



# From Drought to Flood & Back Again: Hydroclimate in the NWPA Region in 2023 and Beyond

**TRENT FORD**

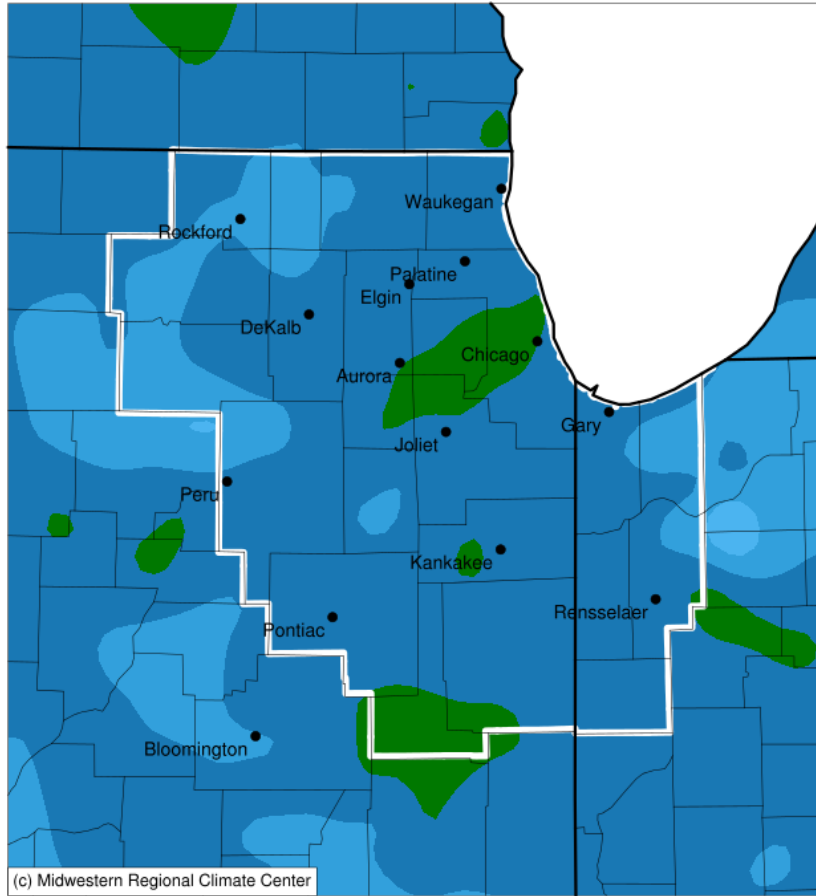
ILLINOIS STATE CLIMATOLOGIST  
ILLINOIS STATE WATER SURVEY | PRAIRIE RESEARCH INSTITUTE  
UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN



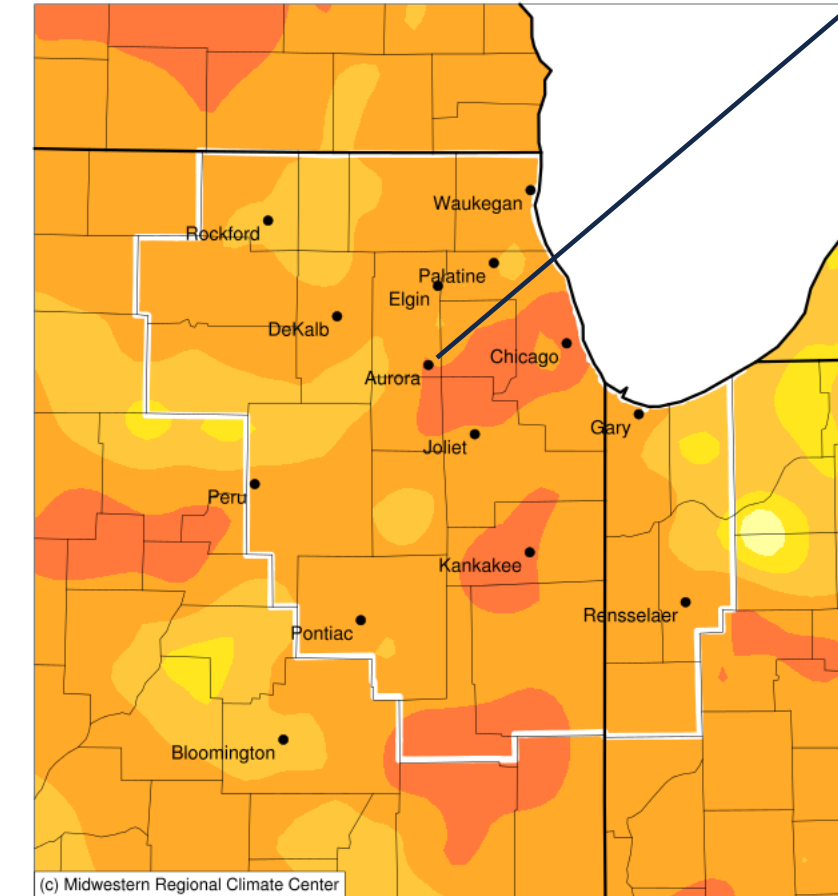


# Very Dry April to June

Total Precipitation (inches)



Departure from Normal (inches)



6<sup>th</sup> driest April-June in Aurora (since 1892)...  
50% of average



0.01 0.1 0.5 1 1.5 2 3 4 5 7.5 10 12.5 15

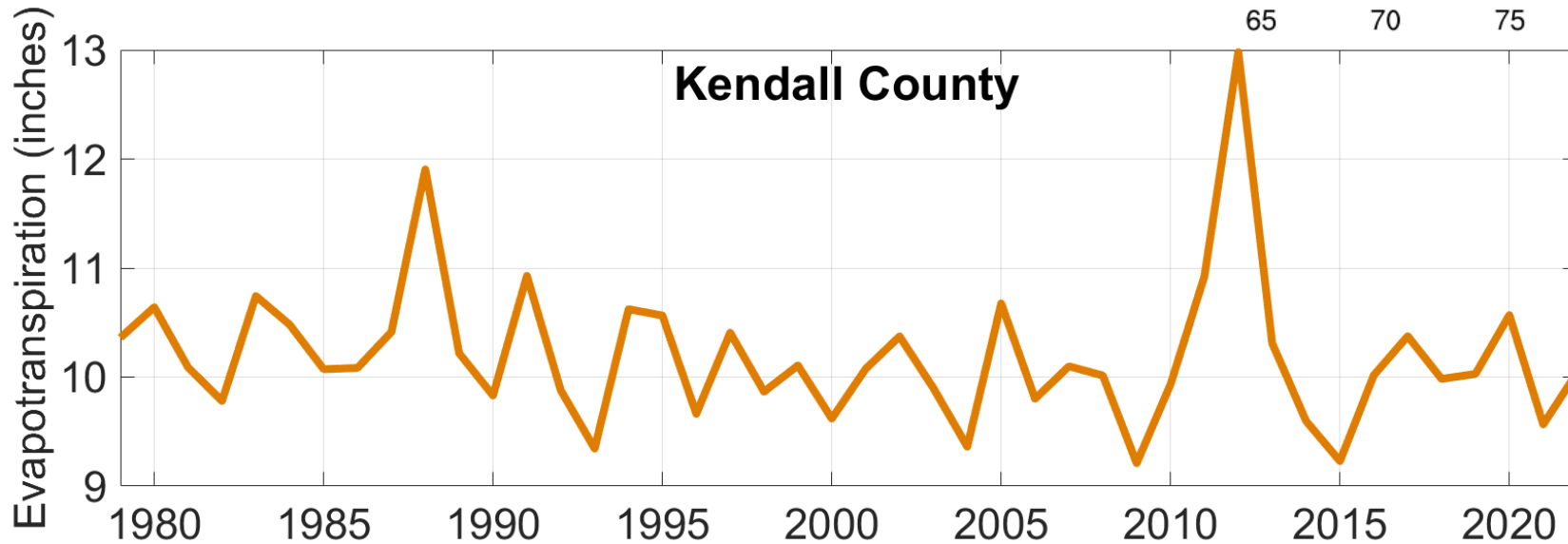
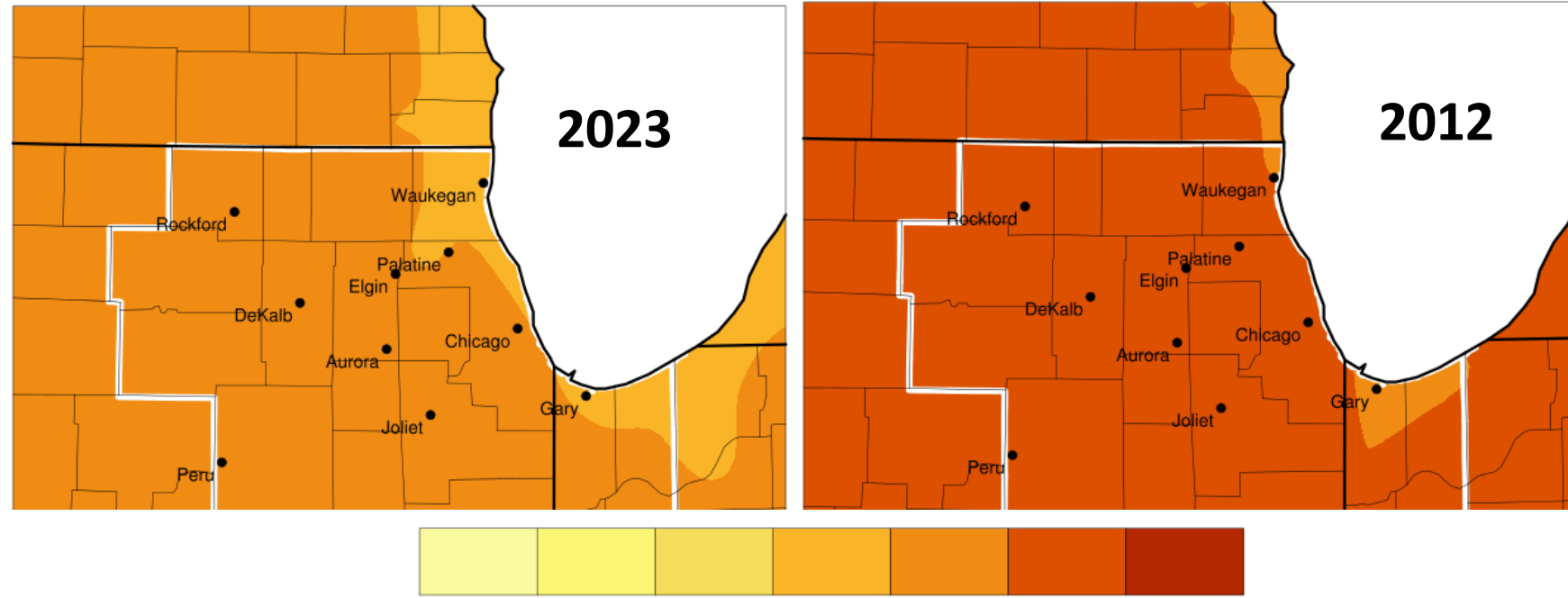
-10 -8 -6 -4 -2 0



# This is Not 2012

Average temperatures have been 5 to 10° lower this summer than in past drought years like 2012

### Average High Temperature (June 1 – July 21)

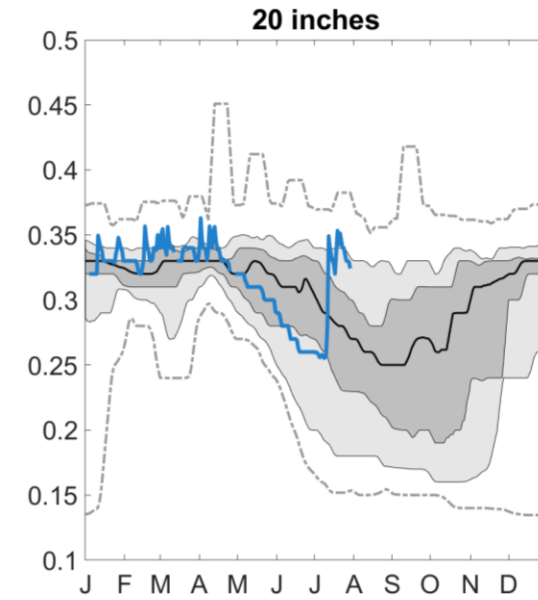
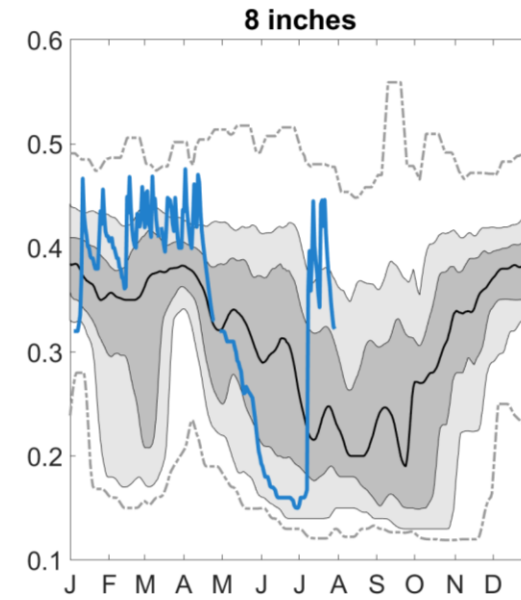
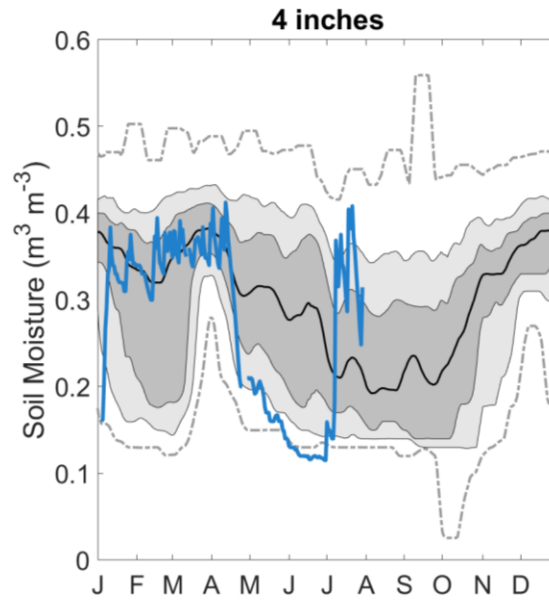
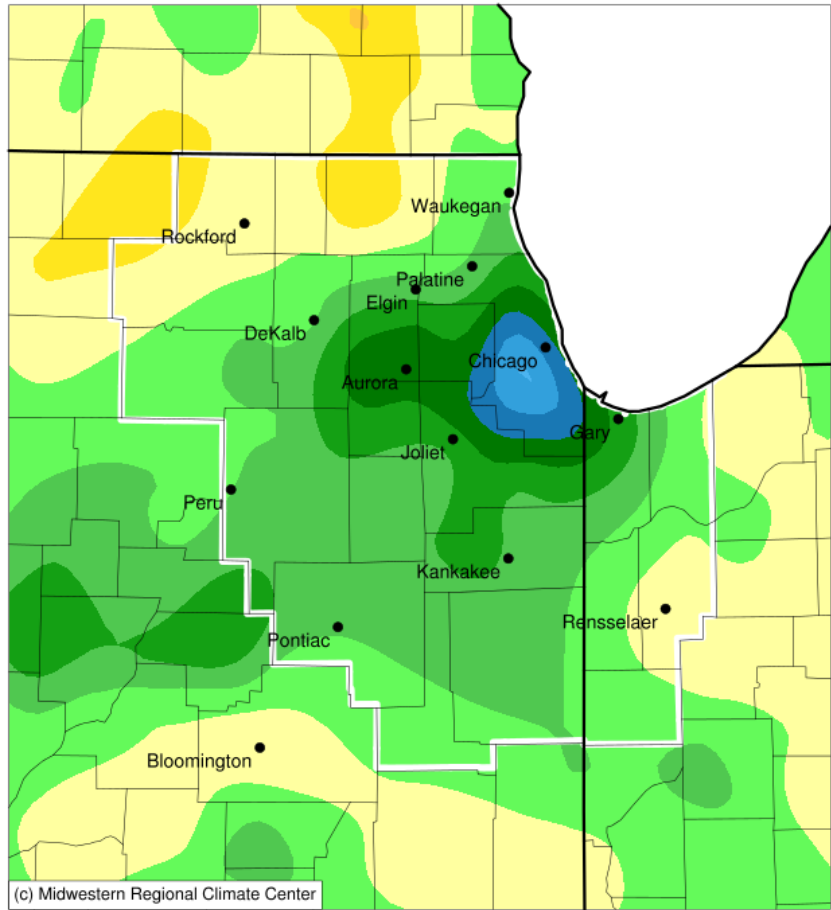


June to present evaporative demand is a full 3" less than in 2012



# Some Improvement in July

Departure from Normal (inches)



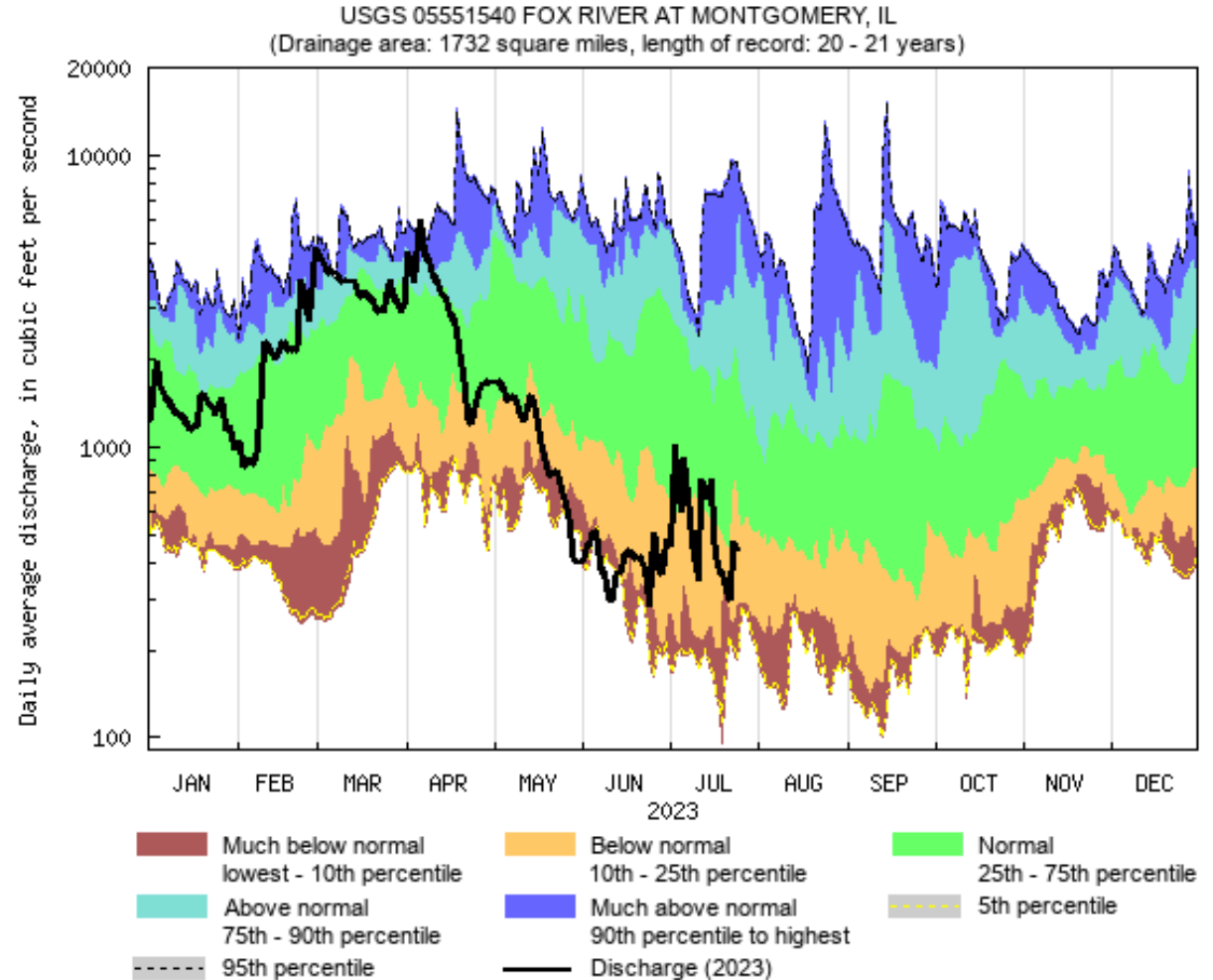
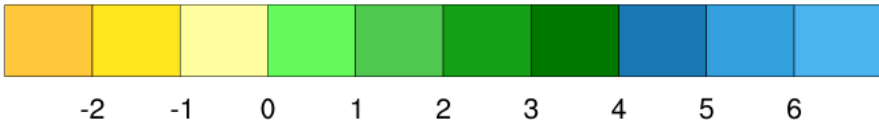
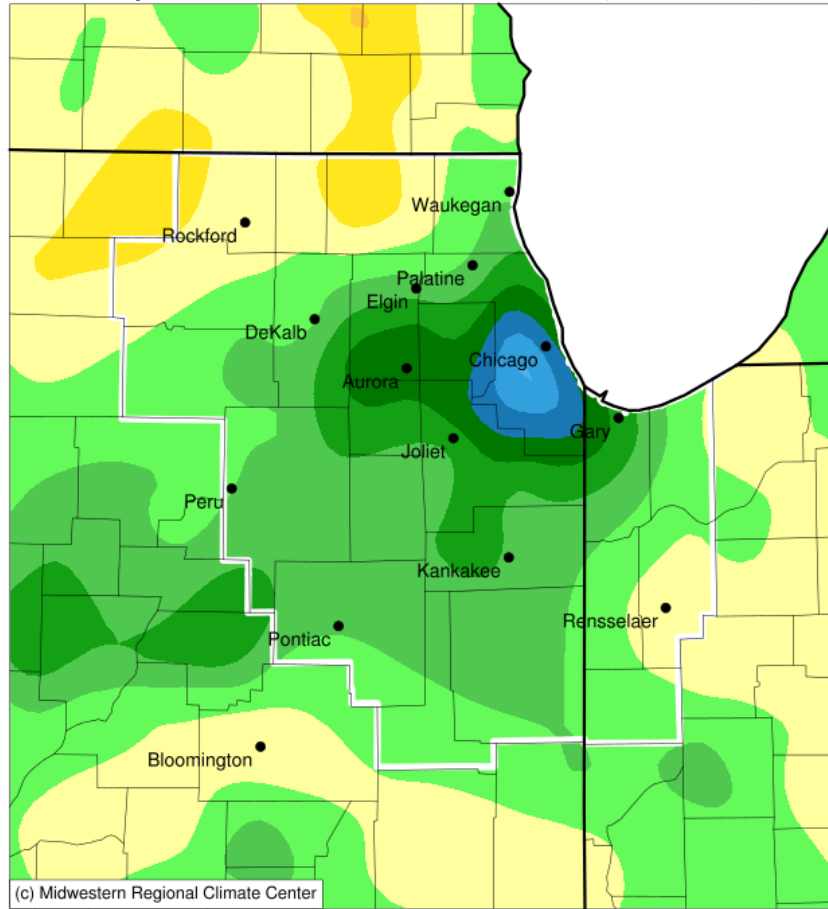
## Soil moisture in St. Charles

Middle 80%
  Middle 50%
  Record Max
  Record Min
  Median
  Current



# Some Improvement in July

Departure from Normal (inches)



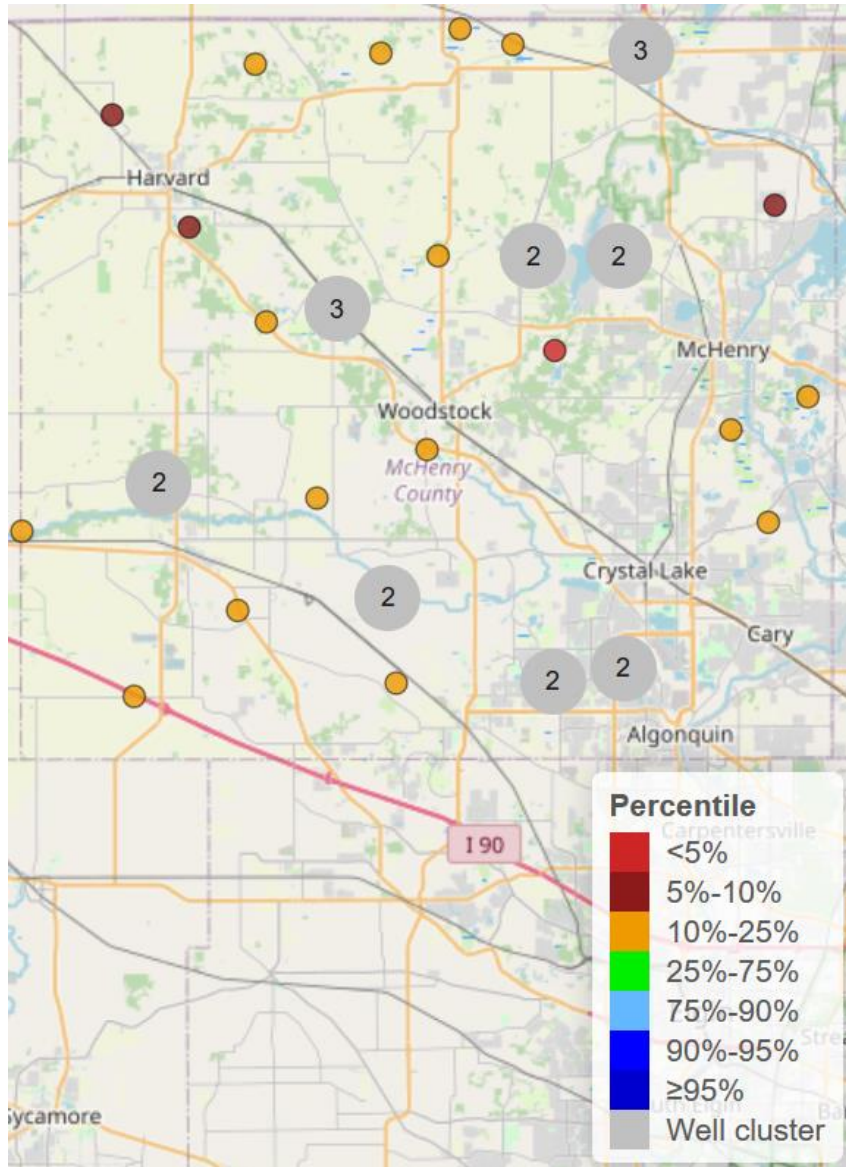
USGS WaterWatch

Last updated: 2023-07-25

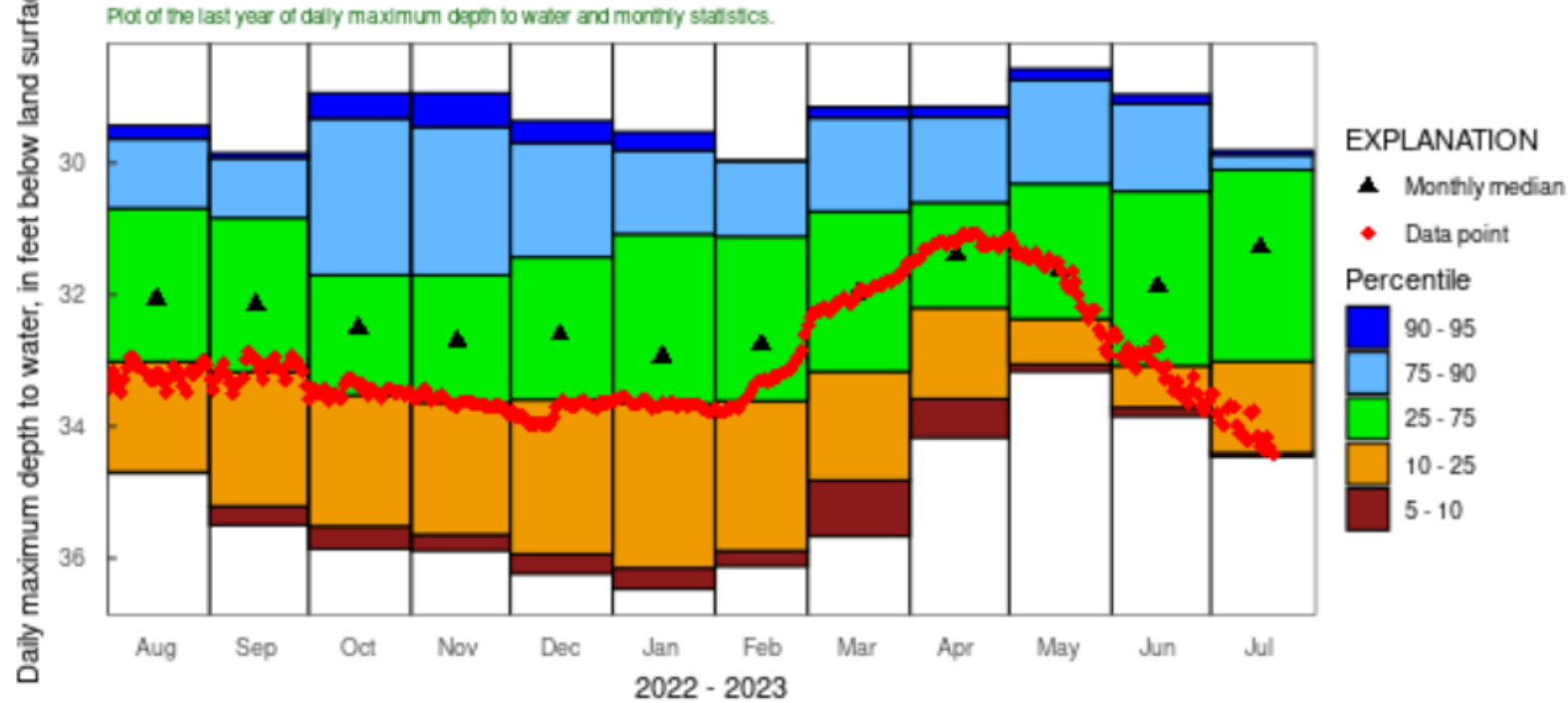




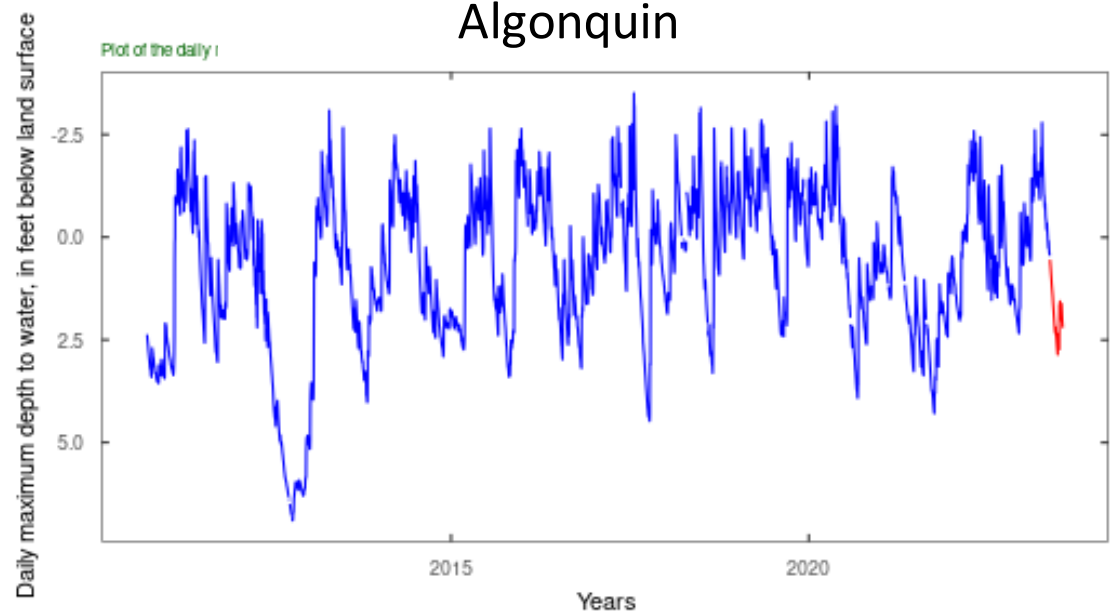
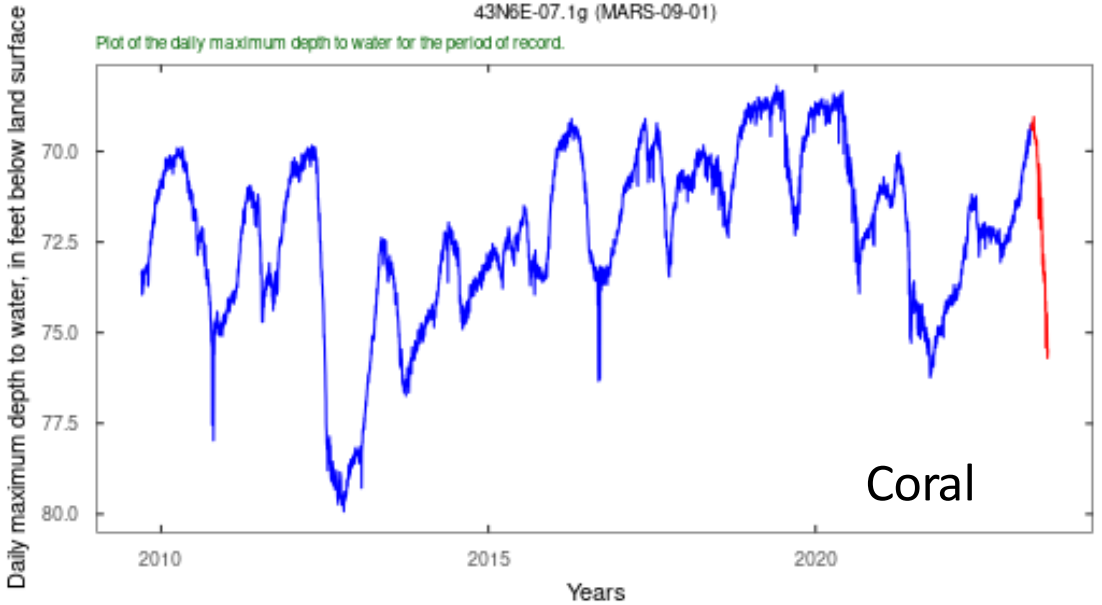
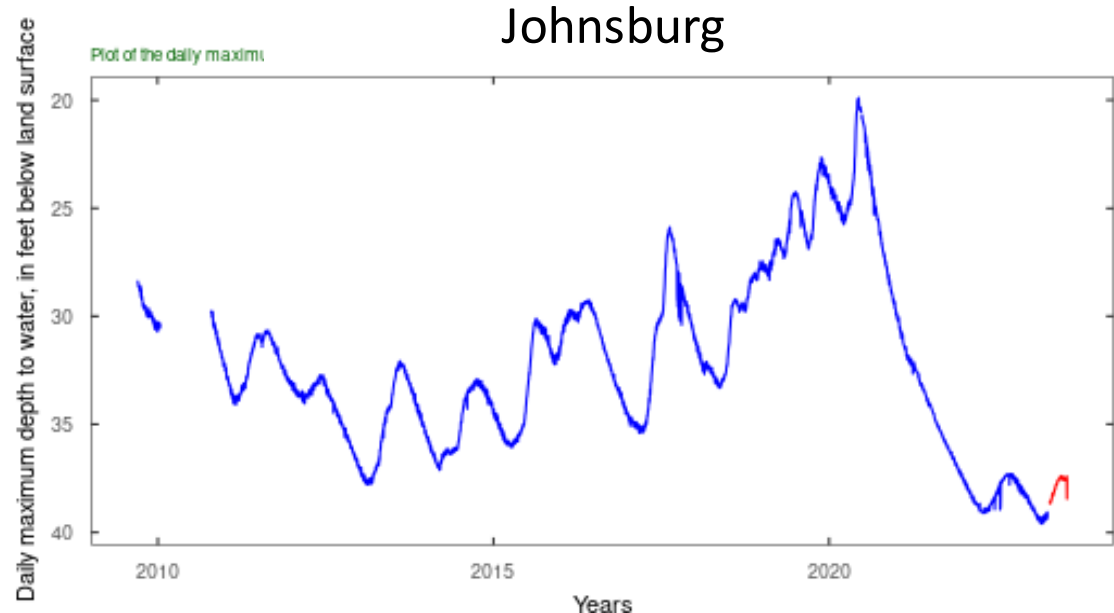
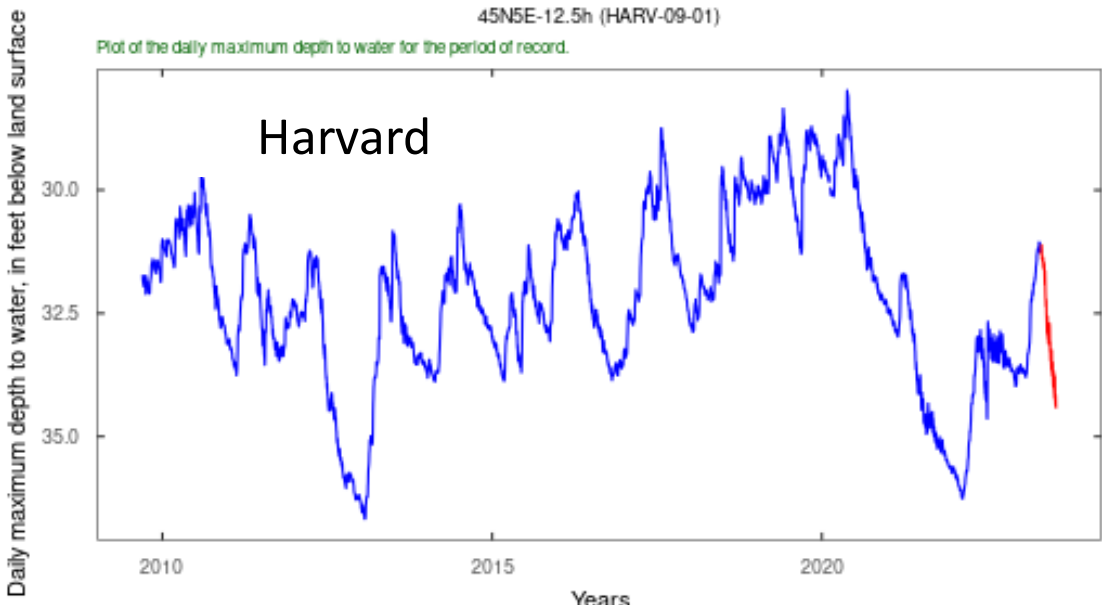
# Groundwater (lack of) Response



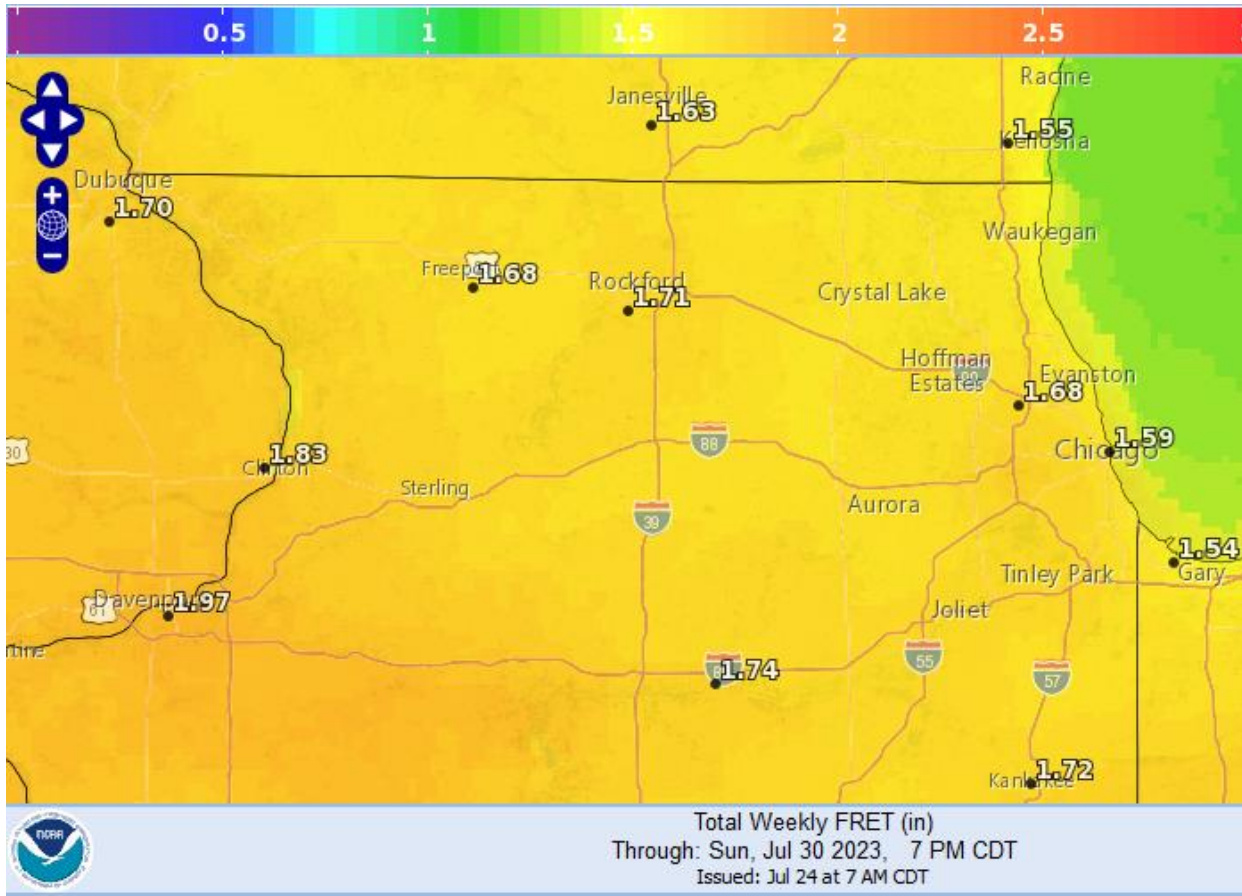
## Groundwater Level – southeast of Harvard



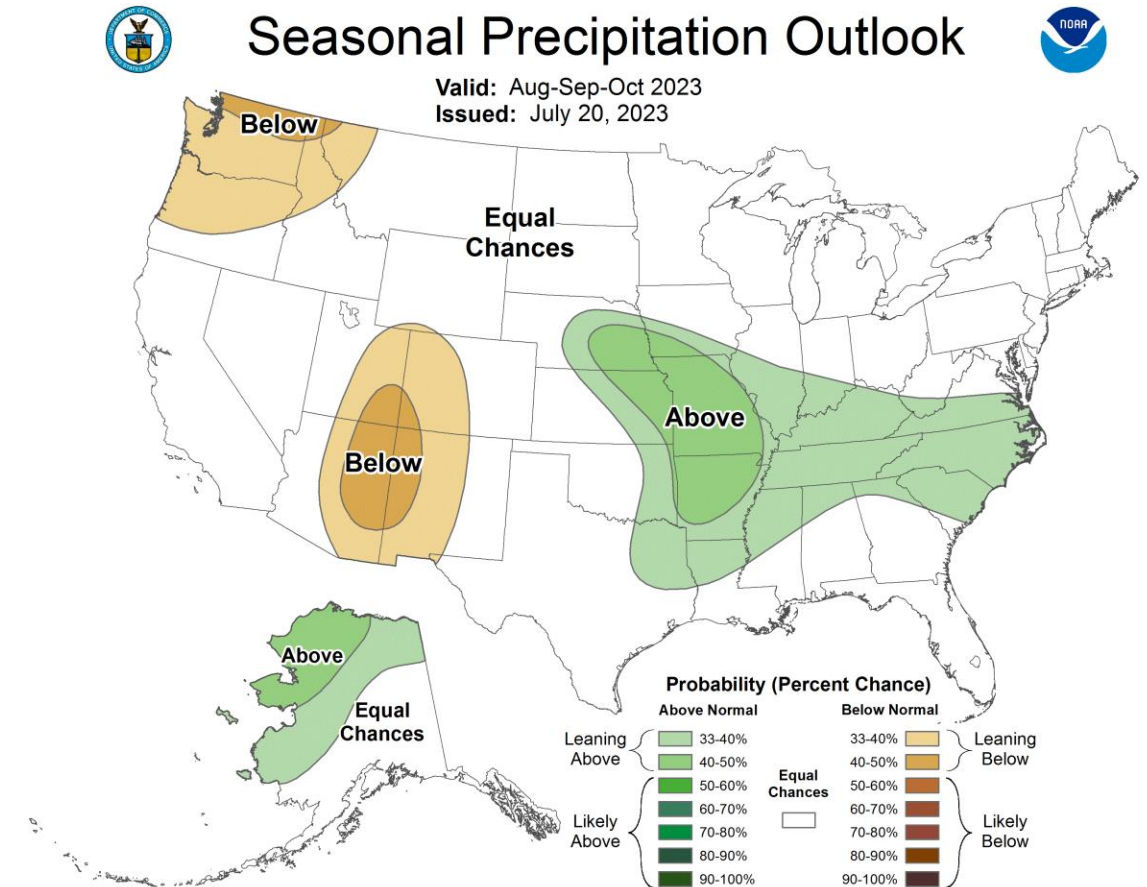
# Groundwater (lack of) Response



# Looking Ahead – Next Week to Season



No widespread relief in the next 7-10 days...  
1.5 – 2.0” of evapotranspiration putting us  
deeper into water balance hole



August – October outlooks leaning wetter in  
Midwest, but assumes El Niño kicks into gear



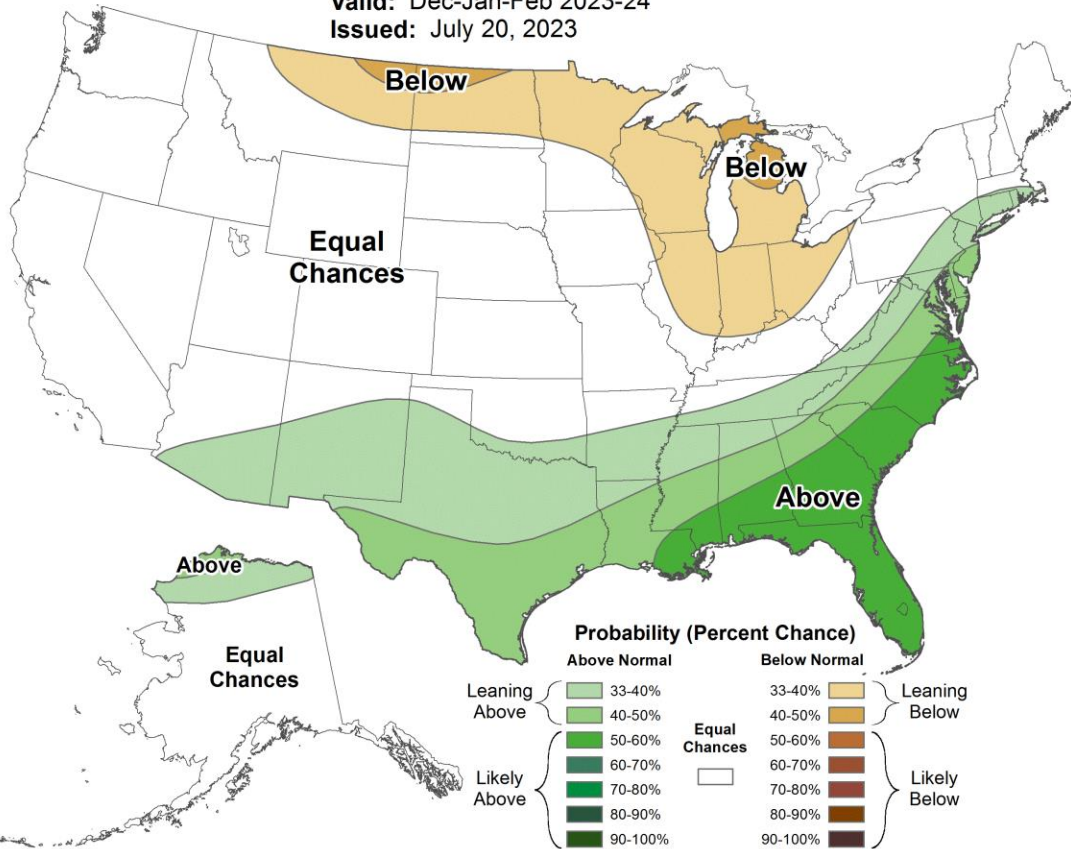
# Winter: Our Saving Grace?



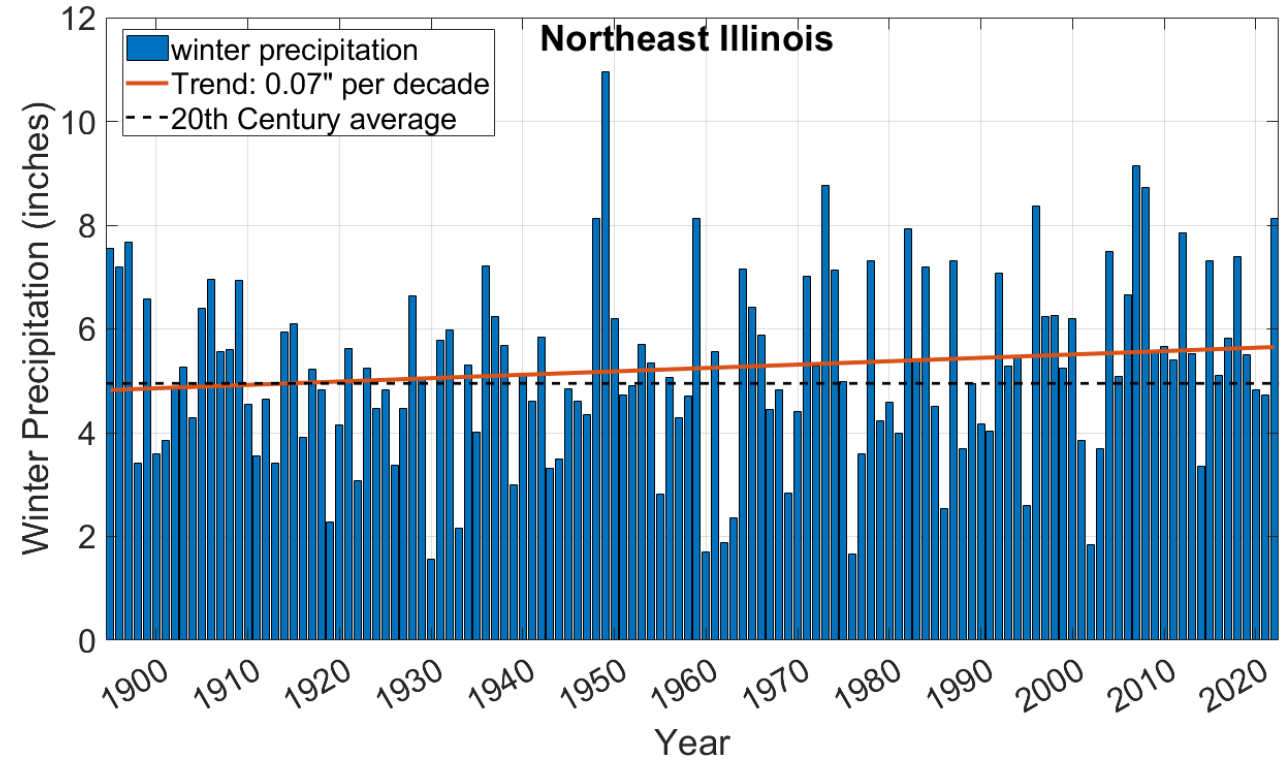
## Seasonal Precipitation Outlook



Valid: Dec-Jan-Feb 2023-24  
 Issued: July 20, 2023



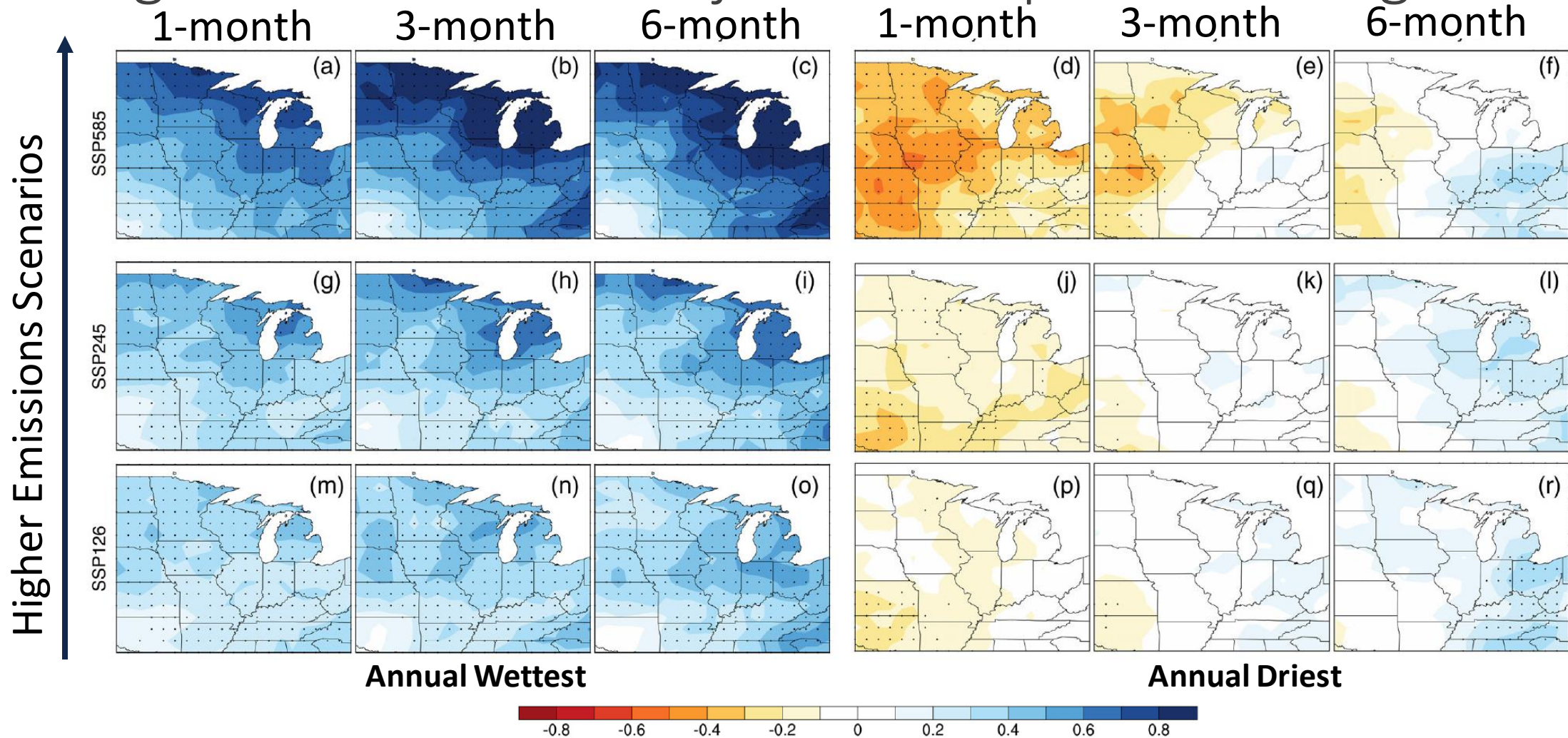
Drier Dec-Feb outlook for Great Lakes...  
 more El Niño influence on outlooks



Winter is getting wetter with more rain  
 5 of the top 10 wettest winters in last 25 years



# Looking Farther Ahead – Projected Precipitation Changes



- Wet conditions projected to increase at 1-, 3-, and 6-month timescales across the Midwest in all scenarios
- Dry conditions increase at 1-month timescales with higher emissions, no confidence at 3- and 6-months

# Looking Farther Ahead – Drought Changes

## Very Confident



More evaporation



A wetter climate



More intense rainfall

## Somewhat Confident



Less frequent long drought



More frequent flash drought



More frequent spring flood and summer low-flow

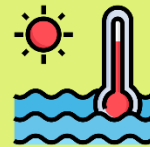
## Somewhat Uncertain



Drier summer soils



More winter water recharge



Higher surface water temperatures

## Very Uncertain



Groundwater recharge



Annual-to-Decadal Climate Variability



Emerging threats



# Climate Resources for Planning

## Data & Information Tools

- Climate Engine: <https://app.climateengine.org/climateEngine>
- Climate Toolbox: <https://climatetoolbox.org/tool/climate-mapper>
- Climate Mapping for Resilience & Adaptation: <https://livingatlas.arcgis.com/assessment-tool/home>



## State Climate Office Expertise

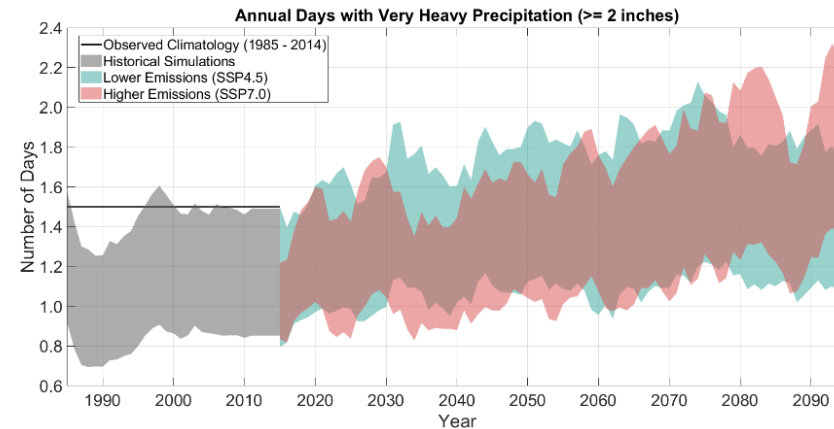
- Historical data and trends analysis
- State-of-the-art projections assessment
- Impact assessment
- Education & stakeholder outreach
- **\*\*New quarterly webinar – climate updates\*\***

## Climate Action Plan for Rockford Mass Transit District

Final Report  
March 30, 2022



Figure 6-3. Projected Increase in Heavy Precipitation in the Rockford Region



Source: Illinois State Water Survey<sup>x</sup>

<https://rmtd.org/about-us/sustainability/>

