



(A little nostalgia: a picture from the Blizzard of '78)

[The Long, Cold Snowy Winter of 2010-11](#)

[Winter 2010-11 Final Review for Southeast Lower Michigan](#)

[Last Four Out of Six Winters in Top 10 Snowiest \(Three in the Last Four Winters\)](#)

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The Winter of 2010-11 was one of our coldest winters in recent history across Southeast Lower Michigan. Temperatures averaged around 22.4 degrees over the entire region and this was 2.6 degrees below normal. The winter was not one of extreme cold spells intermingled with substantial mild spells, it was one more of persistent moderate cold with just a few fleeting mild spells, similar to that of 2002-03. This winter has also had a similar feel to that of 2002-03 by way of temperature pattern and departures with below normal days far outpacing the above. On average, two thirds of the days from December through February contained below normal temperatures. The impacts of a strong La Nina and another winter with a predominant negative North Atlantic Oscillation /NAO/ were well reflected in our winter weather pattern. When the NAO is in a negative state it encourages troughing over eastern half of the country which in turn delivers Arctic air into the Great Lakes. The recent Winter of 2008-09 also averaged near 22 ½ degrees but the nearly duplicate average came by way of a cold December, a very cold January and a milder February (see a temperature comparison in the three winters in Chart -1, below).

This past winter played out like a movie plot; starting out slowly with a gradual buildup of winter weather events and cold outbreaks through midwinter, only to accelerate with increasing snowstorm amounts and depth of the cold outbreaks by late January and early February. There was no doubt about it; the worst of the winter was the second half. Of course Mother Nature teased us early in the game (not unlike a movie in the beginning) with our first big snowstorm in mid-December. The storm deepened over the region as colder air was drawn into the system, quickly changing the rain over the area to snow. Strong gusty northerly winds buffeted the region as they approached 40 mph over the region. Snowfalls ranged mainly from 4" to 7" over much of the region with higher amounts of 8" to 20" covering the tip of the Thumb. Wind gusts to 50 mph+ over the tip of the Thumb whipped up Blizzard conditions while piling the snow into drifts as high as 10 feet.

Mother Nature threw us a curve ball by starting January on a relatively balmy note (high around 50 rang in the New Year) only to come back at us with primarily below normal temperatures the rest of the month. Accompanying the cold, light snow fell nearly every day in January (28 days at White Lake) and this alone added up with time; though there were no big storms. The Saginaw Valley saw the highest snow amounts in January with Saginaw measuring 22.0". Other amounts in January included: Detroit with 17.9" of snow, Flint received 17.3" while White Lake measured an even 17.0". This snowfall was about 6 to 12" above normal. The most notable snow events were January 11-12th and January 29th.

No question about, Mother Nature saved February this winter for our most noteworthy winter month. It was a [very busy February](#) across Southeast Lower Michigan with big snowstorms, freezing rain, sleet, thunderstorms, cold and even a few mild spells thrown in for good measure. There were many snowstorm events and they can be found [here](#).

March into Mid April 2011: The Time Period Spring Forgot

After a cold and snowy winter, Mother Nature forgot to turn on the spring weather in March with the below normal temperatures and the snow persisting. Temperatures averaged two to three degrees below normal along with above average snowfalls for what is typical in March. A cold snap late in the month put a definite chill on any spring green up with soil temperatures reversing course from around 40, back down to the lower 30s by the end of the month. Snowfalls generally ranged from 8.0" to 12.0" with the highest amounts falling across the Saginaw Valley and Thumb Region. March's monthly climatic summaries can be found here for [Detroit](#), [Flint and Saginaw](#). April thus far has not been anything to write home about with a dominance of normal to cool days with one glaring exception, a 24 hour period of exceptional warmth from midday on the 10th to midday on the 11th. Colder weather and more snow soon followed on the 17th into the 18th with generally an inch or two falling.

TEMPERATURE STATISTICS

Reviewing the three winter month's /Dec-Feb/ temperature statistics (Chart - 1) indicates the Winter of 2010-11 was a colder than typical winter. Temperatures all three months averaged below normal at all stations with December and January having the greatest departure. The temperature data chart shows monthly temperatures, winter temperatures and departures (any additional monthly details can be found [here](#)).

(Chart - 1)

WINTER TEMPERATURES: 2010-11/2002-03/2008-09

SITE	DEC	JAN	FEB	WINTER TEMP AVE / DEP 2010-11	WINTER TEMP AVE / DEP 2002-03	WINTER TEMP AVE / DEP 2008-09
DETROIT	25.6	21.8	24.8	24.1/-3.0	24.1/ -3.0	24.4/ -2.7
FLINT	24.3	19.0	23.5	22.2/-1.7	22.5/-1.4	21.8/-2.1
SAGINAW	24.9	18.8	23.4	22.4/-1.7	21.3/ -2.8	21.4/-2.7
NWS WHITE LAKE	22.6	17.6	22.8	21.0	21.2	21.3

WINTER TEMPERATURES: 2010-11/2002-03/2008-09

WINTER TEMPERATURES/DEPART FROM NORM	B	B	B	SE Michigan Winter Ave 22.4 / -2.6 Including DTX	SE Michigan Winter Ave 22.3 / -2.7 Including DTX	SE Michigan Winter Ave 22.2 / -2.8 Including DTX

MA= Much Above A=Above N=Normal B=Below MB=Much Below

SNOWFALL STATISTICS: Winter Season of 2010-11 and Comparisons to 2008-09 & 2002-03

Season snowfall for 2010-11 /Nov -Apr/ (Chart - 2) indicates the Winter of 2010-11 started out slow but gained momentum by the second half of January. In fact, at Detroit and Flint more snow fell in February than had fallen in the winter up to that point (very similar to that of 2010) and thus, easily doubling the amounts. By the end of March, all three cities (Detroit, Flint and Saginaw) were once again in the top 10 snowiest winters list. The Winter of 2008-09 was basically a front-end loaded snow season with much of the snow falling by the end of January. All regions saw a well above normal snow cover that winter. The Winter of 2002-03 was snowy generally south of I-69 with metro Detroit and Ann Arbor south to the Ohio Border getting the surplus.

(Chart – 2)

Season Snowfall Comparison: 2010-11/ 2002-03 / 2008-09/NORMS

SITE	OCT	NOV	DEC	JAN	FEB	MAR	APR	SEASON SNOWFALL 2010-11	SEASON SNOWFALL 2002-03	SEASON SNOWFALL 2008-09	SNOWFALL NORMALS
DETROIT	0	T	9.3	17.9	31.7	8.6	1.6	69.1"	60.9"	65.7"	44.0
FLINT	0	0.2	12.1	17.3	31.7	8.6	2.2	72.1"	52.1"	72.8"	48.3
SAGINAW	0	0.3	9.6	22.0	29.4	12.0	2.9	76.2"	42.4"	79.4"	45.0
NWS - WHITE LK	0	0.1	12.0	17.0	24.3	6.3	2.0	61.7"	66.0"	88.8"	E55.0
DEPART FROM NORM (AVE)	B	B	N	A	MA	A		MA	A	MA	N

MA = Much Above A = Above N=Normal B=Below MB=Much Below E= Estimated

Last Four Out of Six Winters in the Top 10 Snowiest

If you felt like you've been shoveling a lot of snow the past several winters, you are right. The last four out of six winters have made the Top 10 Snowiest Winters list at all three locations (Detroit, Flint and Saginaw) with three of them occurring in past four winters. The Winter's of 2007-08, 2008-09 and now 2010-11 all have been snowy across the region. Taking this one step further back, these snowy winters are something that has become rather commonplace lately with all three cities making the Top 20 Snowiest list (Chart -3) 5 times since 2002-03 at Detroit and Flint and 2000-01 at Saginaw.

(Chart – 3)

Top 20 Snowiest/Snowless Seasons in Southeast Lower Michigan

Rank	Detroit Area*				Flint Bishop**				Saginaw Area***			
	Snowiest		Snowless		Snowiest		Snowless		Snowiest		Snowless	
	Total	Year	Total	Year	Total	Year	Total	Year	Total	Year	Total	Year
1	93.6	1880-1881	13.4	1936-1937	82.9	1974-1975	10.9	1921-1922	87.2	1966-1967	7.8	1941-1942
2	78.9	1925-1926	13.7	1948-1949	82.8	2007-2008	16.0	1944-1945	83.5	1951-1952	14.2	1999-2000
3	74.0	1981-1982	15.1	1881-1882	78.6	1966-1967	17.6	1948-1949	80.0	2007-2008	18.5	1976-1977
4	71.7	2007-2008	15.2	1918-1919	76.6	1975-1976	18.5	1932-1933	79.4	2008-2009	20.0	1952-1953
5	69.1	2010-2011	15.4	1965-1966	75.3	1951-1952	20.7	1936-1937	76.2	2010-2011	21.0	1920-1921
6	69.1	1899-1900	15.8	1889-1890	73.0	2004-2005	21.5	1943-1944	75.4	1996-1997	21.4	1901-1902
7	67.2	1907-1908	16.6	1952-1953	72.9	1964-1965	21.6	1933-1934	75.4	2004-2005	21.9	1963-1964
8	67.2	1929-1930	17.1	1968-1969	72.8	2008-2009	23.4	1952-1953	74.9	1903-1904	22.7	1948-1949
9	65.7	2008-2009	18.0	1957-1958	72.1	2010-2011	24.2	1957-1958	72.4	1908-1909	23.6	1918-1919
10	63.8	2004-2005	18.0	1960-1961	64.9	1925-1926	24.4	1937-1938	68.4	1995-1996	23.8	1982-1983
11	63.1	1974-1975	20.0	1982-1983	63.4	1929-1930	28.2	1939-1940	66.2	2000-2001	23.9	1916-1917
12	61.7	1977-1978	20.9	1945-1946	62.9	1972-1973	28.3	1997-1998	65.8	1972-1973	24.3	1943-1944
13	61.6	1884-1885	22.8	1943-1944	62.2	1981-1982	28.4	1931-1932	64.0	1984-1985	24.5	1932-1933
14	60.9	2002-2003	23.0	1888-1889	61.5	1958-1959	28.6	1968-1969	63.0	1971-1972	25.1	1944-1945
15	60.2	1898-1899	23.4	1997-1998	60.1	1959-1960	28.7	1941-1942	61.3	1907-1908	25.3	1927-1928
16	60.0	1922-1923	23.7	1999-2000	56.0	1989-1990	28.9	1924-1925	61.1	1964-1965	26.1	1921-1922
17	59.9	1892-1893	23.8	1937-1938	55.9	2005-2006	29.5	1988-1989	60.6	1947-1948	26.9	1993-1994
18	58.6	1951-1952	24.1	2003-2004	55.0	1969-1970	29.5	1999-2000	59.3	1911-1912	27.4	1983-1984
19	58.5	1911-1912	24.8	1941-1942	54.9	1970-1971	30.5	1928-1929	58.1	1904-1905	27.5	1912-1913
20	57.0	1903-1904	25.1	1988-1989	54.4	1991-1992	31.3	1956-1957	57.0	1929-1930	27.5	1979-1980

* Detroit Area snowfall records date back to January 1880.

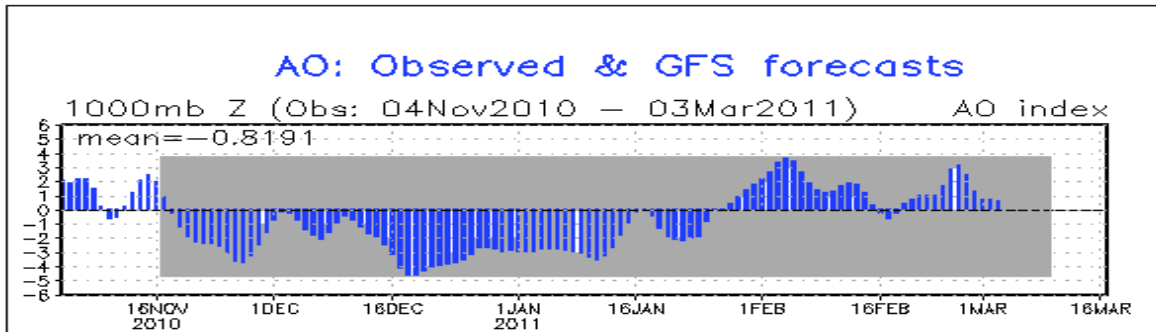
** Flint Bishop snowfall records date back to January 1921.

*** Saginaw Area snowfall records date back to January 1900.

Arctic Oscillation: Winter of 2010-11

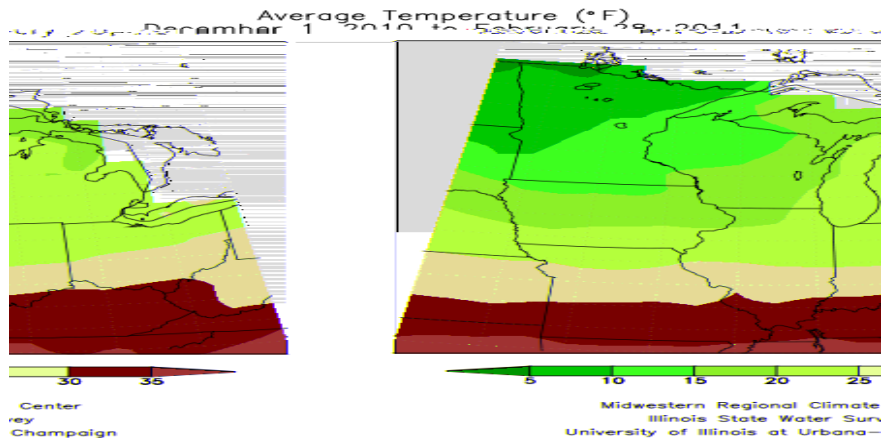
The Arctic Oscillation /AO/ (Fig - 1) basically a subset of the NAO displayed an exclusively negative trace from late November through January, while February was dominated by a more positive state. The temperature departure pattern reflected the AO well with the majority of our below normal temperatures coming the early to mid winter as lower (relative to normal) temperatures dominated. There was no extensive “January Thaw” this winter; we had to wait until February. February’s temperatures varied and reflected of a few notable warm and cold periods.

(Fig - 1)

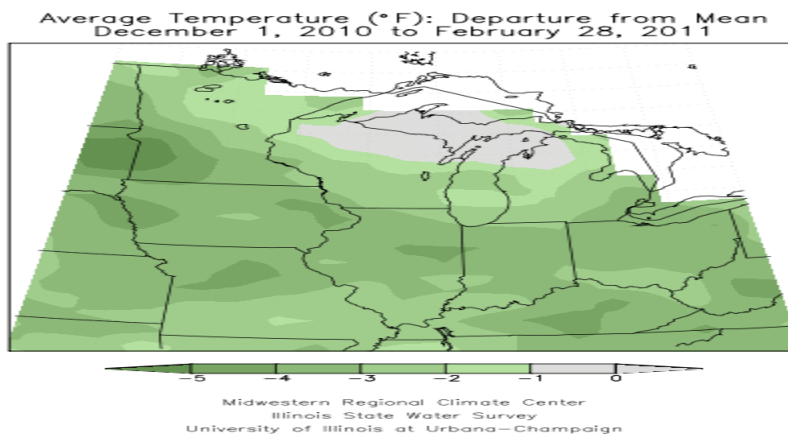


Below (Fig's 2 & 3) are the average temperature and departure maps for the winter across in the Upper Midwest, Great Lakes and Ohio Valley.

(Fig - 2)



(Fig - 3)



PRECIPITATION STATISTICS

Reviewing the past three winter month's /Dec-Feb/ precipitation statistics (Chart - 4) indicates the Winter of 2010-11 was close to a typical winter as far as rainfall and melted snow is concerned, with the exception of Saginaw. Precipitation totaled near the average over much of the area along and south of I-69 and over the Thumb Region. The Saginaw Valley however, showed a deficit of an inch or better. Going into February, all regions maintained a deficit even though snow totals were around normal to above, simply because much of the snow that fell contained low water equivalents. This changed in all areas (except the Saginaw Valley) in February as more rainfall and wetter snows brought the entire winter precipitation total up to normal levels.

(Chart – 4)

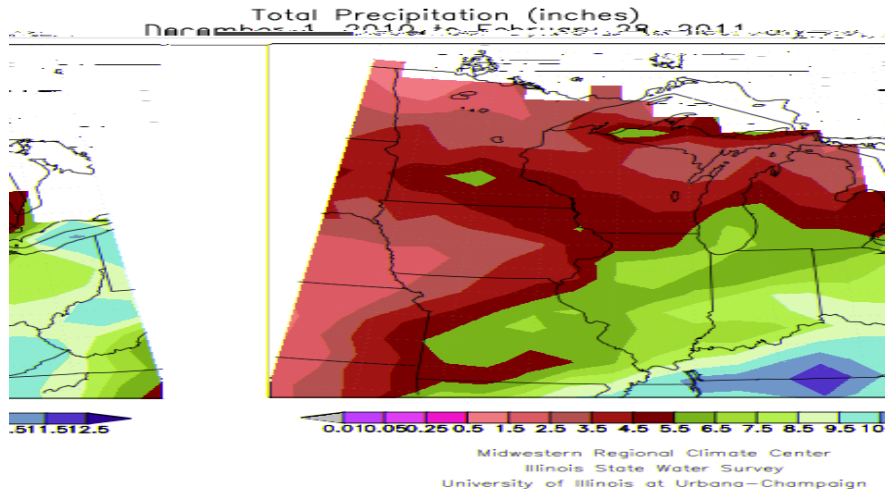
WINTER 2010-11 PRECIPITATION

SITE	DEC	JAN	FEB	WINTER TOTAL PRECIP/DEPART
DETROIT	1.28	1.53	3.60	6.41 / +0.11
FLINT	1.47	1.25	2.36	5.08 / -0.02
SAGINAW	1.20	1.32	1.63	4.15 / -1.30
NWS WHITE LK	1.34	1.42	1.99	4.75 / B

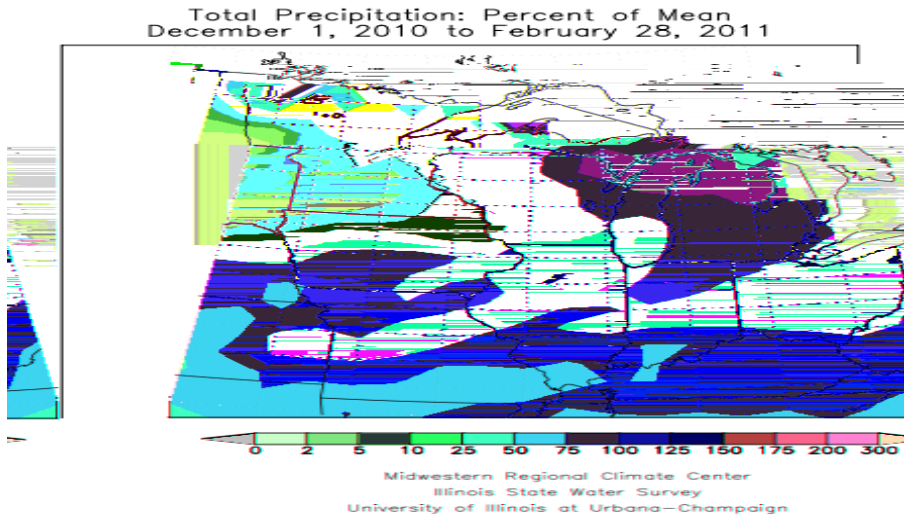
MA = Much Above A = Above N=Normal B=Below MB=Much Below

Below (Fig's 4 & 5) are the total precipitation and departure maps for the winter across the Upper Midwest, Great Lakes and Ohio Valley.

(Fig - 4)



(Fig - 5)



I retire from the NWS on April 23rd, 2011. I plan to remain active in the weather field as my interest remains strong. I wish to thank my readers for many years of encouraging comments on my past weather stories, season outlooks/reviews along current weather and climate summaries.

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