February 2008 Climate Narrative

By Janis Laurens

February of 2008 will be most remembered for being the snowiest on record in portions of our area. Temperatures through much of the month averaged below normal. Precipitation was observed on almost every day of the month. In fact, there were only three dry days in Grand Rapids, two in Lansing and five in Muskegon.

Temperatures generally averaged around five to fifteen degrees above normal during the first nine days of February. However, through most of the rest of the month temperatures generally averaged about five to fifteen degrees below normal. The only exceptions to this occurred on the 17th and 25th, when temperatures averaged about five to ten degrees above normal.

February of 2008 was the snowiest ever recorded in Grand Rapids and Lansing. The record breaking snowfall of 41.6 inches in Grand Rapids broke the previous record of 35.5 inches set back in February of 1900. The record breaking snowfall of 27.6 inches in Lansing broke the previous record of 25.4 inches, also set back in February of 1900.

The total snowfall for the month in Muskegon was 41.7 inches, which was the second snowiest on record in Muskegon. The snowiest February on record in Muskegon occurred in 1981, when 45.8 inches was recorded. At least an inch of snow cover (and often much more than that) was reported in Muskegon, Grand Rapids and Lansing throughout the entire month of February.

February 2008 Temperature, Precipitation and Snowfall

Site	Average Temperature	Precipitation	Snowfall
Grand Rapids	22.3	4.16	41.6
Normal	25.0	1.54	12.2
Departure	- 2.7	2.62	29.4
Lansing	21.5	2.67	27.6
Normal	24.0	1.45	10.6
Departure	- 2.5	1.22	17.0
Muskegon	22.3	4.64	41.7
Normal	25.4	1.58	18.3
Departure	- 3.1	3.06	23.4

February 2008 Temperature Plots For Grand Rapids, Lansing and Muskegon

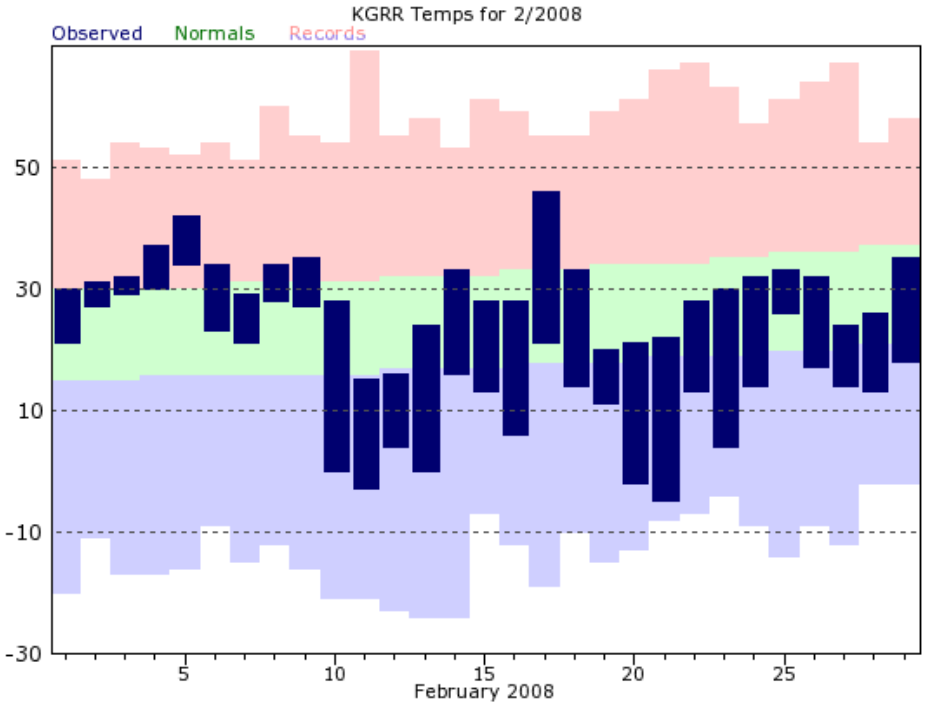


Figure 1. Grand Rapids Daily Temperatures February 2008.

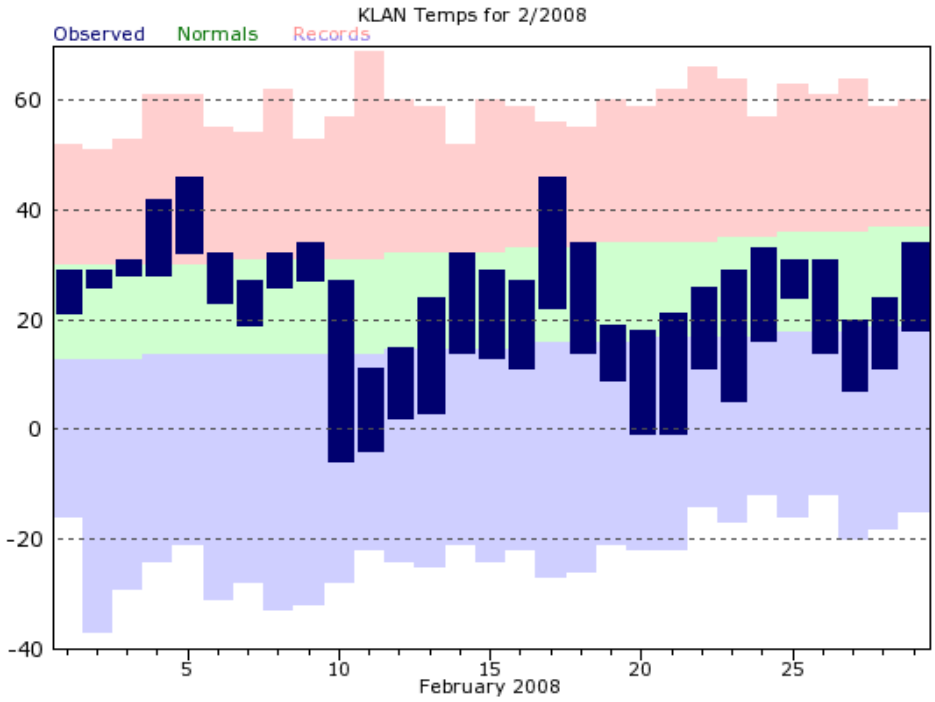


Figure 2. Lansing Daily Temperatures February 2008.

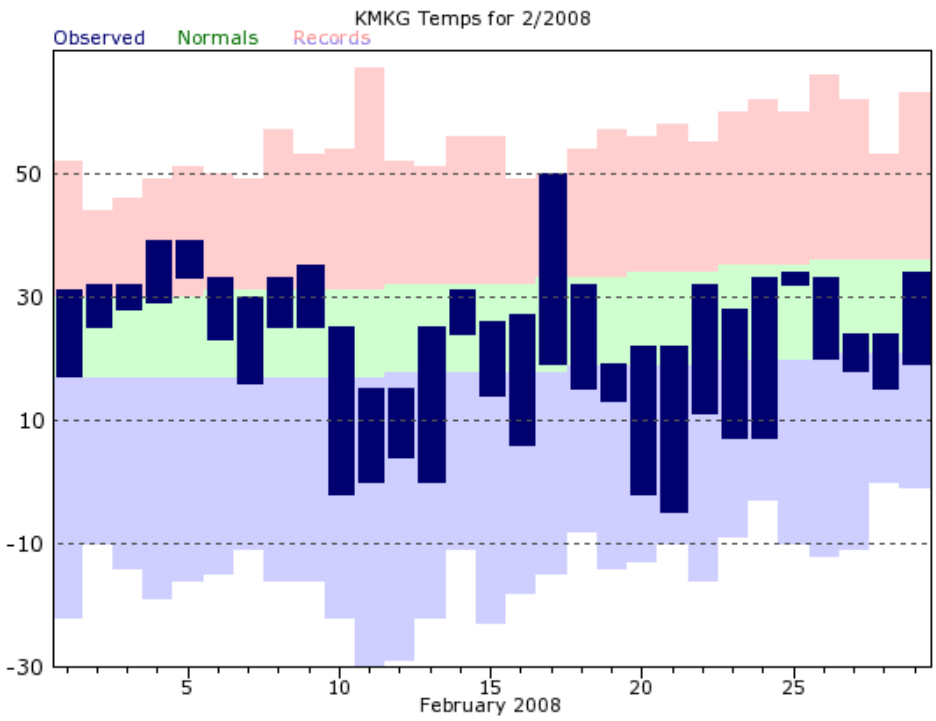


Figure 3. Muskegon Daily Temperatures February 2008.

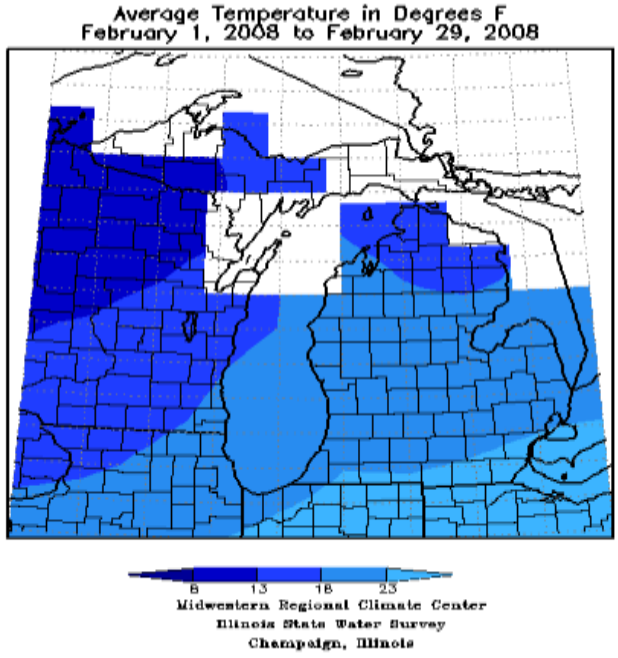


Figure 4. Average Daily Temperature (courtesy Midwest Climate Center).

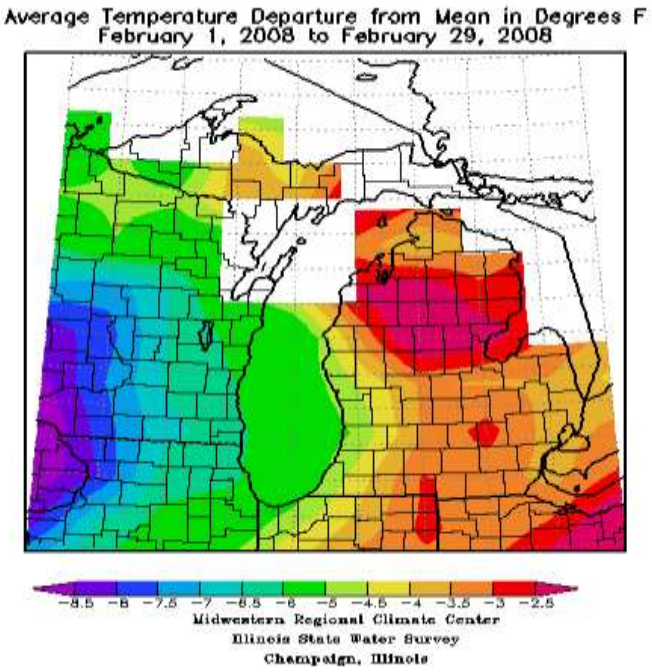


Figure 5. Average Temperature Departure From Normal (courtesy Midwest Climate Center).

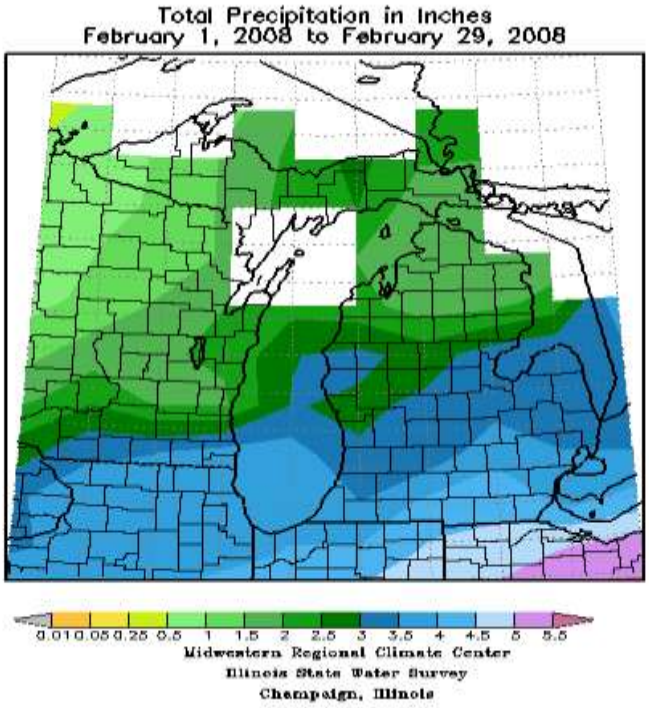


Figure 6. Total Precipitation (courtesy Midwest Climate Center).

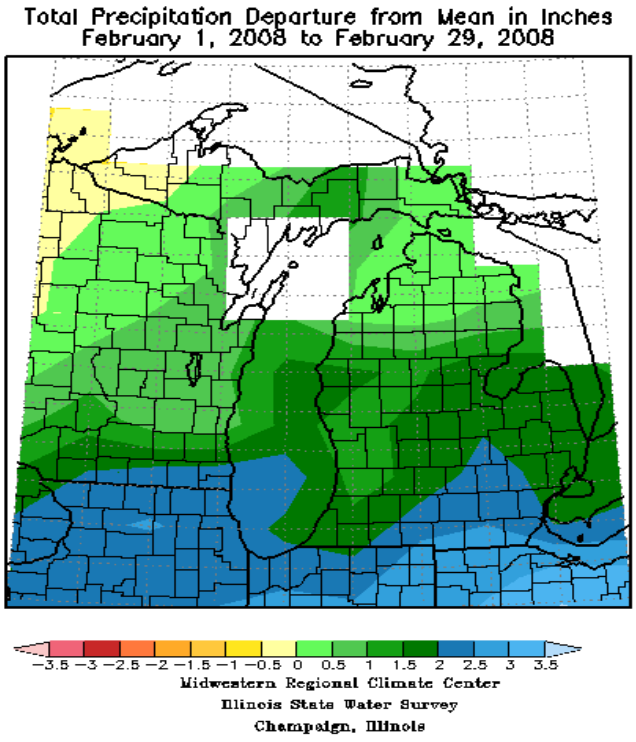


Figure 7. Precipitation Departure From Normal (courtesy Midwest Climate Center).

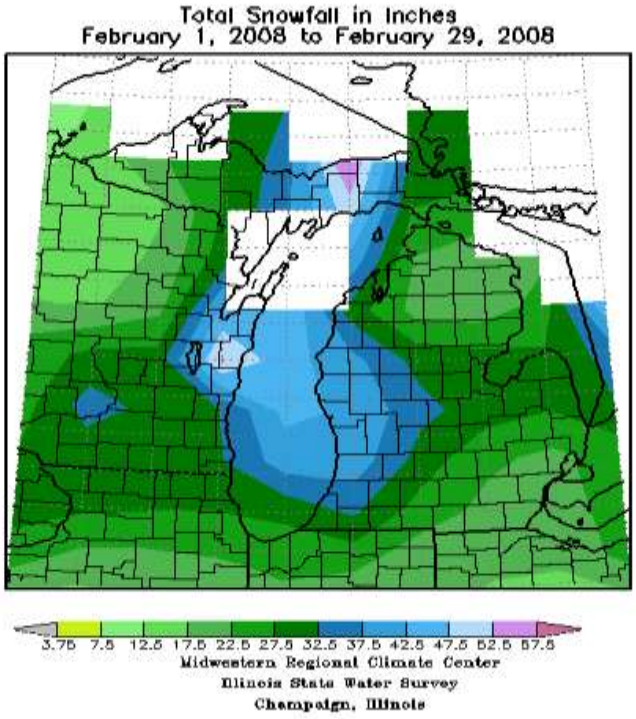


Figure 8. Total Snowfall (courtesy Midwest Climate Center).

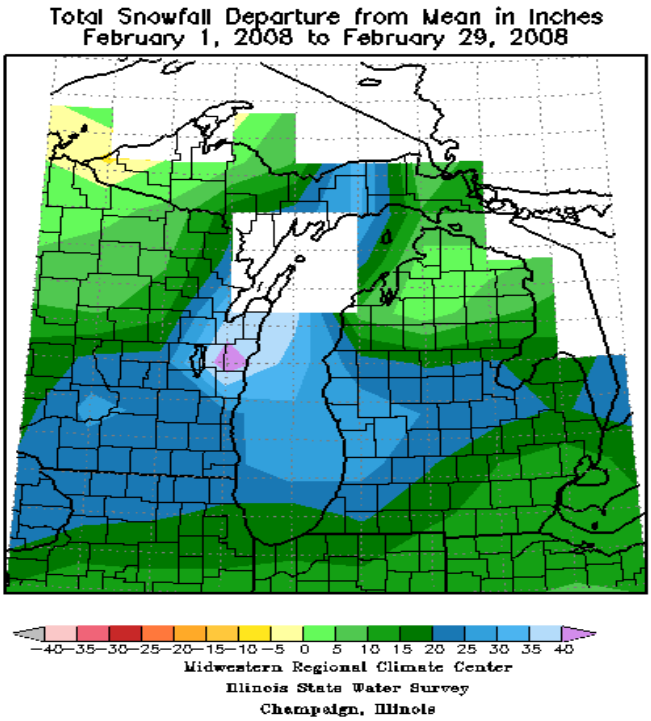


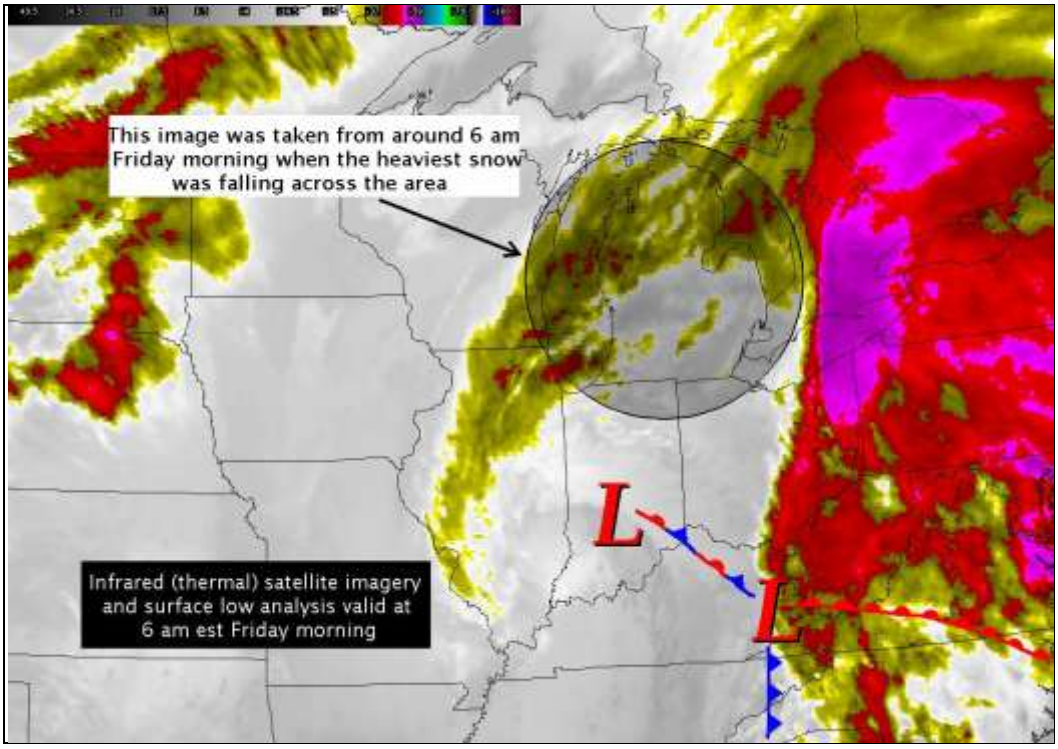
Figure 9. Snowfall Departure From Normal (courtesy Midwest Climate Center).

January 31 - February 1 Winter Storm Summary

An area of low pressure that was centered over Arkansas moved northeast to between Toledo and Cleveland. Light snow developed across the area during the afternoon hours of the 31st as warmer and more moist air began to ride north over the cold air that was in place over Michigan.

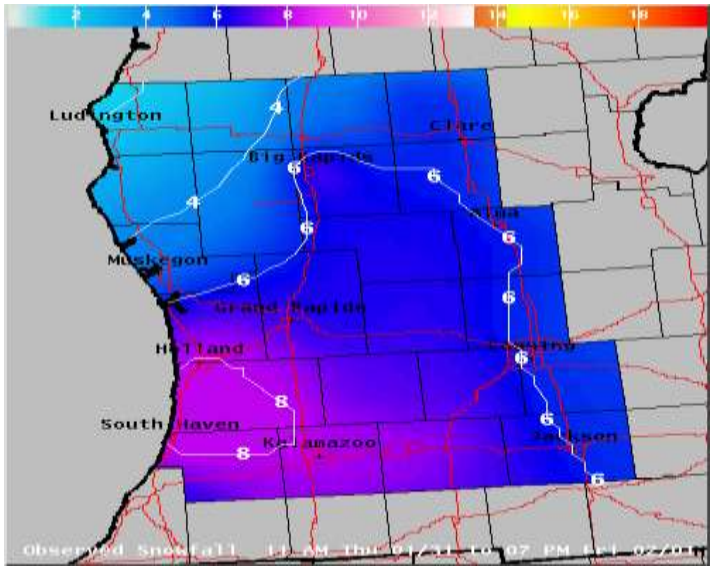
Light snow continued across the area through Thursday evening. Snow then increased in intensity and coverage Thursday night, especially after midnight. The heavier snow continued at times through daybreak on Friday, before diminishing in intensity a bit toward noon. The snow finally came to an end Friday evening. In general, five to seven inches of snow fell south of a line from Muskegon to Clare, with some reports of around eight inches south and southwest of Grand Rapids, from Battle Creek to Burnips to Grand Haven.

The first image below is a snapshot of satellite imagery around 6 am on Friday morning, when the snow was the most widespread and intense. The second image is radar imagery from around the same time.



Satellite Image from 6 am Friday

Radar image at 6 am Friday



Storm total snowfall.

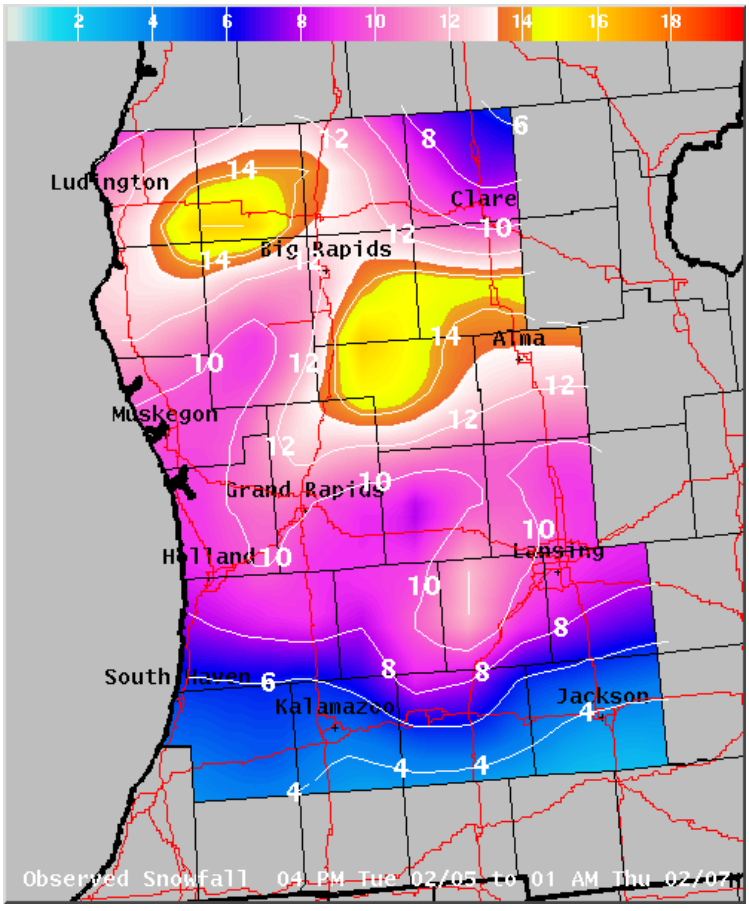
Major Winter Storm Hits Central and Southern Lower Michigan On February 6th

A widespread snowstorm produced near blizzard conditions across much of central and southern Lower Michigan Wednesday afternoon into the evening. Snowfall rates of 1 to 2 inches per hour occurred in the heaviest snow bands.

The height of the storm happened during the afternoon and evening commute with near zero visibilities and snow covered roads, making for very treacherous travel conditions. By the time the snow tapered off round midnight Wednesday night, totals in excess of a foot were reported north of Interstate 96 to route10. Further south along the Interstate 94 corridor a wintry mix of snow, sleet and freezing rain occurred, limiting the snowfall totals.

The storm developed in Texas on Tuesday. It strengthened and gathered moisture from the Gulf of Mexico as it tracked into Indiana on Wednesday. Meanwhile, colder air was filtering in from Canada. The tight temperature gradient along the storm track fueled the intensity of the system.

Surface Weather Map at 4 pm Wednesday

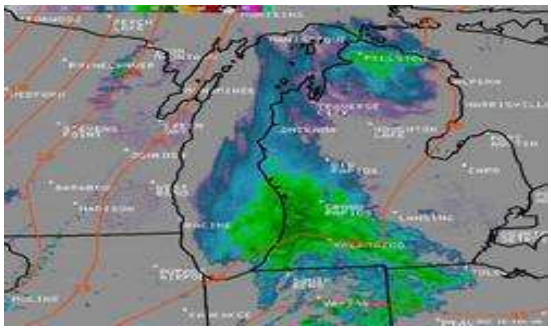


Storm total snowfall.

Summary of February 9/10 Arctic Blast and Snow Event

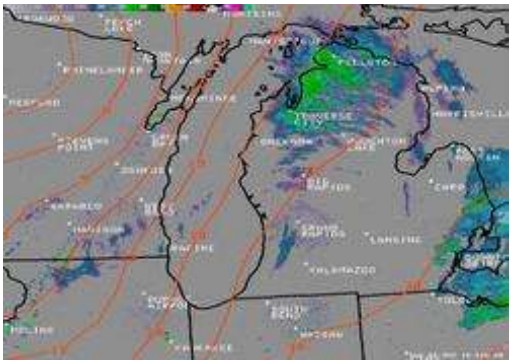
A powerful arctic cold front blasted through Lower Michigan and temperatures at the Grand Rapids airport plummeted from 28 degrees at midnight Saturday night to 7 degrees at 6 am on the 10th. Temperatures dropped further to zero degrees by 11 am. Frequent wind gusts over 40 mph were common, especially near the Lake Michigan shoreline. This resulted in dangerous wind chills around twenty below zero.

Snowfall totals were greatest over Allegan and Van Buren counties. It should be noted that significant drifting during this event made it difficult to take accurate snowfall measurements. Snow drifts of three to five feet deep were common in rural and outlying areas.



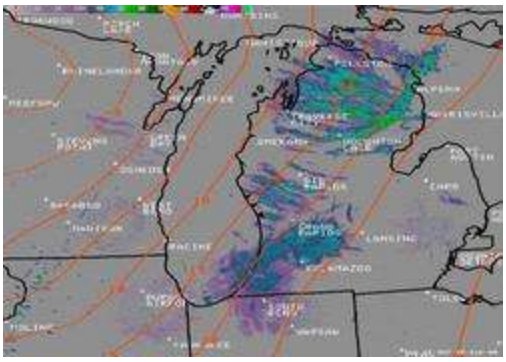
Radar plot 4 pm EST.

In the radar image below, taken on Saturday night at midnight, the first burst of snow can be seen east of the area over the Lake Erie/Huron area. Lake effect snow had already begun over northern Lower Michigan, and a small burst of snow can be seen near Grand Rapids at the leading edge of the much colder air about to stream into Michigan.



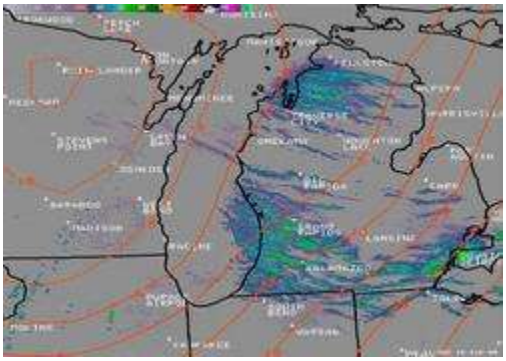
Radar plot on Saturday night at midnight EST.

Lake effect snow began immediately behind the cold front. The image below shows bands of snow beginning to form northwest of Grand Rapids. Over northern Lower Michigan, an area of snow associated with a push of much colder air can be seen extending along an arc from Alpena through Houghton Lake.



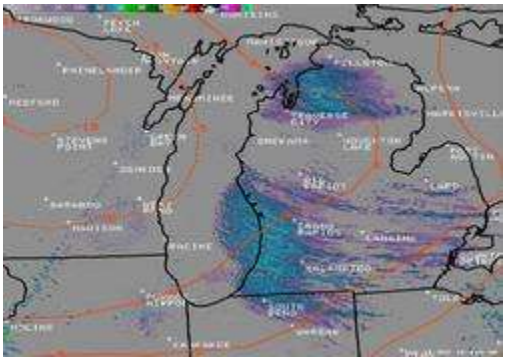
Radar plot on Sunday morning at 2 am EST.

By 6 am EST, snow bands became better developed and extended well inland. Near whiteout conditions were occurring under these bands, with visibilities near zero in blowing and falling snow.



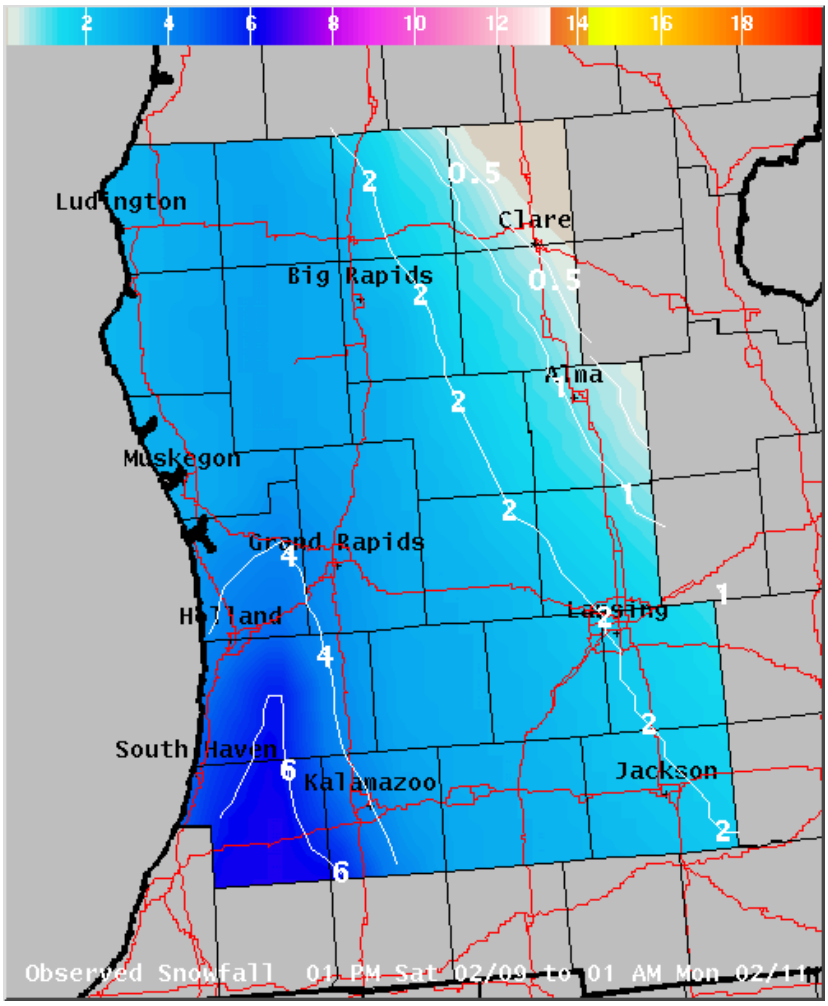
Radar plot on Sunday morning at 6 am EST.

By noon on Sunday, temperatures had fallen to around zero degrees over much of southwest Lower Michigan. The heaviest lake effect snow remained closer to the coast. Due to the very cold temperatures, snowflakes were very small, which allowed strong winds to carry them far inland.



Radar plot on Sunday at noon EST.

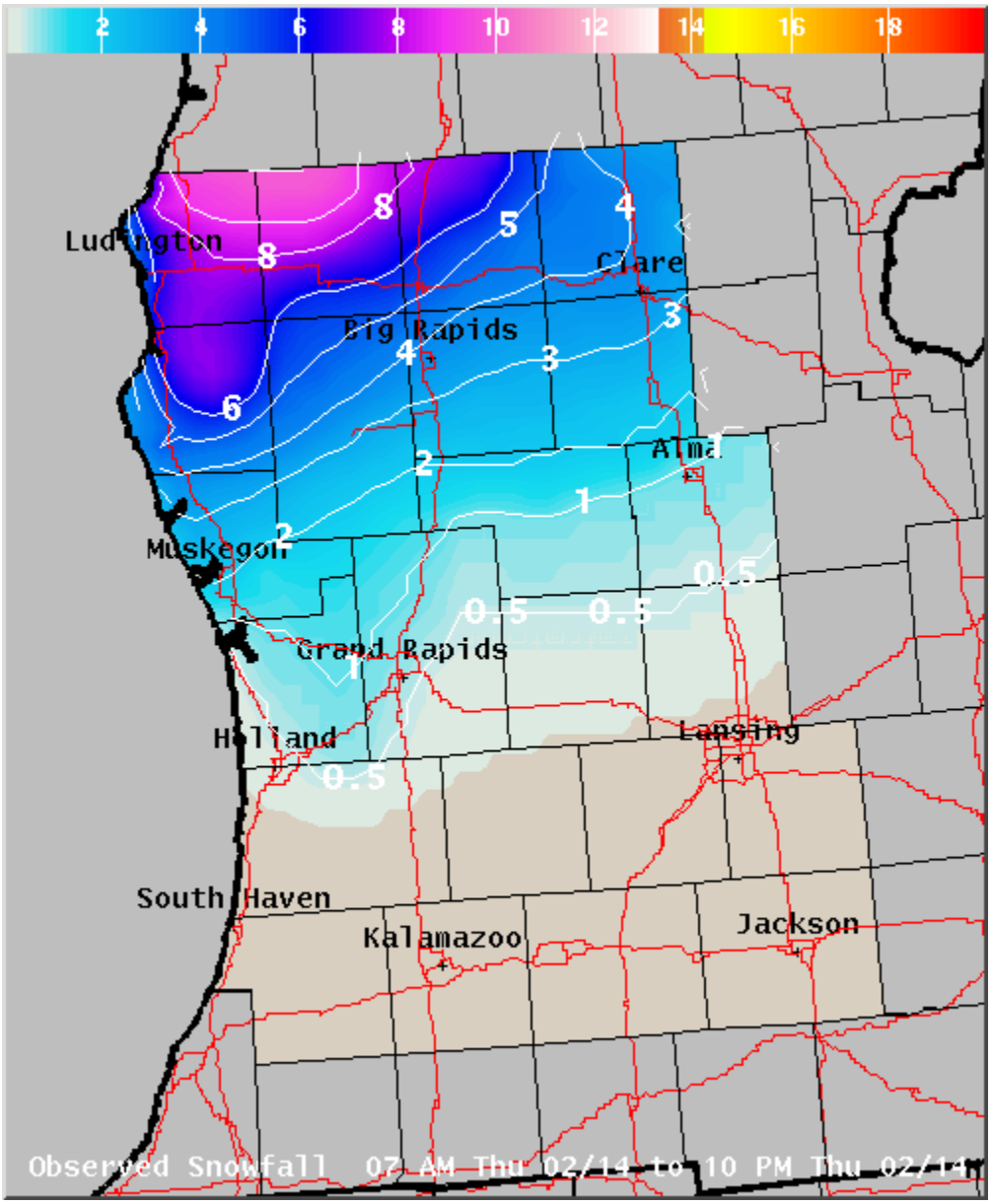
The strong winds caused significant blowing and drifting of snow. Visibilities were extremely poor due to the large number of small snowflakes present. Visibilities tend to be worst when there are many smaller flakes to scatter light. This is similar to how many tiny drops associated with fog and drizzle will reduce visibilities much more than larger and fewer drops associated with rain.



Summary of Winter Storm Event on Valentine's Day

An area of low pressure that moved into Northern Lower Michigan during the day on Thursday brought a band of moderate to heavy snow to areas north of a line from Pentwater to Clare. Snow fell moderately to locally heavy at times, producing amounts of up to 12 inches of snow in portions of Mason and Lake Counties.

Below is an unofficial map of the snow that fell across the area during the Winter Storm on Valentine's Day.

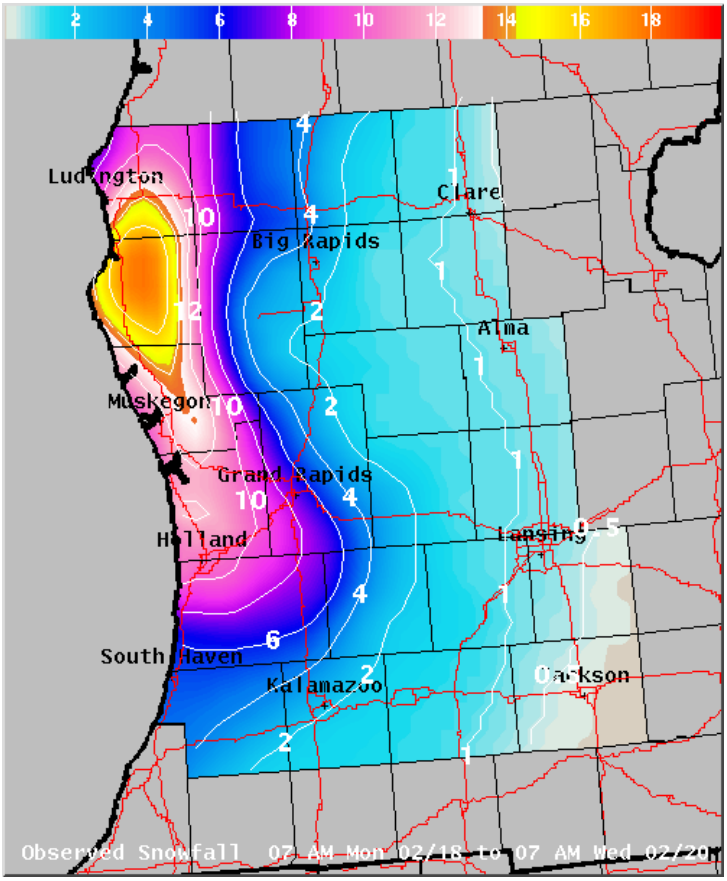


Summary of Snow Event February 18-20

Significant lake effect snow fell across portions of our area from Monday morning through Tuesday night. The heaviest snow fell across our lakeshore counties, where total snow in that time frame ranged from 8 to 10 inches to as much as 14 to 16 inches.

The combination of snow, blowing snow and much colder temperatures resulted in snowy to icy roads and very hazardous travel conditions early to midweek.

Below is an unofficial map of total snow that fell from 7 a.m. Monday through Tuesday night:



Snowfall Summary for February 28/29

The cause of the snow was a low pressure system which tracked southeast from the province of Alberta, Canada. Meteorologists refer to these types of weather systems as "Alberta Clippers", because of the area where they originate and how fast they typically move.