

## IOWA MONTHLY WEATHER SUMMARY – SEPTEMBER 2023

General Summary: Temperatures averaged 67.1 degrees or 3.4 degrees above normal while precipitation totaled 2.05 inches or 1.43 inches below normal. September 2023 ties 1906 as the 20<sup>th</sup> warmest on record with a warmer September last occurring in 2019. The month ties 1984 and 2013 the 31<sup>st</sup> driest September in 151 years of statewide records with a drier one occurring just last year.

Temperatures: All National Weather Service (NWS) co-op stations reported positive temperature departures in September. Conditions were warmer across northern Iowa where temperatures were up to six degrees warmer than the climatological average.

September's statewide average maximum temperature was 79.4 degrees, 4.0 degrees above normal, while the average minimum temperature was 54.8 degrees, 2.9 degrees above normal. Sioux City Airport (Woodbury County) observed the month's high temperature of 102 degrees on the 2<sup>nd</sup>, 22 degrees above normal. Mason City Airport (Cerro Gordo County) reported the month's low temperature of 36 degrees on the 13<sup>th</sup>, 14 degrees below normal.

Cooling Degree Days: Home air conditioning requirements, as estimated by cooling degree day totals, averaged 41% more than last September and 64% more than normal. Cooling degree day totals since January are running 1% more than last year at this time and 11% more than normal.

Precipitation: Iowa's preliminary statewide average precipitation totaled 2.10 inches, or 1.38 inches below normal. Widespread areas of 1.00 to 3.00-inch deficits were found across the state. Isolated pockets of wetter-than-normal conditions were found in central and northeastern Iowa. Monthly precipitation totals ranged from 0.57 inch in Rock Valley (Sioux County) to 6.87 inches in Waukon (Allamakee County).

A weak cold front brought scattered light showers to far southwestern Iowa overnight into the 5<sup>th</sup>, though totals varied from a trace at a handful of stations to 0.08 inch at Logan (Harrison County). A stronger complex of thundershowers formed in southeastern Iowa through the late morning hours before dissipating around noon. Rainfall totals ranged from 0.12 inch at Salem (Henry County) to 0.43 inch in Burlington (Des Moines County). Additional thunderstorms formed in northeastern Iowa just before midnight and into the early morning hours of the 6<sup>th</sup>, producing a county-wide swath of 0.25 to 0.75-inch totals from Black Hawk to Dubuque County; Stanley (Buchanan County) measured 0.26 inch while Manchester (Delaware County) collected 0.74 inch. Showers pushed across Iowa's southwest corner just after midnight on the 9<sup>th</sup> with general totals under 0.10 inch with Sidney (Fremont County) collecting 0.13 inch. Scattered showers pushed across northern Iowa through the day, dissipating into the evening hours; a more concentrated area of showers and a few thunderstorms crossed into northwestern Iowa early on the 10<sup>th</sup> ahead of a larger-scale weather disturbance. Measurable totals were observed at several stations with Mapleton (Monona County) hitting 0.23 inch while 0.32 inch was reported at Remsen (Plymouth County). Showers and some thunderstorms gradually expanded over Iowa through the afternoon, persisting overnight across Iowa's southeastern half through the late morning of the 11<sup>th</sup>, gradually dissipating by noon. The southern half of Iowa received general rain totals above 0.50 inch from the event with much of northern Iowa reporting a few tenths. Nearly 60 stations collected at least an inch as south-central counties experienced the highest totals, ranging from 2.04 inches at Allerton (Wayne County) to 2.25 inches in Mount Ayr (Ringgold County); the statewide average total was 0.59 inch. Light showers pushed into northwest Iowa after midnight on the 12<sup>th</sup> leaving Rock Rapids (Lyon County) with a 0.18-inch total before diminishing near daybreak. Scattered thunderstorms

formed later in the day over north-central to eastern Iowa. The storms fizzled out after sunset, leaving behind general amounts under 0.25 inch; higher totals ranged from 0.32 inch at Hopkinton (Delaware County) to 0.47 inch near Clinton (Clinton County).

Showers formed along a cold front into the daytime hours of the 15<sup>th</sup> with widespread totals reported over Iowa's northwest corner. Scattered thundershowers fired in south-central Iowa along with an isolated severe-warned evening storm in Sioux County; Orange City measured a 0.77-inch total with Rock Rapids reporting 0.90 inch. Totals outside of these higher amounts were a few tenths of an inch. A cluster of showers and thunderstorms pushed from central Iowa into the southeast corner through the afternoon of the 16<sup>th</sup> as a secondary complex fired along the Mississippi River in northeastern Iowa. Rathbun Dam (Appanoose County) observed 0.50 inch with Chariton (Lucas County) and DeWitt (Clinton County) reporting 1.08 and 1.62 inches, respectively. Showers and thunderstorms began to form across northwestern Iowa as a stationary front shifted into the state after sunset on the 18<sup>th</sup>. A more widespread shield of rain formed from central to eastern Iowa as more concentrated storms continued in west-central Iowa into the 19<sup>th</sup>. Stagnant thunderstorms with vivid lightning continued to redevelop over a broad swath of central Iowa into the evening hours with lighter showers farther east. Additional slow-moving storms developed along the Iowa-Nebraska border into the morning of the 20<sup>th</sup> before falling apart a few hours before sunrise. More than 50 stations reported at least an inch of rain through the event with the highest totals on either side of I-35; Jefferson (Greene County) measured 2.04 inches while 3.40 inches was reported in Bondurant (Polk County). Stations around the periphery reported widespread totals in the 0.30 to 0.50-inch range with a statewide average of 0.43 inch. Rain amounts were generally below 0.20 inch though stations in Fayette (Fayette County) and Atlantic (Cass County) collected 0.50 and 0.65 inch, respectively.

Daytime conditions on the 24<sup>th</sup> were partly to mostly cloudy over Iowa's eastern two-thirds as another complex of thunderstorms moved along the Iowa-South Dakota border later in the day; Sioux City Airport (Woodbury County) collected 1.92 inches. Rain showers pushed through southern Iowa into the 22<sup>nd</sup> with a more organized line of thunderstorms draped across northern Iowa. Stronger storms fired across northeastern Iowa into the evening hours, spinning up a weak tornado near Blainstown (Benton County). Heavy rain fell over the Exceptional Drought (D4) region, causing isolated flash flooding and beneficial rain totals; Decorah (Winnebago County) reported 3.44 inches while two stations in Chickasaw County observed 3.80 and 5.08 inches. A handful of stations in north-central Iowa also collected more than 200% of normal weekly rainfall. A strong cold front pushed through Iowa on the 23<sup>rd</sup>, producing multiple severe-warned storms and a strong bowing line across northern Iowa over the late afternoon and early evening hours. An additional narrow line moved into southern Iowa through midnight, though it did not have ample energy to stay together. Rain totals reported at 7:00 am on the 24<sup>th</sup> showed a wide swath of Iowa's northwestern half receiving at least 0.50 inch with the highest totals from 1.01 inches in Rockwell City (Calhoun County) to 1.72 inches in Webster City (Hamilton County). Thunderstorms formed in eastern Iowa after sunset but quickly dissipated by midnight; several stations in Dubuque County reported more than 0.50 inch with 0.56 inch near Dubuque to 2.40 inches in Peosta. Another wave of showers and thunderstorms associated with a cut-off low in Minnesota pushed into northern and eastern Iowa during the evening hours of the 25<sup>th</sup>; a more concentrated cluster re-fired in the northeast corner towards daybreak on the 26<sup>th</sup>. Scattered thundershowers continued on the backside of the low-pressure center for most of the day; showers and thunderstorms finally dissipated during the nighttime hours with rainfall total highest in the northeast. Decorah measured 1.05 inches while Waukon reported 3.93 inches. Almost 60 stations farther west observed at least 0.20 inch. Ample low-level moisture allowed dense fog to form before sunrise on the 27<sup>th</sup> before burning off as the sun heated the surface through late morning. Light and spotty showers dotted northeastern Iowa during the evening hours as winds shifted to the east; Waukon

recorded an additional 0.35 inch total. Gusty southerly winds pushed highs into the low to mid 90s in western Iowa on the 29<sup>th</sup> as low to mid 80s were observed east. Isolated severe-weathered thunderstorms fired in extreme northwestern Iowa, leaving behind 0.90 inch of rainfall in Sioux City.

US Drought Monitor: Timely rainfall in northeast Iowa in September helped to reduce the drought concern for that part of the state. While the large area of Exceptional Drought (D4) was removed, a smaller area remains for parts of Tama and Benton Counties. Significant drought concerns remain for those counties and the surrounding area. Without normal to above normal rainfall this fall, eastern Iowa in general, and those counties in particular, could face a Drought Warning or even Drought Emergency, per the *Iowa Drought Plan*. The fall months are a time of reduced water demand, which helps to alleviate some concerns. However, normal to above-normal rainfall and snow are needed in the fall and winter months to reduce the impacts of drought in 2024. Current drought conditions have resulted in several county burn bans, and there are reports of voluntary and mandatory water restrictions in a limited number of communities in Iowa. As of the first week of October, the breakdown of drought categories was as follows: Abnormally Dry (D0) – 4%, Moderate Drought (D1) – 28%, Severe Drought (D2) – 40%, Extreme Drought (D3) – 24% and Exceptional Drought (D4) – 3%.

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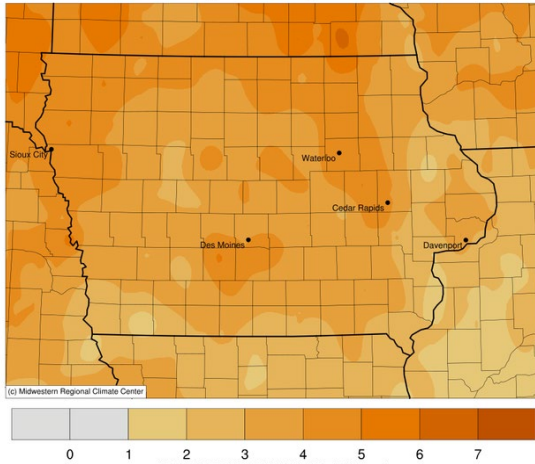
## WEATHER BY DISTRICTS

DISTRICT	TEMPERATURE (F)		COOLING DEGREE DAYS				PRECIPITATION (inches)			
	September 2023 Average Departure <sup>*</sup>		September 2023 Average Departure <sup>*</sup>		Since Jan., 1, 2023 Average Departure <sup>*</sup>		September 2023 Average Departure <sup>*</sup>		Since Jan. 1, 2023 Average Departure <sup>*</sup>	
Northwest	66.5	+4.0	116	+52	871	+141	1.67	-1.48	21.82	-4.18
North Central	66.2	+4.0	104	+49	787	+121	2.26	-1.11	21.91	-7.88
Northeast	65.8	+3.7	95	+45	715	+79	3.30	-0.49	21.31	-10.28
West Central	67.2	+3.4	127	+48	946	+118	2.36	-0.89	21.35	-6.68
Central	67.2	+3.4	123	+51	900	+92	1.88	-1.58	21.71	-8.45
East Central	67.4	+3.3	118	+47	905	+98	1.77	-1.88	19.36	-11.39
Southwest	67.9	+2.8	141	+41	1008	+43	1.50	-1.94	22.78	-6.92
South Central	68.6	+3.6	151	+55	1038	+97	1.88	-1.81	21.35	-9.49
Southeast	68.0	+2.6	134	+40	996	+39	1.54	-2.08	21.41	-9.61
STATE	67.1	+3.4	121	+47	895	+92	2.05	-1.43	21.43	-8.25

\* 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**  
September 01, 2023 to September 30, 2023



**Accumulated Precipitation (in)**  
September 01, 2023 to September 30, 2023

