IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP

Mike Naig
Secretary of Agriculture

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IOWA MONTHLY WEATHER SUMMARY – JUNE 2021

General Summary: Temperatures averaged 73.4 degrees or 3.5 degrees above normal while precipitation totaled 3.26 inches or 2.00 inches below normal. June 2021 ties 1963 as the 13th warmest; it was also the 28th driest June in 149 years of statewide records. A warmer June last occurred 1991, while a drier June last occurred in 2012.

Temperatures: The first half of June saw very warm temperatures across the Midwest with daytime high temperatures in the upper 80s and 90s along with sporadic triple-digit days; the first 16 days were the 7th warmest dating back 149 years. With a return of an active weather pattern, clouds and rain helped moderate temperatures during the month's second half.

June's statewide average maximum temperature was 85.5 degrees, 4.9 degrees above normal while the average minimum temperature was 61.2 degrees, 2.0 degrees above normal. Little Sioux (Harrison County) observed the month's high temperature of 104 degrees on the 17th, 20 degrees above normal. Belle Plaine (Benton County), Elkader (Clayton County) and Estherville Municipal Airport (Emmet County) reported the month's low temperature of 40 degrees on the 22nd, on average 20 degrees below normal.

Cooling Degree Days: Home cooling requirements, as estimated by cooling degree day totals, averaged 9% more than last June and 45% more than normal. Cooling degree day totals are running 13% more than last year at this time and 32% more than normal.

Precipitation: A majority of Iowa's National Weather Service co-op stations reported below-average totals during the month; pockets of three to four-inch deficits were reported from Des Moines (Polk County) to Waterloo (Black Hawk County) and into the state's northwest corner. Only stations in southern and eastern Iowa observed positive departures.

Light showers formed in southeastern Iowa early on the 1st, along with a line of thundershowers later in the day in northern Iowa, which produced heavier totals in Chickasaw County. Precipitation totals for the first week of June ranged from no accumulation at many Iowa stations to 0.53 inch near New Hampton (Chickasaw County); the statewide weekly average precipitation was 0.06 inch while the normal is 1.17 inches. The next shot of rain occurred on the 8th, as very spotty thundershowers popped up in eastern and southern Iowa with limited rain amounts, though some downpours were reported; a rain gauge in Camanche (Clinton County) observed 0.91 inch. Isolated showers and thunderstorms again formed in eastern and central Iowa during late afternoon of the 9th with three stations in Story County reporting between 0.53 inch and 0.87 inch. An organized system of thunderstorms called a mesoscale convective system (MCS) propagated into western Iowa during the morning of the 11th. Slow moving thunderstorms brought measurable rainfall to Iowa's western half with amounts above 0.50 inch reported at several stations, though most stations observed totals under a few tenths of an inch; Greenfield (Adair County) measured 1.20 inches from slower moving thunderstorms. Scattered thunderstorms also developed in eastern Iowa ahead of a cold front with very spotty accumulations.

Widely scattered thundershowers developed in western Iowa before sunrise on the 16th with stronger storms forming in northwestern Iowa during the late evening hours. Rain totals reported the next morning showed widespread rainfall across a swath of western Iowa with lighter totals east as showers and thunderstorms moved through central and southern Iowa; Anita (Cass County) reported 0.78 inch while Manning (Carroll County)

observed 0.96 inch with general accumulations of a few tenths of an inch at a majority of stations experiencing rain. A low pressure system propagating across northern Iowa produced stronger thunderstorms just before midnight and through the morning of the 18th. Additional showers formed during the day as the atmosphere over southern Iowa destabilized into the evening hours, partially due to afternoon temperatures reaching into the 80s under sunny skies and elevated dew points. Severe thunderstorms formed in this environment along with locally heavy downpours. Rain totals at 7:00 am on the 19th were heaviest near the Iowa-Missouri border with almost 30 stations measuring an inch or more; six stations in Davis County reported more than two inches with a gauge in Drakesville dumping out 3.54 inches. Another strong low pressure system pushed across Iowa overnight into the 20th, producing widespread and much-needed rainfall across most of Iowa with under 20 stations receiving no rain. The statewide average rainfall was 0.40 inch with Little Sioux (Harrison County) observing 2.10 inches; nearly 20 stations reported over an inch of water. As a cold front swept through Iowa, strong storms formed along the boundary producing widespread rainfall in northeast Iowa. Rain totals reported on the 21st indicated heavier rainfall from stronger thunderstorms between Waterloo and Dubuque (Dubuque County) with over 30 stations reporting above one inch; a gauge in Winthrop (Buchanan County) measured 2.40 inches.

As a warm front lifted across Iowa on the 22nd, thunderstorms formed during the evening hours from the northwest into central Iowa. Moderate rain fell over Iowa's central northwest to southeast one-third with totals above 0.50 inch at a majority of stations; Montezuma (Poweshiek County) measured 2.55 inches with the statewide precipitation averaging 0.43 inch. Widespread atmospheric instability on the 23rd helped force a line of thunderstorms across Iowa's southern two-thirds before pushing out of southeastern Iowa late morning on the 24th. In the presence of abundant atmospheric moisture, thunderstorms in southeastern Iowa produced rainfall rates between two to three inches per hour; Eldon (Wapello County) reported 7.21 inches with 32 stations observing over two inches. Showers and thunderstorms developed across Iowa's northern half during the afternoon of the 25th with heavy rain reported in the northeast. Storms pushed into western Iowa as another disturbance re-fired showers and thunderstorms across the state into the 26th. Widespread rainfall persisted in northern Iowa as a cold front swept through during the late afternoon hours, forcing isolated thunderstorms in eastern Iowa. Two-day rain totals reported at 7:00 am on the 27th were highest in northern Iowa with isolated measurements of two to four inches; Sac City (Sac County) observed 4.53 inches while Dakota City (Humboldt County) reported 3.29 inches with a statewide average at 0.64 inch.

Spotty showers and storms popped up over northern Iowa through the afternoon as a disturbance pushed into the region. Additional showers and thunderstorms formed in northwestern and southern Iowa into the evening, producing locally heavy totals with slower cells in southern Iowa. Morning rainfall totals on the 29th indicated isolated amounts above an inch at multiple stations and general totals below 0.50 inch; a Community Collaborative Rain, Hail and Snow Network (CoCoRaHS) observer in Bloomfield (Davis County) emptied 1.75 inches. Sluggish and very isolated thunderstorms popped from west-central Iowa into the northeast corner during the late afternoon and evening hours producing locally heavy downpours at a handful of stations; Perry (Dallas County) observed 1.78 inches while Monona (Allamakee County) reported 2.14 inches.

Monthly precipitation totals ranged from 0.84 inch in Lake Park (Dickinson County) to 12.96 inches at a CoCoRaHS network rain gauge near Harpers Ferry (Allamakee County).

Severe Weather: With a transition to a more active storm track after an extremely warm and dry first half of June, severe weather returned to Iowa on 16th as winds shifted to the south through the day; along with sunny skies, afternoon highs were boosted into the low 90s west to mid 80s east. Additional storms, some strong to severe, fired

in northwestern Iowa during the late evening hours producing hail and strong winds from Buena Vista County south to Audubon County. Severe thunderstorms formed in this environment with several large hail and straight-line wind reports south of Interstate 80; 2.50-inch diameter hail was reported near Lake Red Rock (Marion County) while severe straight-line winds flattened corn around Milton (Van Buren County). As temperatures rose into the low 80s with an unstable atmosphere, strong to severe storms formed ahead of a cold front. There were several reports of severe hail and high winds, though the story of the day was an EF-1 rated tornado that caused structural damage at a farm in Pella (Marion County). As a warm front lifted across Iowa, severe and discrete supercell thunderstorms formed during the evening hours on the 22nd from northwestern Iowa into central Iowa producing hail sizes ranging from pea to golf ball. Though narrow, the length of the hail damage swaths were relatively long, producing thousands of acres of shredded corn and defoliated soybeans. Within this unstable environment, a line of strong thunderstorms moved across Iowa's southern two-thirds before pushing out of southeastern Iowa late morning on the 24th. Partly to mostly sunny conditions persisted through early evening as a strong disturbance moved along the Iowa-Missouri border, bringing isolated severe storms in southwestern Iowa; a weak tornado was observed near Prescott (Adams County).

US Drought Monitor (USDM): With warmer and drier conditions building in during the first week of June and below average rainfall over the previous seven to 10 days, D1 (Moderate) drought conditions significantly expanded across the northern two-thirds of Iowa with additional D0 (Abnormally Dry) expansion into southern Iowa; only southeastern Iowa was free of abnormally dry and drought conditions. As of June 1, the breakdown of drought categories was as follows: D0 – 17%, D1 – 29%, D2 – 8%. Over the first three weeks of June, the USDM indicated worsening conditions across Iowa with D2 – Severe Drought, covering almost 44 percent of the state, up from only eight percent at the start of June. As of the end of the first week of June, 83 percent of Iowa is experiencing some degree of dryness or drought, with 37.9 percent of the state shown in D2. The D2 conditions have expanded from all or parts of 12 counties in northwest Iowa across nearly all of northern Iowa D2 conditions now cover all or parts of 45 counties.

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June 2021

WEATHER BY DISTRICTS

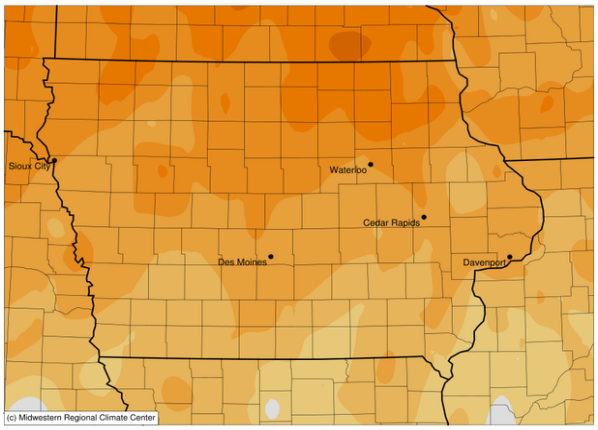
DISTRICT	TEMPERATURE (F)		COOLING DEGREE DAYS				PRECIPITATION (inches)			
	June 2021		June 2021		Since Jan., 1, 2021		June 2021		Since Jan.1, 2021	
	Average	Departure*	Average	Departure*	Average	Departure*	Average	Departure*	Average	Departure*
Northwest	73.4	+4.2	265	+95	303	+80	1.74	-3.10	10.81	-4.76
North Central	73.6	+4.8	270	+112	308	+100	2.23	-3.19	11.07	-6.85
Northeast	72.6	+4.4	241	+97	273	+86	3.09	-2.82	11.31	-7.62
West Central	73.5	+3.3	267	+79	318	+68	3.04	-1.92	13.51	-3.17
Central	73.7	+3.6	272	+87	326	+79	2.54	-2.88	11.53	-6.69
East Central	73.3	+3.1	259	+77	300	+53	3.90	-1.46	14.75	-3.89
Southwest	73.9	+2.7	277	+65	340	+52	3.89	-1.31	15.50	-2.41
South Central	73.3	+2.4	260	+59	317	+45	4.53	-0.59	16.02	-2.64
Southeast	73.0	+1.8	251	+43	304	+17	5.35	+0.22	19.73	+0.50
STATE	73.4	+3.5	262	+81	309	+66	3.26	-2.00	13.52	-4.38

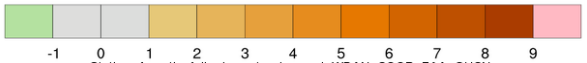
* Departures are computed from 1991-2020 normals.

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

June 01, 2021 to June 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
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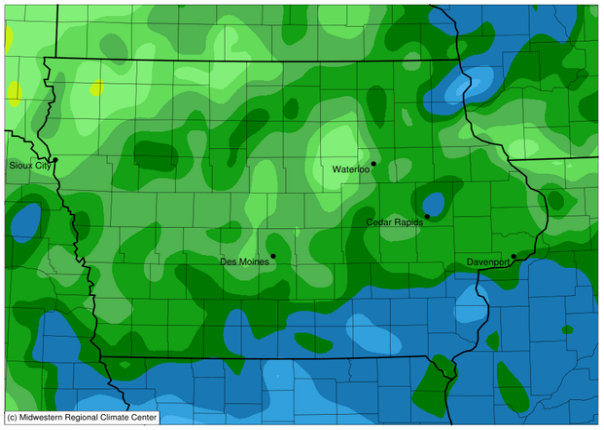
Accumulated Precipitation (in)

June 01, 2021 to June 30, 2021



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Midwestern Regional Climate Center
cli-MATE: MRCC Application Tools Environment
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