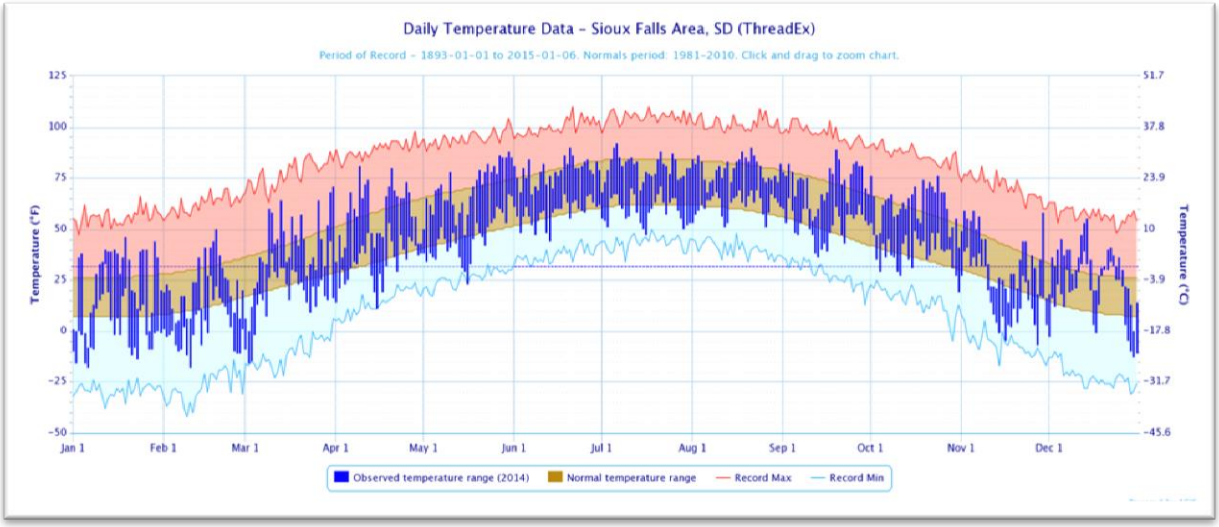
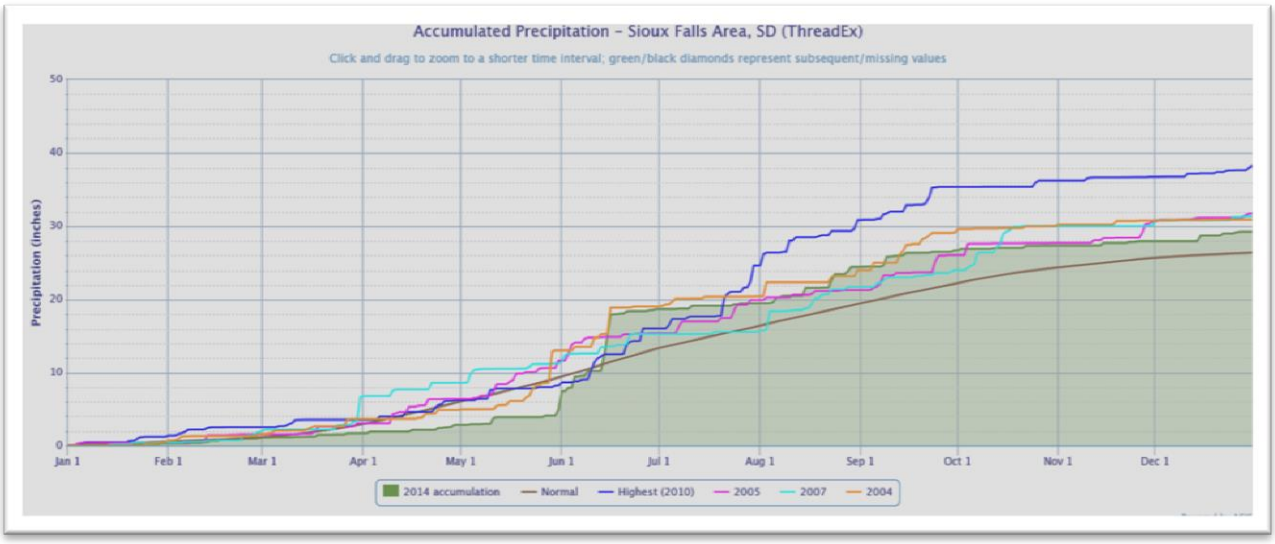
Weather across the Sioux Falls area during the year 2014 will generally be defined by two elements: the cold winter temperatures, and the extreme precipitation and associated bouts of severe weather during the month of June.



Annual temperatures averaged out to 44.4 degrees, nearly equaling the mean temperature of 2013, and finishing the year 1.3 degrees below normal. Maximum temperatures produced a slightly greater proportion of the cooling, with an annual mean of 55.0 degrees (1.5 degrees below normal), compared to the mean minimum temperature (33.7 degrees, 1.1 degrees below normal). Three months (February, July and November) fell into the top 20 coldest for that particular month, while only one month (December) cracked the top 40 warmest for that month. The warmest temperature of the year was 92 degrees on July 6, and this tied for the third coolest maximum temperature recorded during a year, matching 1998, 1992 and 1903. In fact, there were only four days with high temperatures of 90 or above, and this was the fourth fewest 90 degree days for any year on record, and far from the average of 14. The coolest reading of the year at -18 was attained twice, on January 6 and February 10.

Sioux Falls, SD

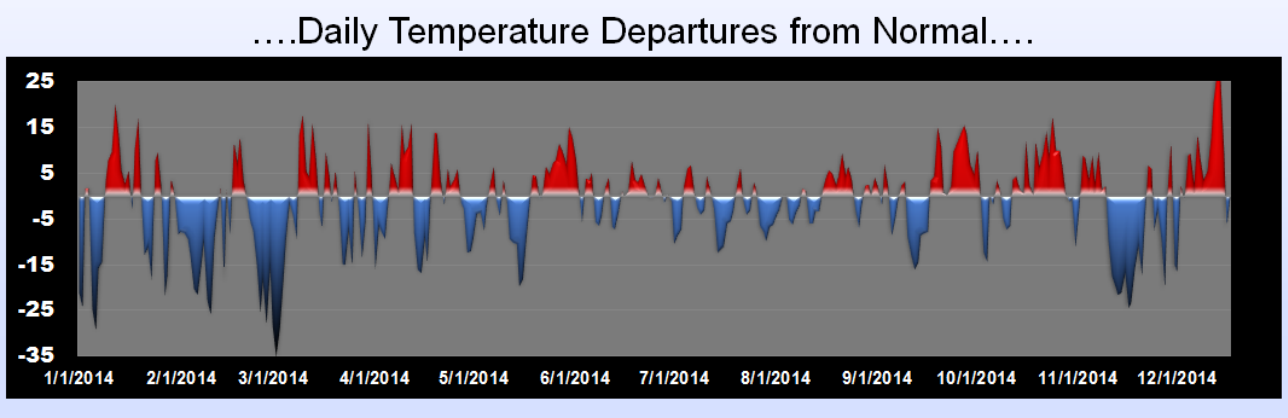
Month	Average Temperature			Departure from normal	Extremes		Temperature Rank
	Max	Min	Mean		High	Low	
January	25.9	0.7	13.3	-3.3	46	-18	49th coldest
February	22.2	1.4	11.8	-9.7	50	-18	**13th coldest**
March	40.6	17.8	29.2	-3.7	71	-16	36th coldest
April	58.1	33.5	45.8	-0.6	81	11	46th coldest
May	70.2	45.3	57.7	-0.3	88	23	54th coldest
June	78.4	58.2	68.3	0.5	90	44	58th warmest
July	80.2	59.3	69.8	-3.2	92	47	**11th coldest**
August	79.5	61.9	70.7	0.1	90	51	48th coldest
September	72.9	51.9	62.4	1.1	89	36	53rd warmest
October	62.0	38.6	50.3	2.4	76	19	51st warmest
November	35.9	16.5	26.2	-6.4	59	-7	**10th coldest**
December	31.9	17.0	24.4	5.2	55	-13	36th warmest
Year	55.0	33.7	44.4	-1.3	92	-18	26th coldest



For the year, precipitation reached 29.27 inches, ranked as the 32nd wettest in the period of record. The year started out much drier than average, and drier through the end of May than other wet years in the last decade (green trace above is 2014). There were only 3 months during the year which featured well above normal precipitation (June, August and December), with most of the other months not only below normal, but well below normal. June produced the most prolific precipitation, with the 13.70 inches not only representing the greatest monthly precipitation, but also the wettest for any month on record in Sioux Falls. Some locations on the west and south side of Sioux Falls received even more precipitation. Most of the cold and transition seasons were below normal precipitation, so no surprise that the 39.0 inches of snowfall over the calendar year was 5.5 inches shy of normal. Even December, with above normal precipitation, had below normal snowfall thanks to much warmer than average temperatures.

Sioux Falls, SD

Month	Precipitation (in.)		Snowfall (in.)		Precipitation Rank	Max Wind Gust
	Amt.	Departure	Amount	Departure		Direction/MPH/Date
January	0.31	-0.25	4.7	-3.0	47th driest	NW 63 mph on 16th
February	0.68	0.08	9.0	2.1	52nd wettest	NW 45 mph on 20th
March	0.71	-1.05	7.7	-0.7	31st driest	W 51 mph on 31st
April	1.17	-1.84	3.4	-1.2	**20th driest**	E 51 mph on 26th
May	2.11	-1.29	0.0	0.0	36th driest	NE 42 mph on 11th
June	13.70	9.78	0.0	0.0	***WETTEST***	E 87 mph on 16th
July	0.80	-2.29	0.0	0.0	**14th driest**	W 41 mph on 22nd
August	4.95	1.90	0.0	0.0	21st wettest	SW 60 mph on 24th
September	2.28	-0.49	0.0	0.0	59th driest	W 44 mph on 20th
October	0.67	-1.50	0.0	-1.3	30th driest	NW 48 mph on 3rd
November	0.56	-0.80	8.3	0.9	51st driest	N 47 mph on 7th
December	1.33	0.64	5.9	-2.3	**19th wettest**	N 44 mph on 15th/16th
Year	29.27	**2.89**	**39.0**	**-5.5**	32nd wettest	**E 87 mph on 6/16**



Thermometers, barometers, and anemometers got a workout during January 2014. The new year started much as December 2013 ended, with a period of very cold temperatures. The extreme cold was accompanied at times by buffeting winds of 35 to 45 mph, which not only produced blowing snow, but also life-threatening wind chills, as low as 45 below zero on the 5th and 6th. It took until the 9th to have a low temperature above zero, and there was a period of temperatures below zero which lasted for more than two days. A relatively mild period followed through mid-month, before temperatures see-sawed drastically for the rest of the month. An arctic front blasted through the area on the 16th, bringing the greatest snowfall of the month at 2.4 inches, along with northwest winds of 45 to 55 mph resulting in a period of whiteout conditions in the early to mid-afternoon. Residents of the area were surprised during the early morning hours of the 18th, which brought the first thunderstorm of the year, with light rain quickly changing to a dusting of light snowfall. Frequent wind-related winter weather events highlighted the remainder of the month, despite very little precipitation to close out the month.

More of the same would come in February with wind and frigid temperatures, but with a little more frequent light snowfall during the month. Only six days of February were above normal, with extensive cold periods on both ends of the month resulting in the 13th coldest February on record. Snowfall would not come in large quantities, with the greatest on Valentine's Day with 2.2 inches. However, snowfall would be above normal for the month, one of only two months during the year. Some light ice accumulations occurred on the 17th.

Sioux Falls, SD

Season	Average Temperature				Temperature Rank
	Max	Min	Mean	Departure	
Winter '13-'14	23.1	1.4	12.3	-6.7	**10th coldest**
Spring '14	56.3	32.2	44.2	-1.6	39th coldest
Summer '14	79.4	59.8	69.6	-0.9	30th coldest
Fall '14	57.0	35.7	46.3	-1.0	23rd coldest

The winter season of Dec. 2013-Feb. 2014 with a mean temperature of only 12.3 degrees would go down as the 10th coldest on record, coldest since the winter of 1996-1997, and reminiscent of winters during the late 70s. In fact, there were 18 days with low temperatures of -10 or colder, and this was the greatest number of days with lows of -10 or colder since 1996-1997. There were 43 days with lows below zero, the most since 49 occurred in 1978. Precipitation (2.12 inches) and snowfall (26.3 inches) were both a little above normal for the period, but generally came in small amounts throughout the winter, after the heavier snowfall on December 3-4, 2013.

Sioux Falls, SD

Season	Precipitation		Precipitation Rank
	Total	Departure	
Winter '13-'14	2.12	0.27	49th wettest
Spring '14	3.99	-4.18	11th driest
Summer '14	19.45	9.39	2nd wettest
Fall '14	3.51	-2.79	28th driest

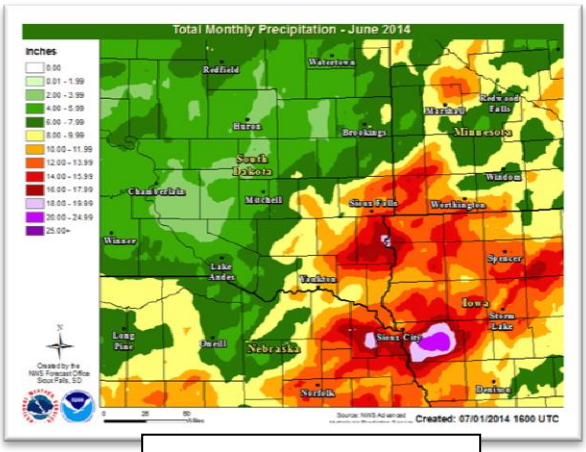
The calendar and meteorological season may have changed, but there was no way winter was going to give up as we entered March 2014, coming in not as a lion, but a polar bear. After coming up a degree short of a record low on the 2nd at -16, the afternoon temperature would reach only zero, establishing a record low maximum for the date, and the second coldest March maximum ever recorded. A morning low of -15 on the 3rd would tie a record low. The first three days of the month were the coldest start on record by almost 5 degrees. Less than a week later, a sneak preview of spring would commence with a week of above normal temperatures, reaching 60 degrees on the 9th and 64 on the 13th. Winter returned on the Ides of March, and the greatest snowfall of the month followed on the 18th with 2.9 inches. Rapid thermal changes characterized the end of the month, with chilly and breezy conditions returning with the official start to spring. Strong southerly winds on the 26th brought not only warmer air and enhanced fire danger, but also reduced visibility with blowing dust and dried crop debris from the fall harvest. This was immediately followed by another 1.2 inch snowfall occurring on the 27th. There could not have been much greater contrast between the start and finish to the month, as high temperatures of 68 and 71 degrees were found on the 30th and 31st. However, the temperature plunged from the high of 71 just after 1pm, to 22 degrees by 7pm, accompanied by sleet and snow.

Conditions typical of spring were found in April, with wide temperature swings during the month. The month started chilly with snow on each of the first four days, greatest with 2.6 inches on the 3rd. A distinct warmup followed for the next week, with the first 80 degree day of the year on the 9th. A swing back to colder temps continued through mid-month, with a record low of 11 set on the 15th, and the final dusting of light snowfall of the season on the 16th (0.8 inches). By the end of the third week of the month, Sioux Falls had received only 38% of normal precipitation for the year. Despite around three quarters of an inch rainfall the final week, the month ended as the 20th driest April. Overall, it was

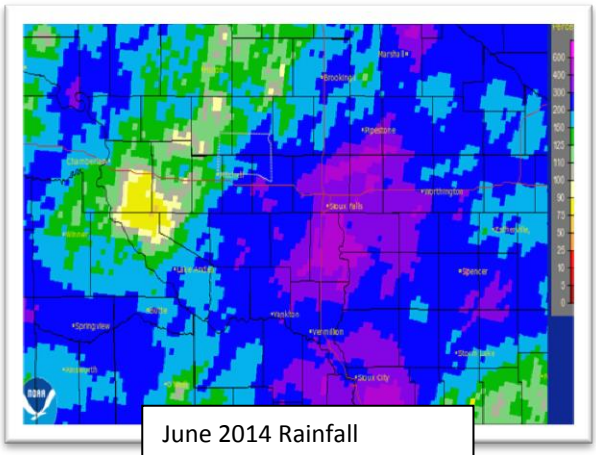
another fairly windy month, with delayed green up coming out of the eternal winter bringing an enhanced fire danger at times.

While the average temperature for May ended up fairly close to normal, a departure of -0.3 marked the 8th consecutive month of below normal temperatures. "Normal" was greatly absent, an artifact of the balance between an anomalously cold first half and a mild second half. Temperatures were only above normal on three of the first 18 days of the month. The low temperature of 23 degrees and final freeze of the season on the 16th not only smashed the previous record low by nine degrees, but became the coolest temperature recorded this far into the season. It was fortunate that most gardens were not yet established with the cold readings to start the month. During the one brief warmup early in the month, the first severe weather of the year for the Sioux Falls area occurred during the afternoon of the 8th as quarter size hail fell near Harrisburg.

The spring months of March through May accumulated less than 50 percent of normal precipitation, and ended 11th driest on record. There were many more and longer cold streaks than warm, especially during the first half of the meteorological season, with the mean temperature of 44.2 degrees sitting 1.6 degrees below normal.



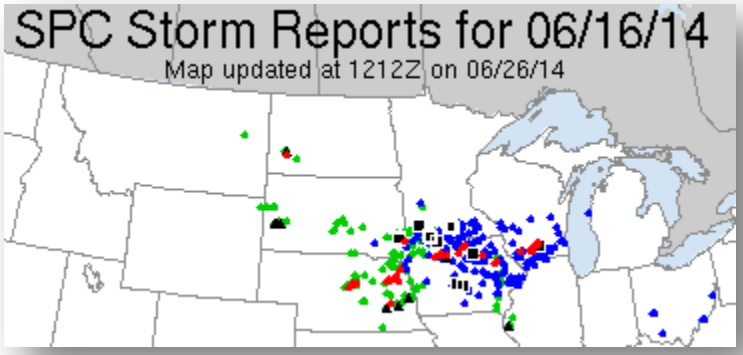
June 2014 Monthly Rainfall



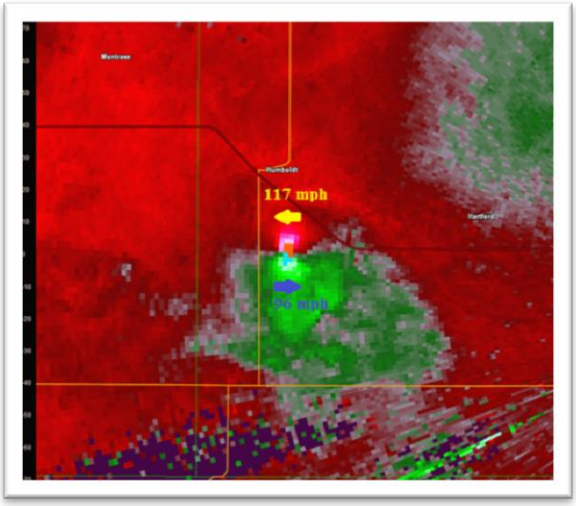
June 2014 Rainfall
Departure From Normal

June marked a drastic turn from the dry conditions over the first five months of 2014. A dousing of 2.47 inches the first day set the tone, bringing urban flash flooding to parts of the city. Numerous heavy rain events later (thunder reported on 19 of 30 days during June), there was a record 13.70 inches of rainfall at month's end; not only the wettest June on record, but the **<u>most precipitation for any month</u>** on record in Sioux Falls. Not far away, Canton, SD set a new state record for monthly precipitation at 19.65 inches! Record daily rainfall occurred on the 1st (2.47 inches), 14th (1.97 inches), and 15th (2.74 inches). In fact, the rain over the 14th and 15th established a new 24-hour record of 4.65 inches. The five days with one-inch or greater amounts also set a record for June, and tied the most for any month with August 2002. The heavy rainfall across the area produced not only flash flooding with devastating damage to areas south of Sioux Falls, but all-time high river crests were observed along much of the Rock to lower Big Sioux River mid to late month. The quiet early severe weather season also ramped up with numerous events impacting the Sioux Falls area during the month. A brief tornado touched down

in rural areas southeast of Harrisburg during the mid-afternoon of the 5th, with hail up to two inches diameter pounding the west and south sides of the Sioux Falls metro area. The most active week of severe storms for the summer started on Flag Day. Thunderstorms produced torrential rainfall and some hail up to golf ball size just southeast of Sioux Falls. The activity in the Sioux Falls area peaked on the afternoon of the 16th, when thunderstorms pelted the city with hail up to golf ball size, shattering car windows and causing extensive property damage. Winds were measured at 87 mph at Joe Foss Field, and 96 mph just southeast of the airport.



The next evening, an EF2 tornado developed near Humboldt, west of Sioux Falls, taking an odd southeast to northwest track. The tornado produced damage to two farms along the track. The tornadic signature on radar was one of the strongest rotational velocities ever detected on a NWS Doppler radar.

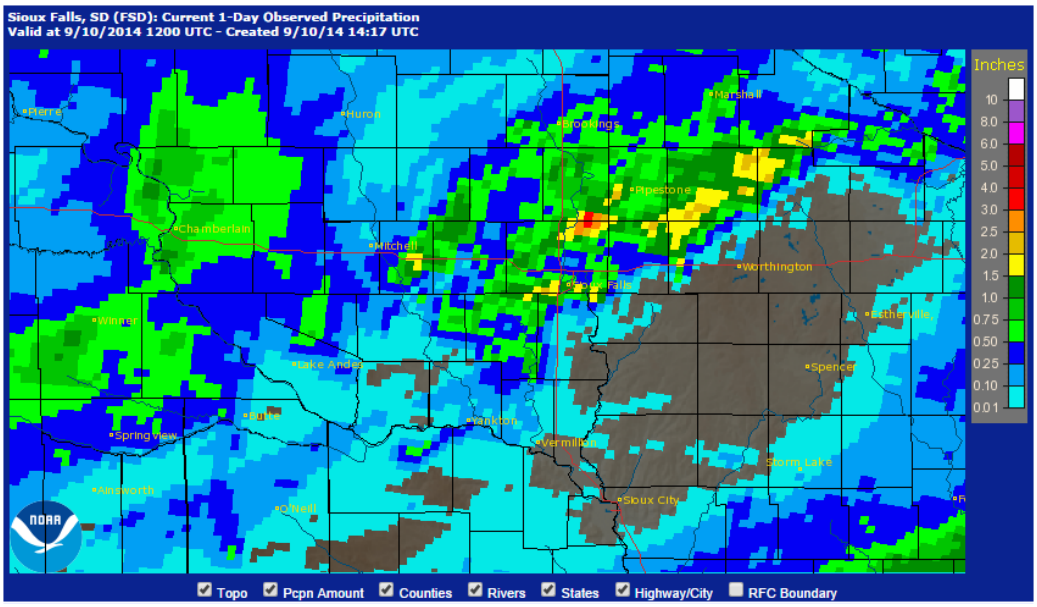


The faucets were turned off at the turn of the calendar page, as July had nearly 13 inches less rainfall than June at 0.80 inches, officially the 14th driest July on record. Much of this 11th coldest July was below normal, with only brief warmups during the month. The warmest readings of the summer occurred around Independence Day, with 92 degrees on the 6th being the warmest maximum for the year.

Rains returned during August, with 4.95 inches of rainfall making for the 21st wettest August on record. Rainfall was nicely distributed, with roughly an inch a week during the month. The only severe weather in Sioux Falls during August occurred in the wee hours of the morning on the 24th, when wind gusts of 60 mph moved across the city along with brief heavy rainfall. Fortunately, only minor and spotty tree damage was reported with this wind. Temperatures ended the month the closest to normal for any month of the year; with the first half slightly cool and second half slightly warm. There was only a single day of 90 degree heat (six years without a 90 degree day), and a matching solo day with highs in the 60s.

Powered by the excessive June rainfall, the summer season of June through August overwhelmed a dry July to amass 19.45 inches of rainfall (9.39 inches above normal), second only to the soggy summer of 2010 (22.64 inches). The average summer temperature was also dominated by a single month, but this time the cold July, to rank 30th coldest with a mean temperature of 69.6 degrees. Much of the cold ranking was also a result of the cooler mean maximum temperature (13th coolest), while the mean minimum temperature ended up slightly on the warmer half of the distribution (49th warmest).

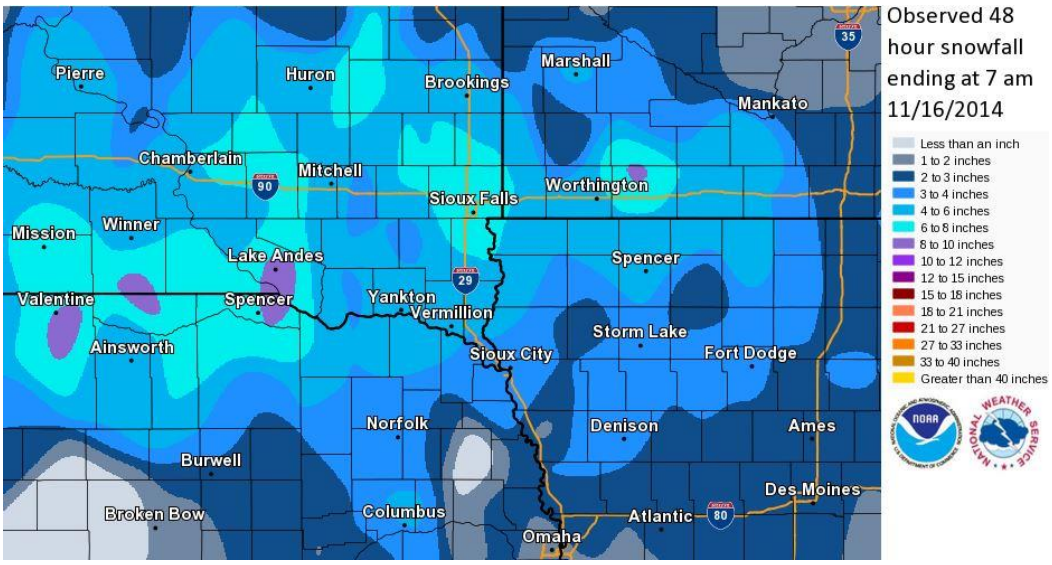
September was the most mild-mannered month of the year. There was a fairly sizable cool period from the 6th to the 17th, with a little frost in outlying areas on the morning of the 13th. During the cooler stretch, a majority of the month's precipitation occurred, with the greatest daily rainfall on the 9th at 1.23 inches. The monthly mean temperature of 62.4 degrees was 1.1 degrees above normal, and was fueled by very warm periods near the astronomical end of summer during which the warmest temperature of the month occurred (89 degrees on the 19th) and from the 24th to 28th.



Pleasant and quiet weather carried over into October, with an average temperature of 50.3 degrees, 2.4 degrees above normal. October was the third consecutive month of above normal temperatures. The first freeze of the season occurred on the 4th which ended the growing season at 140 days, six shy of the average length of 146 days. A week later, a hard freeze occurred when the temperature dipped to 27 degrees on the 11th, making for 147 days since the last hard freeze and shortest time between hard

freezes since 142 days in 2002. A record low maximum temperature was tied on the 4th with a high of only 48 degrees. Just over two-thirds of an inch or rain fell during the month, making the 30th driest October on record. There was no snowfall, and this was just the third time in the last decade that there was no snowfall during the month.

After a mild and quiet start to November, the month would take a drastic turn to the cold side after an early season arctic front on the 9th. The following days would yield the coldest 10 day period on record up to the 20th of November, by more than two degrees! The first snowfall of the season was a paltry tenth of an inch on the 10th, but this was quickly chased by the heaviest daily snowfall of the calendar year on the 15th, when a fluffy 5 to 8 inches of snow blanketed the Sioux Falls area. This set the stage for a near record low on the 16th (-5 degrees), and a record low maximum of 14 degrees on the 17th.



Temperatures were a bit more erratic toward month's end, with only one day greatly above normal, ending just shy of a record high at 58 degrees on the 29th. For the month, the mean of 26.2 degrees was the 10th coldest November on record. Despite precipitation less than 50 percent of normal, snowfall totaled 8.3 inches. This was only the second month of the calendar year to experience above normal snowfall, and the most November snowfall since 2005.

Despite the below normal months being outnumbered 2 to 1 during the fall season, November was so far below normal that the fall months of September to November finished as the 23rd coldest on record. After the extremely wet summer, all three fall months recorded below normal precipitation, and the 3.51 inches of total precipitation made it the 28th driest fall season on record.

December was by far the cloudiest month of the year; with nearly half the month classified as "cloudy", averaging more than 80 percent cloud coverage from sunrise to sunset. In fact, there was a stretch of nearly a week where the sun was not viewed in the week before Christmas. December started on the cool side as a carryover from November, but by the 4th, temperatures were consistently above normal which persisted through the 15th. A four-day period above freezing during this period encompassed a record high minimum of 39 degrees 13th, the 6th warmest minimum temperature on record for the

month. A very brief cool period settled in mid month, and then it was back to well above normal readings through Christmas. December was the 19th wettest on record, but despite almost twice normal precipitation for the month, two mid-month rainfall events due to warm temperatures kept snowfall below normal at 5.9 inches. The largest snowfall of the month (2.9 inches) came on the 26th, a bit tardy to stop the Sioux Falls metro from a brown Christmas for the first time since 2011. Light snowfall continued at times through the end of the month as very strong arctic high pressure settled into the region, with surface pressure adjusted to sea level near a record high at 30.99 inches on the 30th. Despite lows colder than -10 the final three days of the year, the overall abundance of clouds during the month helped minimum temps average 17.0 degrees, placing 20th warmest on record. Overall, December was the 36th warmest on record.