

# 2024 Climate & Water + Trends



TRENT FORD

ILLINOIS STATE CLIMATOLOGIST

ILLINOIS STATE WATER SURVEY | PRAIRIE RESEARCH INSTITUTE

UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN

**I ILLINOIS**

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

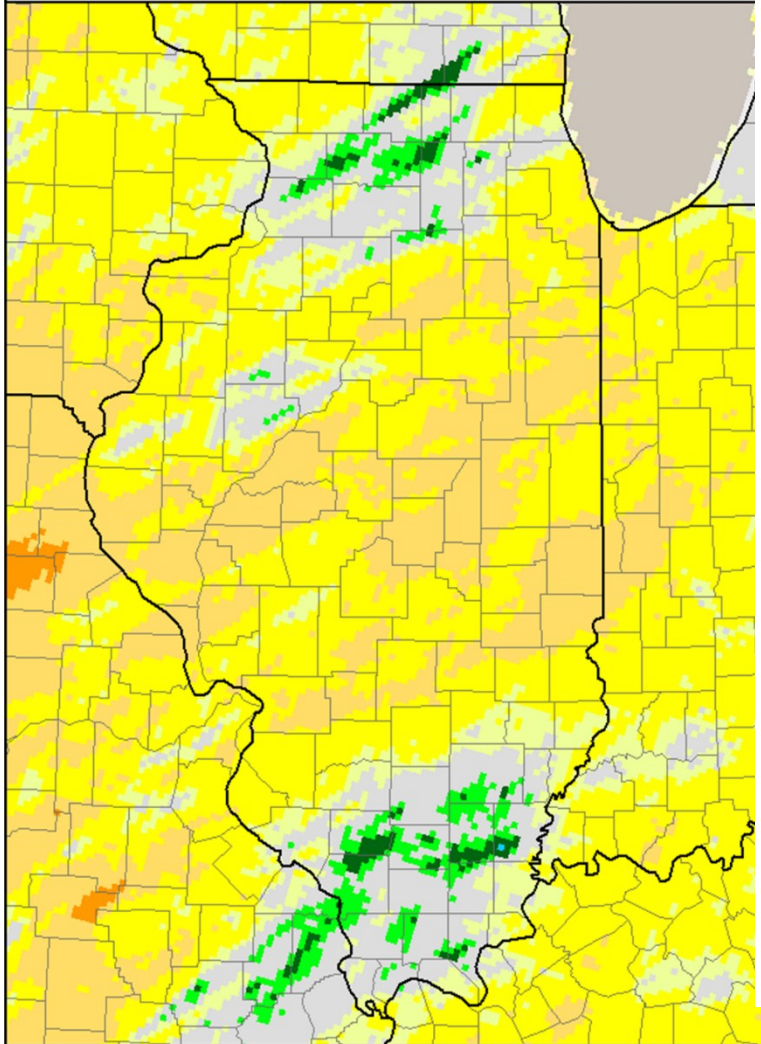
# Early Season Dryness

## April



This product was prepared by the  
USDA Office of the Chief Economist (OCE)  
World Agricultural Outlook Board (WAOB)

Multi-sensor Precipitation: Departure from Normal  
Month-to-Date Ending the Morning of 4/29/2023

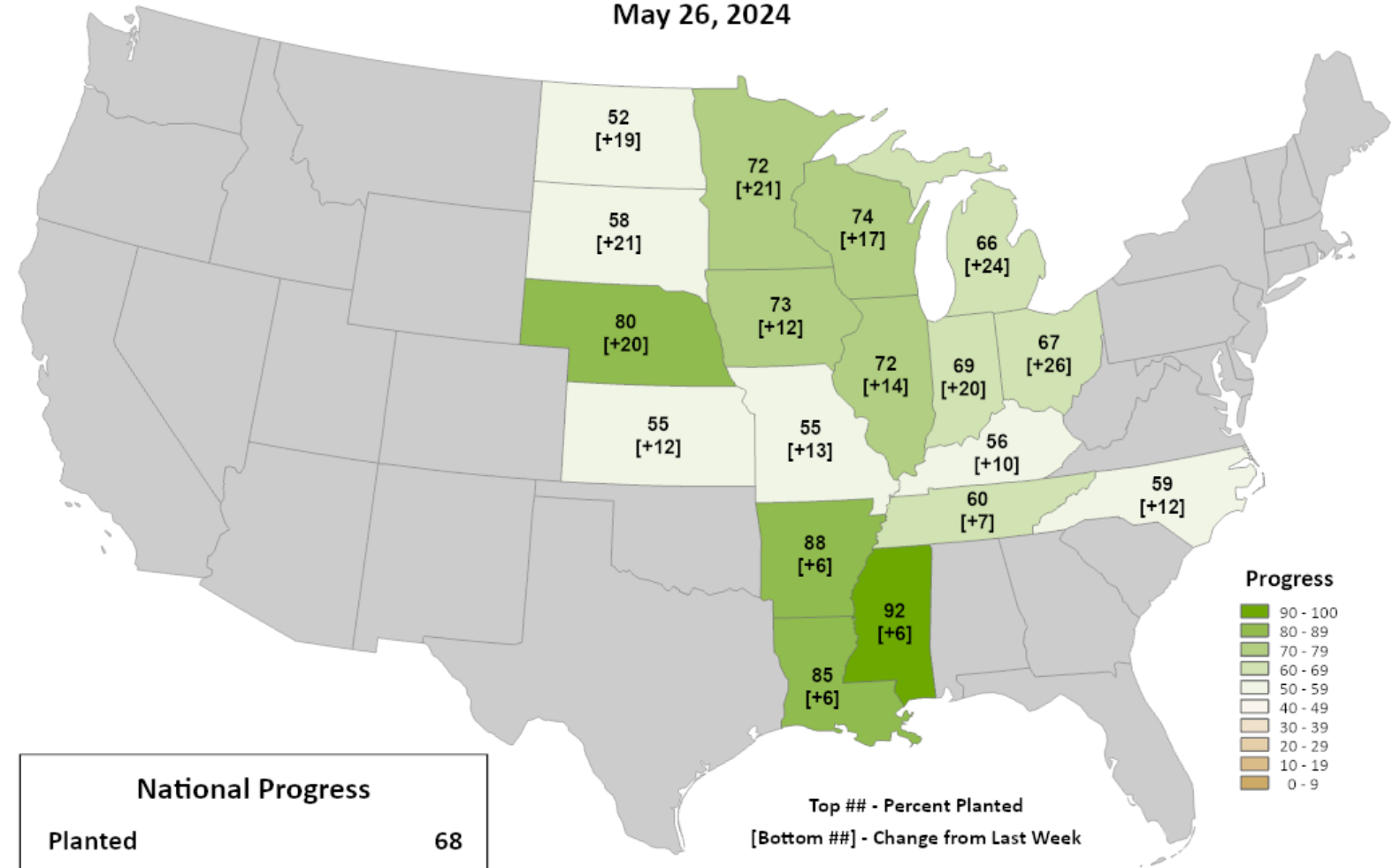


<https://water.weather.gov/precip>

# Soybeans Progress

## Percent Planted

May 26, 2024



National Progress	
Planted	68
Change from Last Week	+16

Top ## - Percent Planted  
[Bottom ##] - Change from Last Week

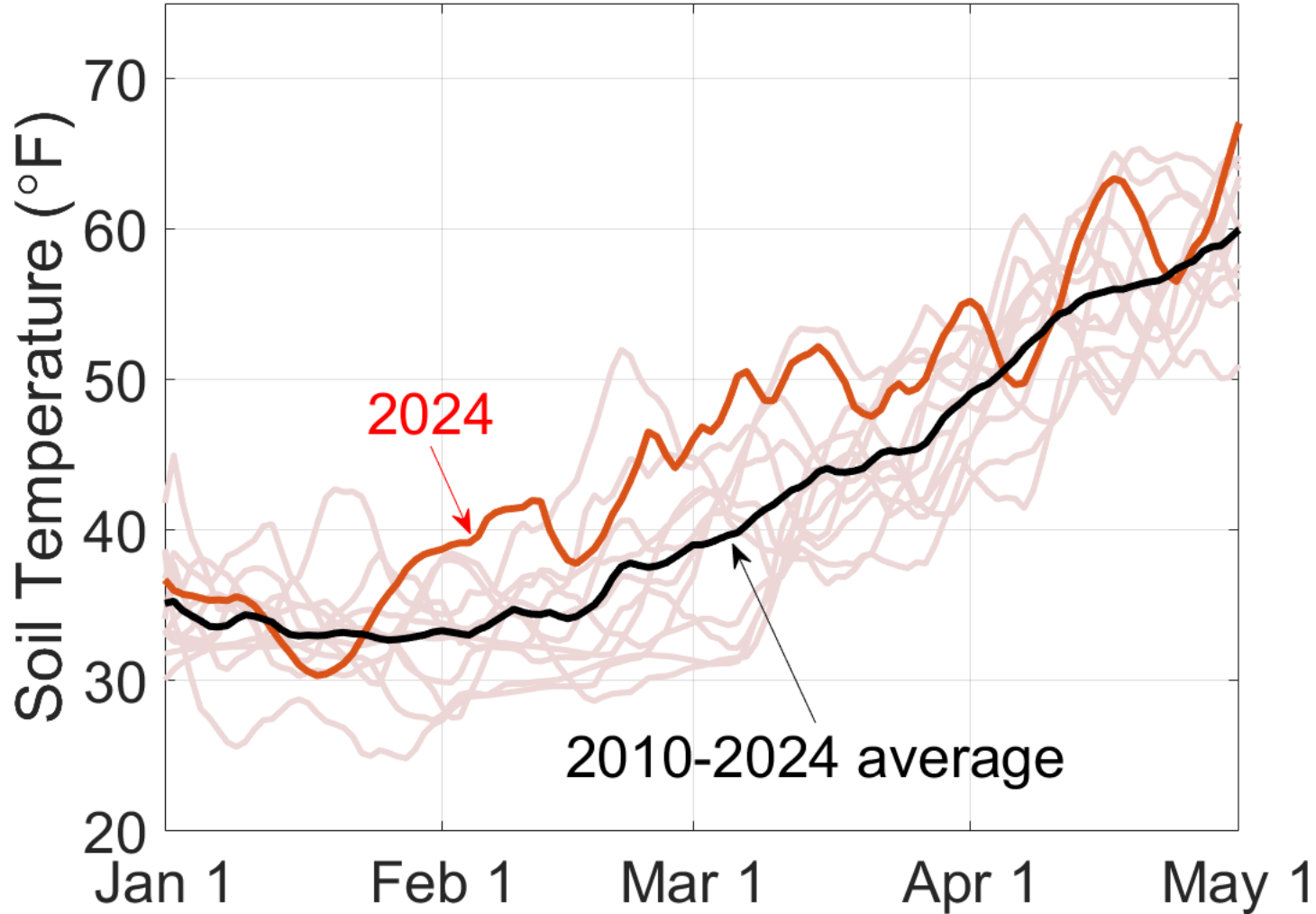
Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports.

<https://water.weather.gov/precip>

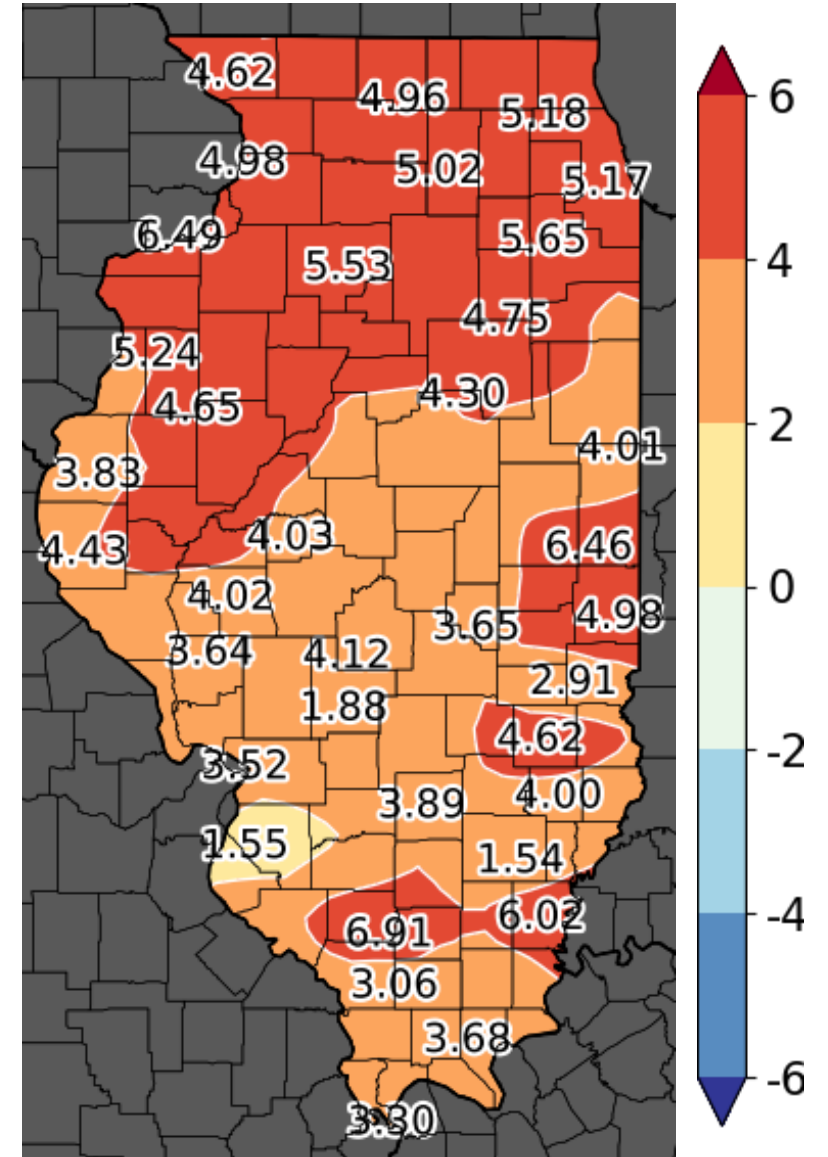


# Very Warm Start to 2024

## Champaign 4" Soil Temperatures



## January – May Average Temperature (°F)

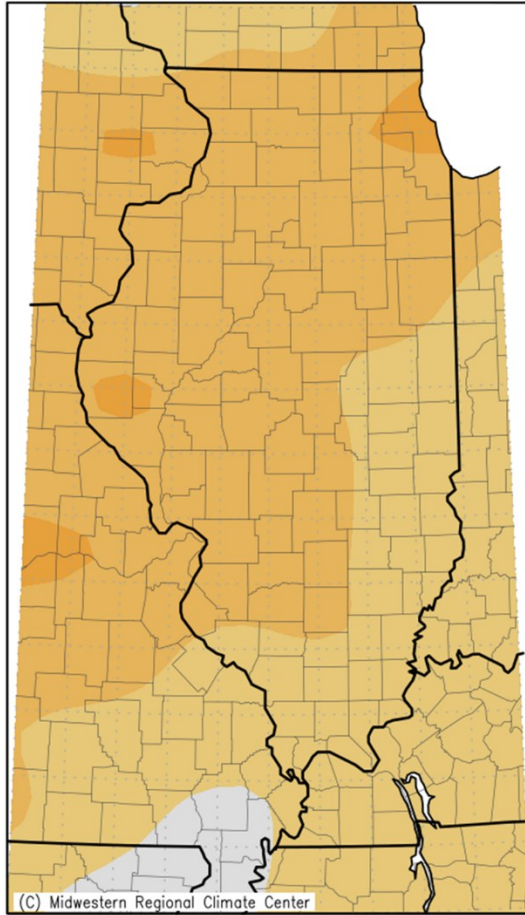




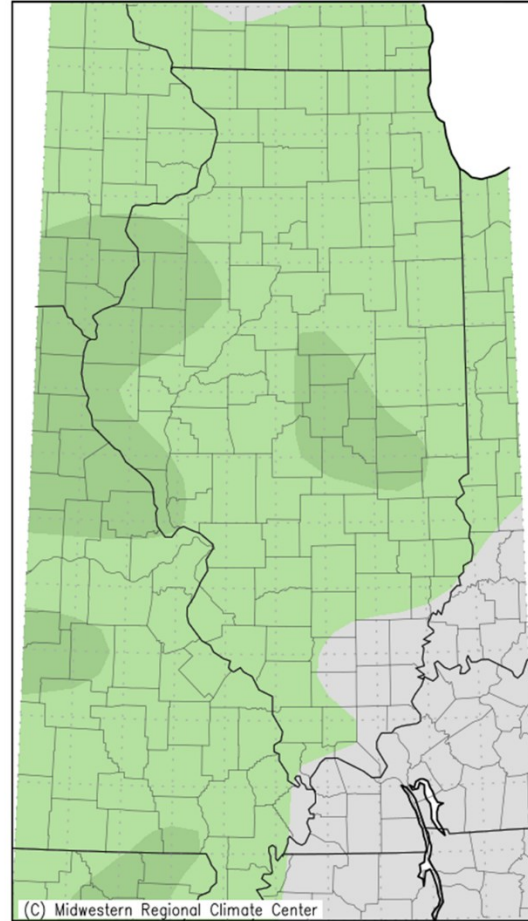
# Mid-Summer Cooled Off...

## Average Temperatures (°F)

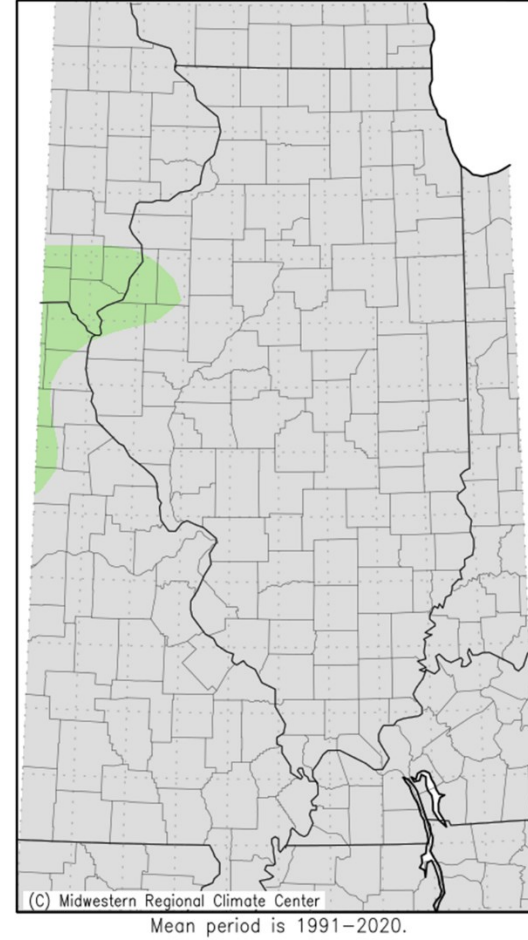
June



July



August

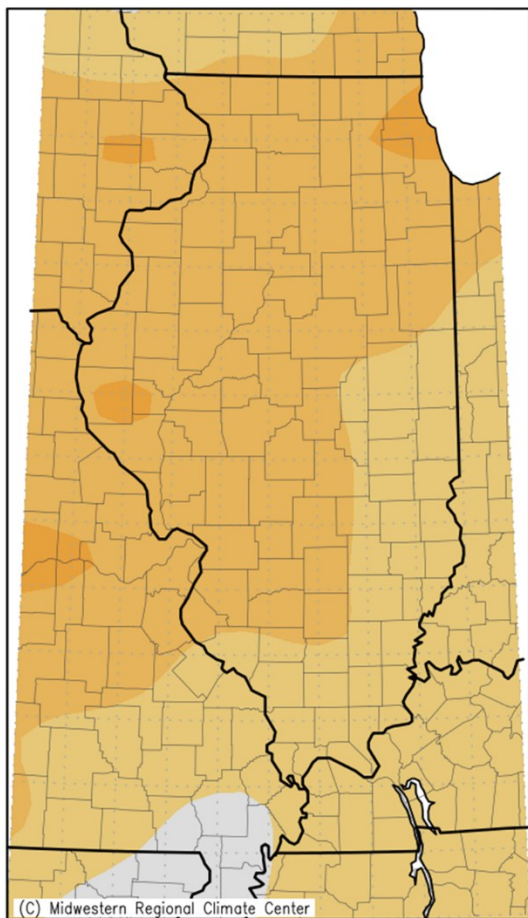




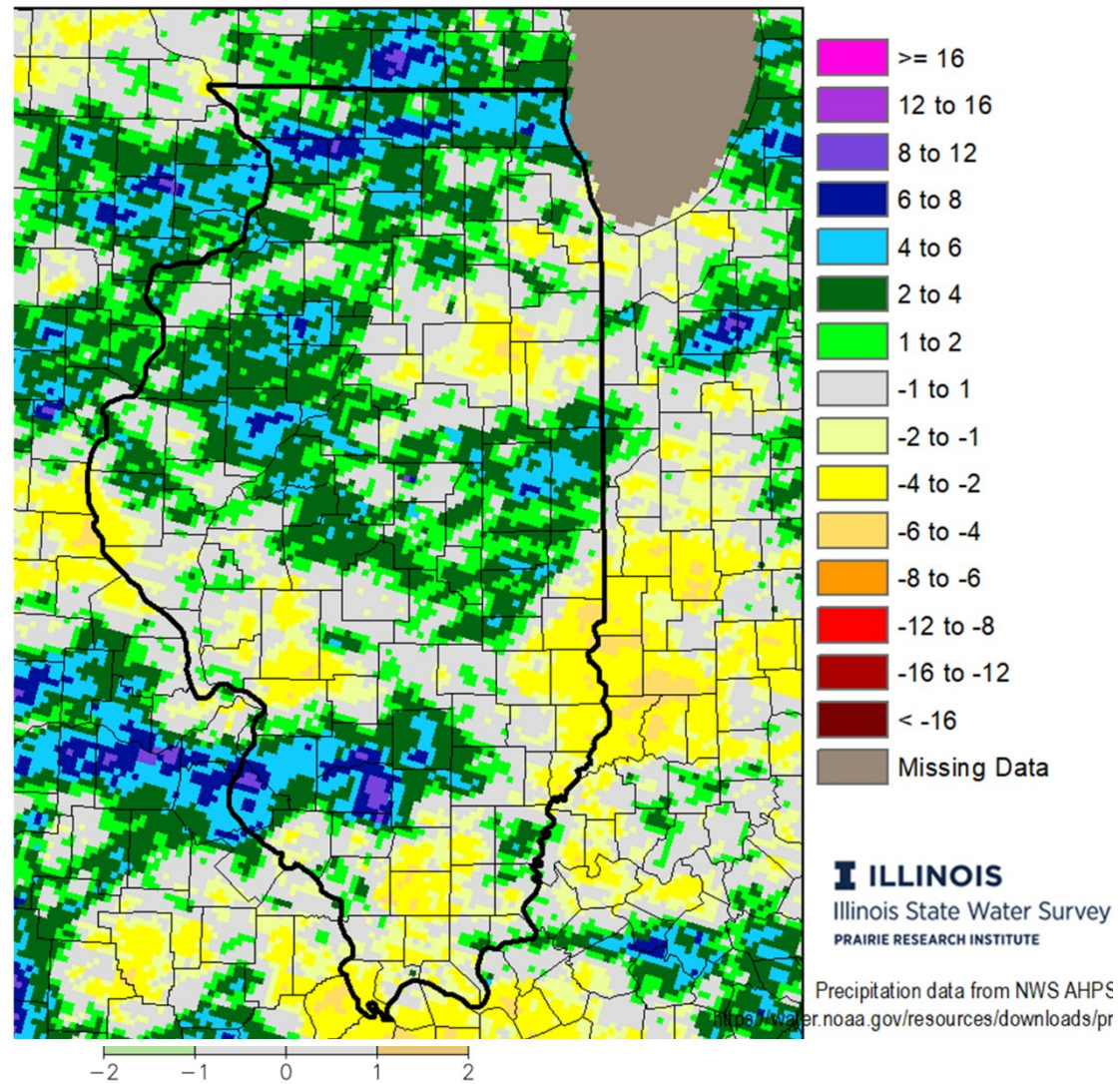
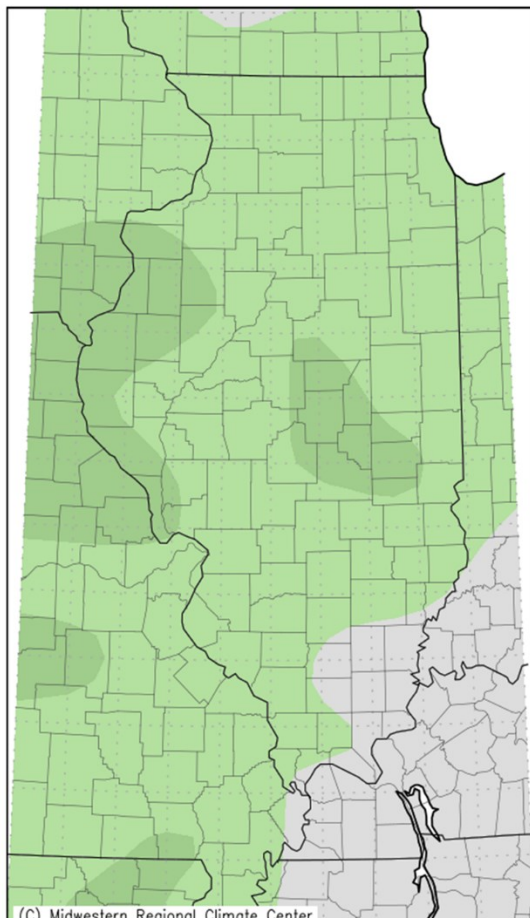
# Mid-Summer Cooled Off... and Got Wet

## Average Temperatures (°F) Summer Precipitation Departures (inches)

June



July



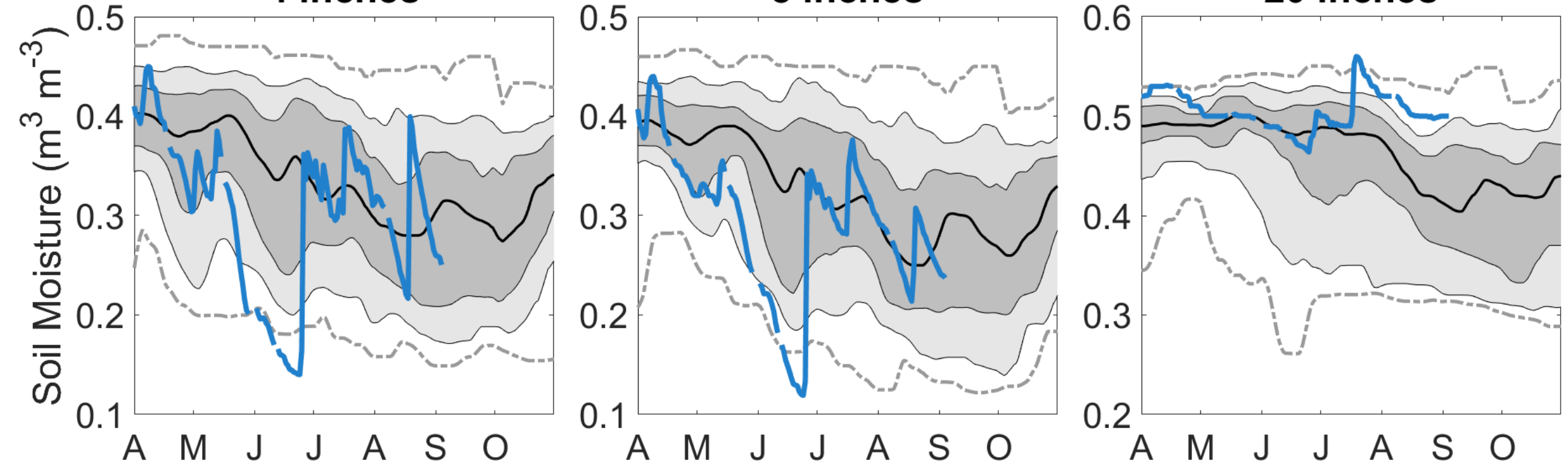
# Soil Moisture

## DeKalb

### 4 inches

### 8 inches

### 20 inches

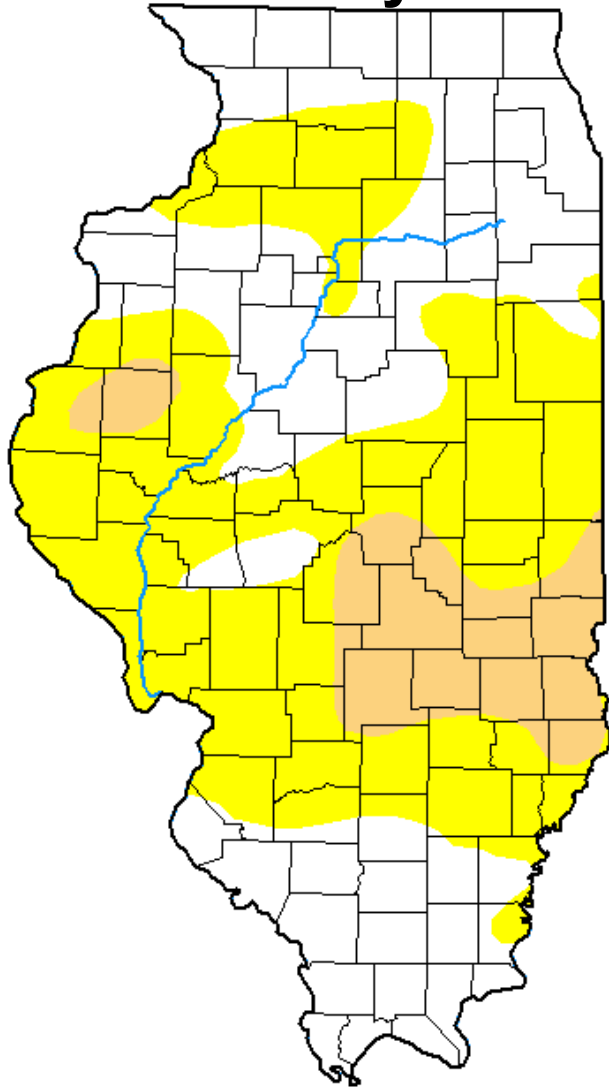


[stateclimatologist.web.illinois.edu](http://stateclimatologist.web.illinois.edu)

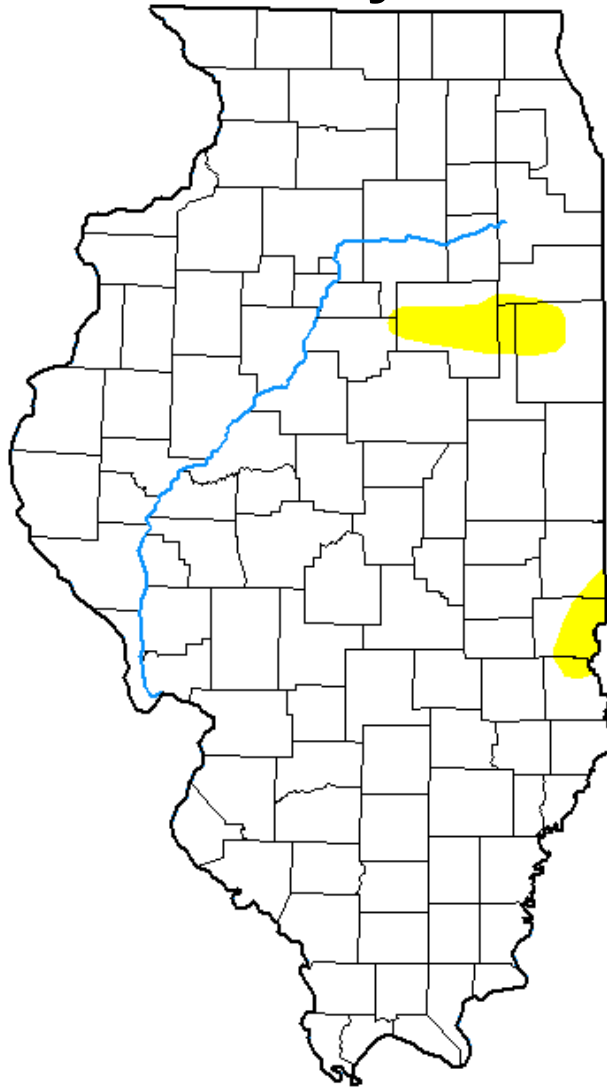


# Timely Summer Rain Kept Drought at Bay...

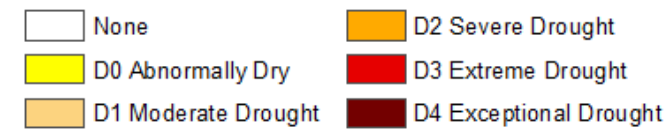
July 2



July 23



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:

Brian Fuchs  
National Drought Mitigation Center



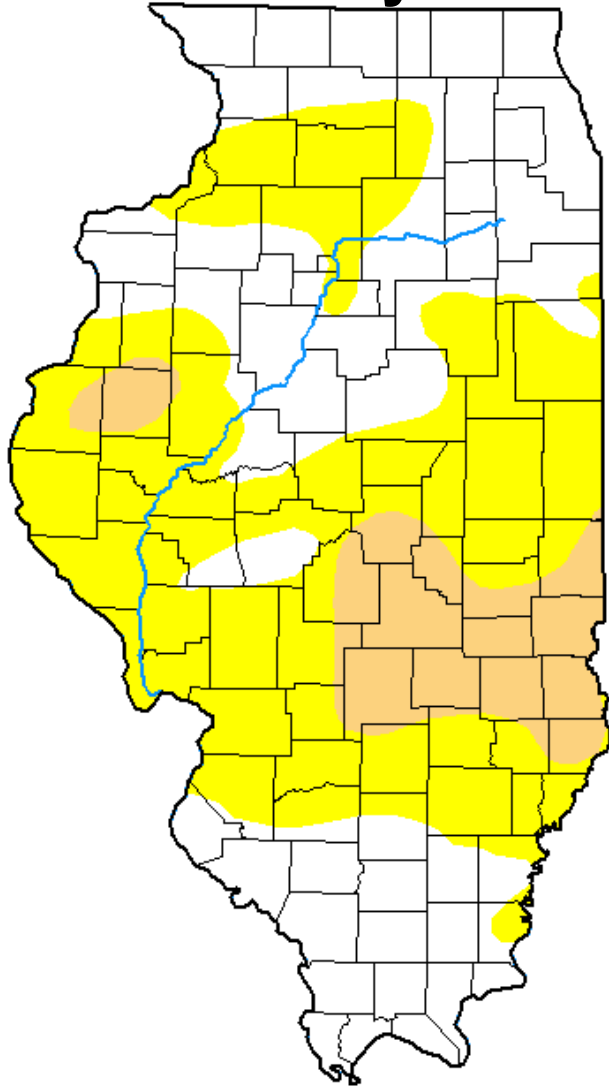
[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)



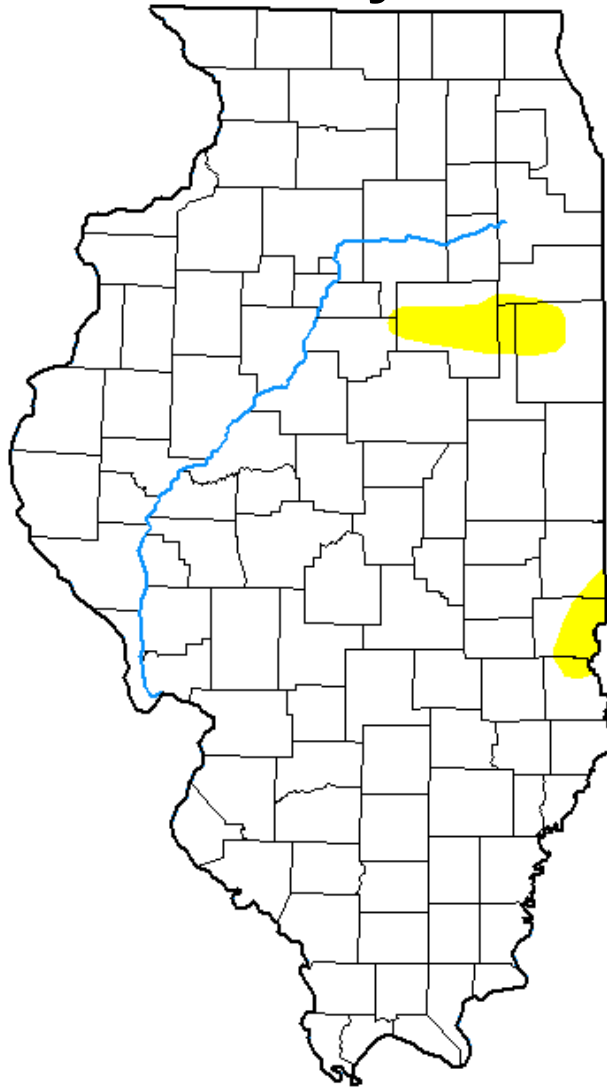


# Timely Summer Rain Kept Drought at Bay... Until Fall

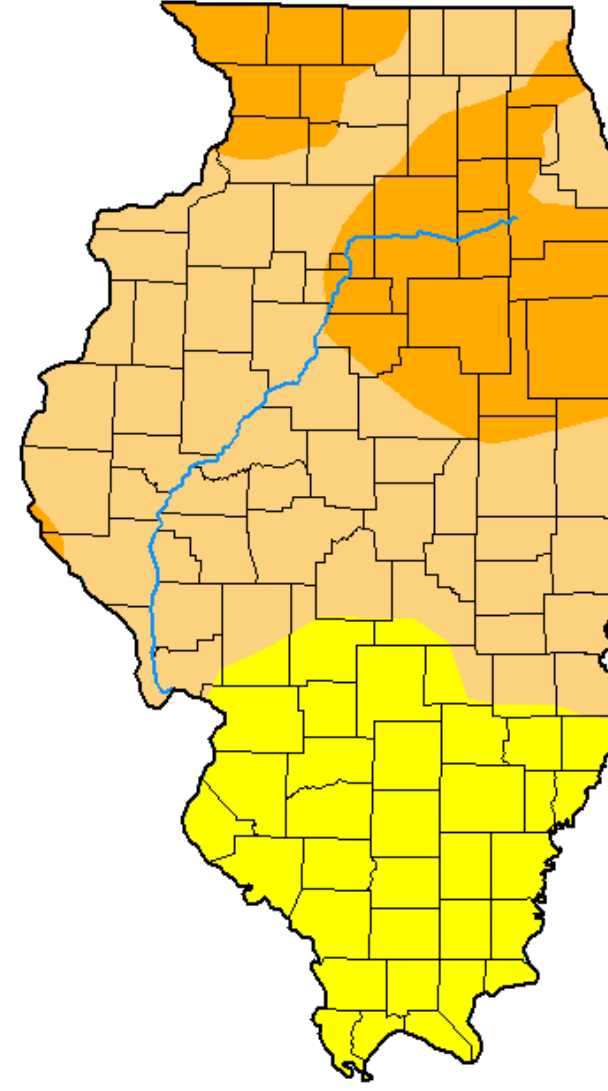
July 2



July 23



October 29



Intensity:

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

*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>*

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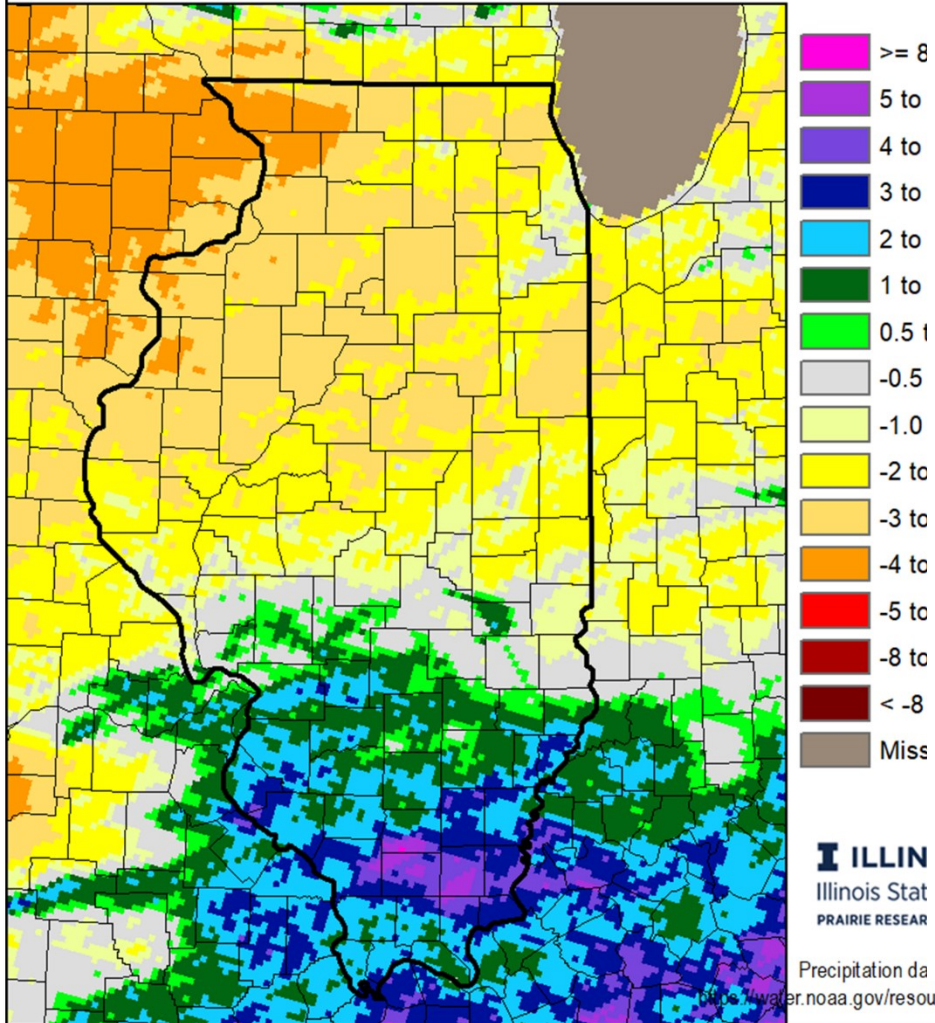
# Harvest Season Dryness

## September



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 USDA Office of the Chief Economist (OCE)  
 World Agricultural Outlook Board (WAOB)

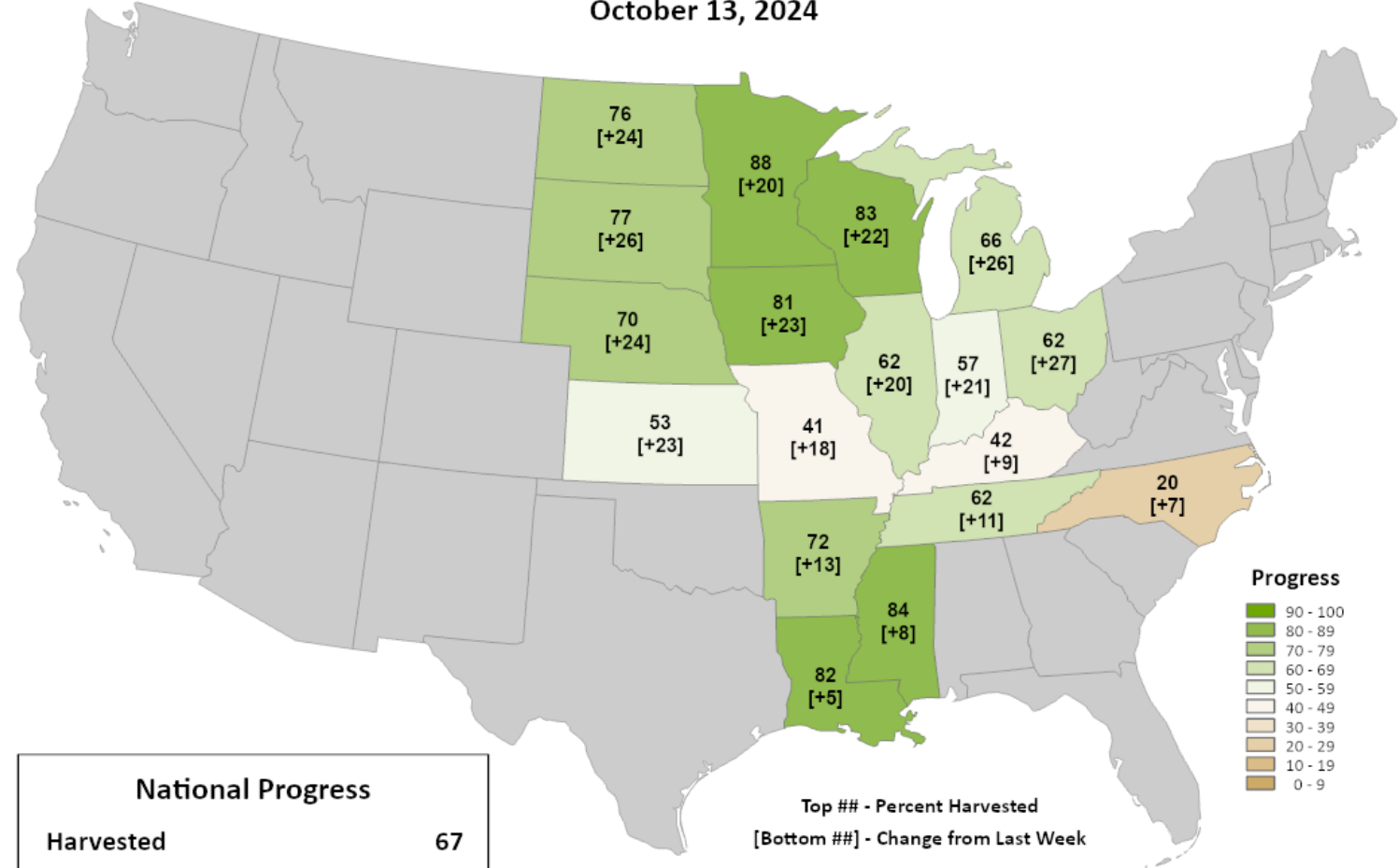
Multi-sensor Precipitation: Departure from Normal (inches)  
 Month-to-Date Ending the Morning of 9/30/2024



# Soybeans Progress

## Percent Harvested

October 13, 2024

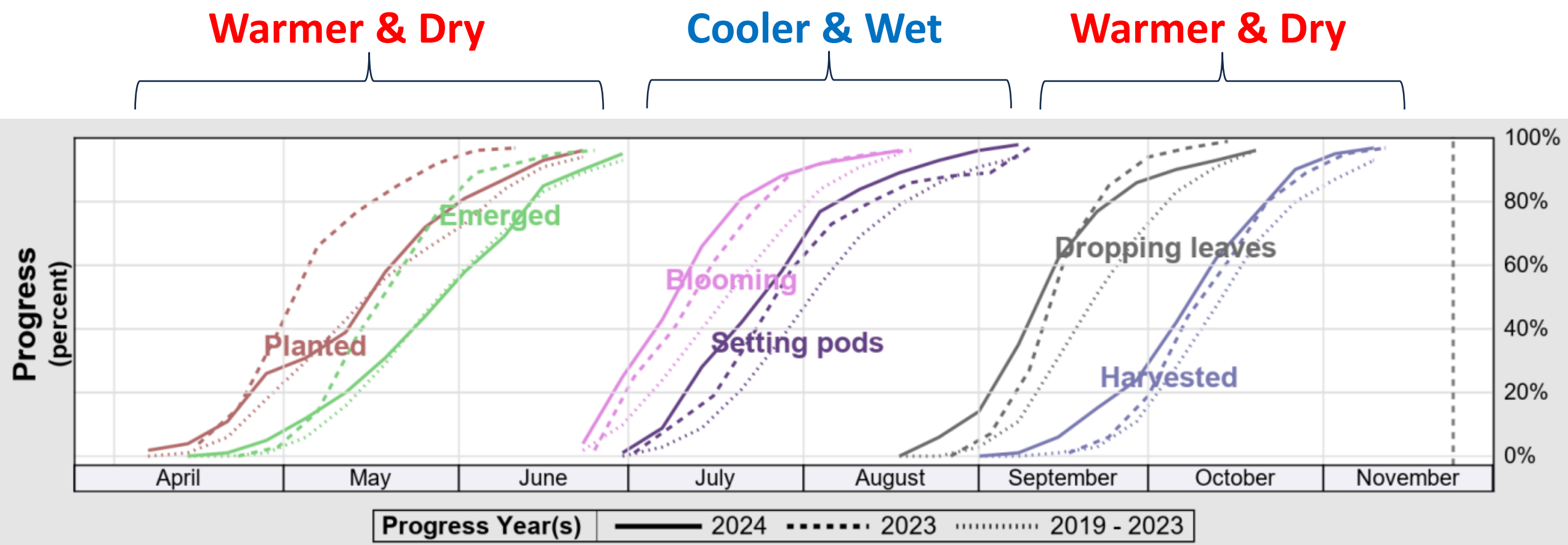


Data obtained from USDA National Agricultural Statistics Service weekly Crop Progress reports.

<https://water.noaa.gov/resources/downloads/precip>



# Bean Progress Throughout the Season



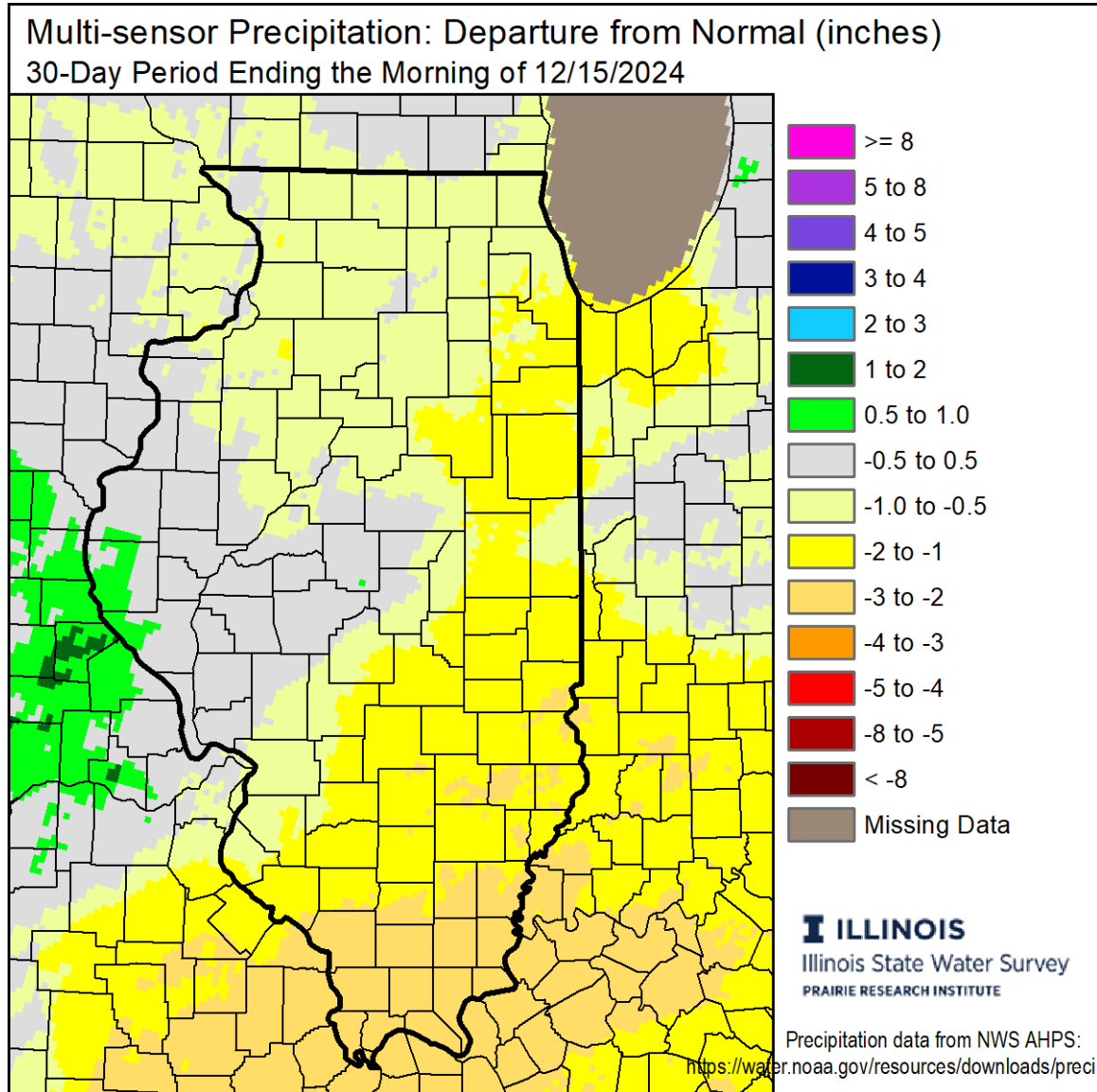
Progress Year(s) ——— 2024    - - - - - 2023    ······ 2019 - 2023

Source: National Agricultural Statistics Service (NASS), Crop Progress Report

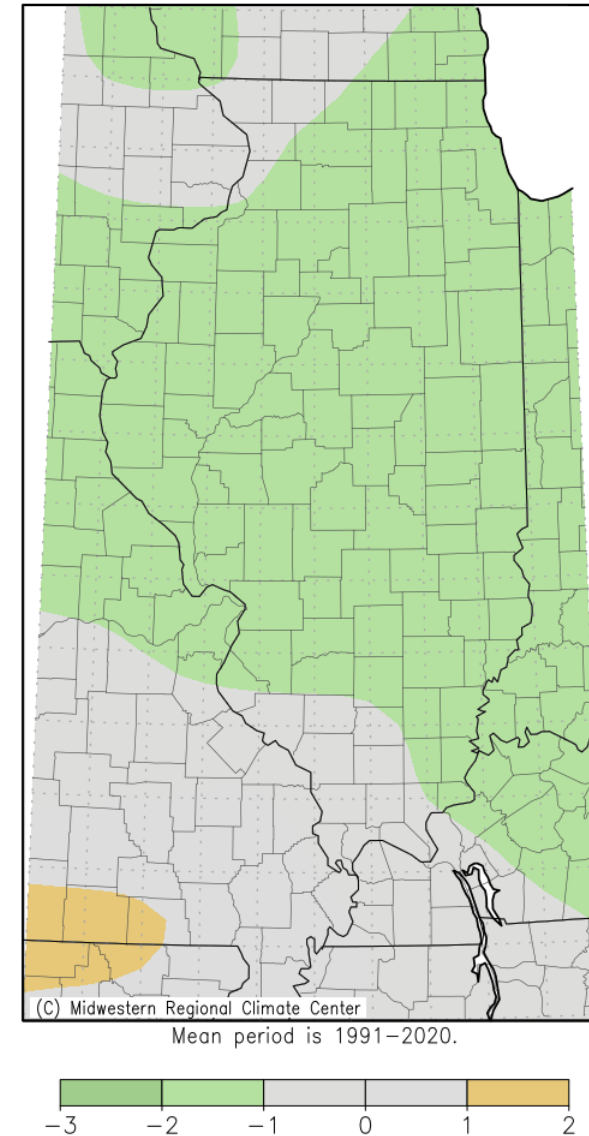




# Since Then...



Average Temperature (°F): Departure from Mean  
November 16, 2024 to December 15, 2024



# Looking Ahead – NWS Climate Prediction Center Outlooks



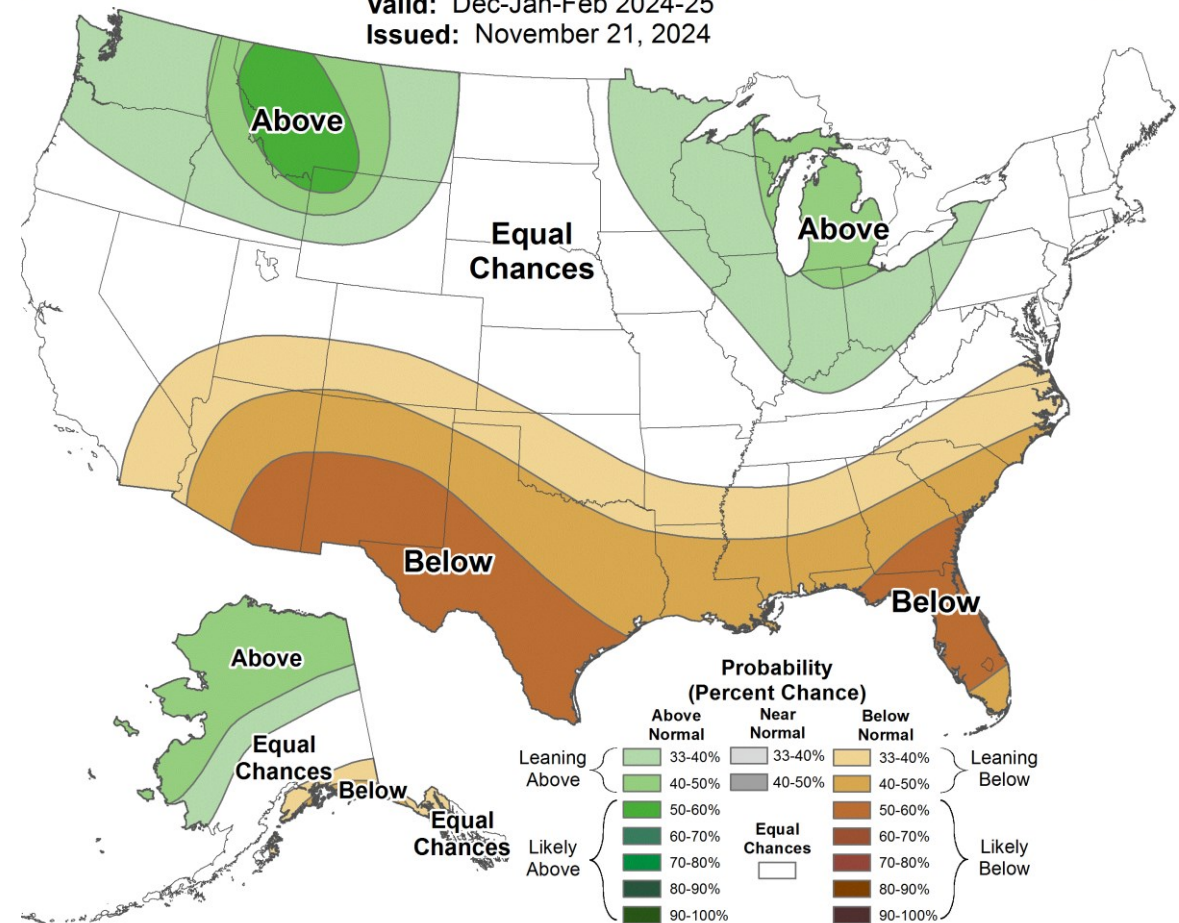
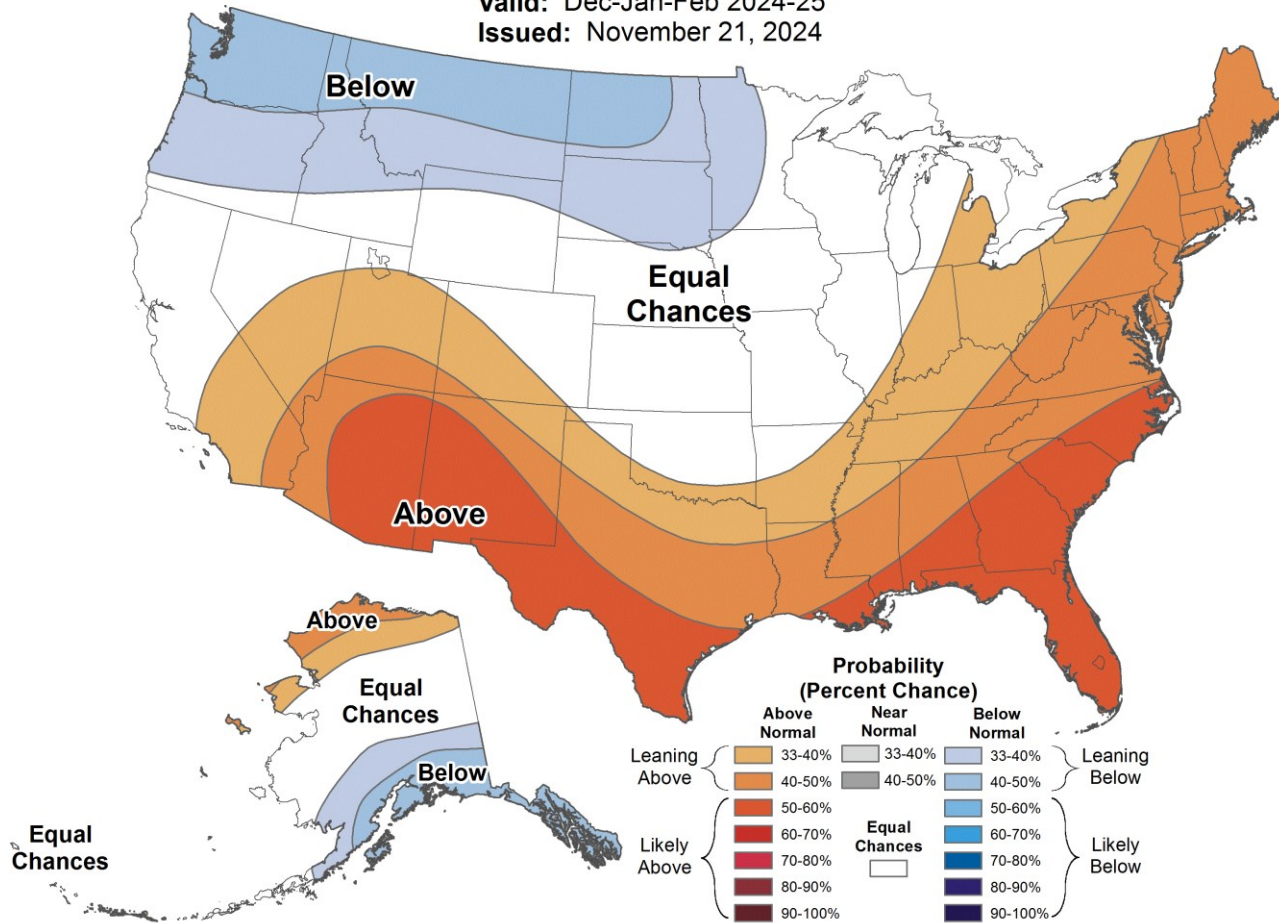
## Seasonal Temperature Outlook

Valid: Dec-Jan-Feb 2024-25  
Issued: November 21, 2024



## Seasonal Precipitation Outlook

Valid: Dec-Jan-Feb 2024-25  
Issued: November 21, 2024



<https://www.cpc.ncep.noaa.gov/>



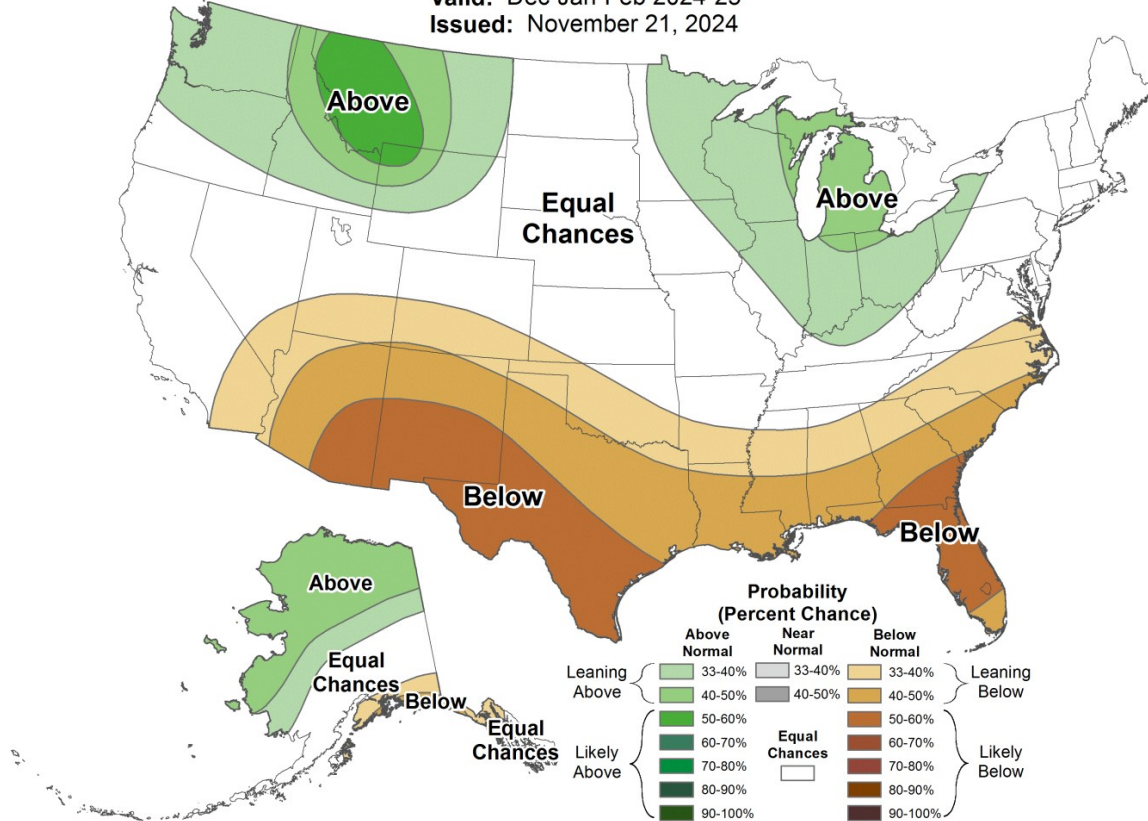


# Looking Ahead – NWS Climate Prediction Center Outlooks



## Seasonal Precipitation Outlook

Valid: Dec-Jan-Feb 2024-25  
Issued: November 21, 2024

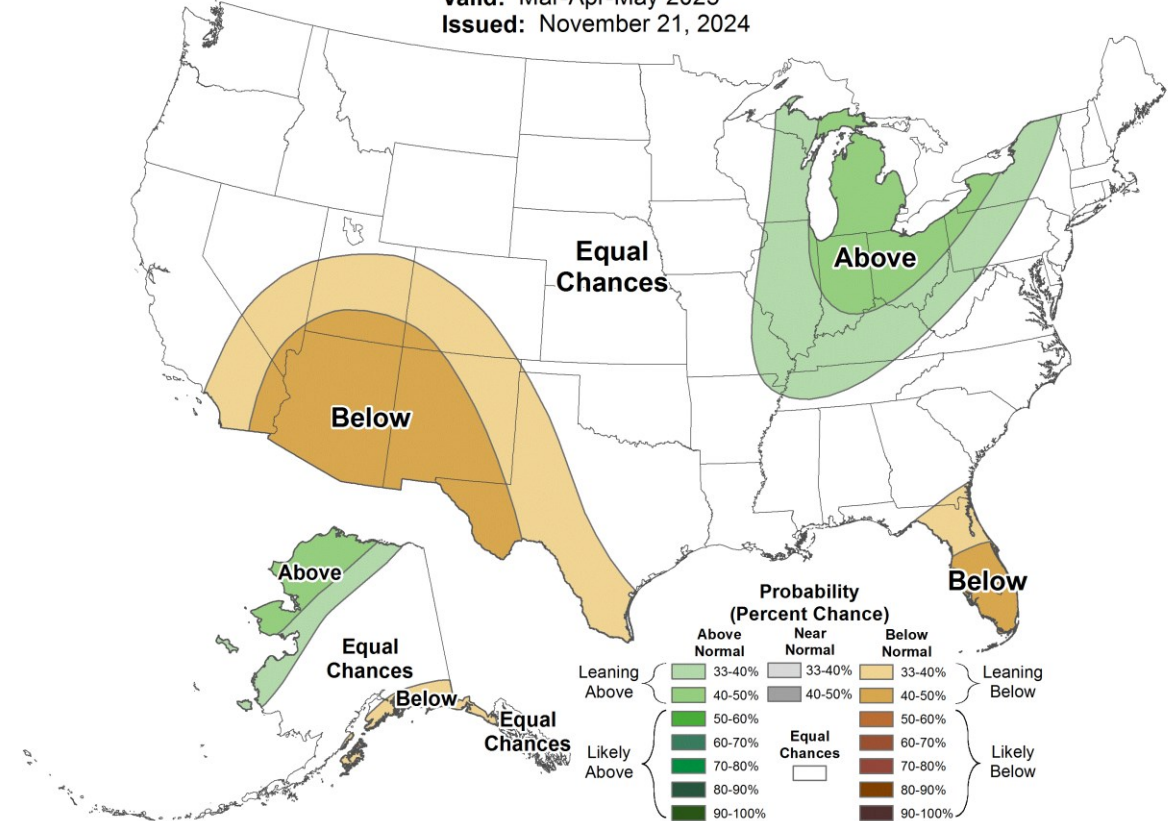


Winter



## Seasonal Precipitation Outlook

Valid: Mar-Apr-May 2025  
Issued: November 21, 2024



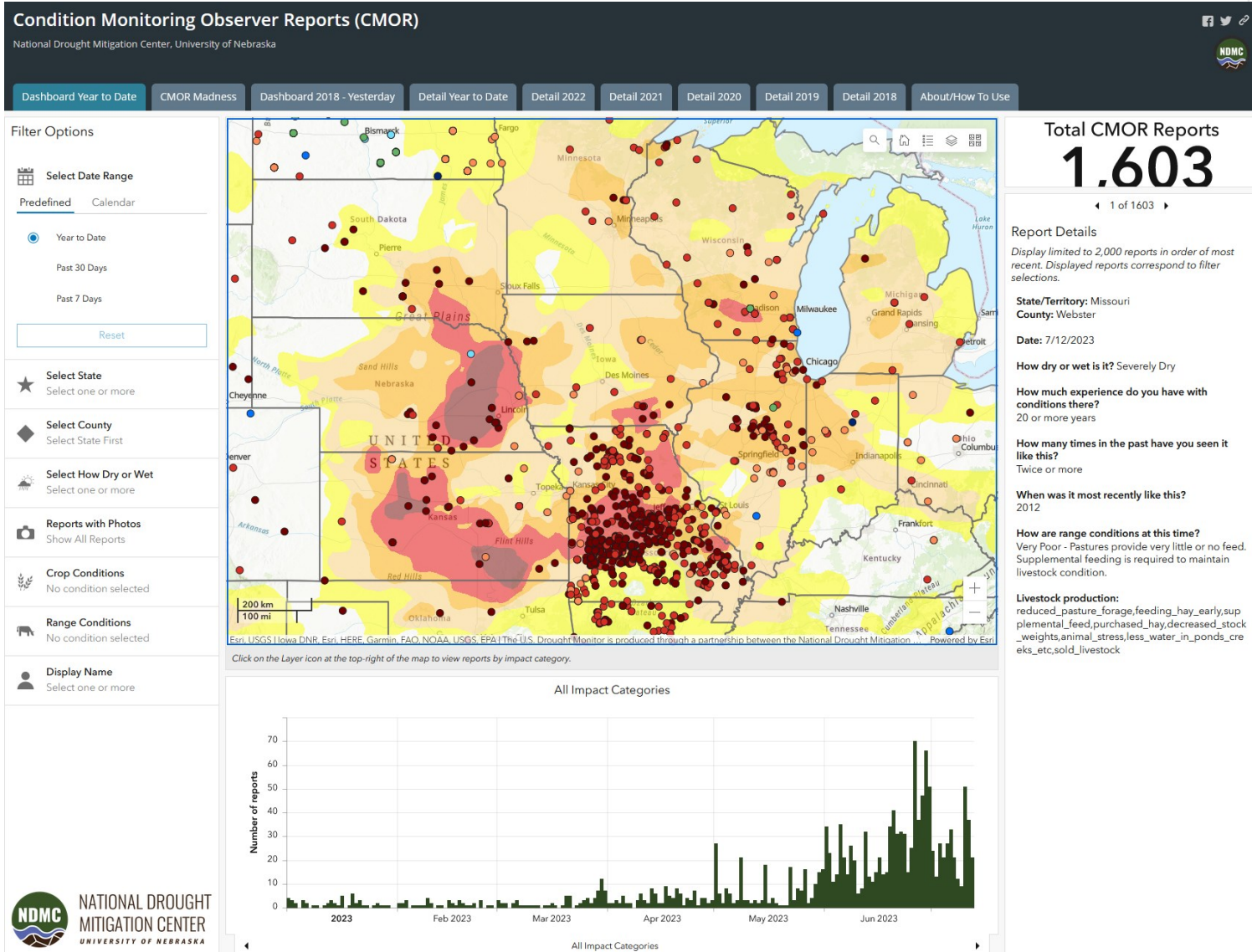
Spring

<https://www.cpc.ncep.noaa.gov/>





# What's Going on Out There? – Condition Monitoring Observer Reports (CMOR)



Total CMOR Reports

2

1 of 2

## Report Details

Display limited to 2,000 reports in order of most recent. Displayed reports correspond to filter selections.

**State/Territory:** Illinois  
**County:** St. Clair

**Date:** 6/1/2023

**How dry or wet is it?** Mildly Dry

**How much experience do you have with conditions there?**  
10-20 years

**How many times in the past have you seen it like this?**  
Twice or more

**When was it most recently like this?**  
2019

**How localized or widespread are the conditions you are reporting?**  
Entire bi-state region

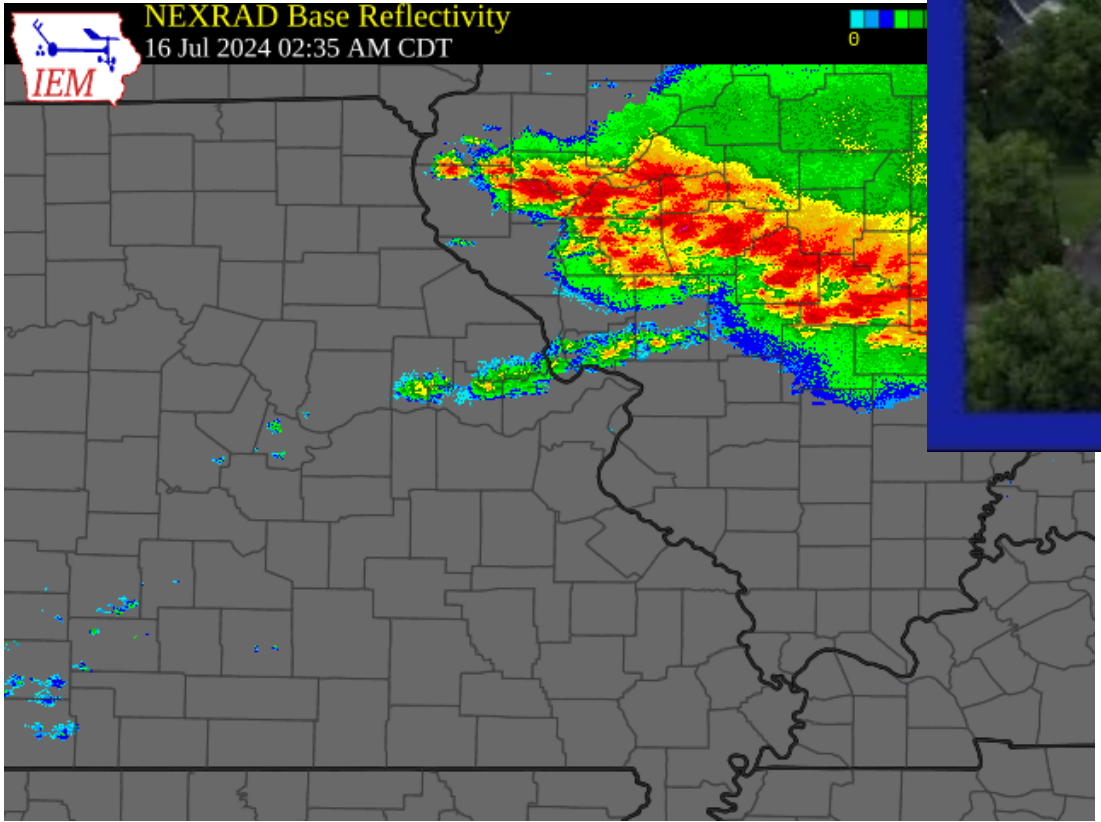
**Description and/or caption information:**  
Grass has slowed growth drastically, beginning to turn tan, plants are increasingly dried out. Looks and feels like mid-way through a dry July, yet it's only June 1st. And now even the small chance we had for rain over these next two days is gone, with high temps forecasted.



<https://go.illinois.edu/cmor>



# Heavier Rain & Flooding



**Wettest July on record in  
Monroe County (9.32")**





# Heavy Rainfall & Runoff

- Heavier rainfall = more runoff\*\*
- Increased peak streamflow, nutrient runoff, soil erosion, sedimentation
- Less effective soil moisture recharge from the rainfall

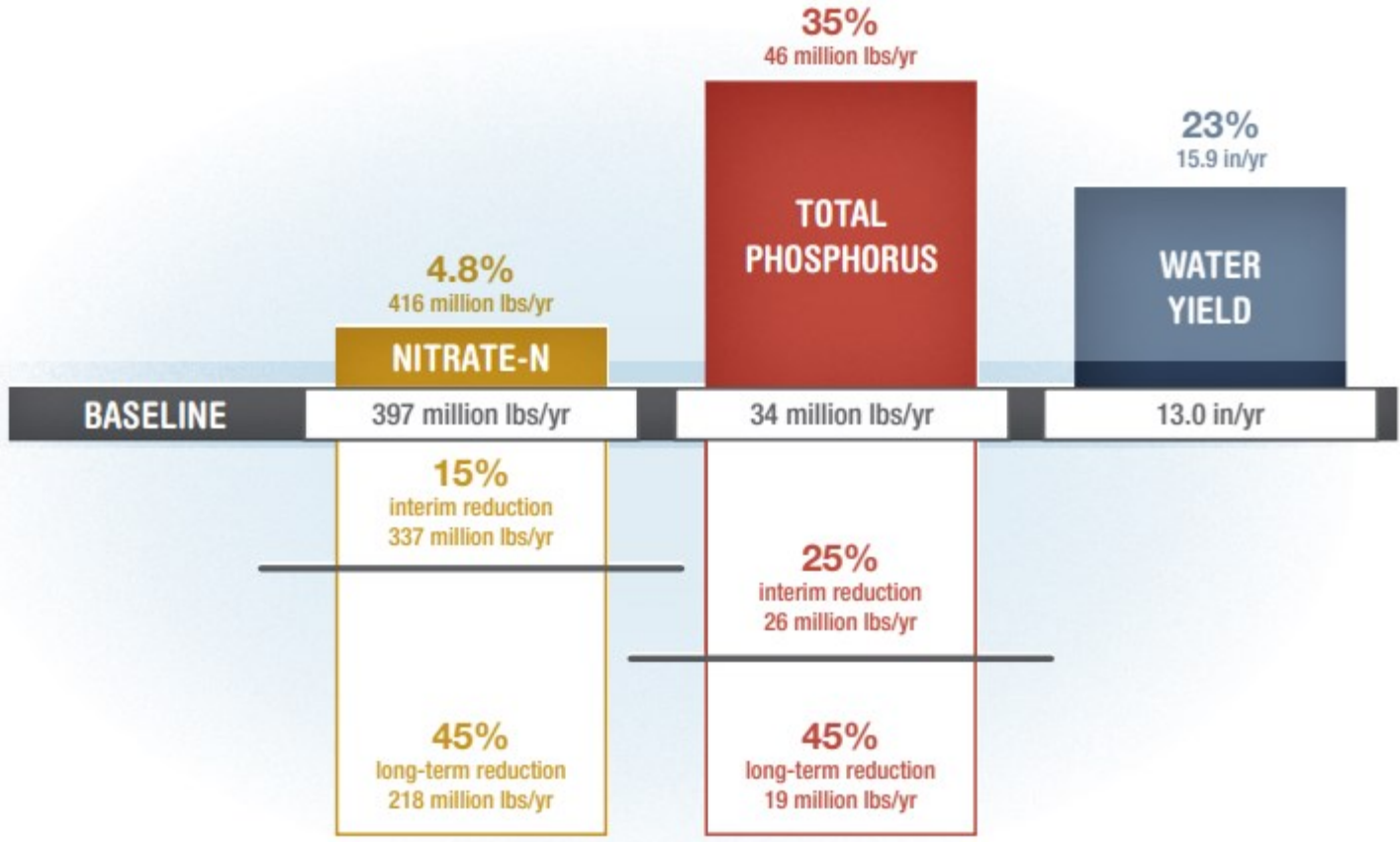
**Small changes in rainfall intensity can produce thousands of gallons of additional runoff from just 1 acre of land**





# Problems with Heavy Rainfall – Nutrient Loss

- 5% increase in Nitrate-N loads (compared to baseline), despite significant efforts across the state

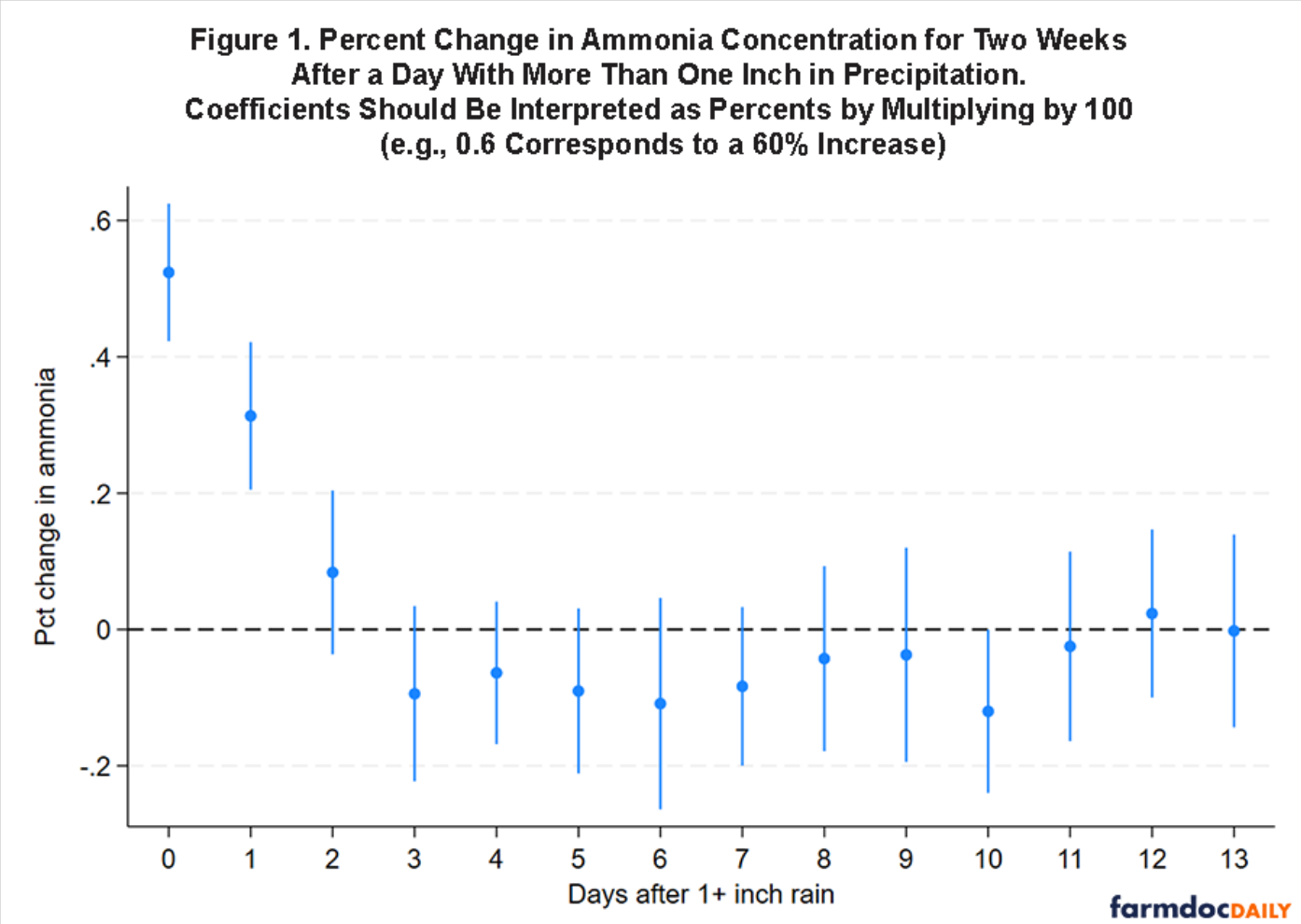


Source: NLRS Biennial Report, [go.illinois.edu/NLRS](http://go.illinois.edu/NLRS)



# Problems with Heavy Rainfall – Nutrient Loss

- 56% increase in ammonia concentration in water on day of 1”+ rain



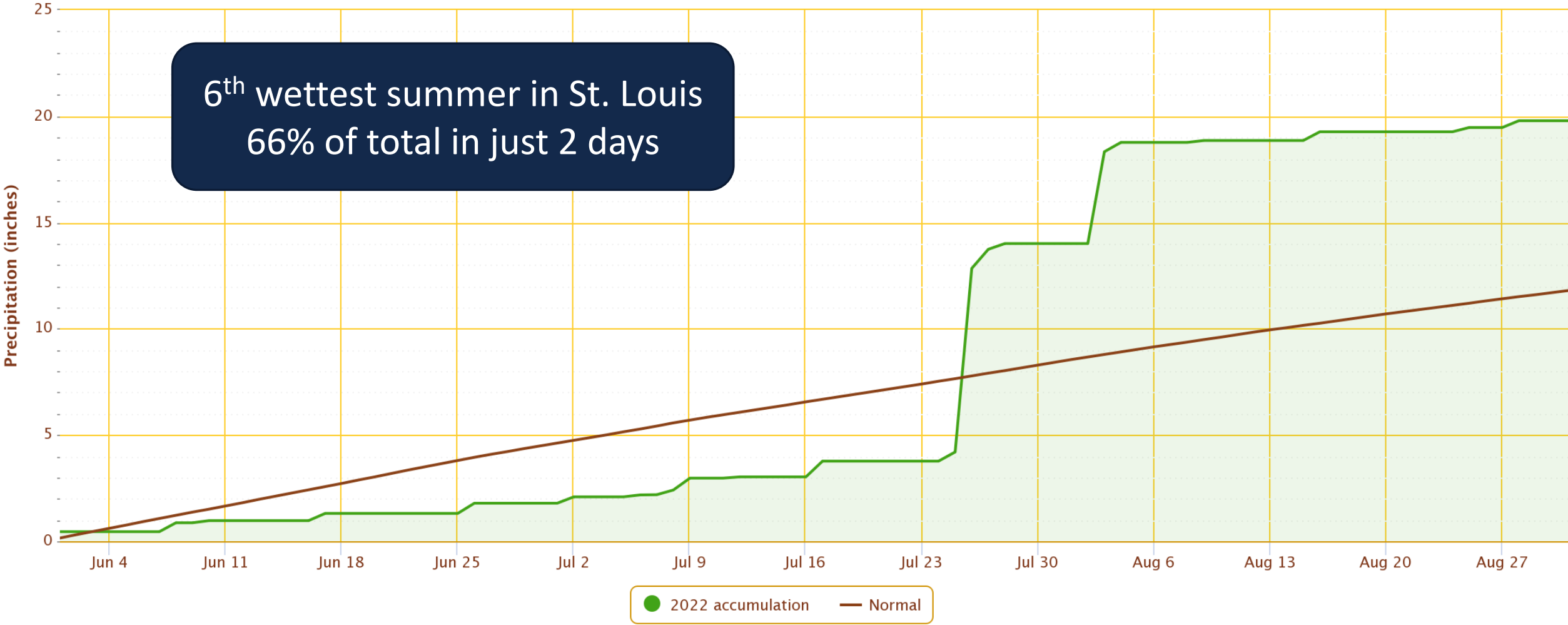
Source: Skidmore & Coppess (2023), <https://farmdocdaily.illinois.edu/2024/01/when-it-rains-it-pours-extreme-precipitation-nutrient-loss-part-3.html>



# Effective Precipitation & Drought

## 2022 Summer Accumulated Precipitation – St. Louis, MO

6<sup>th</sup> wettest summer in St. Louis  
66% of total in just 2 days





# Drought is Complicated



Less frequent long drought

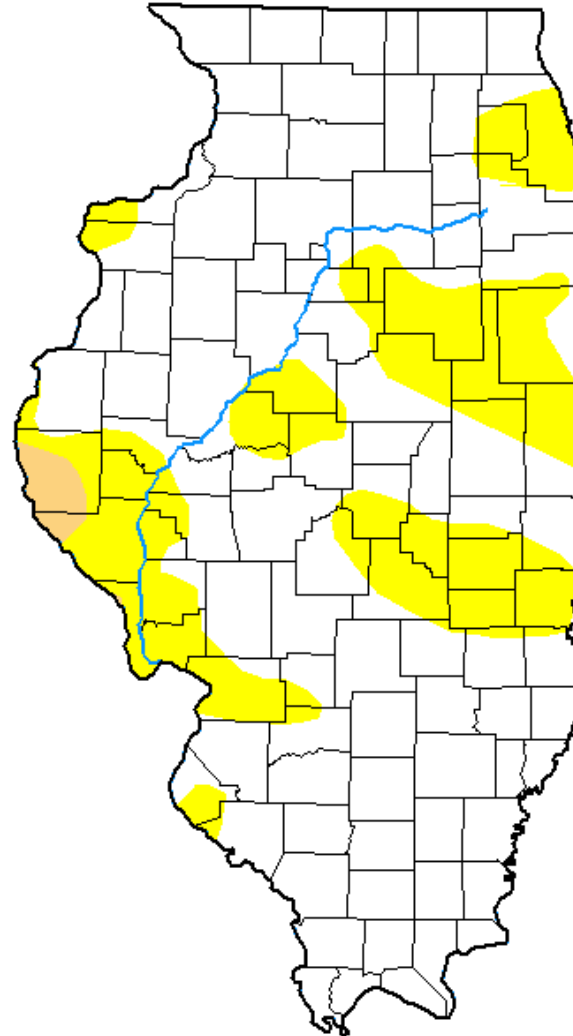


More evaporation

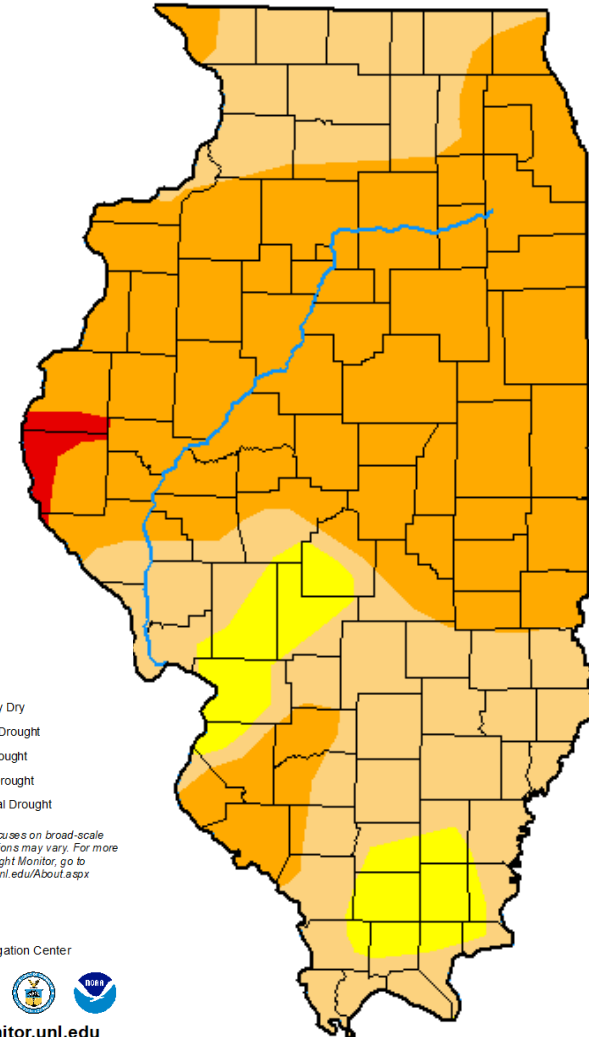


More frequent flash drought

May 16, 2023



June 27, 2023



**Intensity:**

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

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National Drought Mitigation Center

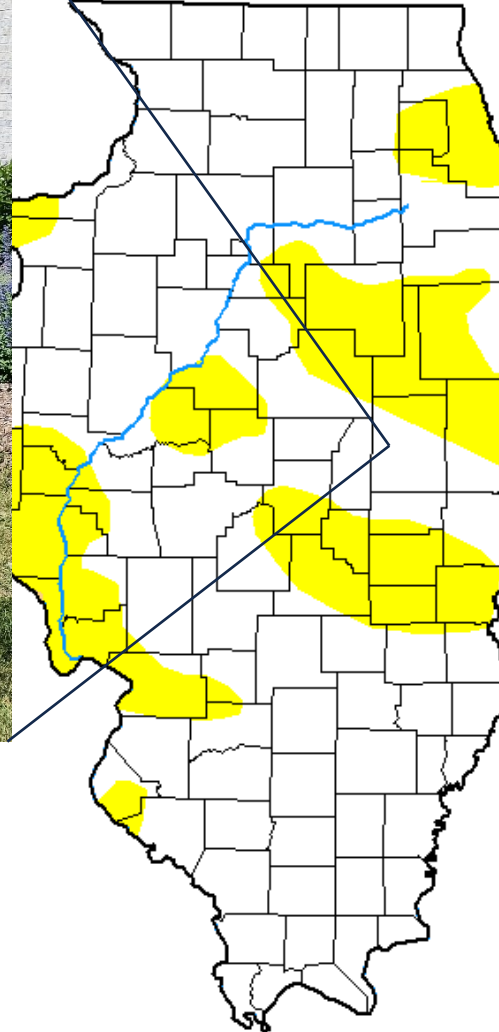


[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

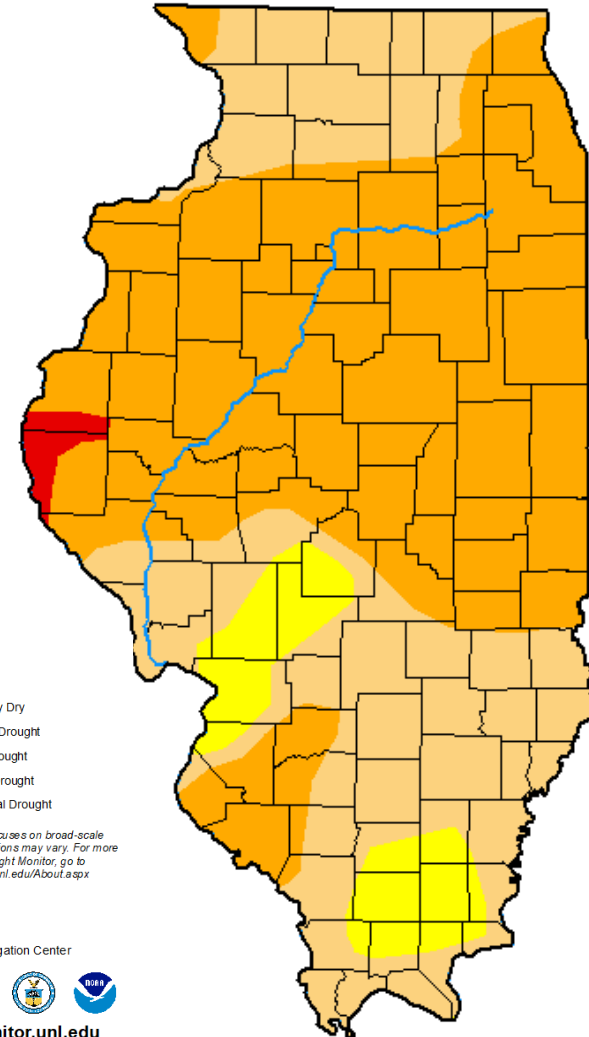
# Drought is Complicated



May 16, 2023



June 27, 2023



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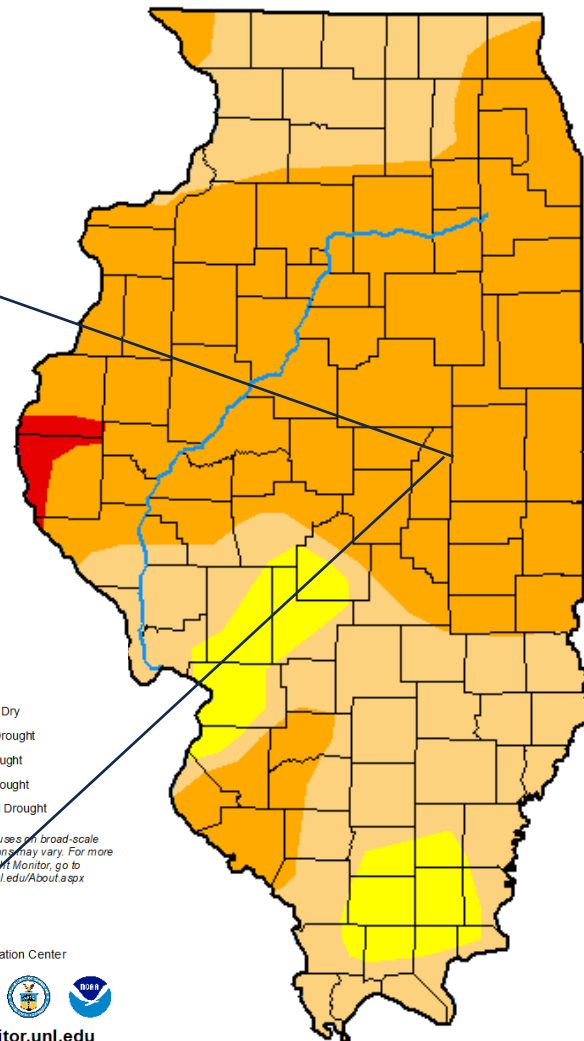
[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)



# Drought is Complicated

May 16, 2023

June 27, 2023



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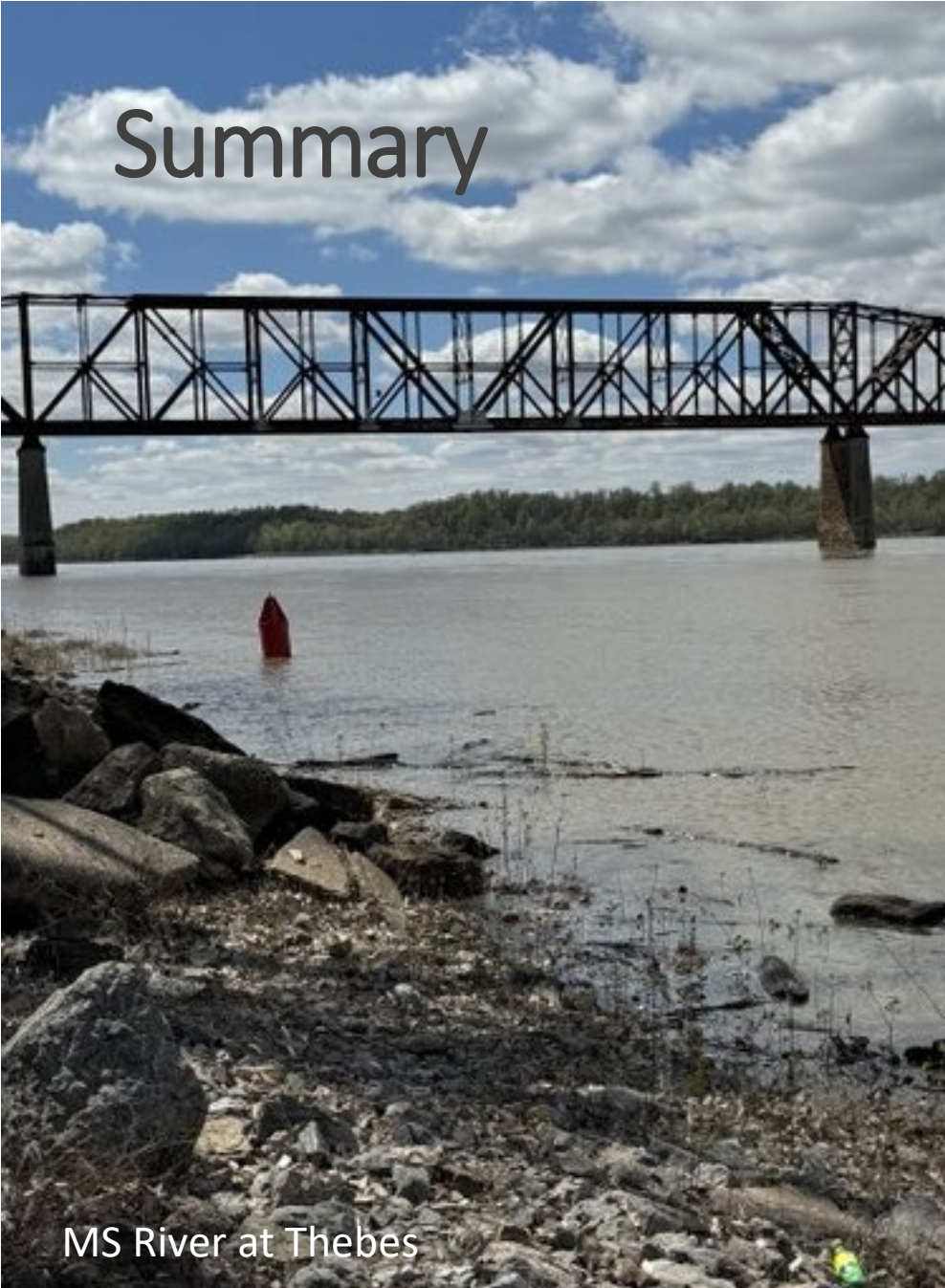


[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)





# Summary



MS River at Thebes

## 2024 Growing Season

- Dry and warmer start – jump on spring fieldwork
- Timely July rains + lack of extreme heat
- Very dry 6 week span in September and October

## Winter & Spring

- Outlook is wet for December – April
- Trends are for wetter winters & springs + La Niña
- Variable winter temperatures... there will be cold & snow
- Spring fieldwork and planting??

## Beyond

- Nothing interesting for summer yet
- Warmer, wetter, more variable Illinois climate... dealing with swings in moisture, shifting timelines, new experiences