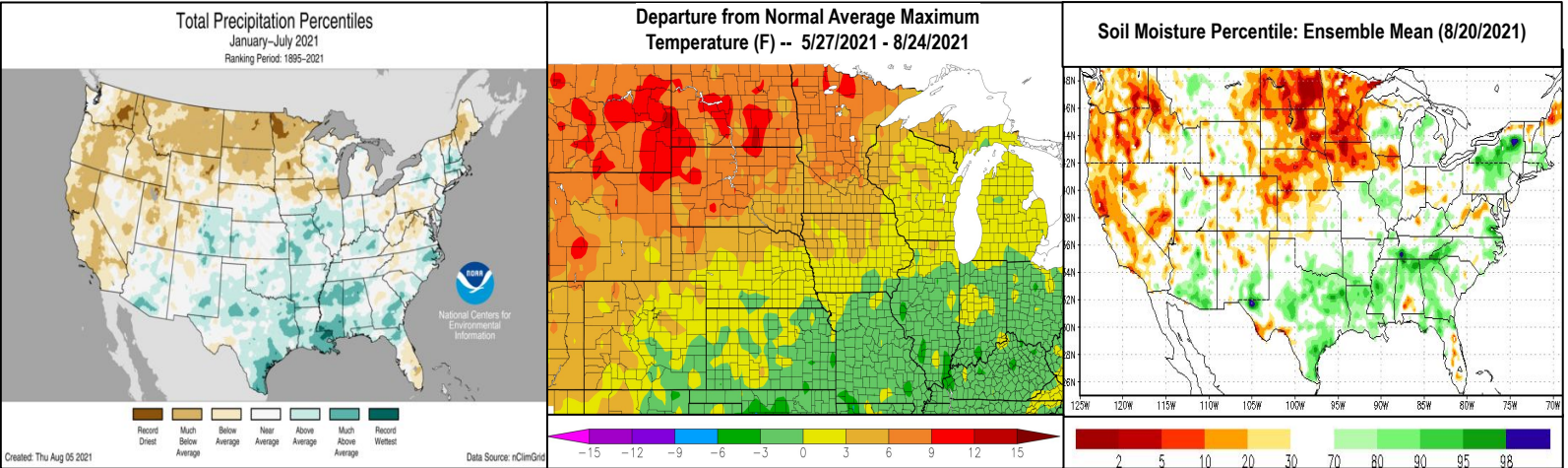


Fall Outlook: Fire Weather and Water Resource Concerns to Continue as Drought Conditions Persist with Warmer/Drier Conditions Expected in the Northern Plains

Setting the Stage: 2020 Drought Conditions Worsened in 2021 from Heat and Limited Rain

2021 started off dry due to limited precipitation during the late summer and fall months of 2020, and these dry conditions have persisted through 2021 so far across much of the Northern Plains due to very little rain (and limited snow during the winter season). The summer heat quickly kicked in by early to mid June with several additional stretches of excessive heat noted across the region through July and August. The combination of these conditions has resulted in very dry soils, leading to continued or worsening drought conditions.



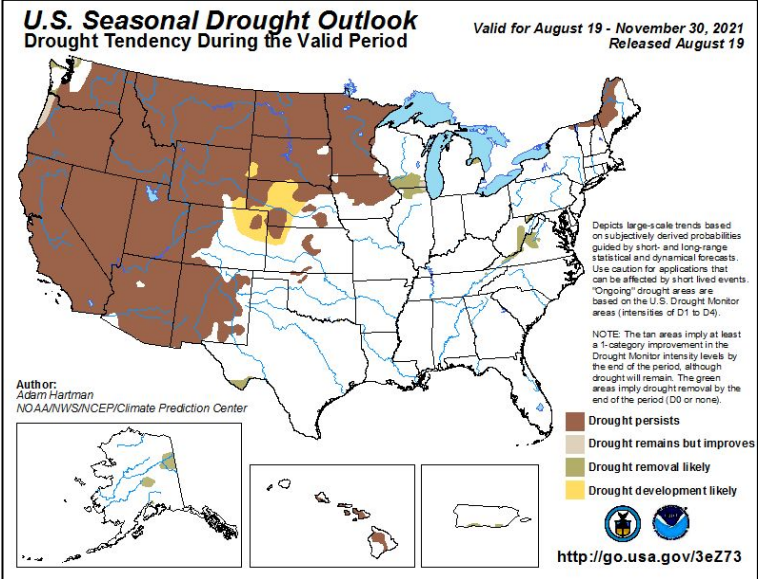
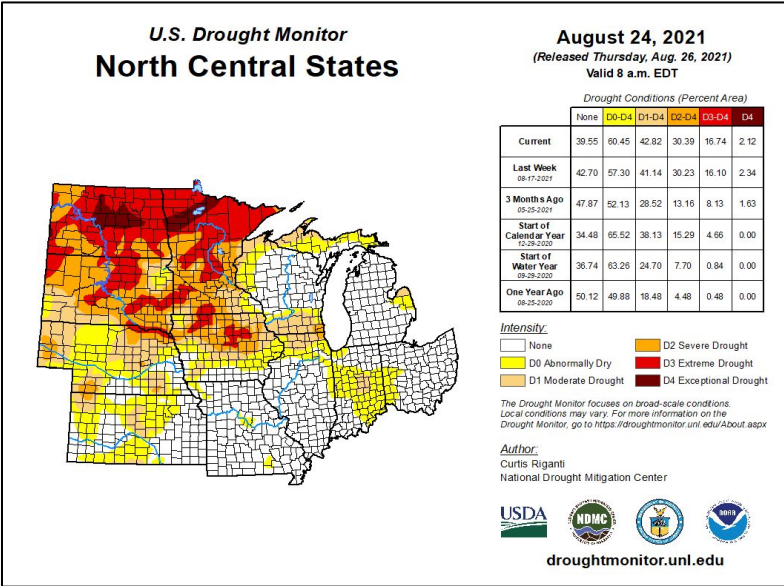
ABOVE LEFT: Total precipitation percentiles across the U.S. from January - July, 2021 (Source: [NCEI](#))

ABOVE MIDDLE: Departure from normal for average maximum temperatures from May 27 to August 24, 2021 (Source: [HPRCC](#))

ABOVE RIGHT: Calculated soil moisture percentile (ensemble mean) across the U.S. from August 20, 2021 (Source: [CPC](#))

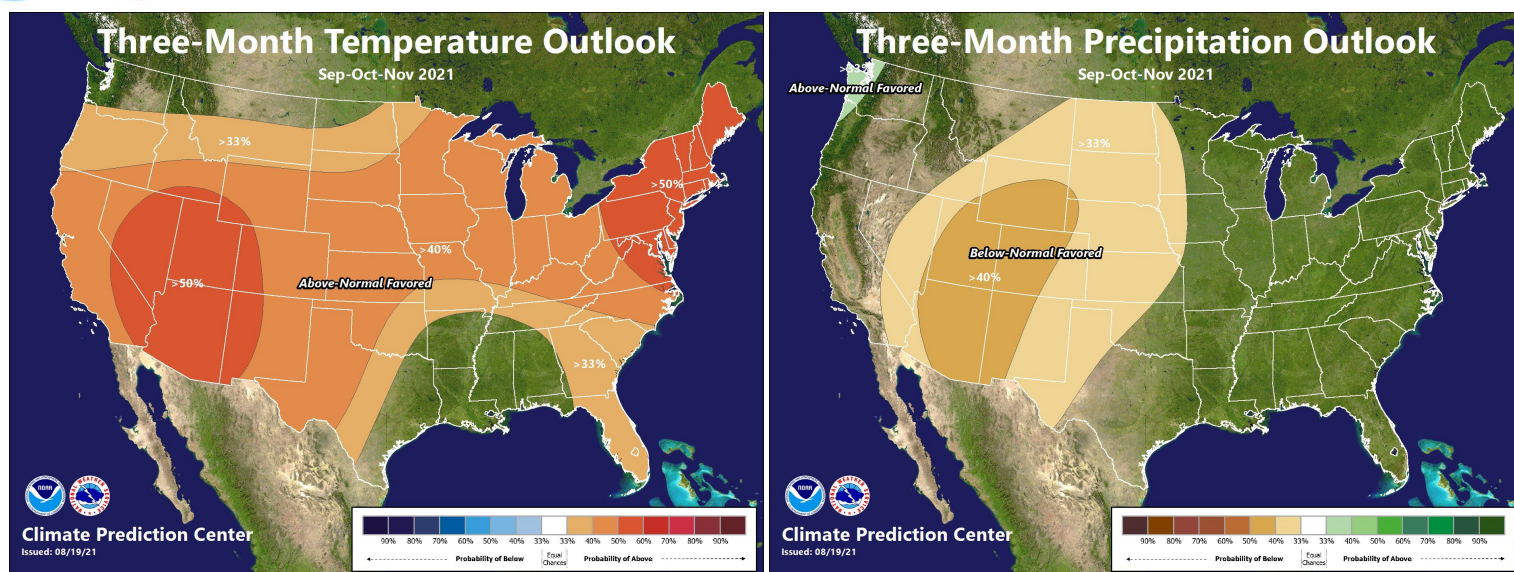
Assessing Drought Conditions

The late August U.S. Drought Monitor update across the north central U.S. highlighted what was the most coverage of drought conditions since the end of the 2012 drought. This Drought Monitor update notes that 60% of the north central U.S. is experiencing some degree of drought conditions, with 30% of the region experiencing severe, extreme, or exceptional drought conditions. The long-range forecasts for much of the Northern Plains are favoring warmer conditions and equal to below-normal chances for drier conditions continuing through the fall. These forecasts, combined with the excessive heat and drier conditions experienced through the summer, lead to increasing concerns for persistent or worsening drought conditions through the fall.



ABOVE: U.S. Drought Monitor for the North Central U.S., as of August 24, 2021 (Source: [U.S. Drought Monitor](#))

ABOVE: U.S. Seasonal Drought Outlook through November 30, 2021 (Source: [CPC](#))

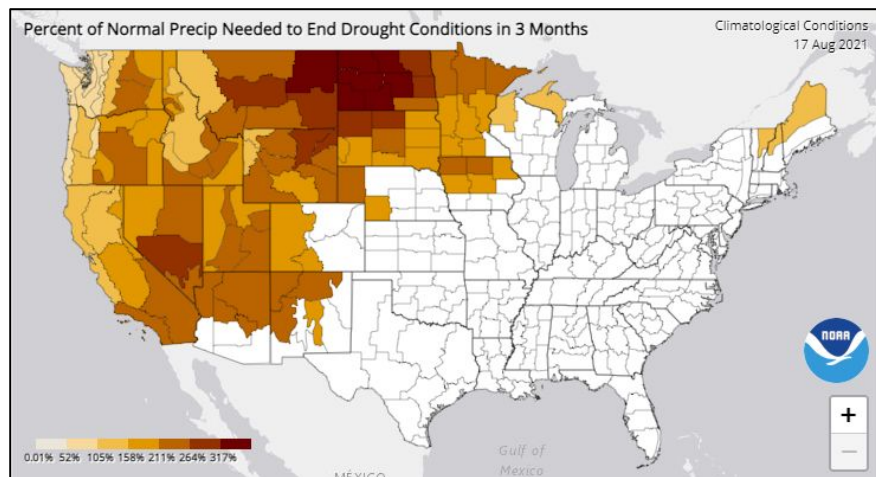
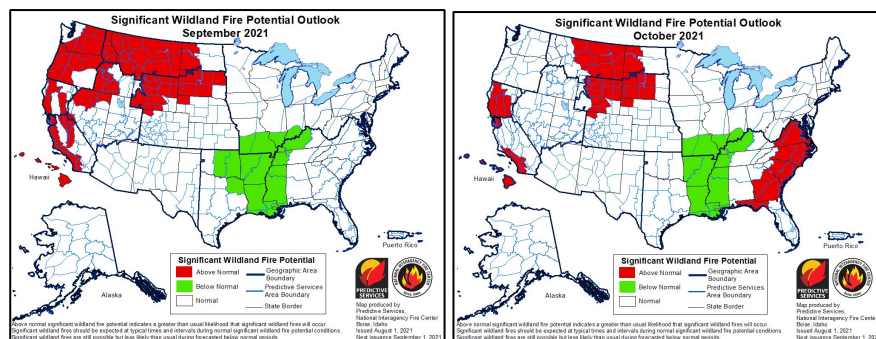


Potential Impacts

Many streamflow gauges are showing that rivers and creeks are running below normal to much below normal for this time of year, particularly across Minnesota, the Dakotas, and Iowa. The combination of long-term dryness, summer heat, higher evapotranspiration, and very dry soils in many areas continues to limit the availability of water for growing crops. Given these conditions, it will require persistent above-normal rain and snow events over multiple seasons to start to see improvement in drought impacts. As a result, drought conditions will likely persist into next year.

Persistent or worsening drought conditions will likely continue to contribute to:

- Larger and more frequent wildfires
- Decreased air quality
- Less forage and water for livestock
- Increased crop stress, livestock heat-stress
- Reduced rural water supply and quality
- Increased production of harmful algae blooms and other ecological impacts due to reduced water levels
- Reduced or adapted outdoor recreation and tourism



For more information visit:

Local Forecast – [weather.gov](#)

Long-Range Outlooks –

[cpc.ncep.noaa.gov](#)

River Forecasts –

[water.weather.gov/ahps/forecasts.php](#)

Weather & Climate Data – [ncei.noaa.gov](#)

Fire Outlook – [nifc.gov/nicc](#)

Drought Information – [drought.gov](#)

Agricultural Outlook – [usda.gov/oce/ag-outlook-forum](#)

Streamflow Data -

[https://waterwatch.usgs.gov/index.php?id=ww](#)

