



IOWA MONTHLY WEATHER SUMMARY – MAY 2023

General Summary: Temperatures averaged 62.8 degrees or 2.9 degrees above normal while precipitation totaled 2.54 inches or 2.30 inches below normal. May 2023 ties 1879 and 1959 as the 36th warmest and the 20th driest May in 151 years of statewide records. A warmer May occurred in 2018, which was also the 3rd warmest, while a drier May occurred in 2006.

Temperatures: Warmer than average temperatures were reported at National Weather Service's co-op stations across the state with the warmest readings in northwestern Iowa. Pockets of near-average temperatures were observed in the northeast and southeast corners.

May's statewide average maximum temperature was 75.7 degrees, 4.6 degrees above normal while the average minimum temperature was 49.8 degrees, 1.0 degree above normal. Dubuque Lock and Dam, Lowden and Spencer Municipal Airport reported the month's high temperature of 93 degrees on the 30th, while Waterloo Municipal Airport observed 93 degrees on the 31st; on average this reading is 16 degrees above normal. Chariton and Vinton reported the month's low temperature of 25 degrees on the 3rd, on average 16 degrees below normal.

Heating Degree Days: Home heating requirements, as estimated by heating degree day totals, averaged 11% less than last May and 26% less than normal. Heating degree day totals are running 1% less than last year at this time and 3% less than normal.

Precipitation: A vast majority of Iowa's National Weather Service co-op stations reported below-average totals during the month, especially in southern Iowa where swaths of three to four inch deficits were observed. Only small sections of northern and central Iowa measured above-average totals, though amounts were up to four inches above normal. Monthly precipitation totals ranged from 0.45 inch at a Community Collaborative Rain, Hail and Snow (CoCoRaHS) network rain gauge in Council Bluffs to 8.39 inches at a CoCoRaHS gauge in Fort Dodge. If you would like to be a CoCoRaHS observer or would like more information on the network, visit cocorahs.org.

Spotty thundershowers formed in extreme northwest Iowa later on the 4th with a more widespread shield of rainfall forming the next morning. The sluggish disturbance moved across central and eastern Iowa; a second band of stronger storms pushed through northern Iowa before sunrise on the 6th before fizzling out around noon. Rain totals were highest in west central Iowa where several stations measured at least an inch with widespread 0.25-0.50 inch totals over Iowa's middle west-to-east one-third; the statewide average rainfall was 0.40 inches. A few severe-warned cells fired in southwest Iowa before diving across the Missouri border. Additional severe thunderstorms formed several hours later and overnight into the 7th in southeastern Iowa. These storms brought locally heavy downpours along with hail and straight-line wind reports across Van Buren, Henry and Lee counties. Many stations in southeastern counties also measured totals from 0.40 inches at Columbus Junction (Louisa County) to 1.17 inches in Augusta (Lee County).

Scattered thunderstorms continued to move across northern and central Iowa afternoon with strong to severe storms firing towards the evening hours. Thunderstorms consolidated into a severe-warned line in eastern Iowa, fueled by highs in the upper 80s and low 90s and ample instability. A secondary line of severe thunderstorms formed in western Iowa and joined a complex in northeastern Iowa that dove through southeastern Iowa into the morning of the 8th. Widespread reports of large hail up to 2.75 inches and straight-line winds were found over the southern half of Iowa with a brief EF-1-rated tornado in Muscatine County. Stronger thunderstorms brought heavier rains with over 100 stations measuring an inch or more and a statewide average rainfall of 0.71 inch; ten stations observed at least 2.00 inches with 2.54 inches reported in Le Claire (Scott County). Isolated storms formed in northwestern Iowa and then, more broadly, across the Iowa-Minnesota border after midnight on the 11th. A separate wave of moderate rainfall propagated north over the state through the day. Rain totals were above 0.25 inch at most stations with a statewide average of 0.34 inch; early morning thunderstorms trained over Mitchell County produced a 4.83-inch reading at Osage.

A potent low-pressure center in Nebraska forced severe thunderstorms that pushed across the western border into the evening hours of the 12th, leaving behind multiple reports of strong winds and torrential downpours; 10 northwest stations measured more than two inches over several hours. A separate line of thunderstorms brought more rainfall to central Iowa early on the 13th. As a warm front lifted north through the day, unseasonable warmth, ample moisture and atmospheric wind shear popped discrete supercells in east-central and northwest Iowa. Several thunderstorms put down brief, multi-vortex tornadoes around Knoxville (Marion County) with more reports of weak tornadoes in Buena Vista, Calhoun and Pocahontas counties. Weak steering flow impeded normal storm motion with several slow-moving storms producing anomalous rainfall rates; two gauges in Pocahontas County, located in Varina and Havelock observed 4.62 inches and 4.95 inches, respectively. Statewide totals were highest over Iowa's northern one-third and a pocket of central Iowa with many stations reporting over 2.00 inches; widespread totals between 0.75 and 1.00 inches were also prevalent.

Showers with moderate rainfall continued across northeastern Iowa through the afternoon hours on the 14th; thirteen stations near the state's eastern border reported over an inch of rain with Elma (Howard County) observing 2.75 inches as totals tailed off rapidly farther west. A low pressure system spinning over Missouri brought additional showers to southwestern Iowa through the early morning hours on the 15th. Heavier rain was reported in slower moving cells, producing a pocket of 1.50 to 3.00-inch totals in Decatur County; Lamoni registered 2.75 inches with many southwestern stations that reported rainfall receiving at least 0.50 inch. Rain showers with a few rumbles of thunder developed in southwestern Iowa just before sunset on the 24th and slowly moved northwest. Additional isolated cells redeveloped the following morning along a localized boundary as a weak cold front dropped north to south through the state. Only 31 stations in western Iowa reported rainfall with six stations registering just a trace amount. Rain totals were generally under a tenth of an inch though higher totals ranged from 0.13 inch at a CoCoRaHS gauge in Atlantic (Cass County) to 0.40 and 0.42 inch-totals at two stations in Woodbury County.

A disturbance moving across the Dakotas produced isolated thunderstorms over northwestern and north-central Iowa late in the day and through the early morning hours of the 30th. Only a handful of stations observed rainfall totals above 0.10 inch though Mapleton (Monona County) measured 0.78 inch. Storms re-fired in western Iowa as temperatures pushed into the upper 80s with southerly flow. Many stations observed 0.25 to 0.50-inch totals with slower-moving thunderstorms dropping 3.13 inches and 3.66 inches at two stations in Fort Dodge (Webster County); 20 stations reported at least an inch. Wednesday (31st) morning lows remained in the 60s with light showers over northern Iowa. Afternoon thunderstorms popped up in northwestern Iowa with locally heavy rainfall and flash flooding in O'Brien County; Sheldon measured 1.34 inches with a half-inch total at Rock Rapids (Lyon County).

Spring Summary: Temperatures for the three spring months of March, April and May averaged 48.7 degrees, 0.4 degree above normal. This ties Spring 1970 as the 62nd warmest on record. Precipitation totaled 6.09 inches or 4.41 inches below normal. This spring ranks as the 16th driest in 151 years of observations; Spring 1994 was drier (6th driest) while 2021 was warmer.

USDM: During May, Iowa saw a rapid and widespread expansion of drought conditions, consistent with "Rapid Onset Drought" or flash drought. This generally refers to a rapid intensification of existing drought due to a combination of below-normal precipitation, unseasonably hot temperatures, low relative humidity and higher winds. Current conditions across the Corn Belt, including Iowa, have reached flash drought potential, particularly in the presence of warmth and a dry airmass. Surface and low-level evaporation is made worse by these conditions and can further dry out topsoil and shallow soil moisture, intensifying drought over a period of several weeks.

The Climate Prediction Center's (CPC's) 8-14 day US Hazards Outlooks shows the potential for rapid onset drought (flash drought) from central Iowa through the eastern Corn Belt and southern Michigan into the third week of June. Over the last month, the US Drought Monitor continued to show an expansion of dryness and drought in Iowa, with nearly all of the state in some form of designation. At the start of May, 75% of Iowa was rated at some level of dryness or drought. By the end of May, that area had grown to 92% of the state. The driest parts of Iowa continued to be the western and southeastern regions, although D4 (Exceptional Drought) was removed from Iowa in late May. The area of the state rated as D3 (Extreme Drought) is less than 1% across Woodbury and Monona counties in western Iowa. The area of D2 (Severe Drought) covers just over 7% of Iowa, while D1 (Moderate Drought) covers about 35% of the state. Abnormally Dry (D0) conditions cover more than half of the state.

This monthly report continues to reflect the implementation of the 2023 Iowa Drought Plan (IDP), which was developed as a collaborative effort between the Department of Natural Resources, the Department of Agriculture and Land Stewardship and the Department of Homeland Security and Emergency Management. The IDP uses precipitation, the Standardized Precipitation Index (SPI), a standardized streamflow index (SSI) and the USDM to establish drought levels for the state. Three out of four of these indicators can trigger a drought determination under the IDP.

Justin Glisan, Ph.D.
State Climatologist of Iowa
Iowa Dept. of Agriculture & Land Stewardship
Wallace State Office Bldg.
Des Moines, IA 50319
Telephone: (515) 281-8981
E-mail: Justin.Glisan@IowaAgriculture.gov

May 2023

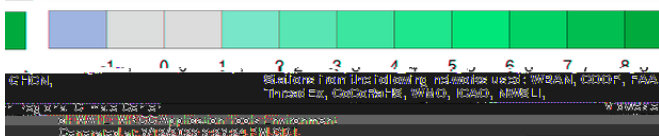
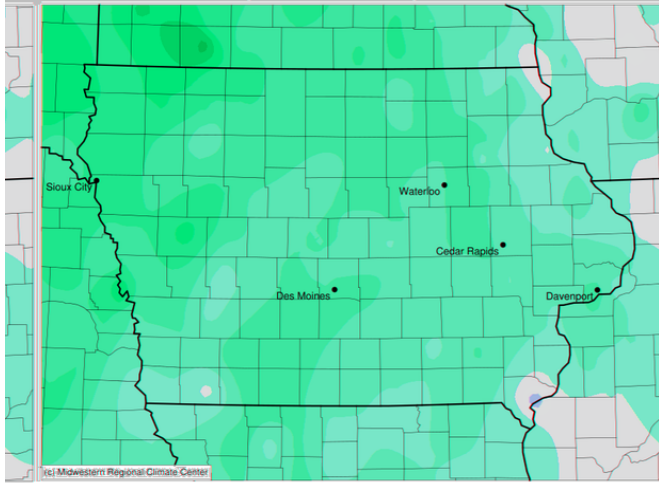
WEATHER BY DISTRICTS

DISTRICT	TEMPERATURE (F)		HEATING DEGREE DAYS				PRECIPITATION (inches)				SNOWFALL May 2023 Average
	May 2023 Average	Departure ¹	May 2023 Average	Departure ¹	Since Jul. 1, 2022 Average	Departure ¹	May 2023 Average	Departure ¹	Since Jan. 1, 2023 Average	Departure ¹	
Northwest	62.9	+4.1	158	-86	7548	+145	2.79	-1.48	9.50	-1.24	0.0
North Central	61.9	+3.4	174	-74	7415	-49	3.29	-1.59	11.49	-1.02	0.0
Northeast	60.6	+2.2	193	-54	7092	-238	2.33	-2.39	10.54	-2.47	0.0
West Central	63.5	+3.5	143	-70	6714	-106	2.65	-2.07	9.63	-2.09	0.0
Central	62.9	+2.8	153	-58	6641	-164	2.82	-2.14	10.70	-2.10	0.0
East Central	62.7	+2.1	154	-46	6292	-336	2.33	-2.29	10.35	-2.93	0.0
Southwest	63.8	+2.5	134	-49	6176	-86	1.84	-3.44	9.71	-3.00	0.0
South Central	63.6	+2.5	136	-51	6043	-196	2.38	-2.84	9.63	-3.91	0.0
Southeast	63.1	+1.4	146	-29	5912	-225	2.10	-3.02	10.78	-3.32	0.0
STATE	62.8	+2.9	156	-55	6601	-188	2.54	-2.30	10.26	-2.38	0.0

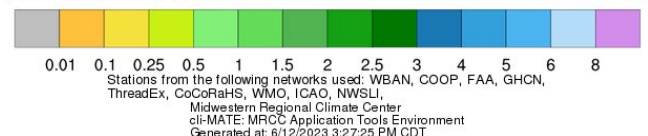
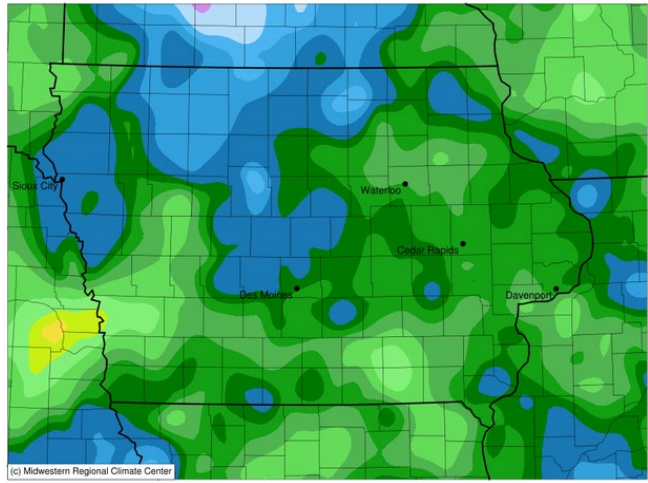
¹Departures are computed from 1991-2020 normals.

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 normal
May 01, 2023 to May 31, 2023



Accumulated Precipitation (in)
May 01, 2023 to May 31, 2023



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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