Governor's Drought and Water Supply Advisory Committee
Snowpack and Water Supply Forecast Update
May 9, 2024

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Outline

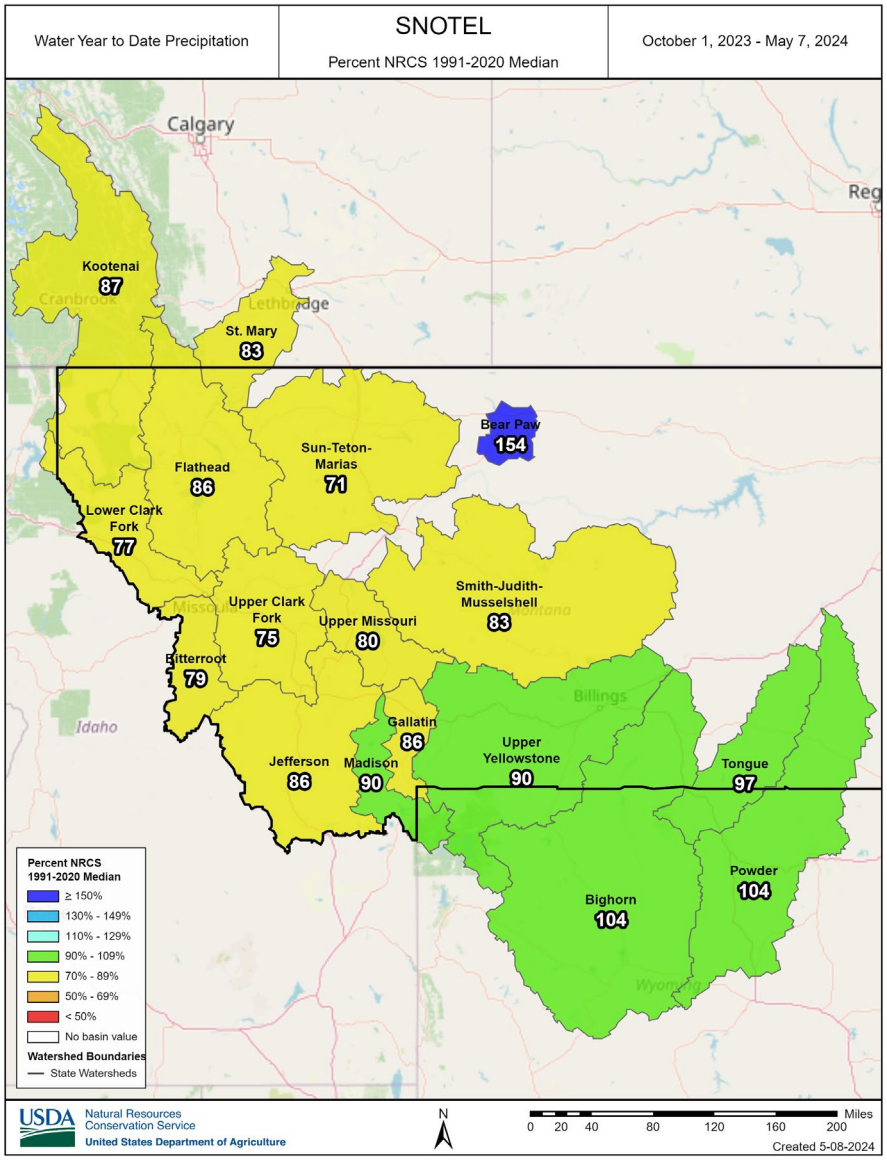
Precipitation
- Water Year 2024 Precipitation

Snowpack
- Current Snowpack Percentages
- Water Year 2024 Review
- Other Low Snow Years

Forecasts
- HUC 4 – 6 (Exceedance 70, 50, 30, 10)

General Information

- Precipitation Data from SNOTEL
- Snowpack Data from Snow Courses (Stations: 146) and SNOTEL (Stations: 144)
- Percentages reference 1991-2020 median (normal)
- Percentiles reference Period of Record
- Snow Water Equivalent (SWE) – Inches of Water in the Snowpack



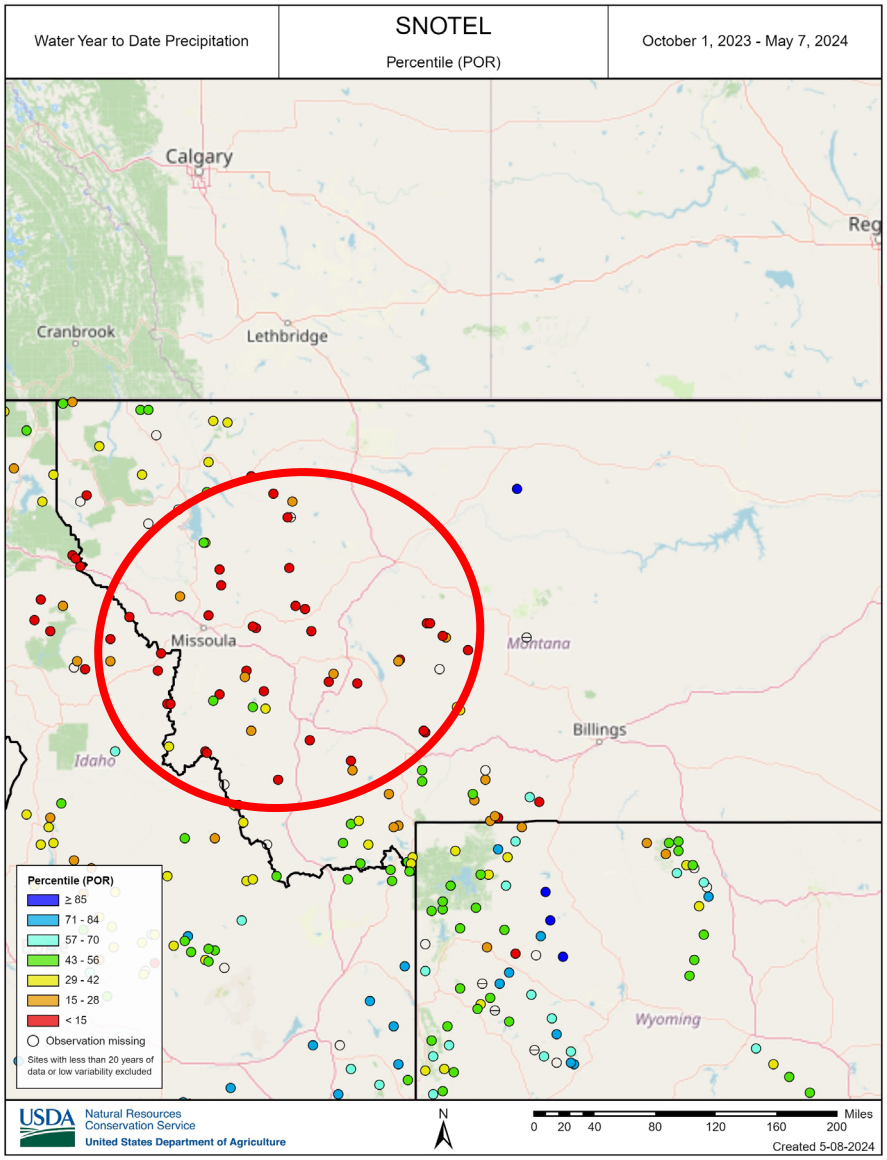
Precipitation Since October 1, 2023

% of median (1991-2020)

71% - Sun-Teton-Marias
75% - Upper Clark Fork
77% - Lower Clark Fork
79% - Bitterroot
80% - Upper Missouri
83% - Smith-Judith-Musselshell
83% - St. Mary
86% - Flathead
86% - Gallatin
86% - Jefferson
87% - Kootenai

90% - Madison
90% - Upper Yellowstone
97% - Tongue
104% - Bighorn
104% - Powder

154% - Bear Paw



Precipitation Since October 1, 2023

Percentile (POR)

Lowest on Record

SNOTEL (County): Current (Min), Median, Observations

North Fork Elk Creek (Powell): 10.2”, 16.7”, 46

Wood Creek (Lewis and Clark): 11.7”, 17.5”, 46

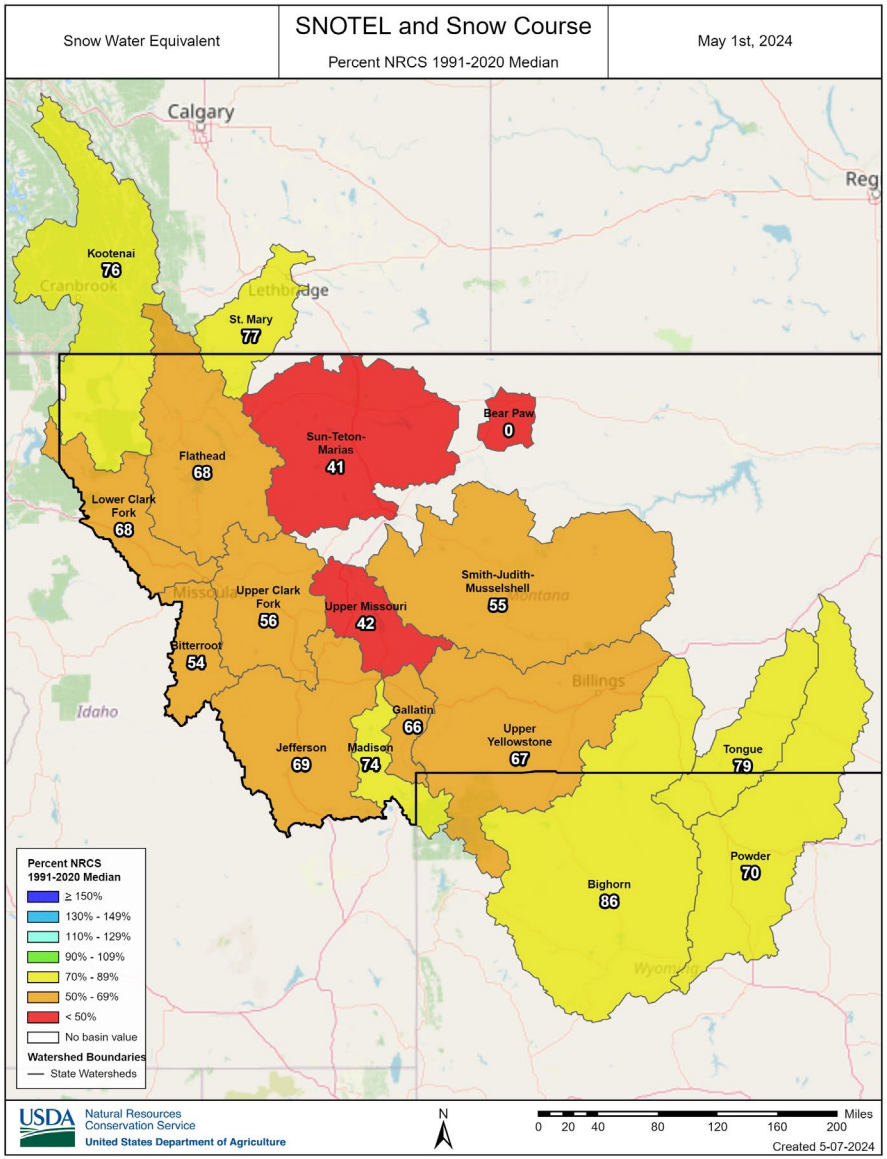
Badger Pass (Pondera): 24.2”, 36.4”, 44

Basin Creek (Silver Bow): 6.9”, 12.6”, 44

Brackett Creek (Gallatin): 23.1”, 31.0”, 30

Nevada Ridge (Lewis and Clark): 13.1”, 18.2”, 30

Stuart Mountain (Missoula): 27.2”, 35.4”, 30



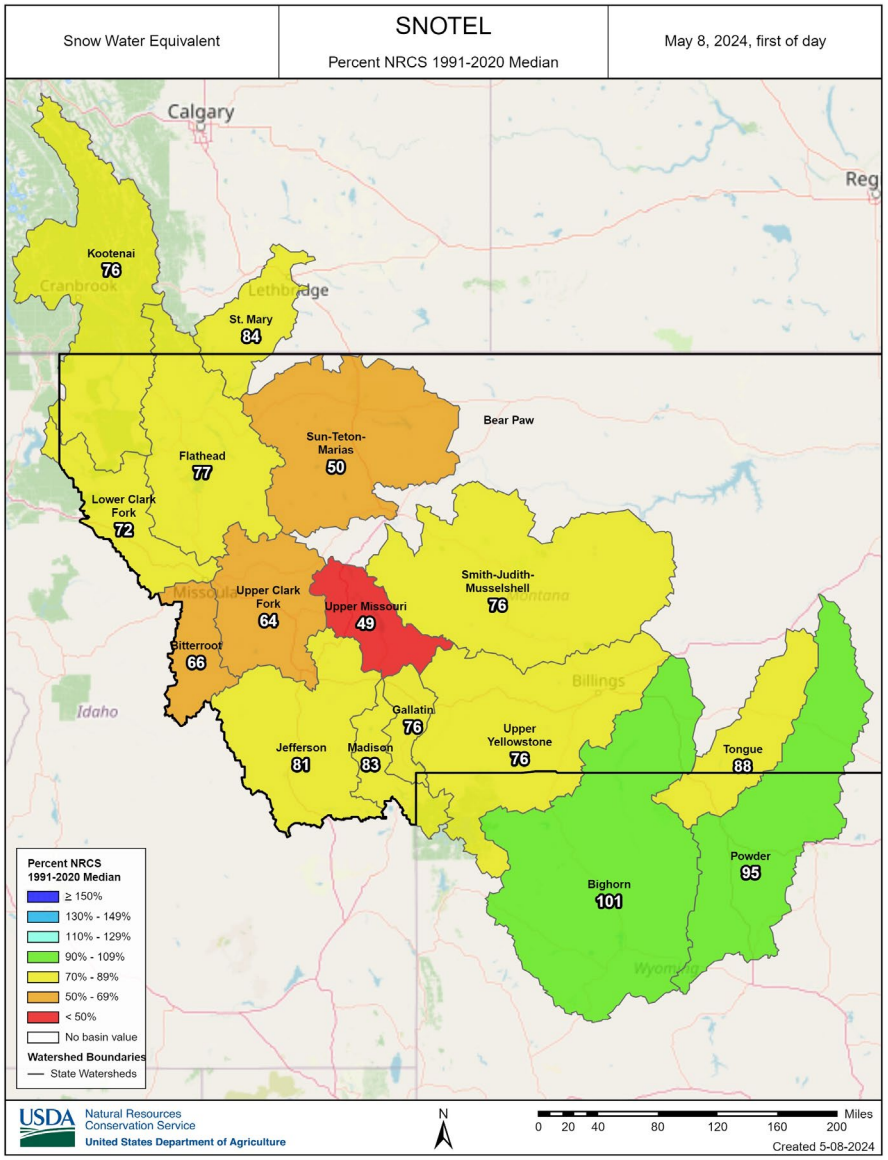
Monthly Snowpack - May 1, 2024

% of median (1991-2020)

0% - Bears Paw
41% - Sun-Teton-Marias
42% - Upper Missouri

54% - Bitterroot
55% - Smith-Judith-Musselshell
56% - Upper Clark Fork
66% - Gallatin
67% - Upper Yellowstone
68% - Lower Clark Fork
68% - Flathead
69% - Jefferson
76% - Kootenai
77% - St. Mary

70% - Powder
74% - Madison
79% - Tongue
86% - Bighorn



Daily Snowpack - May 8, 2024

% of median (1991-2020)

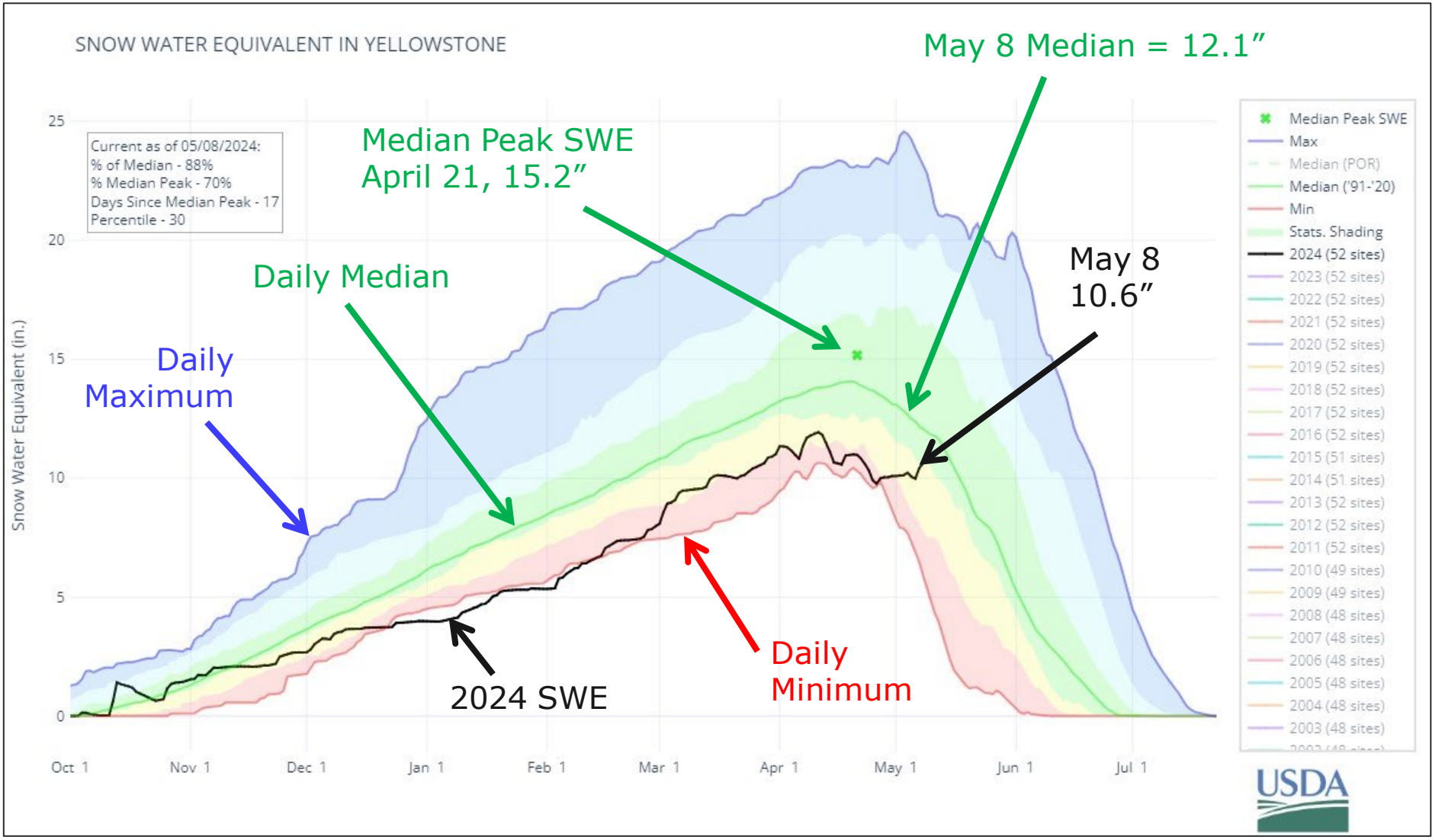
49% - Upper Missouri

50% - Sun-Teton-Marias
64% - Upper Clark Fork
66% - Bitterroot

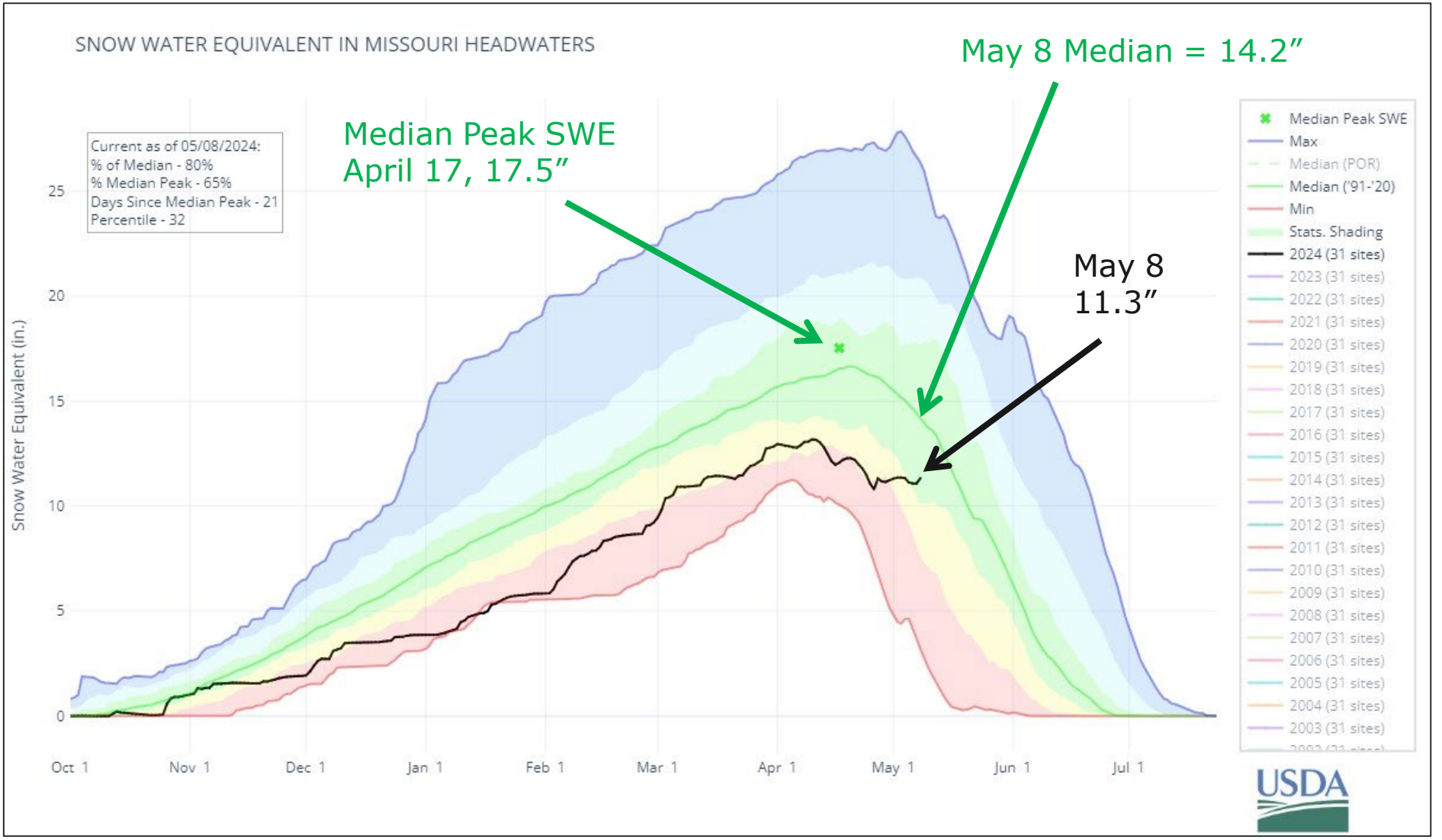
72% - Lower Clark Fork
76% - Smith-Judith-Musselshell
76% - Gallatin
76% - Upper Yellowstone
76% - Kootenai
77% - Flathead
81% - Jefferson
83% - Madison
84% - St. Mary
88% - Tongue

95% - Powder
101% - Bighorn

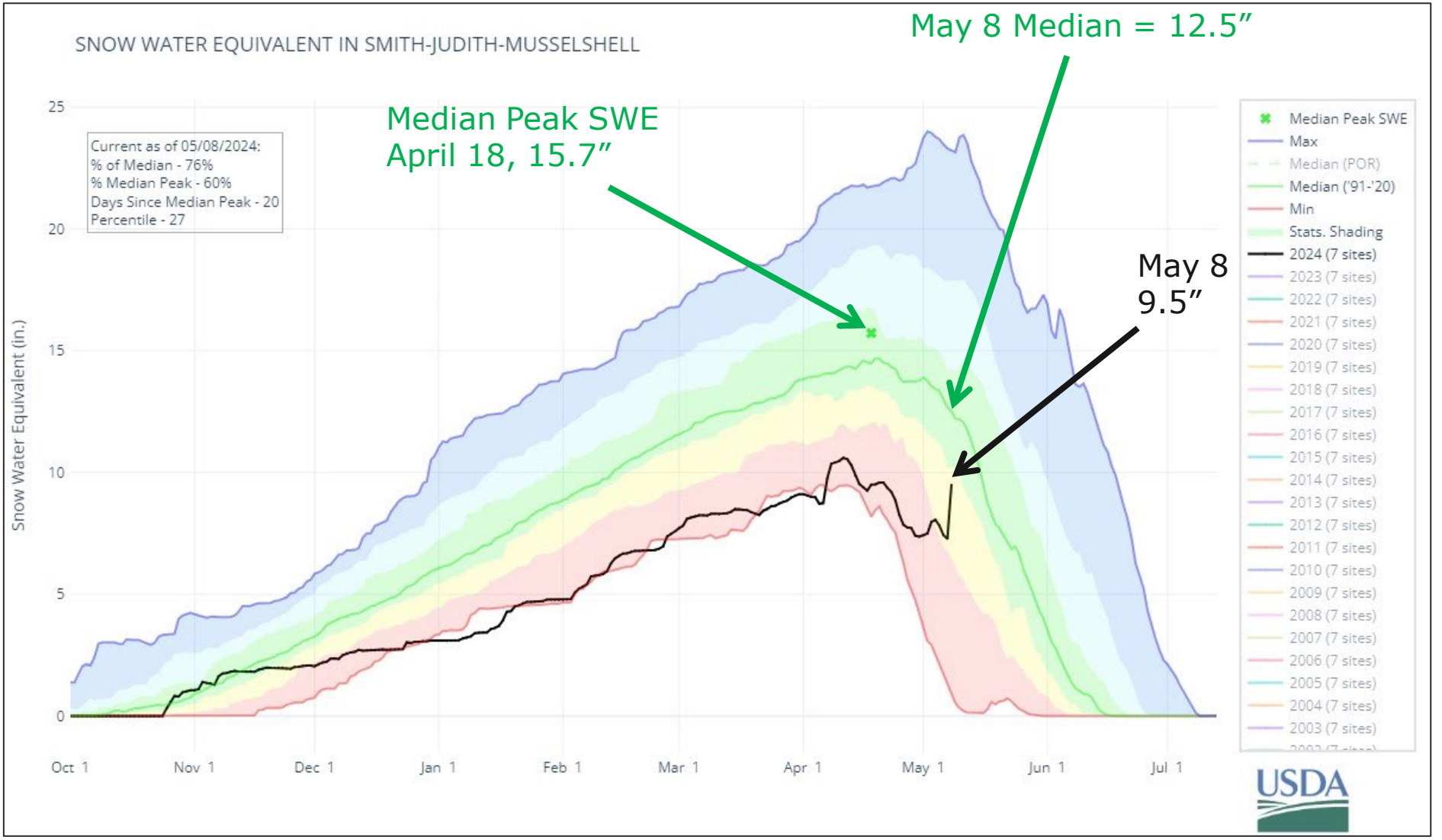
Upper Yellowstone, Bighorn, Powder, Tongue



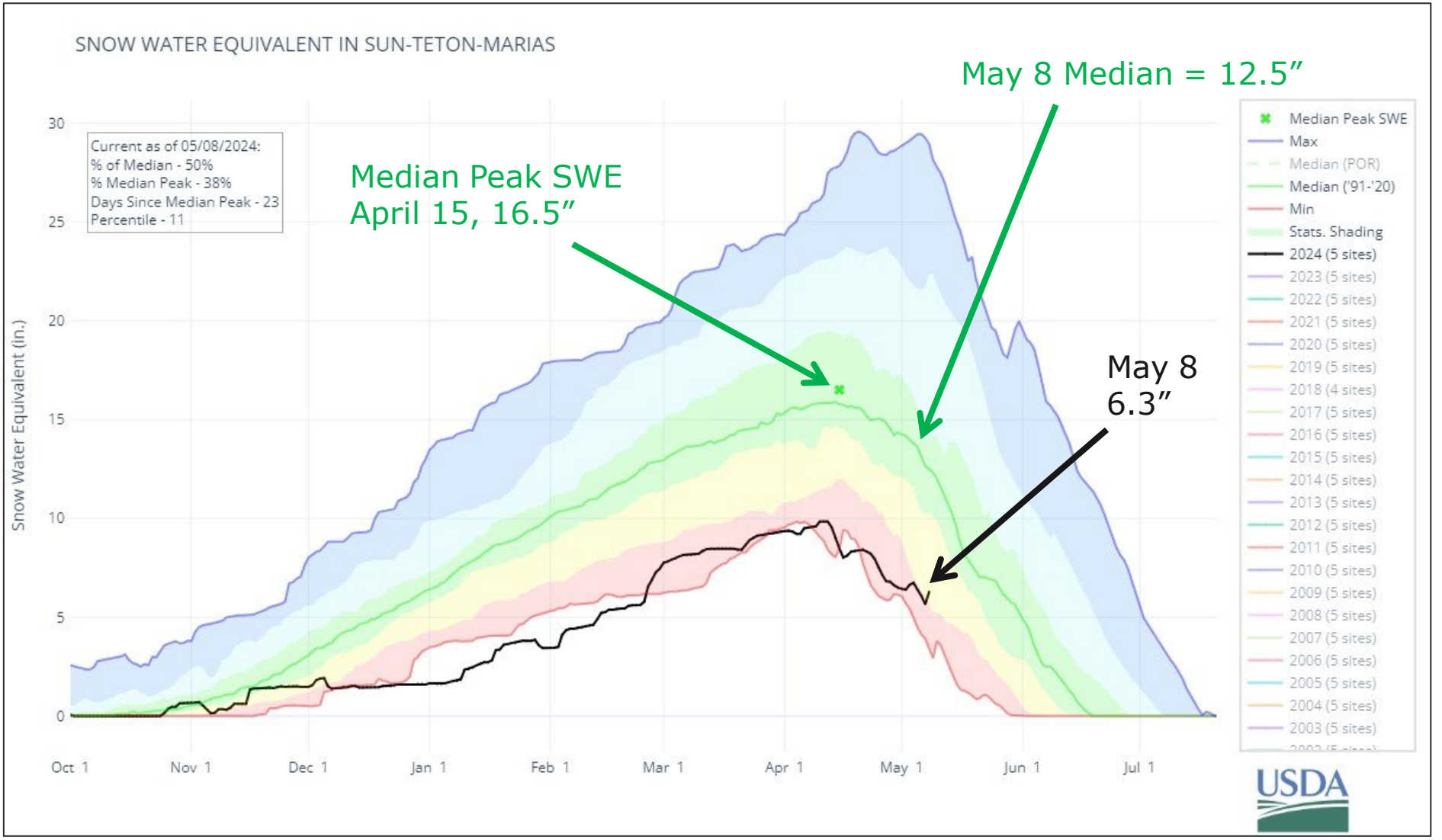
Missouri Headwaters (Jefferson, Madison, Gallatin)



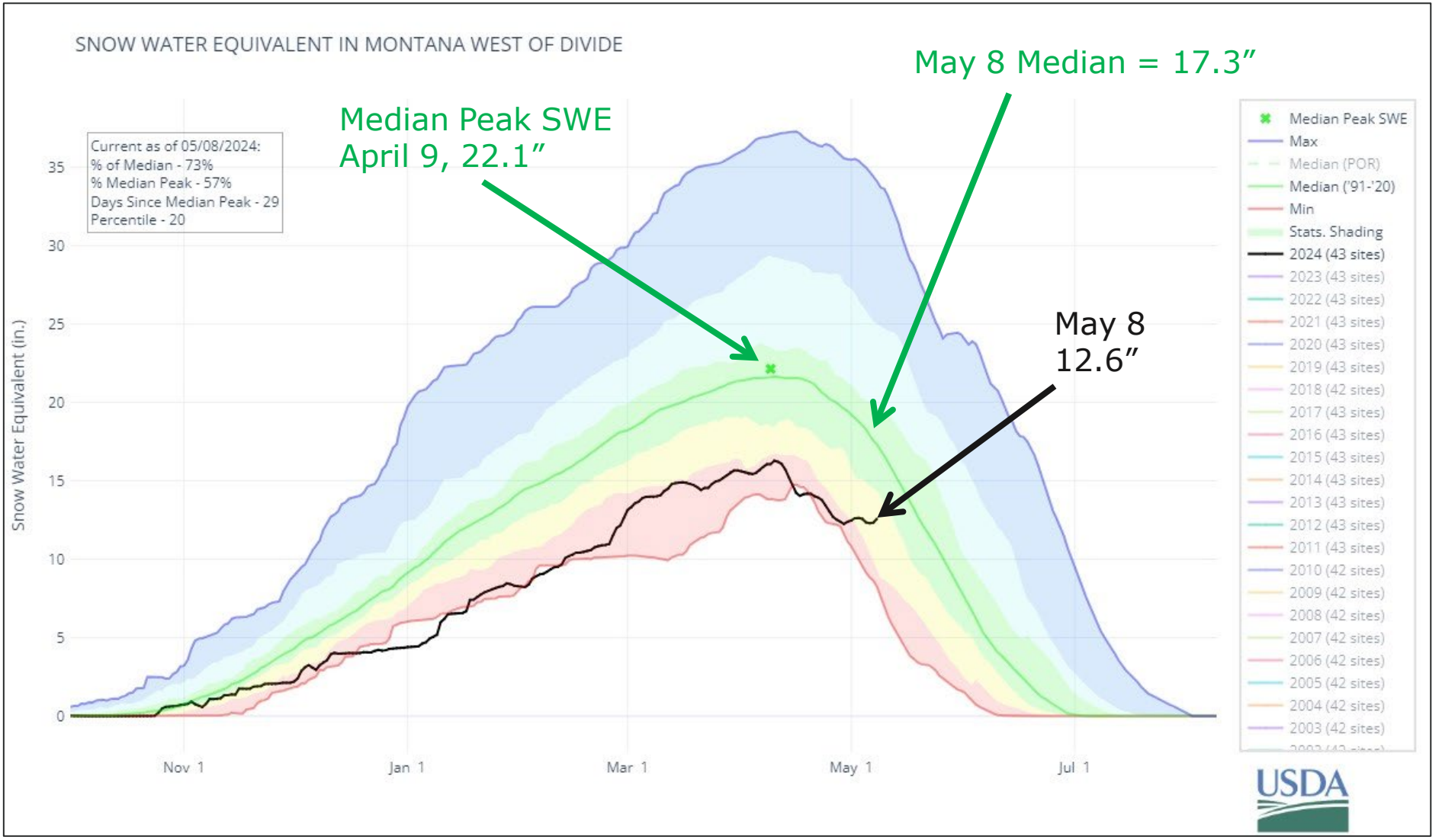
Smith, Judith, Musselshell



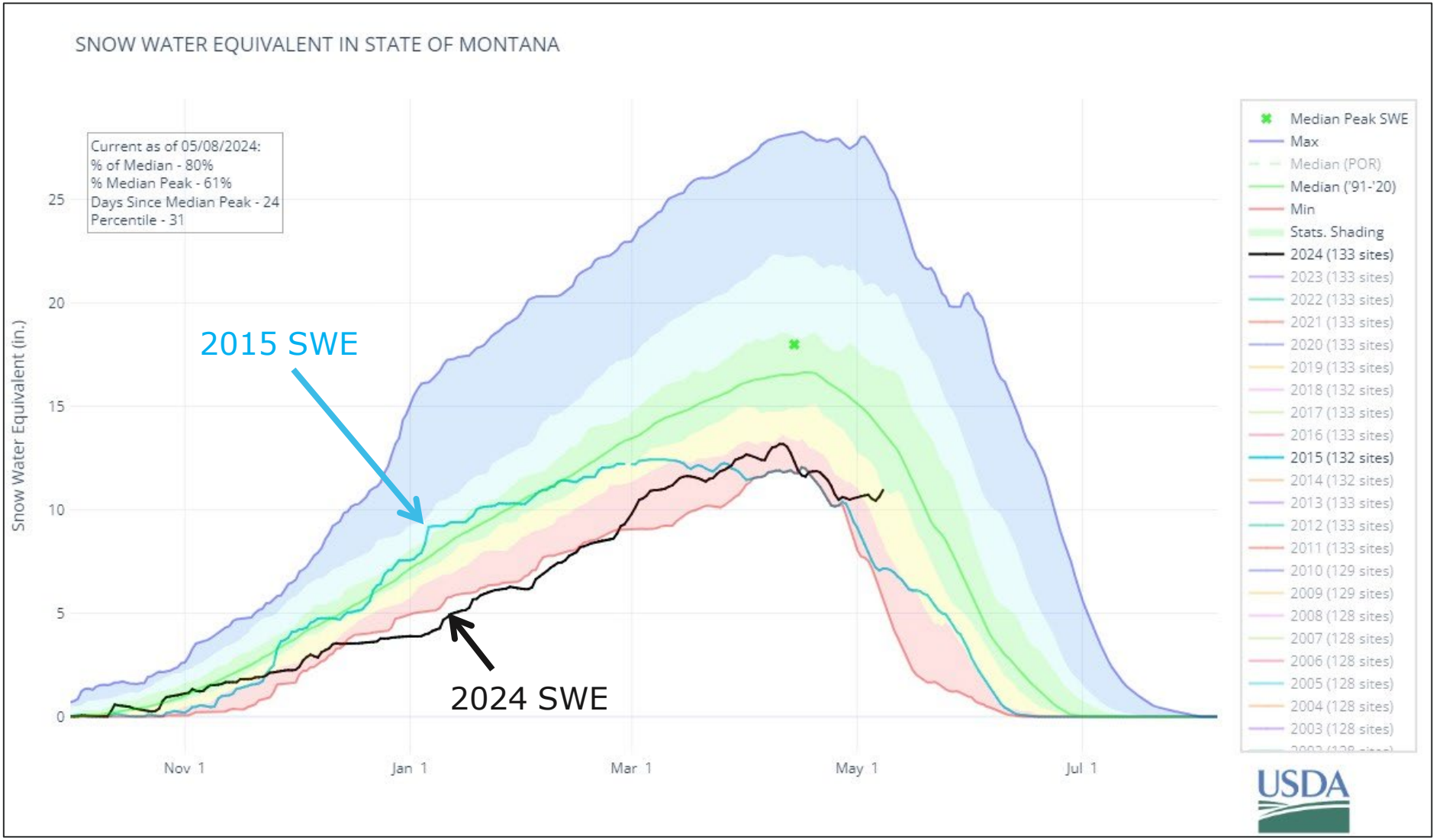
Sun, Teton, Marias



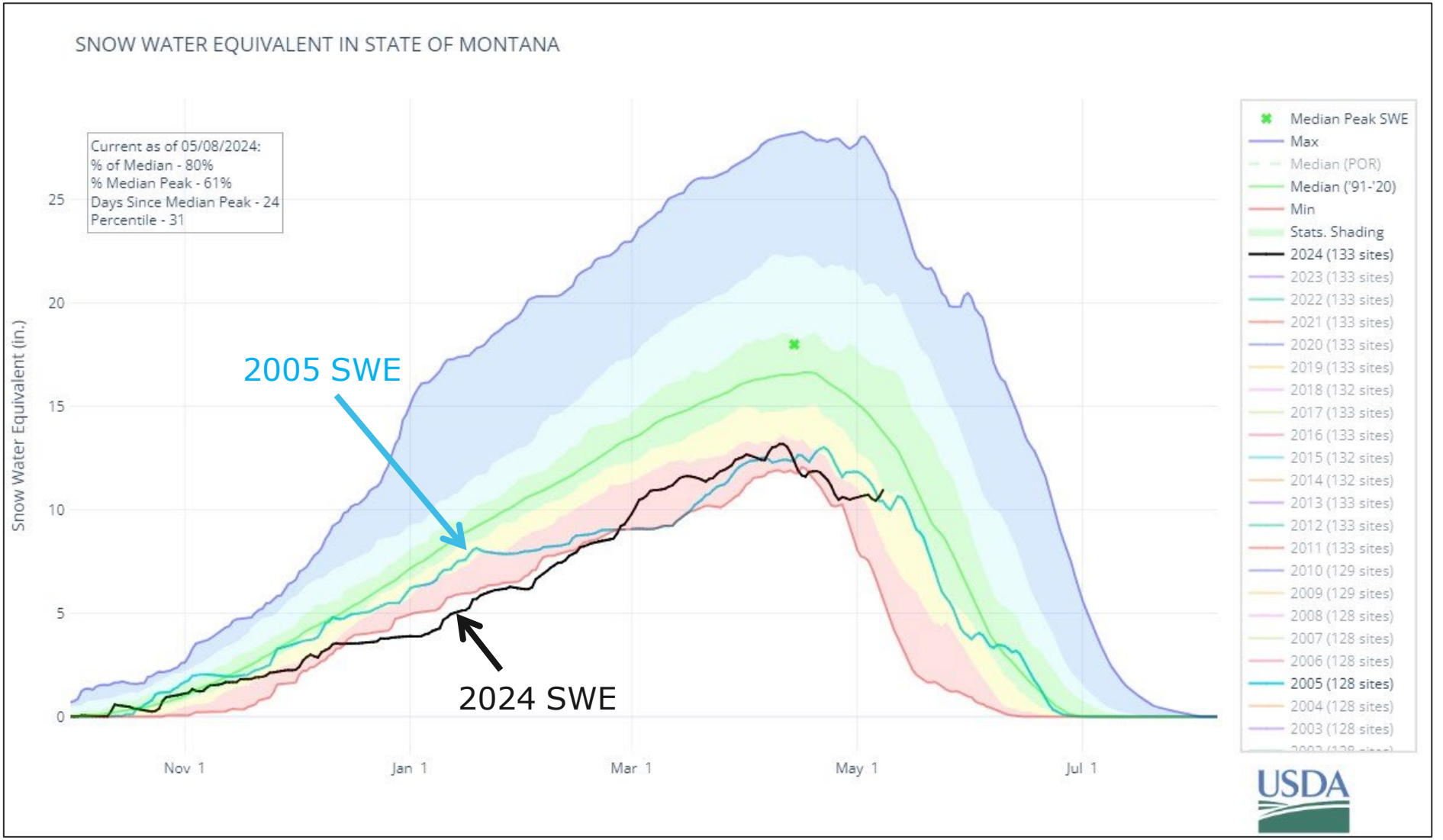
West of the Continental Divide



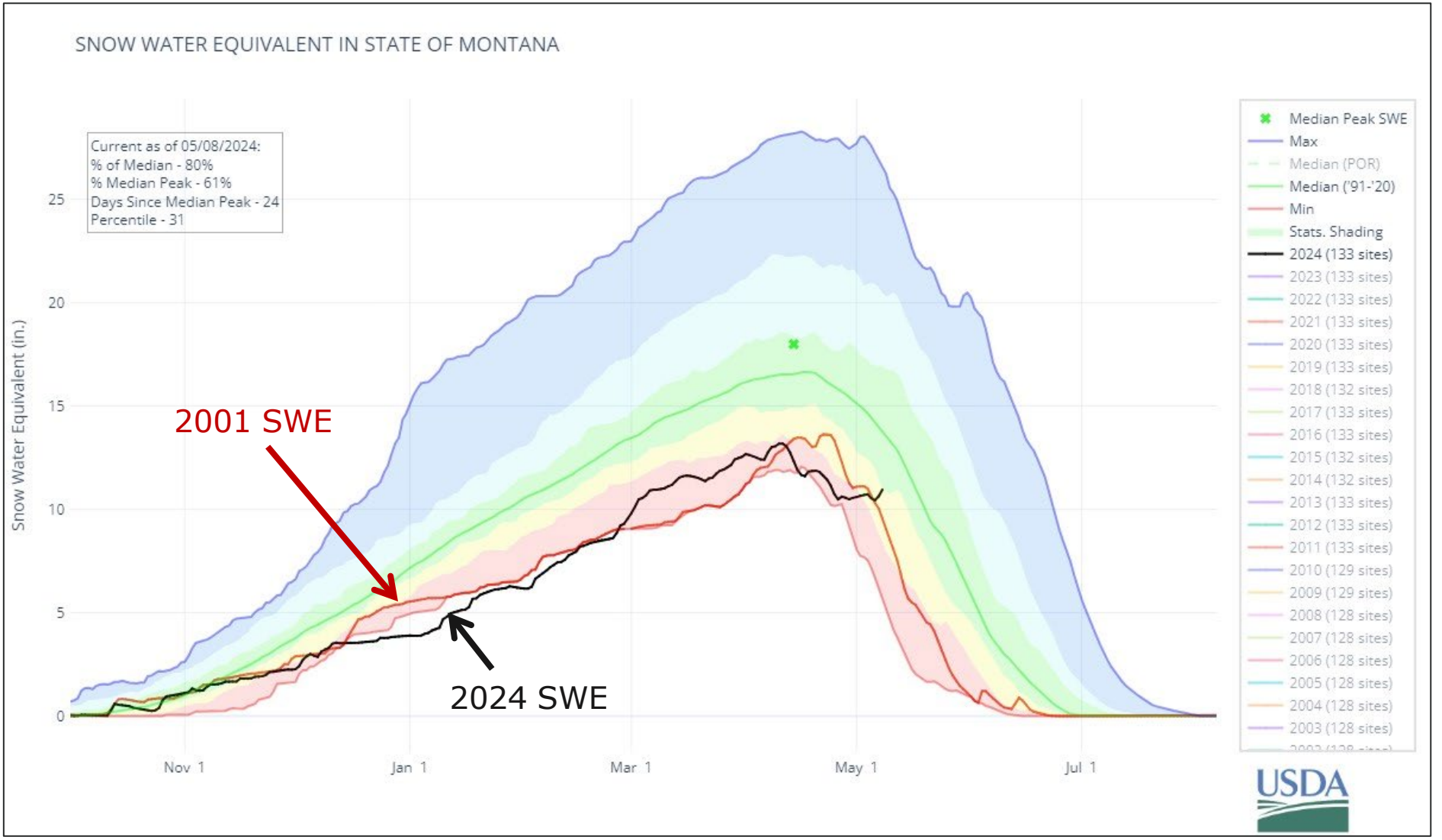
Montana (All Basins) – 2024 vs 2015



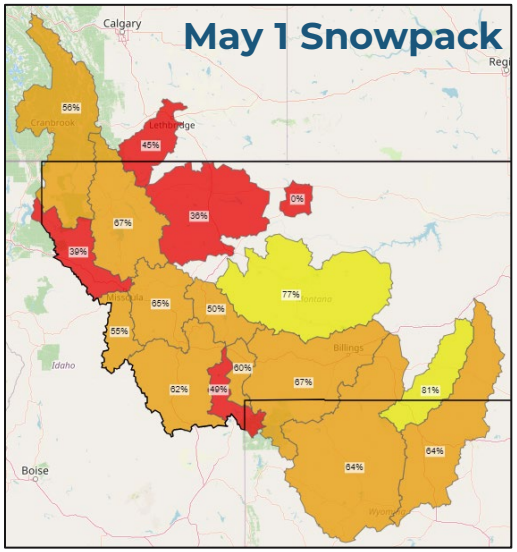
Montana (All Basins) – 2024 vs 2005

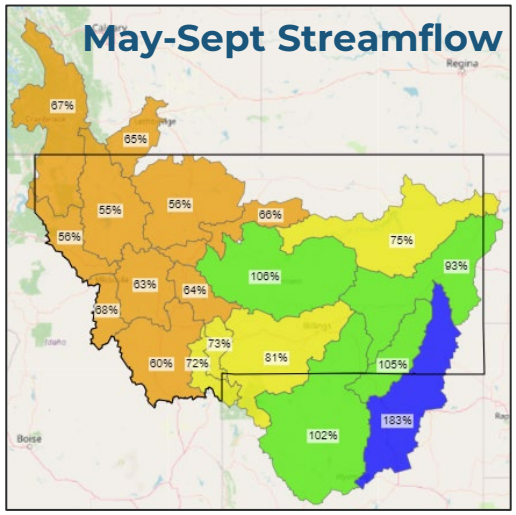


Montana (All Basins) – 2024 vs 2001

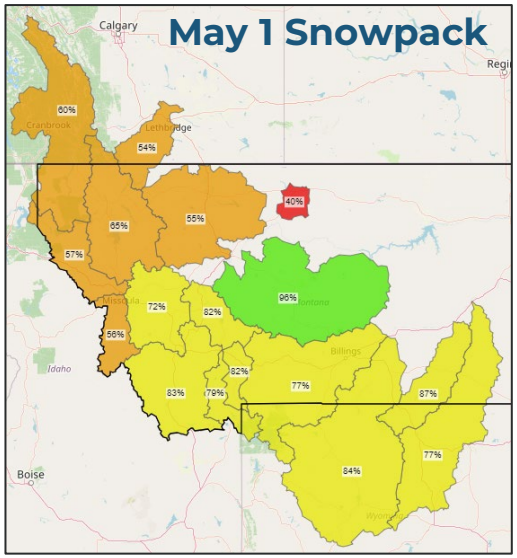


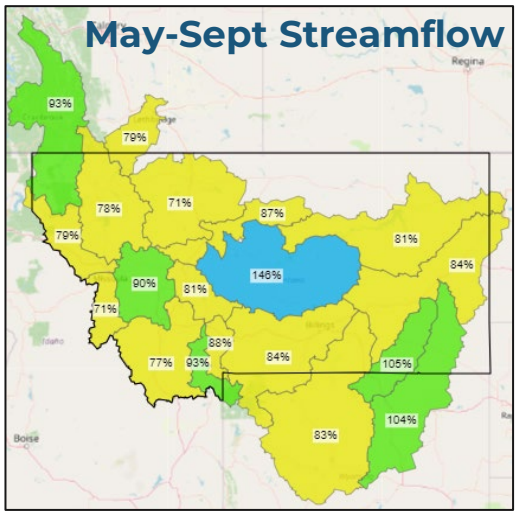
2015



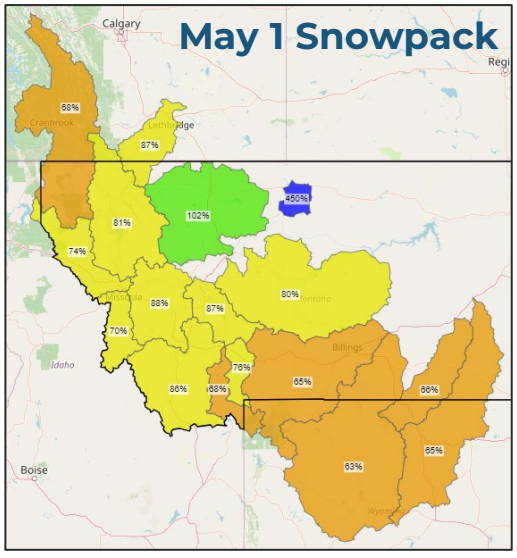


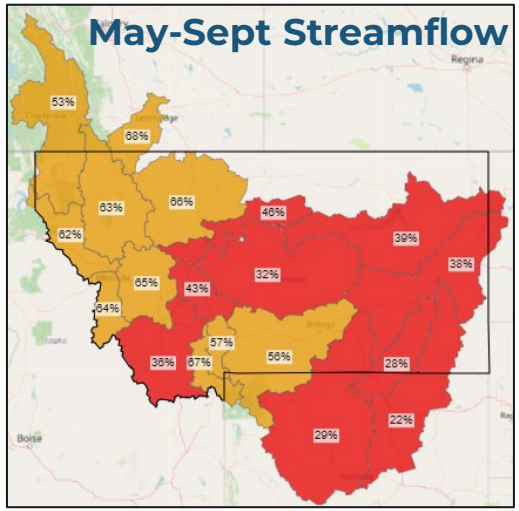
2005





2001





≥ 150% | 130% - 149% | 90% - 109% | 70% - 89% | 50% - 69% | < 50%

NRCS Water Supply Forecast Information

Volumetric Streamflow Forecasts: A prediction of streamflow volume that flows past a point on a stream during a specified season.

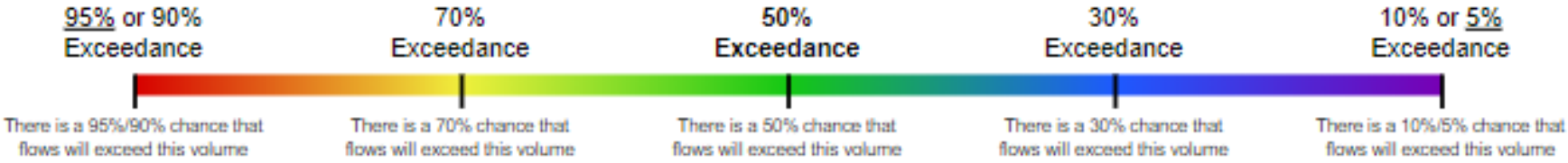
Montana Publication Dates (Forecast Periods):

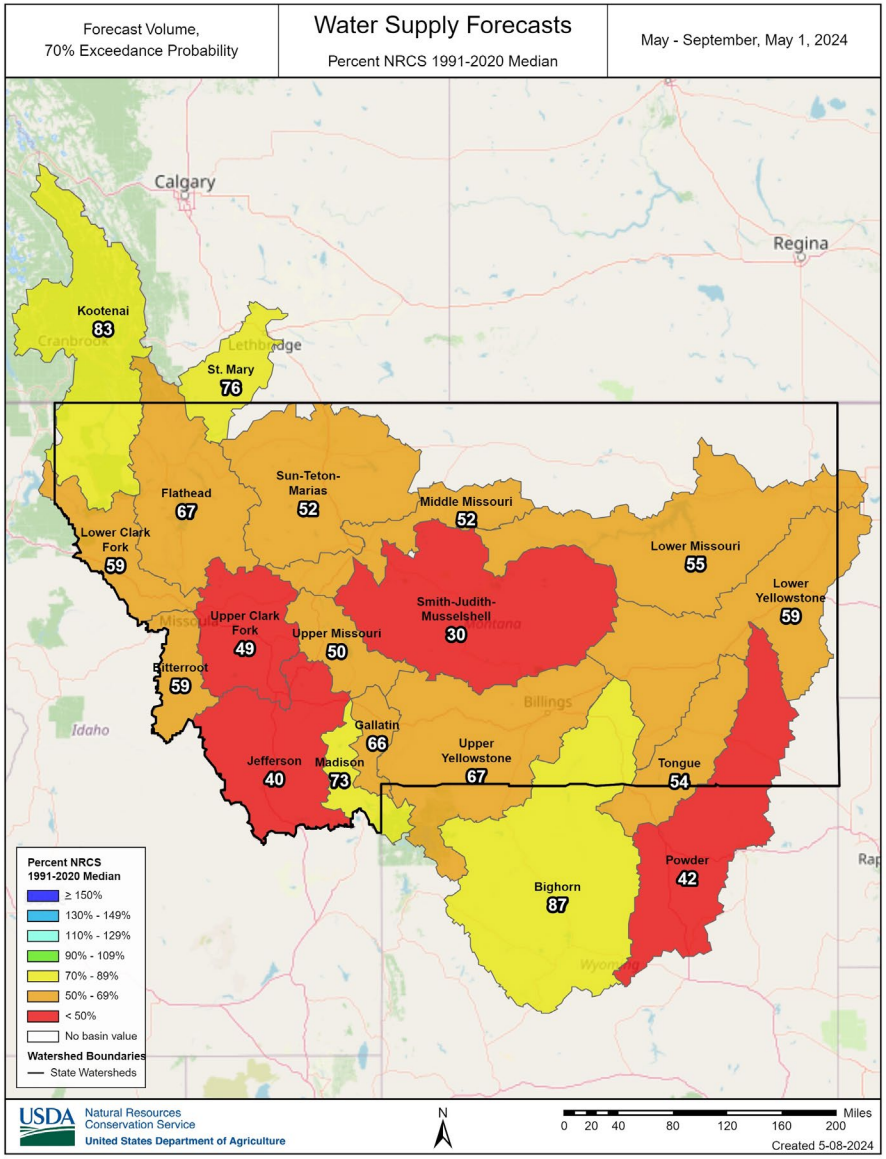
- **March 1** (April – July & April – September)
- **April 1** (April – July & April – September)
- **May 1** (May – July & **May – September**)
- **June 1** (June – July & June – September)

Forecast Exceedance Probabilities

Future Conditions

← Drier --------- Normal --------- Wetter →





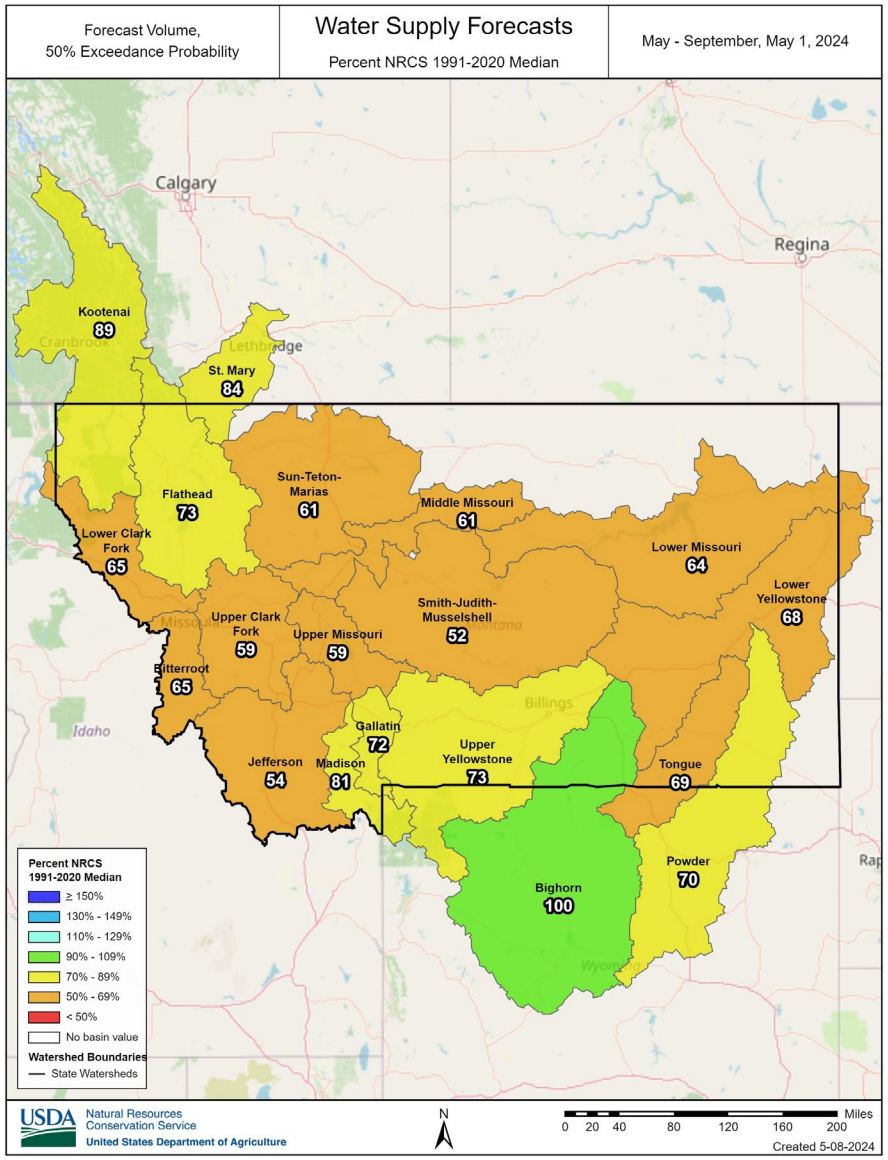
Forecast as Percent of Median Observed Volume

May-September, **70% Exceedance**, 1991-2020 Median

30% - Smith-Judith-Musselshell
40% - Jefferson
42% - Powder
49% - Upper Clark Fork
50% - Upper Missouri

52% - Middle Missouri
52% - Sun-Teton-Marias
54% - Tongue
55% - Lower Missouri
59% - Bitterroot
59% - Lower Clark Fork
59% - Lower Yellowstone
66% - Gallatin
67% - Flathead
67% - Upper Yellowstone
73% - Madison
76% - St. Mary

83% - Kootenai
87% - Bighorn



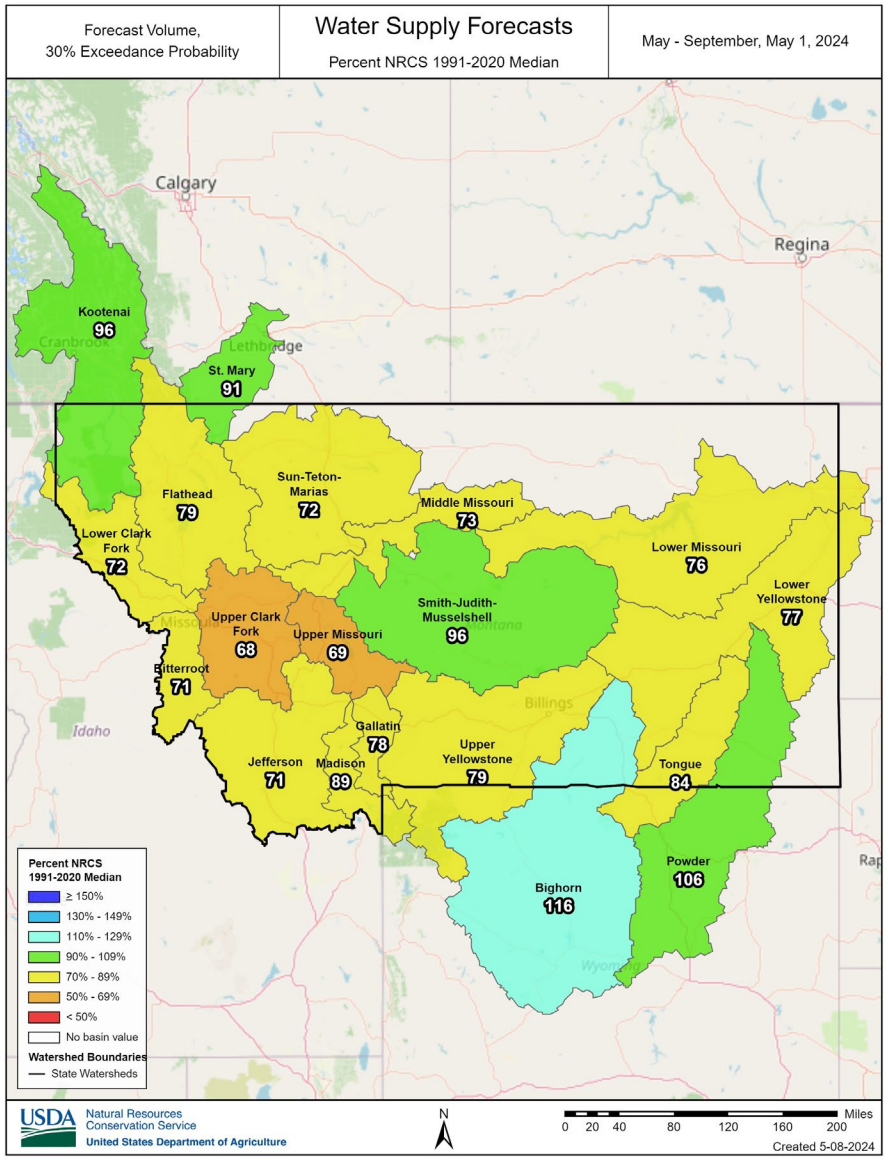
Forecast as Percent of Median Observed Volume

May-September, **50% Exceedance**, 1991-2020 Median

52% - Smith-Judith-Musselshell
54% - Jefferson
59% - Upper Clark Fork
59% - Upper Missouri
61% - Middle Missouri
61% - Sun-Teton-Marias
64% - Lower Missouri
65% - Bitterroot
65% - Lower Clark Fork
68% - Lower Yellowstone
69% - Tongue

70% - Powder
72% - Gallatin
73% - Flathead
73% - Upper Yellowstone
81% - Madison
84% - St. Mary
89% - Kootenai

100% - Bighorn



Forecast as Percent of Median Observed Volume

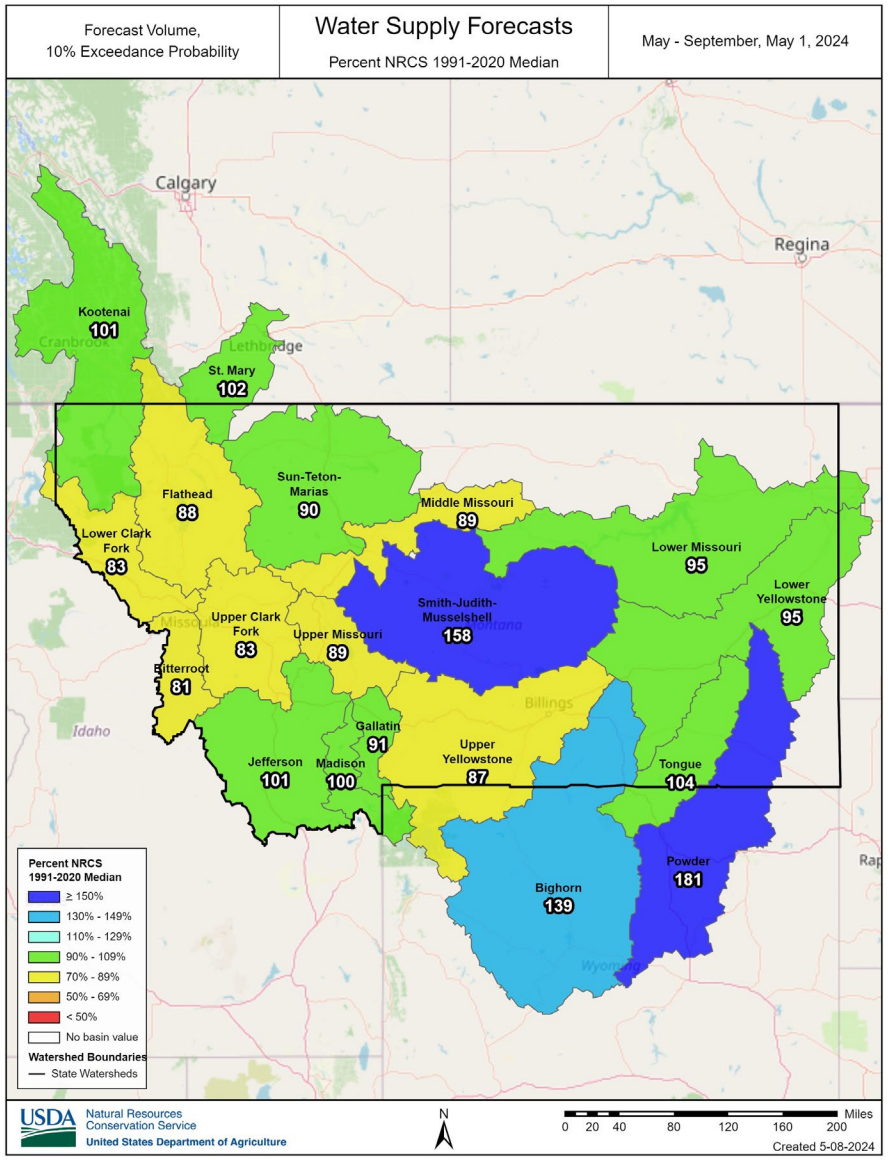
May-September, **30% Exceedance**, 1991-2020 Median

68% - Upper Clark Fork
69% - Upper Missouri

71% - Bitterroot
71% - Jefferson
72% - Lower Clark Fork
72% - Sun-Teton-Marias
73% - Middle Missouri
76% - Lower Missouri
77% - Lower Yellowstone
78% - Gallatin
79% - Flathead
79% - Upper Yellowstone
84% - Tongue
89% - Madison

91% - St. Mary
96% - Kootenai
96% - Smith-Judith-Musselshell
106% - Powder

116% - Bighorn



Forecast as Percent of Median Observed Volume

May-September, **10% Exceedance**, 1991-2020 Median

81% - Bitterroot
83% - Lower Clark Fork
83% - Upper Clark Fork
87% - Upper Yellowstone
88% - Flathead
89% - Middle Missouri
89% - Upper Missouri

90% - Sun-Teton-Marias
91% - Gallatin
95% - Lower Missouri
95% - Lower Yellowstone
100% - Madison
101% - Jefferson
101% - Kootenai
102% - St. Mary
104% - Tongue

139% - Bighorn

158% - Smith-Judith-Musselshell
181% - Powder

Summary

Water Year 2024 precipitation

- Most Basins: 70-90%, Northern Wyoming and Upper Madison: 90-105%
- Record Low Water Precipitation Since October 1, 2023, at 7 SNOTELs (Missoula-Choteau-Helena)

Current Snowpack

- Most Basins: 70-90%, Upper Missouri, STM, Upp. Clark, Bitterroot: 50-70%, Bighorn, Powder: 95-100%
- Near Low or Record Low Snowpack Most of the Season
- Snowpack Peaked Well Below Normal
- Mid-Low Elevation Snowpack Has Melted Out or Near Melt Out

Water Supply Forecasts

- 70% Exceedance – Most Basins: 40-70%
- 50% Exceedance – Most Basins: 50-75%, Madison, Kootenai, St Mary: 80-90%, Bighorn: 100%,
- 30% Exceedance – Most Basins: 70-90%
- 10% Exceedance – Lowest: Bitterroot, Clark Fork, Flathead, Upper Yellowstone, Missouri: 80-90%

Questions?

Montana Snow Survey Webpage
https://www.nrcs.usda.gov/montana/snow-survey

NRCS Interactive Map and Charts
https://nwcc-apps.sc.egov.usda.gov/

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