

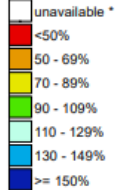
# 2023 Water Supply Outlook (6/1/23)



### Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

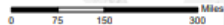
Apr 17, 2023

Current Snow Water Equivalent (SWE) Basin-wide Percent of 1991-2020 Median



\* Data unavailable at time of posting or measurement is not representative at this time of year

Provisional data subject to revision



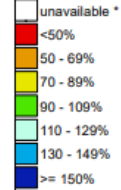
The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by: USDA/NRCS National Water and Climate Center, Portland, Oregon  
<https://www.nrcs.usda.gov/wps/portal/nrcs>

### Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

May 30, 2023

Current Snow Water Equivalent (SWE) Basin-wide Percent of 1991-2020 Median



\* Data unavailable at time of posting or measurement is not representative at this time of year

Provisional data subject to revision



of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on 00:00.

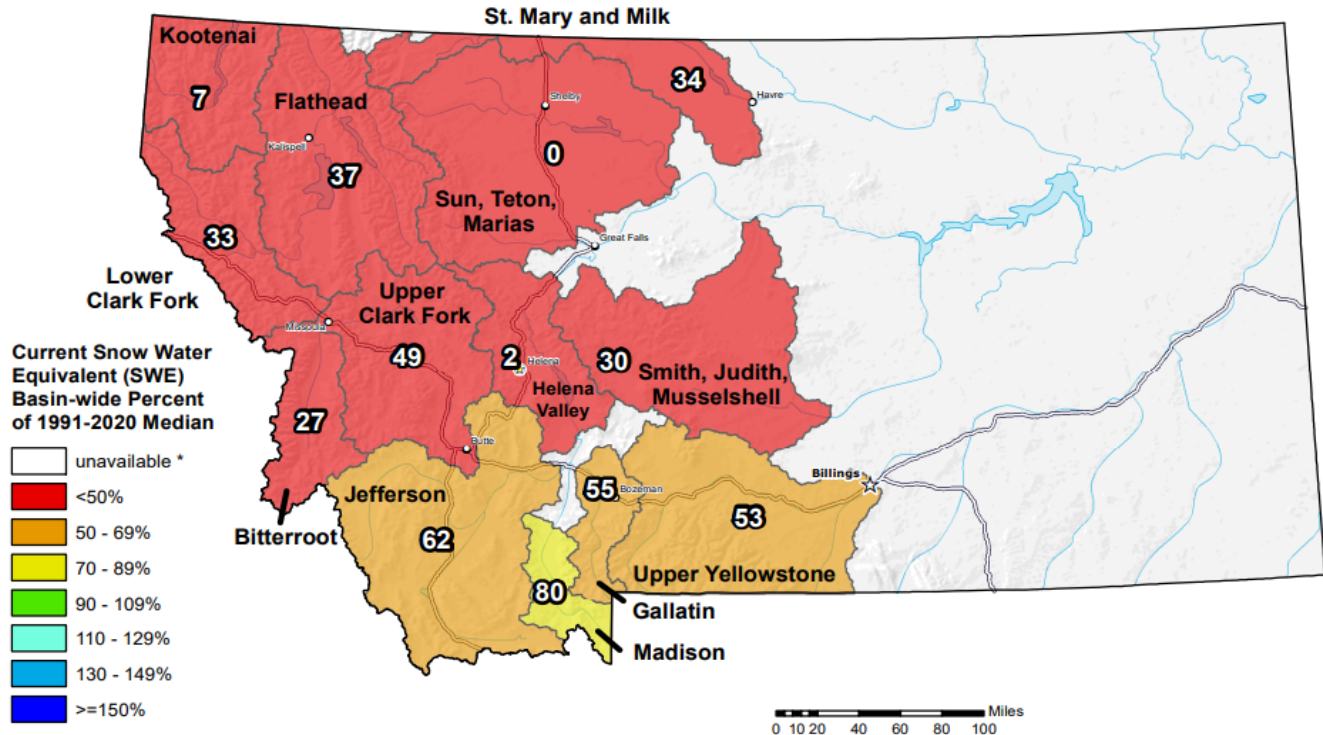
Prepared by: USDA/NRCS National Water and Climate Center, Portland, Oregon  
<https://www.nrcs.usda.gov/wps/portal/nrcs>

# West-wide

# Montana

## Montana SNOTEL Current Snow Water Equivalent (SWE) % of Normal

May 30, 2023



\* Data unavailable at time of posting or measurement is not representative at this time of year

**Provisional Data**  
**Subject to Revision**



The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by:  
USDA/NRCS National Water and Climate Center  
Portland, Oregon  
<https://www.nrcs.usda.gov/wps/portal/wcc/home/>

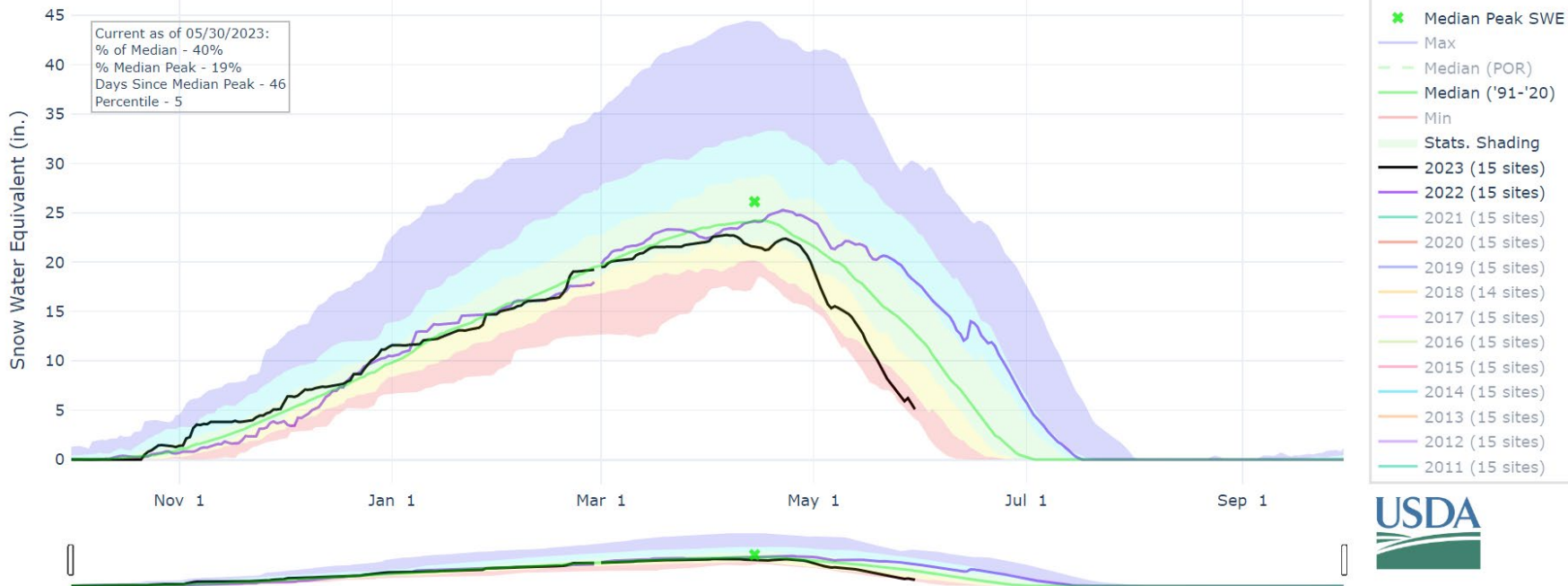
# Flathead Basin (40%)

## SNOW WATER EQUIVALENT IN FLATHEAD

Reset Range

[Link to data: CSV / JSON](#)

[Station List](#)



# North Fork Jocko (6,330 ft / 48%)

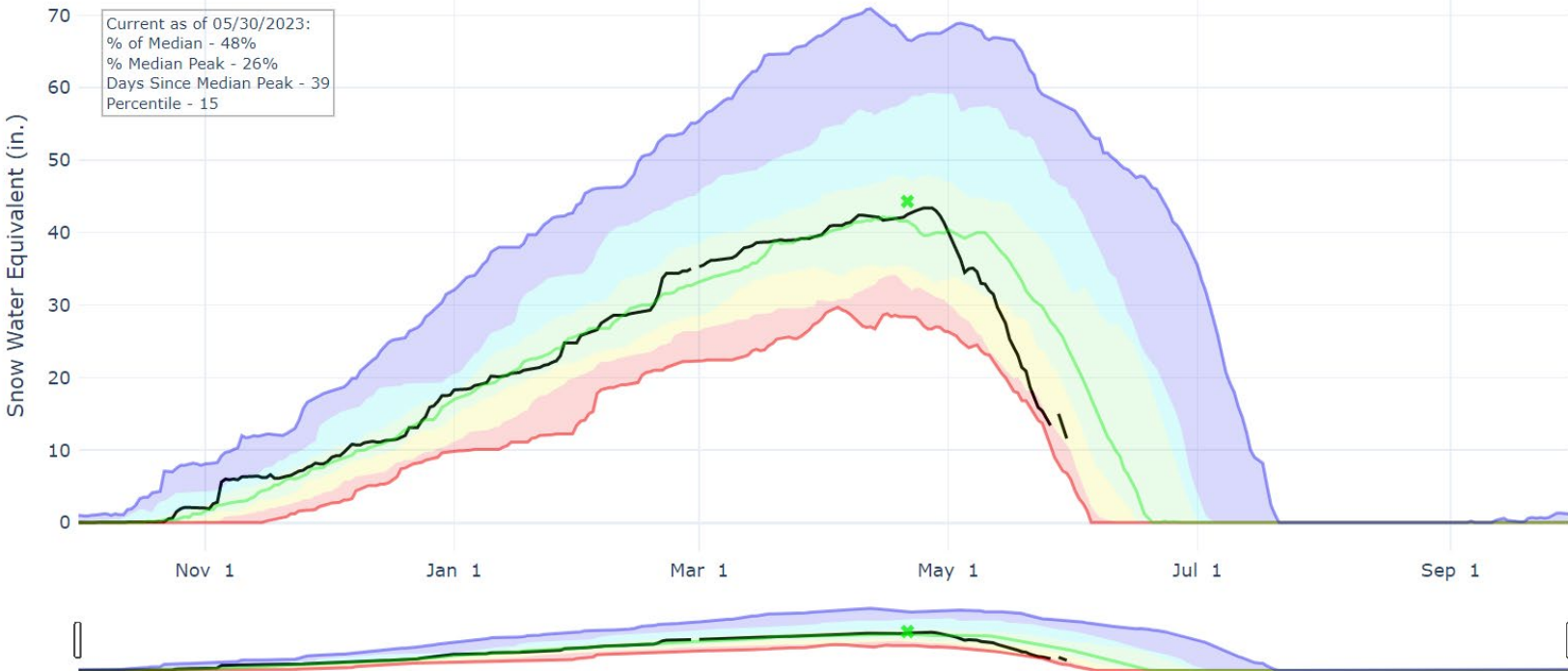
## SNOW WATER EQUIVALENT AT NORTH FORK JOCKO

Reset Range

[Link to data: CSV / JSON](#)

Current as of 05/30/2023:  
% of Median - 48%  
% Median Peak - 26%  
Days Since Median Peak - 39  
Percentile - 15

- ✱ Median Peak SWE
- Max
- Median (POR)
- Median ('91-'20)
- Min
- Stats. Shading
- 2023
- 2022
- 2021
- 2020
- 2019
- 2018
- 2017
- 2016
- 2015
- 2014
- 2013
- 2012
- 2011



# Moss Peak (6,780 ft / 74%)

## SNOW WATER EQUIVALENT AT MOSS PEAK

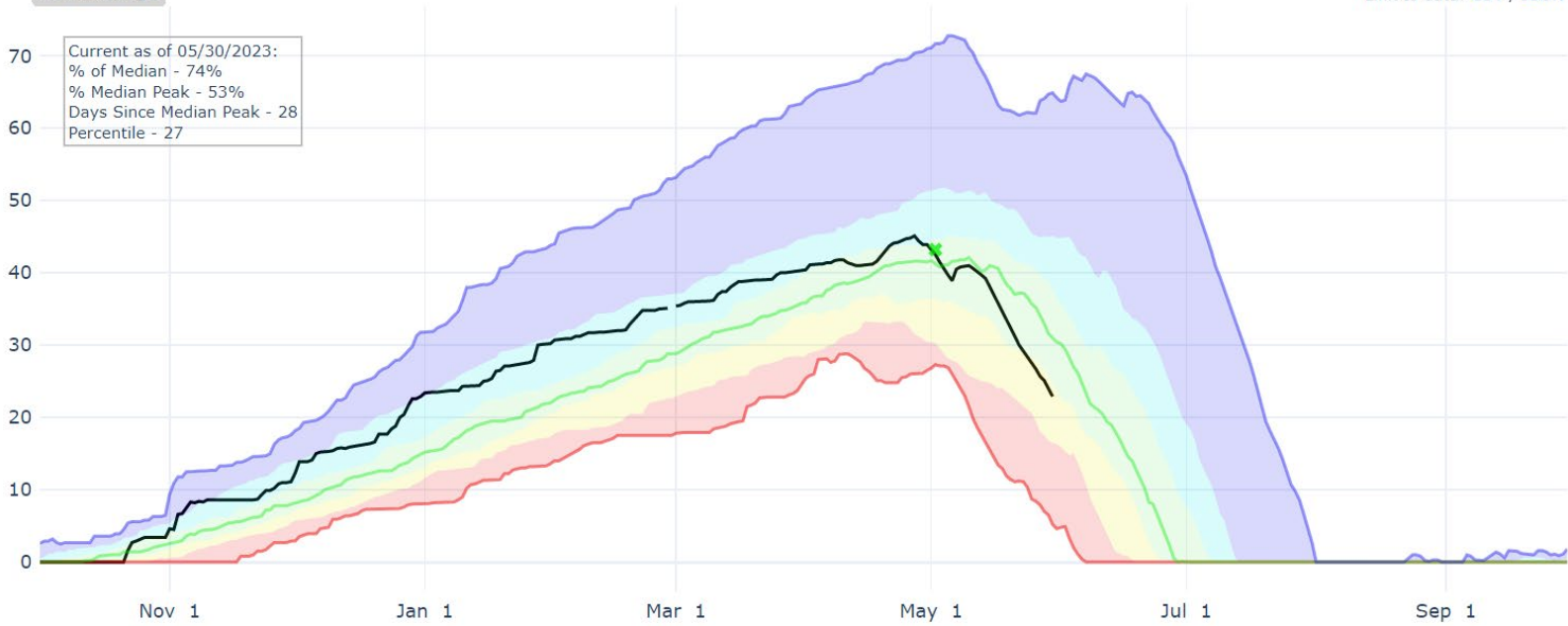
Reset Range

[Link to data: CSV / JSON](#)

Current as of 05/30/2023:  
% of Median - 74%  
% Median Peak - 53%  
Days Since Median Peak - 28  
Percentile - 27

- ✱ Median Peak SWE
- Max
- Median (POR)
- Median ('91-'20)
- Min
- Stats. Shading
- 2023
- 2022
- 2021
- 2020
- 2019
- 2018
- 2017
- 2016
- 2015
- 2014
- 2013
- 2012
- 2011

Snow Water Equivalent (in.)



# Bisson Creek (4,920 ft / May 11 Melt -out)

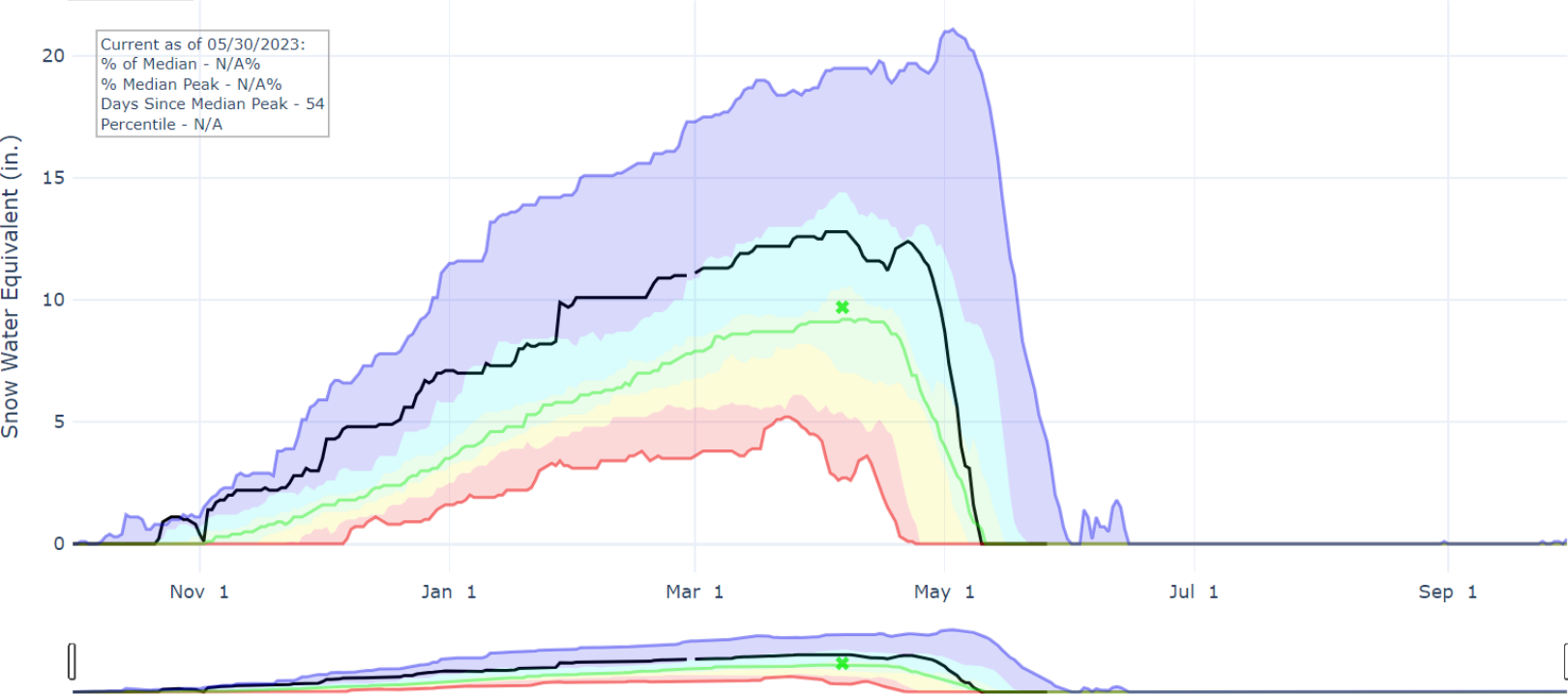
## SNOW WATER EQUIVALENT AT BISSON CREEK

Reset Range

Link to data: [CSV](#) / [JSON](#)

Current as of 05/30/2023:  
% of Median - N/A%  
% Median Peak - N/A%  
Days Since Median Peak - 54  
Percentile - N/A

- ✖ Median Peak SWE
- Max
- Median (POR)
- Median ('91-'20)
- Min
- Stats. Shading
- 2023
- 2022
- 2021
- 2020
- 2019
- 2018
- 2017
- 2016
- 2015
- 2014
- 2013
- 2012
- 2011



# Blacktail (5,650 ft / May 5 Melt-out)

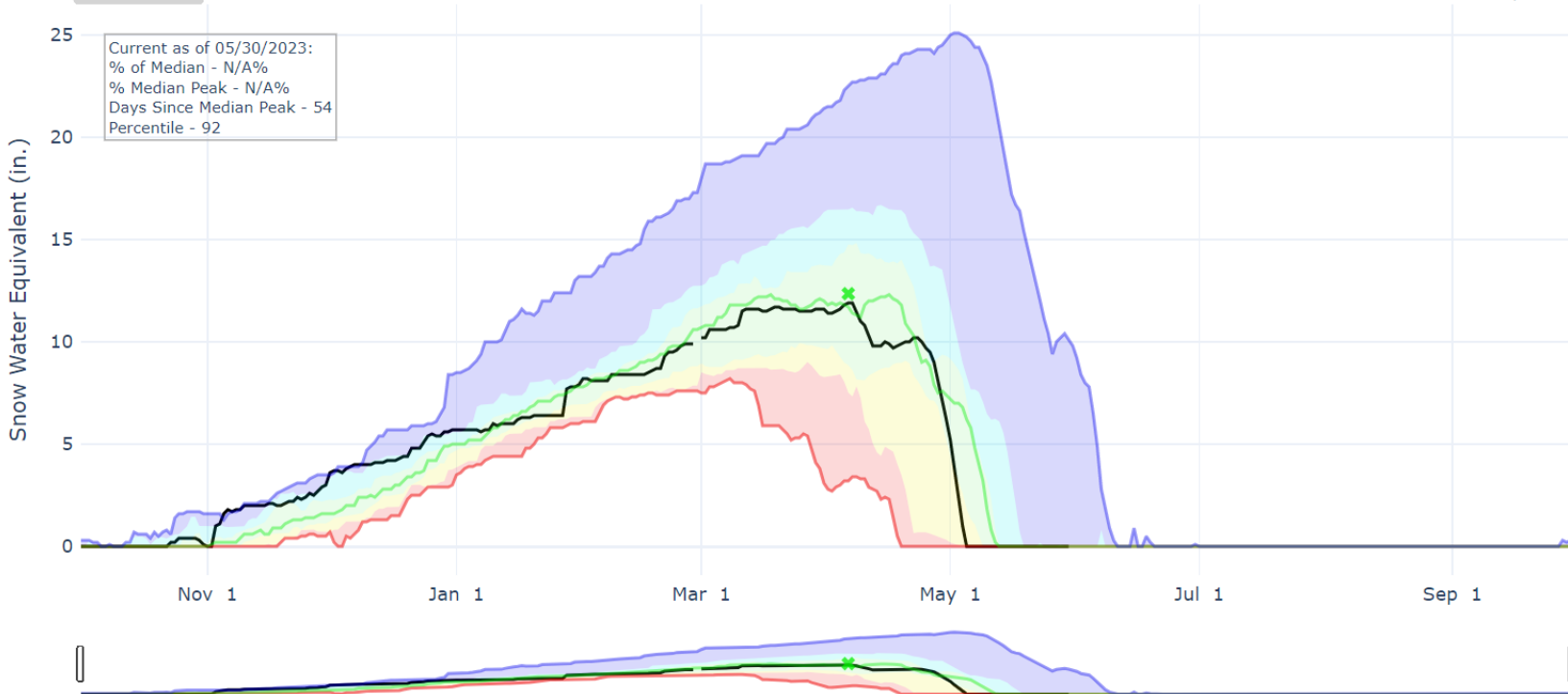
## SNOW WATER EQUIVALENT AT BLACKTAIL MTN

Reset Range

Link to data: [CSV](#) / [JSON](#)

Current as of 05/30/2023:  
% of Median - N/A%  
% Median Peak - N/A%  
Days Since Median Peak - 54  
Percentile - 92

- ✖ Median Peak SWE
- Max
- Median (POR)
- Median ('91-'20)
- Min
- Stats. Shading
- 2023
- 2022
- 2021
- 2020
- 2019
- 2018
- 2017
- 2016
- 2015
- 2014
- 2013
- 2012
- 2011





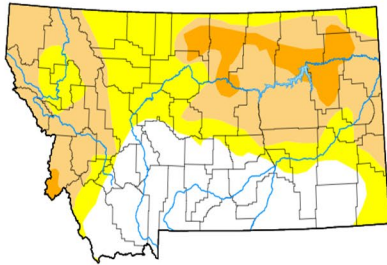
# Drought Conditions

## Montana

Home > Montana

**Map released: Thurs. April 13,  
2023**

Data valid: April 11, 2023 at 8 a.m. EDT



### Intensity



### Authors

United States and Puerto Rico Author(s):  
[David Simeral](#), Western Regional Climate Center

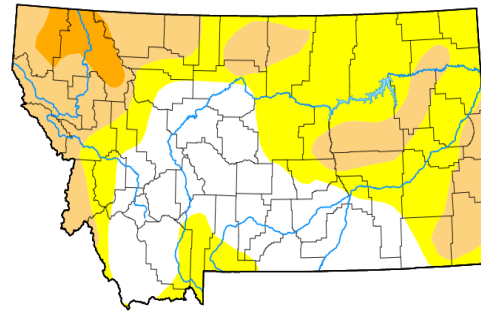
Pacific Islands and Virgin Islands Author(s):  
[Tsegaye Tadesse](#), National Drought Mitigation Center

## Montana

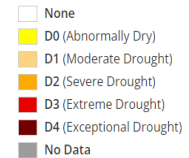
Home / Montana

**Map released: Thurs. May 25, 2023**

Data valid: May 23, 2023 at 8 a.m. EDT



### Intensity



### Authors

United States and Puerto Rico Author(s):  
[Brad Rippey](#), U.S. Department of Agriculture

Pacific Islands and Virgin Islands Author(s):  
[Rocky Bilotta](#), NOAA/NCEI

# Spring 2023 Weather and Climate Forecasts



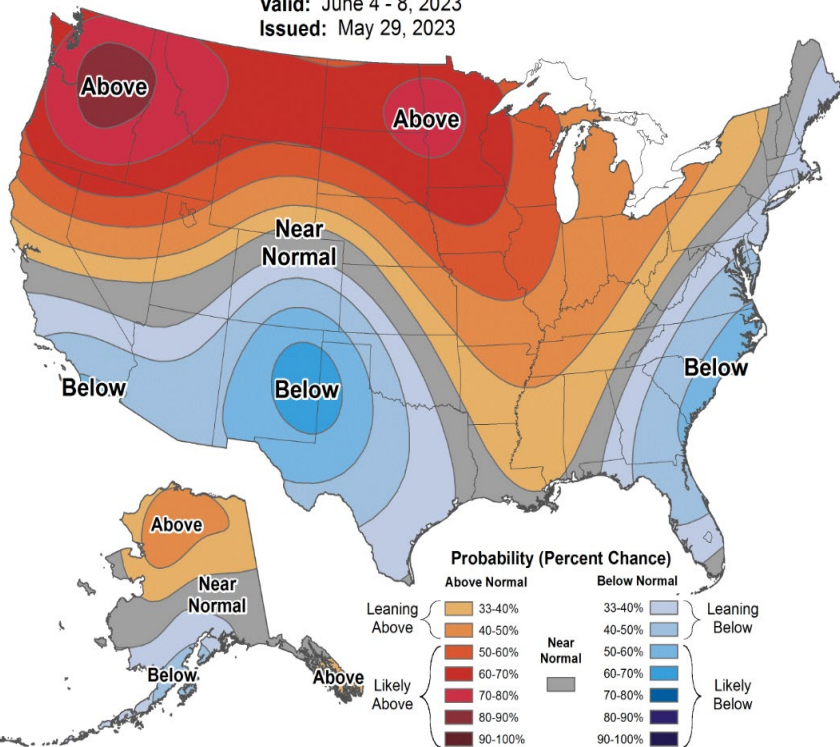
# 6-10 Day Forecast



## 6-10 Day Temperature Outlook



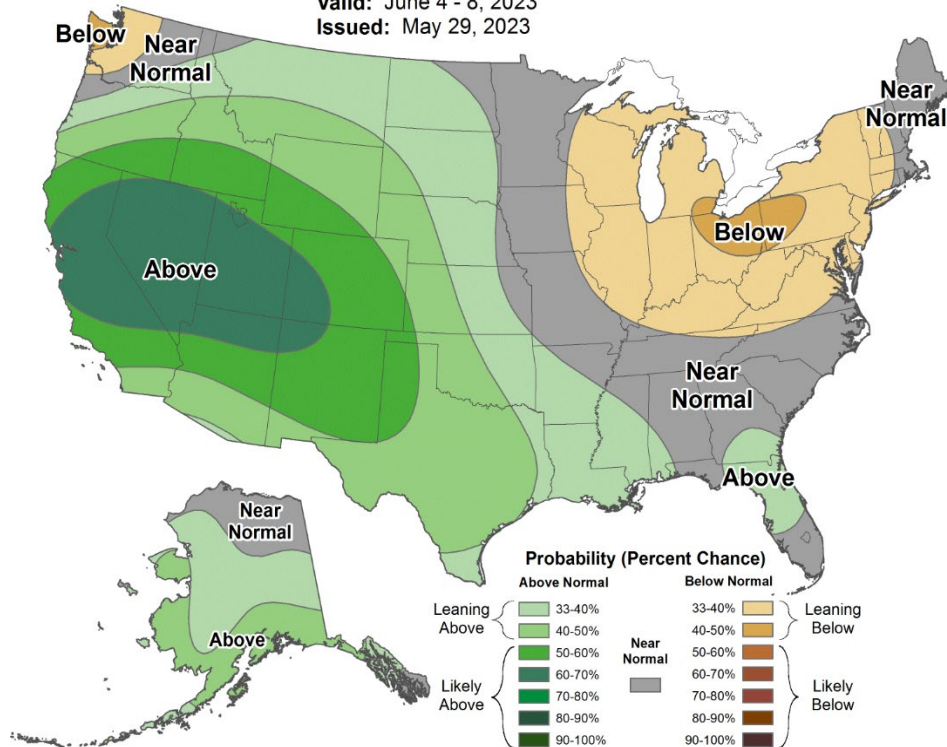
Valid: June 4 - 8, 2023  
 Issued: May 29, 2023



## 6-10 Day Precipitation Outlook



Valid: June 4 - 8, 2023  
 Issued: May 29, 2023



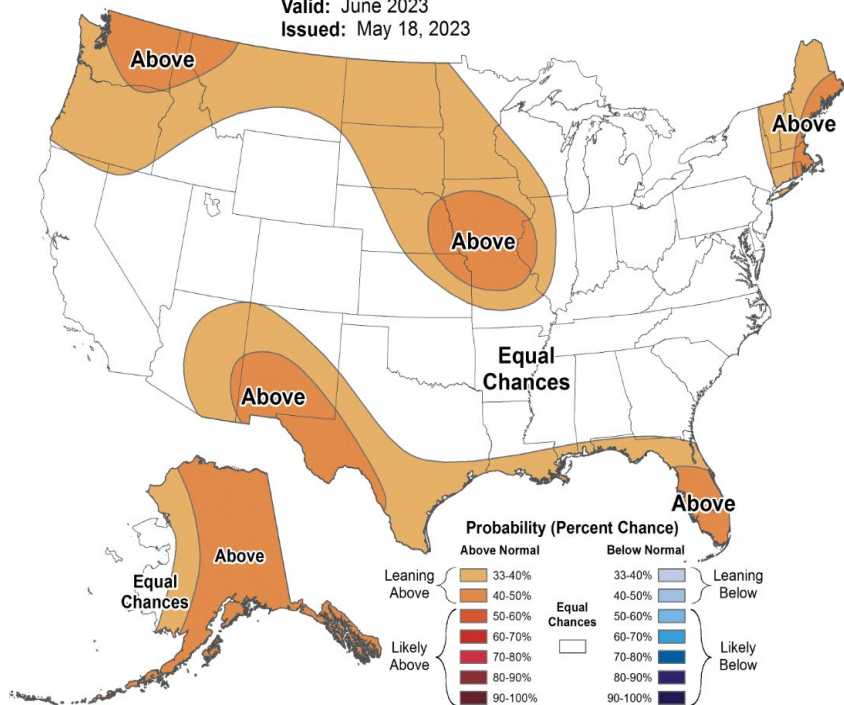
# 30 Day Forecast



## Monthly Temperature Outlook



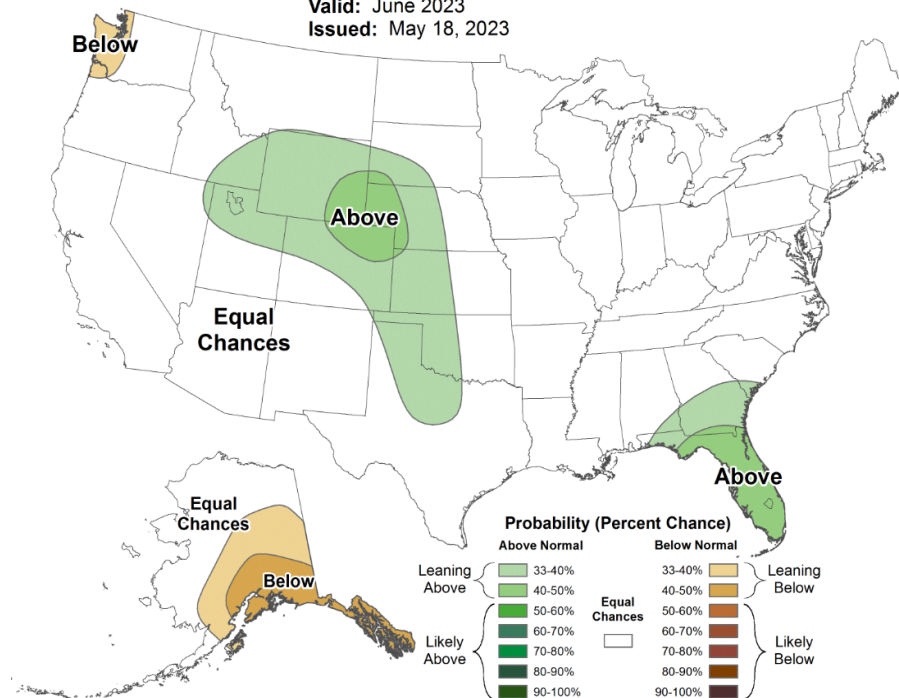
Valid: June 2023  
Issued: May 18, 2023



## Monthly Precipitation Outlook



Valid: June 2023  
Issued: May 18, 2023



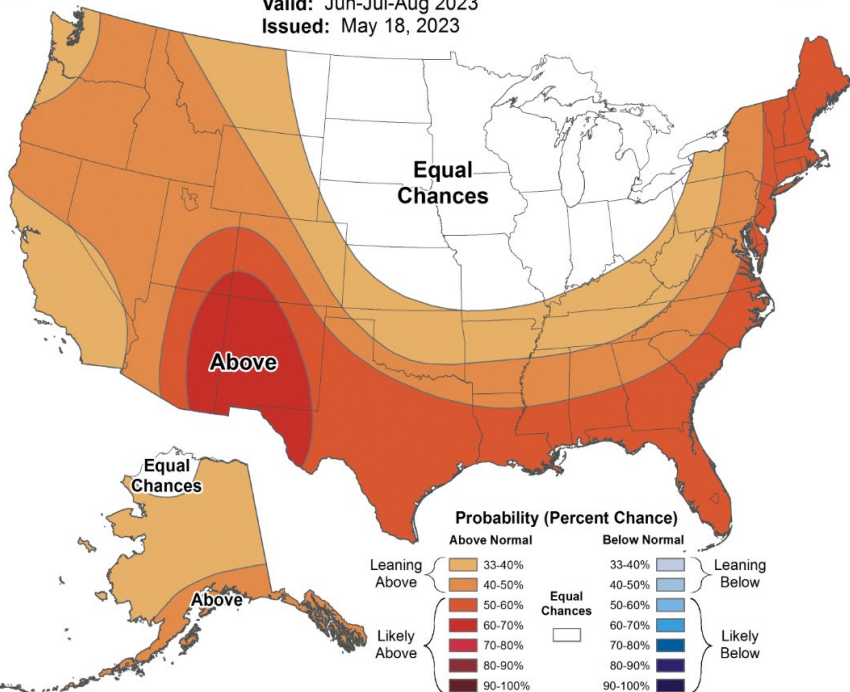
# 90 Day Forecast



## Seasonal Temperature Outlook



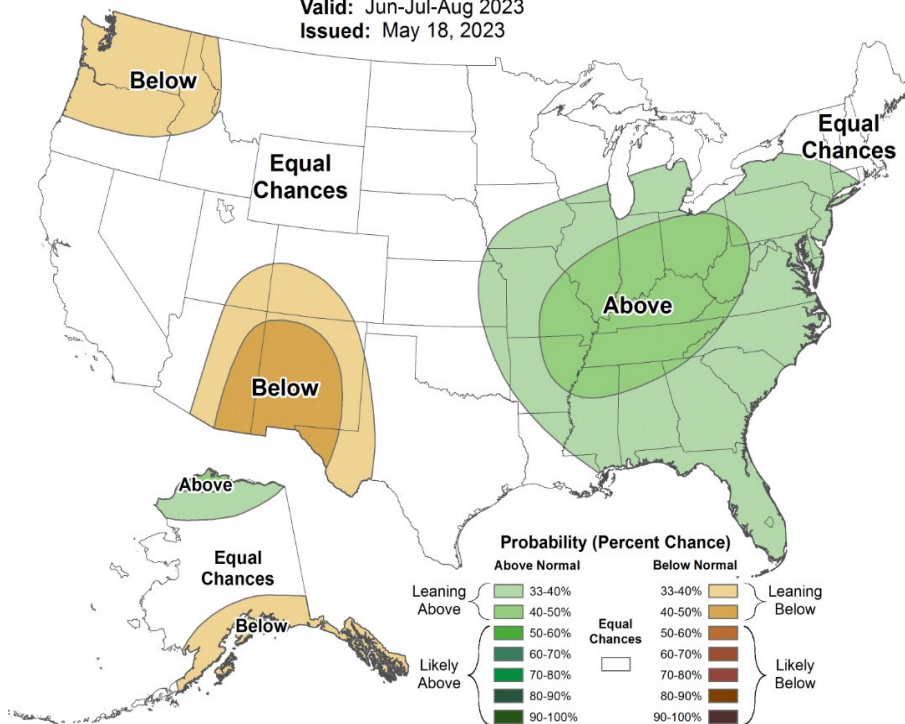
Valid: Jun-Jul-Aug 2023  
Issued: May 18, 2023



## Seasonal Precipitation Outlook

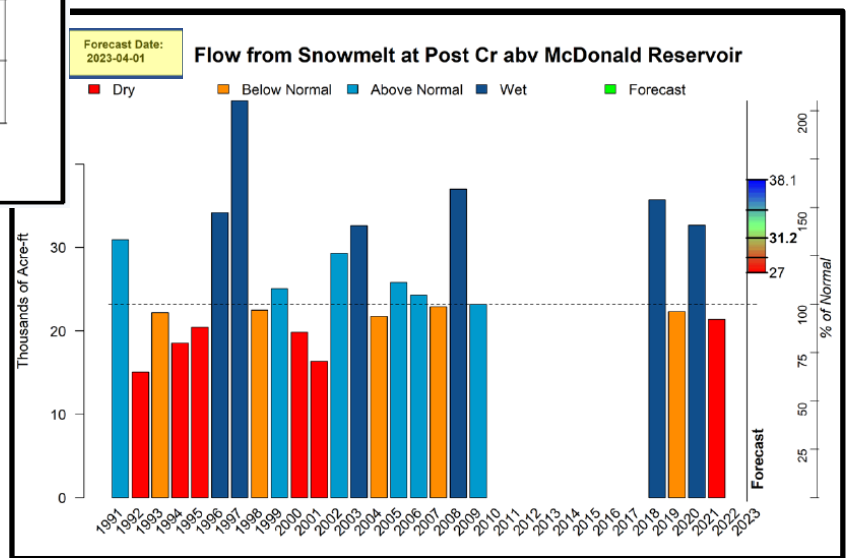
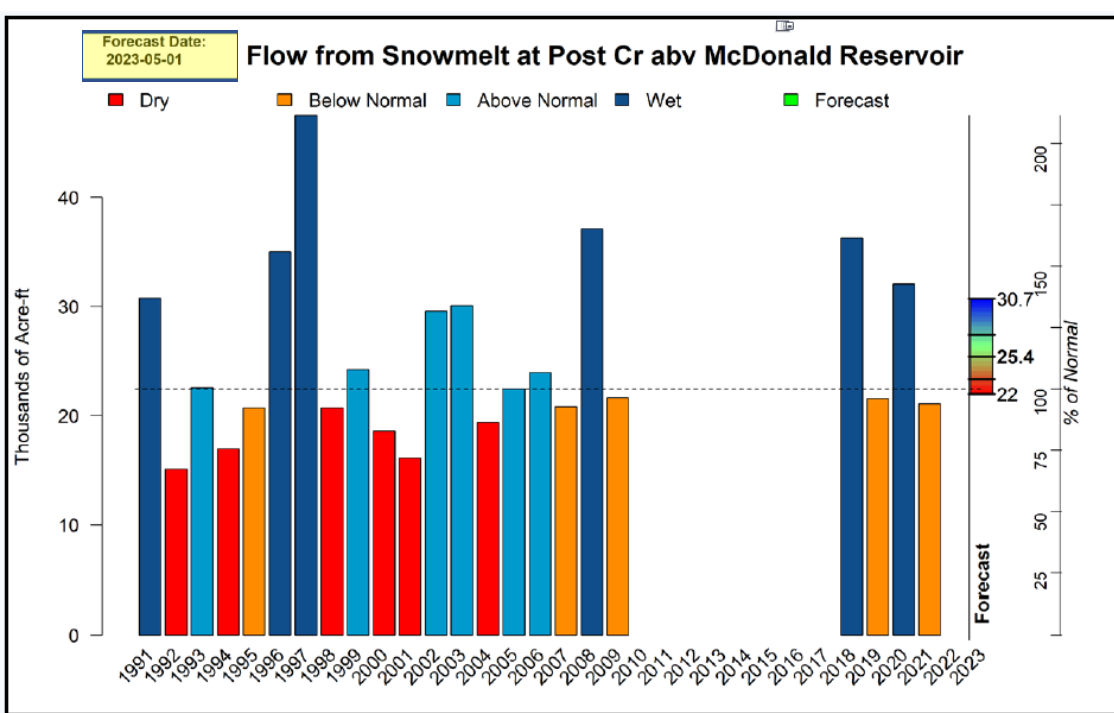


Valid: Jun-Jul-Aug 2023  
Issued: May 18, 2023



Approximate date	Purpose of Meeting
End of January	Review reservoir carryover and initial projection of water supply, tentatively categorize water-year type
End of February	Review reservoir carryover and initial projection of water supply, tentatively categorize water-year type, set March wet and normal year streamflow targets, modify MEF timing (if applicable) to match anticipated snowmelt runoff
End of March	Refine projection of water supply, tentatively categorize water-year type, and set April wet and normal streamflow targets, modify MEF timing (if applicable) to match anticipated snowmelt runoff
Mid-April	Refine projection of water supply, categorize water-year type, update wet and normal streamflow targets for the month, set initial RDAs based on water year type, modify MEF timing (if applicable) to match anticipated snowmelt runoff
Early May	Refine projection of water supply, update water-year type (if applicable), set wet and normal streamflow targets for the month, review initial RDAs based on water year type, taking into account any changes in water year type, modify MEF timing (if applicable) to match anticipated snowmelt runoff
Mid-May	Refine projection of water supply, update water-year type, update wet and normal streamflow targets for the month, update RDAs based on any changes in water year type, modify MEF timing (if applicable) to match anticipated snowmelt runoff
Early June	Refine projection of water supply, update water-year type (if applicable), set wet and normal streamflow targets for month, quantify portion of RDAs used to date, modify MEF timing (if applicable) to match anticipated snowmelt runoff
Mid June	Finalize projection of water supply and water-year type, update wet and normal streamflow targets for month, modify RDAs based on any changes in water year type, modify MEF timing (if applicable) to match anticipated snowmelt runoff
Early July	Set wet and normal streamflow targets for the month, evaluate RDAs, quantify portion of RDAs used to date
Mid July	Update wet and normal streamflow targets for the month
Early August	Set wet and normal streamflow targets for the month, evaluate RDAs, quantify portion of RDAs used to date
Early September	Set wet and normal streamflow targets for the month, quantify portion of RDAs used to date
Early October	Discuss annual reporting and water operations for the completed irrigation season, develop long-range forecast based on climatic indicators
Early December	Finalize annual reporting of water measurement, refine long-range forecast based on climatic indicators

# 2023 Water - Year Type Projection



Report Created:  
4/5/2023 2:11:08 PM

**Streamflow Forecast Summary: April 1, 2023**

(Medians based On 1991-2020 reference period)

Forecast Exceedance Probabilities For Risk Assessment  
Chance that actual volume will exceed forecast

Flathead	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Median (KAF)
Sf Flathead R nr Hungry Horse	APR-JUL	875	1010	1100	89%	1190	1320	1230
	APR-SEP	925	1070	1160	90%	1260	1400	1290
NF Flathead R nr Columbia Falls	APR-JUL	1010	1150	1240	81%	1340	1480	1540
	APR-SEP	1110	1270	1370	81%	1480	1630	1700
Swan R nr Bigfork	APR-JUL	445	505	550	105%	590	655	525
	APR-SEP	500	570	620	106%	670	740	585
Mission Ck nr St. Ignatius	APR-JUL	22	26	29	112%	31	35	26
	APR-SEP	26	31	34	110%	37	41	31
MF Flathead R nr West Glacier	APR-JUL	1000	1140	1230	84%	1330	1470	1470
	APR-SEP	1080	1240	1340	83%	1450	1600	1620
SF Jocko R nr Arlee	APR-JUL	29	36	40	114%	44	51	35
	APR-SEP	33	39	44	113%	49	55	39
Mill Ck ab Bassoo ck nr Niarada	APR-JUL	2.8	3.8	4.6	98%	5.4	6.8	4.7
	APR-SEP	3.1	4.1	4.9	100%	5.8	7.2	4.9
Hungry Horse Reservoir Inflow <sup>1,2</sup>	APR-JUL	1290	1570	1700	92%	1830	2110	1850
	APR-SEP	1360	1660	1800	92%	1940	2240	1960
South Crow Ck nr Ronan	APR-JUL	8.9	10.5	11.6	114%	12.7	14.3	10.2
	APR-SEP	10	12.1	13.5	117%	14.9	17	11.5
Flathead R at Columbia Falls <sup>2</sup>	APR-JUL	3440	3890	4190	86%	4500	4950	4870
	APR-SEP	3710	4210	4550	84%	4890	5390	5400
Flathead Lake Inflow <sup>1,2</sup>	APR-JUL	3910	4770	5160	91%	5550	6420	5670
	APR-SEP	4140	5130	5580	88%	6030	7020	6310

1) 90% And 10% exceedance probabilities are actually 95% And 5%

2) Forecasts are For unimpaired flows. Actual flow will be dependent On management of upstream reservoirs And diversions

Report Created:  
5/24/2023 8:06:16 AM

**Streamflow Forecast Summary: May 1, 2023**

(Medians based On 1991-2020 reference period)

Forecast Exceedance Probabilities For Risk Assessment  
Chance that actual volume will exceed forecast

Flathead	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Median (KAF)
Sf Flathead R nr Hungry Horse	MAY-JUL	680	785	860	86%	935	1040	1000
	MAY-SEP	720	840	920	86%	1000	1120	1070
NF Flathead R nr Columbia Falls	MAY-JUL	760	895	985	71%	1080	1210	1390
	MAY-SEP	860	1010	1110	72%	1210	1360	1540
Swan R nr Bigfork	MAY-JUL	340	390	425	98%	460	510	435
	MAY-SEP	395	450	490	97%	530	585	505
Mission Ck nr St. Ignatius	MAY-JUL	21	25	27	108%	29	33	25
	MAY-SEP	25	29	32	107%	35	39	30
MF Flathead R nr West Glacier	MAY-JUL	830	960	1050	80%	1140	1270	1310
	MAY-SEP	910	1060	1160	79%	1260	1410	1470
SF Jocko R nr Arlee	MAY-JUL	26	31	35	106%	39	44	33
	MAY-SEP	30	35	39	105%	43	48	37
Mill Ck ab Bassoo ck nr Niarada	MAY-JUL	2	2.7	3.2	100%	3.8	4.6	3.2
	MAY-SEP	2.3	3	3.5	97%	4.1	5	3.6
Hungry Horse Reservoir Inflow <sup>1,2</sup>	MAY-JUL	1040	1250	1350	88%	1450	1660	1530
	MAY-SEP	1080	1320	1430	86%	1540	1780	1660
South Crow Ck nr Ronan	MAY-JUL	7.9	9.5	10.6	109%	11.7	13.3	9.7
	MAY-SEP	9	10.9	12.1	111%	13.3	15.2	10.9
Flathead R at Columbia Falls <sup>2</sup>	MAY-JUL	2700	3100	3370	77%	3640	4040	4370
	MAY-SEP	2960	3410	3720	76%	4030	4480	4900
Flathead Lake Inflow <sup>1,2</sup>	MAY-JUL	3030	3750	4080	81%	4410	5130	5040
	MAY-SEP	3230	4080	4470	79%	4860	5710	5680

1) 90% And 10% exceedance probabilities are actually 95% And 5%

2) Forecasts are For unimpaired flows. Actual flow will be dependent On management of upstream reservoirs And diversions



# 2023 Forecast Against Site-Specific 3.7 Streams

## April - July

Table 1: April Water Year and NRCS Streamflow Forecast

NRCS Streamflow Forecast, April- July 2023					Site-Specific Water Year Thresholds		
Gage Site	70%	50%	30%	% Median	Wet Year	Normal Year	Dry Year
South Fork Jocko near Arlee	36,000	40,000	44,000	114%	>36,000	24,000 - 36,000	<24,000
Mission Creek near St. Ignatius	26,000	29,000	31,000	112%	>29,000	21,100 - 29,000	<21,100
South Crow Creek near Ronan	10,500	11,600	12,700	114%	>11,800	7,700 - 11,800	<7,700
Mill Creek above Bassoo Creek near Niarada	3,800	4,600	5,400	98%	>4,900	2,200 - 4,900	<2,200

Wet
Normal
Dry

\*all values are in acre feet

## May - July

Table 2: May Water Year and NRCS Streamflow Forecast

NRCS Streamflow Forecast, April- July 2023					Site-Specific Water Year Thresholds		
Gage Site	70%	50%	30%	% Median	Wet Year	Normal Year	Dry Year
South Fork Jocko near Arlee	31,000	35,000	39,000	106%	>36,000	24,000 - 36,000	<24,000
Mission Creek near St. Ignatius	25,000	27,000	29,000	108%	>29,000	21,100 - 29,000	<21,100
South Crow Creek near Ronan	9,500	10,600	11,700	109%	>11,800	7,700 - 11,800	<7,700
Mill Creek above Bassoo Creek near Niarada	2,700	3,200	3,800	100%	>4,900	2,200 - 4,900	<2,200

Wet
Normal
Dry

\*all values are in acre feet


Adapting APR-JUL forecast volumes to subsequent forecasts that list MAY-JUL volumes requires further discussion.

## 2023 Forecast Against Site-Specific 3.7 Streams

April Forecast (APR-JUL)		May Forecast (MAY-JUL)		Less Volume Forecasted	Observed April Flows
Jocko Area		Jocko Area		(ac. ft)	(ac. ft)
S. Fork Jocko	40,000	S. Fork Jocko	35,000	5,000	2254
Mission Area		Mission Area			
Mission Creek	29,000	Mission Creek	27,000	2,000	993
South Crow	11,600	South Crow	10,600	1,000	756
Little Bitterroot		Little Bitterroot			
Mill Creek	4,600	Mill Creek	3,200	1,400	371

## 2023 Forecast Against Site-Specific 3.7 Streams

April Forecast (APR-JUL)		May Forecast (MAY-JUL)		Less Volume Forecasted	Observed April Flows
Jocko Area		Jocko Area		(ac. ft)	(ac. ft)
S. Fork Jocko	40,000	S. Fork Jocko	35,000	5,000	2254
Mission Area		Mission Area			
Mission Creek	29,000	Mission Creek	27,000	2,000	993
South Crow	11,600	South Crow	10,600	1,000	756
Little Bitterroot		Little Bitterroot			
Mill Creek	4,600	Mill Creek	3,200	1,400	371


  
 How about if we take May forecast and add the observed April flows? How would that compare?

## 2023 Forecast Against Site-Specific 3.7 Streams

April Forecast (APR-JUL)		May Forecast (MAY-JUL)		Less Volume Forecasted	Observed April Flows
<b>Jocko Area</b>		<b>Jocko Area</b>		(ac. ft)	(ac. ft)
S. Fork Jocko	40,000	S. Fork Jocko	35,000	5,000	2254
<b>Mission Area</b>		<b>Mission Area</b>			
Mission Creek	29,000	Mission Creek	27,000	2,000	993
South Crow	11,600	South Crow	10,600	1,000	756
<b>Little Bitterroot</b>		<b>Little Bitterroot</b>			
Mill Creek	4,600	Mill Creek	3,200	1,400	371

+

How about if we take May forecast and add the observed April flows? How would that compare?

May Forecast + April Observed Flow	
<b>Jocko Area</b>	
S. Fork Jocko	37,254
<b>Mission Area</b>	
Mission Creek	27,993
South Crow	11,356
<b>Little Bitterroot</b>	
Mill Creek	3,571

# 2023 Forecast Against Site-Specific 3.7 Streams

April Forecast (APR-JUL)		May Forecast (MAY-JUL)		Less Volume Forecasted	Observed April Flows
<b>Jocko Area</b>		<b>Jocko Area</b>		(ac. ft)	(ac. ft)
S. Fork Jocko	40,000	S. Fork Jocko	35,000	5,000	2254
<b>Mission Area</b>		<b>Mission Area</b>			
Mission Creek	29,000	Mission Creek	27,000	2,000	993
South Crow	11,600	South Crow	10,600	1,000	756
<b>Little Bitterroot</b>		<b>Little Bitterroot</b>			
Mill Creek	4,600	Mill Creek	3,200	1,400	371

How about if we take May forecast and add the observed April flows? How would that compare?

Table 2: May Water Year and NRCS Streamflow Forecast

NRCS Streamflow Forecast, April- July 2023					Site-Specific Water Year Thresholds		
Gage Site	70%	50%	30%	% Median	Wet Year	Normal Year	Dry Year
South Fork Jocko near Arlee		37,254			>36,000	24,000 - 36,000	<24,000
Mission Creek near St. Ignatius		27,993			>29,000	21,100 - 29,000	<21,100
South Crow Creek near Ronan		11,356			>11,800	7,700 - 11,800	<7,700
Mill Creek above Bassoo Creek near Niarada		3,571			>4,900	2,200 - 4,900	<2,200

Wet
Normal
Dry

\*all values are in acre feet

May Forecast + April Observed Flow	
<b>Jocko Area</b>	
S. Fork Jocko	37,254
<b>Mission Area</b>	
Mission Creek	27,993
South Crow	11,356
<b>Little Bitterroot</b>	
Mill Creek	3,571

# 2023 Forecast Against Site-Specific 3.7 Streams

Using this type of approach, the same brackets are determined for Wet, Normal, Dry Year Type as the April Forecast projected.

Table 1: April Water Year and NRCS Streamflow Forecast

NRCS Streamflow Forecast, April- July 2023					Site-Specific Water Year Thresholds		
Gage Site	70%	50%	30%	% Median	Wet Year	Normal Year	Dry Year
South Fork Jocko near Arlee	36,000	40,000	44,000	114%	>36,000	24,000 - 36,000	<24,000
Mission Creek near St. Ignatius	26,000	29,000	31,000	112%	>29,000	21,100 - 29,000	<21,100
South Crow Creek near Ronan	10,500	11,600	12,700	114%	>11,800	7,700 - 11,800	<7,700
Mill Creek above Bassoo Creek near Niara	3,800	4,600	5,400	98%	>4,900	2,200 - 4,900	<2,200

Wet
Normal
Dry

\*all values are in acre feet

Table 2: May Water Year and NRCS Streamflow Forecast

NRCS Streamflow Forecast, April- July 2023					Site-Specific Water Year Thresholds		
Gage Site	70%	50%	30%	% Median	Wet Year	Normal Year	Dry Year
South Fork Jocko near Arlee		37,254			>36,000	24,000 - 36,000	<24,000
Mission Creek near St. Ignatius		27,993			>29,000	21,100 - 29,000	<21,100
South Crow Creek near Ronan		11,356			>11,800	7,700 - 11,800	<7,700
Mill Creek above Bassoo Creek near Niara		3,571			>4,900	2,200 - 4,900	<2,200

Wet
Normal
Dry

\*all values are in acre feet