

Research to Service, and Back Again

TRENT FORD

ILLINOIS STATE CLIMATOLOGIST

ILLINOIS STATE WATER SURVEY/PRAIRIE RESEARCH INSTITUTE

UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN

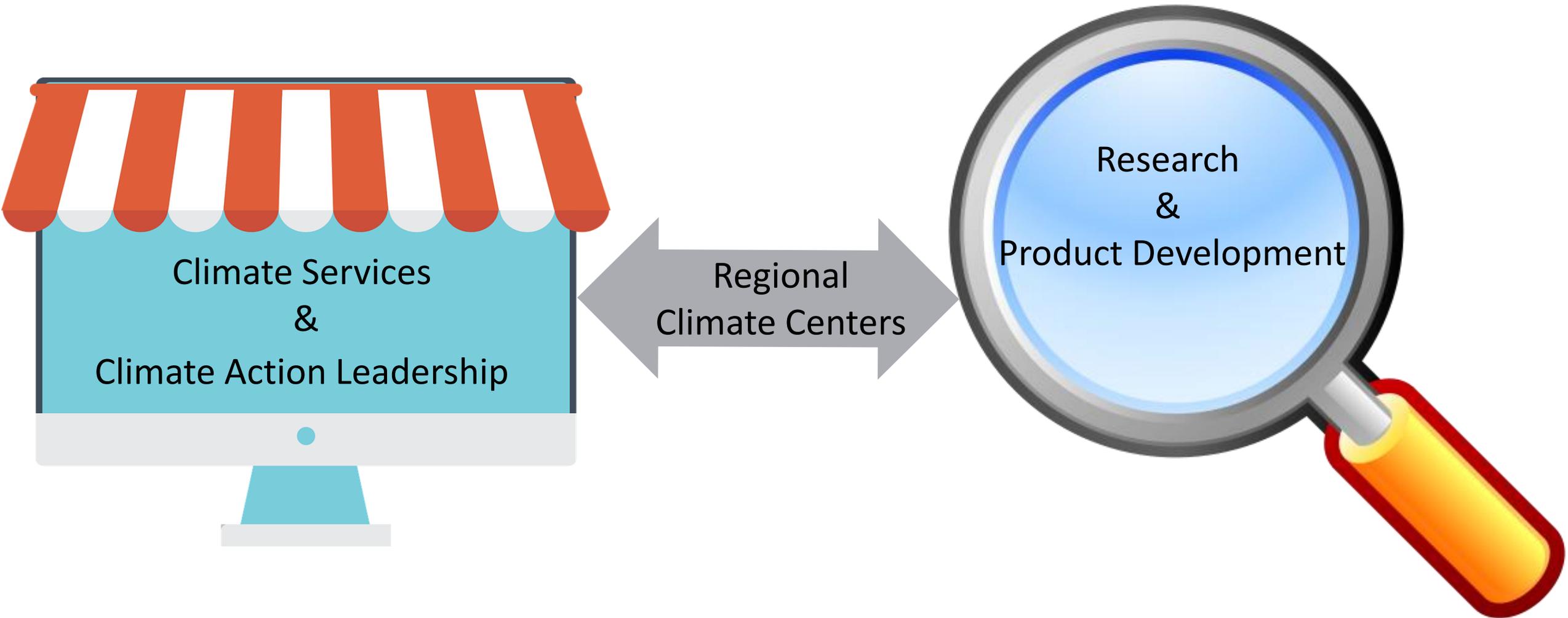


I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

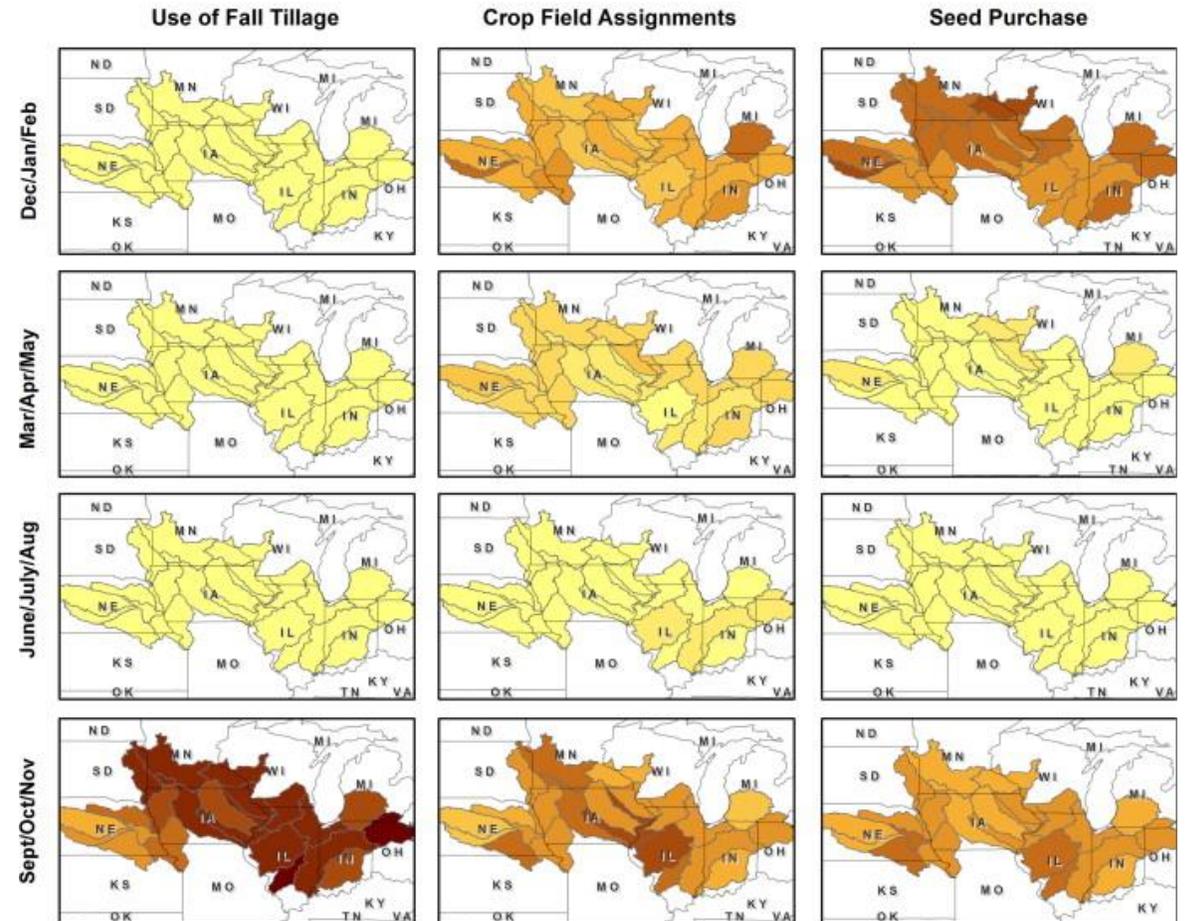
Vision: Illinois State Climatologist Office



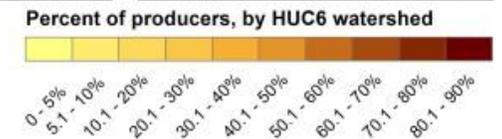
Great Example: Useful-to-Usable (U2U)

- Multi-year, multi-institution research and extension project funded by USDA
- Improve farm resilience and profitability – transforming climate data into usable products
- Large # of decision support tools developed based on extensive stakeholder input and feedback

Timing of Decisions: Fall Tillage, Crop and Field Assignments, and Seed Purchase



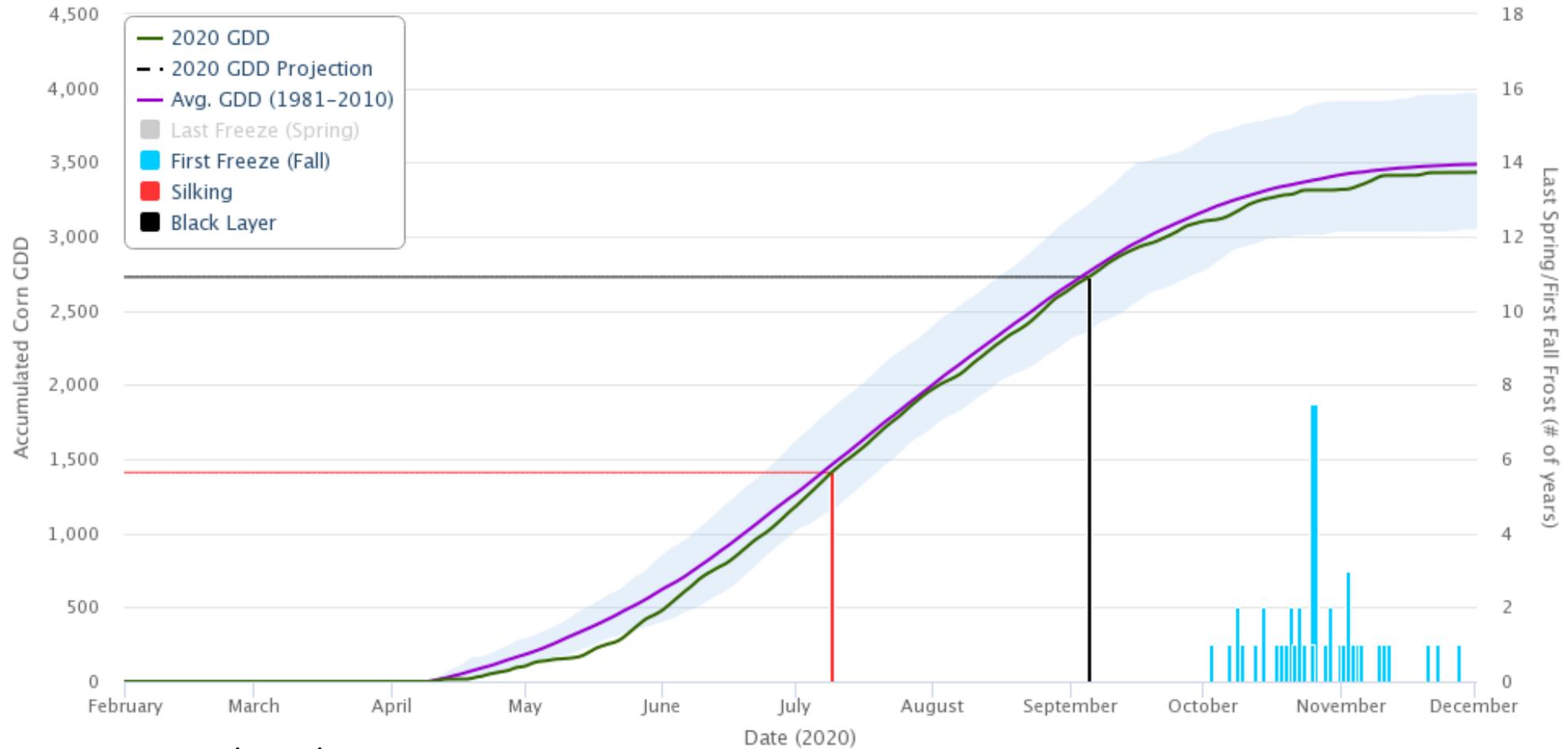
Haigh *et al.* (2015)



Great Example: Useful-to-Usable (U2U)

Corn Growing Degree Day Tool

Location: 40.12, -88.21 in Champaign Co., IL, Start Date: April 10, Maturity Days: 113, Freeze Temp: 28°F, Variation: All Years



<https://mrcc.illinois.edu/U2U/>

GDD Base 50/86 (degrees F); Created: 01/25/2021



Lessons Learned: 2012 Drought

- \$30 billion disaster – mostly agricultural losses
- Popularized the term “flash drought”



What caused 2012's 'flash' drought?

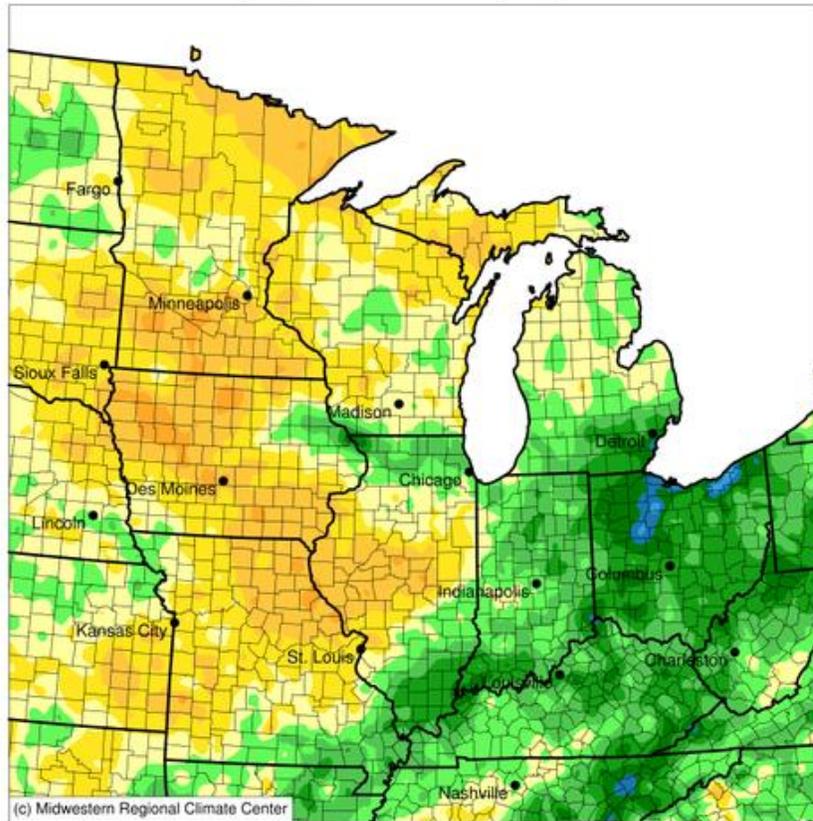
Doyle Rice, USA TODAY

Published 6:03 p.m. ET Apr. 11, 2013 | Updated 12:22 a.m. ET Apr. 12, 2013

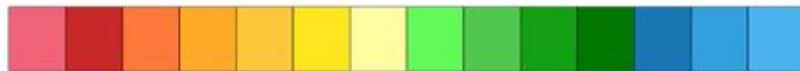
Lessons Learned: 2012 Drought

Accumulated Precipitation (in): Departure from 1981-2010 Normals

July 01, 2011 to January 25, 2012



(c) Midwestern Regional Climate Center



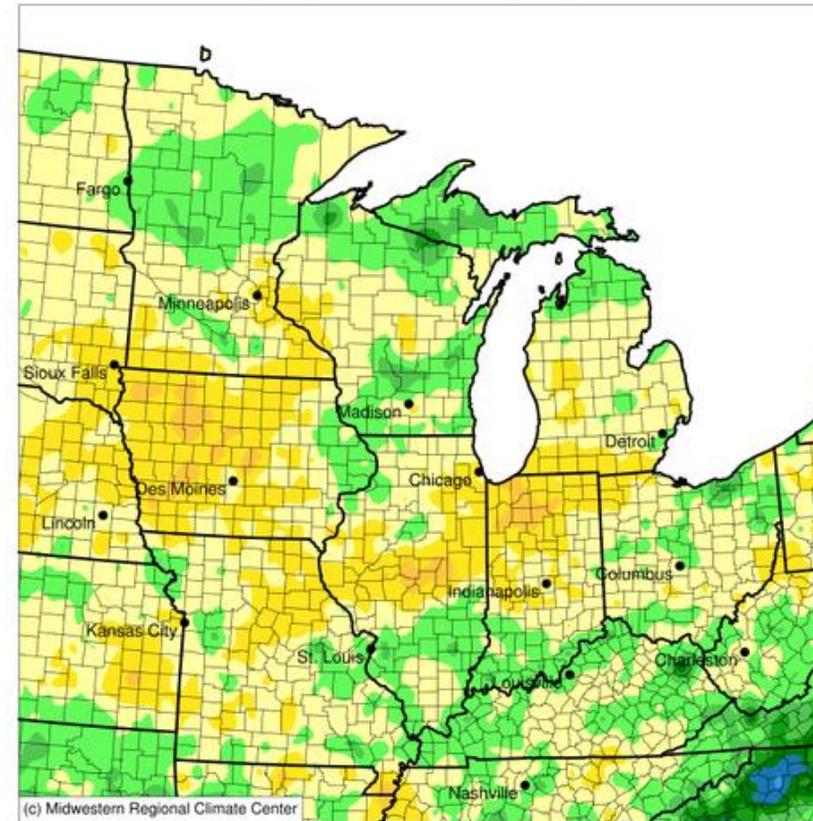
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Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI, Missouri FSA, Missouri Mesonet,

Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 1/25/2021 8:53:36 AM CST

Accumulated Precipitation (in): Departure from 1981-2010 Normals

July 01, 2020 to January 25, 2021



(c) Midwestern Regional Climate Center



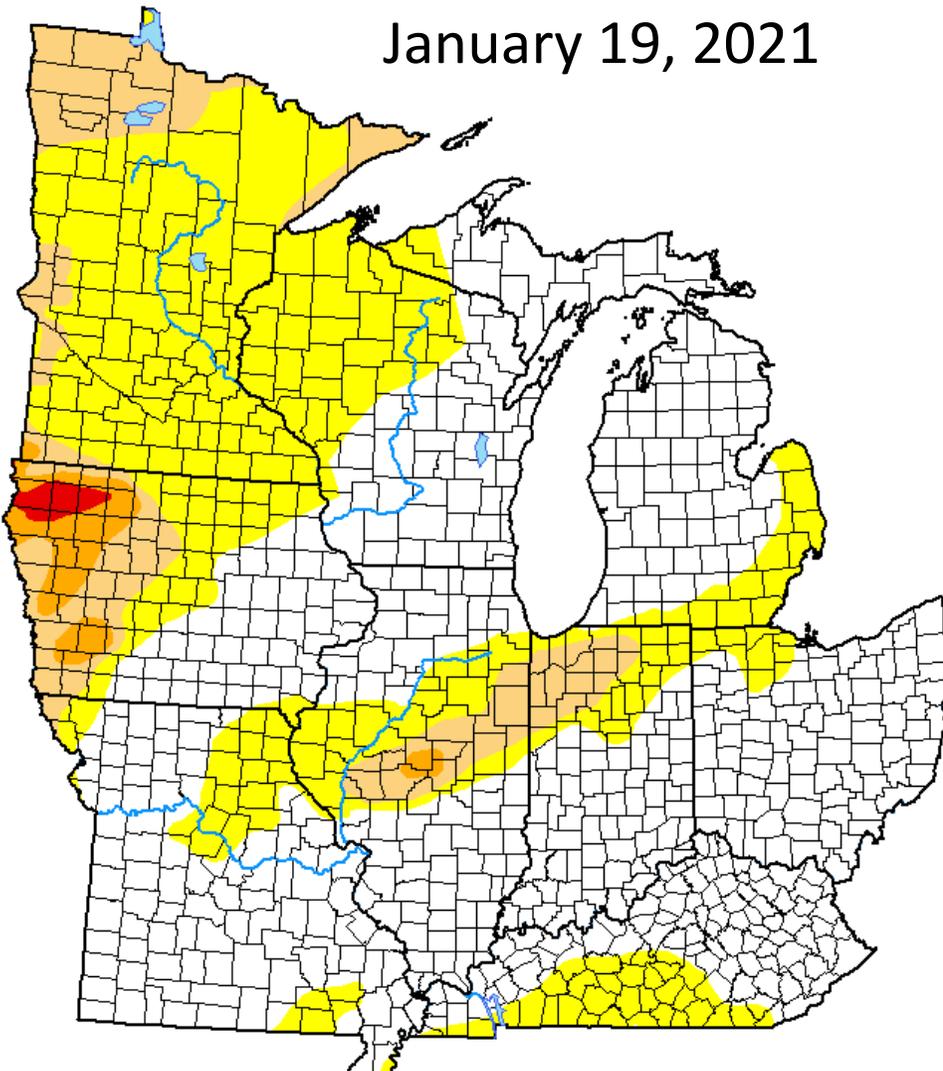
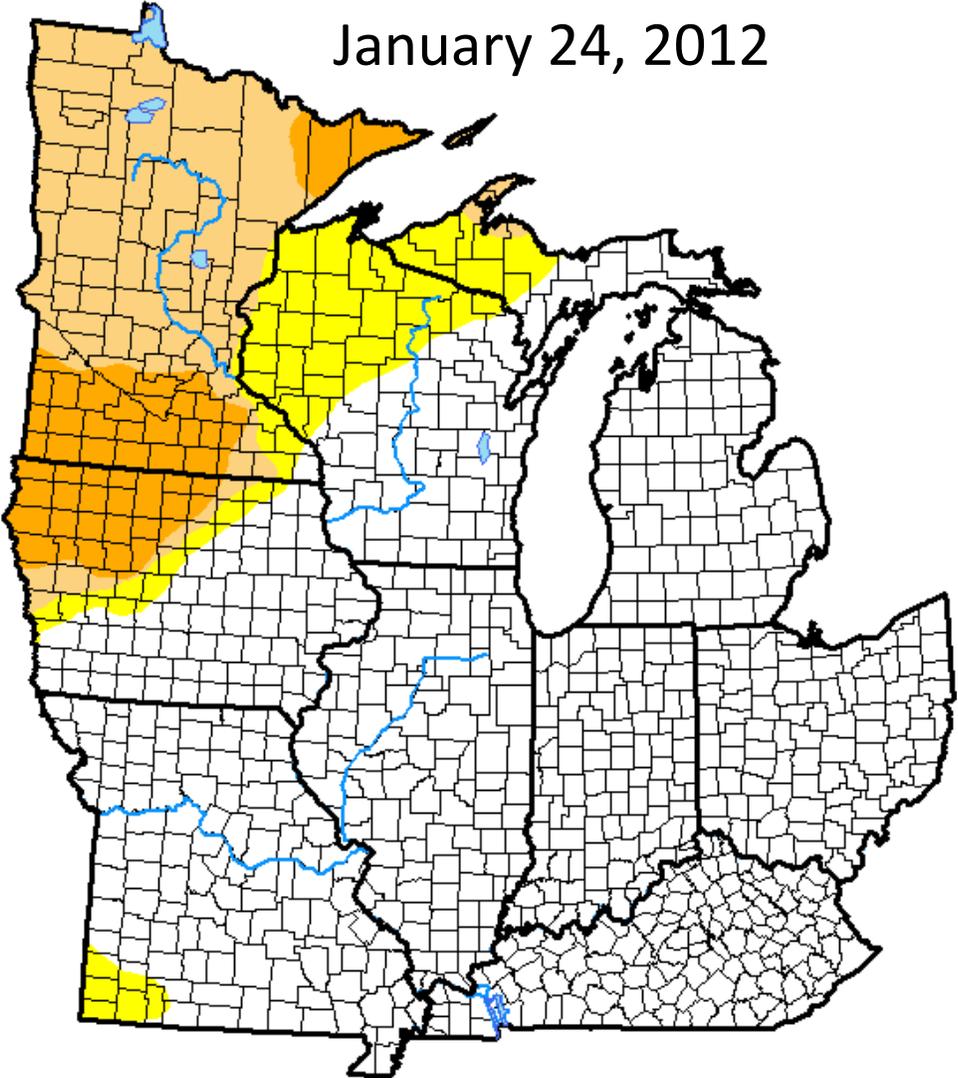
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Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI, Missouri FSA, Missouri Mesonet,

Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 1/25/2021 8:50:30 AM CST



Lessons Learned: 2012 Drought



- Intensity:**
- None
 - D0 Abnormally Dry
 - D1 Moderate Drought
 - D2 Severe Drought
 - D3 Extreme 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>

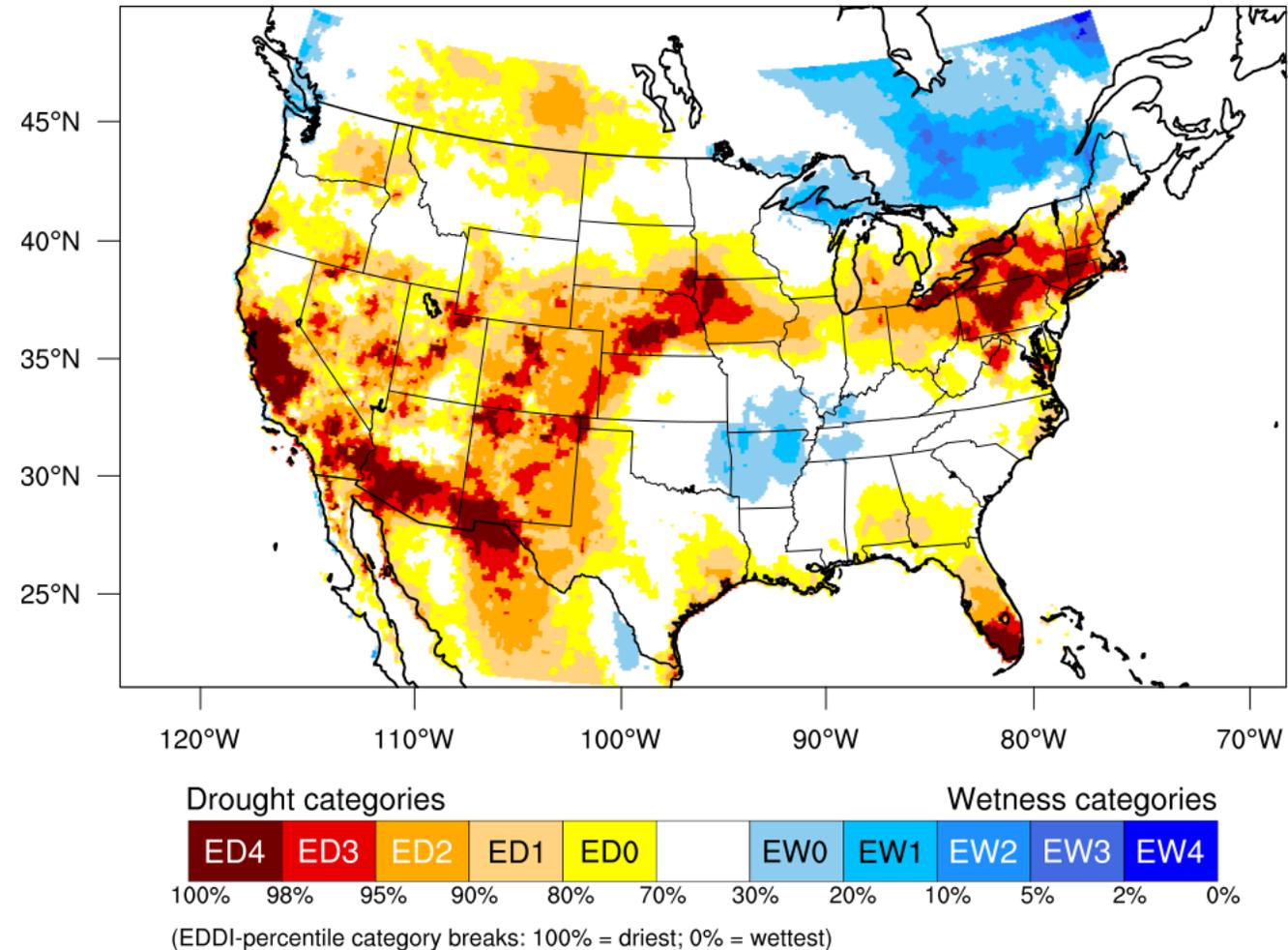


Better Monitoring & Prediction

- More exhaustive condition monitoring
 - Soil moisture, evaporative demand, vegetation conditions, etc.
- Shorter update intervals, less latency
- Improved models, satellite products
- More stations, longer climatology
- Improved regional collaboration (e.g., Regional Mesonet Program)
- Benefit of hindsight

More products ≠ Better Monitoring

2-week EDDI categories for August 31, 2020



Generated by NOAA/ESRL/Physical Sciences Laboratory

https://psl.noaa.gov/eddi/#current_conditions

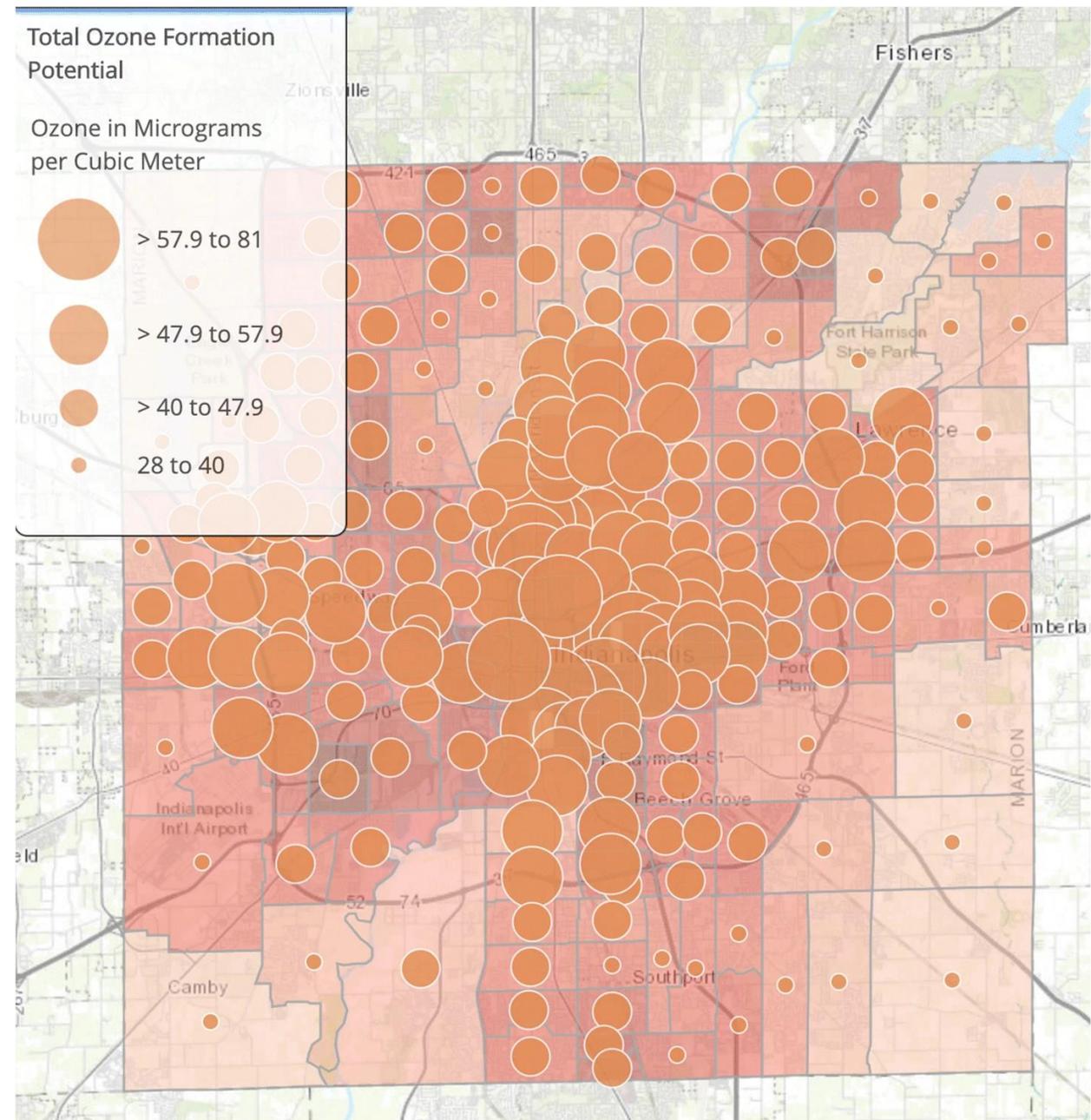
Climate Change Research to Service

Challenges:

- Scaling national reports to improve planning and decision making
- Uncertainty and (mis)communication
- Inherently interdisciplinary
- Political strife

Filippelli *et al.* (2020):

<https://doi.org/10.1007/s10584-020-02710-9>



Summary

- State Climate Offices and RCCs have the largest positive impact through partnership
- Collaboration and communication are just as important now as 50 years ago (if not more)
- The 2-way relationship between climate research and service is essential to increasing a region's resilience to climate variability, change, and extremes
- Bright future for the Midwest  continued, furthered collaboration between SCOs and MRCC

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