

IOWA MONTHLY WEATHER SUMMARY – JULY 2019

General Summary: Statewide temperatures averaged 75.1 degrees or 1.5 degrees above normal while precipitation totaled 3.38 inches or 1.12 inches less than normal. This ranks as the 51st warmest July, tying 1973. This was also the 64th driest July in 147 years of statewide records, tying 1893 and 2011. A warmer July was last recorded in 2012 and a drier one in 2017.

Temperatures: Seventeen days in July had temperatures above average across Iowa with two periods of extended warmth beginning with the month's first five days; temperatures were up to six degrees above normal on each day. The second period of unseasonable warmth occurred from the 12th through the 19th, culminating in a statewide heatwave over the last three days. Highs on the 18th rose into the 90s, creating uncomfortable conditions. Overnight lows remained in the 70s across the state with pockets of low 80s in southwestern Iowa. The average minimum statewide temperature was 74 degrees, 11 degrees above average. The 19th was sweltering across Iowa as highs climbed into the lower 90s north and middle 90s south. Dew point temperatures were also in the upper 70s and lower 80s. The combination of heat and humidity boosted heat indices into triple digits under clear skies; Le Mars Municipal Airport (Plymouth County) reported 120 degrees while Keokuk Municipal Airport (Lee County) observed 110 degrees. The statewide average temperature was 92 degrees, eight degrees above average. Out of the remaining 11 days of July, nine had statewide unseasonable coolness. The month's high temperature of 99 degrees was reported on the 19th in Little Sioux (Harrison County), 13 degrees above average. Cresco (Howard County) reported the month's low temperature of 48 degrees on the 31st, 11 degrees below average.

Cooling Degree Day Totals: Home air conditioning requirements, as estimated by cooling degree day totals, averaged 23% more than last July and 10% more than normal. Thus far this season, air conditioning requirements are running 24% less than at this time last year and 6% less than normal.

Precipitation: Much of Iowa experienced below average precipitation during July with eastern Iowa reporting deficits between two and four inches. Above average totals were reported along the Iowa-South Dakota and Iowa-Minnesota border. Precipitation totals for the month varied from 0.55 inches at Fort Madison (Lee County) to 8.17 inches in Rock Rapids (Lyon County)

Showers and thunderstorms skirted the Iowa-Minnesota border on July 1st ahead of a low pressure system in Nebraska. As the low moved east, a line of strong thunderstorms formed in northwestern Iowa. These slow-moving storms produced locally heavy downpours and flash flooding in some locations. Eleven stations reported totals above two inches with three stations above three inches; Orange City (Sioux County) reported 3.62 inches.

A stationary front draped across central Iowa continued to be a forcing mechanism for thunderstorms on the 2nd. Storms began popping up in the late afternoon and intensified into the evening as they moved into eastern Iowa. Rain totals were heaviest in west-central Iowa. July 3rd saw similar behavior over most of Iowa as thunderstorms popped up along the existing boundary, transitioning south and east as the day progressed. Locally heavy rain fell along isolated lines of stronger thunderstorms. Two-day rain totals were greatest across the central west-to-east third of Iowa with 66 stations reporting over

an inch; nine stations reported over three inches in central Iowa with a station in Boone County observing 5.13 inches. The statewide average rainfall was 0.51 inches, 0.19 inches above average.

Two waves of showers and thunderstorms moved across northern Iowa on Independence Day. Rainfall totals were in the general range of a quarter of an inch to over two inches. Cherokee (Cherokee County) reported 2.39 inches while Ionia (Chickasaw County) reported 2.11 inches. Another line of thunderstorms moved into northwestern Iowa during the morning hours on Friday (5th), though it quickly dissipated in the afternoon. Rain totals ranged from 0.13 inches in Spirit Lake (Dickinson County) to 0.91 inches in Sibley (Osceola County). Isolated storms re-fired in eastern Iowa in the evening with locally heavy accumulations. Multiple stations across northeastern Iowa reported rainfall above one inch with Waukon (Allamakee County) observing 2.56 inches.

Thunderstorms re-fired on the 9th ahead of a warm front and continued into eastern Iowa during the late evening. Rainfall totals at 7:00 am on the 10th were highest across northern and eastern Iowa with Rock Valley (Sioux County) reporting 1.35 inches. Moisture from the remains of Hurricane Barry helped thunderstorms form across Iowa's northern half around midnight on the 16th. The storms consolidated into a squall line that propagated from northwestern Iowa to the southeastern corner during the daytime hours on the 17th. A line of storms re-fired around midnight and extended into central Iowa early on the 18th. Much of Iowa received measurable rainfall over the 24-hour period ending at 7:00 am with multiple locations experiencing torrential downpours from stronger storms, especially across northern and south-central Iowa. Osage (Mitchell County) reported 2.60 inches while Rathbun Dam (Appanoose County) observed 1.98 inches.

Showers and a few thunderstorms moved through Iowa on the 25th leaving measurable rainfall across the state. The highest totals were reported across northern Iowa; Rock Valley (Sioux County) observed 0.23 inches while Forest City (Winnebago County) reported 0.46 inches. West-central Iowa also picked up totals between 0.16 inches at Mapleton (Monona County) to 0.30 inches in Denison (Crawford County). A cold front pushed through Iowa during the day on Sunday (28th) leaving behind measurable rainfall across the entire state with the heaviest amounts reported across the south and northeast. Over 40 stations reported totals at or above an inch with Clarinda (Page County) observing 2.75 inches while 2.08 inches was reported in Ackley (Butler County).

Thunderstorms continued to pop up and move over the same parts of western Iowa through the 31st before moving out of southeastern Iowa during late evening. Two-day rain totals reported at 7:00 am Thursday (August 1st) were highest in south-central Iowa with Atlantic (Cass County) observing 1.44 inches; Holstein (Ida County) and Corning (Adams County) reported 1.23 and 1.21 inches, respectively. General totals in Iowa's western half were between 0.25 inches to 1.00 inch.

Severe Weather: Severe weather was reported on eight days during the month. Thunderstorms fired along a warm front on the 9th during late morning and continued into eastern Iowa during the late evening. There were two reports of an isolated, weak tornado in Scott County; this was the only tornado reported during the month. Thunderstorms returned to Iowa on the 12th, some of which were severe. There were two reports of one inch hail at Hawarden and Maurice in Sioux County. The storms stayed in western Iowa and dissipated after sunset. A squall line that propagated from northwestern Iowa to the southeastern corner during the daytime hours on the 17th produced several reports of severe straight-line winds across nine counties in northwest and southeast Iowa; Harlan (Shelby County) and Mediapolis (Des Moines County) observed 70 mph wind gusts. The 20th was the last and most widespread active weather day of July with

severe straight-line winds reported across 29 counties as a system of strong thunderstorms moved through Iowa. A wind gust of 68 mph was reported at Knoxville (Marion County).

Drought: On July 23rd, Abnormally Dry (D0) conditions were introduced into Iowa for the first time since October 30th, 2018. Eleven counties in eastern Iowa and eight counties in southwestern Iowa had partial to full coverage representing 11.23% of the state. On July 30th, the eastern D0 regions expanded northwest into seven new counties and new region encompassing nine counties was introduced into central Iowa. With this expansion, D0 conditions now cover 23.48% of Iowa.

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