

How Dry Is It? – Challenges in Drought Monitoring

Drought & Water Supply Advisory Committee

October 19, 2023

Michael Downey – DNRC, Drought Program Coordinator



Dust storm on Lake Bowdoin – 8/4/22

How Dry Is It? – Challenges in Drought Monitoring

What the metrics don't tell us:

- Precipitation timing or seasonality
- Spatial Variability
- Precipitation intensity and duration
- Surface water deficits
- Lack of clear guidance on the evaluation of antecedent conditions, or timescale for going into or coming out of drought
- Evaluation of extreme weather events

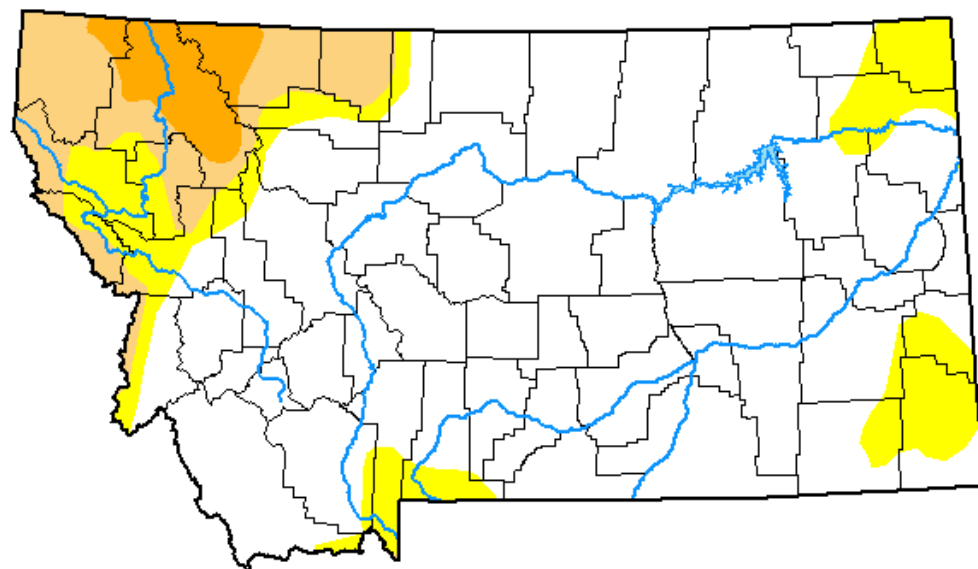
How Dry Is It? – Challenges in Drought Monitoring

Variables we can't control:

- Past management effects on current conditions
- Impacts of antecedent conditions
- Luck
- Spatial Variability in precipitation
- Drawing lines to represent transition zones

U.S. Drought Monitor Montana

July 4, 2023
(Released Thursday, Jul. 6, 2023)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	76.00	24.00	11.73	3.52	0.00	0.00
Last Week <i>06-27-2023</i>	75.09	24.91	11.73	3.52	0.00	0.00
3 Months Ago <i>04-04-2023</i>	18.94	81.06	44.04	10.04	0.00	0.00
Start of Calendar Year <i>01-03-2023</i>	8.71	91.29	59.92	36.33	10.80	0.00
Start of Water Year <i>09-27-2022</i>	5.40	94.60	77.46	45.05	12.35	0.00
One Year Ago <i>07-05-2022</i>	49.23	50.77	32.99	19.56	8.55	3.01

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

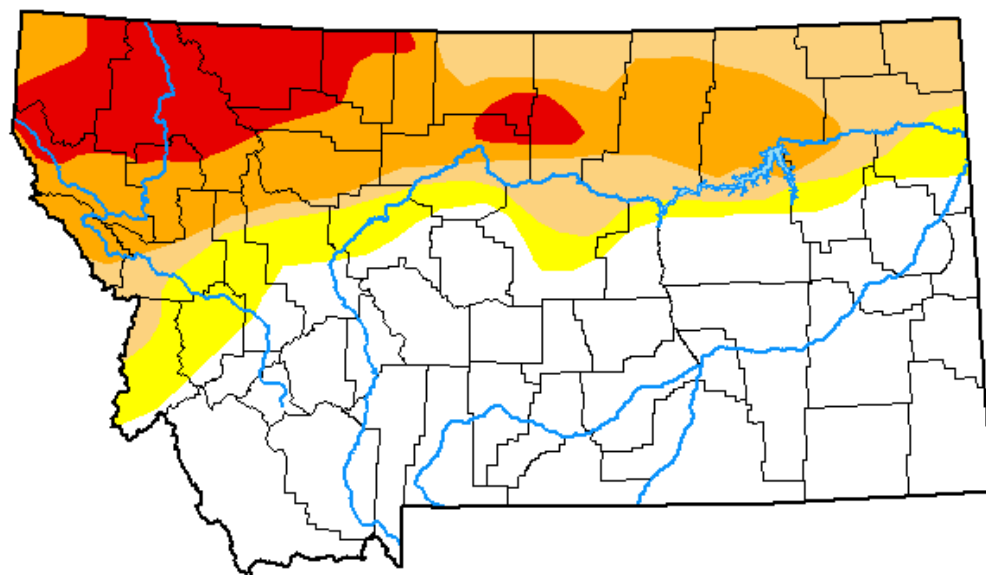
Curtis Riganti
National Drought Mitigation Center



droughtmonitor.unl.edu

U.S. Drought Monitor Montana

September 12, 2023
(Released Thursday, Sep. 14, 2023)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	51.69	48.31	39.59	26.29	9.91	0.00
Last Week <i>09-05-2023</i>	51.68	48.32	39.59	26.29	9.91	0.00
3 Months Ago <i>06-13-2023</i>	68.39	31.61	17.40	3.52	0.00	0.00
Start of Calendar Year <i>01-03-2023</i>	8.71	91.29	59.92	36.33	10.80	0.00
Start of Water Year <i>09-27-2022</i>	5.40	94.60	77.46	45.05	12.35	0.00
One Year Ago <i>09-13-2022</i>	15.46	84.54	57.01	37.79	3.59	0.00

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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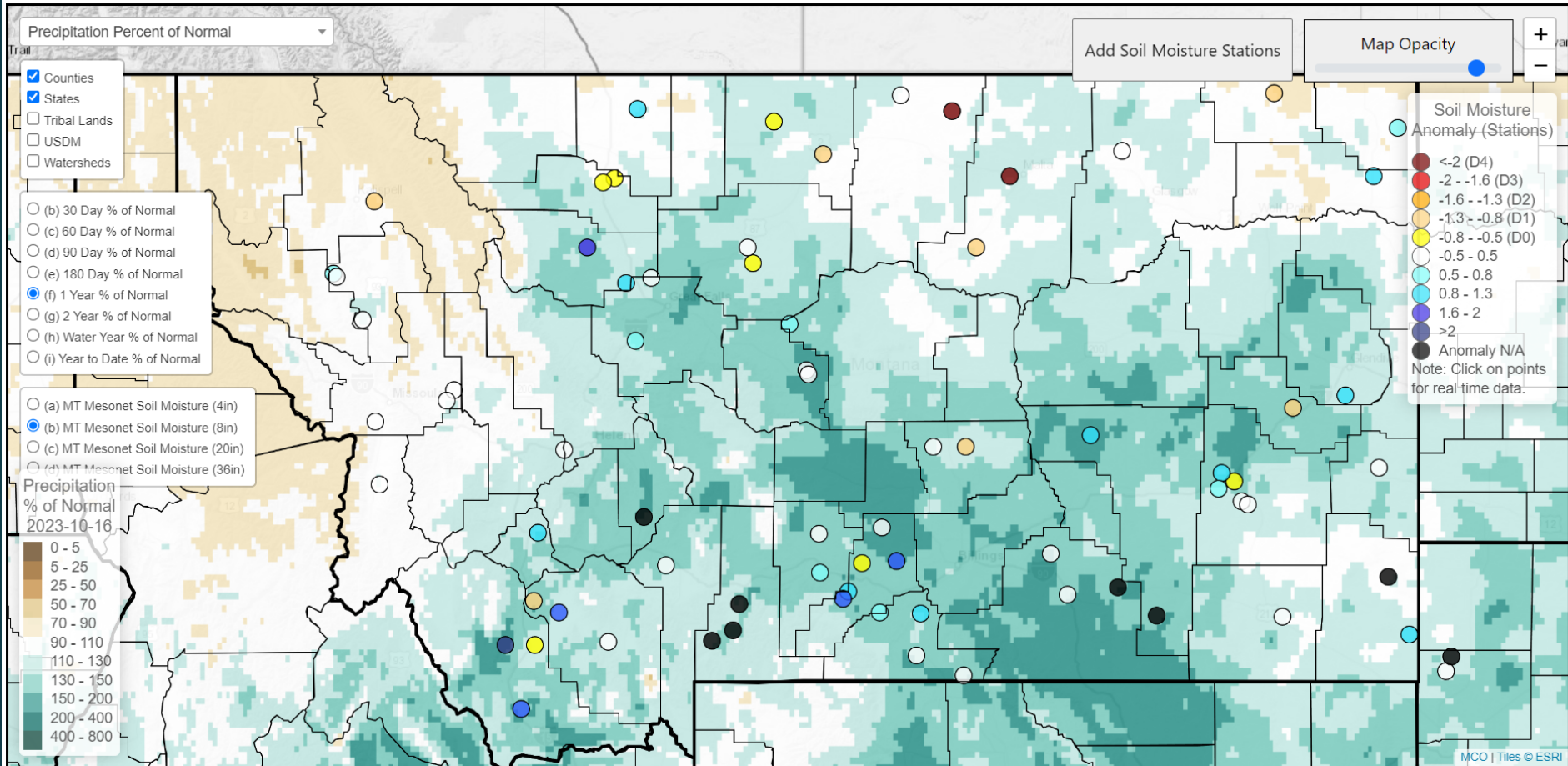
Author:

Brad Pugh
CPC/NOAA

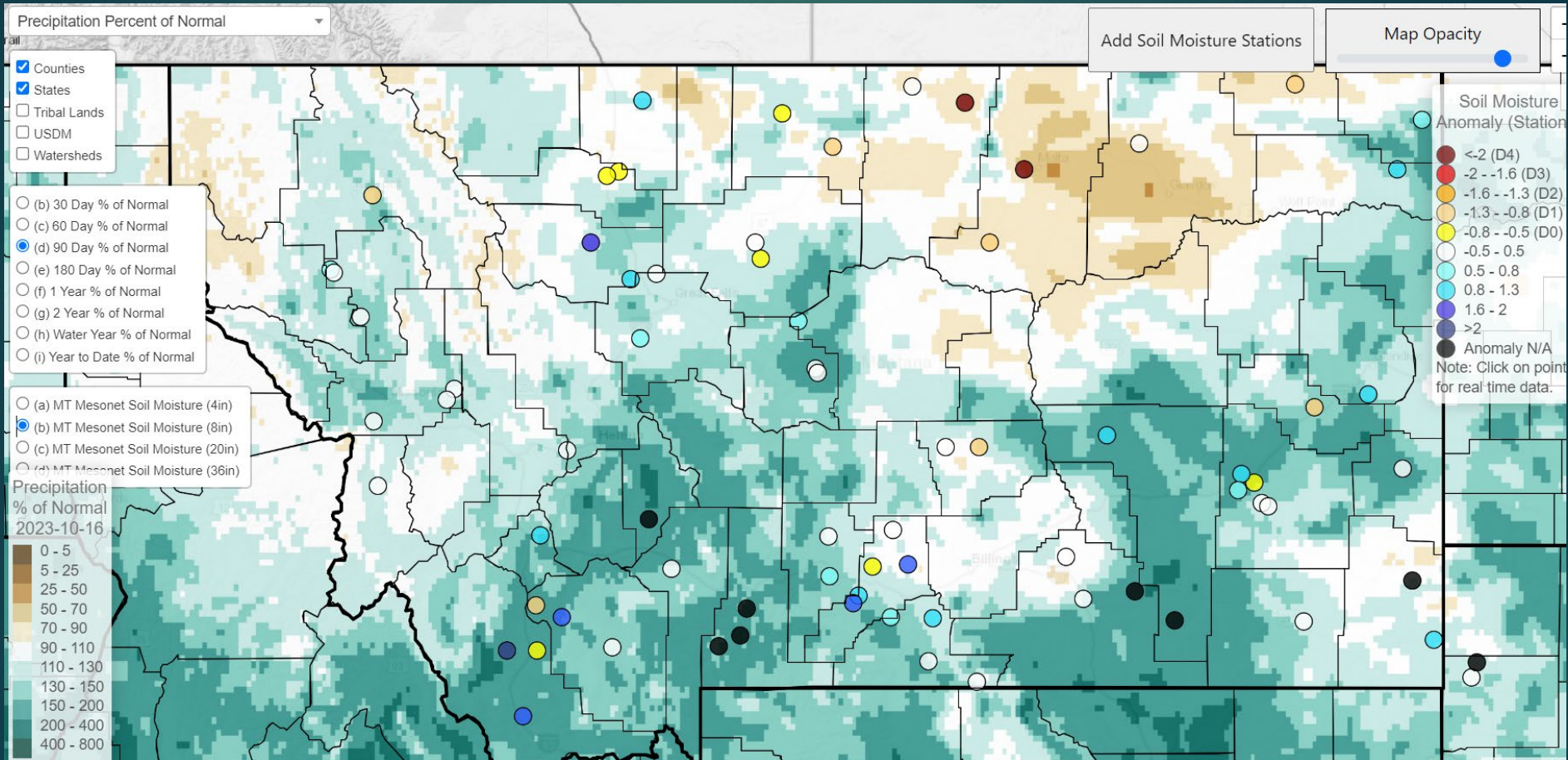


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Precipitation – Percent of Normal (1 year –10/17/22 – 10/16/23)

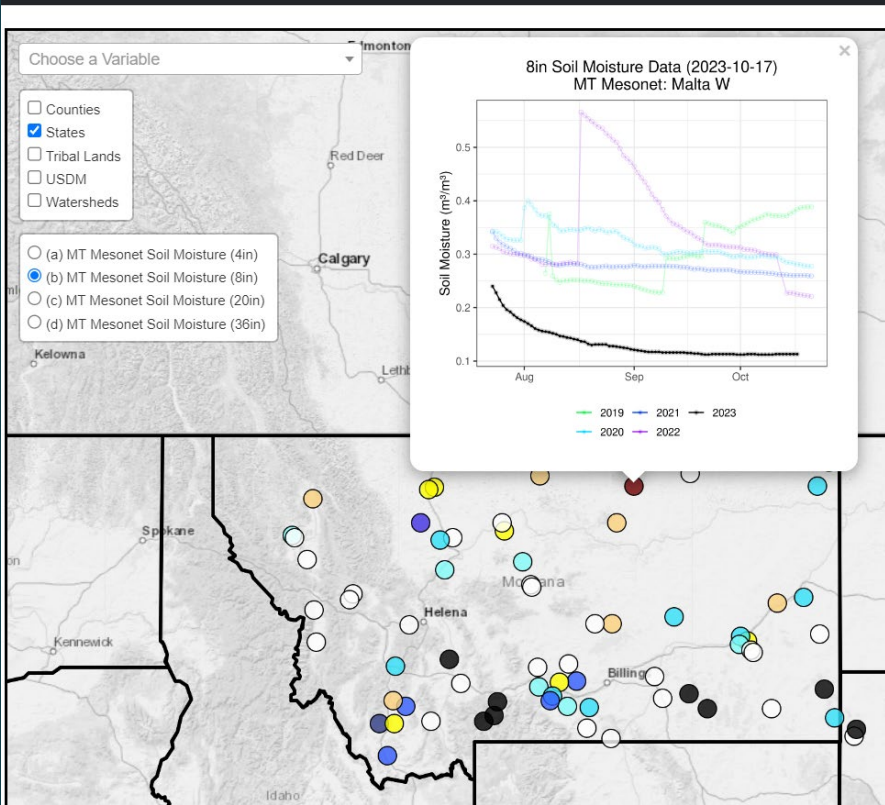


Precipitation – Percent of Normal (90 Days - 7/19/22 – 10/16/23)

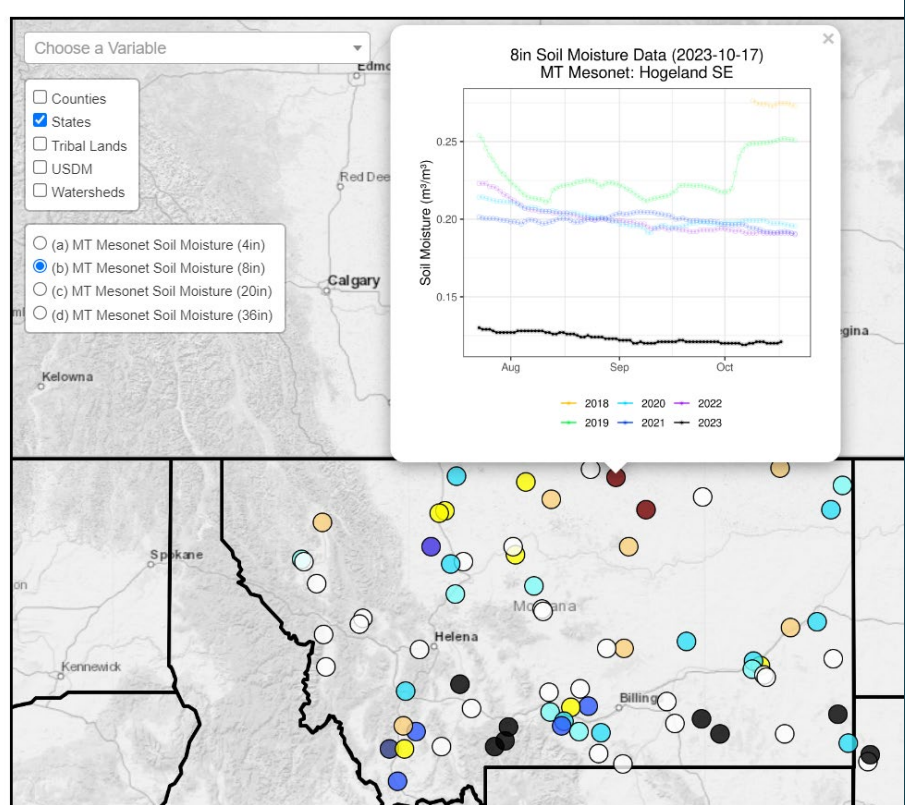


Soil Moisture at 8" deep – Malta and Hogeland, MT

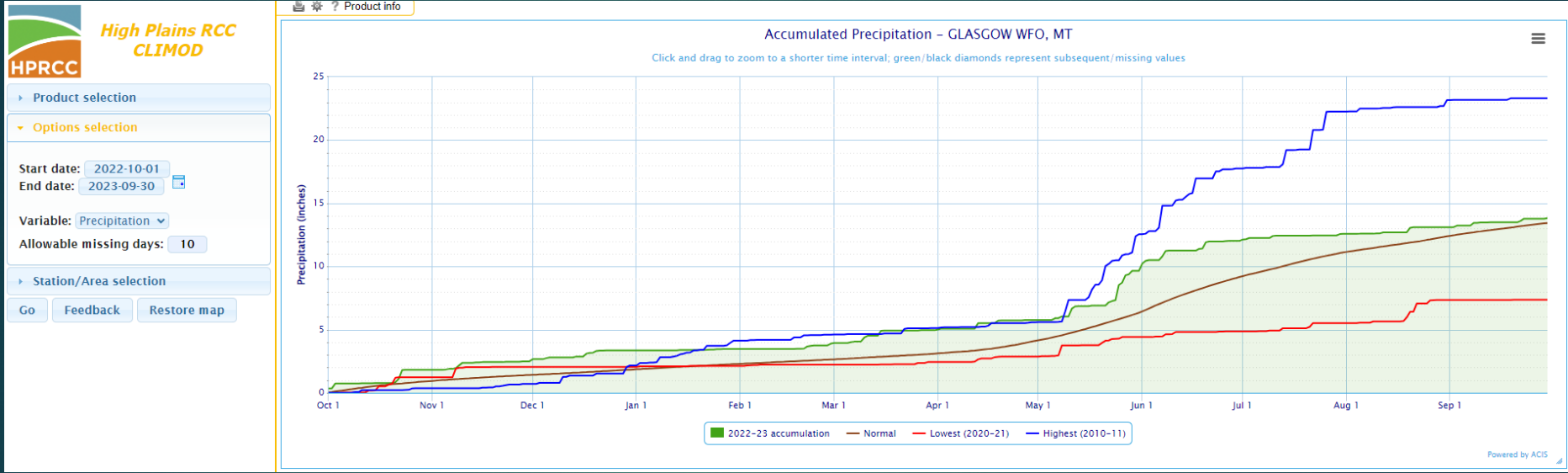
UMRB Drought Indicators Dashboard MT Mesonet Drought Impacts Documentation



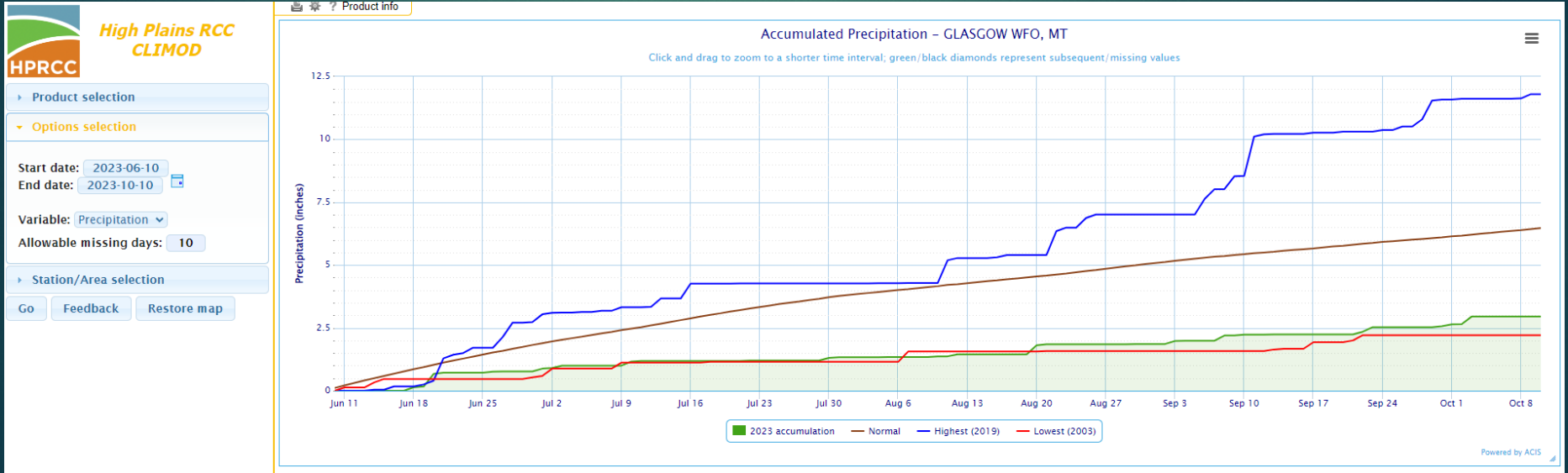
UMRB Drought Indicators Dashboard MT Mesonet Drought Impacts Documentation



Glasgow, Water Year Precipitation 10/1/22 – 9/30/23



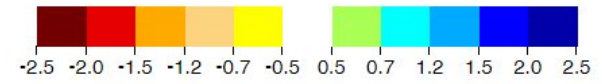
Glasgow, Precipitation Accumulation 6/10/23 – 10/10/23



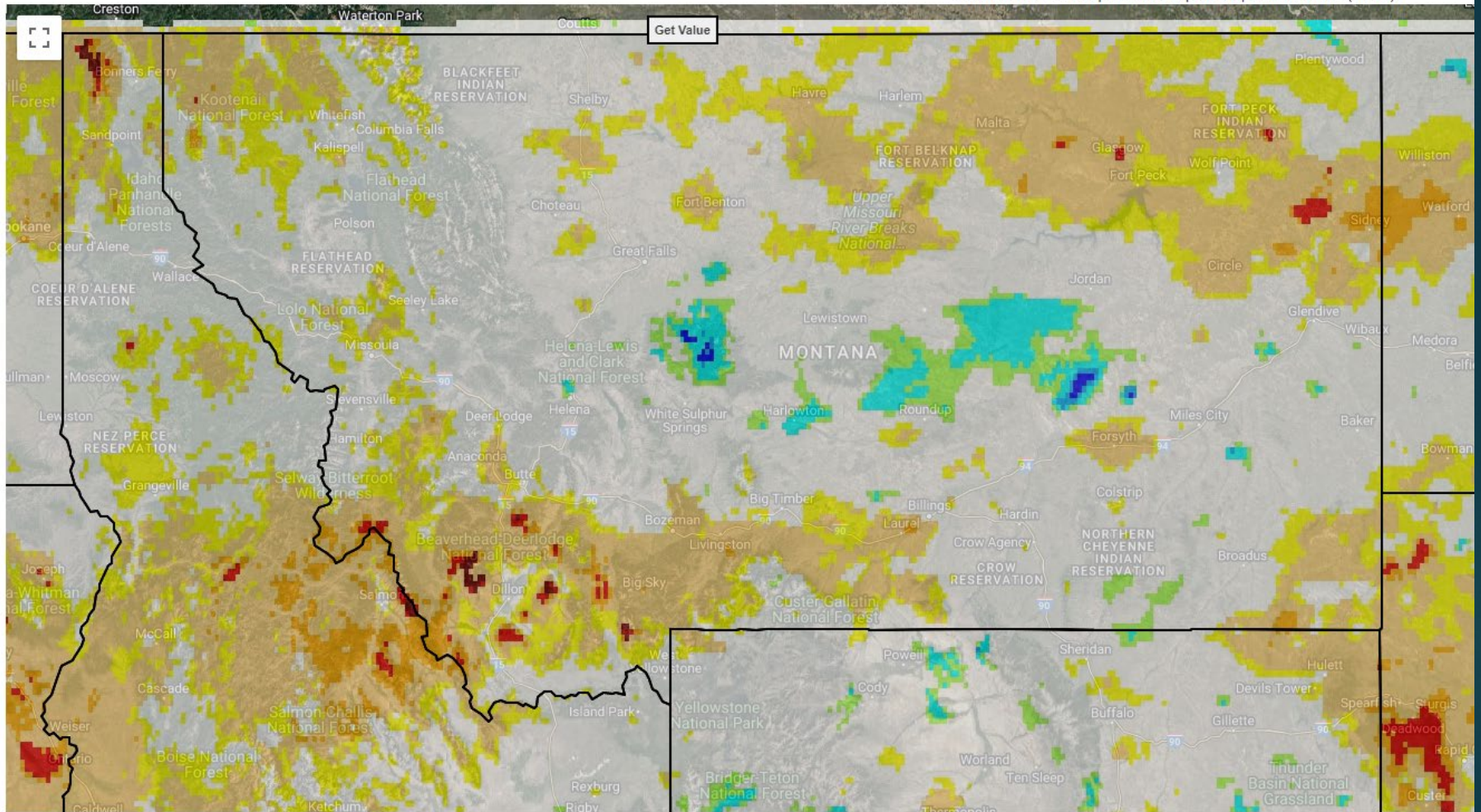
Standardized Evapotranspiration 7/1/22 – 9/30/22

3-Month Standardized Precipitation Evapotranspiration Index (SPEI) (gridMET)

2022-07-01 to 2022-09-30, standardized from 1991 - 2020 (Non-Parametric distribution)



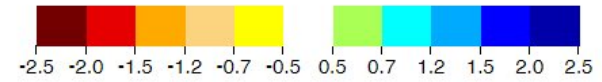
Standardized Precipitation Evapotranspiration Index (SPEI)



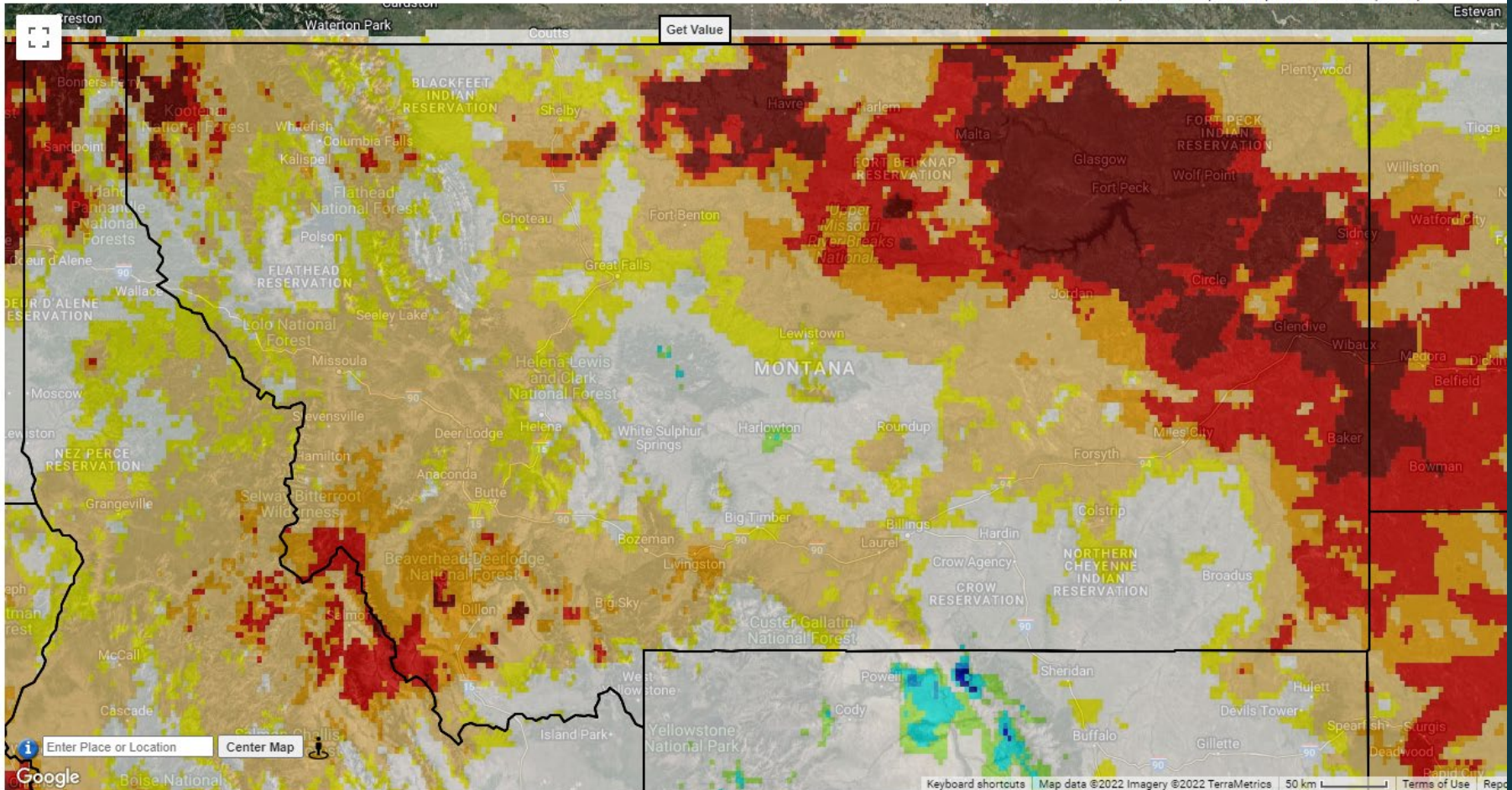
Standardized Evapotranspiration 7/15/22 – 9/30/22

Standardized Precipitation Evapotranspiration Index (SPEI) (gridMET)

2022-07-15 to 2022-09-30, standardized from 1991 - 2020 (Non-Parametric distribution)



Standardized Precipitation Evapotranspiration Index (SPEI)



Challenges in Drought Monitoring

Strengths of Montana's Process:

- Multi-Disciplinary
- Collaborative
- Self-Sustained Metrics via UMRB – Upper Missouri River Basin Drought Dashboard
- Ongoing expansion of Weather & SM Monitoring
- MT Drought Impacts Reporter – Field Scale Input



Questions/Comments?

Contact Information:
Michael Downey
mdowney2@mt.gov
406-444-9748

UMRB Drought Indicators Website // drought.climate.umt.edu

Montana Drought Plan Web Portal // mtdroughtinfo.org