

## **2009 DETROIT ANNUAL**

### **2009 WAS A RELATIVELY COOL YEAR THAT CALMED DOWN WITH TIME AS A COOL SUMMER HELD SEVERE WEATHER AT BAY**

**January 20<sup>th</sup> 2010**

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#### **Overview:**

**It was a relatively cool year across Southeast Lower Michigan in 2009 with temperatures averaging about a half degree below normal at Detroit with 49.3 degrees. It really made no difference where you were in Southeast Michigan, that ½ degree below normal departure was recorded at all three locations (Detroit, Flint and Saginaw), heat island or not. It was the coolest year since 2003 at both Detroit and Saginaw, and the coolest since 1997 at Flint. One of the biggest factors in the cool year was our unseasonably cool summer when Southeast Michigan averaged about two degrees below normal. The Summer of '09 basically was the coolest summer since the [cold summer of 1992](#).**

**The year of 2009 started out like that of 2008 with yet another, ongoing busy winter across Southeast Lower Michigan. There were, however, two main differences between the two winters (Winter of 2008-09 and the Winter of 2007-08). 1) The worst of the Winter of 2008-09 was early to mid winter whereas 2007-08, it was mid to late winter. 2) The Winter of 2008-09 was considerably colder and more brutal than in 2007-08.**

**Using the three main locations (Detroit, Flint and Saginaw) the average winter temperature for 2008-09 in Southeast Lower Michigan came in at 22.5 degrees! Typically, the average winter temperature for all of Southeast Lower Michigan is 25 degrees. Therefore, the winter averaged 2.5 degrees below normal. If one throws in the northern suburbs of Detroit (using White Lake's temperatures) the average temperature only drops further to 22.2. The snowfalls across the region were even more notable (especially coming after our very snowy winter of 2007-08) and ranged from four feet to seven feet across Southeast Lower Michigan, which were generally one to three feet above normal. Officially at Detroit, 65.7" (+21.7") of snow fell making it the 8<sup>th</sup> snowiest winter on record (after 71.7"/4<sup>th</sup> snowiest in 2007-08)**

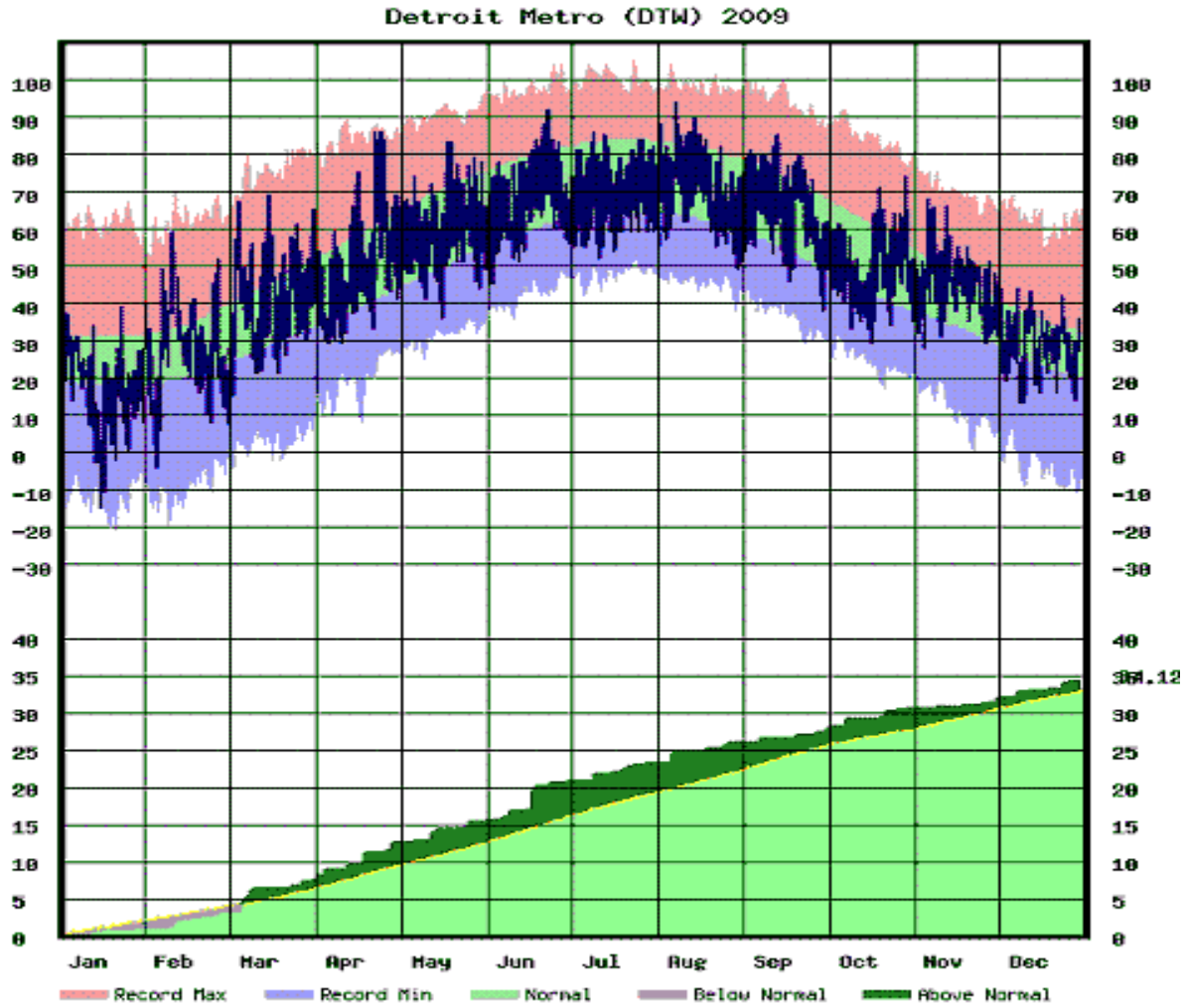
**After our cold and snowy winter abated, Spring of 2009 was still slow to arrive with a slow green-up. The slow green-up certainly wasn't the result of a lack of moisture. With melting snow and some moderate to heavy rains, the region saw above normal rainfall with much of the region averaging one to four inches above normal.**

The trend of our summers getting cooler the past few years continued in 2009 with the summer being the coolest around these parts in years. Even though the summer was exceptionally cool it was comfortable for most people. Few days contained the heat and humidity usually associated with a typical summer in these parts. All of Southeast Michigan averaged at least a solid 2 degrees below normal, something seen quite infrequently for a summer; maybe 10-15% of the time since records began. Overall with the dominant cooler weather, it was a relatively calm summer severe weather-wise with our strongest event actually coming in April.

The Autumn of 2009 weather pattern over the country brought primarily a mild, pleasant and dry fall to Southeast Lower Michigan. It wasn't all nice, however, as our mild fall contained one cold miserable heart, coming during the first half of October. A strong amplified upper air pattern brought pre-season Polar cold resulting in temperatures hovering in record cold territory during the first half of the October. November's weather more than made up for the premature Arctic intrusion of October with unseasonably mild and dry weather...and no snow! With the mild November and normal temperatures in December, the Winter of 2009-10 started off slowly (for a change) with scattered light snows but plentiful rains around metro Detroit.

	<b>DETROIT</b>	<b>2009</b>	<b>STATS</b>
	<b>TEMP</b>		<b>PCPN</b>
	<b>2009</b>		<b>2009</b>
<b>JAN</b>	17.3		1.10
<b>FEB</b>	28.5		2.12
<b>MAR</b>	38.7		4.17
<b>APR</b>	49.8		5.03
<b>MAY</b>	59.4		2.89
<b>JUN</b>	67.8		5.28
<b>JUL</b>	68.9		2.56
<b>AUG</b>	71.2		2.76
<b>SEP</b>	66.0		1.46
<b>OCT</b>	50.0		3.23
<b>NOV</b>	45.3		0.62
<b>DEC</b>	29.3		2.90
<b>AVE</b>	<b>49.3</b>	<b>TOTAL</b>	<b>34.12</b>
<b>DEP</b>	<b>-0.4</b>		<b>+1.23</b>

## Daily 2009 Temperature/Precipitation plot for Detroit

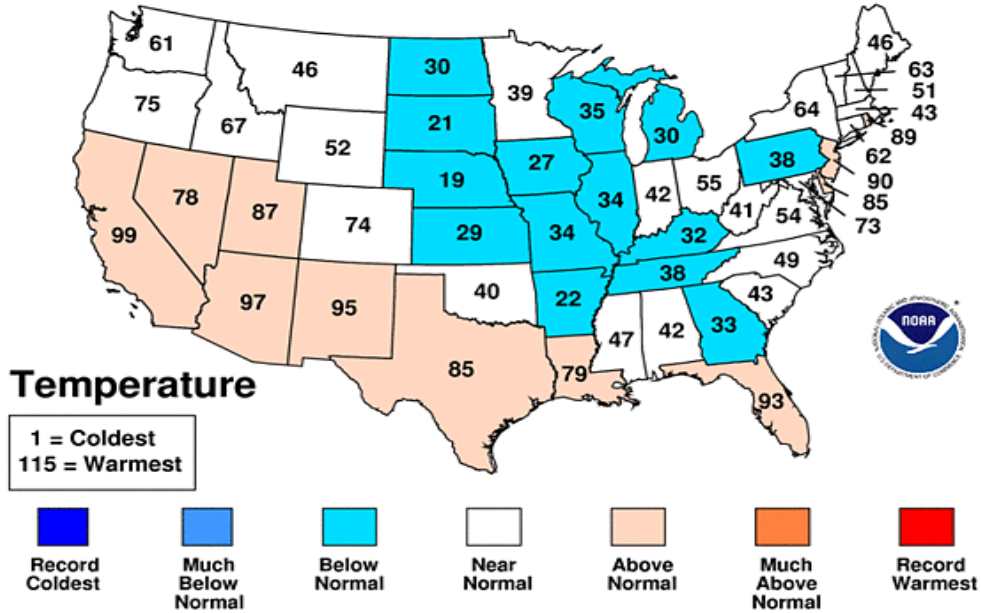


Additional statistical data for 2009 in Southeast Lower Mi can be obtained at:  
<http://www.weather.gov/climate/index.php?wfo=dtx>

Here's a national view of the temperature pattern in 2009

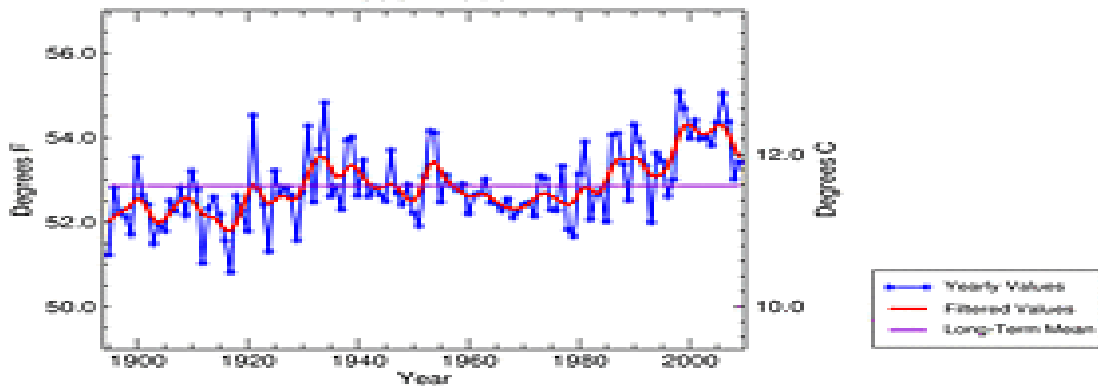
## January-December 2009 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA



Quite a plunge from the recent National temperature trend

National (Contiguous U.S.) Temperature  
1895 - 2009

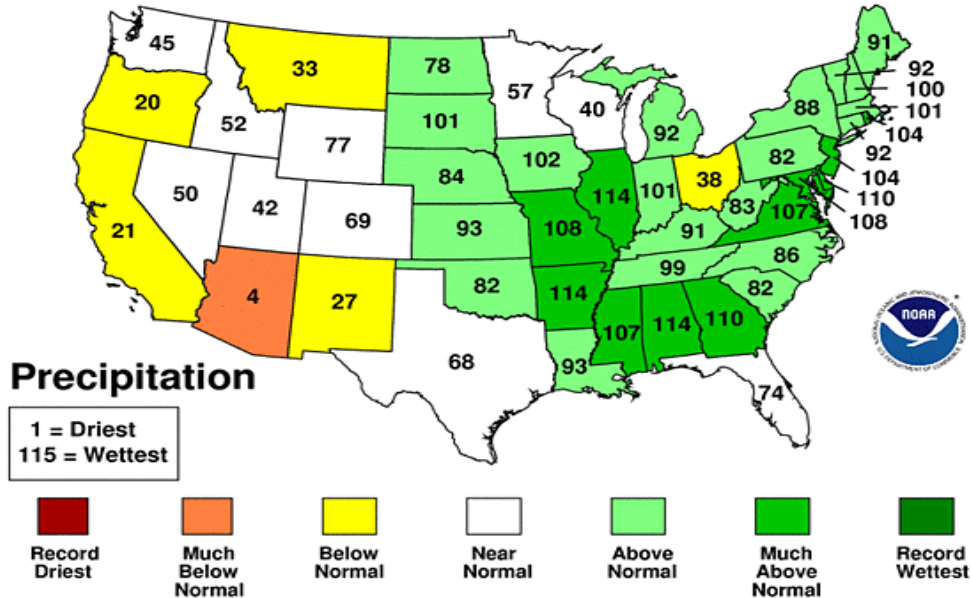


National Climatic Data Center / NESDIS / NOAA

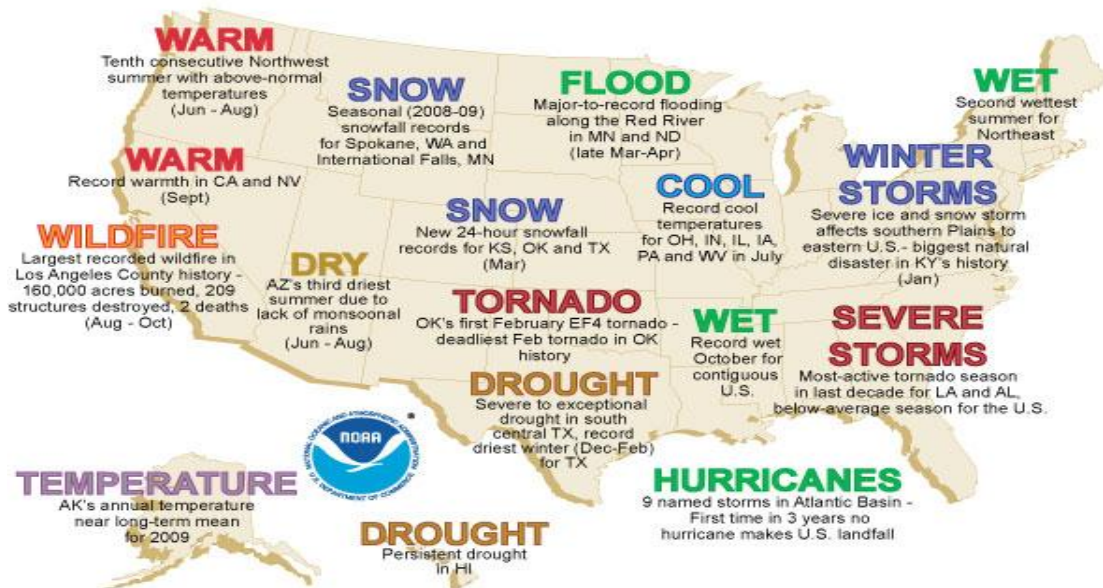
Here's a national view of the precipitation pattern in 2009

## January-December 2009 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA



## Preliminary Significant U.S. Weather and Climate Events for 2009



Additional statistical data and updates for 2009 (across the US or World can be obtained at: <http://www.ncdc.noaa.gov/climate-monitoring/>)

## Seasonal and Monthly Highlights

Much more information (including stats) is available in the full [season write-ups](#) .

### Winter 2008-09

A stormy, snowy cold winter was tale for the Winter of 2008-09 as the upper wind pattern was quite conducive in spawning low pressure after low pressure in the southern Plains and Texas region, which then hooked northeast into the Great Lakes and Northern Ohio Valley. Many of our storms developed off a split flow pattern that allowed varying degrees of phasing in the Midwest and Lakes. At the same time, colder air than seen the past few winters was able to push further south into the region. While December and February were normal to slightly below temperature-wise, the real chill came January when readings averaged in the teens, well below the norms in the lower to mid 20s.

### **VERY IMPRESSIVE SNOWFALLS PAST TWO WINTER SEASONS INSTIGATES A NEW TOP FIVE CATEGORY IN BACK TO BACK SNOWFALL SEASONS**

The snowfalls across Southeast Lower Michigan the past two winters are without precedence in amounts (back to back winters). At Detroit and White Lake when the Winter's of 2007-08 and 2008-09 snowfalls are combined, each location handily establishes a new high total in this newly created list...Most Snowfall in Two Consecutive Winters.

#### DTW Most Snowfall in Two Consecutive Winters

1-	2007-08	71.7-*4 <sup>TH</sup>	*Snowiest
	2008-09	65.7-*8 <sup>TH</sup>	137.4
2-	1898-99	60.2	
	1899-00	69.1	129.3
3-	1925-26	78.0	
	1926-27	47.5	125.5
4-	1974-75	63.1	
	1975-76	55.9	119.0
5-	1884-85	60.8	
	1885-86	56.7	117.5

## DTX Most Snowfall in Two Consecutive Winters

1-	2007-08	91.7	
	2008-09	88.8	180.5
2-	2004-05	62.6	
	2005-06	101.0	163.6

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### Spring 2009:

After a cold and snowy winter, spring arrived very slowly across Southeast Lower Michigan with the green up taking its time. This was in spite of temperatures averaging above normal both March and April (but this was mainly due to just a handful of large above normal departure days). Heavy snows of the winter along with a fairly saturated soil condition led to a cool ground that was slow to warm through April. Not to mention, a wet April and a slightly cooler May didn't help matters in warming the soil. April's rainfall was well above normal across the entire region and was primarily responsible for the wet spring. April also contained our strongest severe weather event during an early mini-heat wave on the 25th. Severe thunderstorms organized in lines (and had a strong punch) while surging across Southeast Lower Michigan. This was almost exclusively a wind event with numerous reports of 50 to 70 mph wind gusts. Strongest storms moved across central and northern Oakland, Macomb and St Clair Counties. Some of the same areas hit with June 8th's 2008 derecho were under the gun this time too. The storms also brought heavy driving rains which only aggravated some of the already high rivers and lowlands with more flooding.

Spring precipitation totals ranged from better than nine inches /9.30"/ at Saginaw to just over a foot /12.09"/ at Detroit (with 12.42" here at the NWS White Lake). Of course, rainfall departures were all above normal, ranging from one to nearly four inches (the highest being around the metro Detroit area). This was in stark contrast to last spring when below normal precipitation (a 2½ - 3.0 inch deficit and coming at the worst time to boot, mainly mid to late spring). Another interesting fact, last spring (when just using the three stations), Southeast Lower Michigan averaged 2.45" below normal, whereas this spring we averaged 2.39 above. Yes, Mother Nature does have a way of balancing things out ;-)

## Summer 2009:

The summer of 2009 will go down in the weather books as an exceptionally cool but fairly nice for most people. Few days contained the heat and humidity usually associated with a typical summer in these parts. All the region saw less than half /4-5/ the usual /8-12/ of 90 degree days along with many days feeling more comfortable due to lower humidity. So cool was the summer, many of the hot and humid weather lovers would call "2009" the year without the summer. With an average of 69.4, Detroit just missed the 20<sup>th</sup> coldest /69.1/ summer on record.

### Impressive July Cold:

The most outstanding summer month in our cool summer goes to July with temperatures averaging some five degrees below normal with Southeast Lower Michigan average temperature of 66.8 (when the three main climate stations are used). Throw in the NWS here in White Lake and the average drops to 66.4, a month when the temperature ought to average about 71.8 and on average, our warmest month. There were no 90 degree days in July, a month that typically has a good proportion of the summer 90s. A good testament for the persistence and resiliency of the cool (or below normal weather) in July was the amount of below normal departure days. Detroit recorded just two days that the temperature averaged above normal in July, while Flint and Saginaw each had just one and thus, nearly the entire month had below normal departures.

Overall, rainfall was plentiful while severe weather was not. The summer started out on the wet side over most of Southeast Lower Michigan from a Flint to Port Huron line /roughly I-69/ south to the Ohio border seeing above normal rains in June. As an example, out of the 5.28" of rain that fell in June, 2.59" fell on the 19<sup>th</sup> and another nine tenths of an inch /.90"/ was measured on the 11<sup>th</sup> therefore, 66% of June's rain in Detroit fell on two days. By the end of June, many areas across Southeast Lower Michigan saw rainfall amounts of four to as much as six inches above the norm for the first six months of the year. The precipitation slacked off in July with all regions seeing below average rainfalls, though not terribly so. The main dry streak came early-mid July with just a couple of days of rain. More generous rains returned in August with most areas seeing normal to above rain.



## **Severe Weather Season 2009**

**As stated, severe weather was quite limited little during the 2009 season due in part to the abnormal coolness of the season. This resulted in the severe weather season having the least amount of severe weather seen since the inception of the Doppler radar and the start of White Lake's statistics /1995/.**

**While June's best severe weather with wind and hail damage occurred on the 25<sup>th</sup>, beforehand, impressive widespread torrential rains accompanied other storms late on the 19<sup>th</sup> into early morning hours of the 20<sup>th</sup> causing lowland and river flooding. Some of the higher rainfall amounts included over three and a half inches /3.59"/ that drowned the Belleville area (southwest of Detroit), while 3.40" deluged portions of Allen Park. In addition, 3.48" clobbered downtown Ann Arbor, 2.90" filled the rain buckets in Canton and Grosse Pointe, 2.85" of rain was dumped just west of the town of Plymouth, 2.40" at both Pinckney and Monroe, 2.35 near Rockwood, 2.28" at Woodhaven and 2.16" in Howell.**

**Then the severe weather later in the week on the 25<sup>th</sup>, rocked the area with many reports of wind gusts between 60 and 75 mph over mainly the north-northeast suburbs. Macomb County saw the worst of the windstorm damage. A 75 mph wind gust estimated at Fraser resulted in numerous trees and power lines knocked down. In addition, 70 mph winds in St Clair Shores and Shelby Twp saw caused considerable damage to trees with some branches/trees blocking roads. Powerful winds of 65 mph uprooted a couple of trees and slammed them onto roofs of homes in sterling heights, while up to golf ball size hail pounded the Oxford/Lake Orion area with localized damaged to vehicles.**

## **Autumn – Early Winter 2009:**

**Our Autumn of 2009 weather pattern over the country brought primarily a mild, pleasant and dry fall. It wasn't all nice, however, as our mild fall contained one cold miserable heart coming during the first half of October. Also, our weather this fall was jumbled up as far as the typical trend seen with one month's weather better suited for another's. September's weather was the most pleasant relative to normal (with November's coming in a close second). September's weather contained above normal temperatures, considerable sunshine and below normal rainfall. In fact, September's weather was more typical of summer (albeit, a few degrees shy of summer's normal) than our actual summer was.**

**With a change in month, came the abrupt temporary change in autumn's overall pattern. A strong amplified upper air pattern brought pre-season Polar cold resulting in temperatures hovering in [record cold territory](#) during the first half of the October. Most areas saw a killing frost/freeze by the second weekend of October (roughly a week ahead of schedule, depending on location) but ironically (especially considering the strength of the cold) none of the three official climate sights reported snow in October. Temperatures moderated impressively during the remainder of the month. As it turned out, October's weather was better suited for November's than November's was. November's weather was mainly unseasonably mild and dry (not unlike the overall fall) weather. All areas saw temperatures average close to 5 degrees above normal with only the first week containing minor below normal departures. At times, the mild weather fulfilled the classic Indian Summer phenomenon for mid-late fall. Also, there were no November gales this November, a November that was a-typically nice with light winds.**

**Like October, no snow fell in November and there have been only 17 years when Detroit recorded no snow in either October or November since 1880. (Thus, the lack of no snow through November in Detroit happens about once every 13 years. Our first official winter month /December/ of the 2009-10 winter season was fairly typical with temperatures averaging close to normal. Snowfall also averaged around normal across the north and west suburbs of Detroit but below the norm, south of Detroit to the Ohio border. A deep intense low pressure system blew through the Great Lakes on the 9<sup>th</sup>, bringing wind driven rain, high winds (gusts in excess 50 mph) along with minor damage and power outages. The most notable meteorological item pertaining to the low was its deep low pressure core. The pressure reading fell to 28.98" /981.3 MB/ at Detroit was the second lowest pressure ever recorded in December.**

**Again, additional climate information LOCAL AND NATIONAL can be found at:**

**<http://www.weather.gov/climate/index.php?wfo=dtx>**