

2010 FLINT/SAGINAW ANNUAL

**14th WARMEST YEAR AT FLINT AND 6TH WARMEST AT SAGINAW IN 2010
AN EXCEPTIONAL SPRING IGNITES SIX MONTHS OF RECORD WARMTH
DRY CONDITIONS DOMINATE ACROSS THE SAGINAW VALLEY INTO FLINT
AN OVERALL BEAUTIFUL AUTUMN**

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Overview

After a relatively cool year across Southeast Lower Michigan in 2009, the above average warmth returned in 2010 with temperatures at Flint averaging at 49.3 degrees or 2.5 degrees above the normal /46.8/ for a year. This made the year 2010 the 14th warmest year on record. This is not the first time this past decade where the annual temperature has managed to creep into the warmest year list. Back in 2006 with an average temperature of 49.0, the year placed at 20TH spot for warmest year. Further back in 2002, with an average temperature of 49.1, 2002 placed at 18th for warmest year. At Saginaw, the 2010 average temperature came in a smidgen warmer than Flint with 49.5. This made it the 6th warmest year in well over a hundred years /1898/ at Saginaw. Saginaw also placed in the warmest year list a few times this past decade. In 2006 with an average temperature of 49.1, the year placed at the 11th warmest. In addition, in 2001 the annual temperature averaged 49.2 degrees which placed 9th for warmest year. Much of the region had well below normal rainfall in 2010 with both Saginaw and Flint seeing a shortfall of better than six inches. At Flint, only 25.57" of precipitation fell in 2010 creating a deficit of 6.04". Typically, Flint measures around 31.61" of precipitation in a year. With a precipitation total of just 25.22" at Saginaw, a deficit of 6.39" was generated. Saginaw's annual normal precipitation also stands at 31.61" The tip of the Thumb fared much better as storms with heavy rain in June and July negated much of the dryness. As an example, Harbor Beach recorded 32.46" of precipitation in 2010, a bit above average. In addition, Bad Axe saw less precipitation than Harbor Beach with 28.50" but this was still more than many other locations in the region.

The year of 2010 started out with a typical winter ([season review](#)) in place as far as average temperatures and snowfall. The oddity that surfaced during the winter of 2009-10 was the lack of variability in temperatures and narrow range of snowfalls. The average temperature for Southeast Michigan for the winter came in at 25.5 degrees (averaging all three sites - DTW, FNT and MBS) and an even 25.0 degrees, with DTX /White Lake/ averaged in. This fell right on the normal temperature of 25.0 degrees for all of Southeast Lower Michigan. Winter 2009-10 snowfall amounts were remarkably in a tight, normal range across the region with all four sites averaging in the mid 40s (inches of snow). These "normal" or "average" amounts of snow are the result of many years averaged. The snowfall average can also be referred to as "the average of the extremes".

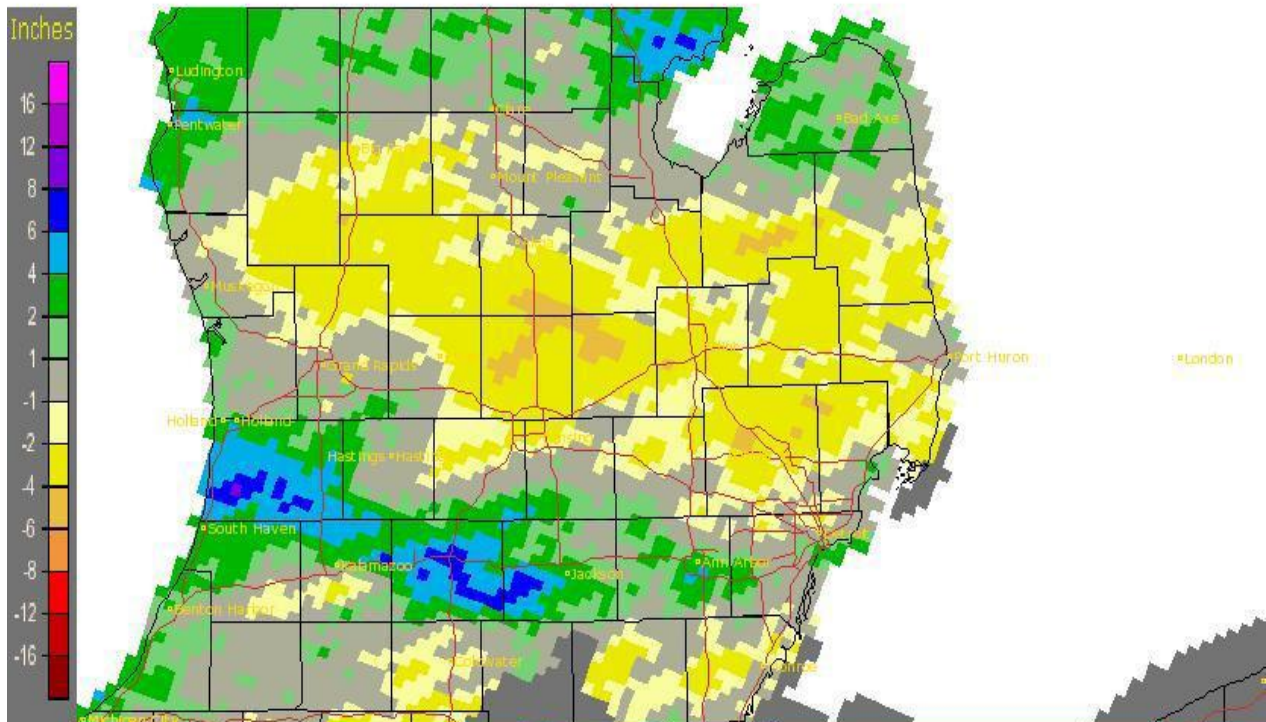
Spring came on like gangbusters in 2010 with March being one of the nicest in a century. Temperatures averaged well above normal and little, if any, snow was seen. This is highly atypical for March in the Great Lakes. The spring grew extraordinarily warmer with time, turning in an outstanding performance in the end; ranking the warmest spring in history for Detroit, 2nd warmest at Saginaw and 5th warmest at Flint. Along with the warmth at the start came dry weather which did moisten up by late in the season.

Record establishing heat continued into the **summer** with Detroit having its 4th warmest summer on record, Flint its 9th warmest and Saginaw 10th warmest. It should be noted, however, summer's high ranking can be more attributed to an abundance of very warm days (mid to upper 80s) and plenty of warm overnight lows.

Along with the very warm conditions there was plenty of humidity for storms (especially south of I-69) with over half the area seeing average to above average rainfall. A few distinctive wet and dry areas developed with time as repetitive storm tracks set the stage. The wettest area extended from the Ann Arbor area, east across the southern portions of Metro Detroit and Downriver communities and points south to near the Ohio border. This area also saw the majority of the severe weather. Another wet area could be found over the tip of the Thumb Region /Huron County/. Notably dry conditions were sandwiched in between the above areas noted and that extended from the far northern suburbs of Detroit northward into the base of the Thumb (Fig -1).

Fig -1

Detroit/Pontiac, MI (DTX): Current 90-Day Departure from Normal Precipitation
Valid at 9/2/2010 1200 UTC- Created 9/2/10 15:32 UTC



The [Autumn of 2010](#) weather pattern over Southeast Lower Michigan was primarily mild and pleasant with mainly below average rainfall. The driest of weather remained in the northern areas of Southeast Lower Michigan around the Saginaw Valley and Thumb Region. October's weather was the most pleasant relative to normal. All regions saw periods of beautiful, warm Indian Summer weather in October with even a few days of notable warmth returning for an encore in November. In spite of being a warm year, 2010 ended on a cold note in December with all Southeast Lower Michigan averaging about 3.0 below normal as the new [winter of 2010-2011](#) started on a cold but relatively dry note.

Spring into Summer Warmth

While the warmth was impressive for the summer period, even more impressive is when the previous spring period is added. The average temperature for that six month period /Mar-Aug/ at Detroit, Flint and Saginaw all showed the warmest average temperature ever recorded. Looking at Table-1 (below) shows how 2010 ranked against the previous warmest six-month periods!

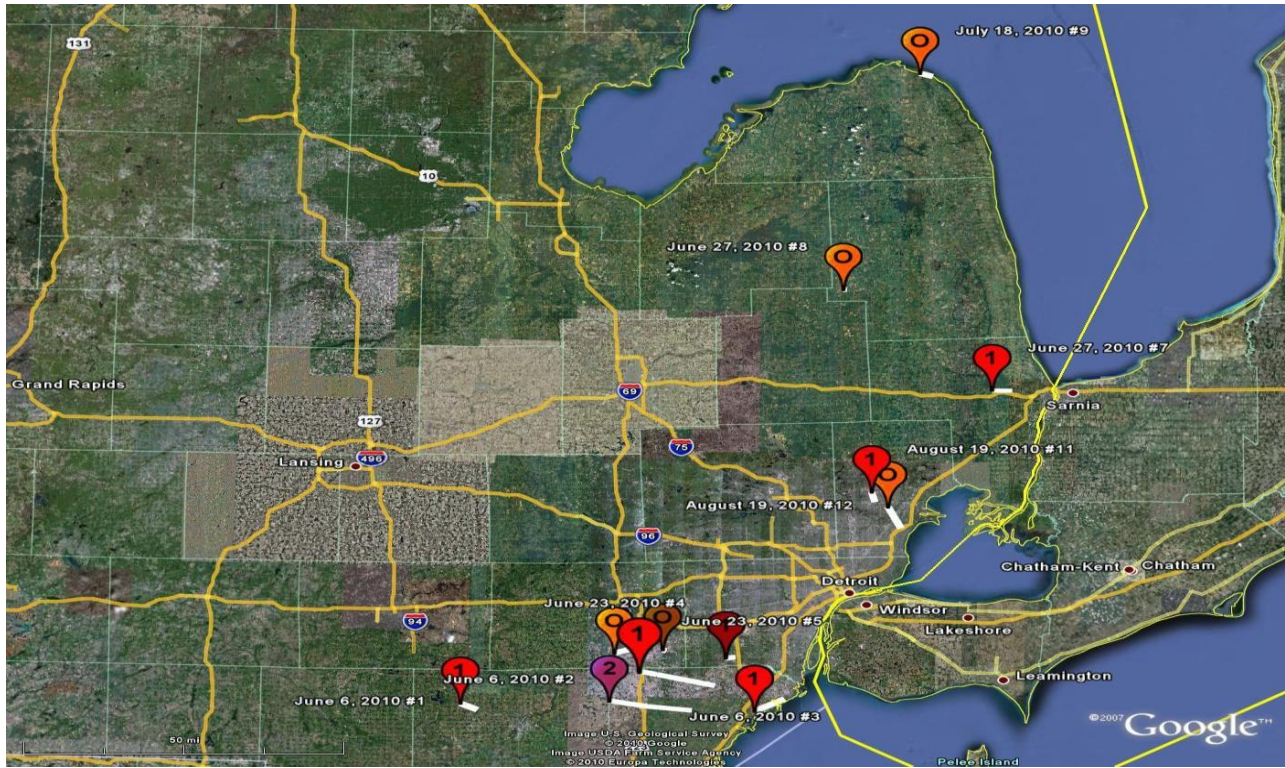
Table - 1

<i>Spring - Summer Period</i>											
<i>March 1st - August 31st</i>											
	Rank	Ave Temp	Year		Rank	Ave Temp	Year		Rank	Ave Temp	Year
Detroit	1	63.8	2010	Flint	1	61.2	2010	Saginaw	1	61.4	2010
	2	63.2	1991		2	61.0	1987		2	61.1	1921
	3	63.1	1921		3	60.6	1991		3	60.5	1998
	4	62.6	1955		4	60.2	1955		4	59.8	1991
	5	62.1	1987		5	59.4	1977/88		5	59.5	1987

Busy Severe Weather Season Produces 12 Tornadoes

The severe weather season for 2010 was busy with severe weather outbreaks producing 12 tornadoes (Fig - 2). On average, we see about six tornadoes in a severe weather season. The 12 tornadoes in 2010 tied for 6th place (Table - 2) for the most tornadoes in Southeast Michigan for any year back to 1950.

FIG - 2



Numbers denote **EF scale**

On average, we have about six tornadoes in a severe weather season. The 12 tornadoes in 2010 tied for 6th place (Table - 2) for the number of tornadoes in Southeast Lower Michigan for any year back to 1950.

Table - 2

YEAR	Number of TORs
1973	20
1974	19
2004	16
1997	14
1988	13
1984, 1986, 2010	12
1975, 1990	11
1976, 1977, 2001, 2007	10

June was the most active month for tornadoes over Southeast Lower Michigan with eight tornadoes. We can see June 2010 (Table - 3) flirted with some tornado records in Southeast Michigan.

Table - 3

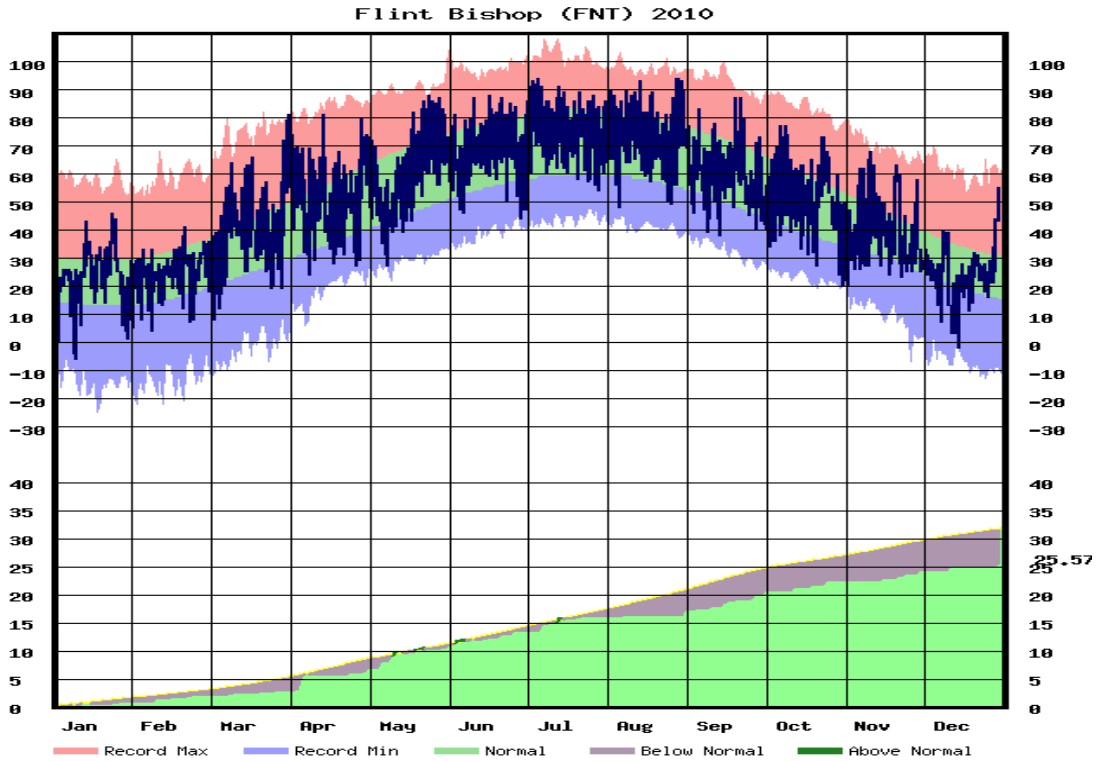
Most Tornadoes in June for Southeast Lower Michigan	
No.	Year
17	1973
9	1953
8	2010

More specific information on particular severe weather events, along with other notable events, can be found [here](#).

Flint 2010 Temperature and Precipitation Statistics

	<u>FLINT</u>	<u>2010</u>	<u>STATS</u>
	TEMP		PCPN
	<u>2010</u>		<u>2010</u>
JAN	22.1		0.83
FEB	23.9		1.37
MAR	38.5		0.65
APR	51.6		3.34
MAY	60.2		4.23
JUN	68.8		3.12
JUL	74.2		2.49
AUG	73.7		0.32
SEP	61.7		3.66
OCT	52.0		2.42
NOV	40.0		1.67
DEC	24.3		1.47
AVE	49.3 /14 TH /		25.57
DEP	2.5		-6.04
Norm	46.8	Norm	31.61

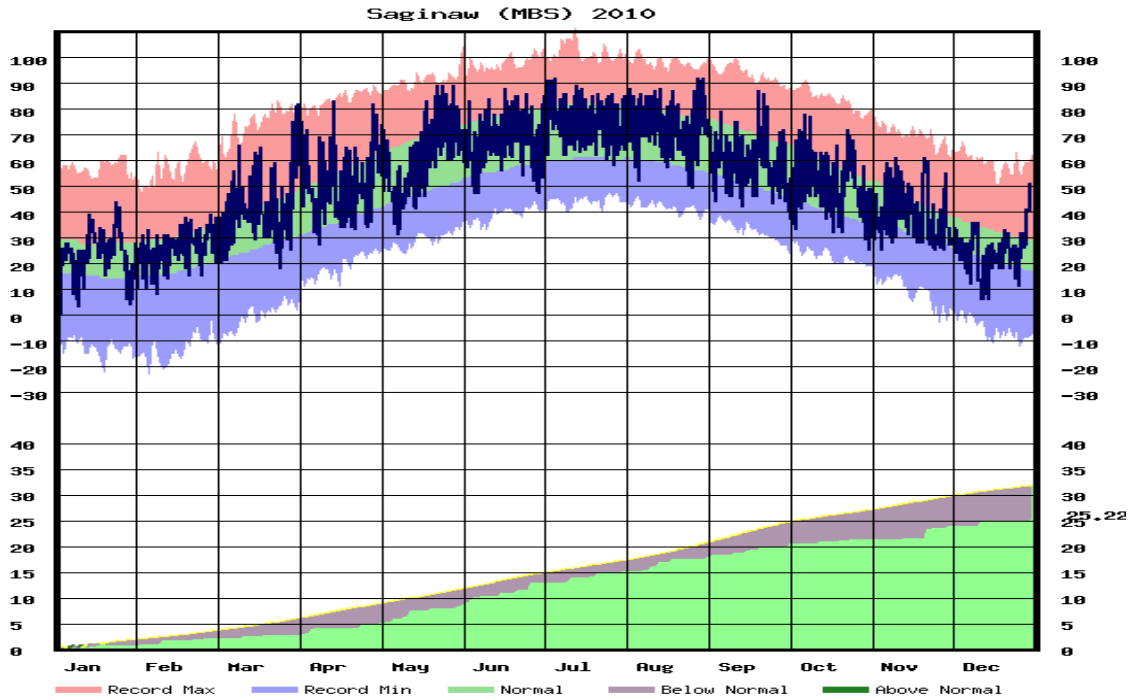
Daily 2010 Temperature/Precipitation plot for Flint



Saginaw 2010 Temperature and Precipitation Statistics

	<u>SAGINAW</u>	<u>2010</u>	<u>STATS</u>
	TEMP		PCPN
	<u>2010</u>		<u>2010</u>
JAN	22.5		1.00
FEB	25.2		1.21
MAR	39.5		0.72
APR	51.7		2.16
MAY	61.3		3.45
JUN	68.2		4.49
JUL	74.3		2.09
AUG	73.3		2.63
SEP	61.0		2.38
OCT	51.8		1.46
NOV	39.9		2.43
DEC	24.9		1.20
AVE	49.5 /6TH/		25.22
DEP	+2.5		-6.39
Norm	47.0	Norm	31.61

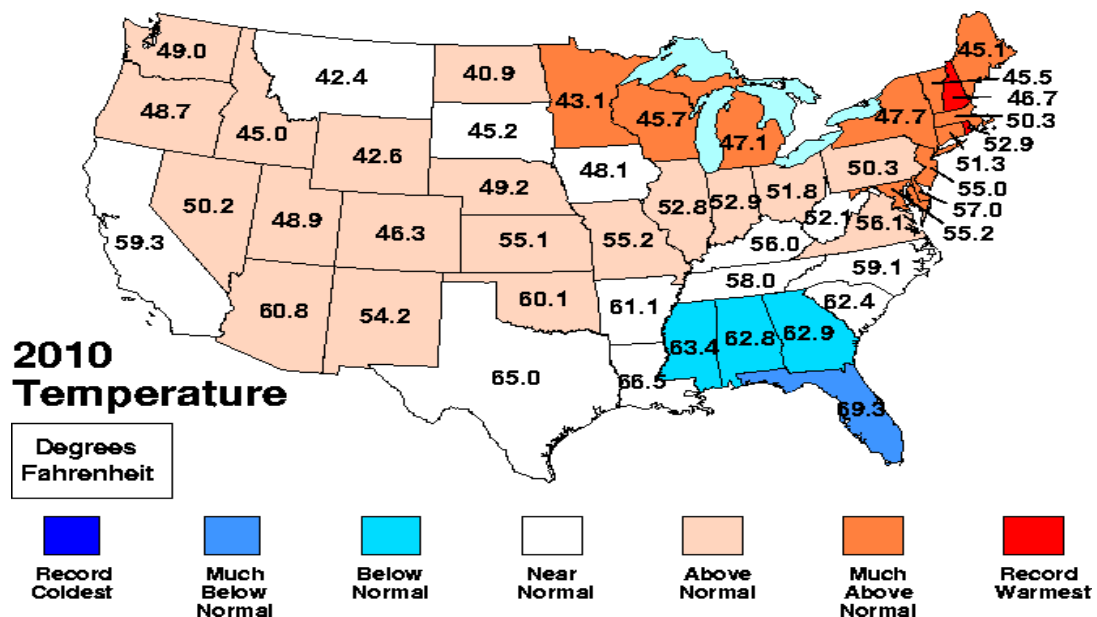
Daily 2010 Temperature/Precipitation plot for Saginaw



See past [plots](#) (back to 2000) for both Flint and Saginaw [legend](#)

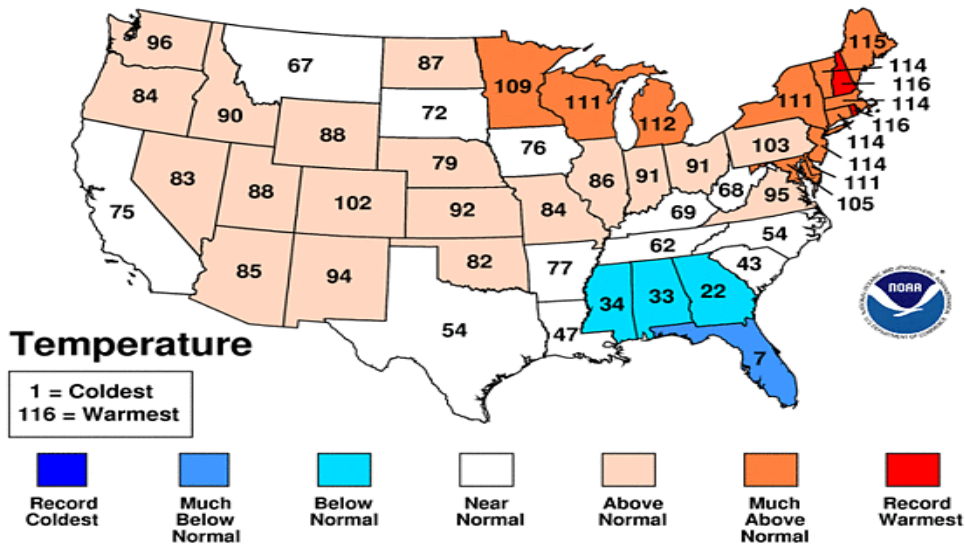
Additional statistical data for 2010 in Southeast Lower Mi can be obtained at:
<http://www.weather.gov/climate/index.php?wfo=dtx>

State Average Temperatures



January-December 2010 Statewide Ranks

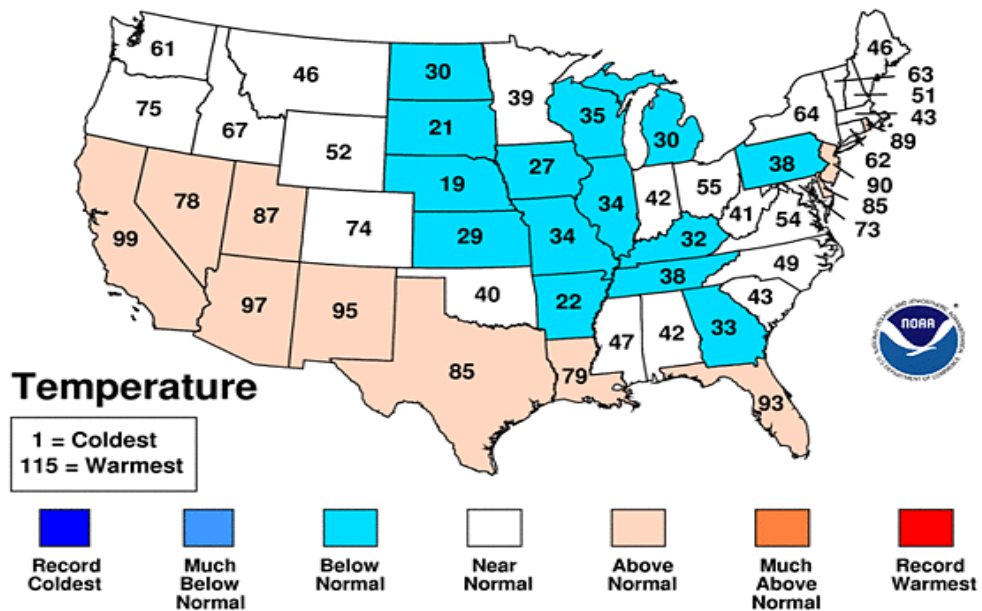
National Climatic Data Center/NESDIS/NOAA



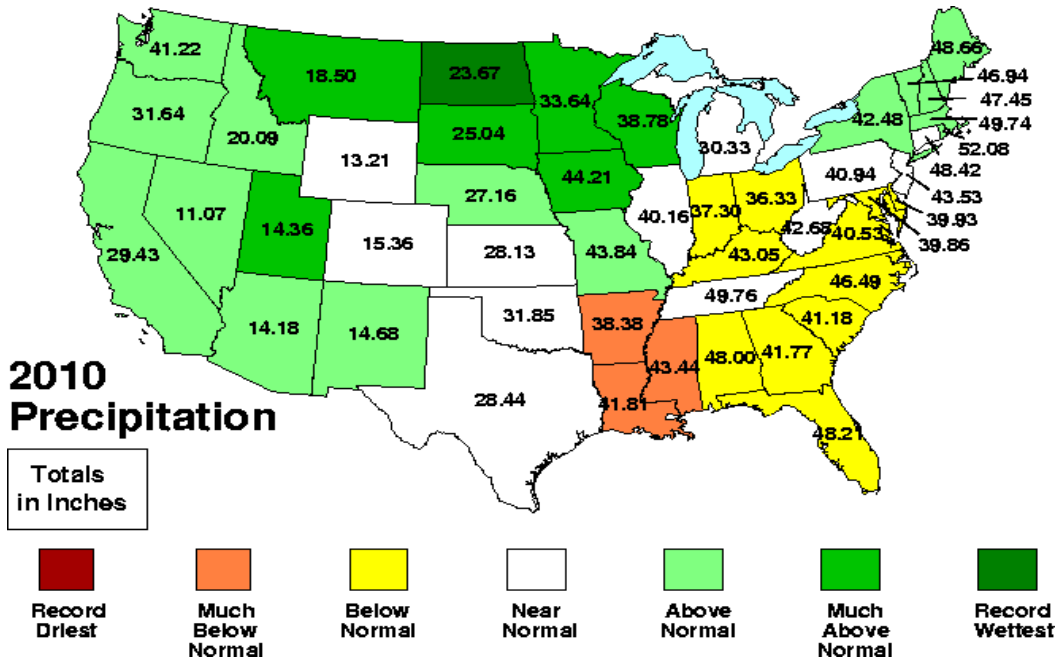
Compare 2010 statewide ranks to 2009, two impressively contrasting years!

January-December 2009 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA



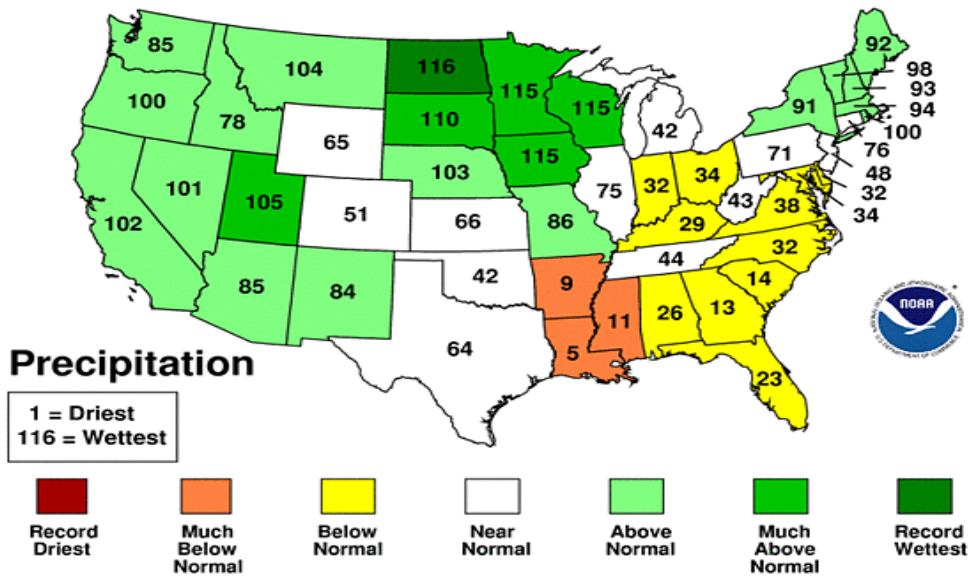
National view of average state precipitation



National view of the statewide precipitation ranks

January-December 2010 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA



Additional statistical data and updates for 2010 (across the US or World can be obtained at: <http://www.ncdc.noaa.gov/temp-and-precip/maps.php>
<http://www.ncdc.noaa.gov/climate-monitoring/>