



IOWA MONTHLY WEATHER SUMMARY – SEPTEMBER 2021

General Summary: Temperatures averaged 66.7 degrees or 3.0 degrees above normal while precipitation totaled 1.80 inches or 1.68 inches below normal. September 2021 ties with 1895, 1938 and 2017 as the 24th warmest on record with a warmer September last occurring in 2019. The month ranks as the 22nd driest September in 149 years of statewide records with a drier one last occurring in 2012.

Temperatures: Warmer than average temperatures blanketed the state during September with all National Weather Service (NWS) co-op stations reporting above average monthly temperatures. The warmest conditions were found across southern Iowa where positive departures approached four degrees. September's statewide average maximum temperature was 79.6 degrees, 4.2 degrees above normal, while the average minimum temperature was 53.8 degrees, 1.9 degrees above normal. Red Oak (Montgomery County) observed the month's high temperature of 95 degrees on the 28th, 21 degrees above normal. Atlantic (Cass County), Audubon (Audubon County) and Guthrie Center (Guthrie County) reported the month's low temperature of 32 degrees on the 25th, on average 14 degrees below normal.

Cooling Degree Days: Home air conditioning requirements, as estimated by cooling degree day totals, averaged 158% more than last September and 57% more than normal. Cooling degree day totals since January are running 9% more than last year at this time and 20% more than normal.

Precipitation: While widespread rain fell statewide, only the extreme northwest corner of Iowa reported above average totals. The driest conditions were found across portions of central, south-central and eastern Iowa, where precipitation departures approached three inches. Monthly precipitation totals ranged from 0.44 inch at Clutier (Tama County) to 4.87 inches at a CoCoRaHS gauge in Sioux Center (Sioux County).

A broad area of low pressure began propagating through northwestern Iowa late morning on the 2nd, bringing showers and a few thunderstorms over the area. A secondary wave of heavier showers and storms formed along the low's attendant cold front late into the evening and pushed over most of the state's western two-thirds by sunrise on the 3rd. Much of northern Iowa experienced rain totals of above 0.50 inch with several stations observing more than 1.50 inches; a station near Lake Park (Dickinson County) measured 2.10 inches while the statewide average was 0.49 inch. Very spotty showers popped up over northwestern Iowa but dissipated by the evening hours on the 5th; several stations reported very light rainfall with a trace observed near Eagle Grove (Wright County) to 0.22 inch at two gauges in Lyon County.

A slow-moving cold front continued to push across Iowa through the afternoon of the 12th, bringing scattered light rain showers to portions of Iowa. A line of heavier thundershowers formed over northeastern Iowa as the sluggish front approached the Iowa-Wisconsin border, leaving behind heavier rainfall. General totals reported at 7:00 am on the 13th ranged from 0.10 inch to 0.25 inch over much of Iowa's northwestern half with a pocket of measurements above 0.50 inch centered near Waterloo (Black Hawk County); Independence (Buchanan County) observed 0.92 inch. A low pressure center entered eastern Iowa around sunset, firing off stronger thunderstorms a few hours later; a severe-warned cell dropped 1.50-inch hail in Auburn (Sac County). Heavier showers also formed in northeastern Iowa as several stations reported a few tenths of an inch with Elkader (Clayton County) and Lake Mills (Winnebago County) both observing 0.33 inch.

On the 16th, a strong line of thunderstorms moved into northwestern Iowa along a cold front after midnight producing several reports of severe straight-line winds. The line weakened and continued across Iowa through the morning of the 17th before dissipating. An additional line of thundershowers popped up over extreme southeastern

Iowa later in the afternoon. More than half of Iowa's stations reported measurable rainfall below 0.20 inch with higher amounts in the northwest and southeast; Rockwell City (Calhoun County) measured 0.88 inch while Mount Pleasant (Henry County) reported 0.80 inch.

Clouds increased through the nighttime hours as a strong cold front entered northwestern Iowa during the early morning hours of the 20th. An initial line of showers formed and proceeded into central Iowa before dissipating as it moved into a drier atmosphere. With higher humidity and afternoon highs in the mid 80s in front of the boundary, a secondary line of thunderstorms fired in west-central Iowa and pushed across the state. Some of the thunderstorms became severe with several occurrences of straight-line winds producing tree damage. As the line filled in, widespread rain was reported at a majority of Iowa's stations with general totals above 0.30 inch. Almost 60 stations measured more than an inch with several stations in Des Moines County reporting over 2.00 inches; a gauge in Burlington observed 3.00 inches. Clouds began building up in northwestern Iowa during the late morning hours on the 24th as a cold front approached Iowa. Light rain showers formed along the front as it raced west to east, clearing eastern Iowa late in the evening. While the rain was widespread, totals were at or below 0.30 inch with a majority of stations reporting accumulations below 0.10 inch; Fort Dodge (Webster County) observed 0.24 inch while Lamoni (Decatur County) measured 0.30 inch.

A stationary front draped north to south in western Iowa was a focusing mechanism for isolated showers in the southwest corner early in the afternoon on the 29th. The first wave of showers and thunderstorms formed over the state's western half overnight into the 30th and persisted through the morning hours before dissipating in northwestern Iowa just after noon. A secondary wave formed later in the evening over the same region with rain totals for the event highest across western Iowa while much of eastern Iowa missed out. Nearly 100 stations reported an inch or more with 30 measuring above two inches; Atlantic (Cass County) reported 2.02 inches and Estherville (Emmet County) observed 3.21 inches with general totals across the region around 0.22 inch.

US Drought Monitor:

Drought conditions gradually degraded and expanded across Iowa through September. As of the first week of the month, 42% of Iowa was classified as experiencing D1 (Moderate Drought) to D2 (Severe Drought) with 19% of the state in D0 (Abnormally Dry) conditions. While widespread rain fell over much of the state, warm and unseasonably dry weather allowed D0-D2 conditions to spread into southern and eastern Iowa while above-normal rains eased dryness in the northwest corner. As of the first week of October, the breakdown of drought categories was as follows: D0 – 29%, D1 – 32% and D2 – 20%.

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September 2021

WEATHER BY DISTRICTS

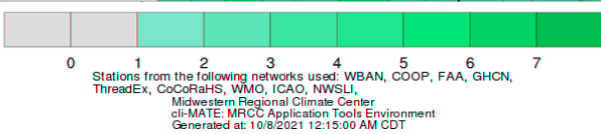
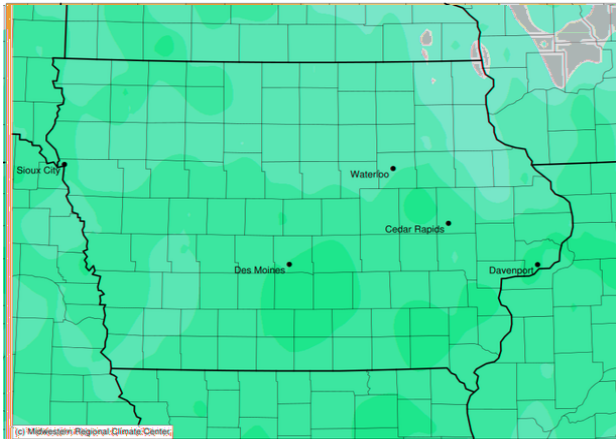
| DISTRICT | TEMPERATURE (F) | | COOLING DEGREE DAYS | | | | PRECIPITATION (inches) | | | |
|---------------|-----------------|------------|---------------------|------------|---------------------|------------|------------------------|------------|-------------------|------------|
| | September 2021 | | September 2021 | | Since Jan., 1, 2021 | | September 2021 | | Since Jan.1, 2021 | |
| | Average | Departure* | Average | Departure* | Average | Departure* | Average | Departure* | Average | Departure* |
| Northwest | 65.2 | +2.7 | 95 | +31 | 892 | +162 | 2.87 | -0.28 | 22.61 | -3.39 |
| North Central | 64.8 | +2.6 | 82 | +27 | 822 | +156 | 1.99 | -1.38 | 24.05 | -5.74 |
| Northeast | 64.2 | +2.1 | 71 | +21 | 780 | +144 | 1.90 | -1.89 | 23.67 | -7.92 |
| West Central | 66.8 | +3.0 | 120 | +41 | 983 | +156 | 2.03 | -1.22 | 23.58 | -4.45 |
| Central | 67.0 | +3.2 | 119 | +44 | 989 | +181 | 1.32 | -2.14 | 20.31 | -9.85 |
| East Central | 67.4 | +3.3 | 118 | +47 | 968 | +160 | 1.23 | -2.42 | 22.17 | -8.58 |
| Southwest | 68.4 | +3.3 | 150 | +50 | 1097 | +132 | 1.60 | -1.84 | 25.75 | -3.95 |
| South Central | 68.9 | +3.9 | 157 | +61 | 1091 | +150 | 1.09 | -2.60 | 27.44 | -3.40 |
| Southeast | 68.9 | +3.5 | 151 | +57 | 1061 | +104 | 1.95 | -1.67 | 30.05 | -0.97 |
| STATE | 66.7 | +3.0 | 116 | +42 | 960 | +157 | 1.80 | -1.68 | 24.13 | -5.55 |

* 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.

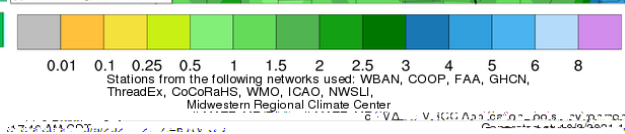
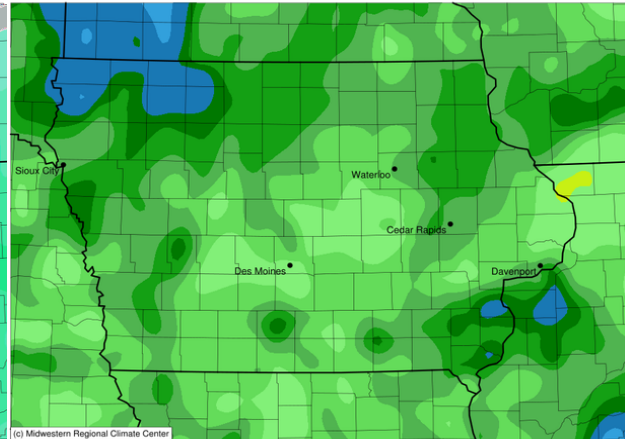
Average Temperature (°F): Departure from 1991-2020 Normals

September 01, 2021 to September 30, 2021



Accumulated Precipitation (in)

September 01, 2021 to September 30, 2021



Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI, Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at 10/8/2021 12:15:00 AM CDT

Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI, Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at 10/8/2021 12:15:00 AM CDT