IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP

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Secretary of Agriculture

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IOWA ANNUAL WEATHER SUMMARY – 2018

General Summary: Iowa temperatures averaged 47.5 degrees or 0.7 degrees below normal while precipitation totaled 45.08 inches or 9.81 inches more than normal. This ranks as the 51st coolest and 2nd wettest year on record. A colder year was last recorded in 2014 while a wetter (and wettest on record) occurred during the Great Flood year of 1993. This is the 26th snowiest calendar year among 131 years of records, tying with 1905 at 38.0 inches, 5.8 inches above average. A snowier year was last reported in 2013.

Temperatures: Iowa experienced some extremely variable temperatures during 2018. April was the coldest on record, as temperatures averaged 39.0 degrees, 10 degrees below normal. May's temperature behavior was the opposite of the previous month, with the average temperature across Iowa seven degrees above normal, making it the third warmest on record. Spring into early summer was generally near normal, until unseasonably warm conditions moved into the state during the 10th warmest June; temperatures were 3.3 degrees above climatology at 73.0 degrees. Fall was generally cooler than average with temperatures around 2.1 degrees below average. The end of 2018 was a temperature seesaw as November was 6.4 degrees below average and December was 5.1 above average. Annual temperature extremes varied from a high temperature of 102 degrees in Hawarden (Sioux County) on May 27th; this reading was 27 degrees above average. A frigid temperature of -28 degrees was the lowest reading of the year and occurred on January 2nd in Battle Creek (Ida County), Sheldon (O'Brien County), Sioux City (Woodbury County), Washta (Cherokee County) and Webster City (Hamilton County).

Precipitation: January and February were generally wetter than average with only southwestern Iowa experiencing minor precipitation deficits. Spring was drier than normal as the statewide precipitation deficit was 1.67 inches below normal, on the heels of the 13th driest April on record. During the summer months, statewide rainfall totals were above average, especially northern Iowa. June and August recorded unseasonably wet conditions and ranked as the 10th and 12th wettest, respectively. Fall was extremely wet across Iowa, ranking as the 3rd wettest with 14.48 inches of precipitation, 6.48 inches above normal; September and October were the 3rd and 12th wettest on record, respectively. These very wet conditions helped significantly in south-central and southeastern Iowa, where drought and abnormally dry conditions were removed. Wet conditions statewide also significantly slowed harvest and field work. Annual precipitation totals varied from a record 67.42 inches at New Hampton (Chickasaw County), 22.52 inches above normal to 27.60 inches at Spencer (Clay County), 1.91 inches less than normal. Above normal annual precipitation totals were reported across a majority of the state, especially the northern third of Iowa; northeast Iowa averaged 18.61 inches above normal. Preliminary estimates have 27 northern counties breaking their annual precipitation records. The driest part of the state was located in the southeastern corner of Iowa, though the wet autumn significantly improved the anomalously dry conditions. Notable heavy rain events occurred on a few occasions during the summer of 2018. Central Iowa experienced extremely heavy rainfall over a 24-hour period ending 7:00 am on July 1st. Multiple stations in Polk County reported six to eight inches of rainfall over a three hour period. Stations in western Iowa reported heavy rain for the period ending at 7:00 am on August 20th. Logan (Harrison County)

reported 7.1 inches of rain, over 21% of its expected annual precipitation. A blizzard the weekend after Thanksgiving (November 25th – 26th) brought moderate to heavy snow across the southern half of Iowa, where record high snow totals were reported for the month. Oskaloosa (Mahaska County) reported the greatest accumulation at 18 inches. The table below highlights the National Weather Service coop stations breaking their all-time annual precipitation records.

Station Name	2018 Precipitation Total [inches]	Previous Record Total [inches]	Previous Record Year	Period of Record [years]
Charles City	61.37	58.49	2016	121
Elkader 6 SSW	54.64	50.01	1902	107
Guttenberg L and D 10	56.39	46.41	2008	78
Hampton	54.77	48.55	2010	104
Lake Mills	53.74	50.96	2016	60
Mason City	55.1	46.09	1991	115
Mason City Municipal Airport	50.01	47.75	2016	75
Milford 4 NW	51.37	46.92	1993	83
New Hampton	67.42	56.17	2016	116
Pocahontas	52.29	43.98	1991	103
Primghar	48.11	42.49	1951	78
Rock Rapids	45.34	41.69	1944	115
Rock Valley	51.29	40.96	2010	39
Sanborn	54.39	46.02	1951	101
Sheldon	50.12	46.02	1951	101
Sibley	53.77	47.83	1979	104
Sioux Center 2 SE	47.61	42.96	2010	101
Sioux Rapids 4 E	46.55	43.25	1993	73
Tripoli	64.31	51.03	1951	66
Waucoma 1WNW	59.73	51.01	2016	53

Severe Weather: The 2018 severe weather season began on April 13th with a long, narrow swath of severe hail and straight-line wind reports from the southwest to northeast corners of Iowa. May 29th was the most active day of the month with 35 severe weather reports; multiple severe straight-line wind events were observed in western Iowa. June was active with 18 days of severe weather reports, mostly occurring on the 6th (23 counties) and the 20th (19 counties). An extensive tornado outbreak occurred on July 19th with at least 12 confirmed tornadoes. Marshalltown (Marshall County) and Pella (Marion County) received direct hits from EF-3 rated tornadoes, with wind gusts estimated at 144 mph. Bondurant (Polk County) was hit with an EF-2 rated tornado, with estimated winds at 115 mph. No strong tornadoes (EF-2 or above) occurred in the state for the rest of 2018. There was another widespread severe weather outbreak on August 28th with 26 counties reporting either severe hail or straight-line winds. Hail reports were mostly confined to northern Iowa; Garner (Hancock County) reported 3 inch diameter hail. September and October were active in terms of weak tornadoes with over 20 reported across the state causing mainly minor structural damage, crop and tree damage.

Drought: The year began with abnormally dry (D0) and moderate drought (D1) conditions covering 71% of Iowa, around 63% of that being D0. These conditions eased somewhat as Iowa entered the growing season with the majority of D0 – D1 conditions confined to the southern third of Iowa. As of the end of April, moderate drought covered 7.45% of southern Iowa; abnormally dry conditions covered 12.46%. A relatively warm and dry May through July across southern Iowa increased drought conditions, especially in southeastern Iowa, where severe drought (D2) was introduced on July 12th from Appanoose, Davis,

Wapello, Van Buren and Lee counties. The period from mid-July through mid-August saw the most significant deterioration of conditions in southern Iowa as a small area (~1.0%) of Davis County was classified as extreme drought (D3). This was the first introduction of D3 since November 2013. Drought peaked in Iowa on August 21st with D0 – D3 conditions covering 31% of Iowa. The D3 region expanded to completely cover Davis County and sections of Wayne, Appanoose, Monroe, Wapello and Van Buren counties. This was the largest extent of D3 conditions in Iowa since April 2013, though not a significant as the Drought of 2012. An extremely wet September and October led to significant improvement in conditions in southern Iowa with one category improvements through late October; D1 conditions were completely removed from Wayne, Appanoose and Davis counties on October 16th, leaving only 1.47% abnormally dry conditions. After continued wetter-than-average conditions statewide, abnormal dryness was removed on November 6th; this was the first time since May 30th, 2017 that Iowa was without drought and abnormal dryness. These conditions continued into 2019.

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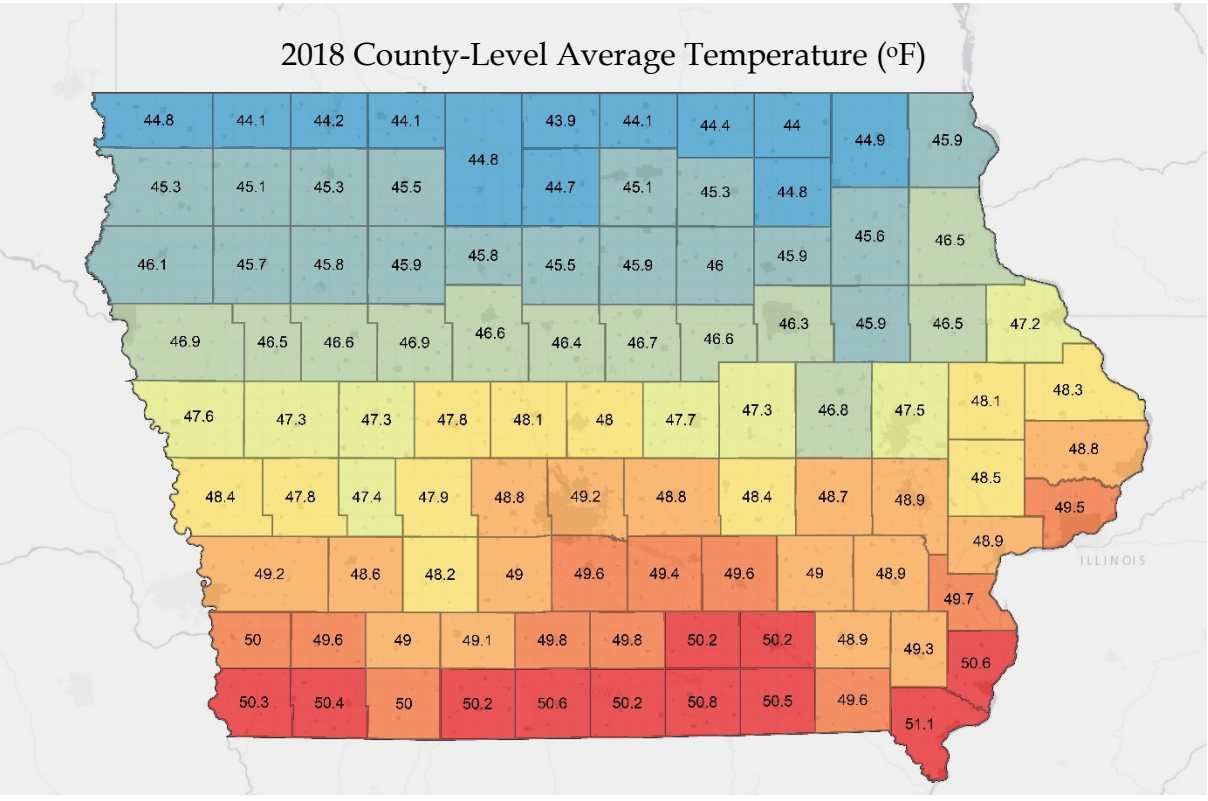
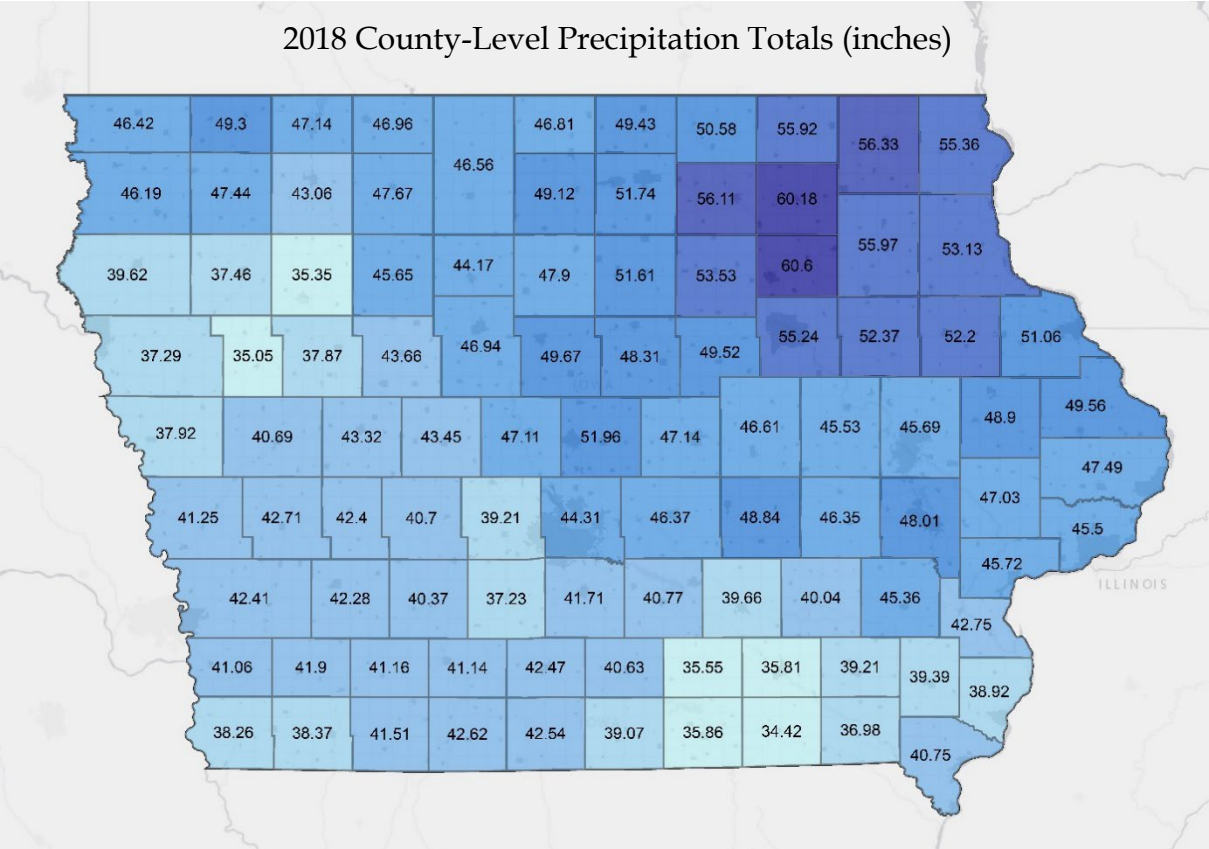
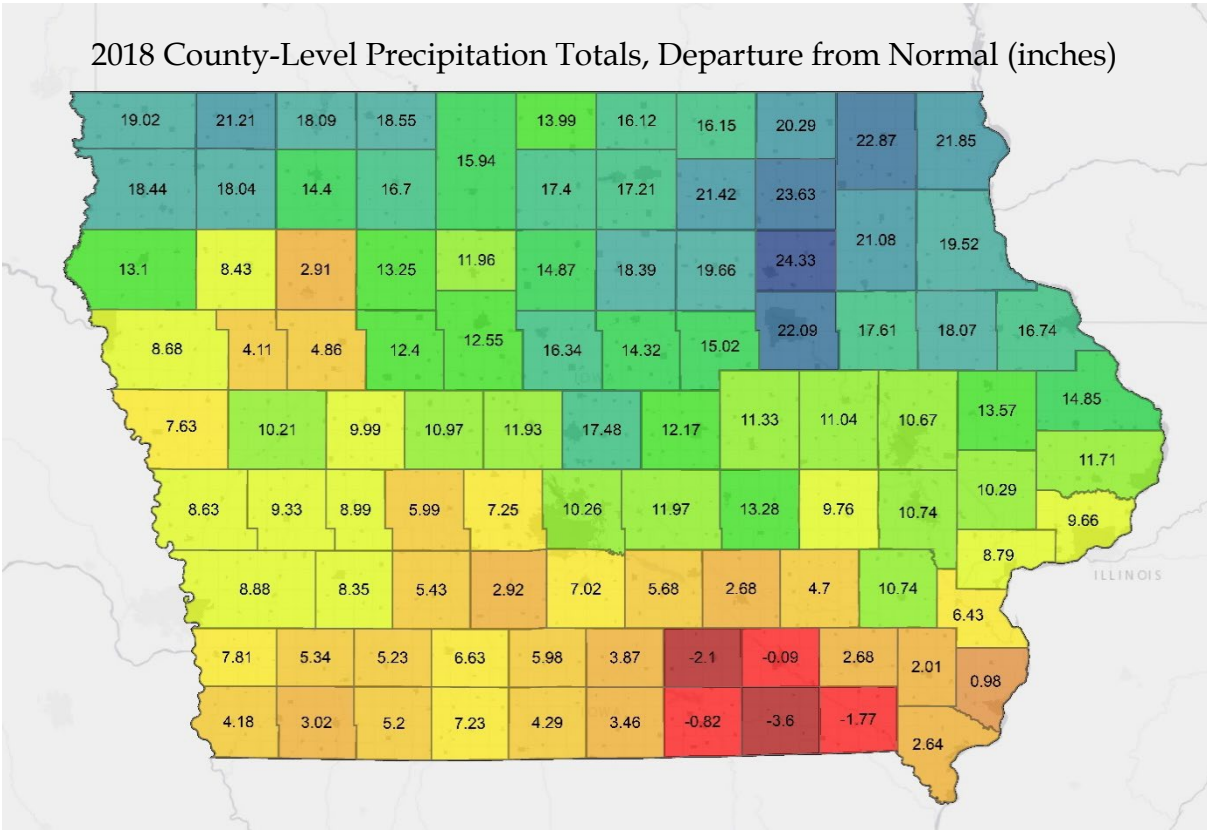


2018 County-Level Precipitation Totals (inches)



2018 County-Level Precipitation Totals, Departure from Normal (inches)



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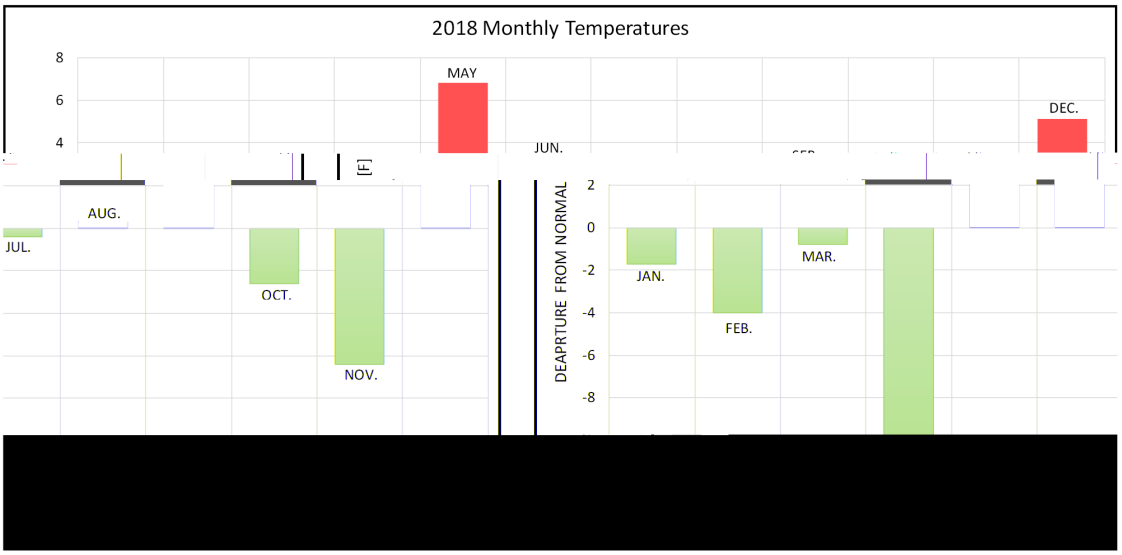

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2018 Statewide Monthly Temperature Extremes							Statewide Monthly Rank*	
Month	Max. Temp.	Day	Location	Min. Temp.	Day	Location	Temperature	Precipitation
January	60	26th	Keosauqua Ottumwa	-28	2nd	Battle Creek Sheldon Sioux City Washta Webster City	73rd warmest	58th wettest
February	70	27th	Lamoni	-18	6th	Cresco Webster City	65th coldest	23rd wettest
March	67	14th	Clarinda Red Oak Shenandoah	4	8th	Cresco	66th coldest	39th wettest
April	85	14th	Sidney	2	4th	Primghar	1st coldest	13th driest
May	102	27th	Hawarden	37	12th	Postville	3rd warmest	43rd wettest
June	98	1st	Osceola	45	4th	Chariton	10th warmest	10th wettest
July	99	12th	Centerville	48	27th 28th	Sheldon Stanely Waukon	50th coldest	56 driest
August	98	5th	Centervillle Osceola	45	29th	Sheldon	49th warmest	12th wettest
September	96	17th	Williamsburg	30	30th	Cresco Fayette Stanley	22nd warmest	3rd wettest
October	93	2nd	De Soto	19	22nd	Elkader Stanley	19th coolest	7th wettest
November	62	1st 22nd	Atlantic Red Oak Sioux City	-6	18th	Mason City New Hampton	11th coldest	76th driest
December	57	18th	Bloomfield Centerville Des Moines Rathbun	-4	29th	Hawarden Sheldon Sibley	22nd warmest	10th wettest