

IOWA MONTHLY WEATHER SUMMARY – JULY 2023

General Summary: Temperatures averaged 72.0 degrees or 1.4 degrees below normal while precipitation totaled 3.08 inches or 1.09 inches below normal. July 2023 ties 1945 as the 22nd coldest July in 151 years of statewide records; it also ties 1998 as the 50th driest. A colder July last occurred in 2014 and was the 5th coldest, while 2020 was drier.

Temperatures: Statewide average temperatures in July were near-normal across portions of eastern and southern Iowa with negative departures of up to three degrees in the northwest.

July's statewide average maximum temperature was 83.1 degrees, 0.8 degree below normal while the average minimum temperature was 60.8 degrees, 2.1 degrees below normal. Keokuk Lock and Dam (Lee County) reported the month's high temperature of 101 degrees on the 28th, 16 degrees above normal. Vinton (Benton County) reported the month's low temperature of 42 degrees on the 7th, 18 degrees below normal.

Cooling Degree Days: Home cooling requirements, as estimated by cooling degree day totals, averaged 16% less than last July and near the 1991-2020 climatological normal. Cooling degree day totals since January are running 3% less than last year at this time and 13% more than normal.

Precipitation: National Weather Service co-op stations in north-central Iowa reported comparatively large precipitation deficits, 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 0.79 inch in St. Ansgar (Mitchell County) to 7.34 inches in Burlington (Des Moines County).

Rain showers formed overnight into the morning of the 1st north of a low-pressure center pushing across Missouri. More thundershowers spread into northeastern Iowa and refired across the southwest through the day with moderate rainfall in south-central and southeastern Iowa. Sixteen stations measured at least an inch with more than half of the locations hitting at least 0.40 inch; Donnellson (Lee County) poured out 3.43 inches. Spotty thunderstorms, some severe warned, fired in northwestern Iowa later in the afternoon on the 3rd before dissipating after sunset. Another round formed after midnight in northeastern Iowa. Rain totals at 7:00 am on the 4th were above 0.50 inch at ten stations with Oelwein (Fayette County) observing 1.15 inches while Strawberry Point (Clayton County) measured 1.29 inches. Showers associated with an approaching low pressure system pushed into the northwest corner just before noon; as the low's attendant cold front moved over the Nebraska border, severe thunderstorms formed but lost strength over the next few hours as fireworks streaked across the sky. Widespread rain totals above 0.25 inch were reported in western Iowa with higher amounts ranging from 0.73 inch at Rock Rapids (Lyon County) to 2.26 inches in Mapleton (Monona County). Thunderstorms dissipated as the front moved through central Iowa into the 5th but refired stronger storms along the Iowa-Illinois border in the early afternoon; Burlington (Des Moines County) registered 0.79 inch while Salem (Henry County) collected 1.11 inches. Clouds increased over western Iowa close to sunrise on the 7th as another low-pressure center approached from Nebraska. A broad area of showers and thunderstorms developed and pushed across Iowa for the remainder of the day. Most of Iowa's stations reported measurable rainfall with widespread amounts in the 0.25 to 0.75-inch range in western and southern Iowa; peripheral stations measured a tenth or two with a statewide average of 0.23 inch. Burlington and Salem again received totals over an inch, registering 1.65 inches and 1.97 inches respectively. Light, variable winds developed through the afternoon of the 9th with a brilliant blue sky and daytime highs in the upper 70s and low 80s. Temperatures climbed into the upper 80s across northern Iowa as scattered severe

thunderstorms formed during the late afternoon hours and pushed east. A few more cells developed before midnight but diminished during the early hours of the 11th. A swath of stations across far northern Iowa picked up decent rainfall totals, ranging from 0.53 inch at Sanborn (O'Brien County) to 1.39 inches in Milford (Dickinson County). Clouds increased overnight ahead of a potent squall line rapidly forming over southern South Dakota and northeastern Nebraska. The line crossed into northwest Iowa around sunrise on the 12th as a secondary downstream wave intensified and sped through central Iowa. Both waves had large bowing segments with severe-warned thunderstorms, producing damaging straight-line wind gusts and a few weak tornadoes in Harrison and Pottawattamie counties. Torrential downpours were also observed as the now combined disturbance cleared eastern Iowa by noon. Event rain totals reported at 7:00 am on the 13th showed widespread and beneficial totals across most of Iowa with over 200 stations measuring at least an inch; 45 stations observed two inches or more with three stations in Boone County reporting between 4.00 and 4.55 inches. The statewide average rainfall from the system was 1.11 inches, producing the wettest 24-hour stretch of the growing season thus far. Isolated severe storms fired across northcentral Iowa later in the afternoon and persisted over northeastern Iowa into the next morning. Most stations in the northeast quadrant of Iowa received general totals in the 0.25 to 0.50 inch range with higher totals along the Iowa-Minnesota border; Lake Mills (Winnebago County) observed 1.00 inch while New Hampton (Chickasaw County) measured 2.16 inches. Another system brought showers through Iowa's western half into the afternoon with a stronger line of storms firing in eastern Iowa later in the evening. Some of the storms turned severe with 1.00-inch-sized hail near Monmouth (Jackson County) and higher intensity rainfall rates; Strawberry Point registered 0.51 inch with 1.84 inches in Monticello (Jones County).

Showers and scattered thunderstorms fired over the southwestern half of the state during the early morning hours on the 17th and 18th. The first wave of thunderstorms brought several reports of hail through southern Iowa with Malvern (Mills County) reporting up to 1.50-inch hailstones; one-inch hail was observed from Lorimor (Union County) to Oskaloosa (Mahaska County). There were also multiple narrow swaths of rainfall totals above 0.30 inch over southwestern Iowa with 0.32 inch in Council Bluffs (Pottawattamie County) to 0.85 inch in Missouri Valley (Harrison County). The second round of showers clipped the southwest corner with lighter rainfall totals at a handful of stations ranging from 0.06 inch in Lamoni (Decatur County) to 0.16 inch in Hastings (Mills County). Additional showers formed over the afternoon and evening hours of the 19th with totals at several stations under 0.10 inch. July 20th was the ideal day of the week with daytime highs in the upper 70s and low 80s under brilliant sapphire skies. Partly cloudy conditions were reported in central Iowa, though the sun broke out as the evening wore on. Winds were no stronger than a baby's breath into the 21st with lows in the upper 50s to mid-60s. Afternoon conditions were near seasonal with mid-level clouds transiting the sky. Daytime temperatures were a repeat of the previous day with puffy cumulus dotting the sky. Stars were visible for much of Iowa into Saturday (22nd) morning though foggy conditions developed in northwestern Iowa. Westerly winds and low to mid 80s were observed throughout the day as mostly sunny skies reigned. The week ended with isolated thunderstorms crossing the Minnesota border into northern Iowa through the evening hours, dissipating just southwest of Jack Creek in Emmet County; additional thunderstorms developed in eastern Iowa overnight into Sunday (23rd) with a pocket of heavier rainfall in Cedar County, though amounts quickly decreased towards the Weber neighborhood in western Coralville (Johnson County). Several counties in northeast Iowa also saw widespread totals in the 0.10 to 0.50-inch range.

Clouds increased over southwestern Iowa overnight into the 24th as a complex of strong thunderstorms, some severe-warned, moved southeast over the Iowa-Nebraska border. Some of the more intense thunderstorms produced heavier rainfall ranging from 0.40 inch in Logan (Harrison County) to 0.85 inch in Oakland (Pottawattamie County). Light showers pushed across southern Iowa through the day on the 25th with widespread, though light rainfall totals under a tenth of an inch at most stations. An isolated severe thunderstorm sped across northwestern Iowa early on the 26th producing golf-ball-sized hail from Sutherland (O'Brien County) to Fonda (Pocahontas County); Primghar (O'Brien County) and Sioux Rapids (Buena Vista County) measured 0.46 inch of rainfall from the

cell. Scattered thunderstorms also fired in northeastern Iowa after sunrise with several stations in Winneshiek County observing totals between 0.33 to 0.35 inch. An eastward-moving boundary produced showers and a few thunderstorms over Iowa's southern two-thirds overnight on the 27th. A small swath of west-central Iowa picked up totals in the 0.50 to 1.00-inch range with Sac City (Sac County) measuring 0.63 inch while Jefferson (Greene County) reported 1.03 inches. Under sunny skies, southwesterly winds and high dewpoints, severe storms fired rapidly in north-central Iowa through the evening hours on the 28th and transitioned to eastern Iowa. There were two weak tornadoes observed in Franklin and Jackson counties along with a wide swath of straight-line wind reports; numerous 90 to 95 mph gusts were registered around Cedar Rapids (Linn County). Of the stations reporting rainfall, most received at least 0.40 inch with 1.20 inches at Steamboat Rock (Hardin County) and 1.88 inches in Dubuque (Dubuque County).

US Drought Monitor (USDM): Drought conditions remained generally status quo across the state in July with some improvement in eastern Iowa. A large area of D2 (Severe Drought) that covered part or all of nearly 20 counties in eastern and northeastern Iowa has improved to D1 (Moderate Drought). D3 - Extreme Drought has been reduced from 5.5 to 4.2 percent of the state. At the end of July, 26 percent of the state was rated as D2 and 52% of the state was rated in D1 (Moderate Drought). Abnormally Dry (D0) conditions covered the remaining 18% of the state. Abnormal dryness or drought conditions have now been continuously present in Iowa for more than three years.

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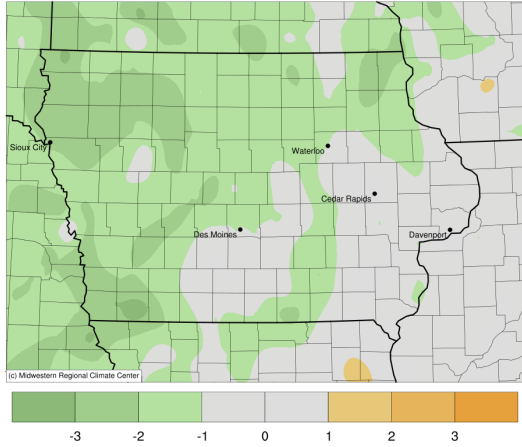
WEATHER BY DISTRICTS

DISTRICT	TEMPERATURE (F)		COOLING DEGREE DAYS				PRECIPITATION (inches)			
	July 2023 Average Departure*		July 2023 Average Departure*		Since Jan., 1, 2023 Average Departure*		July 2023 Average Departure*		Since Jan. 1, 2023 Average Departure*	
Northwest	70.6	-2.1	197	-58	516	+38	2.38	-1.20	15.94	-3.21
North Central	70.2	-1.7	186	-48	454	+13	2.20	-2.15	17.27	-5.00
Northeast	70.3	-1.4	187	-39	406	-7	3.68	-1.00	16.63	-6.98
West Central	71.7	-1.9	226	-54	552	+22	3.22	-0.63	15.48	-5.04
Central	71.9	-1.5	229	-44	522	+1	2.76	-1.46	16.85	-5.58
East Central	73.0	-0.5	257	-15	544	+25	3.11	-1.21	15.63	-7.33
Southwest	73.0	-1.9	263	-54	600	-5	4.09	-0.10	16.89	-5.21
South Central	73.8	-1.0	283	-31	602	+15	2.94	-1.36	15.55	-7.41
Southeast	74.0	-0.9	287	-28	594	-8	3.74	-0.38	16.83	-6.52
STATE	72.0	-1.4	235	-37	525	+10	3.08	-1.09	16.32	-5.75

* 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, 2023 to July 31, 2023



Accumulated Precipitation (in)
July 01, 2023 to July 31, 2023

