IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP

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Secretary of Agriculture

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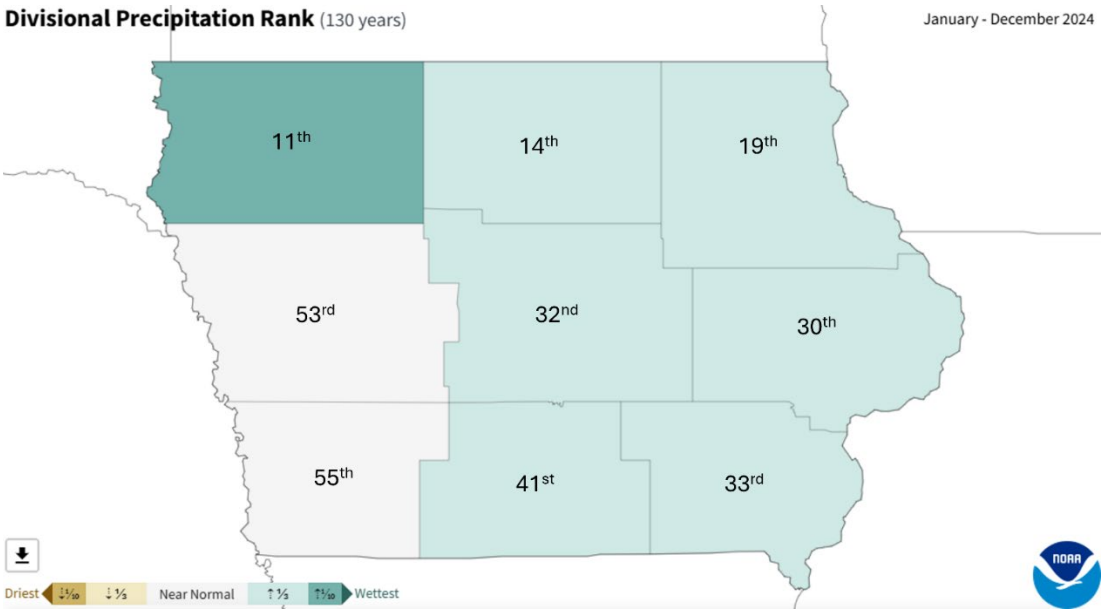
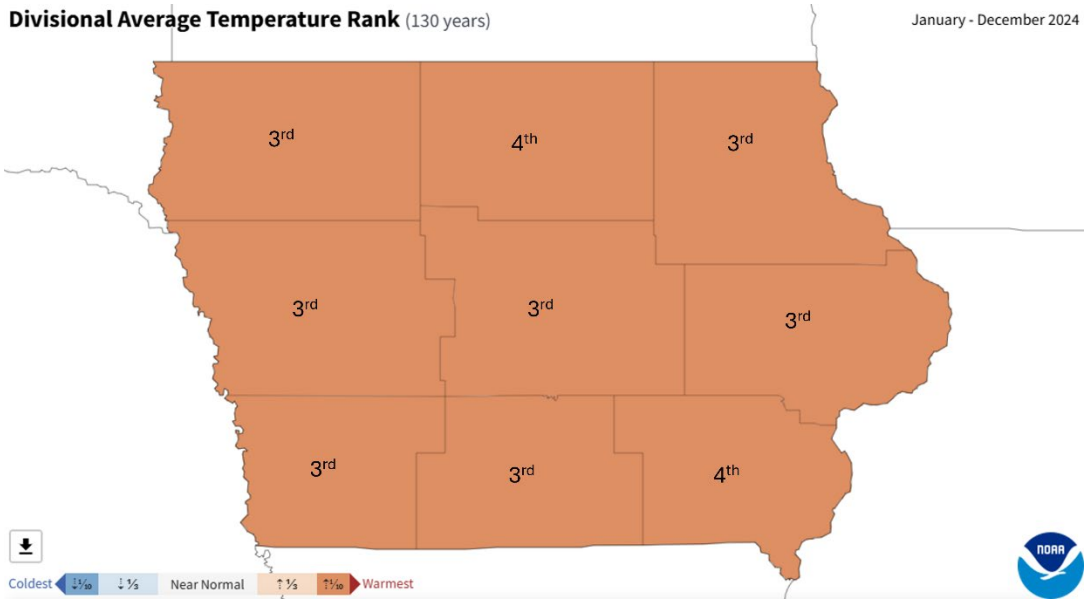
IOWA ANNUAL WEATHER SUMMARY – 2024

General Summary: Statewide annual temperatures averaged 51.5 degrees or 3.1 degrees above normal, ranking 2024 as the 5th warmest year on record. Annual precipitation averaged 36.95 inches or 1.40 inches more than normal, ranking as the 29th wettest year on record. A warmer year last occurred in 2012 (4th) warmest while 2019 was wetter (12th).





Annual Precipitation Summary: In a flip from 2023, precipitation was above normal for eight of the twelve months of the year. Much of the growing season was unseasonably wet, which busted 204 consecutive weeks of drought across Iowa, the longest drought since the 1950s. The wettest conditions for the year were found across much of northern and eastern Iowa; stations in the northwest corner reported surpluses in the six to 12-inch range. Southwestern Iowa was the driest part of the state where departures in the three to six-inch range were reported; deficits approaching 20 inches were found near Cedar Rapids (Linn County) and Waterloo (Black Hawk County). Annual minimum and maximum station precipitation totals ranged from 25.43 inches in Randolph (Fremont County) to 47.76 inches at Lowden (Cedar County).

Annual Temperature Summary: All but one month of 2024 experienced below-average temperatures. February was an exceptionally warm winter month, coming in at nearly 14 degrees above normal. The strong El Niño signal in the Pacific Ocean aided in these unseasonably warm conditions for the climatological second coldest month of the year. July, the climatologically warmest month of the year was almost two degrees below normal for the second year in a row. Taken together, NWS co-op stations across much of the eastern two-thirds of Iowa experienced their top five warmest years on record.

Seasonal Temperature and Precipitation Summary: Temperatures for the three winter months of December, January and February (DJF) averaged 30.7 degrees or 7.8 degrees above normal while precipitation totaled 3.83 inches, 0.32 inch above normal. Winter 2023-2024 ranks as the 2nd warmest and ties 1997 as the 47th wettest; 1877 was warmer while 2022 was wetter (3rd wettest). The statewide average snowfall was 20.1 inches, 2.00 inches below normal, making it the 71st least snowy winter in 137 years of records with 2020-2021 experiencing less snow.

Temperatures for the three spring months of March, April and May averaged 51.1 degrees, 2.8 degrees above normal. This ties Spring 1878 and 1894 as the 16th warmest on record. Precipitation totaled 14.22 inches or 3.73 inches above normal. Spring 2024 ranks as the 6th wettest in 152 years of observations; Spring 2013 was wetter (wettest on record) while 2012 was warmer (warmest on record).

Temperatures for the three summer months of June, July and August averaged 71.8 degrees, which is 0.4 degree above normal. Precipitation totaled 13.48 inches or 0.08 inch below normal. This ties 1898, 1910, 1966 and 1989 as the 86th warmest summer on record. It also ranks as the 52nd driest summer in 152 years of records. Summer 2023 was warmer while 2018 was wetter and the 8th wettest on record.

Temperatures over the three autumn months (September-October-November) averaged 54.8 degrees or 4.3 degrees above normal while precipitation totaled 5.62 inches, 2.37 inches below normal. Fall 2024 ties 1953 as the 5th warmest fall among the period of record; it also tied 1949 as the 35th driest fall on record. Fall 2016 was warmer (3rd warmest) while 2022 was drier.

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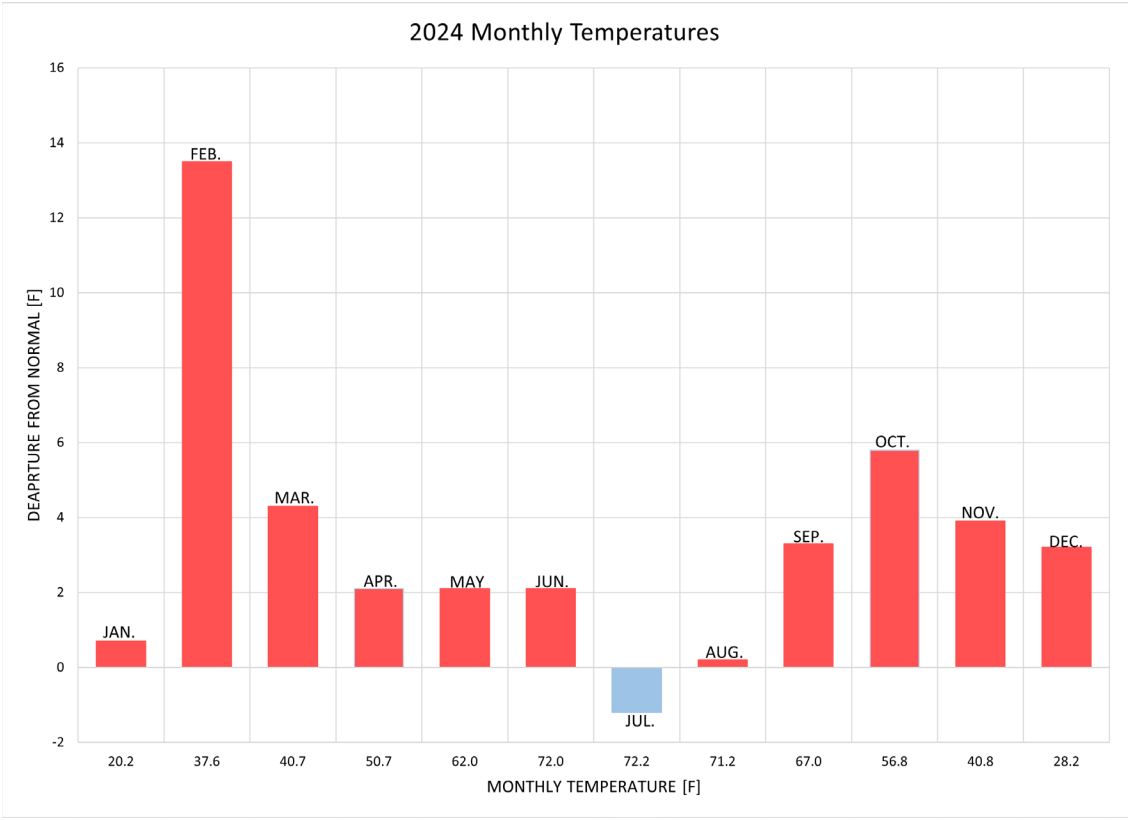
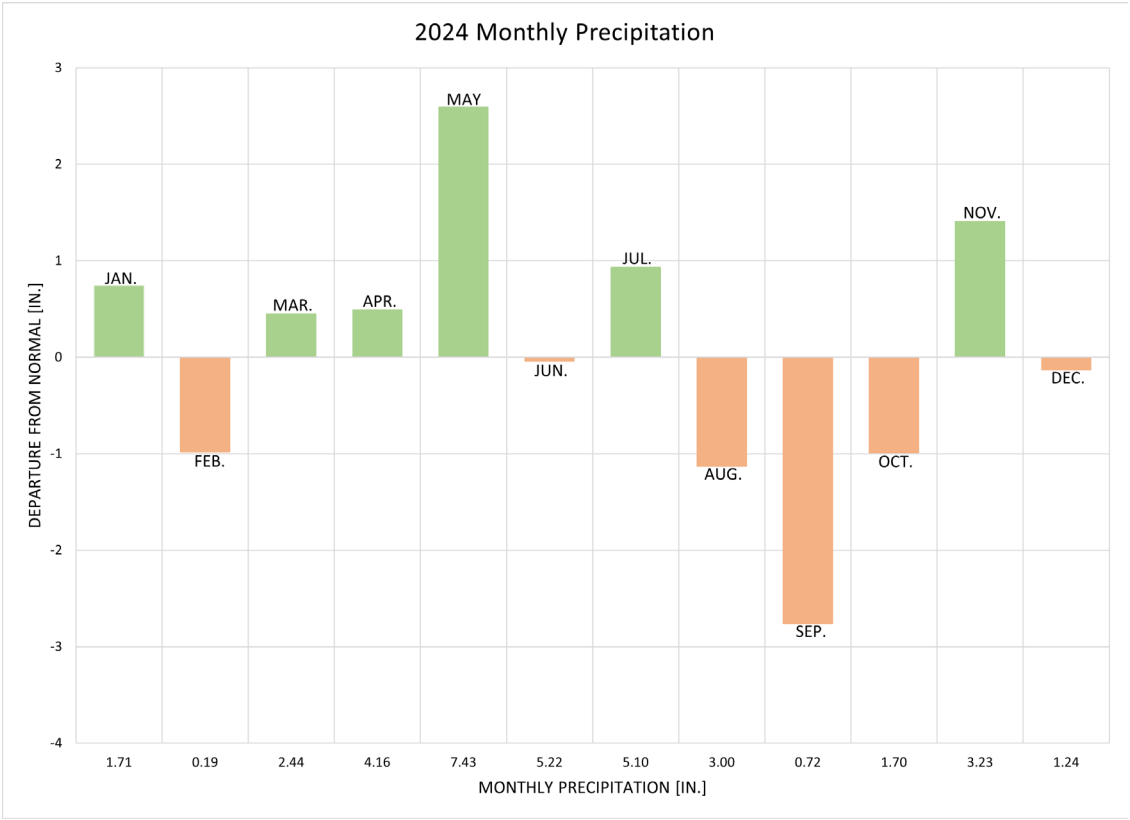

2024 Monthly Temperatures
DEAPRTURE FROM NORMAL [F]
16
14
12
10
8
6
4
2
0
-2
JAN.
FEB.
MAR.
APR.
MAY
JUN.
JUL.
AUG.
SEP.
OCT.
NOV.
DEC.
20.2
37.6
40.7
50.7
62.0
72.0
72.2
71.2
67.0
56.8
40.8
28.2
MONTHLY TEMPERATURE [F]

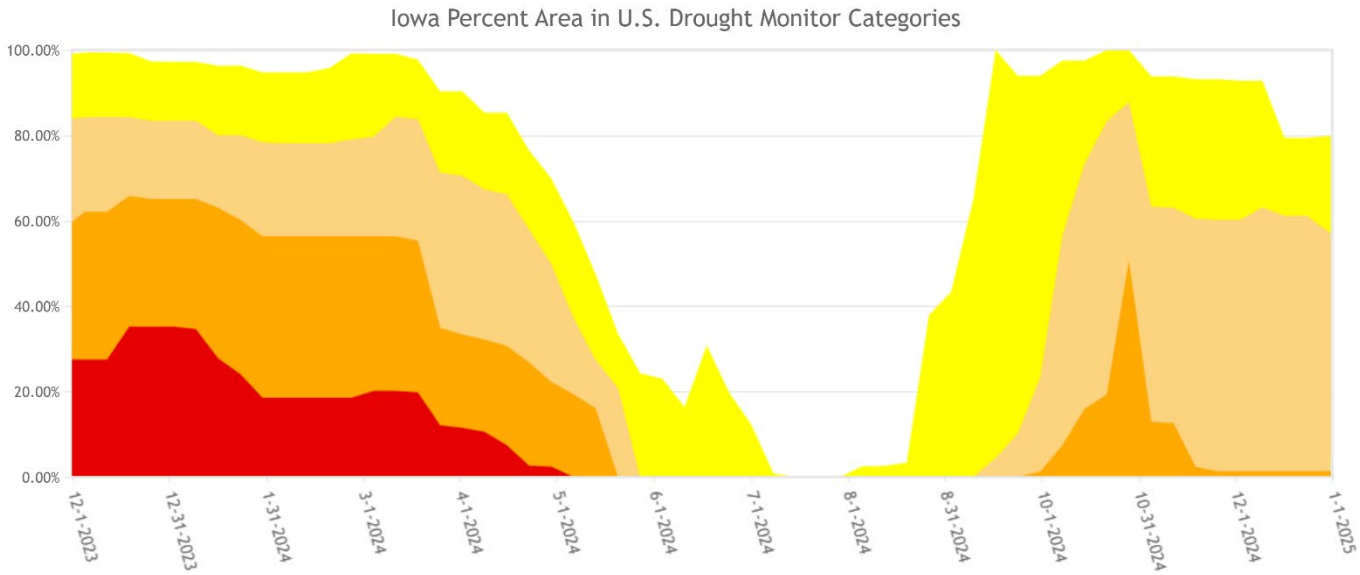

2024 Monthly Precipitation
DEPARTURE FROM NORMAL [IN.]
3
2
1
0
-1
-2
-3
-4
JAN.
FEB.
MAR.
APR.
MAY
JUN.
JUL.
AUG.
SEP.
OCT.
NOV.
DEC.
1.71
0.19
2.44
4.16
7.43
5.22
5.10
3.00
0.72
1.70
3.23
1.24
MONTHLY PRECIPITATION [IN.]

2024 Statewide Monthly Temperature Extremes							Statewide Monthly Rank*	
Month	Max. Temp.	Day	Location	Min. Temp.	Day	Location	Temperature	Precipitation
January	58	31st	Shenandoah	-28	14th	Primghar	67th warmest	18th wettest
February	81	26th	Clarinda A.P. Little Sioux Shenandoah A.P.	-2	17th	Mapleton Primghar	Warmest	2nd driest
March	81	3rd	Donnellson Mount Pleasant Muscatine	9	1st 23rd 27th	Multiple Stations	20th warmest	44th wettest
April	89	13th 14th	Spencer A.P. Winterset	9	6th	Elkader	41st warmest	32nd wettest
May	91	21st	Davenport A.P	25	3rd	Forest City Storm Lake	47th warmest	8th wettest
June	102	24th	Little Sioux	43	11th	Iowa City	25th warmest	57th wettest
July	96	16th 29th	Little Sioux Osceola	47	1st 18th	Elkader Battle Creek	27th coldest	31st wettest
August	94	26th	Osceola Shenandoah	43	10th	Mapleton	59th coldest	52nd driest
September	94	20th	Osceola Washington	36	23rd	Lake Park	22nd warmest	Driest
October	96	5th	Atlantic	17	16th	Mapleton	14th warmest	51st driest
November	71	4th	Columbus Junction Donnellson	0	30	Primghar	22nd warmest	14th wettest
December	65	7th	Several Stations	-8	12th 21st	Multiple Stations	37th warmest	86th driest

Drought: The Iowa Drought Plan (IDP) was implemented in early 2023. The IDP was developed as a collaborative effort between the Department of Natural Resources, the Department of Agriculture and Land Stewardship, and the Department of Homeland Security and Emergency Management. The Iowa Drought Plan (IDP) divides the state into five drought regions, and drought conditions are reported monthly for those regions. IDP categories are Normal, Drought Watch, Drought Warning, and Drought Emergency. 2024 began with Drought Region 3 (northeast Iowa), Region 4 (southwest Iowa), and Region 5 (southeast Iowa) in Drought Watch, and the remaining regions of the state in normal conditions. Throughout the year, higher-than-average monthly rainfall totals resulted in the entire state being

classified under normal conditions for seven months. The fall months of 2024 were very dry resulting in a drought watch classification for much of the state. However, above-normal rainfall in November changed the classification in all drought regions to normal to wrap up the year.

The US Drought Monitor (one of the data sources used in the IDP) shows that Iowa was in drought conditions in early 2024 but returned to Abnormally Dry (D0) or no drought conditions over the summer months. Below is a graph that shows statewide coverage of drought conditions for 2024, starting with nearly the entire state in some form of drought and then no drought conditions in July. An anomalously dry fall brought D0 conditions across most of Iowa with D1 (Moderate Drought) and D2 (Severe Drought) reemerging.



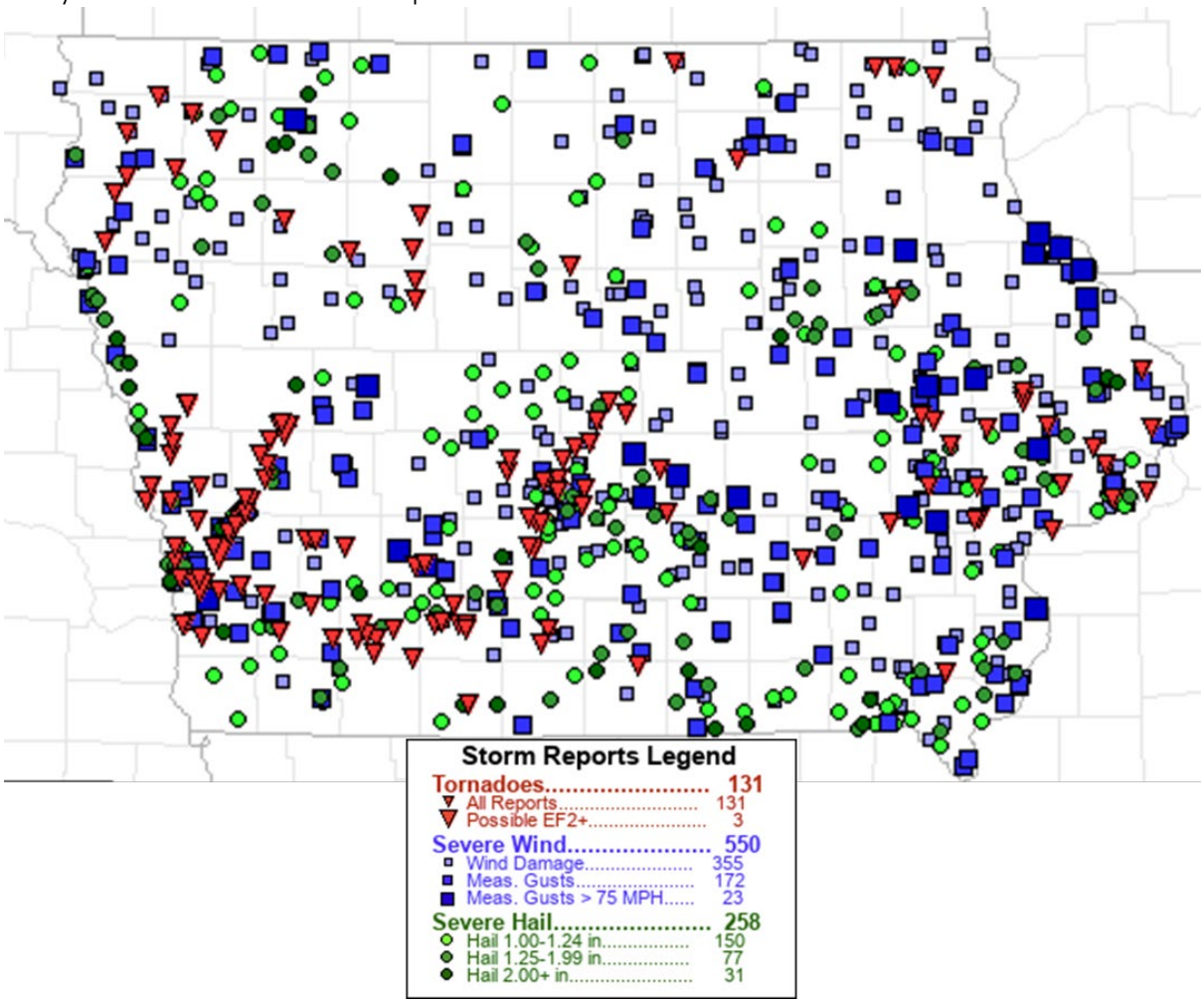
Severe Weather: The most active severe weather year for Iowa started in mid-April. Thundershowers pushed into southwestern Iowa towards midnight on the 15th, expanding into northern Iowa before daybreak on the 16th. A second, stronger line formed during the later morning hours with embedded strong to severe thunderstorms. The first tornado of the day formed near Minburn (Dallas County) and traveled nearly seven miles, producing some structural damage. As the initial line strengthened and moved northeast, a more narrow but equally strong line formed behind, producing several severe and

tornado-warned storms in eastern Iowa. Enough wind shear and instability over northwestern Iowa fired off shallow-topped supercells that spun up a few weak tornadoes; Rockwell City (Calhoun County) experienced an EF-1-rated tornado with wind speeds estimated at 100 mph. A longer track EF-2 was observed near Salem (Henry County), producing winds near 130 mph and lasting for 42 miles. Numerous hail and high wind events were reported across the state as well. Showers and thunderstorms pushed into western Iowa during the early morning hours of the 26th ahead of a warm front draped over southern Iowa. Rainfall overspread much of the state into the afternoon with overcast skies holding highs in the low to mid 50s; upper 60s and low 70s were reported in southwestern Iowa where clearing skies and higher dewpoints were amping up atmospheric instability. Intense supercells that blasted through eastern Nebraska crossed into Iowa, spawning several long-track, multi-vortex tornadoes. As the tornadoes plowed northeast, several towns experienced substantial damage along with heavy rain. Minden (Pottawattamie County) took a direct hit and experienced extensive damage to more than 75 homes. These storms eventually coalesced into a line that produced additional tornadoes, many rated EF-2, in central Iowa causing additional damage across Union, Clarke, Madison and Polk counties.

May 21st was a notable severe weather day in that thunderstorms became more widespread through the morning hours as an initial squall line sped east and into Wisconsin by noon. Clearing skies in western Iowa along with anomalously high atmospheric instability and wind shear produced explosive convection near the Iowa-Nebraska border. A rare "Particularly Dangerous Situation" Tornado Watch was issued for most of Iowa as supercells became tornado-warned almost immediately. There were several reports of multi-vortex tornadoes in southwest Iowa with Greenfield (Adair County) taking a direct hit from a higher-end EF-4; sadly, there were 35 injuries and five fatalities. The long-track supercells sped at nearly 40 mph into central Iowa where additional tornadoes formed between Des Moines (Polk County) and Nevada (Story County). As the line evolved, widespread reports of severe straight-line winds continued into eastern Iowa with moderate to heavy rainfall and some hail. Rain totals were unseasonably wet; over the preceding 36 hours, 140 stations reported over 2.00 inches with remarkable totals in the 4.00 to 6.00 inch-range in central to western Iowa; Polk City (Polk County) registered 4.01 inches with a 6.14-inch total at Missouri Valley (Harrison County) and a statewide average of 1.57 inches. An intense squall line raced out of Nebraska on the morning of the 24th, spawning at least 18 tornadoes as it plowed across Iowa. The line bowed out in the center as a rear-inflow jet strengthened straight-line winds along the length of the line. Hail and heavy rain were also reported across the length of squall. With numerous wind gusts at or above 58 mph along the path length of at least 400 miles, the event was categorized as a derecho. Thunderstorms continued to fire through the afternoon hours before dissipating around sunset. Rain totals at 7:00 am on the 25th were highest in eastern Iowa with nearly 100 stations receiving at least an inch with 20 approaching 2.00 inches; Dubuque (Dubuque County) measured 1.50 inches while Chariton (Lucas County) hit 1.96 inches. Another disturbance pushed into Iowa on the 26th bringing isolated severe-warned thunderstorms and additional heavy rain, especially in northeast Iowa; many of the stations received totals between 0.75-1.50 inches.

On July 15th, afternoon temperatures rose into the upper 80s to mid 90s under an existing heat dome over the Midwest. A boundary draped west to east became a focusing mechanism for afternoon discrete supercells. The initial storms fired in central Iowa with a fast-moving EF-1-rated tornado carving a seven-mile path through the near-western suburbs of Des Moines (Polk County). The storms quickly coalesced into a squall line and sped across eastern Iowa, leaving behind nearly 50 reports of severe straight-line

winds and hail along with three weak tornadoes; a wind gust of 86 mph was observed near Aurora (Buchanan County). Much of the state's eastern half reported measurable rainfall with many stations collecting at least 0.50 inch. Stations in east-central Iowa observed heavier amounts with 30 stations at or above 1.50 inches; five stations in Linn County measured more than 2.00 inches from 2.25 inches in Central City to 2.80 inches in Cedar Rapids.



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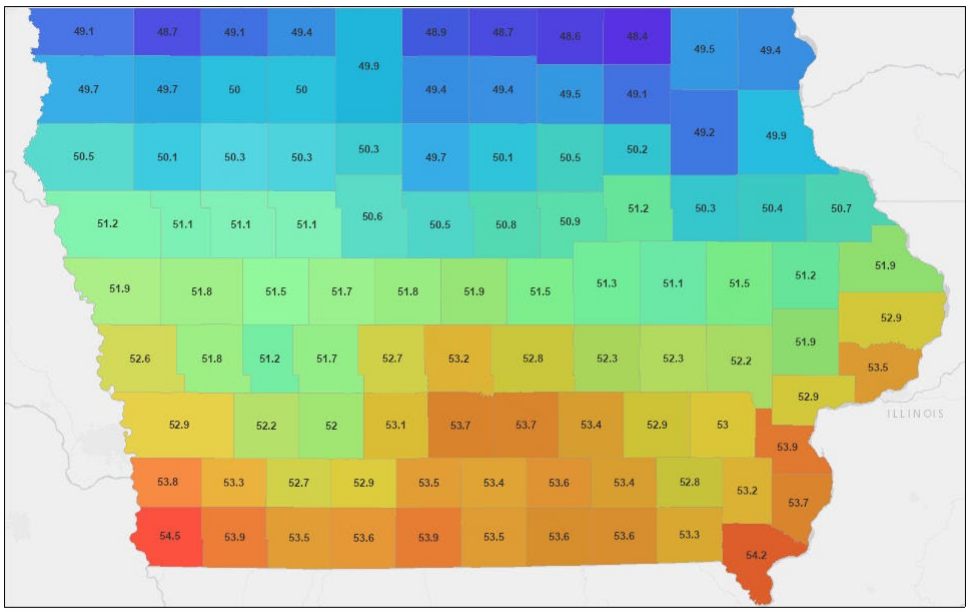
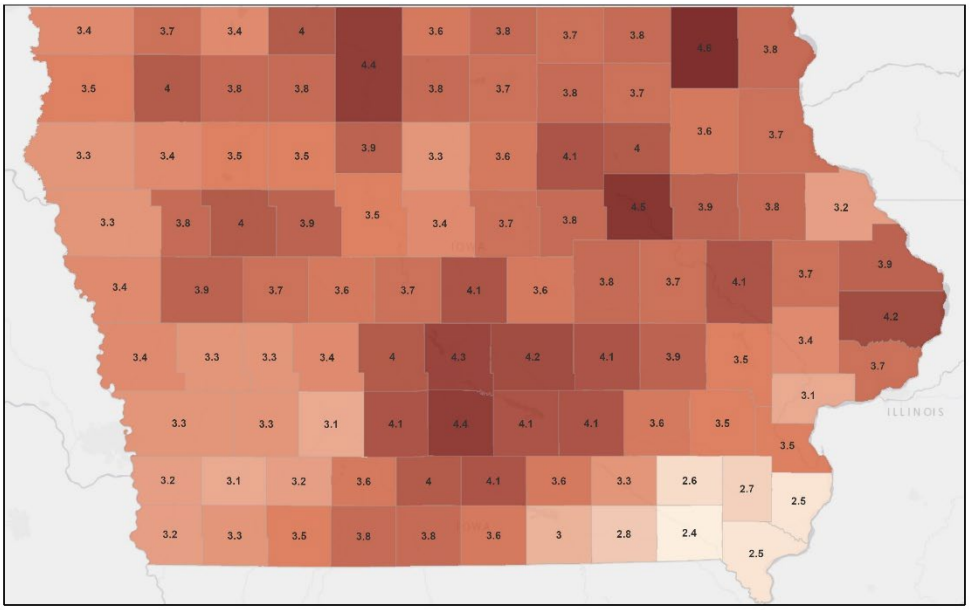
2024 Annual Average County Temperature [degrees F]



2/25/2025

1:2,964,071
0 15 30 60 mi
0 30 60 120 km
Esri, HERE, Garmin, USGS, EPA, NPS

2024 Annual County Temperature Departure [degrees F]



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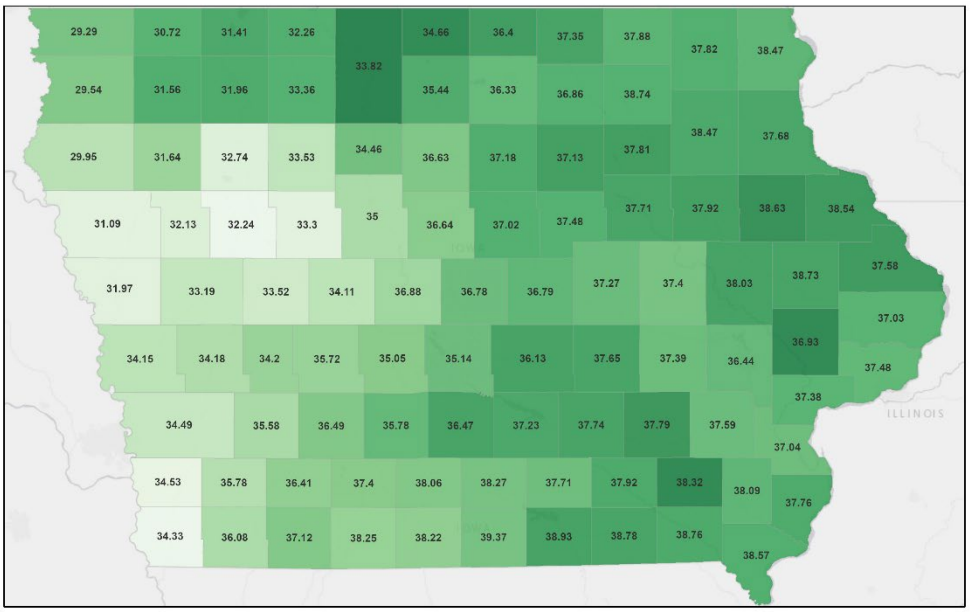

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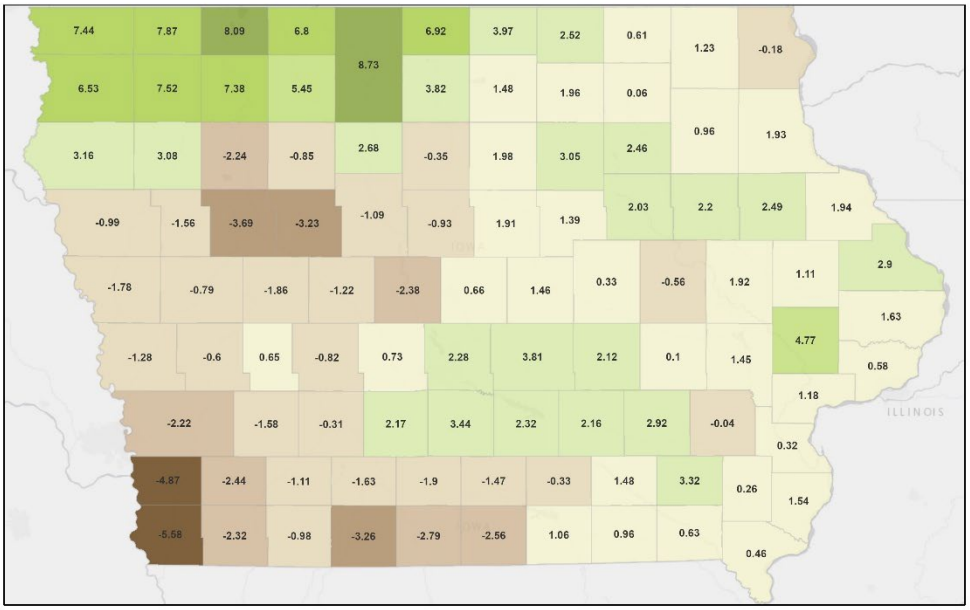

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