

## IOWA MONTHLY WEATHER SUMMARY – SEPTEMBER 2019

General Summary: Iowa temperatures averaged 68.2 degrees or 5.0 degrees above normal while rainfall totaled 6.21 inches or 2.83 inches above normal. This ranks as the 9<sup>th</sup> warmest September on record; a warmer September last occurred in 2015. This was also the 14<sup>th</sup> wettest September in 147 years of statewide records with a wetter September occurring last year.

Temperatures: Unseasonable warmth persisted across Iowa for 23 days in September. Departures from normal were in the range of four to six degrees above average. While daytime highs for the month were up to four degrees warmer than expected, statewide overnight lows were six to nine degrees above average. September 20<sup>th</sup> was the warmest day of the month with the statewide average high of 85 degrees, 11 degrees above normal. The coolest stretch of days during the month occurred from September 3<sup>rd</sup> through the 7<sup>th</sup> with an average temperature 3.3 degrees below average. The month's high temperature of 93 degrees was reported on the 15<sup>th</sup>, 17<sup>th</sup> and 18<sup>th</sup> at multiple stations in south-central Iowa. This reading was on average 17 degrees above normal. Estherville (Emmet County) reported the month's low temperature of 41 degrees on the 28<sup>th</sup>, two degrees below normal.

Cooling Degree Day Totals: Home air conditioning requirements, as estimated by cooling degree day totals, averaged 91% more than normal and 39% more than experienced during September 2018. Cooling degree day totals for the season are running 6% less than normal and 20% less than last year at this time.

Precipitation: With the exception of few stations, Iowa experienced above average precipitation during September with eastern Iowa reporting totals four to eight inches above average. Much of the remaining parts of Iowa were between one to three inches. Precipitation totals for the month varied from 2.44 inches at Sheldon (O'Brien County) to 13.99 inches at Dubuque #3 (Dubuque County).

Shortly after midnight on the 3<sup>rd</sup> thunderstorms formed in northeastern Iowa and quickly moved into Illinois. Additional showers and thunderstorms propagated through the state during the late morning and afternoon hours, bringing measurable rain across Iowa's northern half. The highest rain totals were reported in northeastern Iowa with Lansing and Waukon (Allamakee County) observing 1.53 inches and 1.34 inches, respectively. Thunderstorms formed in southern Iowa during the nighttime hours on September 7<sup>th</sup> and lingered into the next morning. Rainfall totals at 7:00 am were highest in southwestern Iowa with Shenandoah (Page County) reporting 2.56 inches; over ten stations reported totals above one inch.

Stronger thunderstorms popped up across central Iowa during the early morning hours of the 9<sup>th</sup> with locally heavy downpours reported at multiple stations; three stations in Ames (Story County) observed totals from 1.21 inches to 1.39 inches. The afternoon saw a continuation of the active conditions as thunderstorms moved from west-central Iowa northeast through the evening hours. Over 80 stations reported rainfall above one inch with multiple stations in northeastern Iowa observing over two inches. Rain totals ranged from 0.01 inch to 2.85 inches in Persia (Harrison County). Thunderstorms lingered into the 10<sup>th</sup> as an outflow boundary from northern storms moved west to east across Iowa. The storms

dissipated just after noon as partly sunny conditions prevailed. Isolated storms re-developed in eastern Iowa later in the evening on the 11<sup>th</sup> with some storms moving over the same region. Rain totals were in the range of 0.50 inch to an inch across northern Iowa with heavier totals in the northeast; Dubuque (Dubuque County) reported 3.70 inches.

September 12<sup>th</sup> was another dynamic weather day as a warm front lifted north across Iowa in the early morning hours with multiple lines of showers and thunderstorms. Rain totals at 7:00 am on the 13<sup>th</sup> ranged from 0.01 inch at multiple stations to 4.07 inches at St. Ansgar (Mitchell County). September 14<sup>th</sup> began with showers and thunderstorms across western Iowa that moved east through the early afternoon. Another wave of storms brought locally heavy rain totals to eastern Iowa with Muscatine (Muscatine County) observing 2.96 inches. These thunderstorms continued to exit southeast Iowa into the morning of the 15<sup>th</sup>.

Showers and thunderstorms started to pop up in northwestern Iowa just after midnight on the 18<sup>th</sup>. The narrow band of thunderstorms propagated through eastern Iowa during the afternoon and fell apart during the evening hours with isolated stronger storms popping up in east-central Iowa. A new complex of thunderstorms pushed into Iowa just before midnight. Two-day rain totals at 7:00 am on the 19<sup>th</sup> showed a vast majority of Iowa received measurable rainfall. The highest amounts were found in Iowa's northeastern quadrant with over 30 National Weather Service stations reporting over an inch; Osage (Mitchell County) observed 3.45 inches with the statewide average rainfall at 0.74 inch.

Another line of thunderstorms formed across northern and eastern Iowa early on the 20<sup>th</sup> and slowly moved east, dissipating near the Iowa-Illinois border after noon. Stronger thunderstorms ahead of a low pressure system moved into southwestern Iowa after 9:00 pm and expanded across much of the state's western half. Rain expanded into eastern Iowa through the early morning hours of the 22<sup>nd</sup>. Rain totals at 7:00 am were largest in southern Iowa with nine stations reporting 2.00 inches or more. Centerville and Rathbun Dam (Appanoose County) reported 3.60 inches and 2.71 inches, respectively.

A strong cold front moved through Iowa on the 24<sup>th</sup> leaving measurable rainfall statewide, generally in the range of 0.10 to 0.75. Higher amounts were observed in western Iowa with Atlantic Municipal Airport (Cass County) reporting 4.67 inches. Multiple waves of thunderstorms moved through eastern Iowa on the 27<sup>th</sup> with the first round moving through the southeastern counties during the morning and persisting into the morning of the 28<sup>th</sup>. Rain totals ranged from a few tenths of an inch at multiple stations to 3.83 inches in Burlington (Des Moines County). Showers and thunderstorms moved across much of the eastern half of Iowa into early on the 29<sup>th</sup> with over 20 stations reporting over an inch at 7:00 am; Lamoni Municipal Airport (Decatur County) observed 3.00 inches.

Severe Weather: There were multiple days in which severe weather was reported in Iowa during September with the first occurring on the afternoon of the 9<sup>th</sup> as a warm front lifted into central Iowa, creating unstable atmospheric conditions that helped force severe weather. A thunderstorm complex moved from west-central Iowa northeast through the evening hours. There were reports of severe straight-line winds across 22 counties with multiple observed wind gusts of 60 mph and a 70-mph wind gust in Colo (Story County). A warm front lifted north across Iowa in the early morning hours of the 12<sup>th</sup> with multiple lines of showers and thunderstorms. Strong storms began to fire in an unstable atmosphere during the afternoon as a cold

front swept west to east across the state. Thunderstorms became severe in northeastern Iowa during late afternoon with several reports of straight-line wind damage to trees. There was also a preliminary report of a weak tornado in Ossian (Winneshiek County).

Severe thunderstorms on the 14<sup>th</sup> produced multiple reports of pea to dime-sized hail across central Iowa. On the 24<sup>th</sup>, a strong cold front encountered unstable conditions producing discrete thunderstorms, some of which turned severe relatively fast. The individual cells eventually coalesced into a continuous band as the front propagated across Iowa. All modes of severe weather were reported with multiple reports of severe hail and straight-line winds; an observer in Holstein (Iowa County) reported 1.75 inch diameter hail. There were also preliminary reports of weak tornadoes in Harrison and Iowa counties.

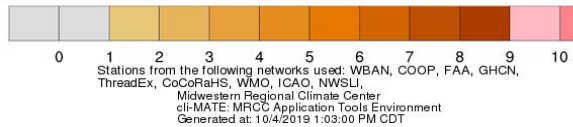
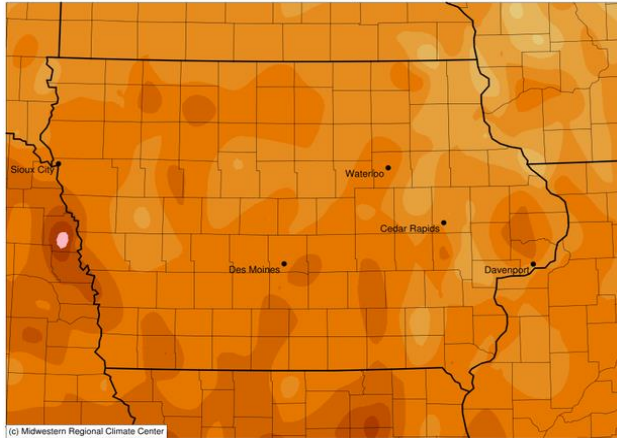
Drought: Abnormally Dry (D0) conditions peaked during the first week of September, covering 41% of the state. Moderate Drought (D1) conditions also covered the largest aerial extent at 12%, concentrating in central and eastern Iowa. As the rainfall totals increased across the state through the month, D0 conditions continued to shrink from west to east; D1 also followed this pattern and were completely removed during the week of September 24<sup>th</sup>. As of October 2<sup>nd</sup>, D0 conditions were completely removed from Iowa.

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| September 2019       |                                   |      |                                   |      |  |     |                                   |       |                                      |       |
|----------------------|-----------------------------------|------|-----------------------------------|------|--|-----|-----------------------------------|-------|--------------------------------------|-------|
| WEATHER BY DISTRICTS |                                   |      |                                   |      |  |     |                                   |       |                                      |       |
| DISTRICT             | TEMPERATURE (F)                   |      | COOLING DEGREE DAYS               |      |  |     | PRECIPITATION (inches)            |       |                                      |       |
|                      | September 2019 Average Departure* |      | September 2019 Average Departure* |      | Since Jan., 1, 2019 Average Departure* |     | September 2019 Average Departure* |       | Since Jan.1, 2019 Average Departure* |       |
|                      |                                   |      |                                   |      |  |     |                                   |       |                                      |       |
| Northwest            | 66.7                              | +4.9 | 119                               | +66  | 723                                    | +5  | 4.51                              | +1.28 | 31.33                                | +5.61 |
| North Central        | 66.5                              | +5.2 | 109                               | +64  | 678                                    | +14 | 5.39                              | +2.20 | 31.06                                | +2.23 |
| Northeast            | 66.0                              | +4.1 | 98                                | +57  | 665                                    | +40 | 7.79                              | +4.44 | 36.50                                | +6.59 |
| West Central         | 68.7                              | +5.6 | 154                               | +84  | 848                                    | +26 | 5.82                              | +2.66 | 29.12                                | +1.28 |
| Central              | 68.4                              | +5.3 | 144                               | +78  | 829                                    | +28 | 4.98                              | +1.66 | 31.65                                | +1.38 |
| East Central         | 68.6                              | +4.8 | 141                               | +80  | 876                                    | +80 | 7.43                              | +4.11 | 37.70                                | +8.07 |
| Southwest            | 70.4                              | +5.6 | 192                               | +102 | 1009                                   | +57 | 7.01                              | +3.60 | 34.15                                | +4.31 |
| South Central        | 70.3                              | +6.1 | 187                               | +100 | 977                                    | +47 | 6.29                              | +2.47 | 38.03                                | +6.81 |
| Southeast            | 69.8                              | +4.4 | 171                               | +85  | 975                                    | +17 | 7.44                              | +3.66 | 39.96                                | +8.76 |
| STATE                | 68.2                              | +5.0 | 142                               | +78  | 835                                    | +40 | 6.21                              | +2.83 | 34.08                                | +4.80 |

\* Departures are computed from 1981-2010 normals. Monthly estimates are preliminary and are likely to change.  
 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 1981-2010 Normals**  
 September 01, 2019 to September 30, 2019



**Accumulated Precipitation (in)**  
 September 01, 2019 to September 30, 2019

