

Second Stormy and Snowy Winter in a Row Establishes Snow Records
 /Updated to Include Snow Records/
 2008-09 Winter Cold Similar to That of 2002-03 and 1993-94

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Yet another stormy, snowy winter has been the tale of the Winter of 2008-09. There were, however, two main differences between the Winter of 2008-09 and last winter, 2007-08. 1) This time the worst of the winter was early to mid winter whereas last winter, it was mid to late winter. 2) This winter was considerably colder and more brutal than last winter.

Using the three main locations (Detroit, Flint and Saginaw) the average winter temperature for Southeast Lower Michigan came in at 22.5 degrees! Throw in the northern suburbs of Detroit with White Lake's temperatures and the average temperature falls to 22.2. Typically, the average winter temperature for all of Southeast Lower Michigan is 25 degrees. Therefore, the winter averaged 2.5 degrees below normal.

WINTER 2008-09 TEMPERATURES

SITE	DEC	JAN	FEB	WINTER TEMP AVE DEP
DETROIT	27.4	17.3	28.5	24.4/-2.7
FLINT	24.7	14.5	26.2	21.8/-2.1
SAGINAW	23.7	14.9	25.5	21.4/-2.7
NWS WHITE LAKE	23.9	14.4	25.5	21.3/ B
DEPART FROM NORM	B	MB	A	B

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

WINTER 2008-09 PRECIPITATION

SITE	DEC	JAN	FEB	WINTER TOTAL PRECIP/DEPART
DETROIT	4.07	1.10	2.12	7.29/ +0.99
FLINT	2.79	0.96	2.57	6.32/ +1.22
SAGINAW	3.77	0.77	3.03	7.57/ +2.12
NWS WHITE LK	3.72	1.60	2.64	7.96/ A
DEPART FROM NORM	MA	B	A	A

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

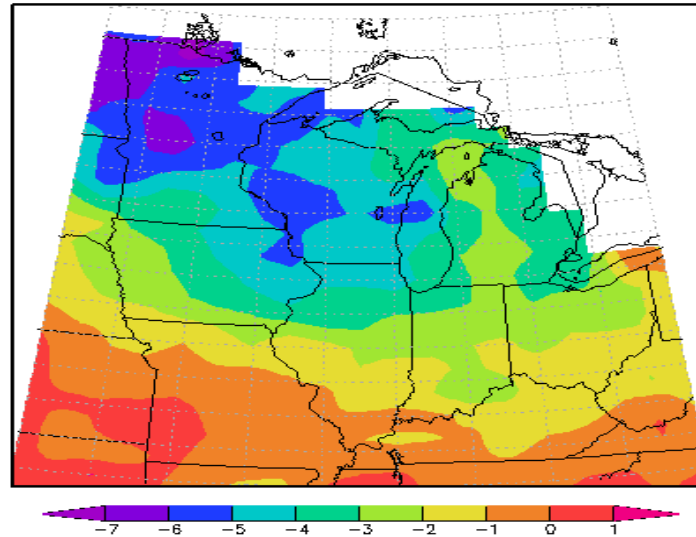
WINTER 2008-09 SNOWFALL

SITE	OCT	NOV	DEC	JAN	FEB	MAR	APR	SEASON/DEP	LAST SEASON
DETROIT	0.0	2.2	21.4	25.2	8.5	1.0	7.4	65.7"/+21.7	71.7"
FLINT	0.0	9.2	29.1	17.1	10.2	2.2	5.0	72.8"/+24.8	82.8"
SAGINAW	0.0	8.8	39.1	15.2	13.1	0.7	2.5	79.4"/+34.5	80.0"
NWS - WHITE LK	T	10.7	34.6	25.2	7.1	2.0	9.2	88.8"/ MA	91.7"
DEPART FROM NORM /SE MI/	B	A	MA	MA	N	MB	A	AV:76.6"/ MA	81.5"

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

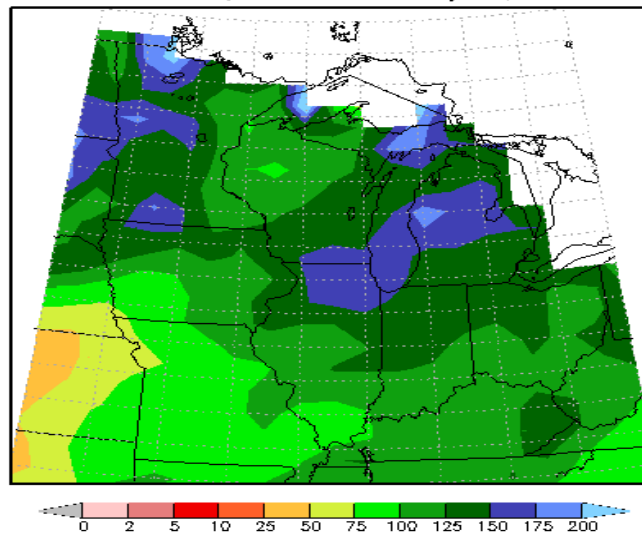
ACTUAL WINTER TEMPERATURE AND PRECIPITATION DEPARTURES

Average Temperature Departure from Mean in Degrees F
December 1, 2008 to February 28, 2009



NOAA Midwestern Regional Climate Center
Illinois State Water Survey
Champaign, Illinois

Total Precipitation Percent of Mean
December 1, 2008 to February 28, 2009



NOAA Midwestern Regional Climate Center
Illinois State Water Survey
Champaign, Illinois

**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 (with the exception of Flint) are without precedence in amounts (back to back winters). At Detroit, White Lake and Saginaw 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. At Flint, the Winter's of 2007-08 and 2008-09 placed second behind the Winter's of 1974-75 and 1975-76 (see tables).

DTW Most Snowfall in Two Consecutive Winters

1-	2007-08	71.7	
	2008-09	65.7	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

FNT Most Snowfall in Two Consecutive Winters

1-	1974-75	82.9	
	1975-76	76.6	159.5
2-	2007-08	82.8	
	2008-09	72.8	155.6
3-	2004-05	73.0	
	2005-06	55.9	128.9
4-	1958-59	61.5	
	1959-60	60.1	121.6
5-	1966-67	78.6	
	1967-68	40.8	119.4

MBS Most Snowfall in Two Consecutive Winters

1-	2007-08	80.0	
	2008-09	79.4	159.4
2-	1995-96	68.4	
	1996-97	75.4	143.8
3-	1966-67	87.2	
	1967-68	47.4	134.6
4-	1907-08	61.3	
	1908-09	72.4	133.7
5-	1903-04	74.9	
	1904-05	58.1	133.0

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

Note: Since White Lake's data only goes back to the Winter of 1995-96, our sample is quite small and not nearly as complete as the other locations, therefore only the top two were listed. The third place drops way down to 113.3 (Winter's of 2002-03, 2003-04).

Performance of the 2008-09 Winter Outlook

The performance of the Winter Outlook (from the study of selected past La Nina to Neutral winters) once again served us very well. In not only projecting the main type of winter we could expect but also, how it would play out.

From the Outlook ([in blue](#))

TEMPERATURES

A "NEUTRAL" WINTER IS ANYTHING BUT FOR 2008-09!

“While the trend of our winter analogues show mainly normal to below normal (very similar to our recent summer analogues), it is felt the coldest of analogues are too cold and thus skewing the average down. However, at the same time, some of the cold outbreaks seen this winter may rival some of the outbreaks seen in recent winters A trend seen during the winters may prove more helpful is that there tended to be a notable period of below normal temperatures with many of the seasons showing this more likely to occur during the first half of the winter (or first half of the cold season of mid Nov-mid Mar).”

Our La Nina - Neutral winter study strongly suggested colder winters dominated, especially the first half (the period mid November - January) with some moderation February and March. The winters used were very useful in projecting how the winter would unfold both in temperatures and snowfall. The worst of the Winter of 2008-09 did indeed come during the first half...mid November through January.

Our data set from La Nina to Neutral winters for the immediate Detroit area (below) shows how the Winter 2008-09 fit in with the analogue winters. First, highlighted in the light blue (five winters) are the past winters that showed the dominant trend (colder through January then milder or warmer February). In addition, the departure column (at the bottom) reflects the trend. Finally, if you increase the sample to include all the winters that projected a below normal winter, then it was seven out of 11...a strong trend.

DETROIT	T	E	M	P
SEASON	DEC	JAN	FEB	WNT AVE
1876-77	17.8	19.2	33.6	23.5
1887-88	23.9	23.0	28.2	25.0
1894-95	32.4	20.0	17.9	23.4
1904-05	25.8	17.9	17.9	20.5
1939-40	33.5	19.0	26.7	26.4
1951-52	28.4	29.3	29.3	29.0
1956-57	34.9	21.1	30.6	28.9
1976-77	21.5	12.8	25.2	19.8
1985-86	22.2	23.9	24.6	23.6
1989-90	18.0	33.6	30.7	27.4
2000-01	19.3	26.2	29.7	25.1
Ave	25.2	22.4	26.8	24.8
NORM 30Y	29.6	24.5	27.2	27.1
Dep	-4.4	-2.1	-0.4	-2.3
2008-09	27.4	17.3	28.5	24.4
Dep	-2.2	-7.4	1.3	-2.7

BEST TREND SETTERS
BELOW>ABOVE
(based on the selected years sample)

PRECIPITATION (including snowfall)

This winter indications suggest the best snows will fall across the northern areas of the region...or from Detroit's northern suburbs across Flint and Port Huron and on into the Saginaw Valley and Thumb Region...while near normal snow is expected south of a line from Ann Arbor to Detroit. The analogue winters are strongly hinting toward a two-tier snowfall pattern this winter with the heaviest amounts to the north with near normal extreme Southeast along with a better chance for mixed precipitation over the entire region.

The best chance for above snow obviously will lie just north of the main storm tracks in the colder air. Therefore, above normal precipitation (rain and melted snow) is forecast across the entire region.

Note: Because the expected storm tracks and above normal snowfall was bearing out for the entire area, the above normal snow forecast was updated to also include the far southeast corner in January, below.

Snowfall /Jan/

In the Original Outlook, an active winter was once again projected with above normal snows expected from the Ann Arbor area to Detroit northward across the remainder of Southeast Lower Michigan. South of that line, closer to normal snow was expected due to more mixed precipitation. Since it has been stormy but colder, mostly snow has been seen by one and all with the most to the north. However, above normal amounts of snow are now expected over all of Southeast Lower Michigan.

PROJECTED STORM TRACKS:

In this year's group, a suggestion of an occasional split flow is stronger. The main dominant Polar/Arctic Jet and the subtropical jet moving in from the Pacific across the West Coast. The potential storm tracks (Fig-10) could be quite interesting, especially when phasing occurs east of the Rockies.

The upper wind pattern was quite conducive in spawning low pressure systems in the southern Plains and Texas region which 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.

