



Drought Monitoring in SD and U.S. Northern Plains

Laura Edwards, State Climatologist

July 15, 2025

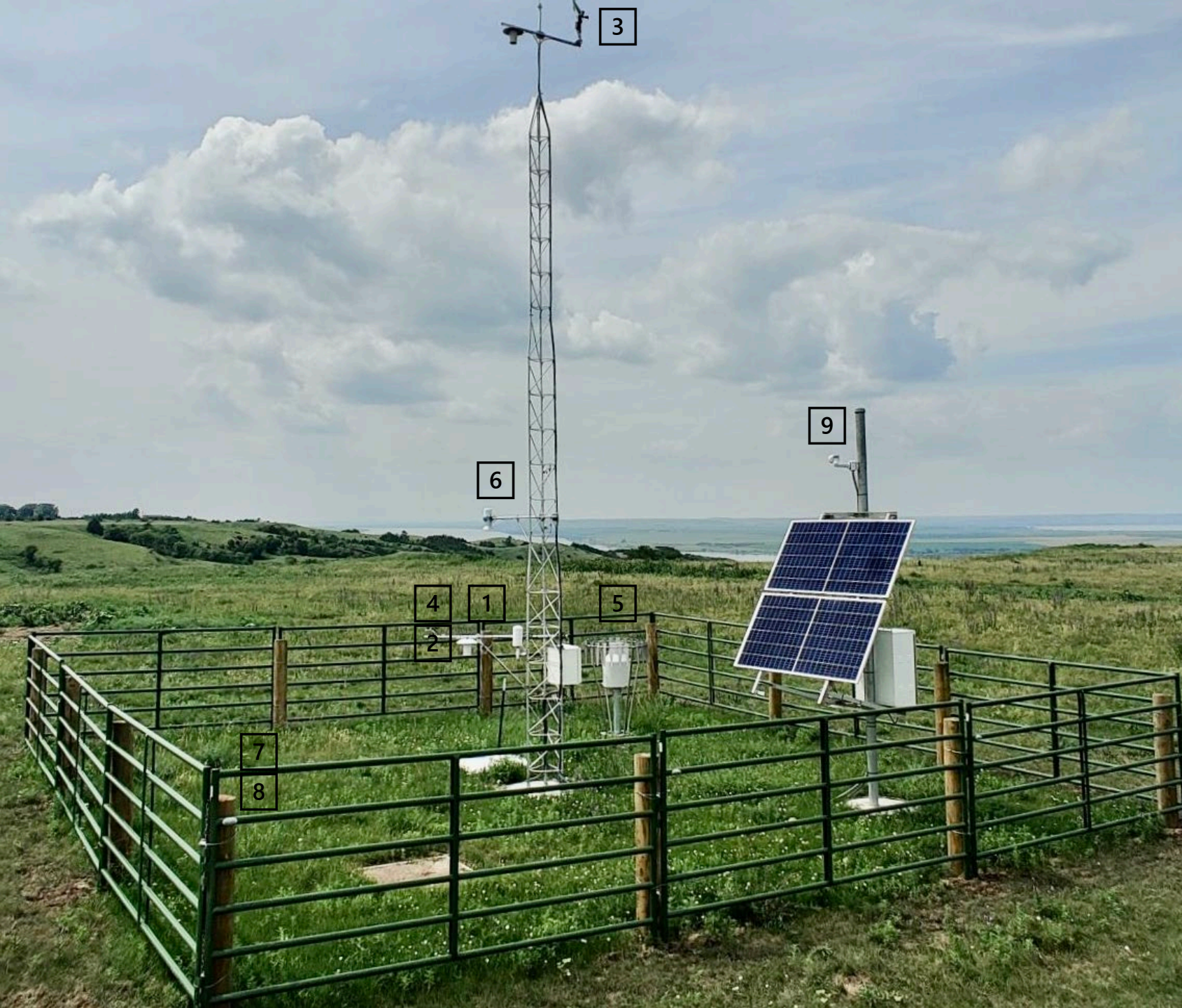
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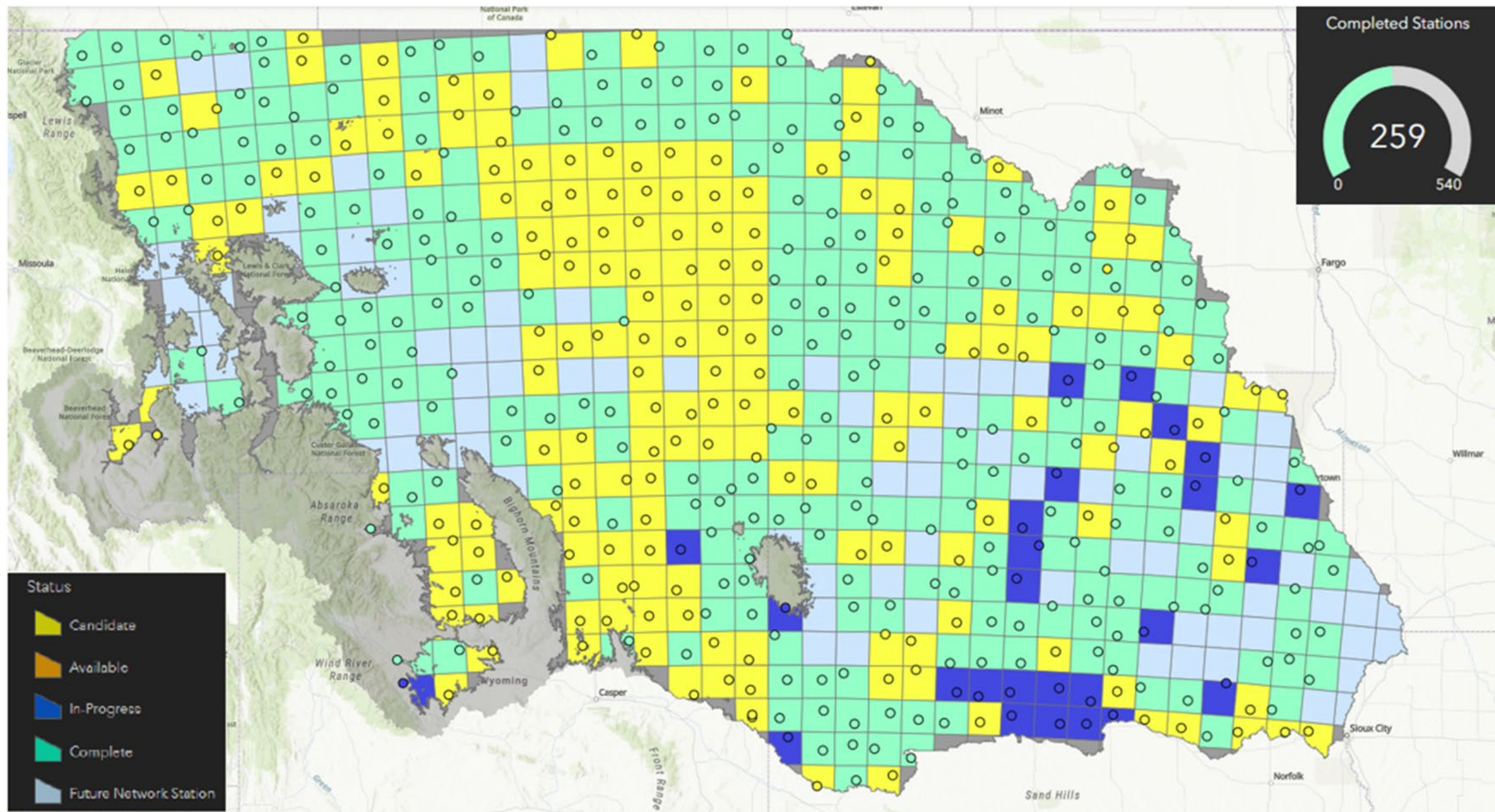
Key Drought Issues & Questions

- Role of wintertime/cold season precipitation in drought recovery/amelioration
- How to integrate soil temperatures in cold season drought monitoring
- Flash drought, especially rapid spring onset
- How to utilize the Upper Missouri River Basin network, especially soil data? Use existing metrics or create new ones? (in progress)

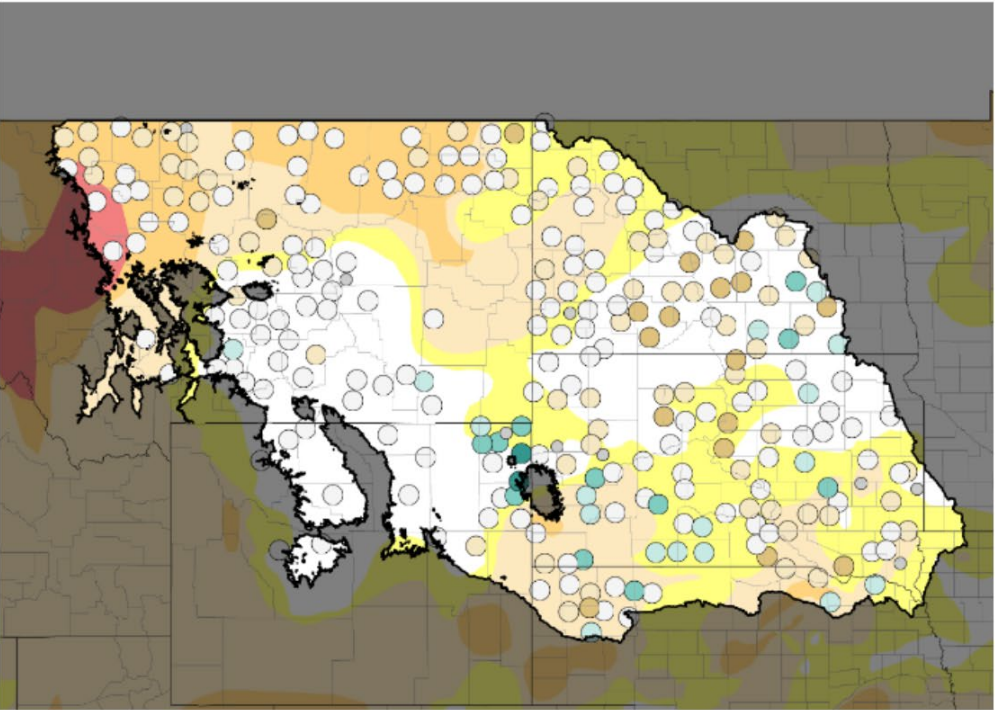




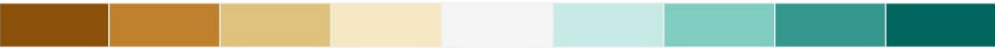
1. Temperature
2. Humidity
3. Wind
4. Solar radiation
5. Year-round precipitation
6. Snow Depth
7. Soil moisture profile (2, 4, 8, 20, 40 inch) + 4" bare soil
8. Soil temperature profile (2, 4, 8, 20, 40 inch) + 4" bare soil
9. Weather camera



Change in Volumetric Water Content - 1 Week Column



Change in Volumetric Water Content (m3/m3)



No Data

Uses latent moisture of frozen soils

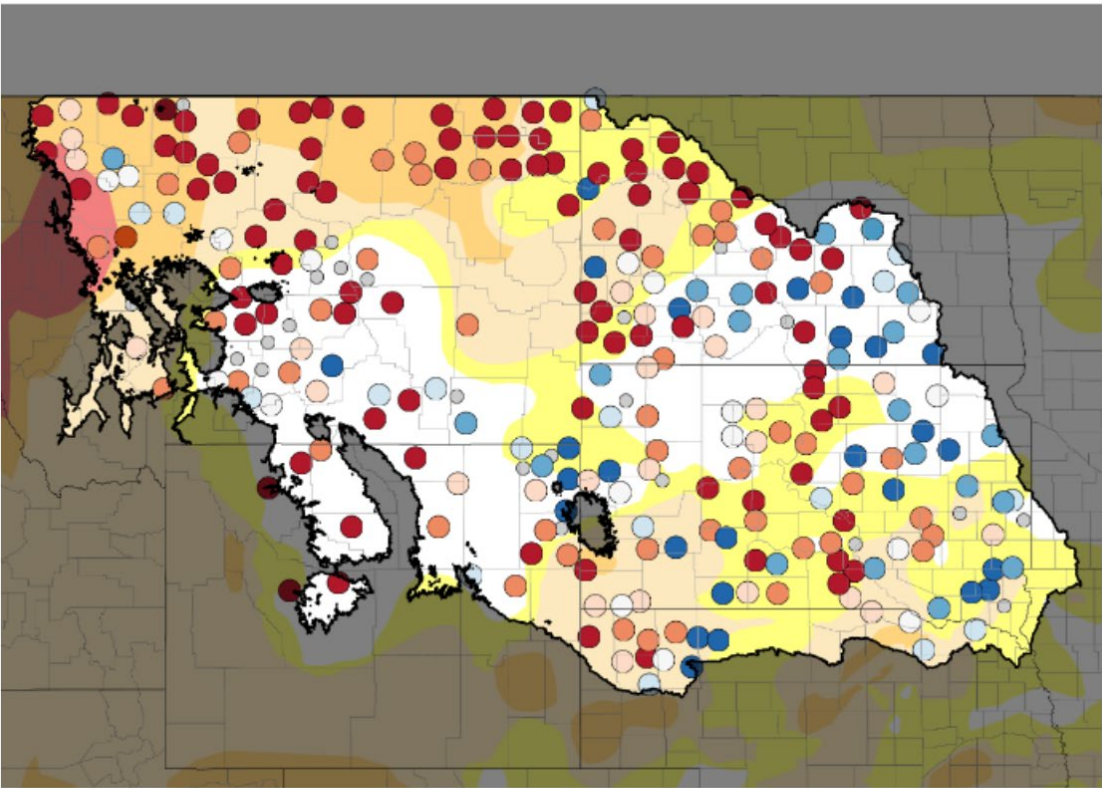
U.S. Drought Monitor



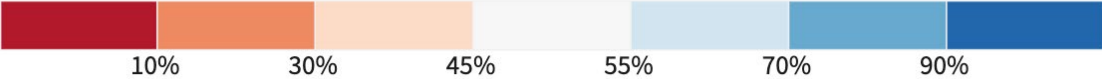
Source(s): Montana, Nebraska, North Dakota, South Dakota, and Wyoming State Mesonets
Data Valid: 07/08/25

Drought.gov

Fractional Available Water: Total Column



Fractional Available Water (%)



U.S. Drought Monitor



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Drought.gov

User/stakeholder concerns with USDM

- USDA Drought Disaster Designation: criteria tied to USDM categories at the county level.
 - Livestock Forage Program eligibility
 - “High bar” to qualify for LFP assistance
 - Fast-track designation is NOT a concern, much improved from previous system
- Mismatch with differing qualifying criteria for drought assistance, even within same agency (USDA)
- Lag time for USDM to “catch up” to conditions, 1 category per week change
- Some non-government insurance products use different data sources that may trigger a payment before the USDM
 - I do not think there is a need to address this relating to the USDM product, but is a comparison I hear



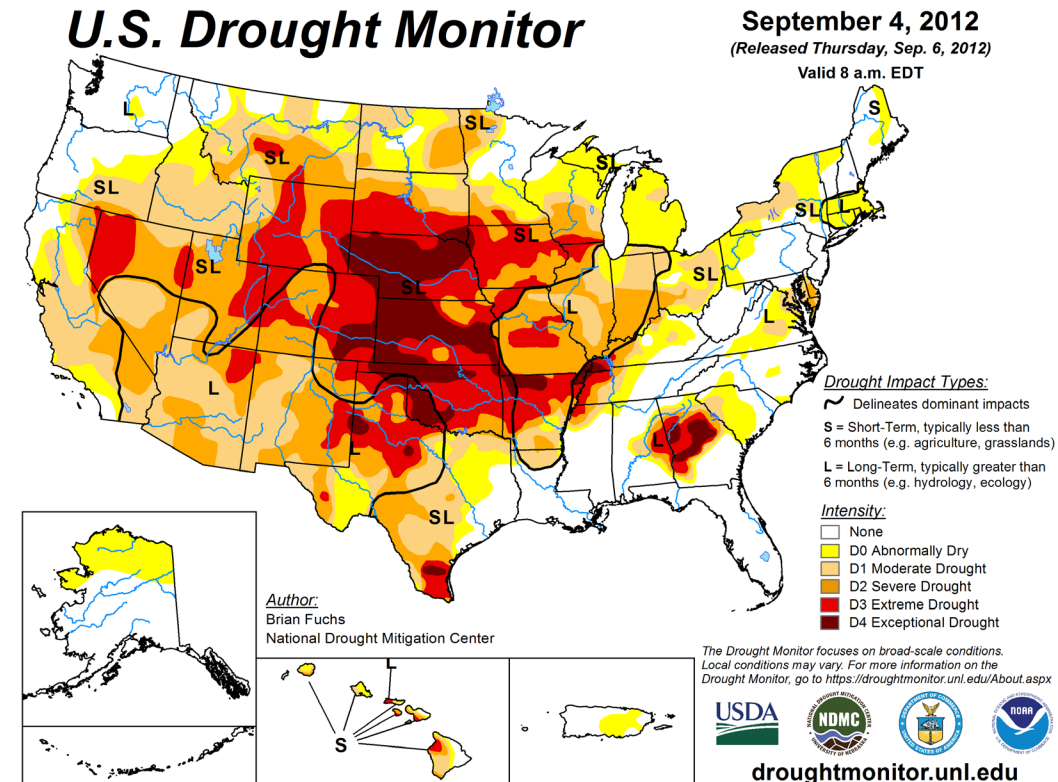
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USDA Livestock Forage Program

	SD	MT	ND	WY	CO	U.S.
Highest year	2012 \$172.6M	2022 \$102.3M	2021 \$83.4M	2013 \$78.9M	2012 \$82.5M	2012 \$2.623B
# of years with no payments	6	3	6	4	1	0
2008-2024 total indemnities	\$609.3M	\$465.9M	\$235.8M	\$384.3M	\$393.2M	\$26,950,651,414

Does the USDM adequately reflect drought?

- Yes, most of the time
- Some vocal critics
- In SD, we try to get broad representation in our weekly discussions and recommendations, including:
 - Agriculture
 - Water
 - Wildland fire
 - Tribes
 - NOAA National Weather Service
 - State, federal, academia, & Extension
 - And reach out to others as needed



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