IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP

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IOWA MONTHLY WEATHER SUMMARY – JUNE 2023

General Summary: Temperatures averaged 71.3 degrees or 1.4 degrees above normal while precipitation totaled 2.80 inches or 2.46 inches below normal. June 2023 ties 1913, 1939 and 1994 as the 40th warmest and ranks as the 16th driest June in 151 years of statewide records. A warmer June occurred in 2022, while a drier June occurred in 2006, which was the 10th driest.

Temperatures: Average temperatures varied in June with near-normal conditions over portions of southern and eastern Iowa and temperatures up to three degrees above-normal in the northwest. June's statewide average maximum temperature was 83.8 degrees, 3.2 degrees above normal while the average minimum temperature was 58.9 degrees, 0.3 degree below normal. Washington (Washington County) reported the month's high temperature of 95 degrees on the 24th, 12 degrees above normal. Elkader (Clayton County) reported the month's low temperature of 35 degrees on the 12th, 20 degrees below normal.

Cooling Degree Days: Home cooling requirements, as estimated by cooling degree day totals, averaged 4% less than last June and 14% more than normal. Cooling degree day totals are running 4% less than last year at this time and 20% more than normal.

Precipitation: Most of Iowa's National Weather Service co-op stations reported below-average totals during June, especially in western and northeastern Iowa where pockets of three to four-inch deficits were observed. There were also several small pockets of above-normal amounts across various sections of the state.

Pockets of showers and thunderstorms formed from southwest to central Iowa into the morning of the 1st with afternoon heat producing scattered pop-up storms across the state several hours later. In the presence of ample low-level moisture and instability, afternoon thunderstorms again fired over much of Iowa. Most of the thunderstorm activity fizzled out around sunset with rain showers remaining in western Iowa. Rain totals over the previous 48 hours were above 0.30 inches at most stations receiving rainfall with Atlantic (Cass County) and Little Sioux (Harrison County) reporting 2.09 and 2.30 inches, respectively. Easterly flow pushed scattered thundershowers across northern Iowa during the afternoon hours of the 3rd; Rock Valley (Sioux County) reported 1.24 inches while Swea City (Kossuth County) picked up 1.45 inches.

Daytime temperatures on the 4th were in the low to mid 80s, helping scattered thunderstorms form across Iowa. The large-scale steering flow pushed these storms from east to west with cells becoming severe-warned in southeastern Iowa. As the sun set and the heating of the day was lost, the remaining thunderstorms dissipated. Rain totals reported at 7:00 am on the 5th showed widespread 0.10-0.20 inches with isolated pockets of heavier totals; Clare (Webster County) observed 0.53 inches while West Bend (Palo Alto County) measured 0.71 inches. Hit-or-miss thundershowers popped in western Iowa later in the day with Hastings (Mills County) and Sibley (Osceola County) observing 0.52 and 0.53-inch totals, respectively. Moderate rain showers streamed north to south in western Iowa through the afternoon of the 8th as skies cleared into the evening hours. Rainfall totals for the previous two days were beneficial for northwest Iowa where Estherville Municipal Airport (Emmet County) registered 2.50 inches while other nearby stations reported amounts nearing 1.00 to 1.50 inches. Totals tailed off farther south and east with many locations observing several tenths of an inch. A complex of thundershowers moved southeast along the Iowa-Nebraska border early on the 9th, bringing much-needed rainfall to western stations. Airports in Sioux City (Woodbury County) and Spencer (Clay County) measured 0.80 inches and 0.94 inches, respectively, with Spirit Lake (Dickinson County) observing 0.83 inches. Clouds increased through Saturday (10th) as a low-pressure center spun across Missouri. Scattered showers and thunderstorms spread over the state

later in the evening, bringing rainfall to many Iowa stations into the 11th; amounts were greatest in southwestern Iowa, where Oakland (Pottawattamie County) picked up 1.41 inches. General totals farther north and east were in the 0.10 to 0.30-inch range.

Scattered showers spun through eastern Iowa during the evening and continued into the 13th with amounts generally under 0.10 inches where rain was observed. Spotty thundershowers popped up just over the border in Nebraska with a few cells lingering in western Iowa before dissipating near sunset on the 16th. Thunderstorms formed in west-central Iowa in the late afternoon of the 17th and sped east over the next several hours. A few cells became severe-warned with a handful of large hail and high wind reports; Creston (Union County) observed a one-inch diameter hail with a 60-mph wind gust reported at the airport. The initial thunderstorms consolidated into a non-severe line with moderate to heavy rain falling across central Iowa. More than 25 stations observed at least an inch with seven stations reporting more than two inches; Boone (Boone County) measured 2.02 inches while Coon Rapids (Carroll County) observed 2.30 inches. Most of Iowa's stations reported rain with general amounts outside of central Iowa in the 0.20-0.75 inches range. Showers and thunderstorms spun across eastern Iowa through the afternoon of the 18th with mostly sunny conditions over the rest of the state. Locally heavier totals were reported in northeast Iowa, ranging from 2.23 inches in Independence (Buchanan County) to 2.43 inches near Decorah (Winneshiek County). General totals in eastern Iowa were in the 0.20 to 0.50-inch range.

Winds began shifting to a southerly direction as a low-pressure center approached Iowa on the 23rd. Daytime highs ranged from the low 90s in southeastern and central Iowa to the upper 80s north as relative humidity increased from southerly moisture transport. Cloud cover increased in western Iowa after midnight as a line of strong thunderstorms entered Iowa's northwest corner just before sunrise on the 24th. The initial complex had moderate to localized heavy rainfall across northern Iowa through midday before dissipating in eastern Iowa. Additional thunderstorms fired in central Iowa with multiple cells becoming severe-warned; the second wave of storms consolidated into a line as it moved east with more reports of severe straight-line winds. A third complex of thunderstorms formed in northwestern Iowa, persisting into the early hours of the 25th. A few of these thunderstorms breached the severe threshold with reports of hail and strong winds; an observer in Cylinder (Palo Alto County) reported a 3.00-inch hail. Another powerful storm near Maysville (Scott County) dropped a brief tornado that caused sporadic tree damage. Event totals were widespread with beneficial rainfall occurring at most stations, especially over Iowa's northern half; 55 stations measured at least an inch with more than half of the stations hitting the 0.50-inch mark. Observers in north-central and northeastern Iowa reported totals ranging from 2.00 inches in Ionia (Chickasaw County) to 2.75 inches in Zearing (Story County).

Scattered showers developed through the evening hours in western Iowa as a second wave formed after midnight on the 28th. A wider shield of rain spread from north-central into eastern Iowa after sunset before dissipating. Additional thundershowers popped up in southern Iowa over the late afternoon hours as smoky skies helped to hold temperatures in the lower 80s while northwestern stations registered upper 80s under clear skies. Totals were generally under 0.20 inches with isolated swaths near 0.50 inches in central Iowa. July 29th was active as morning severe storms in southwest Iowa consolidated into a squall line through southeastern Iowa. Severe straight-line winds were widespread with pockets of mature tree damage and flattened crops from Bedford (Taylor County) to Fort Madison (Lee County). The line was later determined to meet the threshold of a derecho, given the path length and width as it moved through Illinois and Indiana. Another wave of thunderstorms formed along the same line on the morning of the 30th, though with less intense activity and rainfall spreading farther north. Forty stations received above an inch from the two events, 15 of which measured more than 2.00 inches; Adair (Adair County) observed 2.00 inches while 3.26 inches fell at Lamoni Municipal Airport (Decatur County). Most stations across the southern three tiers of counties received at least 0.50 inches as totals approached 0.20-0.30 inches through central Iowa with a statewide average of 0.60 inches.

Monthly precipitation totals ranged from 0.55 inch in Clinton (Clinton County) to 6.27 inches in Ackworth (Warren County).

US Drought Monitor (USDM): During June, Iowa experienced continued intensification of drought conditions in the eastern and southeastern parts of the state. An area of Extreme Drought (D3) was introduced in Davis, Appanoose, and surrounding counties. Over the next two weeks, the area grew to include all or parts of nine counties. At the same time, Severe Drought (D2) covered western and eastern Iowa, with about 40% in this classification. Less than one percent of Iowa is now free from drought or Abnormal Dryness (D0). Abnormal dryness or drought conditions have now been continuously present in Iowa for more than three years. The last USDM to show no dryness or drought in the state was May 5, 2020. This is the longest continuous period of dryness or drought in Iowa since the start of the USDM in 2000.

As a result of moisture deficits, streamflow is down, and soil moisture profiles are depleted as well, the Iowa Drought Plan (IDP) now has Drought Regions 1, 3, 4, and 5 in "Drought Watch," with conditions across the entire state trending downward. For the first half of 2023, Iowa has received 83 percent of its expected precipitation. There are smaller areas within Drought Regions 4 and 5 which are nearing conditions of "Drought Warning", and that designation may emerge soon. The Seasonal Drought Outlook issued by the CPC, valid for July 1 through September 30, shows most of Iowa with a tendency for improvement or even removal of drought conditions.

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June 2023

WEATHER BY DISTRICTS

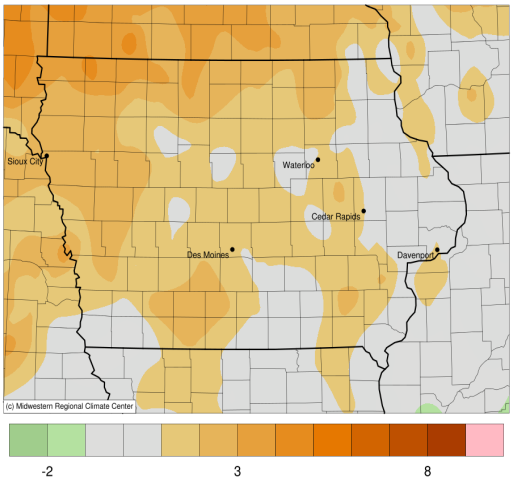
DISTRICT	TEMPERATURE (F)		COOLING DEGREE DAYS				PRECIPITATION (inches)			
	June 2023		June 2023		Since Jan., 1, 2023		June 2023		Since Jan.1, 2023	
	Average	Departure*	Average	Departure*	Average	Departure*	Average	Departure*	Average	Departure*
Northwest	72.0	+2.7	229	+59	322	+99	3.41	-1.43	13.43	-2.14
North Central	70.5	+1.7	192	+33	268	+60	3.20	-2.22	14.86	-3.06
Northeast	69.3	+1.1	162	+18	218	+31	2.43	-3.48	13.03	-5.90
West Central	71.9	+1.7	225	+37	320	+70	2.62	-2.34	12.25	-4.43
Central	71.0	+0.9	203	+18	293	+46	3.04	-2.38	13.93	-4.29
East Central	71.2	+1.0	204	+22	291	+45	2.34	-3.02	12.65	-5.99
Southwest	72.4	+1.2	238	+26	340	+52	3.04	-2.16	12.74	-5.17
South Central	72.6	+1.7	242	+41	335	+63	2.71	-2.41	12.47	-6.19
Southeast	71.6	+1.6	215	+7	302	+14	2.28	-2.85	13.06	-6.17
STATE	71.3	+1.4	206	+25	291	+48	2.80	-2.46	13.18	-4.72

* 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, 2023 to June 30, 2023



Accumulated Precipitation (in)

June 01, 2023 to June 30, 2023