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Meteorology



How Much Did YOU Get?
An Overview of 2023
Oddities, Patterns and
How You Can Contribute!

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- Assistant Chief Meteorologist

In This Presentation...

- 2023 Oddities
- Interesting Weather Trends
- Overview and Climatology of Storm Reports
- How Can I be a Spotter?
- Overview of a Professional wx Station





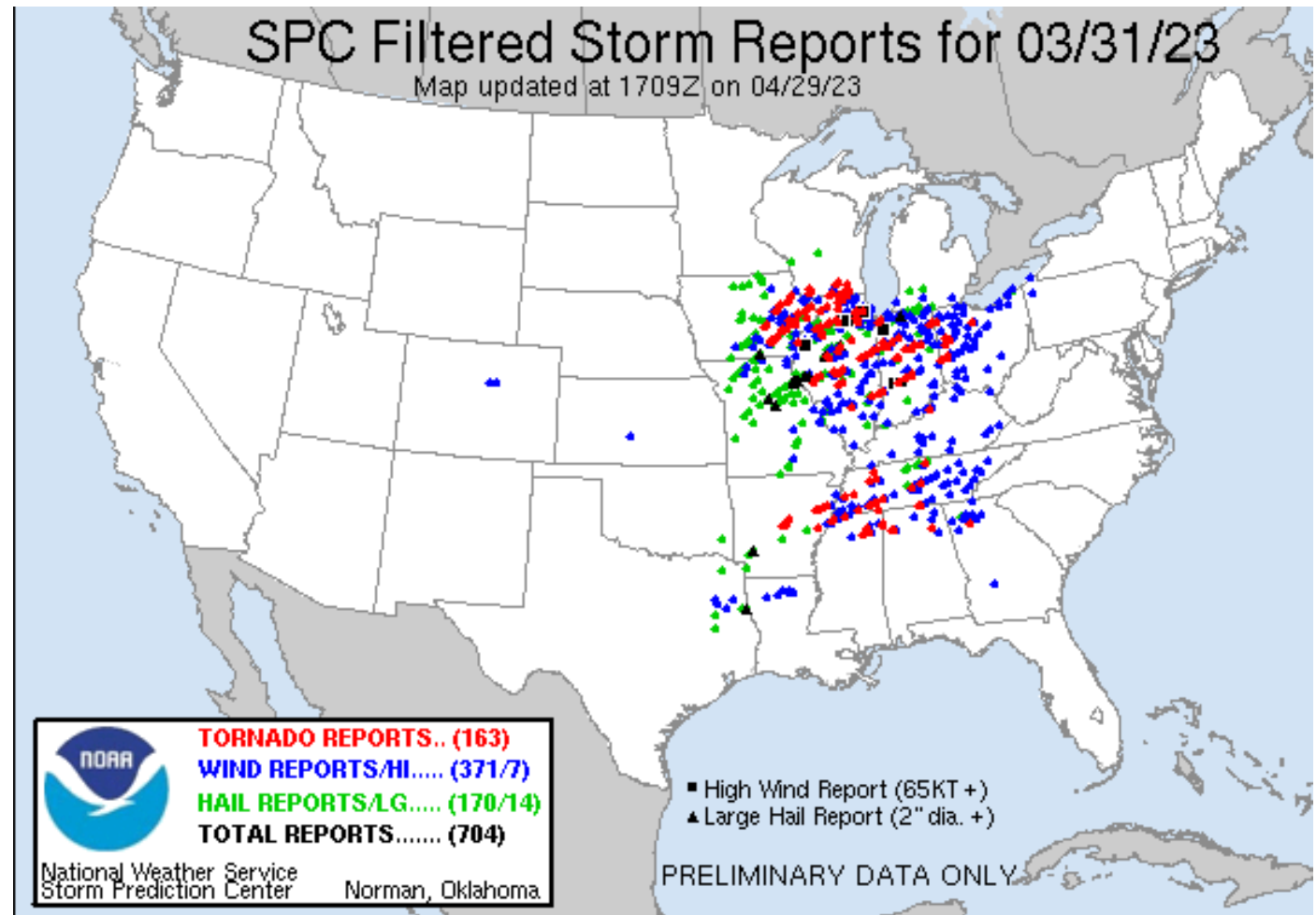
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2023 Oddities

Big Tornado Outbreak, March 31-April 1

- Big outbreak with multiple long track tornadoes
- Highest rated tornado in Iowa was an EF4 at a farmstead in Keota – estimated max wind around 170 MPH

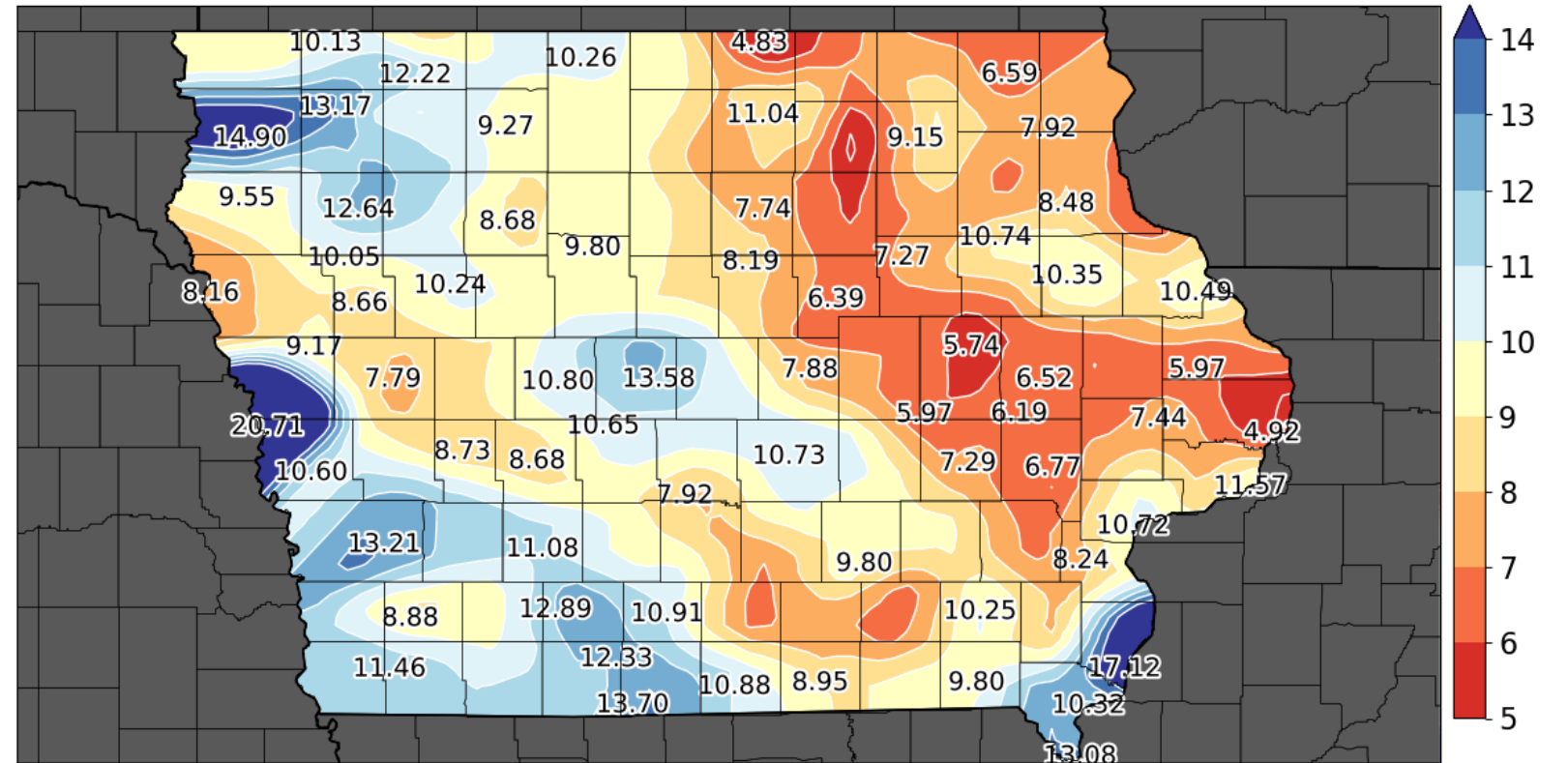


Summer of Drought (again)

- Entire summer characterized by drought with only occasional rainfall
- Most rains were isolated
- Parts of Iowa didn't even get 6" for the whole summer.



1 Jun 2023 thru 31 Aug 2023 Precipitation Total [inch]



Generated at 3 Jan 2024 10:23 AM CST in 6.06s

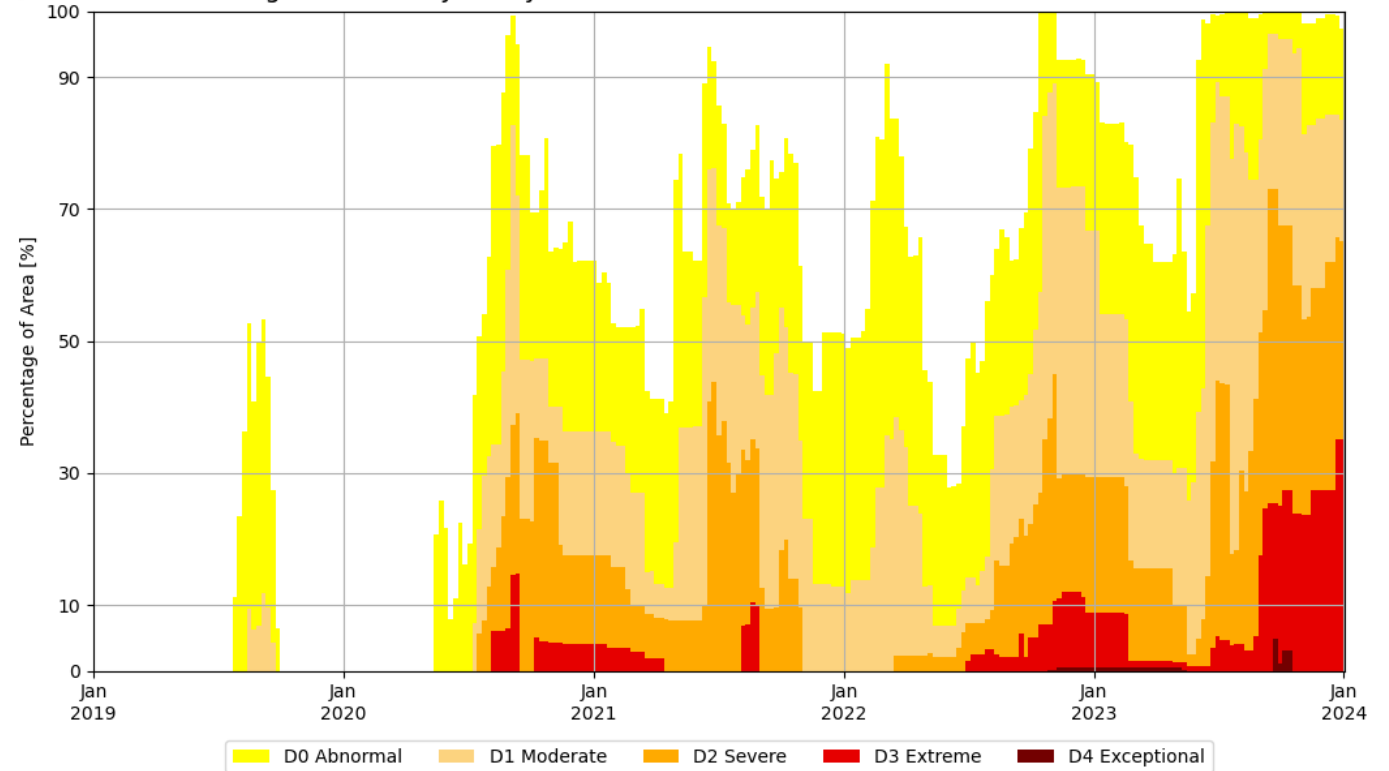
data units :: inch
IEM Autoplot App #97

Summer of Drought (Continued)

- We were in drought last time I was here!
- It's been a battle for several years
- So, what'll it take to turn things around?



Areal coverage of Drought for Iowa from US Drought Monitor 1 January 2019 - 26 December 2023

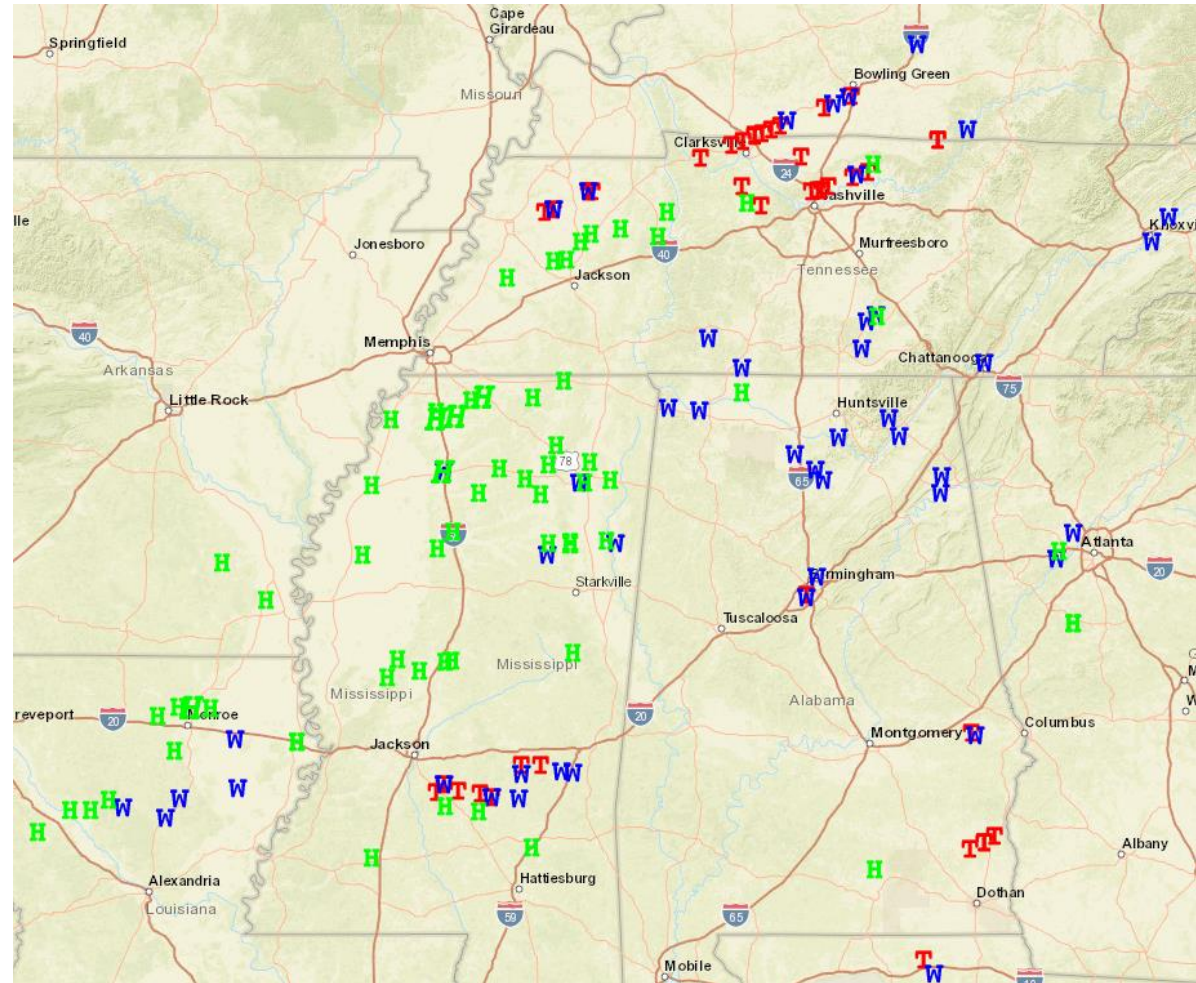


Generated at 3 Jan 2024 10:27 AM CST in 3.21s

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More Severe Weather in December

- Deadly tornadoes
- Numerous hail and wind reports
- The southeast U.S. is climatologically favored for events like these, but event still, this event was a tough one





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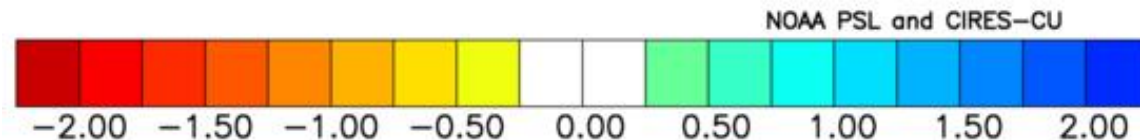
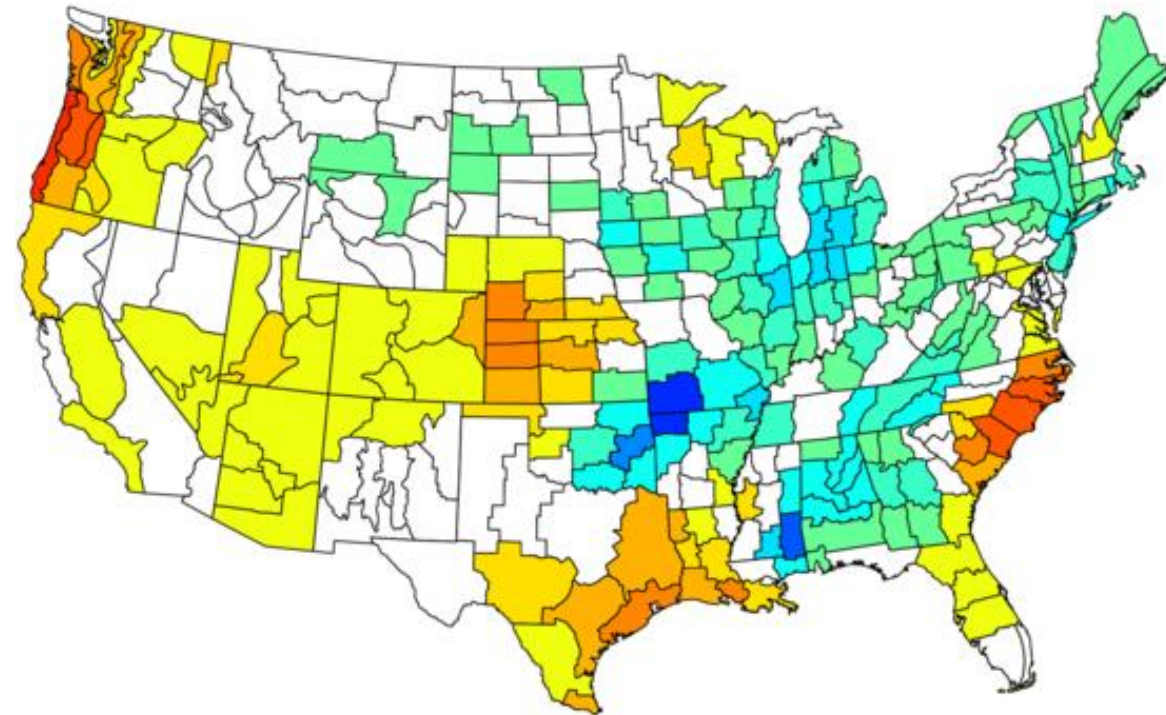
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Interesting Weather
Trends

Wet Octobers

NOAA/NCEI Climate Division Composite Precipitation Anomalies (in)
Oct 2019 to 2023
Versus 1991–2020 Longterm Average

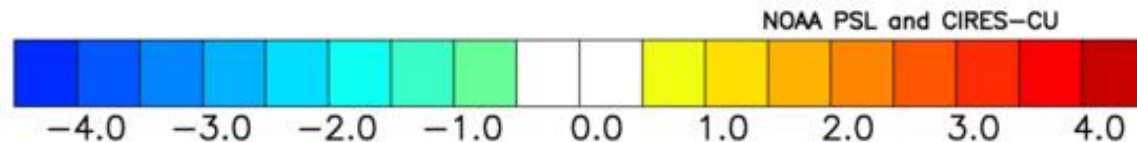
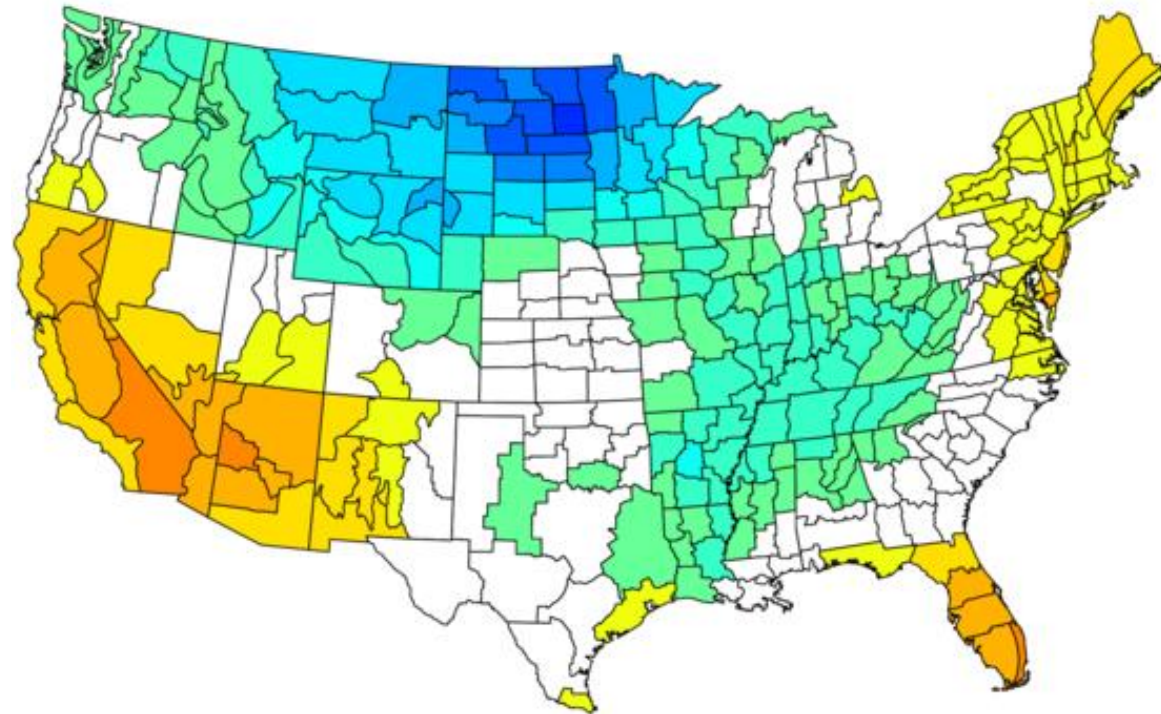
- 2023 was also wetter than normal, similar to the past several Octobers
- This creates challenges for harvest season, crop drying, etc
- Positive for post-harvest is a recharge of soil moisture into the following year



Chilly Aprils

NOAA/NCEI Climate Division Composite Temperature Anomalies (F)
Apr 2019 to 2023
Versus 1991–2020 Longterm Average

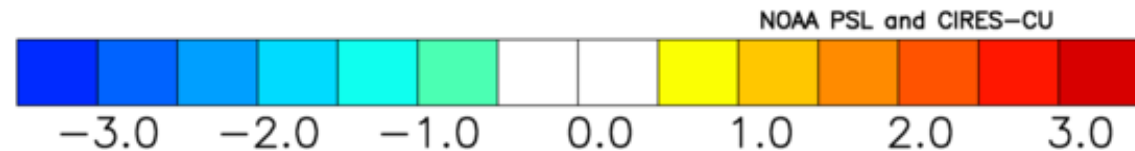
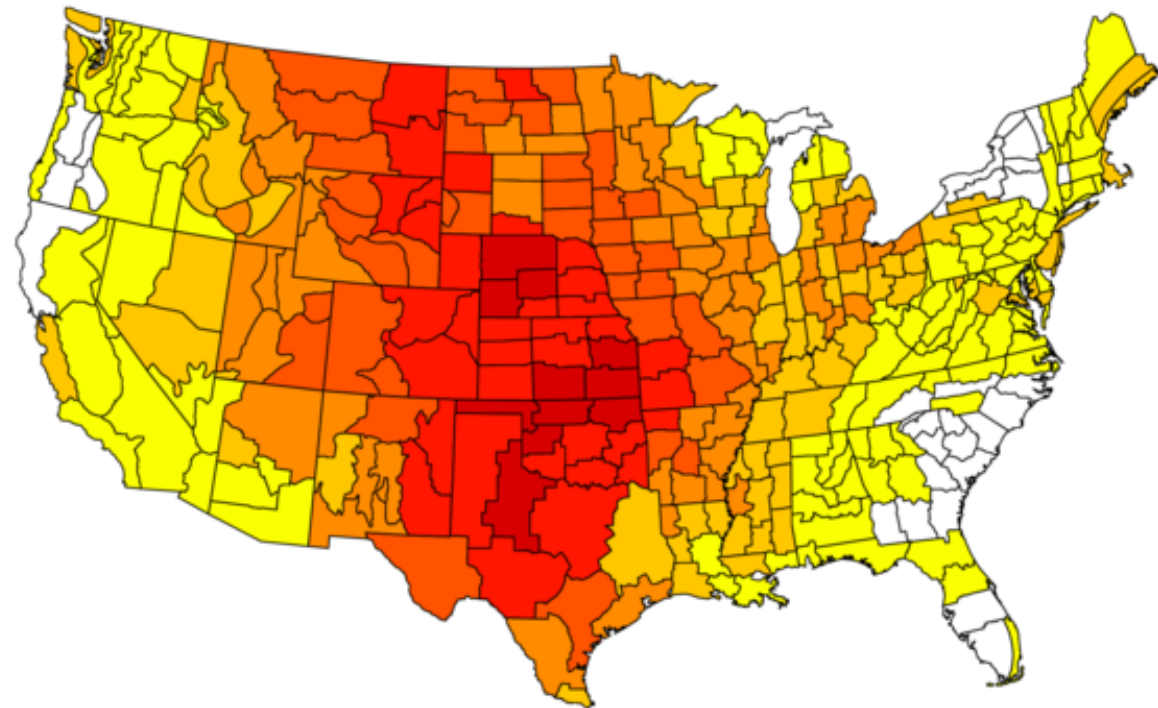
- Numerous snow events
- Challenge to get soil temperature up to 50
- The chill usually goes hand in hand with moisture, too – creating additional challenges for planting.



Warmer Septembers

NOAA/NCEI Climate Division Composite Temperature Anomalies (F)
Sep 2019 to 2023
Versus 1991–2020 Longterm Average

- Unusually warm in the center of the country in September
- Astronomically, still a summer month, but, actually really feeling like it lately.

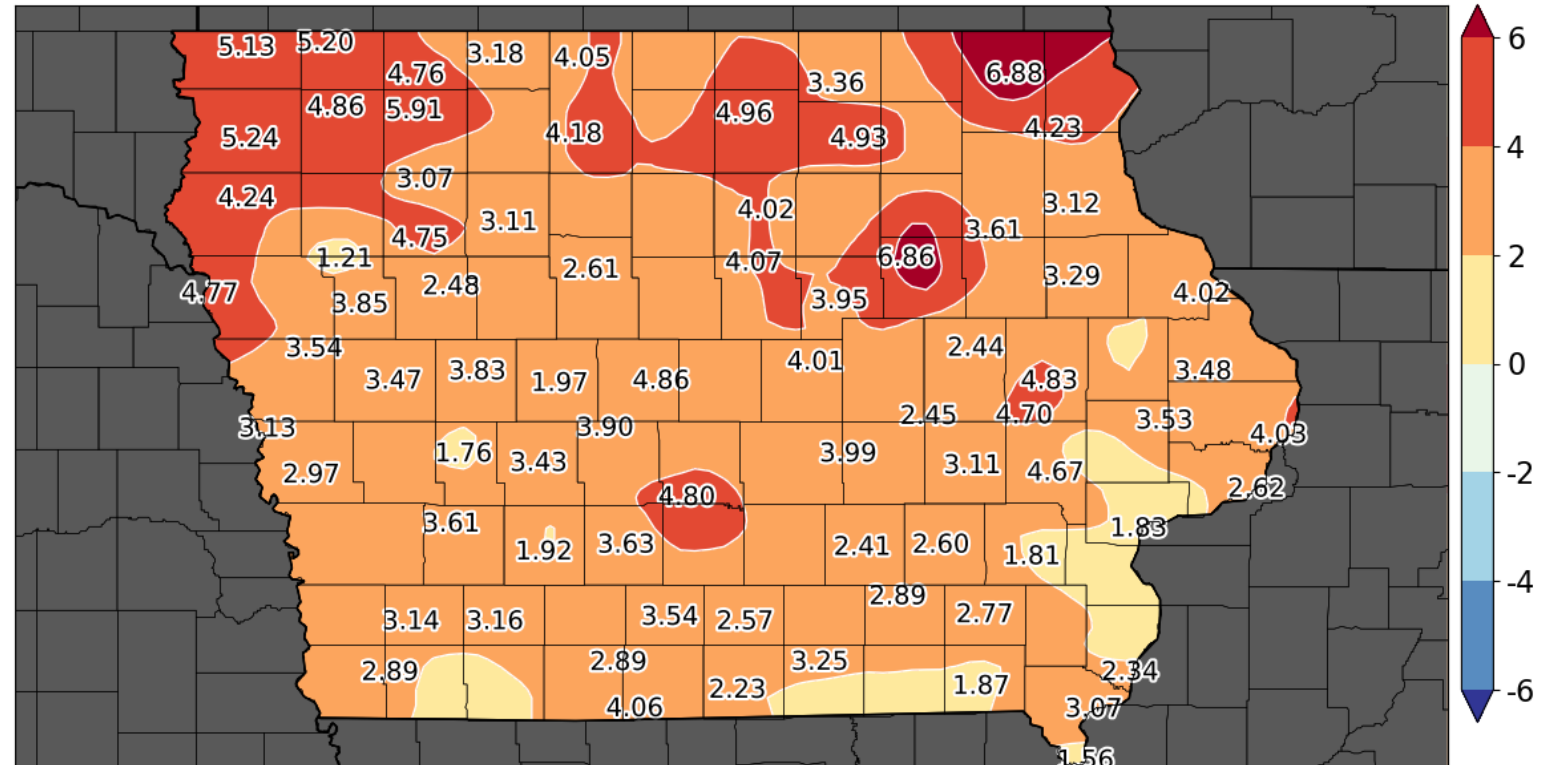


Warmer Septembers

- It happened again in 2023
- Multiple 90s reported



1 Sep 2023 thru 30 Sep 2023 Average Temperature Departure [F]
2023 is compared with 1951-2023 Climatology to compute departures



Generated at 15 Mar 2024 1:49 PM CDT in 2.96s

data units :: F
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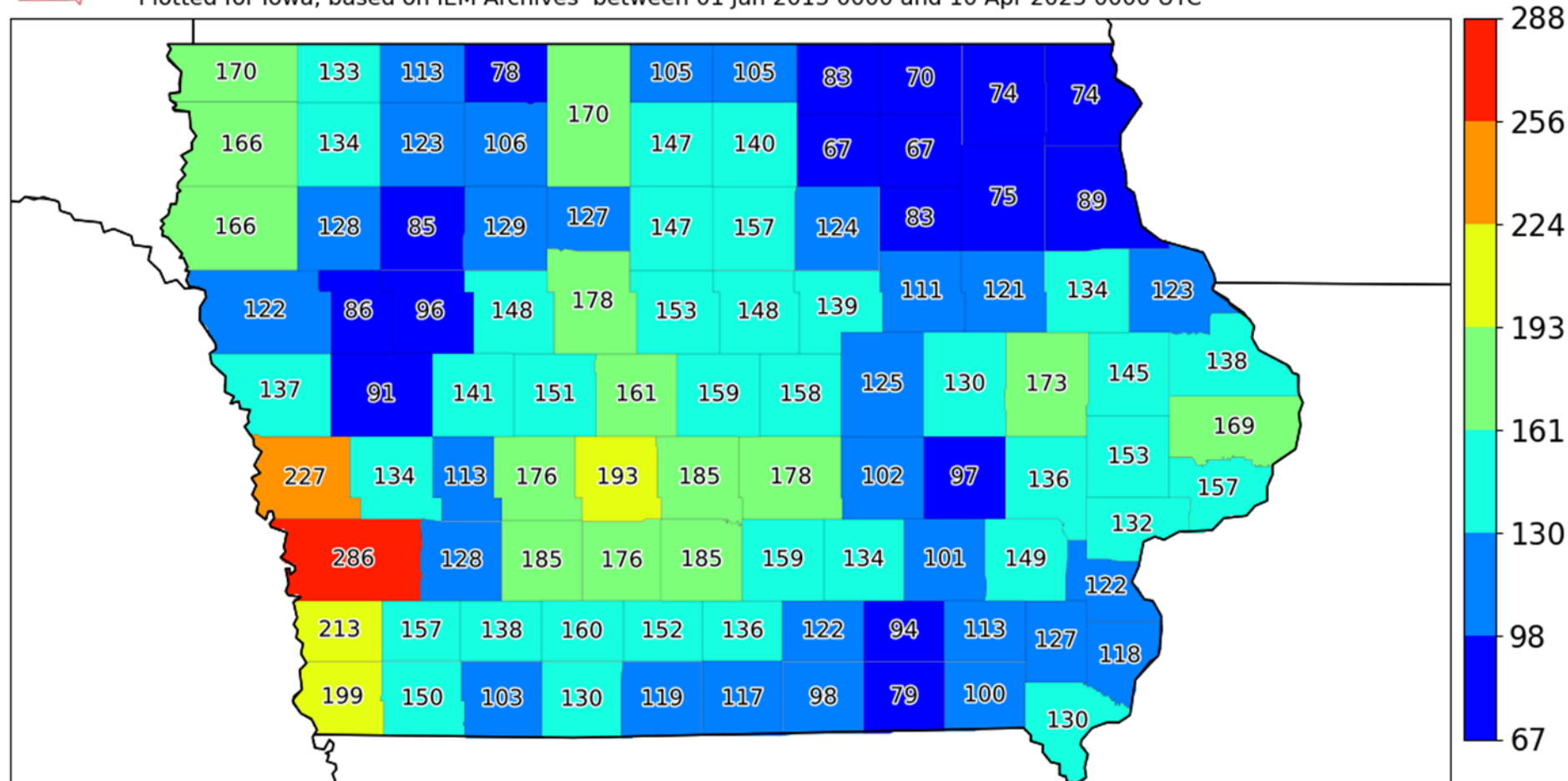
Storm Reports

Fun Facts – Severe Thunderstorm Warnings



Total Severe Thunderstorm Warning (SV.W)

Plotted for Iowa, based on IEM Archives between 01 Jan 2013 0000 and 10 Apr 2023 0000 UTC

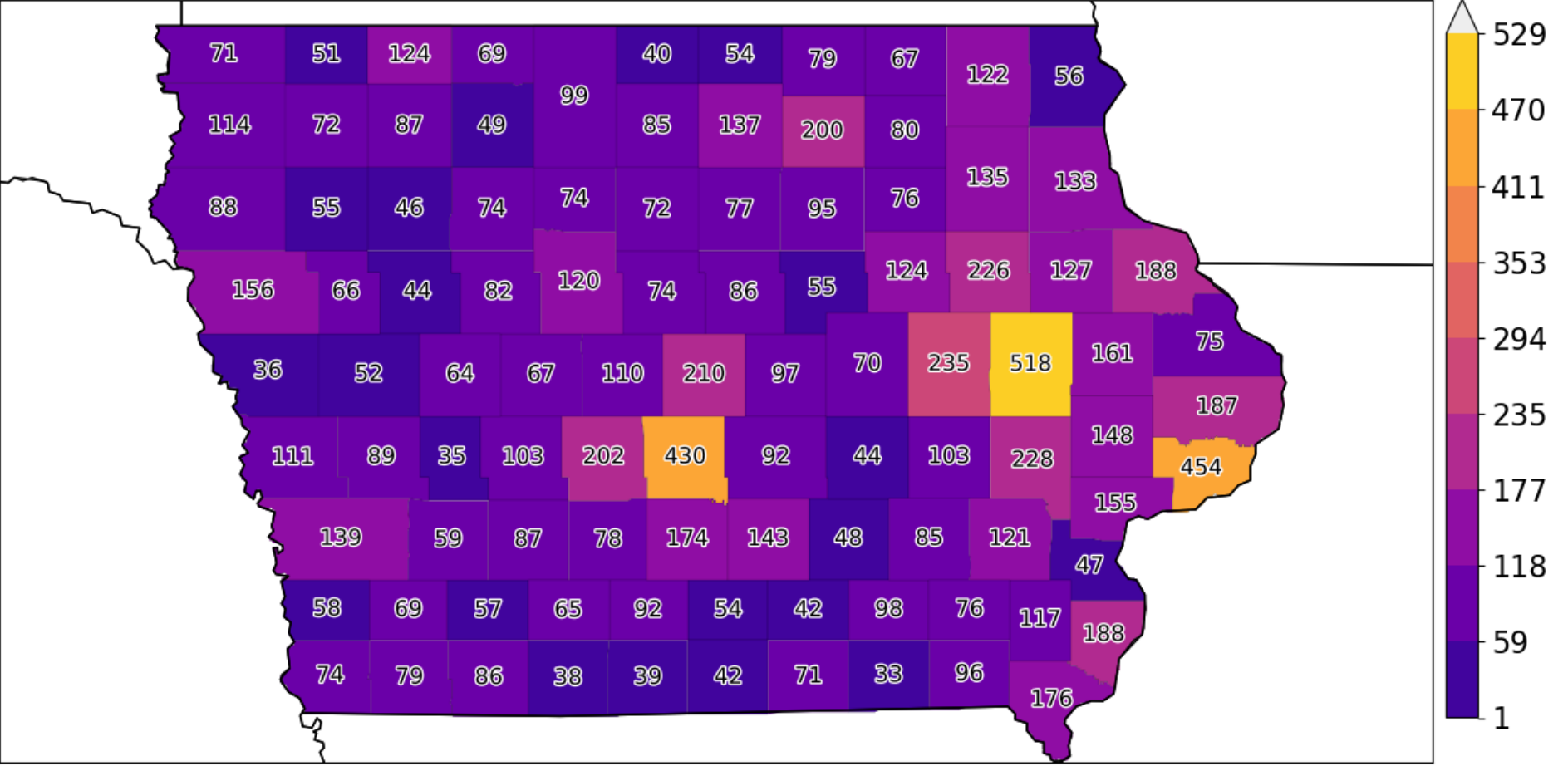


Fun Facts – Convective Storm Reports (Severe TS/Tornadoes)



Preliminary/Unfiltered Local Storm Report Event Count By County

Valid 01 Jan 2013 00:00 - 10 Apr 2023 00:00 UTC, type limiter: Convective LSRs (Tornado, TStorm Gst/Dmg, Hail)



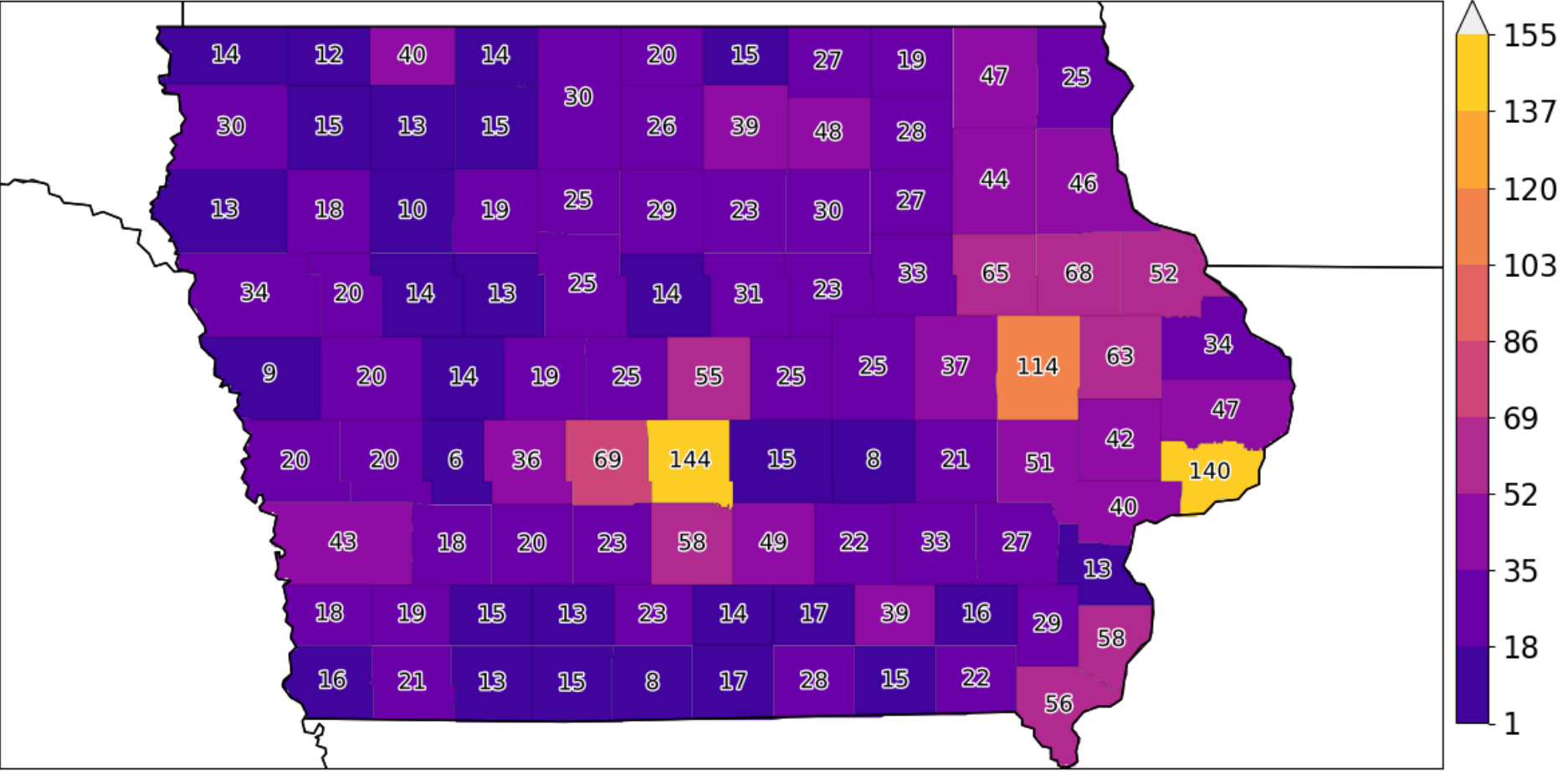
data units :: Count
IEM Autoplot App #163

Fun Facts – Thunderstorm Wind Damage LSR (Local Storm Report)



Preliminary/Unfiltered Local Storm Report Event Count By County

Valid 01 Jan 2013 00:00 - 11 Apr 2023 00:00 UTC, type limiter: TSTM WND DMG



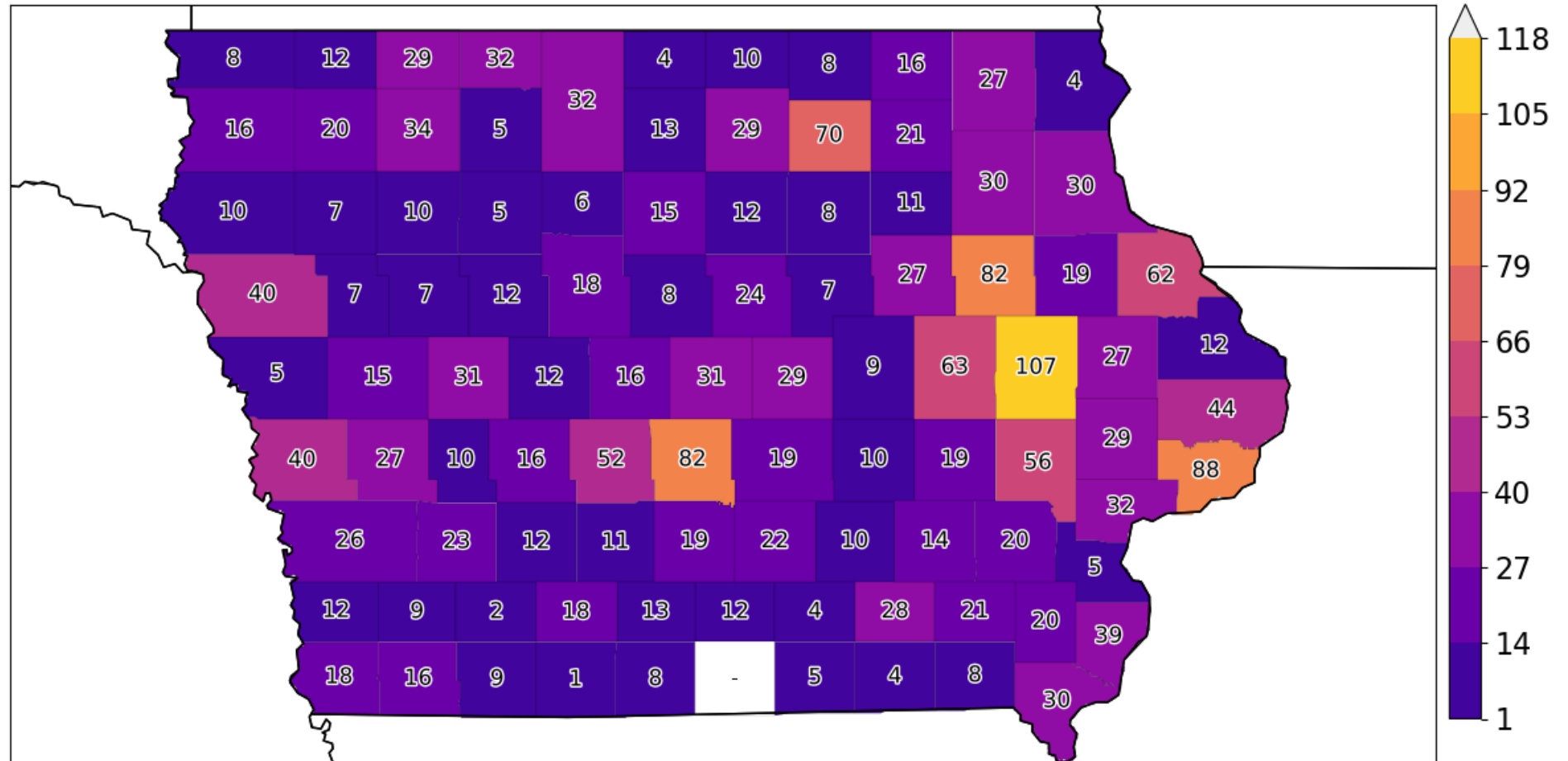
data units :: Count
IEM Autoplot App #163

Fun Facts – Thunderstorm Wind Gust LSR



Preliminary/Unfiltered Local Storm Report Event Count By County

Valid 01 Jan 2013 00:00 - 11 Apr 2023 00:00 UTC, type limiter: TSTM WND GST



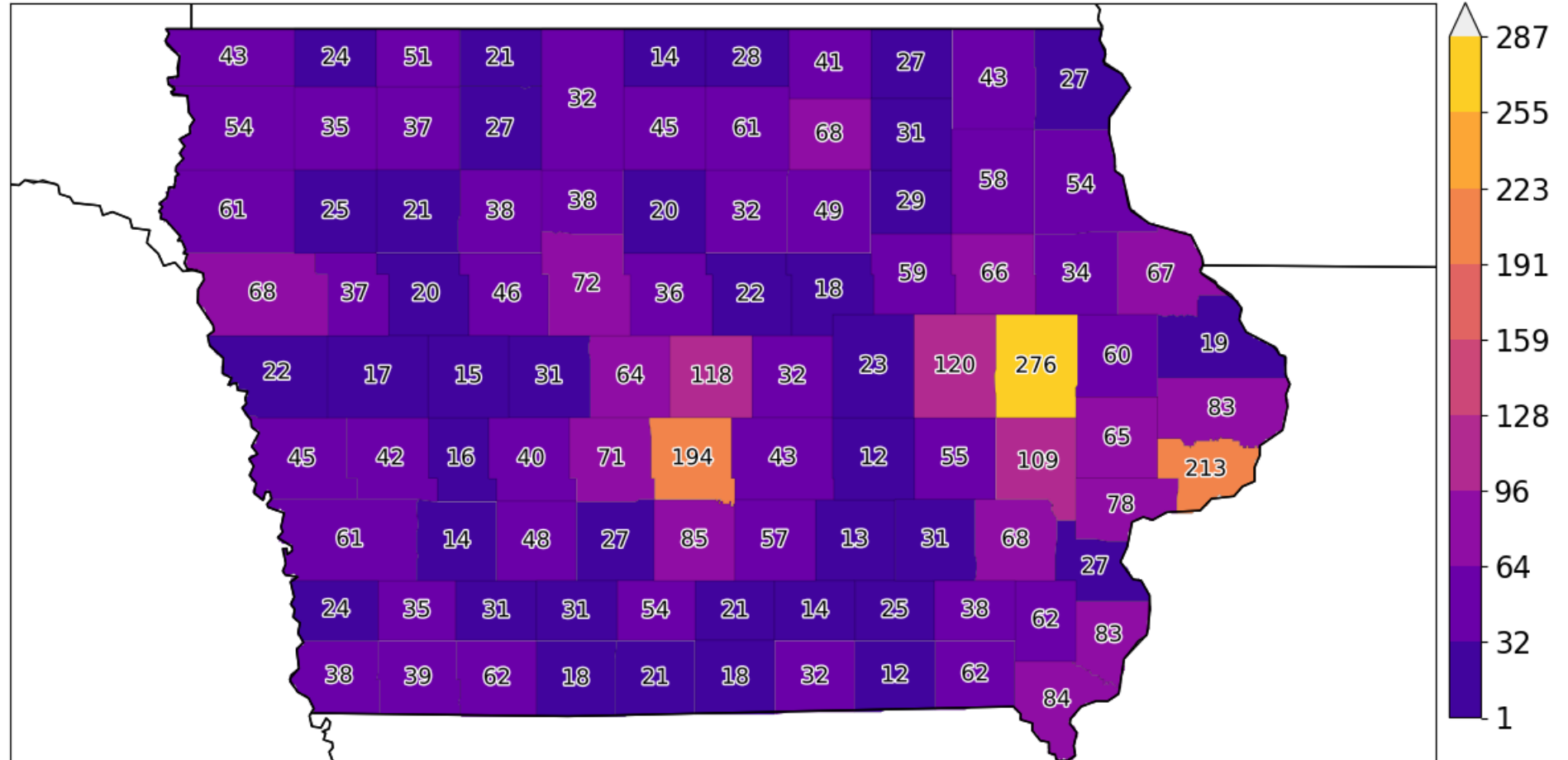
data units :: Count
IEM Autoplot App #163

Fun Facts – Hail LSR



Preliminary/Unfiltered Local Storm Report Event Count By County

Valid 01 Jan 2013 00:00 - 11 Apr 2023 00:00 UTC, type limiter: HAIL



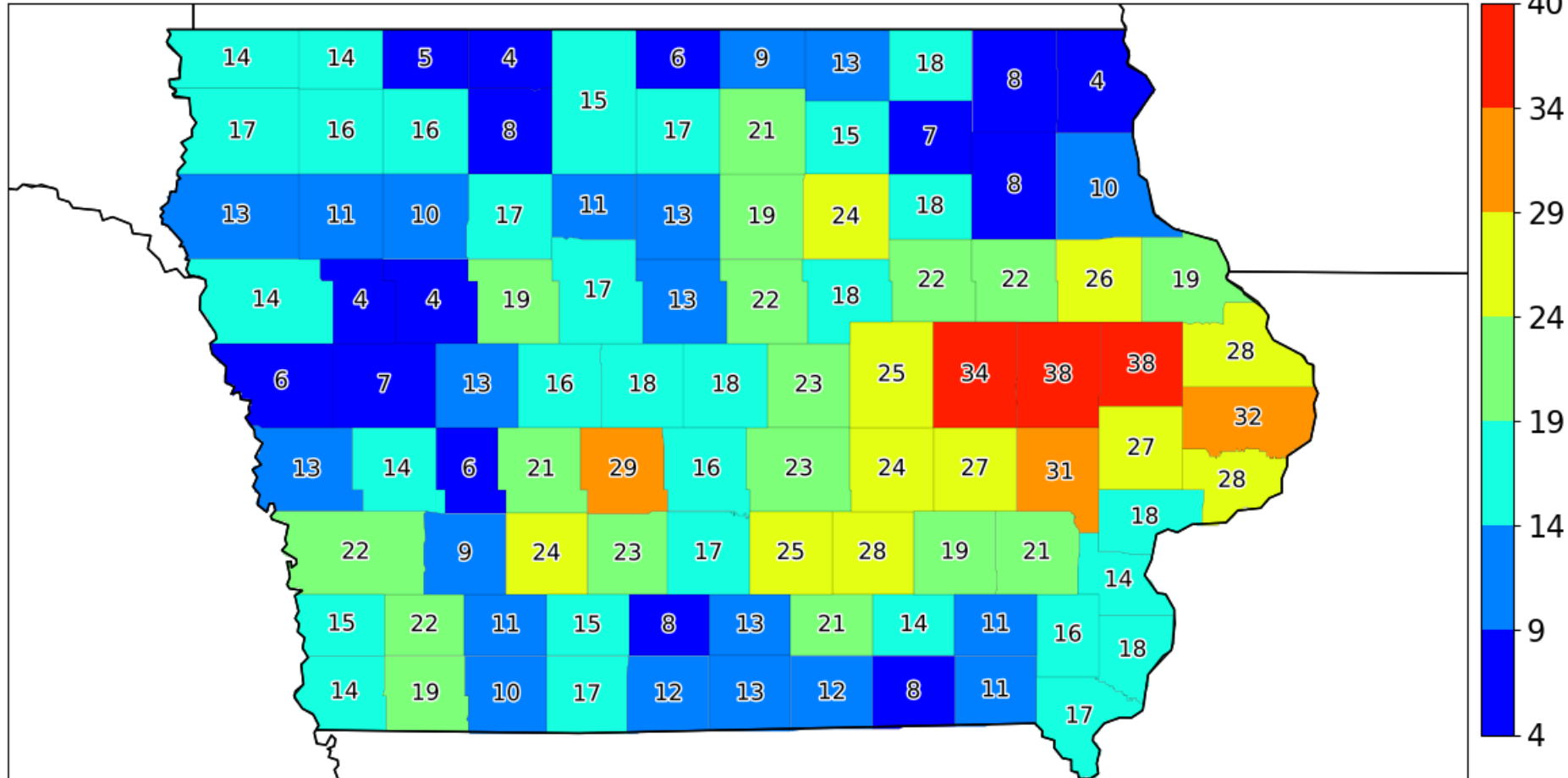
data units :: Count
IEM Autoplot App #163

Fun Facts – Tornado Warning



Total Tornado Warning (TO.W)

Plotted for Iowa, based on IEM Archives between 01 Jan 2013 0000 and 10 Apr 2023 0000 UTC

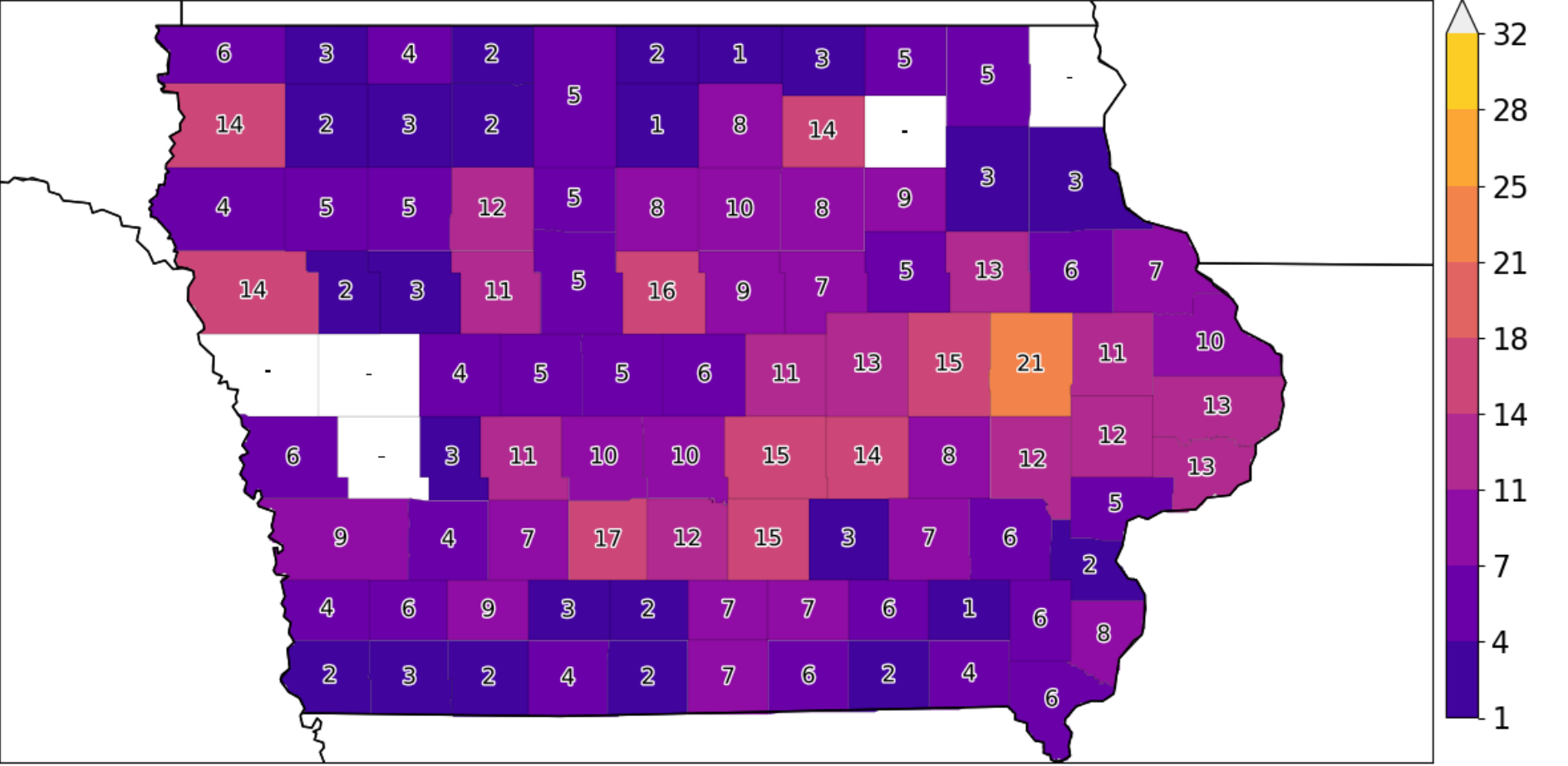


Fun Facts – Tornado LSR



Preliminary/Unfiltered Local Storm Report Event Count By County

Valid 01 Jan 2013 00:00 - 11 Apr 2023 00:00 UTC, type limiter: TORNADO



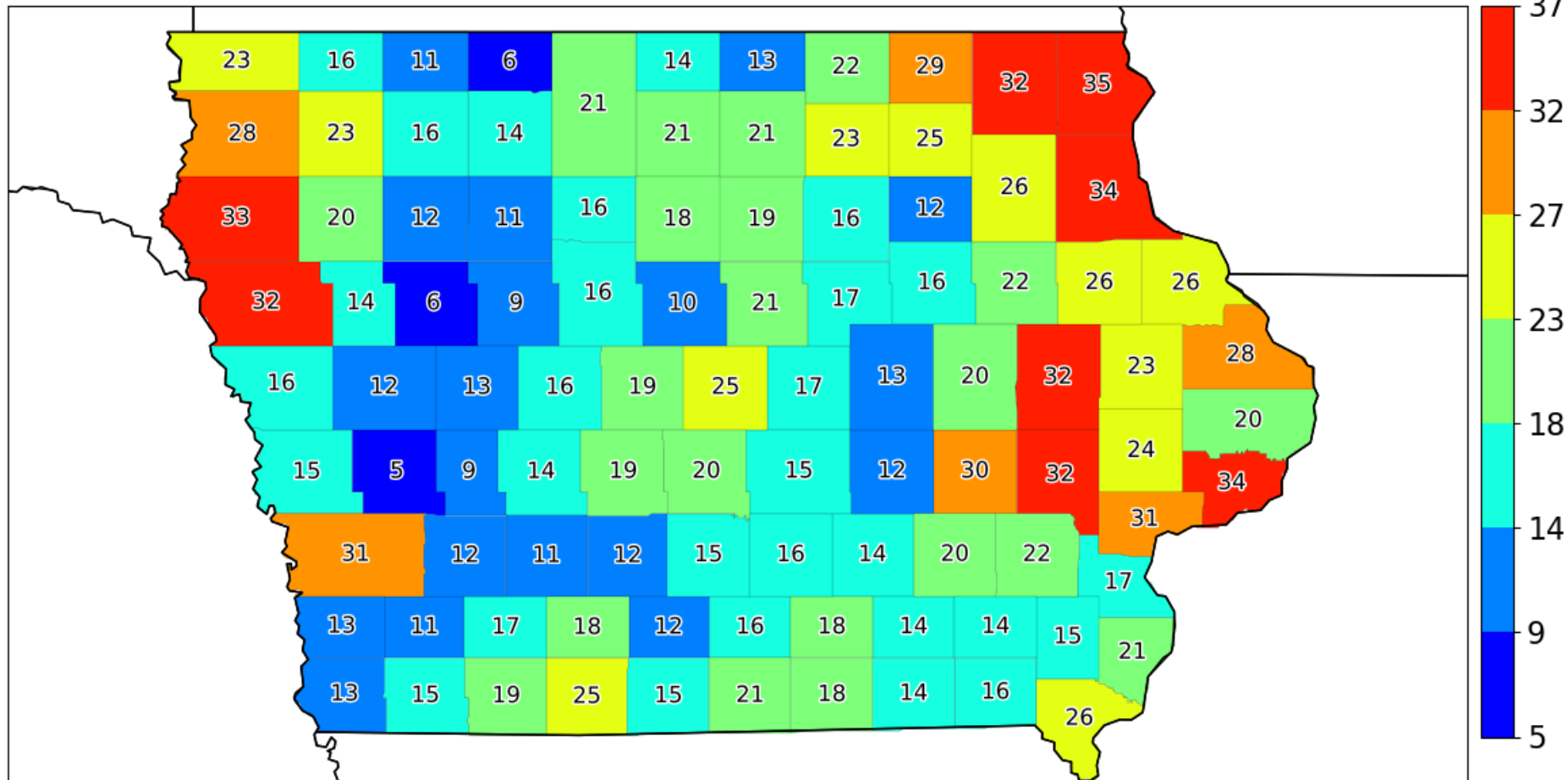
data units :: Count
IEM Autoplot App #163

Fun Facts – Flash Flood Warnings



Total Flash Flood Warning (FF.W)

Plotted for Iowa, based on IEM Archives between 01 Jan 2013 0000 and 10 Apr 2023 0000 UTC

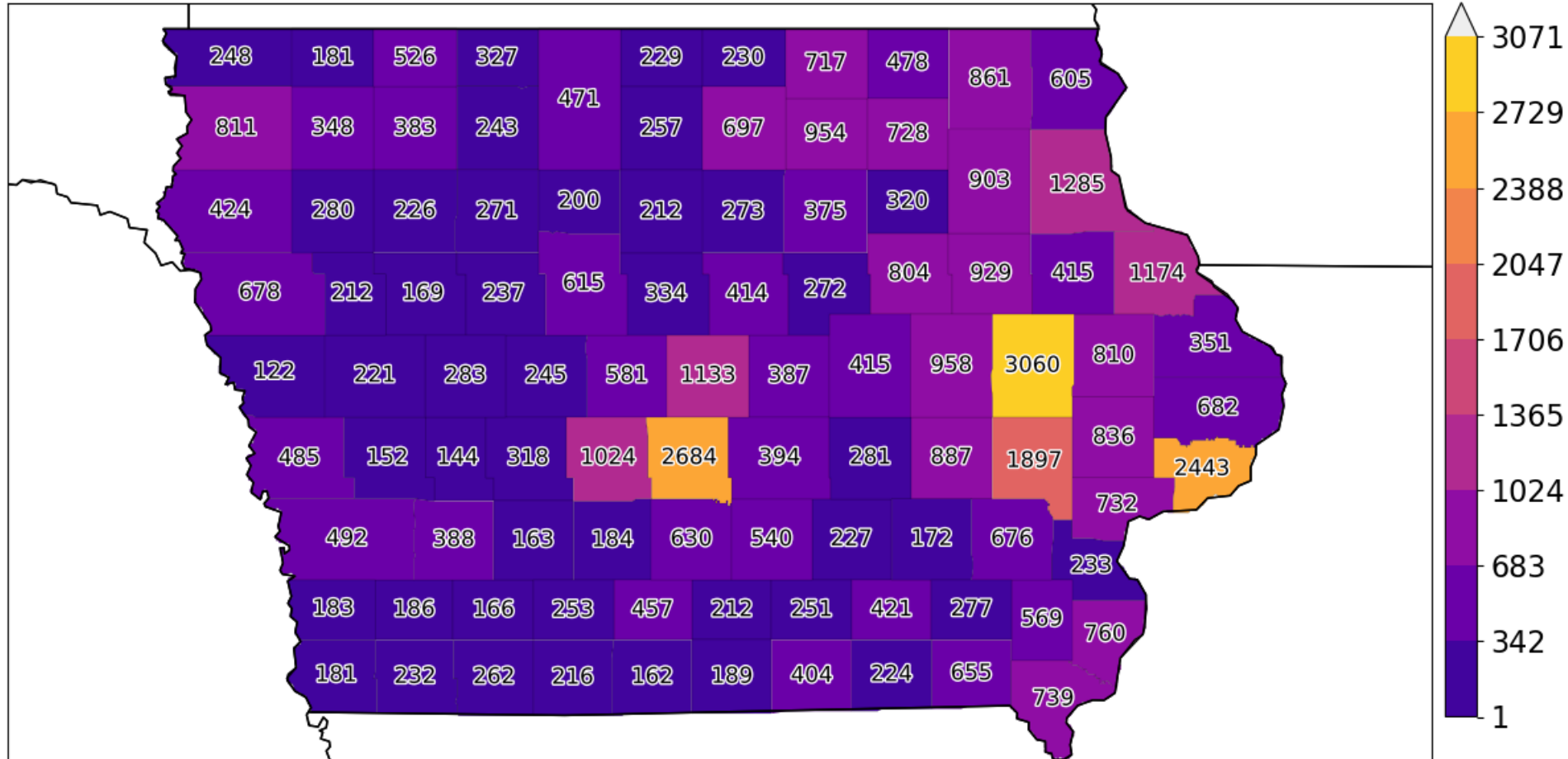


Fun Facts – Heavy Snow LSR



Preliminary/Unfiltered Local Storm Report Event Count By County

Valid 01 Jan 2013 00:00 - 11 Apr 2023 00:00 UTC, type limiter: All LSR Types



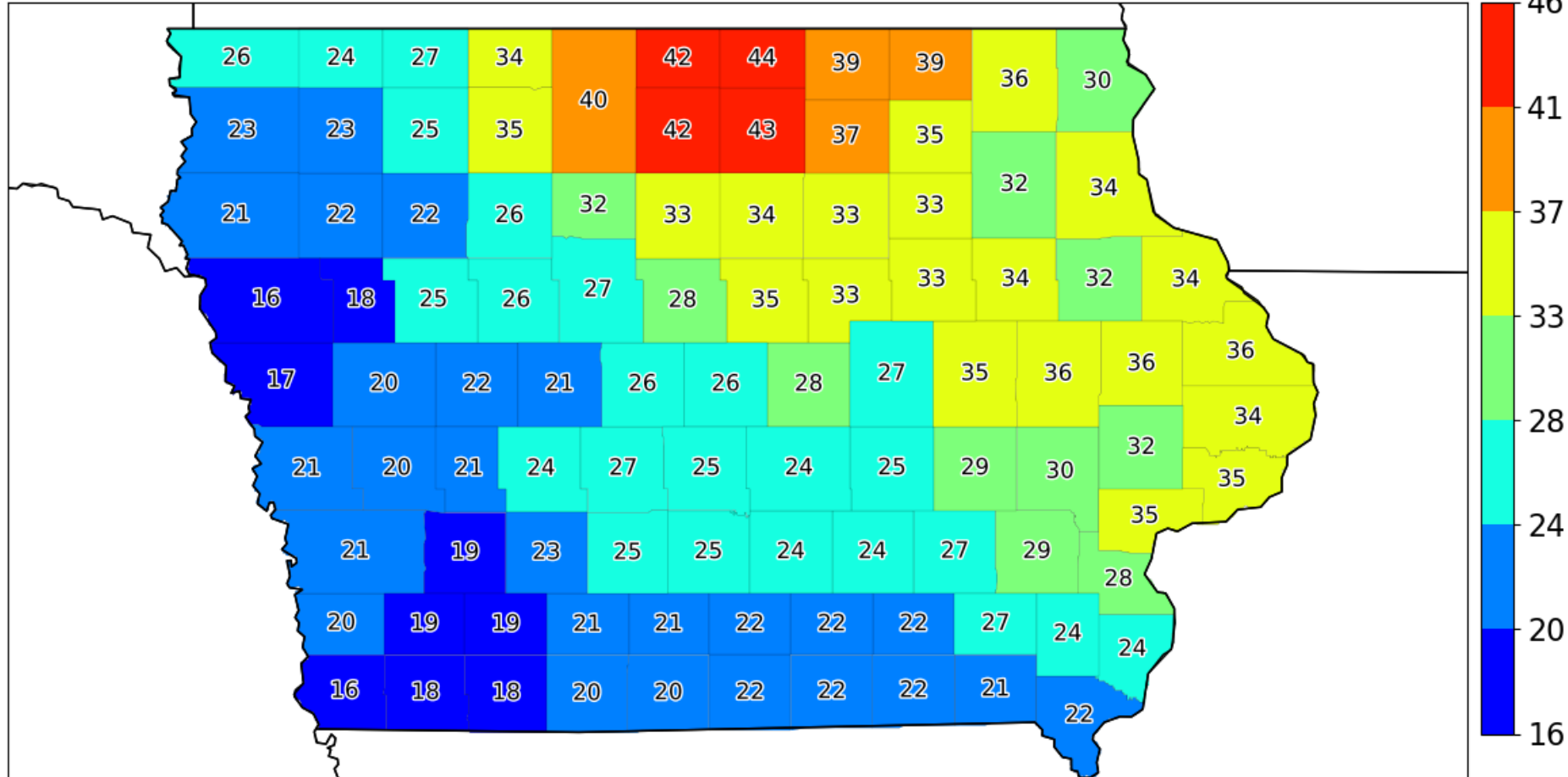
data units :: Count
IEM Autoplot App #163

Fun Facts – Winter Storm Warnings



Total Winter Storm Warning (WS.W)

Plotted for Iowa, based on IEM Archives between 01 Jan 2013 0000 and 10 Apr 2023 0000 UTC



How...and Where do They Come From?

A Trained SKYWARN spotter is one who has taken the free two-hour course, learning:

- Storm Development
- Fundamentals of structure
- ID of severe features
- Info to report
- How to report
- Basic severe safety



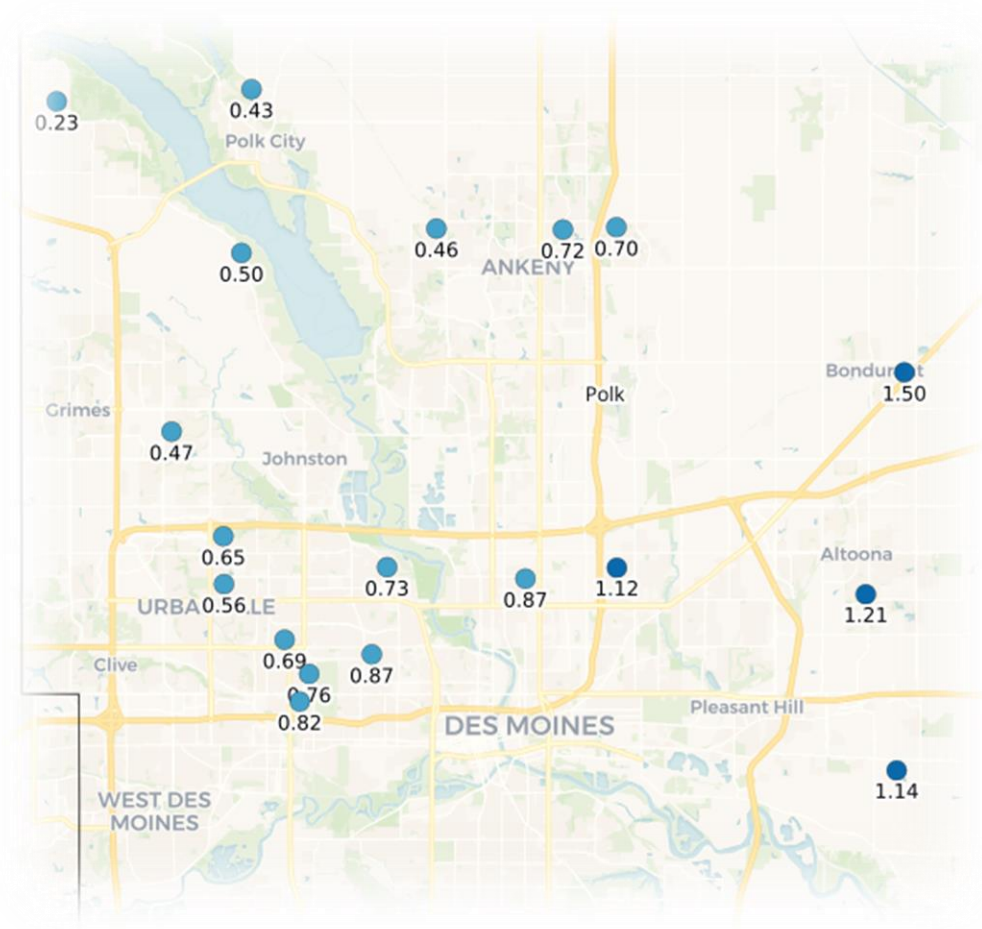
Local Storm Reports Typically Are Created from...

- Trained spotters
- Fire/Police/Sheriff/EMS
- Broadcast Media
- Off-Duty NWS Employees
- Social Media
- Public



CoCoRaHS Observing

- Free to Join!
- Rain Gauges are around \$35
- No experience required
- Easy to report through an app
- Data available to view online
- Denser than airport data





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Professional Weather
Stations

Professional Weather Stations

- Wide price range
- Usually, a few hundred can get you a good one
- Common brands include Davis (usually most expensive), Ambient Weather, La Crosse, Oregon Scientific, Tempest, AcuRite
- Think about your needs



The Right Weather Experts

Meteorologists Bring the Weather to the Doorstep.

Competitive Fees for Weather Experts:

- \$200-\$300 per hour (consultation rates)
- \$300-\$400 per hour (depo/trial rates)
- Some require retainer agreements

Key to your Team!

- Getting the weather right, first!
- Helps provide weather to engineers
- Helps provide weather to adjusters
- Helps provide weather to appraisers
- Helps provide weather to attorneys
- Can testify in court!



Questions?

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