



## IOWA MONTHLY WEATHER SUMMARY – AUGUST 2021

General Summary: Temperatures averaged 72.9 degrees or 1.9 degrees above normal while precipitation totaled 4.57 inches or 0.44 inch above normal. August 2021 ties 1957 as the 49<sup>th</sup> warmest August in 149 years of statewide records; it was also the 42<sup>nd</sup> wettest on record. August 2010 was warmer while 2018 was wetter.

Temperatures: August started with generally cooler than average conditions statewide. Temperatures began to increase through the month with the warmest temperatures occurring over the last week; the statewide average temperature was more than six degrees above normal. August's statewide average maximum temperature was 84.1 degrees, 2.4 degree above normal while the average minimum temperature was 61.6 degrees, 1.3 degree above normal. Multiple south-central stations observed the month's high temperature of 98 degrees on the 24<sup>th</sup>, on average 15 degrees above normal. Forest City and Webster City reported the month's low temperature of 45 degrees on the 14<sup>th</sup>, on average 14 degrees below normal.

Cooling Degree Days: Home cooling requirements, as estimated by cooling degree day totals, averaged 12% more than last August and 21% above normal. Cooling degree day totals since January are running 1% more than last year at this time and 15% more than normal.

Precipitation: August was the first summer month that brought above-normal precipitation to the state, providing significant relief to ongoing drought conditions. Much of the state's northern half reported above-average rainfall with many stations in north-central to northeastern Iowa measuring more than four inches more than normal. Multiple National Weather Service co-op stations in northern Iowa experienced their wettest August on record. Southern Iowa stations reported near to below-normal precipitation with the driest stations observing more than two-inch deficits.

Clouds increased from west to east as a low pressure center moved into western Iowa after midnight on the 5<sup>th</sup>, bringing a line of showers across the state during the early afternoon. An outflow boundary from thunderstorms in western Minnesota fired strong thunderstorms later in the day with locally heavy downpours in northwest Iowa; the line broadened and pushed southeast across western Iowa through the morning of the 6<sup>th</sup>. Additional showers and thunderstorms formed in southeastern Iowa. Rain totals for the previous 48 hours were highest in the northwest with a wide swath of totals above 0.50 inch and isolated pockets over an inch; Orange City (Sioux County) measured 1.00 inch while Holstein (Iowa County) reported 1.64 inches. Another thunderstorm complex skirting the Iowa-Minnesota border brought rainfall to northern Iowa and eastern Iowa through morning on the 7<sup>th</sup>. Totals ranged from 0.01 inch at Cedar Rapids (Linn County) to 0.91 inch at Sibley (Osceola County). Stronger thunderstorms fired in southwestern Iowa during late-night and into the 8<sup>th</sup> with another storm cluster forming in east-central and northeast Iowa before sunrise; heavy rain was observed at several stations with a narrow southwest-to-northeast band above 0.50 inch; four stations measured over two inches with Coon Rapids (Carroll County) reporting 2.10 inches while Grundy Center (Grundy County) observed 3.27 inches.

From late on the 8<sup>th</sup> into the 9<sup>th</sup>, numerous thunderstorms formed in northeastern Iowa with locally heavy downpours, creating some flash flooding. The National Weather Service co-op station in Ionia (Chickasaw County) reported an astounding 11.25 inches of rainfall at 7:00 am from a sluggish, high-intensity storm. Over 30 stations measured an inch or more with six in Chickasaw and Floyd counties reporting over four inches. Several strong to severe thunderstorms formed over eastern Iowa on the afternoon of the 10<sup>th</sup>, bringing high winds and heavy

rainfall; additional strong storms moved through southeastern Iowa late in the evening. Several stations reported more than an inch with a gauge near Central City (Linn County) collecting 3.24 inches.

Isolated thunderstorms formed across a few counties in extreme southeast Iowa early in the morning on the 11<sup>th</sup>, leading to downpours and roadway flooding; Burlington (Des Moines County) measured 2.66 inches. Winds began to shift to a northerly direction during the afternoon as a cold front dropped south into Iowa; a few stronger storms popped along the boundary in eastern Iowa. A severe-warned cell moved through Dubuque (Dubuque County) leaving behind 0.99 inch of rain. Muggy conditions greeted the opening of the Iowa State Fair on the 12<sup>th</sup> with slow-moving thunderstorms persisting over southeastern Iowa into the afternoon hours. Rain totals observed at 7:00 am on the 13<sup>th</sup> showed totals ranging from 0.01 inch at Mount Pleasant (Henry County) to 1.74 inches at Centerville (Appanoose County).

Light showers formed in western Iowa early on the 20<sup>th</sup> before dissipating through late morning. Southwesterly winds picked up into the afternoon as a cold front approached the state from the west. Humid conditions continued, which helped fire stronger thunderstorms in northwestern Iowa as the boundary entered the state. Some storms turned severe with a brief tornado reported near Sibley (Osceola County), causing some damage to trees and outbuildings. As the front swept across the state, measurable rainfall was observed at a majority of stations with general totals of a few tenths of an inch over the state's northern half. Numerous stations in north-central Iowa reported above 0.50 inch with nearly 30 stations measuring an inch or more. Pocahontas (Pocahontas County) reported 2.15 inches while Webster City (Hamilton County) observed 2.92 inches.

On the 22<sup>nd</sup>, an upper-level weather disturbance pushed through the state overnight into the very early morning hours of the 23<sup>rd</sup>, firing a line of thunderstorms from central Iowa into the northeast corner. The complex turned southeast and pushed out of eastern Iowa before noon leaving behind rain total above 0.50 inch for many stations in the northeast; over 20 stations reported an inch or more with Fayette (Fayette County) observing 1.90 inches. Tuesday, the 24<sup>th</sup>, began an active stretch of days as the first of several rounds of showers and thunderstorms impacted Iowa. A line of strong thunderstorms formed during the early afternoon over the state's northern half as an intense squall line developed in northeastern Iowa. Additional thunderstorms popped up in southwestern Iowa after midnight producing locally heavy downpours; thunderstorms reformed in southeastern Iowa as well. Rain totals reported on the 25<sup>th</sup> were highest in east-central Iowa with the northwestern stations missing a majority of the rain. Two Iowa County stations, North English and Williamsburg, measured 3.08 inches and 3.45 inches, respectively. Widespread totals of 0.25 inch to near an inch were observed.

A secondary complex of thunderstorms pushed over the Iowa-Nebraska border early on the 26<sup>th</sup>. The line expanded as it crossed Iowa through the afternoon. Two additional lines of thunderstorms popped up along a stationary front draped over northern Iowa later in the evening and through morning on the 27<sup>th</sup>. Heavy rain fell along the Iowa-Minnesota border with 80 stations measuring at least 1.00 inch; more than 30 stations reported 2.00 inches or greater with 6.50 inches observed near Ringsted (Emmet County). The statewide average rainfall was 0.74 inch. Storms continued to pop up over Highway 20 corridor into Saturday (28<sup>th</sup>) morning. The heaviest rain totals ranged from 2.00 inches at Spencer Municipal Airport (Clay County) to 8.74 inches in Elma (Howard County) with widespread totals above 1.50 inches near Waterloo (Linn County) to Mason City (Cerro Gordo County) and northeast; Iowa's southwestern half experienced dry conditions. Additional thunderstorms, some severe, pushed into northwestern Iowa ahead of a cold front during the late evening hours. Much of northern Iowa received more rainfall with higher totals in the northwest corner; Rock Valley (Sioux County) reported 1.01 inches while Sibley (Osceola County) measured 2.76 inches. Totals were generally above 0.50 inch from Mason City west.

Scattered thunderstorms began forming in northwestern Iowa during the evening hours before consolidating into an organized squall line before midnight on the 30<sup>th</sup>. The leading edge of the squall line raced over the Iowa-Missouri border by 3:00 am on the 31<sup>st</sup> as moderate rainfall filled in behind the line. Rain totals measured at 7:00 am were highest from central to southwestern Iowa where over 100 stations observed an inch or more. Multiple stations also reported above two inches, ranging from 2.04 inches near Anita (Cass County) to 3.45 inches in Mondamin (Harrison County).

Monthly precipitation totals ranged from 0.23 inches at Fairfield (Jefferson County) to 20.65 inches at Ionia (Chickasaw County). 11.25 inches of Ionia's total monthly rain fell over 24 hours ending on August 9<sup>th</sup>.

Severe Weather: August was the most active severe weather month of the summer with several days of strong to severe thunderstorms. The first event involved a discrete severe thunderstorm that popped up in northwestern Iowa during the early evening hours of the 8<sup>th</sup> and slowly moved into central Iowa overnight into the 9<sup>th</sup>. The storm had several tornado warnings associated with it. The next day, August 10<sup>th</sup>, was the first anniversary of the devastating derecho that impacted Iowa and became the costliest thunderstorm in United States history. Severe thunderstorms fired in eastern Iowa during the afternoon hours with multiple severe straight-line wind reports from Marion to Fayette counties with a cluster of 60-70 mph wind gusts around Cedar Rapids (Linn County).

On the 20<sup>th</sup>, atmospheric instability helped fire stronger thunderstorms in northwestern Iowa as a frontal boundary entered the state. Some storms turned severe with a brief tornado reported near Sibley (Osceola County), causing some damage to trees and outbuildings. Tuesday, the 24<sup>th</sup>, began an active weather pattern as an intense squall line developed in northeastern Iowa. Several storms turned severe into the evening hours with widespread reports of severe straight-line winds causing crop and isolated structural damage; 70 mph winds were observed from Hazelton (Buchanan County) to Dyersville (Dubuque County).

Unstable conditions in northeastern Iowa on the 27<sup>th</sup> fired supercell thunderstorms that produced two weak tornadoes near Clear Lake (Cerro Gordo) and Marble Rock (Floyd County) during the early evening hours; crop damage was reported along with spotty structural damage. Localized flash flooding also occurred as sluggish thunderstorms moved through northeastern Iowa. Embedded thunderstorms forming along a boundary turned severe as they pushed into west-central Iowa on the 30<sup>th</sup>. Golf ball-sized hail shredded crops in Ida County and there were multiple reports of tree and structural damage around the Des Moines metro area.

Summer Summary: Temperatures for the three summer months of June, July and August averaged 73.3 degrees, which is 1.9 degrees above normal. Precipitation totaled 11.97 inches or 1.59 inches below normal. This ties 1900 and 1947 as the 35<sup>th</sup> warmest summer on record. It also ranks as the 72<sup>nd</sup> driest summer in 149 years of records. A warmer and drier summer occurred just last year.

US Drought Monitor (USDM): August saw significant improvements in the US Drought Monitor depiction. As August began, seven percent of Iowa was experiencing Extreme Drought (D3) with an additional 27 percent of Iowa in Severe Drought (D2). After several rounds of beneficial rainfall, the area of Extreme Drought was eliminated by the end of August; the area of Severe Drought was reduced to under 13 percent. While the total area of the state covered by drought conditions remains above 70 percent, the severity of the drought conditions has been significantly reduced, especially over the last week.

The worst drought conditions in August peaked during the third week, with Extreme Drought covering 10.5 percent of Iowa, and Severe Drought covering another 25 percent of the state. At its greatest extent, during that same week, nearly 79 percent of the state was rated as being in some stage of abnormal dryness or drought. Improvements over the last week have seen the elimination of Extreme Drought and the reduction of Severe Drought coverage to less

than 13 percent of the state. The total area rated in some stage of abnormal dryness or drought is now below 72 percent, an improvement by more than seven percent in the last week.

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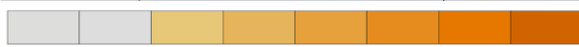
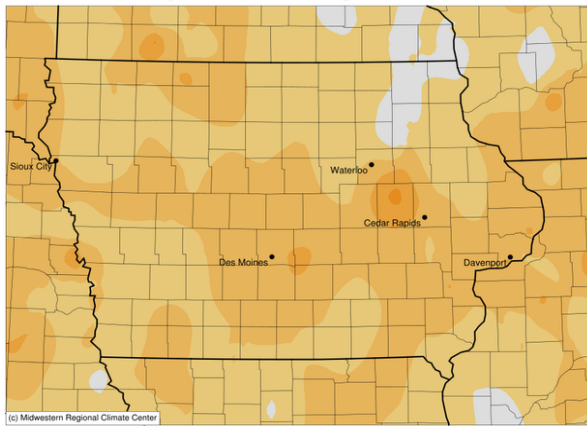
## WEATHER BY DISTRICTS

DISTRICT	TEMPERATURE (F)		COOLING DEGREE DAYS				PRECIPITATION (inches)			
	August 2021		August 2021		Since Jan., 1, 2021		August 2021		Since Jan. 1, 2021	
	Average	Departure*	Average	Departure*	Average	Departure*	Average	Departure*	Average	Departure*
Northwest	71.8	+1.8	228	+40	794	+128	5.02	+1.32	19.74	-3.11
North Central	70.8	+1.5	201	+30	742	+130	7.02	+2.87	21.64	-4.78
Northeast	70.7	+1.3	200	+27	712	+126	7.64	+3.45	21.83	-5.96
West Central	73.2	+2.1	268	+50	863	+115	4.13	-0.12	21.53	-3.25
Central	73.0	+2.0	261	+49	864	+131	4.19	-0.09	18.96	-7.75
East Central	73.3	+2.0	268	+50	842	+105	3.20	-0.94	21.13	-5.97
Southwest	74.8	+2.1	314	+54	947	+82	3.67	-0.50	24.12	-2.14
South Central	74.6	+1.9	308	+49	934	+89	2.41	-1.79	25.90	-1.25
Southeast	74.3	+1.5	298	+37	900	+37	2.99	-1.07	28.25	+0.84
STATE	72.9	+1.9	259	+45	841	+112	4.57	+0.44	22.27	-3.93

\* Departures are computed from 1991-2020 normals.

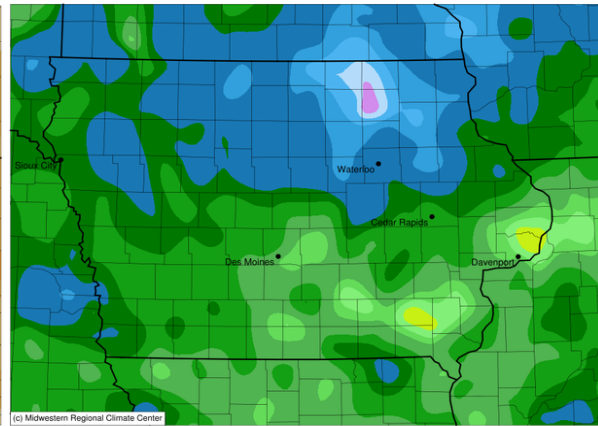
The weather data in this report are based upon information collected by the U. S. Dept. of Commerce, NOAA National Weather Service.

**Average Temperature (°F): Departure from 1991-2020 Normals**  
August 01, 2021 to August 31, 2021



Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI, Midwest Regional Climate Center  
cli-MATE: MRCC Application Tools Environment  
Generated at: 9/2/2021 9:35:38 AM CDT

**Accumulated Precipitation (in)**  
August 01, 2021 to August 31, 2021



Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI, Midwest Regional Climate Center  
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