

## IOWA MONTHLY WEATHER SUMMARY – JULY 2024

General Summary: Temperatures averaged 72.2 degrees or 1.2 degrees below normal while precipitation totaled 5.10 inches or 0.93 inch above normal. July 2023 ties 1972 and 2015 as the 27<sup>th</sup> coldest July in 152 years of statewide records; it also ranks as the 31<sup>st</sup> wettest. A colder July occurred just last year, while 2016 was wetter.

Temperatures: Statewide average temperatures in July were near-normal across smaller swaths of northern, eastern, southern-central Iowa with negative departures of up to two degrees at most stations. July's statewide average maximum temperature was 82.1 degrees, 1.7 degrees below normal while the average minimum temperature was 62.3 degrees, 0.6 degree below normal. The month's high temperature of 96 degrees was reported at Little Sioux (Harrison County) on July 16<sup>th</sup> and in Osceola (Clarke County) on July 29<sup>th</sup>. Both of these high temperatures were about 10 degrees above normal for those dates and locations. Elkader (Clayton County) and Battle Creek (Ida County) reported the month's low temperature of 47 degrees on July 1<sup>st</sup> and 18<sup>th</sup>, respectively, on average 14 degrees below normal.

Cooling Degree Days: Home cooling requirements, as estimated by cooling degree day totals, were similar to last July and 14% less than normal. Cooling degree day totals since January are running 5% more than last year at this time and 7% more than normal.

Precipitation: National Weather Service co-op stations in north-central Iowa reported precipitation deficits that were comparatively large, nearing three inches. A majority of the unseasonably dry stations in Iowa reported deficits in the 1.00-2.00" range. Only stations along the eastern and western borders of Iowa observed above-average rainfall. Monthly precipitation totals ranged from 0.94 inch in Rock Rapids (Lyon County) to 13.78 inches in Pella (Marion County).

A disturbance brought widespread showers and thunderstorms over much of Iowa's northwestern two-thirds overnight into the 2<sup>nd</sup>. Most stations received at least 0.25 inch with nearly 80 observing at least an inch and a statewide average of 0.66 inch. Very heavy rainfall was reported from slow-moving thunderstorms across a narrow band stretching from southwest to central Iowa; Truro (Madison County) measured 2.81 inches while two stations in Mills County, Hastings and Pacific Junction, collected 4.28 and 6.10 inches, respectively. Afternoon temperatures quickly rose into the mid to upper 80s over southeastern Iowa as a warm front lifted out of Missouri ahead of a strong low pressure center. As the low's attendant cold front slammed into the warm and unstable airmass, a line of strong to severe thunderstorms fired in central Iowa and quickly advanced east. Several storms became tornado-warned with two confirmed tornadoes near Iowa City (Johnson County) and Nichols (Muscatine County). The line exited eastern Iowa after sunset with thundershowers remaining in southeastern Iowa into Wednesday (3<sup>rd</sup>) morning. Nearly 150 stations measured an inch of rainfall with 20 stations at or above 2.00 inches from central to eastern Iowa; an observer in Prole (Warren County) recorded 2.01 inches while 3.28 inches was reported in Pella (Marion County). A vast majority of Iowa's stations reported measurable rainfall with a statewide average of 0.86 inch. Showers and a few rumbles of thunder were observed through the overnight hours into the 4<sup>th</sup> along both north and south state lines. Rain totals were generally under 0.30 inch where it fell, though Estherville (Emmett County) collected 0.55 inch with 0.80 inch in Russell (Lucas County).

A narrow line of thunderstorms along a cold front sped across eastern Iowa just as Independence Day fireworks lit the night sky for most Iowans; 7:00 am rain totals were highest over northern Iowa where most stations reported 0.25 to 0.75 inch; a handful of stations measured higher totals with 1.00 inch at Mount Auburn (Benton County) to 1.44 inches in Ringsted (Emmett County). Isolated severe storms fired in north-central Iowa in the late afternoon

hours of the 6<sup>th</sup> ahead of another boundary that would bring stronger storms to the southwest later in the night. Additional storms were observed in central to eastern Iowa near daybreak on the 7<sup>th</sup>. There were several pockets of heavier rainfall with 1.54 inches in Zearing (Story County) to 2.23 inches in Garwin (Tama County). Thunderstorms continued to fire in the afternoon with stronger storms forming in western and northern Iowa over the evening hours. The cells consolidated as they moved into central Iowa and then pushed east through the early morning hours of the 8<sup>th</sup>. There were several reports of severe straight line winds and large hail; Albion (Marshall County) registered a 69 mph gust while two-inch hail was observed in Sheldon (O'Brien County). More than half of Iowa's stations reporting rainfall had at least 0.30 inch with higher totals from north-central to southeast Iowa; Marshalltown (Marshall County) measured 1.61 inches with 2.01 inches at Bloomfield (Davis County).

An upper level low pressure center sitting over the Upper Midwest spun showers and thunderstorms into northern Iowa after midnight with further development later in the day on the 9<sup>th</sup>. Stronger storms formed along the Iowa-Missouri border into the evening where locally heavy downpours were observed. Slow moving thunderstorms persisted in east-central Iowa over the early hours of Wednesday (10<sup>th</sup>). Rain totals were highest in eastern and southwest Iowa with 1.20 inches in Creston (Union County) and 2.13 inches in Coralville (Johnson County). General rainfall amounts were in the 0.20 to 0.40 inch range with a statewide average of 0.23 inch. Spotty clouds developed in central to northeastern Iowa as a fast moving complex of thunderstorms, some severe, moved along the Iowa-Wisconsin border after sunset on the 13<sup>th</sup>. A secondary line moved over the same region with additional development in eastern Iowa early on the 14<sup>th</sup>. Several stations in northeastern Iowa observed rainfall with 0.50 inch in Dubuque (Dubuque County) and Elkader (Clayton County) to 0.98 inch at Guttenberg Lock and Dam (Clayton County). Showers pushed into western Iowa toward the evening of the 19<sup>th</sup> and spread into central Iowa over the next several hours. Light showers increased in coverage by daybreak on the 20<sup>th</sup> with unseasonably cool conditions under stratus clouds and rain. Rainfall eventually ended around sunset with general totals in the 0.10-0.30-inch range. Higher totals were found in pockets of northern and southwest Iowa; Hampton (Franklin County) collected 0.65 inch with a 1.58 inches reading in Underwood (Pottawattamie County).

Scattered thundershowers formed over the evening hours of the 21<sup>st</sup> in eastern Iowa before dissipating by midnight. Rain totals were under a few tenths of an inch, though Waterloo (Black Hawk County) observed 1.02 inches. On the 22<sup>nd</sup>, isolated pop-up thunderstorms fired in the afternoon across central and southern Iowa before diminishing with the loss of daytime heating. Rain amounts were at or above 0.50 inch at nearly 30 stations with 1.85 inches in Ames (Story County) to 2.13 inches in Lucas (Lucas County). Scattered thunderstorms re-fired along an existing outflow boundary from central to eastern Iowa through the afternoon hours of the 23<sup>rd</sup> with a secondary cluster later in the evening over northwestern Iowa. A new area of convection pushed into east-central Iowa around sunrise on the 24<sup>th</sup> before moving into Illinois by late morning. Rainfall totals were more widespread with a broad swath of 0.50-1.00 inch amounts from northwest to east-central Iowa; two stations, Swisher (Johnson County) and Central City (Linn County) registered 2.10 and 2.60 inches, respectively.

A complex of thunderstorms moved into central Iowa after sunset on the 28<sup>th</sup> and increased in coverage across southern and eastern Iowa through early morning on the 29<sup>th</sup>. Many of the storms were sluggish with moderate to heavy rainfall over swaths of central and southeastern Iowa; 15 stations collected at least 2.00 inches with 3.05 inches in Fairfield (Jefferson County) to 3.51 inches in Indianola (Warren County). Most stations receiving rainfall observed at least 0.50 inch with a statewide average of 0.81 inch. Thunderstorms entered northwestern Iowa just after midnight on the 30<sup>th</sup> and sped southeast. As this severe-warned complex exited southeastern Iowa mid-morning, a secondary squall line followed a nearly identical path, becoming severe-warned in west-central Iowa. Locally heavy rain and several reports of strong wind gusts were reported in central to southeastern Iowa; additional discrete thunderstorms formed behind the line, producing large hail from Ankeny (Polk County) to Pella. Stations along the axis of motion reported heavier totals above 0.75 inch with 1.00 inch in Storm Lake (Buena Vista) to 2.30 inches in Montrose (Lee County). Scattered overnight thunderstorms fired across central Iowa and slowly

pushed southeast as a narrow line developed behind the initial convection. Storm motion was again slow with ample moisture to produce heavy rainfall; flash flood warnings were issued across several southern counties. Rainfall amounts at 7:00 am on the 31<sup>st</sup> were high around Pella, where 5.86 inches was reported.

Notable Severe Weather: July 15<sup>th</sup>: Underneath the existing heat dome over the Midwest, afternoon temperatures rose into the upper 80s to mid 90s as 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.

US Drought Monitor (USDM): The remaining Abnormally Dry (D0) areas of Iowa, specifically in eastern Iowa, were removed by July 16<sup>th</sup> after an unseasonably wet stretch; this was the end of 219 consecutive weeks of D0. For the remainder of the month, Iowa was free from dryness or drought for the first time since May 5, 2020. On August 1, 2023 – more than a year ago, 100% of the state was rated in some form of dryness or drought, with 82 percent of Iowa in Moderate Drought (D1) or worse.

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# July 2024

## WEATHER BY DISTRICTS

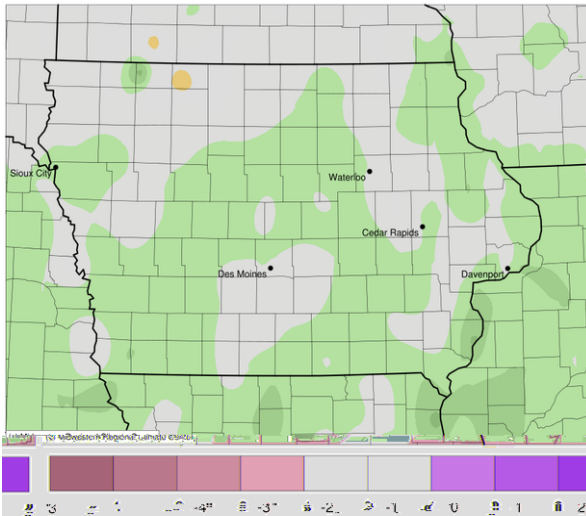
DISTRICT	TEMPERATURE (F)		COOLING DEGREE DAYS				PRECIPITATION (inches)			
	July 2024		July 2024		Since Jan., 1, 2024		July 2024		Since Jan. 1, 2024	
	Average	Departure*	Average	Departure*	Average	Departure*	Average	Departure*	Average	Departure*
Northwest	72.2	-0.5	238	-17	495	+17	3.05	-0.53	28.50	+9.35
North Central	71.0	-0.9	205	-28	451	+11	4.88	+0.53	30.17	+7.89
Northeast	70.6	-1.1	194	-33	421	+6	5.06	+0.38	28.39	+4.78
West Central	72.0	-1.6	234	-46	534	+5	3.37	-0.48	22.72	+2.20
Central	72.0	-1.4	231	-42	546	+25	6.59	+2.37	27.47	+5.04
East Central	72.3	-1.2	237	-35	574	+56	7.11	+2.79	27.77	+4.81
Southwest	73.4	-1.5	274	-43	644	+39	3.43	-0.76	22.51	+0.41
South Central	73.8	-1.0	283	-32	677	+90	5.51	+1.21	25.34	+2.39
Southeast	73.3	-1.6	267	-48	665	+63	7.21	+3.09	28.40	+5.05
STATE	72.2	-1.2	235	-37	549	+34	5.10	+0.93	26.89	+4.81

\* Departures are computed from 1991-2020 normals.

The weather data in this report are based upon information collected by the U. S. Dept. of Commerce, NOAA National Weather Service.

**Average Temperature (°F): Departure from 1991-2020 Normals**

July 01, 2024 to July 31, 2024



**Accumulated Precipitation (in)**

July 01, 2024 to July 31, 2024

