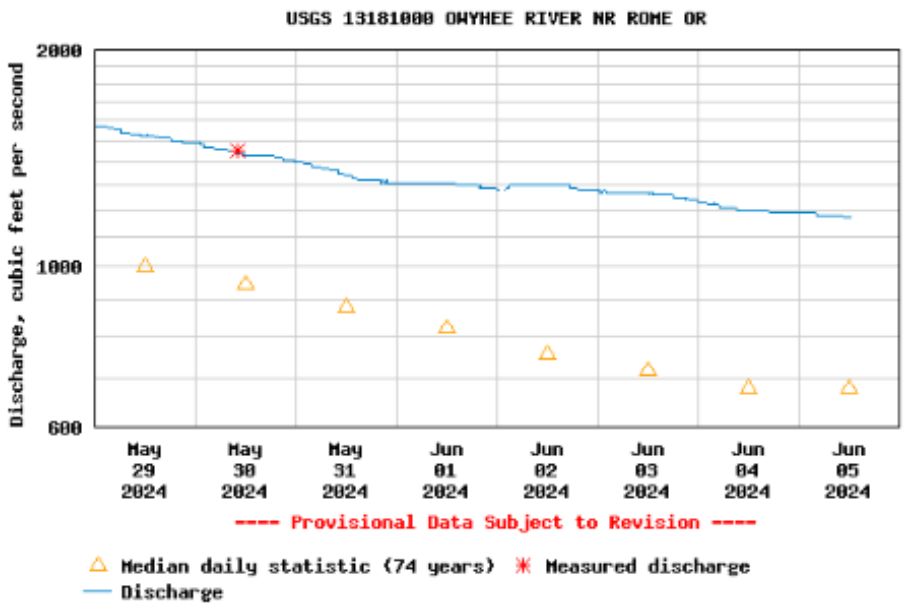
Reporting Frequency: Daily; Date Range: 2024-05-31 to 202

(As of: Tue Jun 04 20:39:41 GMT-08:00 2024)
Provisional data, subject to revision

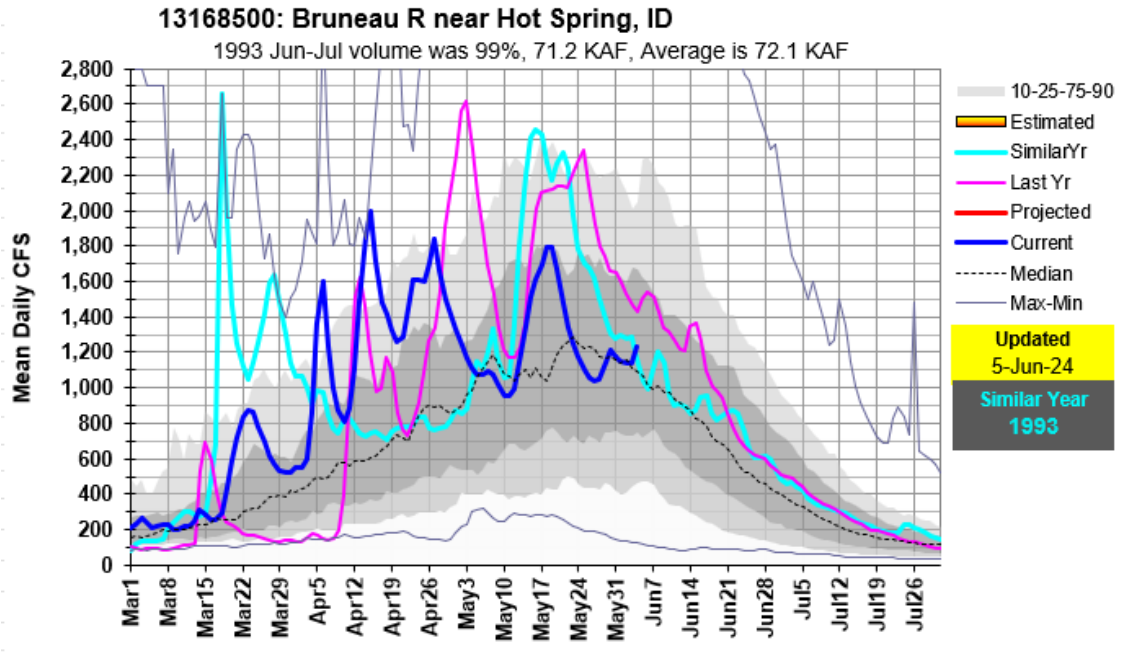
Daily Snowmelt Amount + **Daily Precip Amount** = **Total Runoff Available**

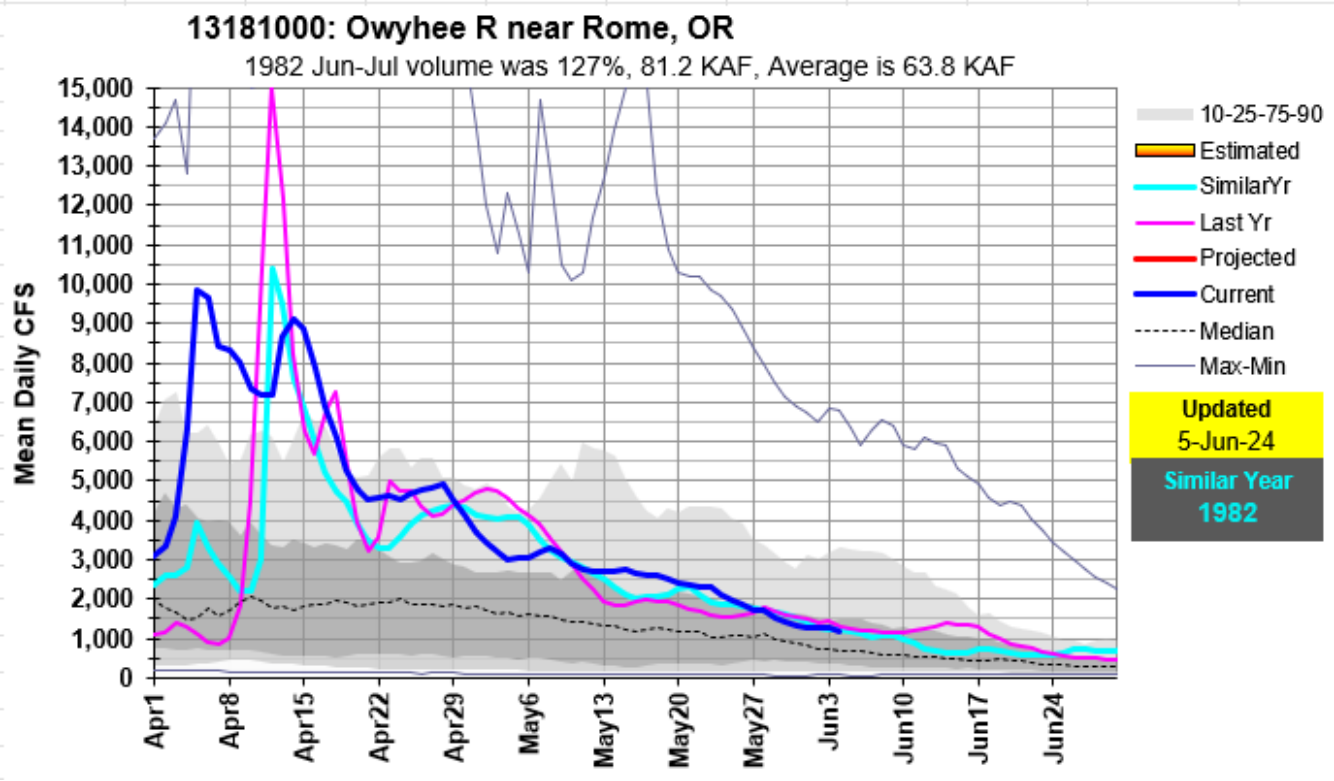
Date	Elevation (ft)	Station Name	Snow Water Equivalent (in) Start of Day Values	Change In Snow Water Equivalent (in)	Precipitation Accumulation (in) Start of Day Values	Change In Precipitation Accumulation (in)	
2024-06-04	8140	Franklin Basin	0.0	0.0	40.7	0.9	**0.9**
2024-06-04	8474	Tony Grove Lake	10.8	-1.0	48.8	0.9	**1.9**
2024-06-01	8040	Bear Creek	0.0	0.0	29.9	0.8	**0.8**
2024-06-04	7250	Klondike Narrows	0.0	0.0	33.8	0.8	**0.8**
2024-06-04	6740	Oxford Spring	0.0	0.0	26.7	0.8	
2024-06-04	6720	Pine Creek Pass	0.0	0.0	32.6	0.8	
2024-06-04	7500	Bostetter R.S.	0.1	0.1	27.8	0.6	
2024-06-04	6880	Magic Mountain	0.3	0.3	31.0	0.6	
2024-05-31	8040	Bear Creek	0.0	0.0	29.1	0.5	
2024-06-04	6800	Somsen Ranch	0.0	0.0	25.1	0.5	
2024-06-04	7705	Garden City Summit	0.0	0.0	25.4	0.4	
2024-06-04	7980	Howell Canyon	1.0	-1.2	41.5	0.4	
2024-06-02	8040	Bear Creek	0.0	0.0	30.2	0.3	

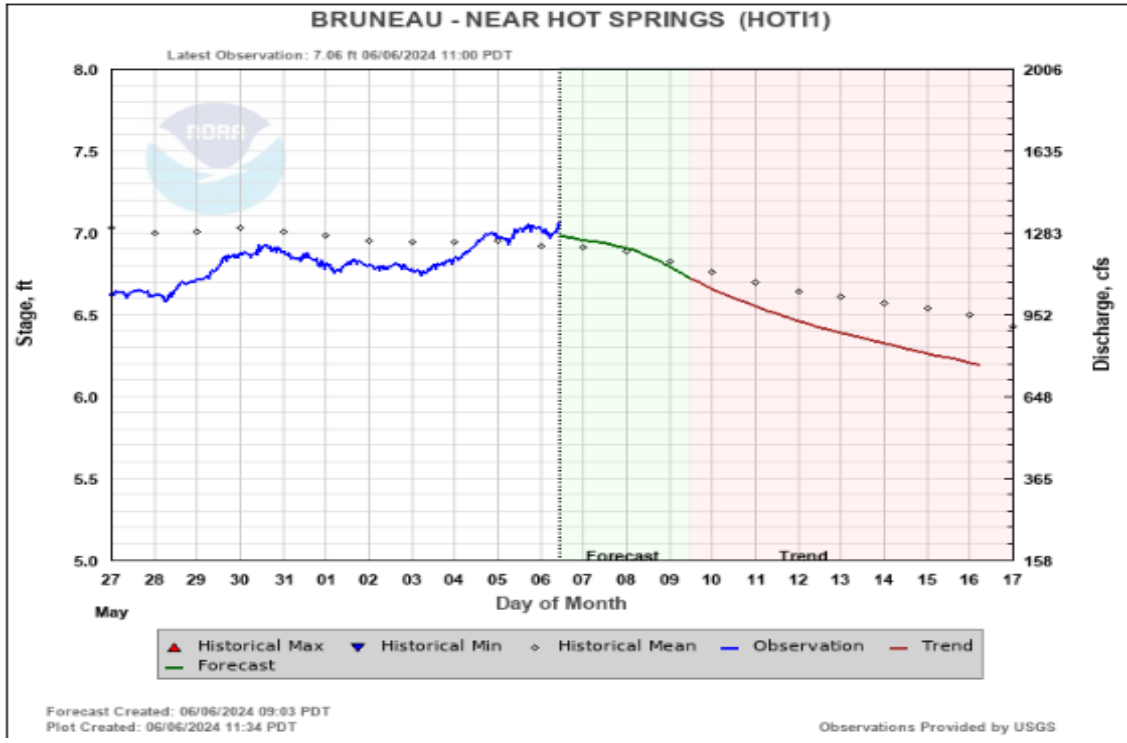
Table of SNOTEL sites sorted by the greatest Daily Precipitation amounts for sites from the Owyhee basin to Bear River basin.

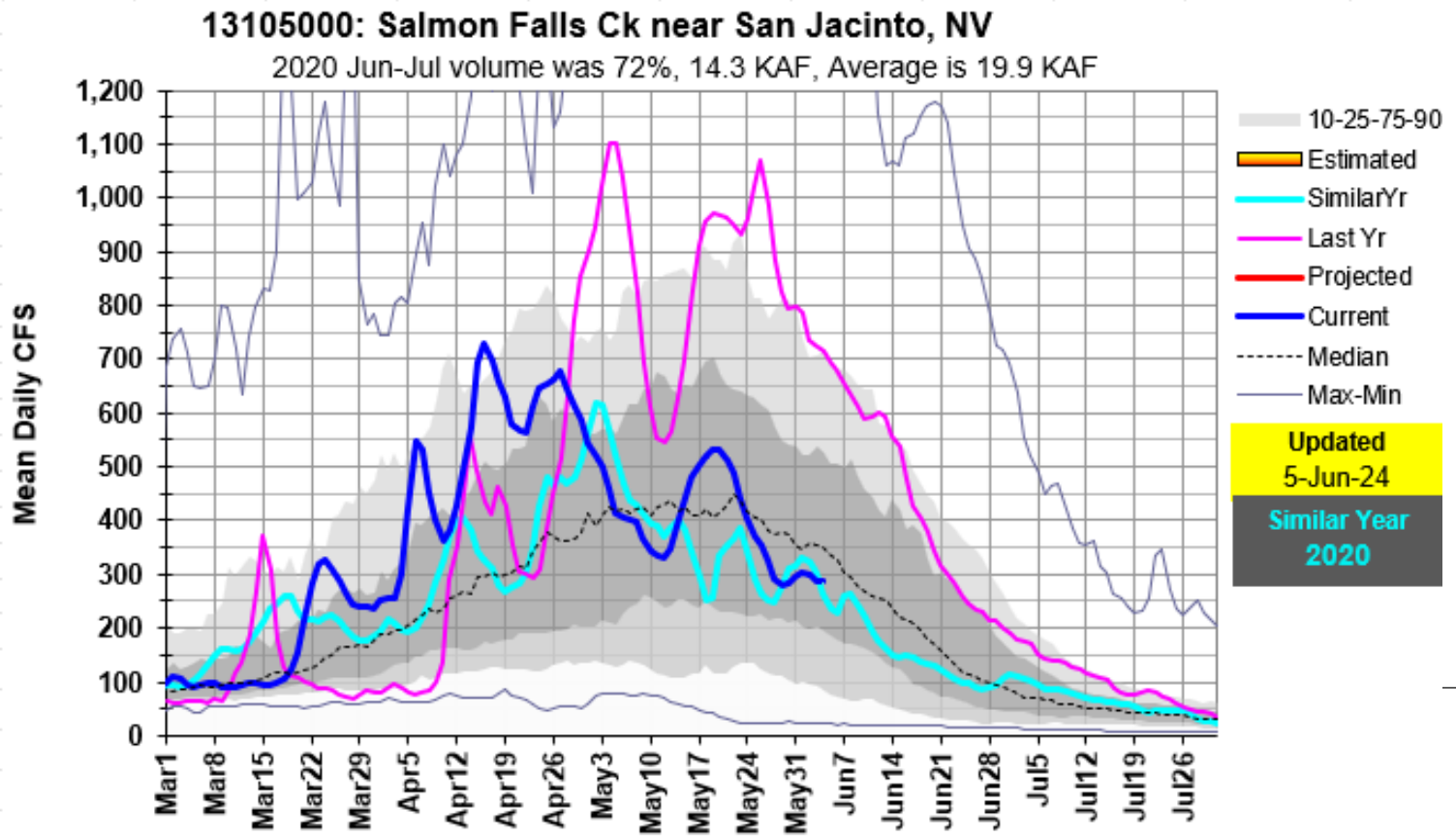


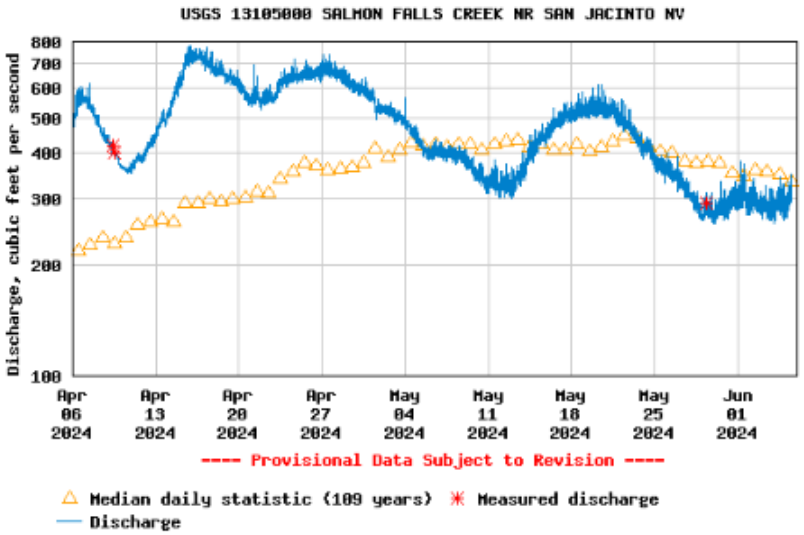
The Owyhee had back-to-back amazing runoff years.
The Bruneau is even showing a slight uptick in flow from the higher snow still feeding the rivers.

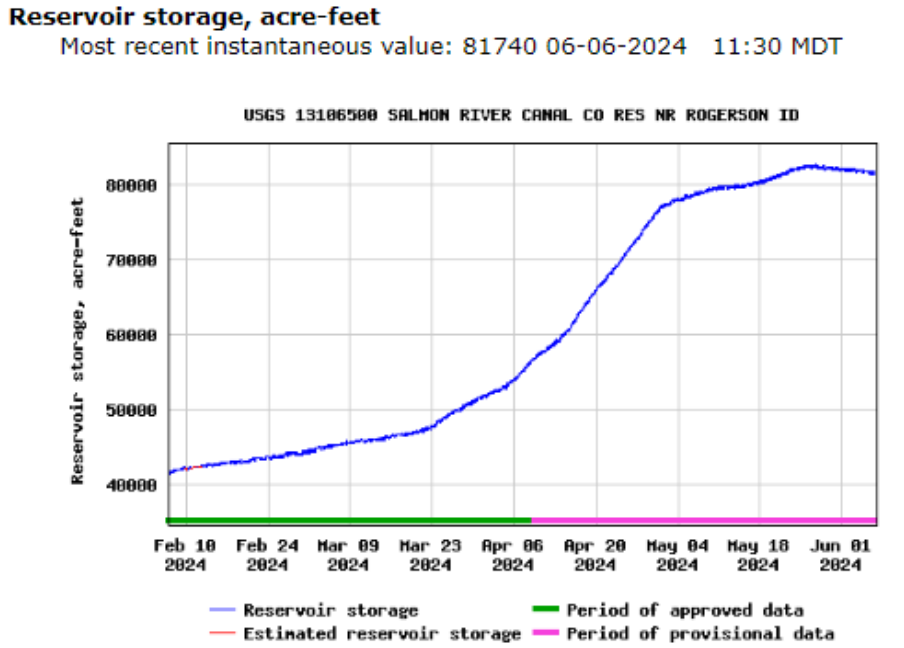


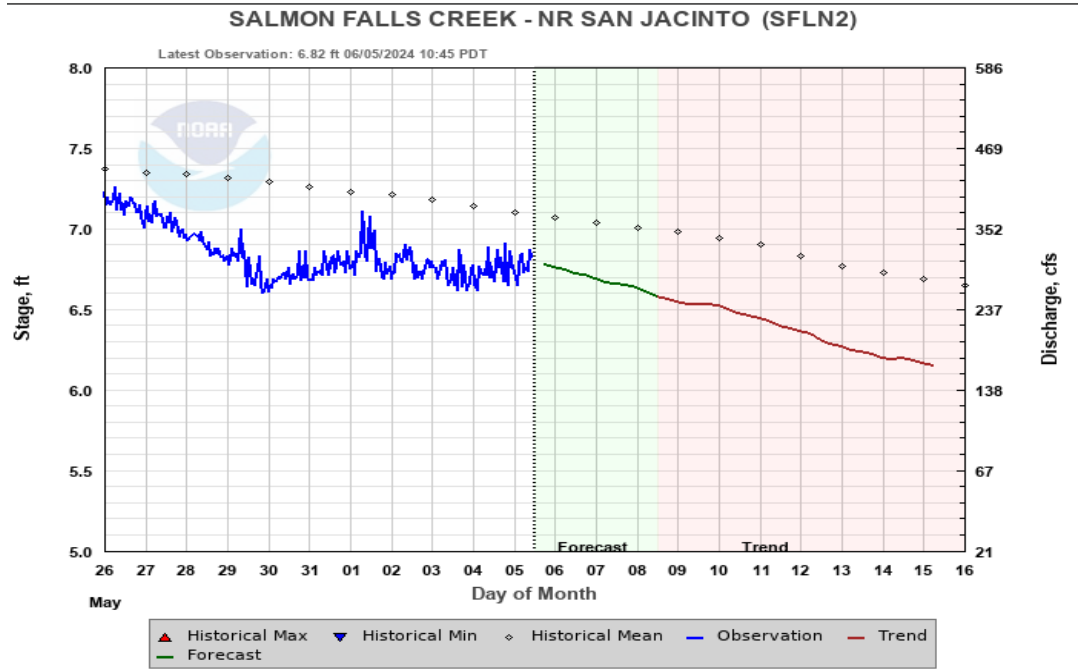





13105000: Salmon Falls Ck near San Jacinto, NV
2020 Jun-Jul volume was 72%, 14.3 KAF, Average is 19.9 KAF
Mean Daily CFS
10-25-75-90
Estimated
SimilarYr
Last Yr
Projected
Current
Median
Max-Min
Updated
5-Jun-24
Similar Year
2020


USGS 13105000 SALMON FALLS CREEK NR SAN JACINTO NV
Discharge, cubic feet per second
---- Provisional Data Subject to Revision ----
Median daily statistic (109 years)
Measured discharge
Discharge


Reservoir storage, acre-feet
Most recent instantaneous value: 81740 06-06-2024 11:30 MDT
USGS 13106500 SALMON RIVER CANAL CO RES NR ROGERSON ID
Reservoir storage, acre-feet
Reservoir storage
Estimated reservoir storage
Period of approved data
Period of provisional data


SALMON FALLS CREEK - NR SAN JACINTO (SFLN2)
Latest Observation: 6.82 ft 06/05/2024 10:45 PDT
Stage, ft
Discharge, cfs
Forecast
Trend
Day of Month
Historical Max
Historical Min
Historical Mean
Observation
Trend
Forecast
Forecast Created: 06/05/2024 09:40 PDT
Plot Created: 06/05/2024 12:29 PDT

Upper Snake – plus 1 day. Had to wait a day to run delta reports as storm moved east.

Daily Snowmelt Amount + **Daily Precip Amount** = **Total Runoff Available**

Reporting Frequency: Daily; Date Range: 2024-06-01 to 202

(As of: Wed Jun 05 11:40:31 GMT-08:00 2024)
Provisional data, subject to revision

Date	Elevation (ft)	Station Name	Snow Water Equivalent (in) Start of Day Values	Change In Snow Water Equivalent (in)	Precipitation Accumulation (in) Start of Day Values	Change In Precipitation Accumulation (in)	
2024-06-04	7670	Cottonwood Creek	0.0	0.0	33.3	1.5	1.5
2024-06-04	7710	White Elephant	1.5	-1.0	36.1	1.3	2.3
2024-06-04	8200	Phillips Bench	11.9	-0.7	36.3	1.2	1.9
2024-06-04	8650	Blind Bull Sum	19.1	0.0	21.2	0.8	0.8
2024-06-04	6720	Pine Creek Pass	0.0	0.0	32.6	0.8	0.8
2024-06-05	8500	Triple Peak			32.3	0.8	0.8
2024-06-04	7850	Lewis Lake Divide	6.6	-1.3	42.1	0.7	2.0
2024-06-04	8170	Black Bear	24.0	-0.5	45.4	0.7	1.2
2024-06-04	7265	Grassy Lake	2.7	-1.0	40.9	0.6	1.6

Table of SNOTEL sites sorted by the greatest Daily Precipitation amounts in Upper Snake.

This report was run Jun 5 to pick up previous day's precip that was still falling.

Precip amounts varied in Upper Snake with highest daily amounts of 1.5" falling Jun 3 at Cottonwood Creek in Wyoming.

Upper Snake had more reaming snow.

Reporting Frequency: Daily; Date Range: 2024-06-01 to 2

(As of: Wed Jun 05 11:40:31 GMT-08:00 2024)
Provisional data, subject to revision

Date	Elevation (ft)	Station Name	Snow Water Equivalent (in) Start of Day Values	Change In Snow Water Equivalent (in)	Precipitation Accumulation (in) Start of Day Values	Change In Precipitation Accumulation (in)
2024-06-05	8650	Blind Bull Sum	16.5	-2.6	21.1	-0.1
2024-06-05	7850	Lewis Lake Divide	4.7	-1.9	42.1	0.0
2024-06-05	7265	Grassy Lake	1.0	-1.7	40.9	0.0
2024-06-01	8080	Willow Creek	9.1	-1.7	42.3	0.0
2024-06-02	7850	Lewis Lake Divide	9.0	-1.6	41.3	0.0
2024-06-02	8080	Willow Creek	7.6	-1.5	42.4	0.1
2024-06-05	8080	Willow Creek	4.0	-1.5	43.0	0.0
2024-06-02	8170	Black Bear	25.3	-1.4	44.6	0.0
2024-06-05	9260	Grand Targhee	34.2	-1.4	38.8	0.0
2024-06-02	7710	White Elephant	3.9	-1.4	34.8	0.0
2024-06-03	7710	White Elephant	2.5	-1.4	34.8	0.0
2024-06-04	7850	Lewis Lake Divide	6.6	-1.3	42.1	0.7

Daily Snowmelt Amount + Daily Precip Amount = Total Runoff Available

2.7

Not as much rain fell in Upper Snake but more snow was present to melt and sustain flows or generate another peak.

Adding the Daily Snowmelt (SWE decrease) to Daily Precip Amount provides the Total Runoff Available from these sites.

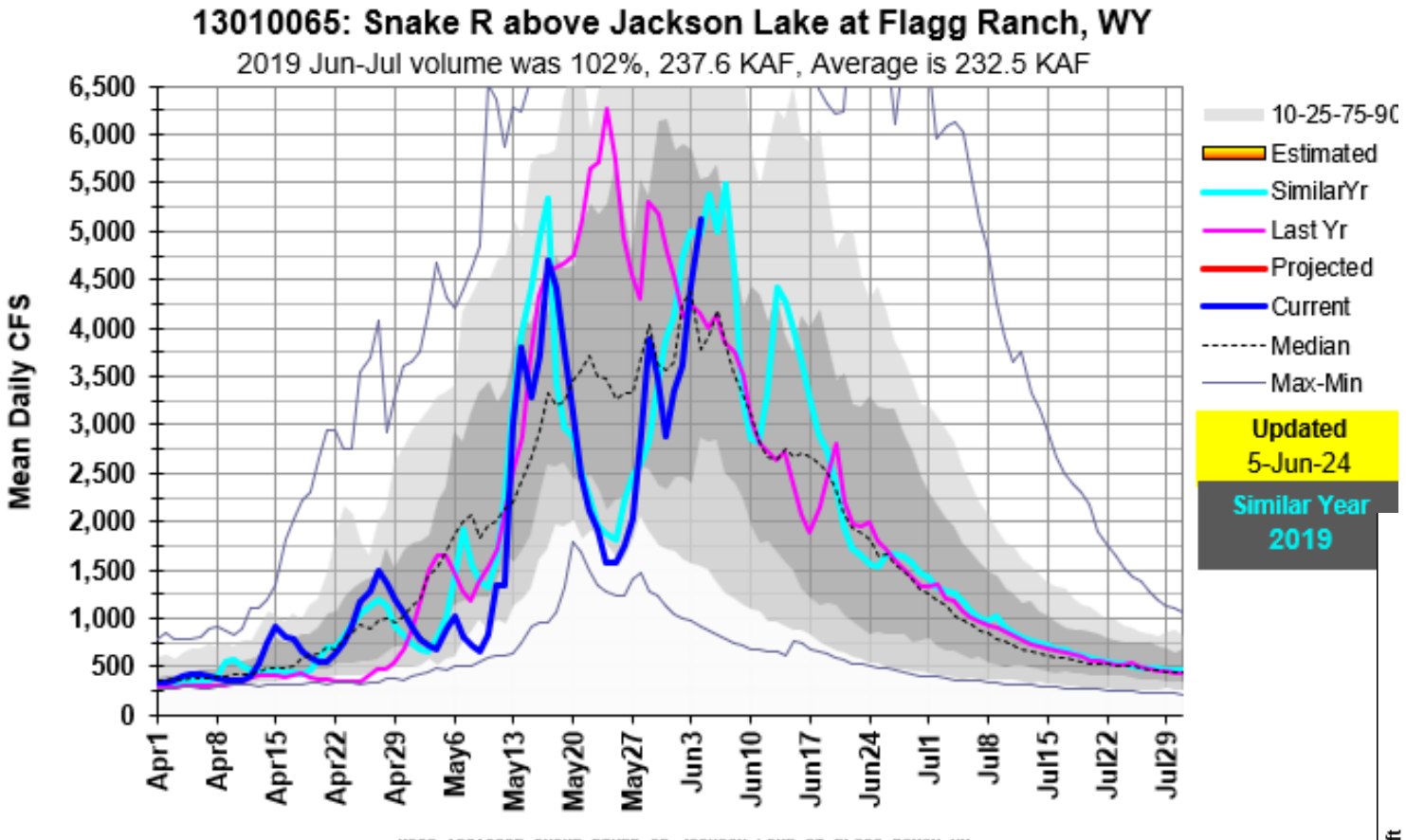
Below is the 5-Day Delta Report for Grand Targhee that shows melt rates are increasing and based on past analysis will reach 2”/day with these hot temps.

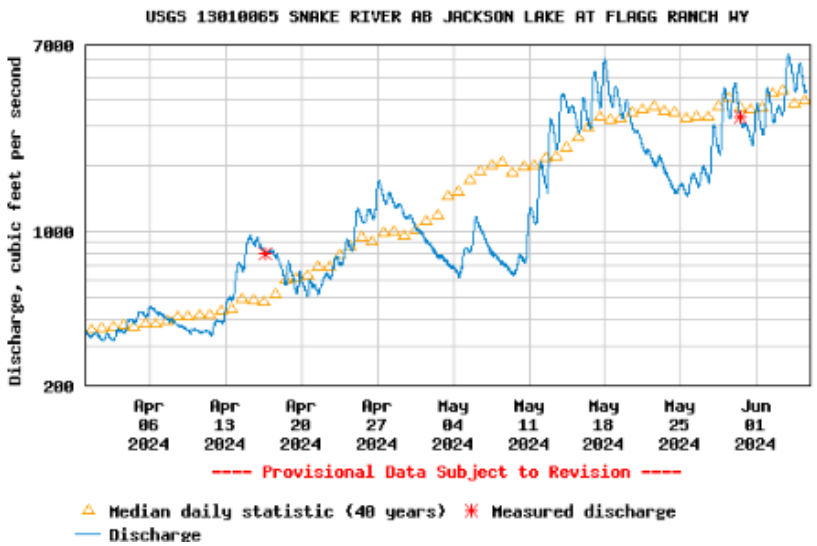
2.0

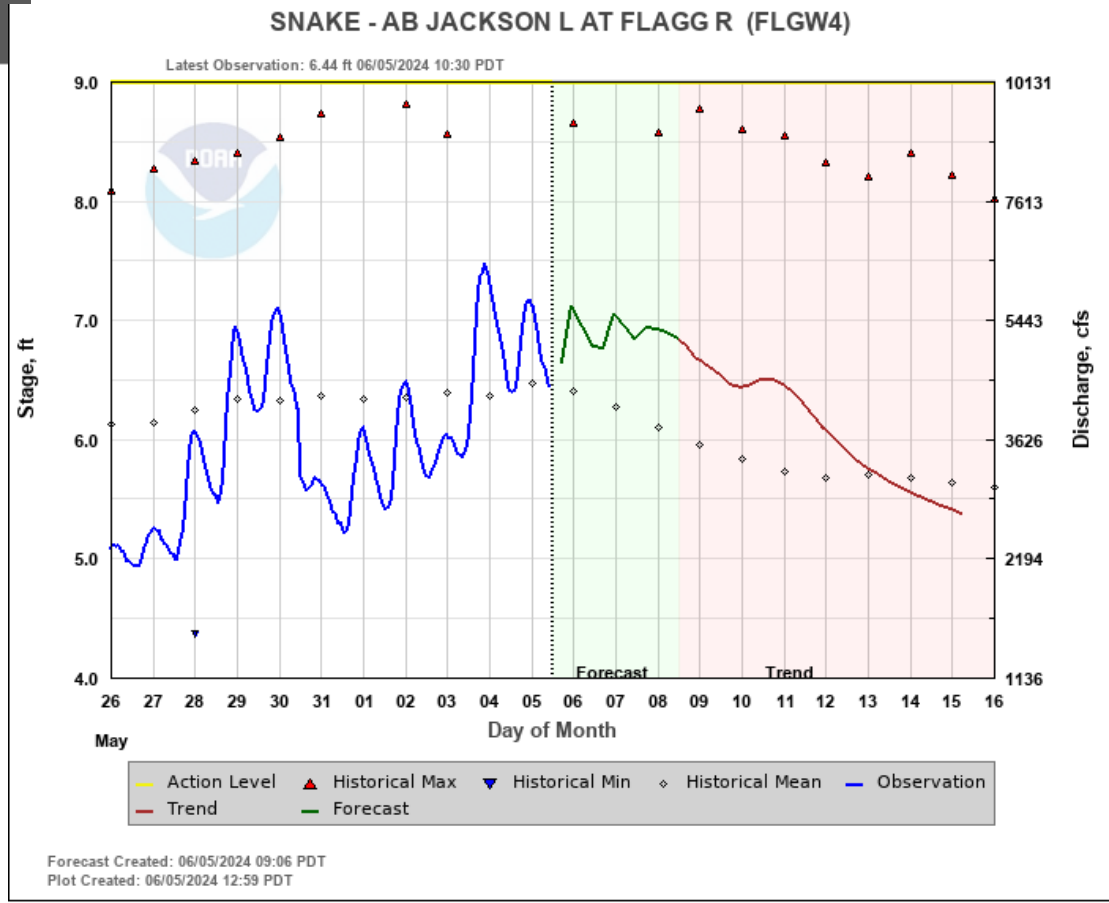
Reporting Frequency: Daily; Date Range: 2024-06-01 to 2024-06-05

(As of: Wed Jun 05 11:51:04 GMT-08:00 2024)
Provisional data, subject to revision

Date	Elevation (ft)	Station Name	Snow Water Equivalent (in) Start of Day Values	Change In Snow Water Equivalent (in)	Precipitation Accumulation (in) Start of Day Values	Change In Precipitation Accumulation (in)	Snow Depth (in) Start of Day Values	Change In Snow Depth (in)
2024-06-01	9260	Grand Targhee	38.6	-0.2	38.6	0.0	84	-2
2024-06-02	9260	Grand Targhee	37.5	-1.1	38.6	0.0	81	-3
2024-06-03	9260	Grand Targhee	36.5	-1.0	38.6	0.0	79	-2
2024-06-04	9260	Grand Targhee	35.6	-0.9	38.8	0.2	76	-3
2024-06-05	9260	Grand Targhee	34.2	-1.4	38.8	0.0	73	-3


13010065: Snake R above Jackson Lake at Flagg Ranch, WY
2019 Jun-Jul volume was 102%, 237.6 KAF, Average is 232.5 KAF
Mean Daily CFS
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
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
5-Jun-24
Similar Year
2019


USGS 13010065 SNAKE RIVER AB JACKSON LAKE AT FLAGG RANCH WY
Discharge, cubic feet per second
7000
1000
200
Apr 06 2024
Apr 13 2024
Apr 20 2024
Apr 27 2024
May 04 2024
May 11 2024
May 18 2024
May 25 2024
Jun 01 2024
---- Provisional Data Subject to Revision ----
Median daily statistic (40 years)
Measured discharge
Discharge


SNAKE - AB JACKSON L AT FLAGG R (FLGW4)
Latest Observation: 6.44 ft 06/05/2024 10:30 PDT
Stage, ft
9.0
8.0
7.0
6.0
5.0
4.0
Discharge, cfs
10131
7613
5443
3626
2194
1136
Forecast
Trend
26 27 28 29 30 31 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16
May
Day of Month
Action Level
Historical Max
Historical Min
Historical Mean
Observation
Trend
Forecast
Forecast Created: 06/05/2024 09:06 PDT
Plot Created: 06/05/2024 12:59 PDT

GRAND TARGHEE, WY (1082) SNOW WATEI

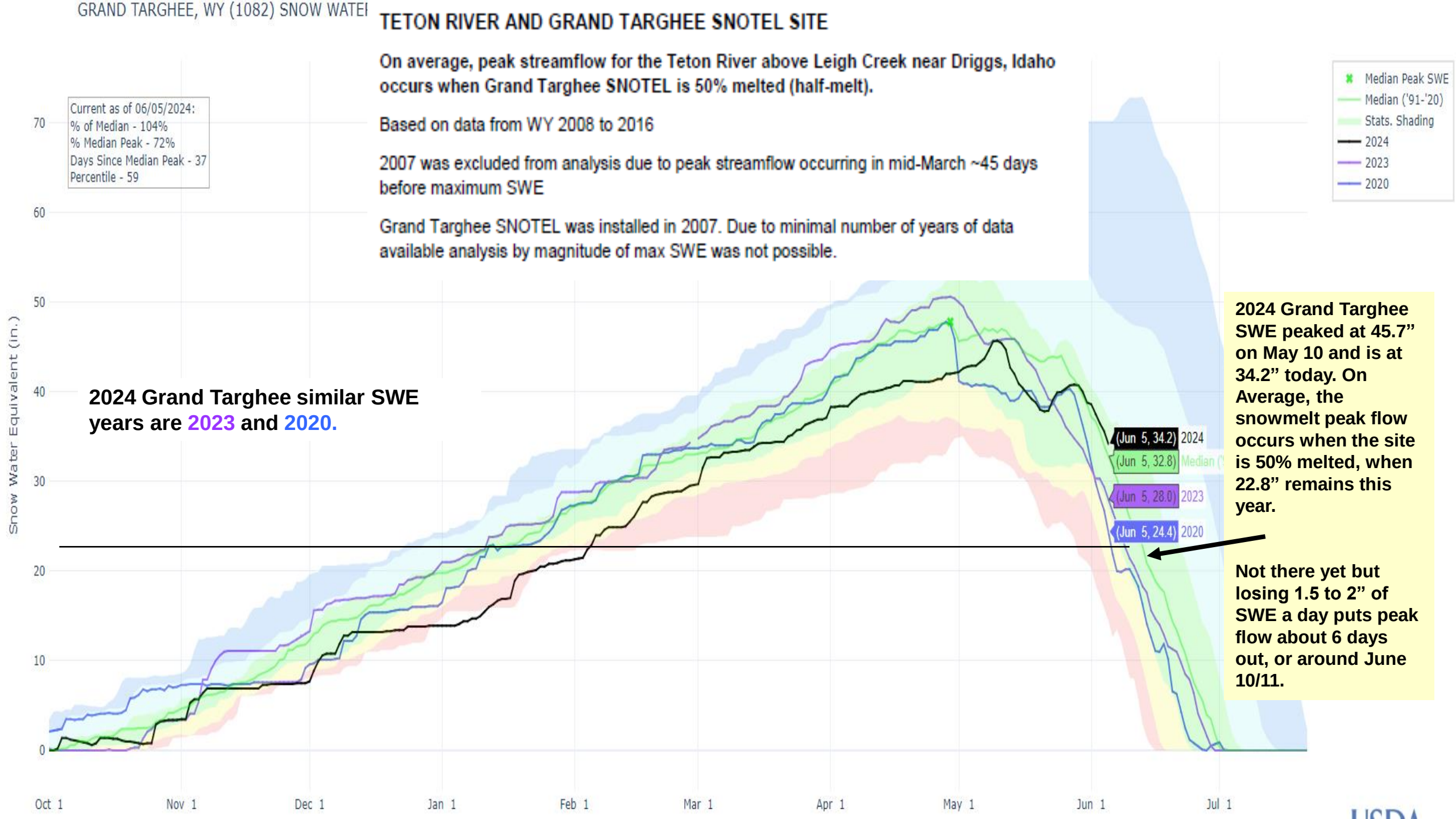
TETON RIVER AND GRAND TARGHEE SNOTEL SITE

On average, peak streamflow for the Teton River above Leigh Creek near Driggs, Idaho occurs when Grand Targhee SNOTEL is 50% melted (half-melt).

Based on data from WY 2008 to 2016

2007 was excluded from analysis due to peak streamflow occurring in mid-March ~45 days before maximum SWE

Grand Targhee SNOTEL was installed in 2007. Due to minimal number of years of data available analysis by magnitude of max SWE was not possible.



2024 Grand Targhee similar SWE years are 2023 and 2020.

2024 Grand Targhee SWE peaked at 45.7" on May 10 and is at 34.2" today. On Average, the snowmelt peak flow occurs when the site is 50% melted, when 22.8" remains this year.

Not there yet but losing 1.5 to 2" of SWE a day puts peak flow about 6 days out, or around June 10/11.

PHILLIPS BENCH, WY (689) SNOW WATER EQUIVALENT

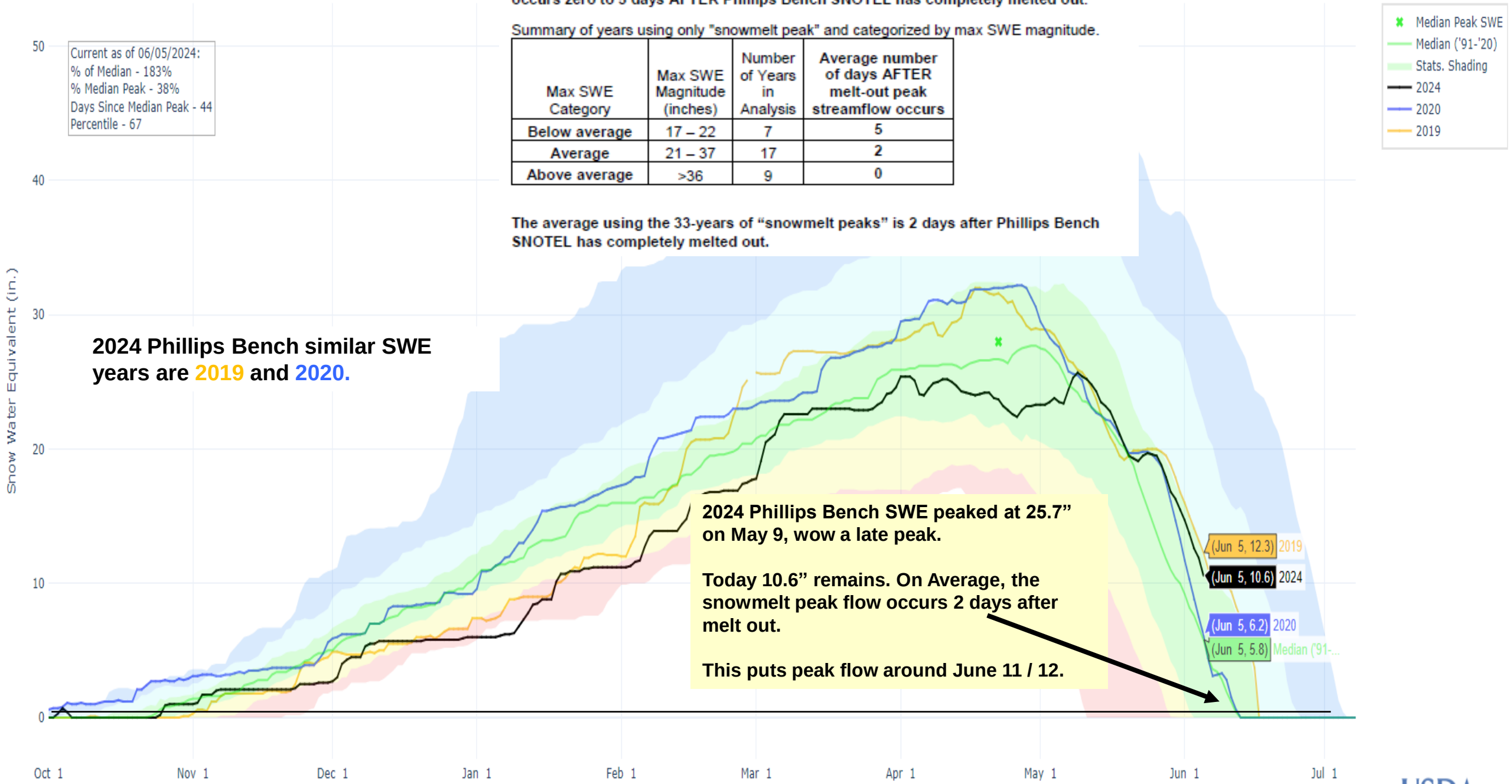
TETON RIVER AND PHILLIPS BENCH SNOTEL SITE

On average, peak streamflow for the Teton River above Leigh Creek near Driggs, Idaho occurs zero to 5 days AFTER Phillips Bench SNOTEL has completely melted out.

Summary of years using only "snowmelt peak" and categorized by max SWE magnitude.

Max SWE Category	Max SWE Magnitude (inches)	Number of Years in Analysis	Average number of days AFTER melt-out peak streamflow occurs
Below average	17 – 22	7	5
Average	21 – 37	17	2
Above average	>36	9	0

The average using the 33-years of "snowmelt peaks" is 2 days after Phillips Bench SNOTEL has completely melted out.

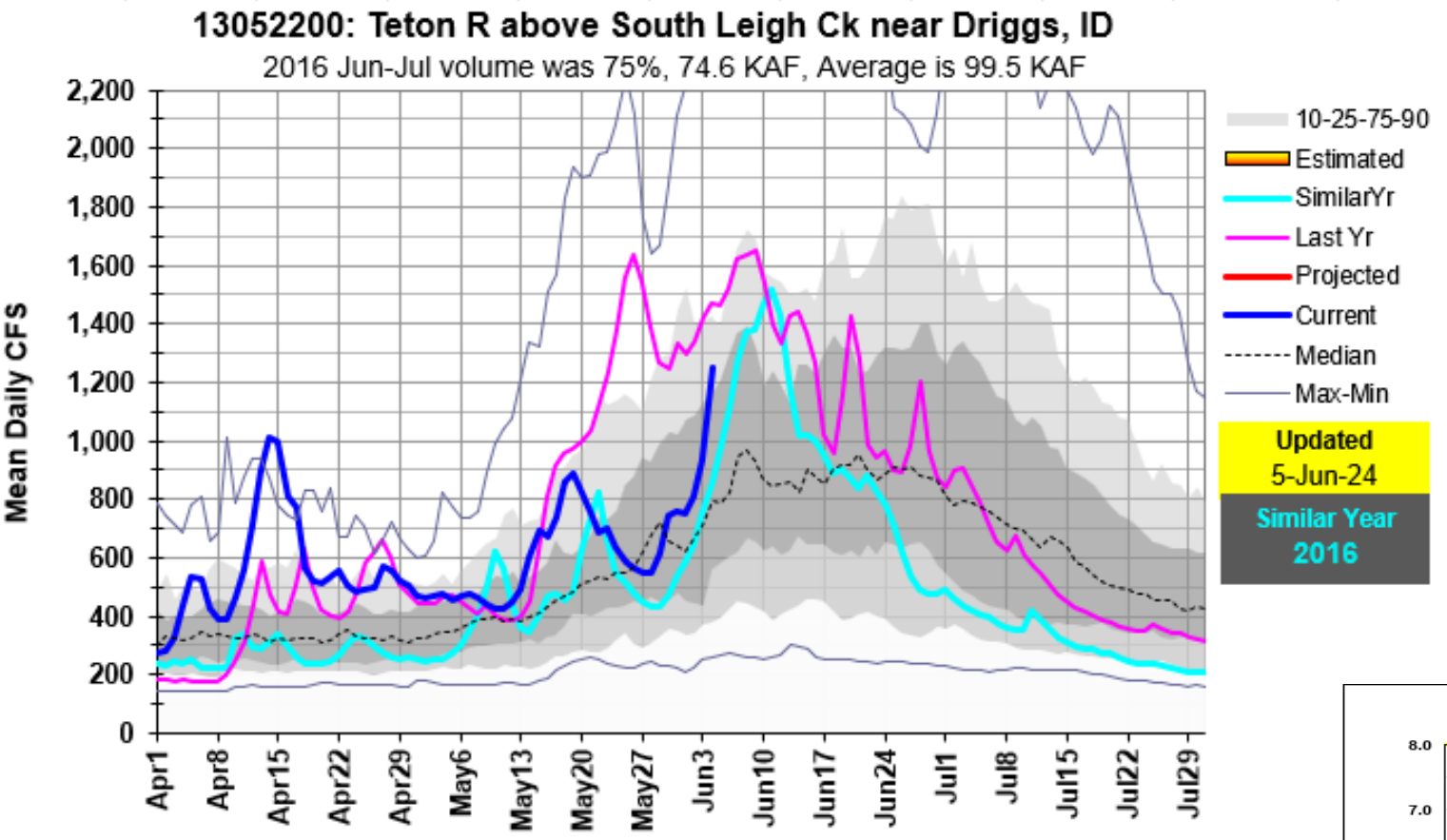


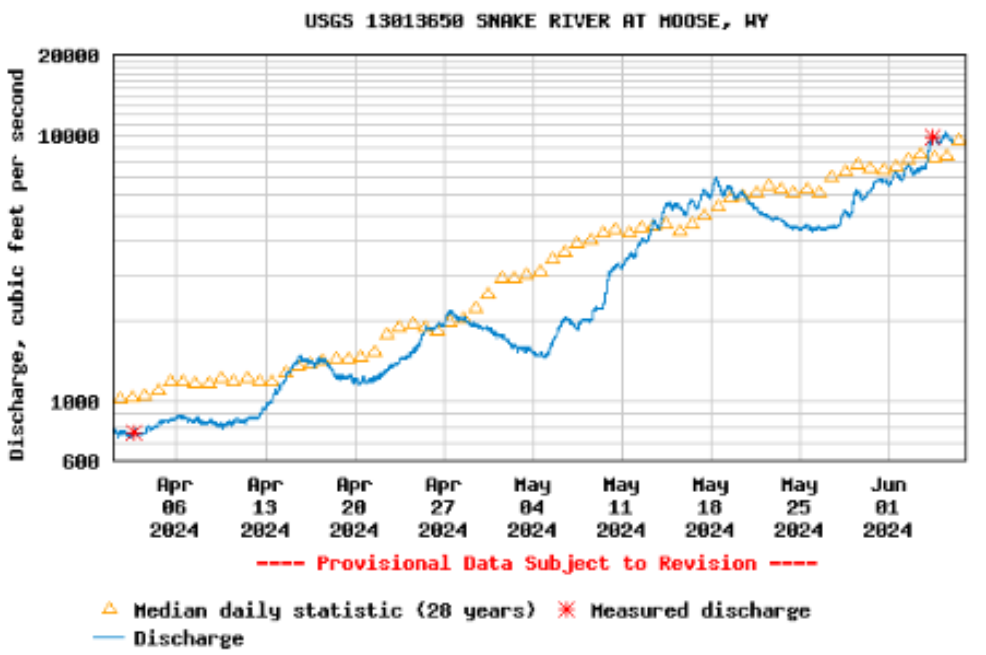
2024 Phillips Bench similar SWE years are 2019 and 2020.

2024 Phillips Bench SWE peaked at 25.7" on May 9, wow a late peak.

Today 10.6" remains. On Average, the snowmelt peak flow occurs 2 days after melt out.

This puts peak flow around June 11 / 12.





Always fun watching the Teton River snowmelt peak flow happen because of the tight relationship with melting snow at Grand Targhee and Phillips Bench.

You know the spring runoff party is over when the Buffalo Fork peaks as its always the last to reach its snowmelt peak flow.
Thanks Lyle S. for this fun hydro fact !

Let's hope La Nina brings plenty of snow and another exciting runoff season like this year. Soon we'll be talking about the Winter of 2024 - 2025 !