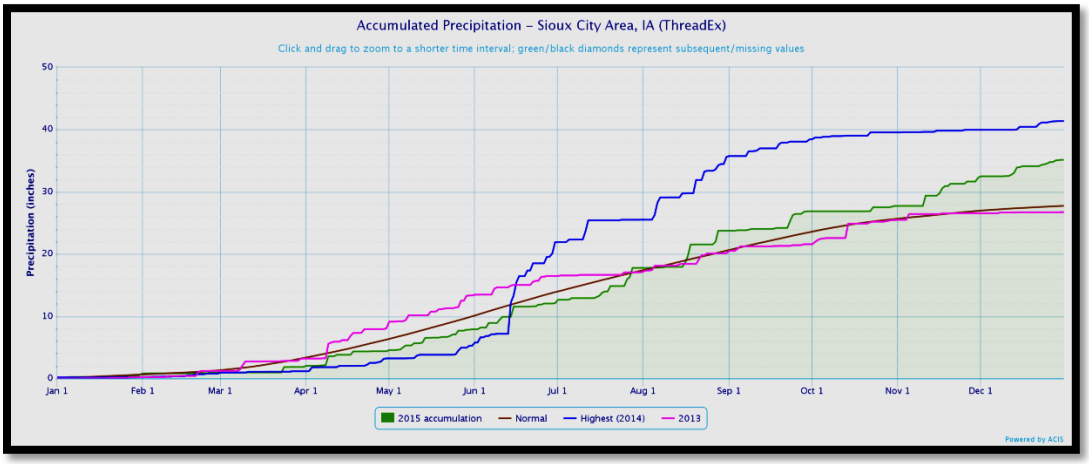
2015 weather was generally tame for the Sioux City area. Conditions were highlighted by steady but modest precipitation, especially the latter half of the year, and by warmer than average temperatures which favored cool and transition seasons.

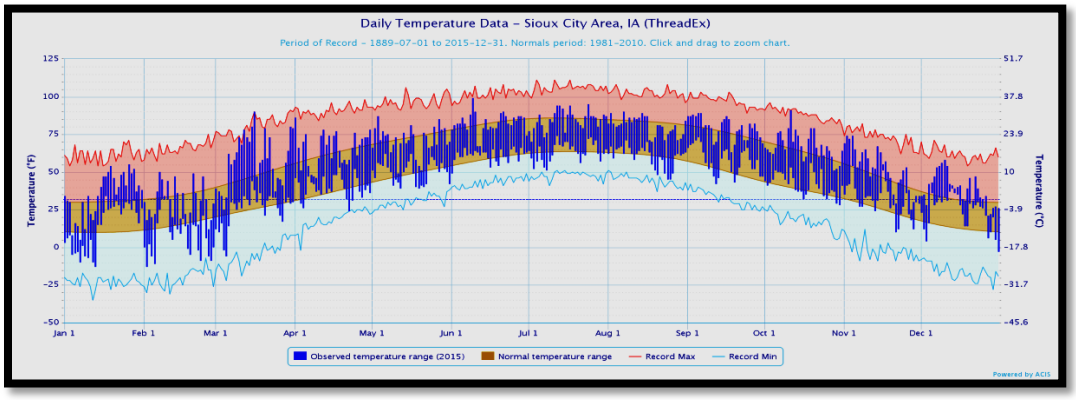


Coming off a record precipitation year in 2014, most of the first half of 2015 lagged in precipitation. Only January and June had above normal precipitation, and this was by very minor amounts. Despite the deficit, amounts still exceeded those to date from last year through early June! By late June, rainfall had become more frequent, and periodic episodes of moderate rainfall would be featured throughout the remainder of the warm season. The months of July, August, November and December each had over a 2 inch departure from normal. Remarkable were the final two months, with **November going down as the wettest on record**, and **December second wettest on record**, going back to 1889. As a result of the heavier precipitation the final half of the year, Sioux City followed up the wettest year in 2014, with the 4th wettest year in 2015. This made for the **wettest back-to-back years** on record, exceeding the second ranked 2007-08 by over 5 ¼ inches. The greatest daily rainfall of the year of 1.86 inches occurred on August 18, the 43rd lowest amount to represent the highest daily value for the year. There were 9 days with greater than an inch of precipitation, 3 more than normal for a year. 110 days received measurable precipitation, slightly more than the normal of 101 days.

Sioux City, IA

Month	Precipitation		Snowfall		Precipitation Rank	Max Wind Gust
	Amt	Departure	Amount	Departure		Direction/MPH/Date
January	0.64	0.02	8.3	1.6	50th wettest	NW 59 mph on 8th
February	0.32	-0.35	4.9	-1.7	26th driest	NW 43 mph on 11th
March	0.88	-1.12	T	-6.5	44th driest	NW 53 mph on 29th
April	2.53	-0.42	0.0	-1.8	58th wettest	NW 51 mph on 20th
May	3.53	-0.21	0.0	0.0	61st wettest	SE 52 mph on 10th
June	4.19	0.30	0.0	0.0	55th wettest	N 50 mph on 22nd
July	5.68	2.24	0.0	0.0	15th wettest	NW 52 mph on 13th
August	5.97	2.74	0.0	0.0	11th wettest	NW 53 mph on 9th
September	3.13	0.17	0.0	0.0	47th wettest	NW 58 mph on 8th
October	0.86	-1.27	T	-1.0	34th driest	NW 47 mph on 11th
November	4.55	3.24	12.5	8.1	** WETTEST **	NW 54 mph on 11th
December	2.86	2.06	11.8	4.0	2nd wettest	NW 50 mph on 10th
Year	35.14	7.40	37.5	2.7	4th wettest	Jan. 8 - NW 59 mph

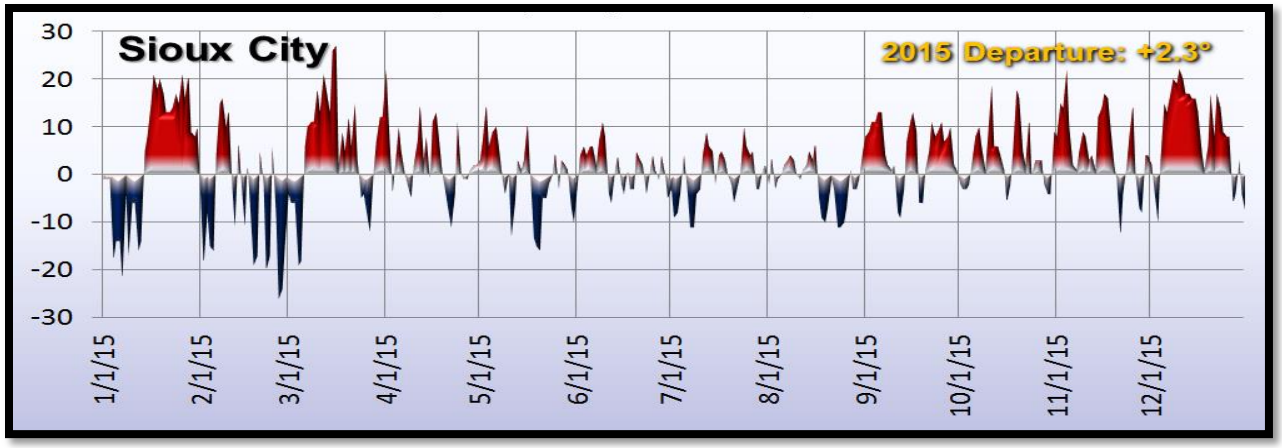
After a slightly above normal snowfall in January and the carryover into February 1, snowfall practically shut off for the rest of the late winter season. The last measurable snowfall of the year occurred on February 25 (1.3 inches), the **second earliest on record for the final measurable snow of the season**. The snow deficit was more than made up for by over 2 feet of snow during November and December. The 24.3 inches of snowfall during this period was the **7th greatest on record**.



Annual temperatures averaged out to 50.8 degrees, a full three degrees warmer than 2014, and 2.3 degrees above normal. This was the **11th warmest year on record**. As revealed in the daily temperature plot above, an abundance of the warmer than normal days occurred in periods early and late in the year. February temperatures were most frequent visitors to the cold side of normal, with the largest departure relative to normal on the cold side (-6.2 degrees). December was both the warmest month by departure (+8.4 degrees) and ranking (10th warmest). The annual mean maximum temperature was 62.0 degrees (2.2 degrees above normal) which was the **9th warmest on record**. Minimum temperatures again produced a slightly greater proportion of the annual warmth with an annual mean of 39.5 degrees (2.3 degrees above normal) and were 19th warmest on record. The warmest temperature of the year was 99 degrees on June 9. There were only 11 days with high temperatures of 90 or above, and this was the eleventh fewest 90 degree days for any year on record, and far from the average of 21. The coolest reading of the year at -13 was attained on January 13 and February 2. There were 20 days with low temperatures at or below zero, 3 more than normal.

Sioux City, IA

Month	Average Temperature			Departure from normal	Extremes		Monthly Records
	Max	Min	Mean		High	Low	
January	34.9	13.5	24.2	3.8	55	-13	25th warmest
February	30.1	7.8	18.9	-6.2	50	-13	33rd coolest
March	58.4	25.5	42.0	5.5	90	-6	11th warmest
April	65.5	39.4	52.5	2.9	86	24	24th warmest
May	70.9	49.8	60.4	-0.4	87	39	60th coolest
June	82.5	60.9	71.7	1.4	99	49	43rd warmest
July	84.5	63.3	73.9	-0.4	95	51	39th coolest
August	80.6	60.1	70.3	-1.8	90	45	25th coolest
September	79.1	57.5	68.3	4.9	89	42	13th warmest
October	67.2	41.6	54.4	3.7	91	28	32nd warmest
November	51.9	30.8	41.4	5.6	74	10	12th warmest
December	38.5	23.4	31.0	8.4	58	-3	10th warmest
Year	62.0	39.5	50.8	2.3	99	-13	11th warmest



January 2015 featured two distinct periods. The first 13 days were all below normal with periods of light snowfall. The last 18 days were all at least 5 degrees above normal, and most days from the 15th on were more than 10 degrees above normal. In the end, warm outpaced cool and the mean temperatures of 24.2 degrees (3.8 degrees above normal) was the **25th warmest on record**. The year started quietly, dry with temps near normal, but the 3rd would bring the first snowfall of the year along with very strong winds around 40 mph and near blizzard conditions. Bitter wind chills of 20 below to 30 below settled across the area, with another quick shot of light snowfall on the 5th. Exceptionally strong high pressure would build across the region after the storm, and on the 7th, the **highest barometric pressure on record** was attained not only for January, but for all months at 31.17 inches. On the very next day, white-out conditions blasted the area with winds gusting over 50 mph, with wind chills 30 below to 40 below zero. A 59 mph wind gust on the 8th would be the **strongest wind gust measured during the year** at Sioux Gateway Airport. Temperatures maintained the chill until bottoming out on the morning of the 13th with the coldest reading of the year (-13). A welcomed flip to the warm side started on the 14th, and the final half of the month was the **3rd warmest on record**. A **record high minimum temperature of 34** was tied on the 17th. Precipitation ended the month near normal and snowfall slightly above normal, only due to a winter system which brought the greatest daily amounts (0.30”/3.8”) of the month.

February was a much more thermally volatile month, starting with the carryover winter storm from January. A storm total 6 to 8 inches blanketed Siouxland, with winds around 40 mph creating considerable blowing snow. With a fresh snow cover, the temperature dropped to match the coldest of the year on the 2nd at -13. Through the 5th, wind chills at times wandered into a bitter -10 to -30 degree range. The longest run of days above normal was from the 6th to 10th, and snow cover was obliterated by a month warmest 50 degree high on the 7th. Warm battled cold through the remainder of February, but there would be no more than a single day at a time above normal through the end of the month, and seven days of 15 to 30 degree below normal. The mean temperature for the month of 18.9 degrees was the **33rd coldest** February on record, and was over 5 degrees cooler than January! It was a dry month, with precipitation **26th driest** and snowfall likewise below normal. Only two measurable snowfalls occurred after the storm on the 1st, and the 1.3 inches on the 25th would end up the final measurable snowfall of the season. This was the **second earliest final measurable snow** on record.

Sioux City, IA

Season	Average Temperature				Temperature Rank
	Max	Min	Mean	Departure	
Winter '14-'15	33.5	14.3	23.8	1.2	43rd warmest
Spring '15	64.9	38.2	51.6	2.6	17th warmest
Summer '15	82.5	61.4	72.0	-0.3	39th coolest
Fall '15	66.1	43.3	54.7	4.7	**6th warmest**

The winter season of Dec. 2014-Feb. 2015 with a mean temperature of 23.8 degrees would go down as the 43th warmest on record, 1.2 degrees above normal. There were 6 days with low temperatures of -10 or colder, about half that of the previous winter (11). There were 22 days with lows at or below zero, the 34th most for a winter, and just above the normal of 16 days during a winter season. Precipitation (2.36 inches – 48th wettest) was just above normal (+0.27") while snowfall (17.0 inches) was 4.1 inches below normal. The greatest 24 hour snowfall occurred with 7.2 inches from Jan. 31 – Feb. 1.

Sioux City, IA

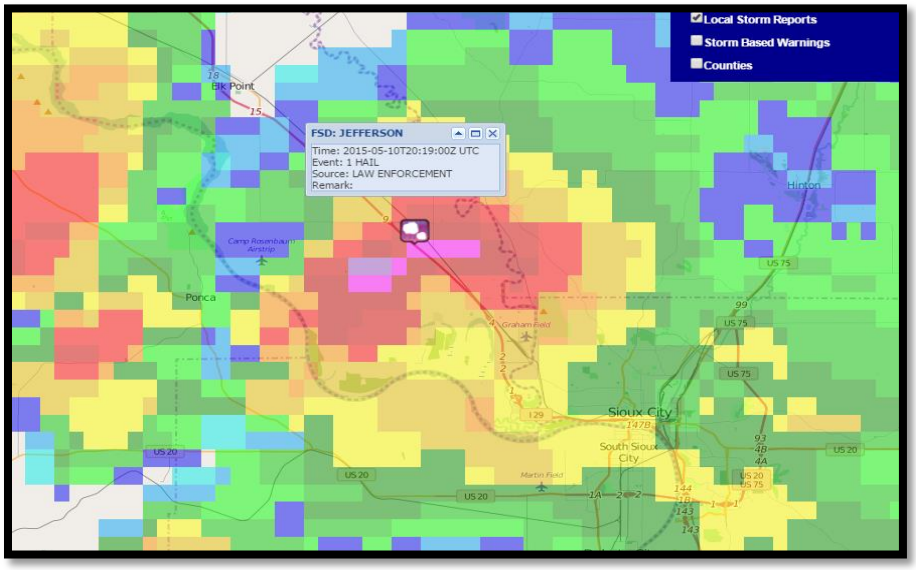
Season	Precipitation		Precipitation Rank
	Total	Departure	
Winter '14-'15	2.36	0.27	48th wettest
Spring '15	6.94	-1.75	55th driest
Summer '15	15.84	5.28	**10th wettest**
Fall '15	8.54	2.14	21st wettest

For the second straight year, the start of meteorological spring did not bring the start of warmer temperatures. March came in like a frosty lamb, with minimum temperatures falling below zero on the 4th (-2) and 5th (-6). This cold period came to an abrupt end on the 6th, and other than a short stretch of below normal temperature which settled in a few days after start of astronomical spring, the remainder of the month basked in quite warm readings. Record high temperatures were established three times during the month, with 78 degrees on the 12th, 90 degrees on the 16th, and 79 degrees on the 20th. The occurrence of 90 degrees was quite remarkable, considering this was the **earliest occurrence of 90 degrees or warmer by TWO WEEKS**, previously March 30, 1968. In fact, the 80 degree high just a day earlier was the second earliest 80 degree reading on record. Precipitation for the month was a mere 0.88 (1.12 inches below normal). Measurable precipitation occurred only on two days, with all but 0.01 occurring on the 24th. The final trace of snow of the year fell on the 27th. With the very dry conditions, low humidity reigned, and this lead to huge daily temperature swings. The **largest diurnal change on record in March** occurred on the 20th, 58 degrees (high of 79 and low of 21). In fact, with the 52 degree range on the 16th and 51 degree range on the 30th, **three of the top 5 largest ranges for March** occurred

this year. When winds kicked up at times late month, fire danger was of great concern. On the final day of the month, a wildfire destroyed a home north of Sioux City, killing over 200 exotic birds.

More widespread grassfires ignited on April 1, as southerly winds kicked up to 40 to 50 mph. A frontal zone pushed through in the evening, accompanied by the first thunderstorm of the year and a welcomed 0.20" rainfall. Skies were mostly clear for viewing of the total lunar eclipse during the early morning of the 4th. For the most part, temperatures spent much of the month within spitting distance of normal (17 of 30 days within 5 degrees of normal), with a few more forays into well above normal territory. Temperatures for the month ended up 2.9 degrees above normal with a mean of 52.5 degrees, for the **24th warmest April** on record. The final hard freeze of the season occurred on the 22nd (**record low 24 degrees**) and final freezing temperature the next day (31 degrees). A delayed green up with dry conditions maintained an enhanced fire danger at times, eased briefly by heavier rainfall on the 9th (1.43 inches) and 18th (0.54 inches). Overall, the month ended up 0.42 inches below normal, sitting almost exactly at the median for precipitation as **58th wettest**.

On the surface, May was far from remarkable. The mean temperature of 60.4 degrees was a dip back below normal, but only a little (**60th coolest**). Precipitation of 3.53 inches was also near normal (-0.21 inches, **4th consecutive month below normal**), at home in the middle of the historical distribution as **61st wettest**. Fire danger did take a break, as May featured precipitation on 22 days! May 10th was the only day with any nearby severe storms, with quarter size hail northwest of the Sioux City metro area near Jefferson. This would be indicative of the overall quiet severe weather season for Siouxland.

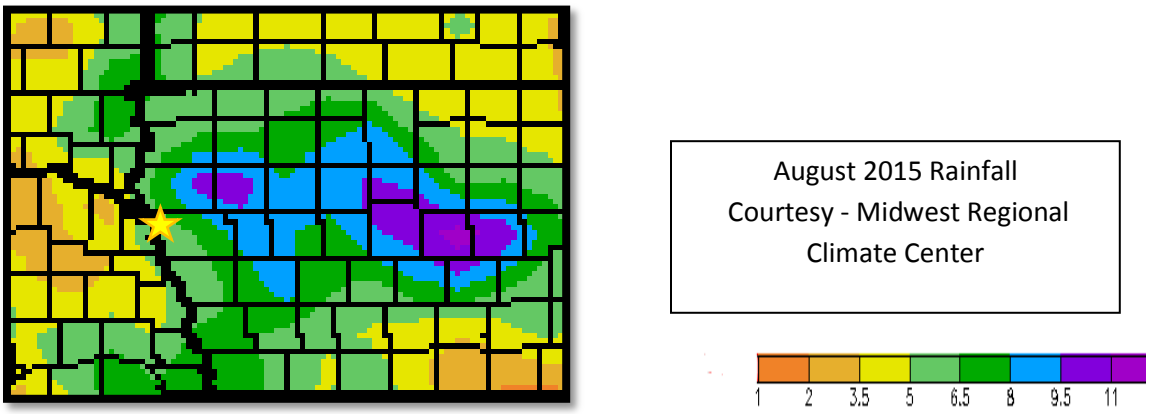


The spring months of March through May accumulated less than just under 80 percent of normal precipitation, 55th driest on record. Snowfall was only a trace - the **least snow on record for the spring** season and a tie with spring in 2012. There were more numerous and stronger warm than cold streaks during the first half of the meteorological season, with the mean temperature of 51.6 degrees sitting just 3.2 degrees warmer than last year, and 17th warmest on record.

June (**43rd warmest, 55th wettest**) continued the theme of moderate conditions. Temperatures, while generally warm to start the month, shaded a bit cooler than normal mid month, and finished the month shadowing normal. June 9 was the only day with a daily departure greater than 8 degrees, with the high of 99 degrees representing the warmest reading of 2015. For the first time in 4 months, precipitation would end up above normal, but only by 0.30 inches. The climatological peak of the severe weather season remained quiet, as Sioux City proper again failed to tally a severe storm report. Heavy rainfall did produce some minor street flooding around North Sioux City on June 6.

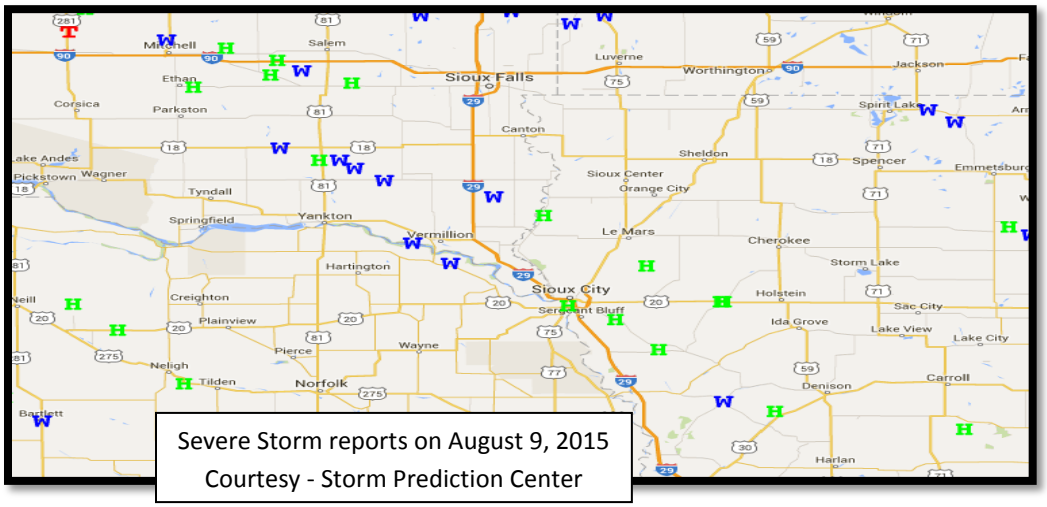
Severe Reports from 7/17/15. "W" represents wind. Courtesy Storm Prediction Center

July (**39th coolest**) commenced with cool conditions through the first 10 days, but was soon followed from the 11th to 17th by a period of typical summer heat and humidity. Afternoon heat indices reached a peak on the 12th at a sweltering 105 to 110 degrees, but much of this week was quite uncomfortable with a heat index from 95 to 105. The heat and humidity broke on the 17th in the form of thunderstorms, pushing through the Sioux City metro area on the eve of the RAGBRAI start. While winds at Sioux Gateway Airport topped out at 50 mph, these storms featured gusty winds with tree damage scattered around the Sioux City metro area, forcing thousands to take shelter as storms passed through the area. Additional heavier rainfall focused around the renewed humidity late in the month from the 26th to 28th, with the 1.47 inches on final day the heaviest daily amount this month. With this late round of storms, monthly rainfall reached 5.68 inches (2.24 inches above normal). There were 12 days with thunder in July, 4 more than normal.



August 2015 Rainfall
Courtesy - Midwest Regional Climate Center

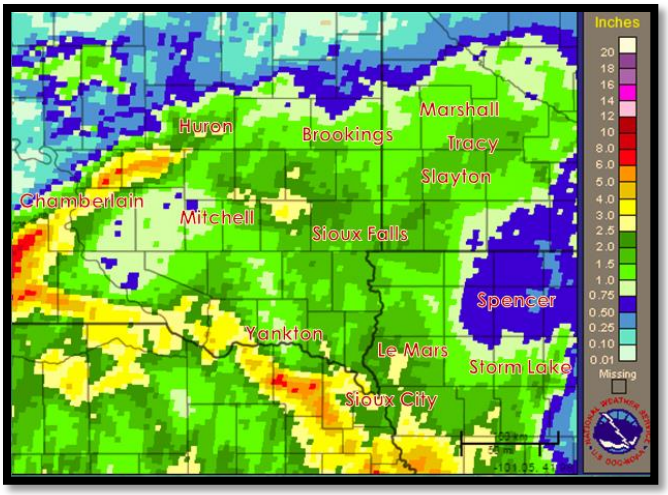
More widespread and heavier rainfall prevailed during August (11th wettest, 5.97 inches, +2.74 inches). Most of this precipitation occurred during the second half of the month, as the first half was quite dry with none of the five days with rainfall receiving a tenth of an inch. While severe weather remained scarce, the most significant event of the summer occurred on the evening of August 9, when supercellular storms pushed out of southeast South Dakota and northeast Nebraska late evening. Fortunately, storms which had a history of winds to 70 to 80 mph weakened moving into the city, with only reports of quarter size hail in South Sioux City and east of Sergeant Bluff. Winds gusts were largely less than severe, but did cause some spotty tree damage around the city. The rainfall increases drastically mid month, with a 24 hour rainfall of 2.19 inches from the 17th into the 18th, generating some street flooding around Sioux City. After a week of much cooler and drier weather, another heavy rainfall over 2 inches doused the city on the 27th and 28th. Temperatures ended the month at 1.8 degrees below normal, 25th coolest on record. There was only a single day with a temperature of 90 degrees, tying recent years of 2008 and 2002, among others, for the second fewest. The only years with fewer 90 degree days in August were 1915 and 1923.



Severe Storm reports on August 9, 2015
Courtesy - Storm Prediction Center

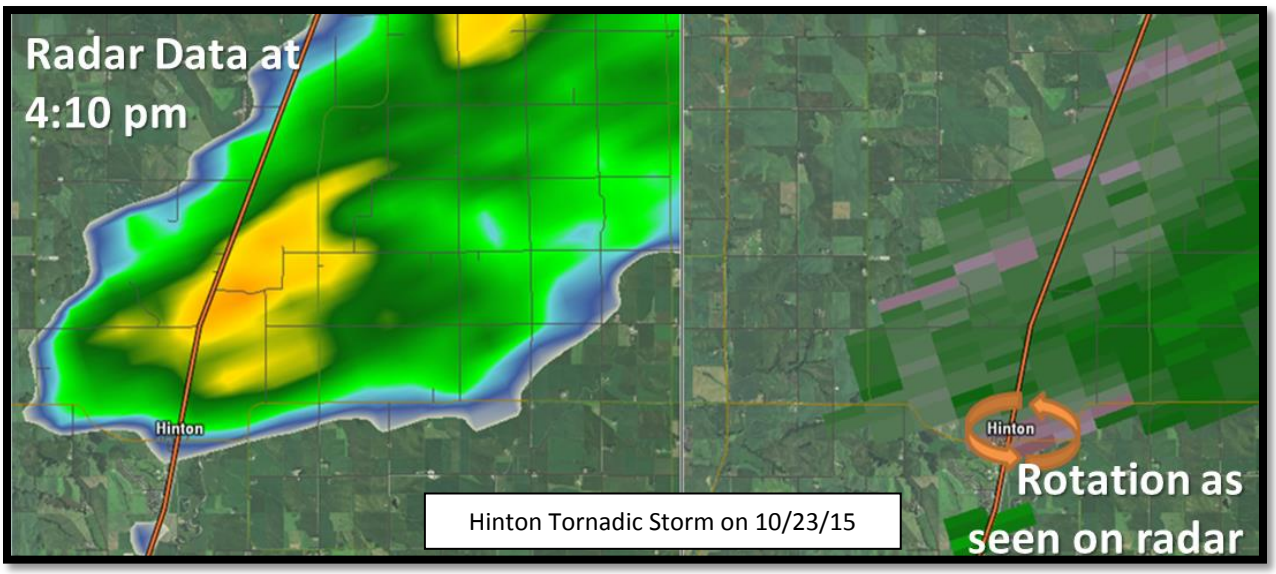
Powered by dispersed soggy periods, the summer season rainfall from June through August was a healthy 15.84 inches, more than 50 percent above normal. Following last year's incredible feat, this year ranked as the **10th wettest summer** on record. The average summer temperature was 0.3 degrees below normal at 72.0 degrees, ranking 39th coolest on record.

September commenced with very warm and muggy conditions for the first week. Especially warm low temperatures averaged the **4th warmest on record for the first six days**. Cooler temperatures occurred during the middle third of the month with two short slightly below normal stretches. The monthly mean temperature of 68.3 degrees was a full 4 degrees than last year, and almost 5 degrees above normal. Moisture and remnants of an eastern Pacific tropical system fueled the greatest precipitation of the month on the 23rd and 24th, when 1.59 inches fell over a 24-hour period, and 2.08 inches in 48 hours. Otherwise, precipitation was fairly sparse through what ended up a slightly above normal month.



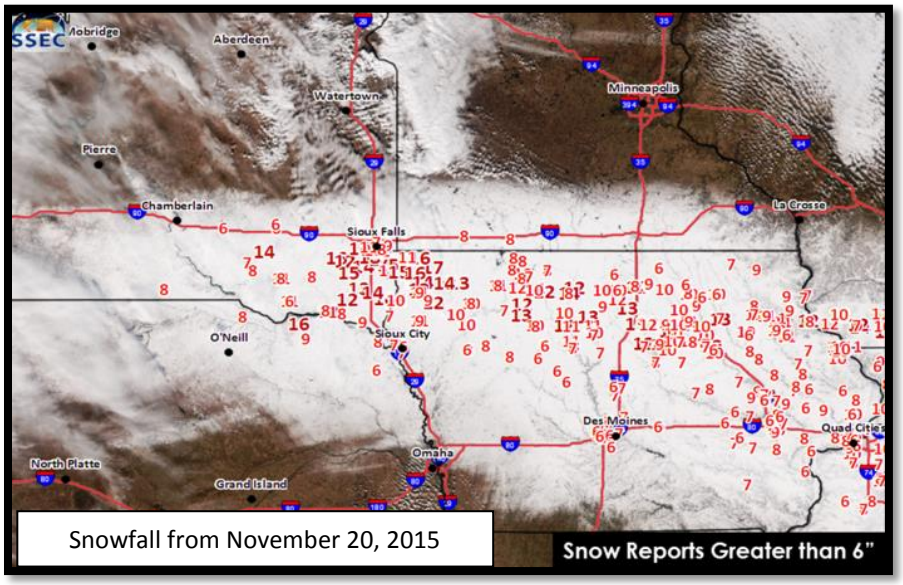
48 hour rainfall (inches)
7 pm Sep. 22 to 7 pm Sep. 24

October would end the streak of above normal precipitation at four months, as it would take until the 21st to record a measurable rainfall. October 23 had a majority of the monthly total of 0.86 inches, and also brought a climatologically rare tornadic episode to northwest Iowa. There were a total of 6 tornadoes during the late afternoon and early evening. Closest to Sioux City was a brief touchdown causing tree damage just south of Hinton during late afternoon. With an average temperature of 54.4 degrees (32nd warmest), October was the second consecutive month of above normal temperatures. When the temperature hit a daily record of 91 degrees on the 11th, it was the **4th latest 90 degree reading** on record. Comparing dates of first and last 90 degree readings of the year, 2015 featured a stretch of 208 days between March 16 and October 11, **longest on record by 36 days**! The first freeze of the season occurred on the 16th which ended the growing season at 175 days (23rd longest), a full two weeks longer than the average length of 161 days. The hard freeze held off until the 30th, when the temperature dipped to 28 degrees, making for 190 days since the last hard freeze. The first snow of the year occurred on the 28th.



Hinton Tornadic Storm on 10/23/15

The big story for November 2015 was the precipitation, with a total of 4.55 inches making the **WETTEST November on record**, and the **3rd wettest month of 2015**. Veteran's Day brought a record daily rainfall of 1.65 inches (greatest for this month) along with some hail up to dime size near Lawton and Kingsley. Thunder would occur on an unusual three days during the first 19 days of the month, all tallying above normal temperatures. A very warm stretch at the start of the month contained a record high minimum of 54 degrees on the 4th, and mild conditions returned strongly from the 14th to 18th when each day was 10 degrees or more above normal. Another period of heavier rainfall and thunder spread from the 16th to 18th, with those three days alone measuring more rain (1.54") than the monthly normal (1.31"). A brief swing to colder conditions timed out along with another storm on the 20th, which brought the first measurable snowfall to much of the area. While heaviest amounts were found to the north, the 5.7 inches of snowfall on the 20th was enough for a daily record. A wintry mix of precipitation on Thanksgiving Day would impede travel plans, with light accumulations of freezing rain and snow across much of Siouxland. The month would close with another significant snowfall which continued into December 1 – the ***greatest daily snowfall of the year*** along with a **daily record (6.6 inches)** for the 30th. The 12.5 inches total snowfall during November was the **3rd highest monthly total,** and the greatest November snowfall since 1983. With only 5 days recording temperatures below normal during the month, November would average to **12th warmest** on record, 5.6 degrees above normal.



Snowfall from November 20, 2015

Convergence of three straight months of above normal temperatures during the fall season produced the **6th warmest fall** on record, warmest since 1998. Despite the wettest November on record, the dry October and average September moderated the season to 21st wettest on record.

Almost without skipping a beat, December played the same warm and wet tune as November. It was the **second wettest December on record**, missing the wettest by a mere 0.01 inch. At a remarkable 8.4 degrees above normal, December finished as the 10th warmest on record, much due to the 6th warmest mean minimum temperature on record.

The snow event from the final day of November leaked into the start of December, with a second consecutive day of record snowfall on the 1st (3.2 inches). The storm total of 9.8 inches snowfall was the greatest of the year. The deepest snow cover of the year was measured on the 2nd at 9 inches, followed by a couple of days of below normal temperatures and periods of dense fog. Mild temperatures could not be held back, and in just 5 days, the snow was fully melted. A nine day period from the 7th to 15th had the **longest consecutive streak of days of 30 degree or greater minimum temperatures in December**, breaking the previous record of 7 days from 1931. The nine day average minimum temperature for this period of 33.8 degrees was the **warmest 9-day average** for any period during December. Included in this stretch was a record high minimum temperature tied on the 12th at 37 degrees. A thunderstorm on the 12th would be the last of 52 thunderstorm days in 2015, around 25 percent more than annual normal of 41. Wet mid-month conditions yielded **record rainfall** on the 14th (0.86 inches). After the rainfall, temperatures settled back toward a more normal pace for a few days, but soon after rebounded and as of Christmas Day, monthly means were almost 11 degrees above normal. A larger-scale pattern change would dump colder air back into the region to close out the year, and resulted in 8 consecutive days of snowfall surrounding Christmas Day. The final day of the year brought a low temperature below zero for the first time. Nearly half the month was classified as "cloudy", averaging more than 80 percent cloud coverage from sunrise to sunset.

As a final punctuation to 2015, the final 6 months measured 23.05 inches of precipitation, which was the greatest amount of precipitation on record, edging out 2009 when 22.52 inches of precipitation occurred after July 1.