

January 2008 Climate Narrative  
By William Marino and David Beachler

January 2008, for southwest Lower Michigan, will go down in the record books as being warmer, wetter and snowier than normal. While that is true, January 2008 was not as warm as January 2007 or 2006. For all of southwest Lower Michigan, the mean temperature of 25.8 degrees was 3.9 degrees warmer than normal. This is 1.6 degrees cooler than January 2007 and 7.8 degrees cooler than January 2006.

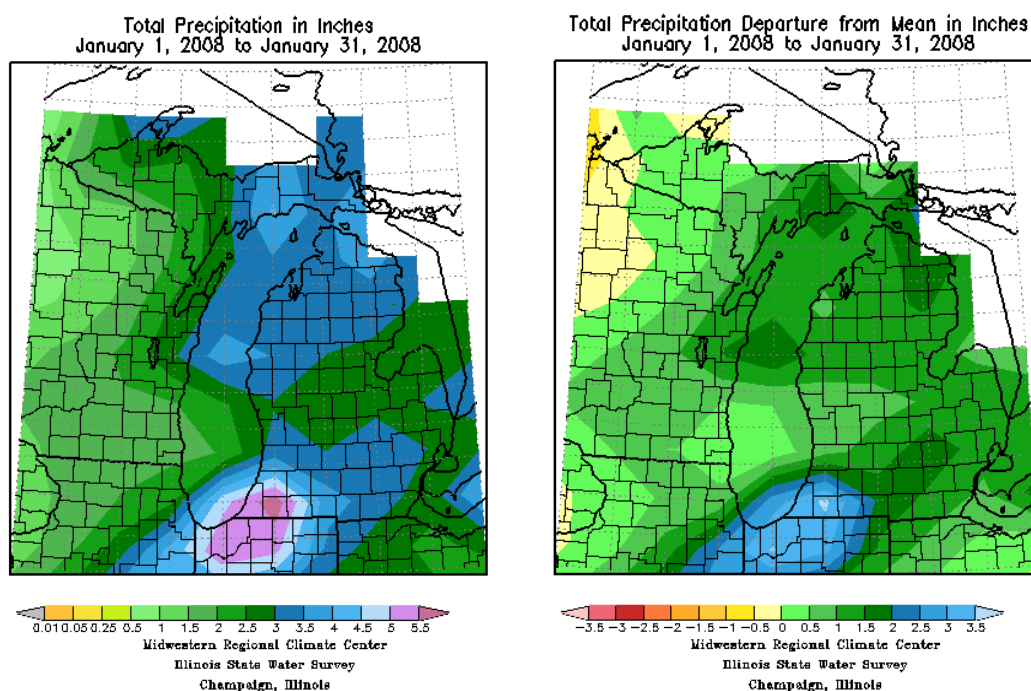
The warmer than normal temperatures were heavily weighted towards the 5th through the 7th (see fig. 21, 22, 23). Over the course of these three days, temperatures averaged 25 to almost 35 degrees above normal. High temperatures on the 6th and 7th, soared into the 50s and 60s for most of the area. The high of 63 degrees in Grand Rapids on the 7th was the warmest value in January since the 66 degree high on January 25th of 1950. Lansing reached 62 degrees and Muskegon 58 degrees on the 7th. Beyond the middle of the month, temperatures fell to more seasonal levels with cooler air prevailing. This resulted in temperatures at or below freezing from the 18th through the 27th. In fact, after the 16th, it snowed every day except for the 28th. Winter came back full force. Several major snow storms occurred during this time.

Precipitation amounts for January 2008 (fig. 1a) in southwest Lower Michigan were significantly higher than normal (fig. 1b). It was also the 4th consecutive winter with above normal precipitation. The mean area precipitation was 3.47 inches, which was 1.49 inches above the 1971 to 2000 mean of 1.98 inches. For much of southwest Lower Michigan, precipitation was observed almost every day of the month. Muskegon and Grand Rapids had only 2 dry days. There were 25 days with measurable precipitation at Muskegon and Grand Rapids had 24 days with measurable precipitation.

Throughout the month, the most common storm track was south of Michigan. This resulted in most of the precipitation falling as snow across southwest Lower Michigan. Snowfall was above normal for numerous locations in January (see fig. 20b).

## Precipitation Section

Precipitation was above normal across all of Michigan for January of 2008. For the most part, this was the result of a strong La Niña and its impact on storm tracks. The southwest quarter of Lower Michigan had the most precipitation and the largest positive departures from normal. This can also be seen in the precipitation section of Table 1 and in Figure 1 below. Precipitation fell on all but 2 days of the month. Three of the last four Januarys have had above normal precipitation.



**Figure 1.** Western Great Lakes total precipitation (a) and departure from normal (b) for January 2008 (courtesy of the Midwestern Regional Climate Center).

# Snow Storms of the Month

## Storm # 1

### Southern Plains Low with an Arctic Front Evening of December 31st into the morning of January 1st

On the evening of December 31<sup>st</sup> we see in Figure 2, a storm from the southern plains interacting with an arctic front. The system tracked east northeast across northern Ohio during the early morning hours of January 1<sup>st</sup>. This brought the first major snow storm of the year to the southeast sections of Lower Michigan. The area south of a line from Lansing to Battle Creek received 6 to 11 inches of snow from the storm. Areas between Interstate 96 and Interstate 94 west of Lansing had 2 to 5 inches from the storm.

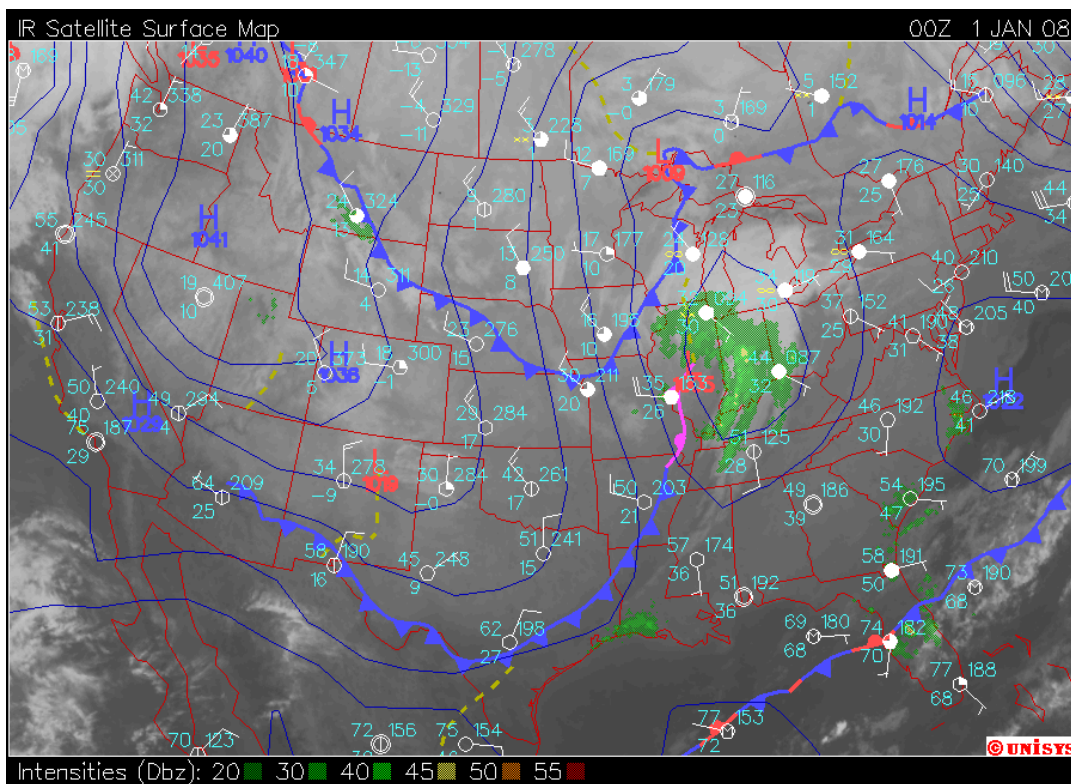
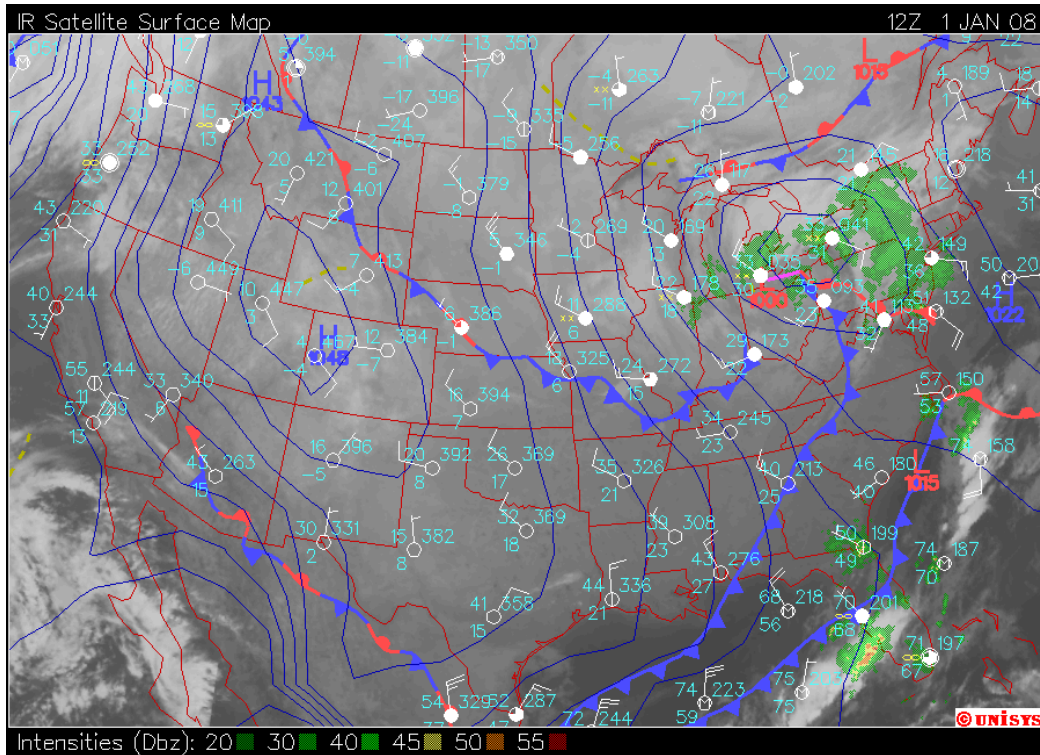


Figure 1. Dec 31st at 7 PM showing a southern stream storm interacting with an arctic front.



**Figure 2. Storm has moved to near Cleveland by 7 AM on January 1st.**

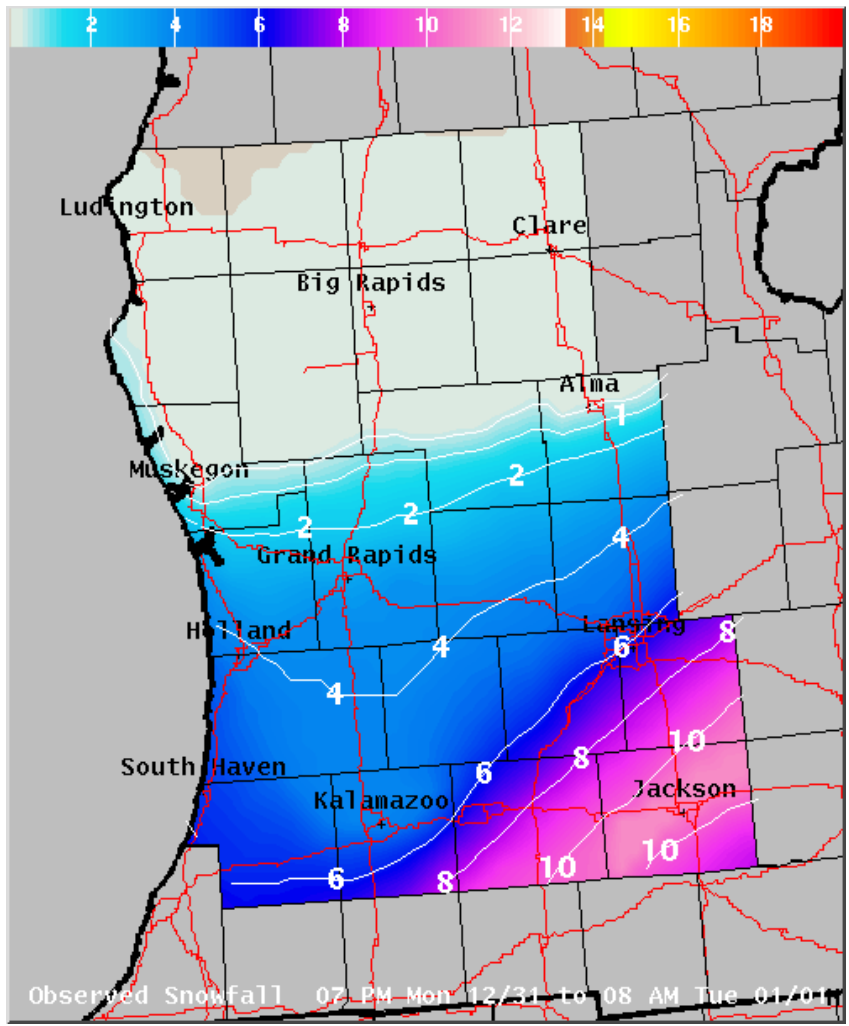


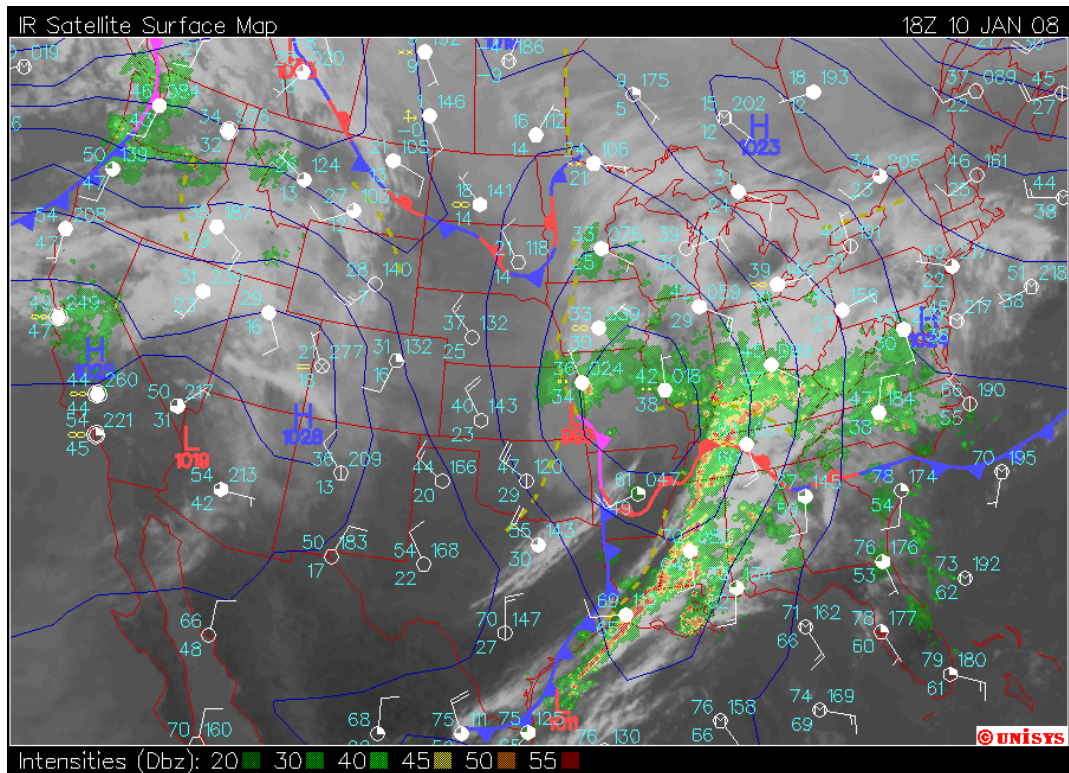
Figure 3. Snowfall totals from December 31st at 7 PM through January 1st at 8 AM.

## Storm # 2

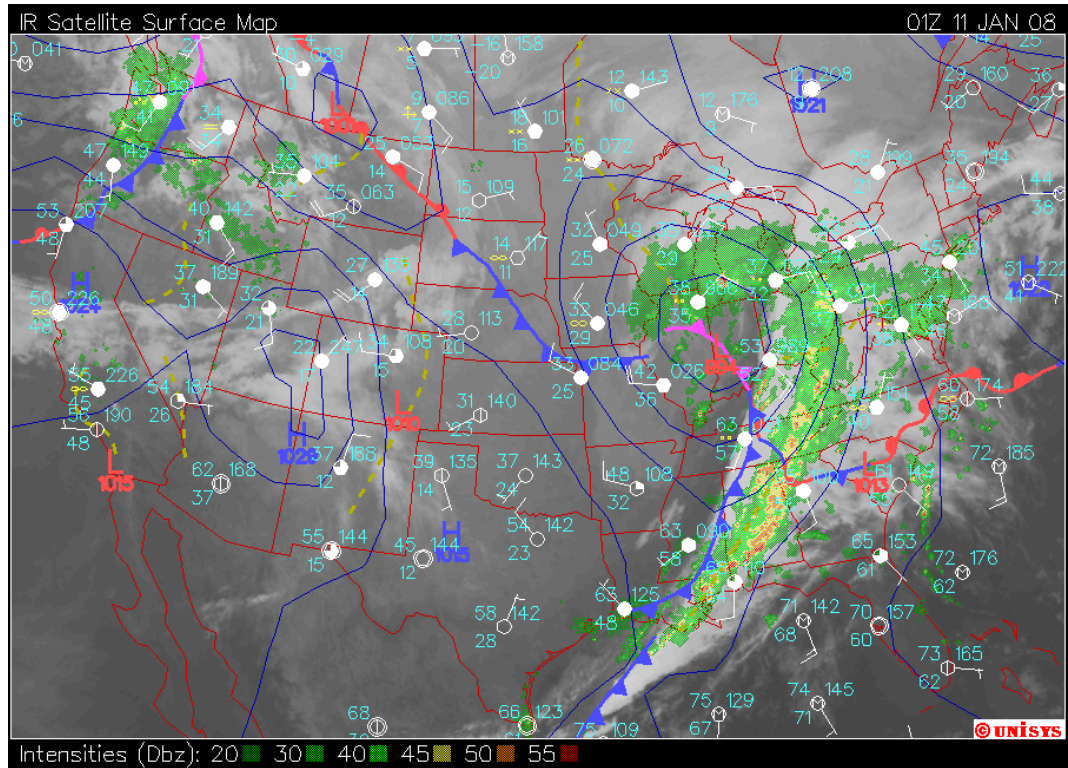
### Southern Plains System #II with Limited Cold Air behind it

#### Evening of January 10th into the morning of the 11th

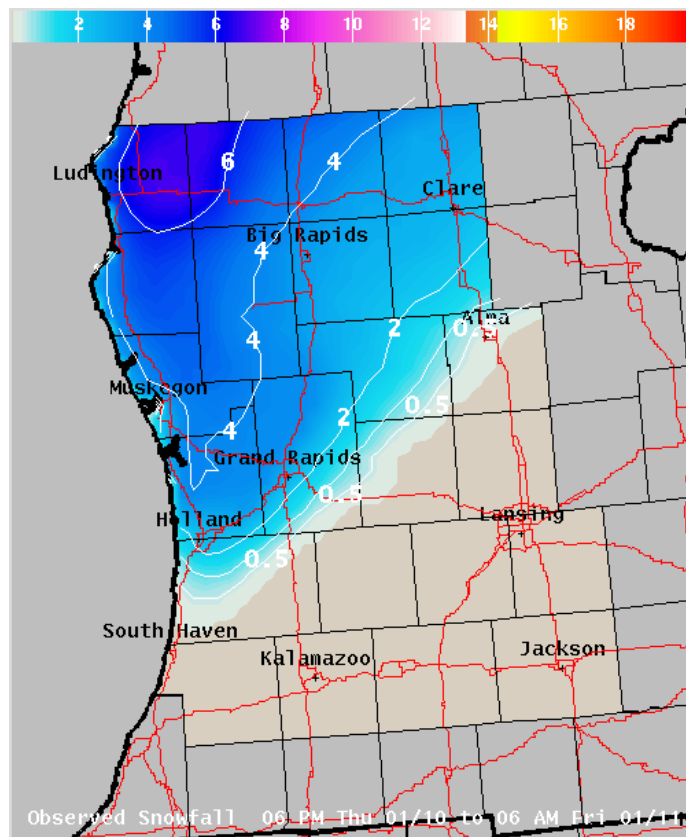
The second significant snowstorm of the month was another southern plains system. It was this system that brought the cold air back to the region after nearly a week of unseasonably warm temperatures. For the most part, rain fell near and south of Interstate 96. Snowfall amounts ranged from 4 to 7 inches north and west of a line from Holland to Clare.



**Figure 4. Snow Storm #2 was another southern plains system. This was what the radar and surface map looked like at 1 pm on January 10th, 2008.**



**Figure 5. Southern Plains low bring heavy snow to the area northwest of Grand Rapids. This was the time of maximum precipitation intensity, around 8 PM on the 10th.**



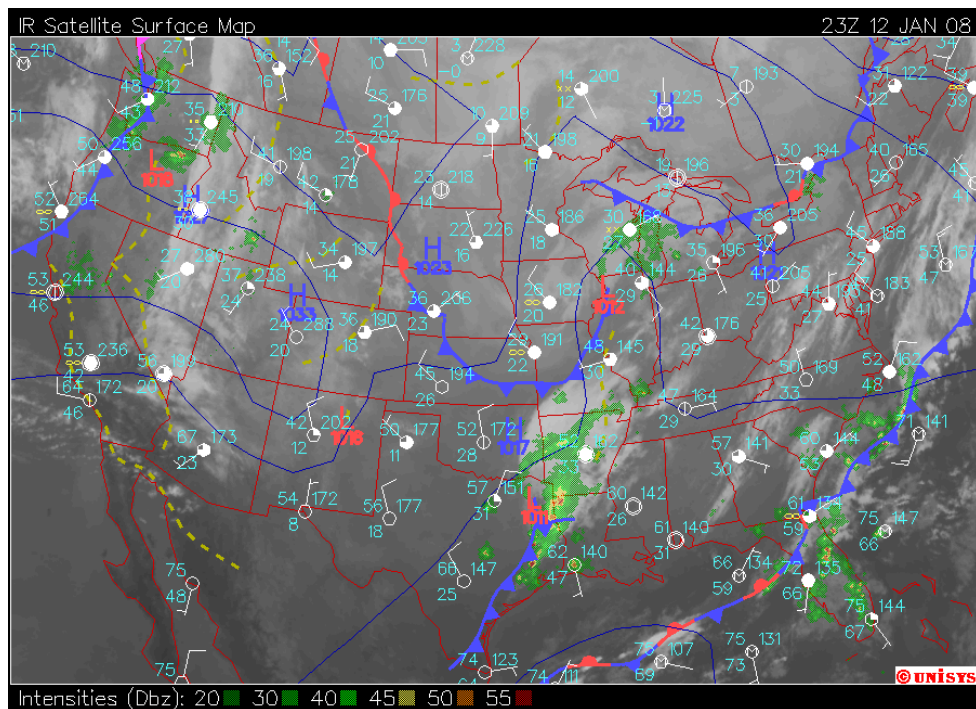
**Figure 6. Snowfall totals from January 10th at 6 pm to the 11th at 6 am.**

# Storm # 3

## Southern Plains System #III and #II with an Arctic Front

### Morning of January 13th into the Morning of January 14th

The third significant snow storm of the month was similar to the first storm. Both had a southern plains system interacting with an arctic front. Unlike the first system, this one tracked farther north and brought snow across the entire CWA instead of just the southern few rows of counties. This system was occluded and had lake enhanced wrap around snow on the back side of the system early in the morning on the 14th. Snowfalls were very unimpressive over the forecast area, with total snowfall mostly less than 5 inches.



**Figure 7. The Third Storm of the Month was a Southern Plains system interacting with an arctic front.**



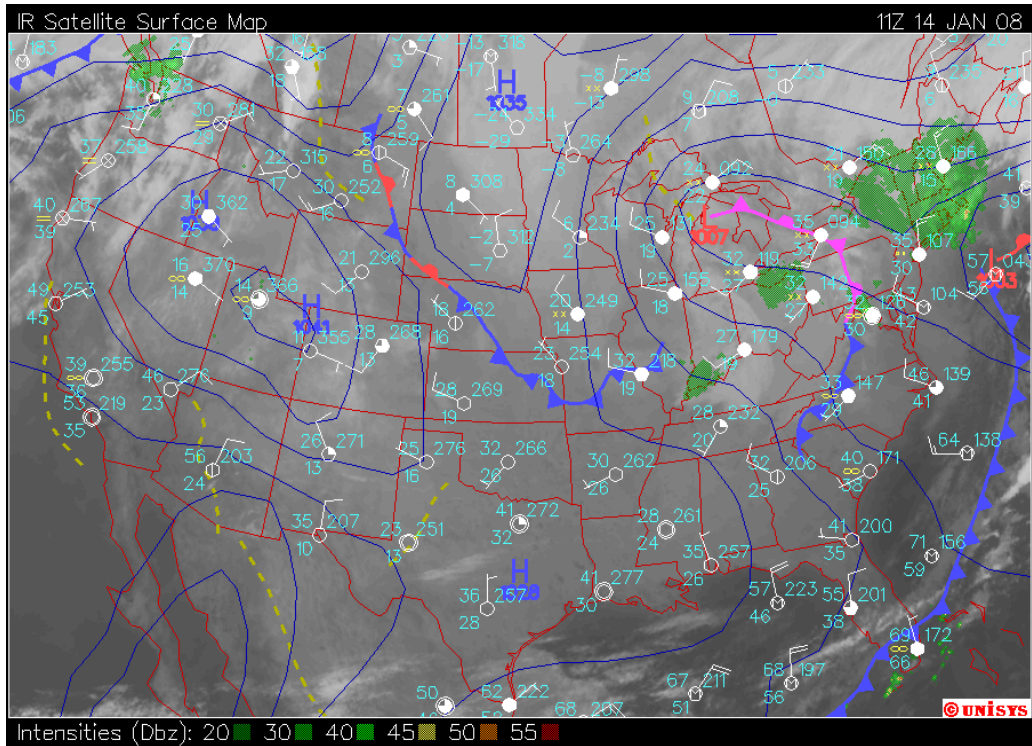


Figure 8. By 7 AM on the morning of the 14th, the storm has occluded.

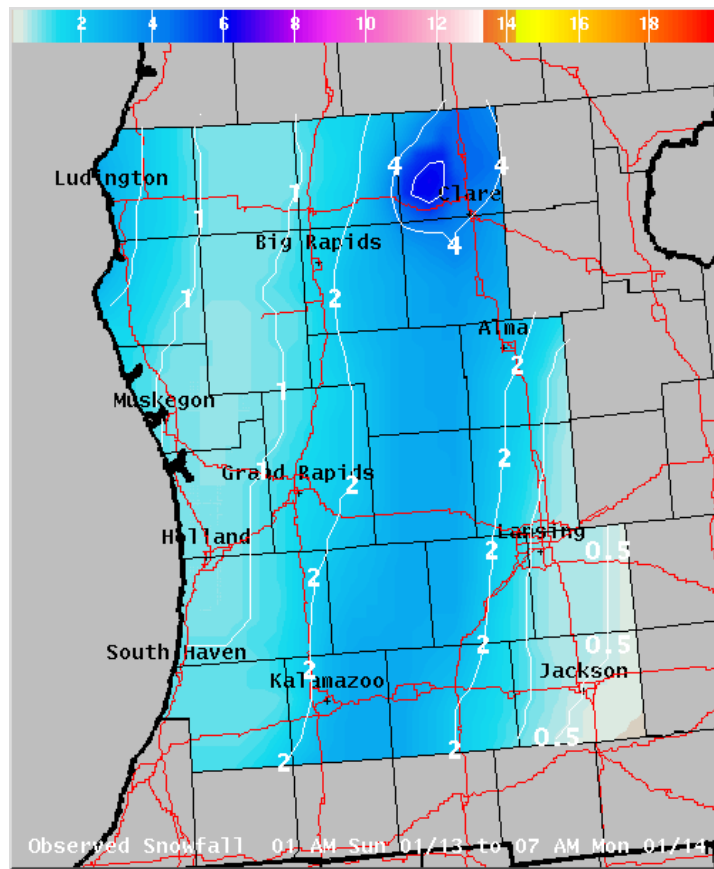


Figure 9. Snowfall totals from January 13th at 7 am through the 14th at 7 am.

# Storm # 4

## Southern Plains System #IV and #III with an Arctic Front

### Morning of January 21st into early afternoon of the 22nd

The fourth significant snow storm of the month was similar to storms number 1 and 3. This was one of the best snow producers of the month. This storm was more of an actual snow storm then a wind storm. There was a 30 to 50 mile wide band of snowfall that ranged from 10 to 12 inches from Grand Haven to Mount Pleasant. Most of the northwest two thirds of the forecast area had more than 4 inches from this event.

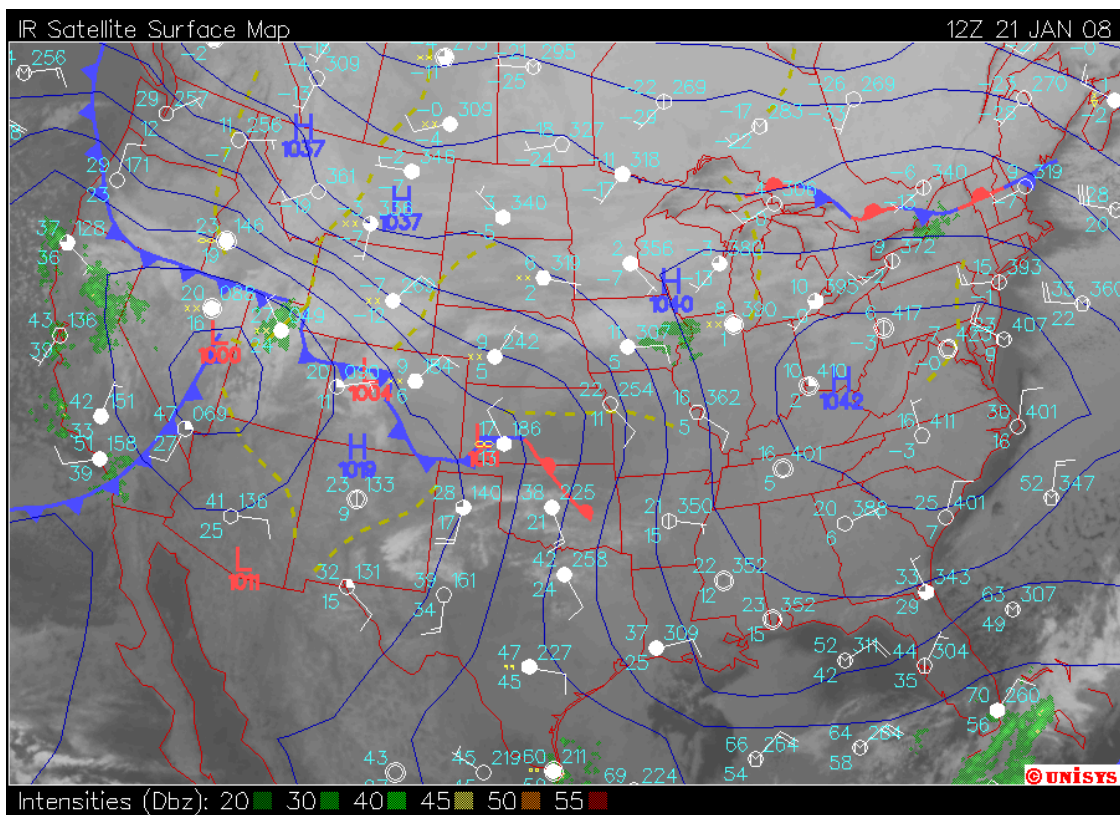


Figure 10. January 21st, 2008 at 7 AM

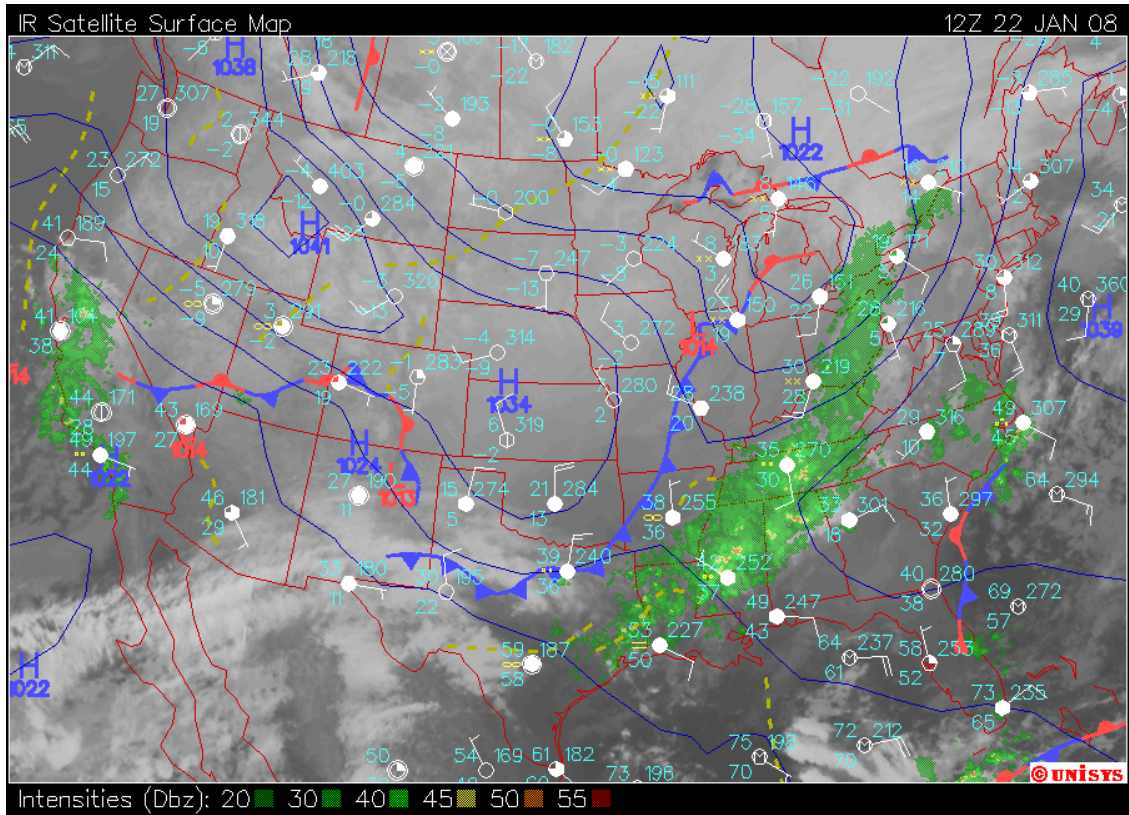


Figure 11. January 22nd 2008, at 7 AM

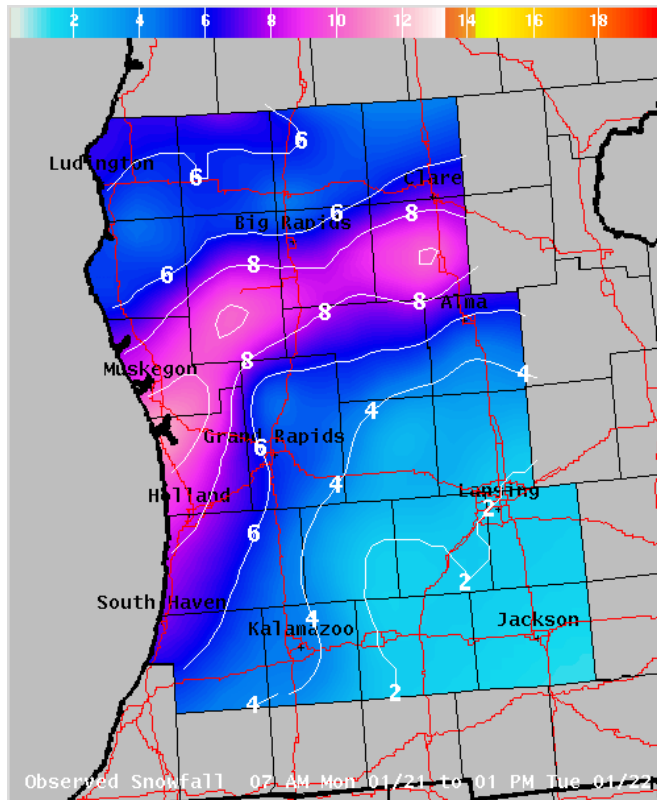


Figure 12. Snowfall totals from January 21st at 7 am through the 22nd at 1 pm.

## Storm # 5

### Arctic Air Lake Effect aided by a northern surface wave Early Morning of January 23rd into the early afternoon of the 24th

This storm was the closest to a pure lake effect event. This was a result of the cold air behind the 4th system. Given the nature of the very cold air (note the below zero surface temperatures on the accompanying weather maps over Wisconsin), the snowfall amounts were actually impressive. This was the best snow producer of the month, but being lake effect it had limited extent. Monterey in Allegan County reported 17 inches and Grand Junction in Van Buren County had 14 inches from the event.

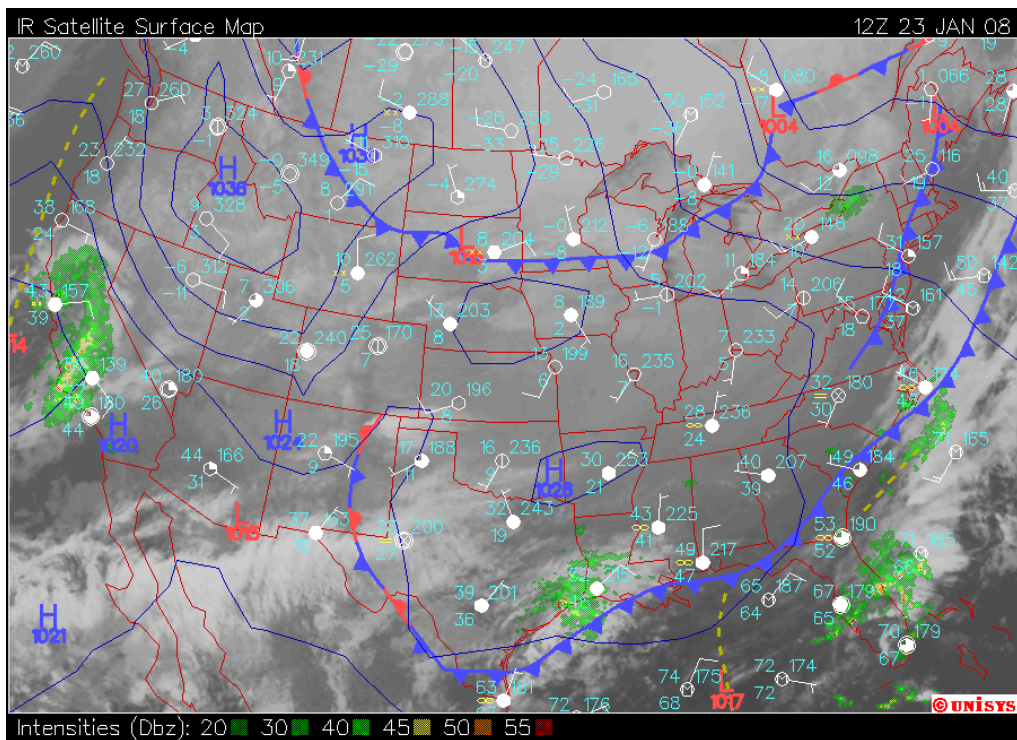


Figure 13. January 23rd 2008, at 7 AM

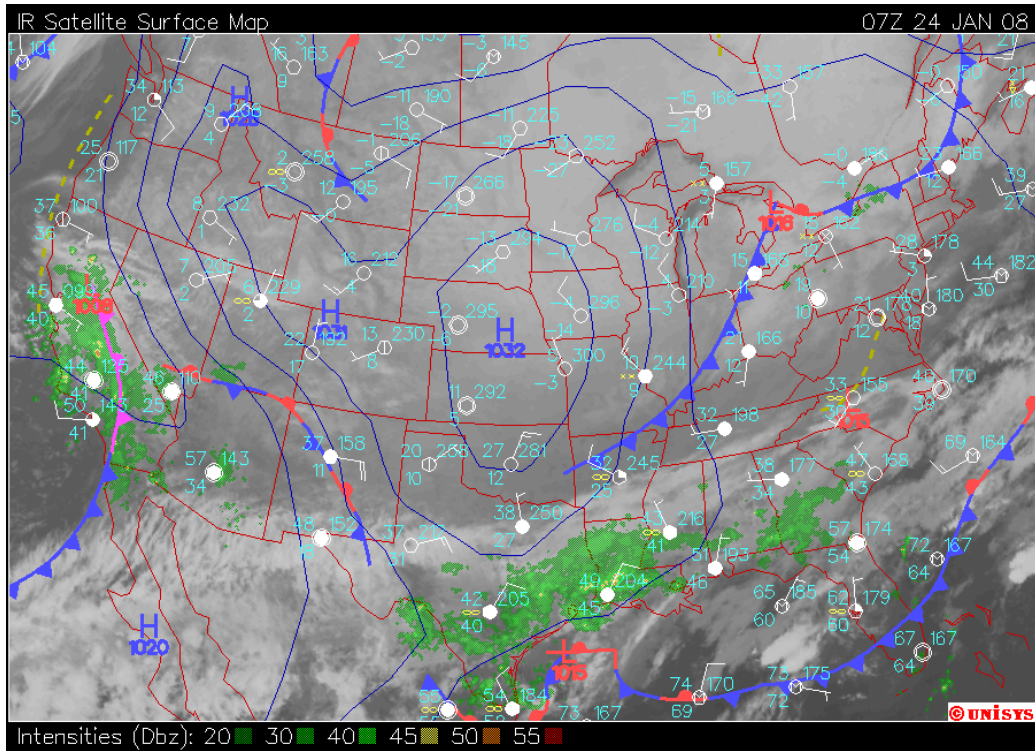


Figure 14. January 24th 2008, at 2 AM

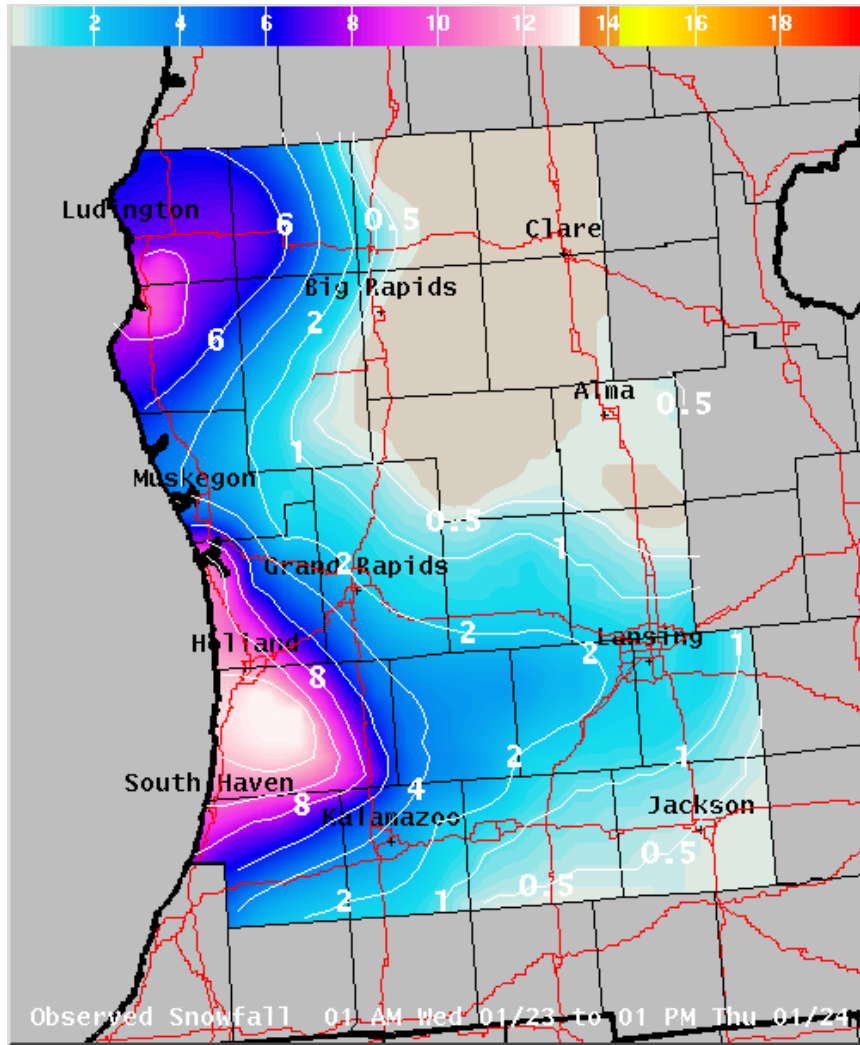


Figure 15. Snowfall totals from the 23rd at 1 am through the 24th at 1 pm.

## Storm # 6

### BLIZZARD January 29th into the 30th

While snowfall amounts from this storm were less than impressive, 3 to 5 inches, this was a true blizzard. The combination of very cold arctic air and a very powerful surface storm resulted in around 8 hours of blizzard conditions from the Lake Michigan shore to near highway 131. The conditions existed from just before midnight on the 29th into the mid morning hours of the 30th. During this time, winds were between 25 and 45 mph with gusts to 64 mph (near Agnew in Ottawa County) and the air temperature plunged from freezing during the evening of the 29th to near 10 degrees above zero by sunrise on the 30th. Driving was nearly impossible over a wide area of southwest Lower Michigan during this time as visibilities were frequently near zero. This had a huge impact on travel the morning of the 30th. Numerous schools were closed.

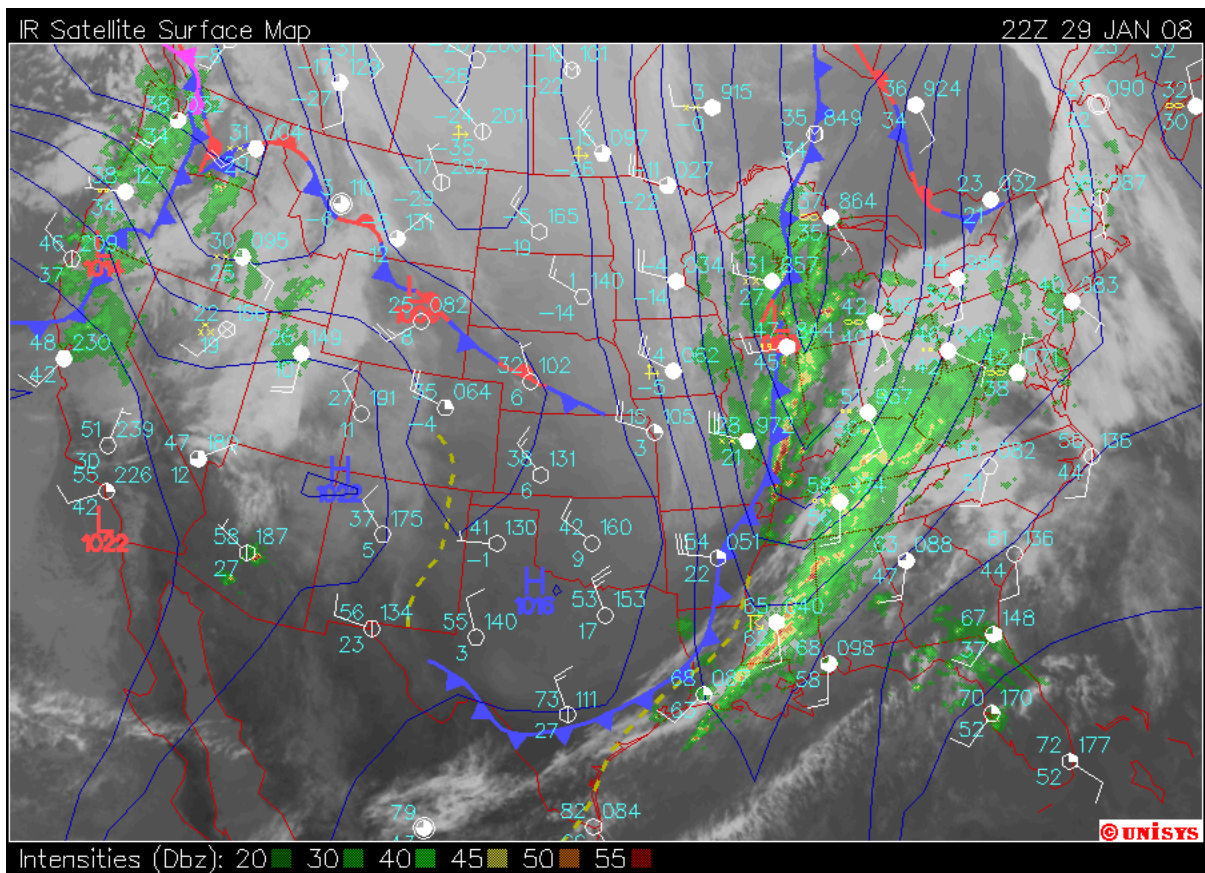
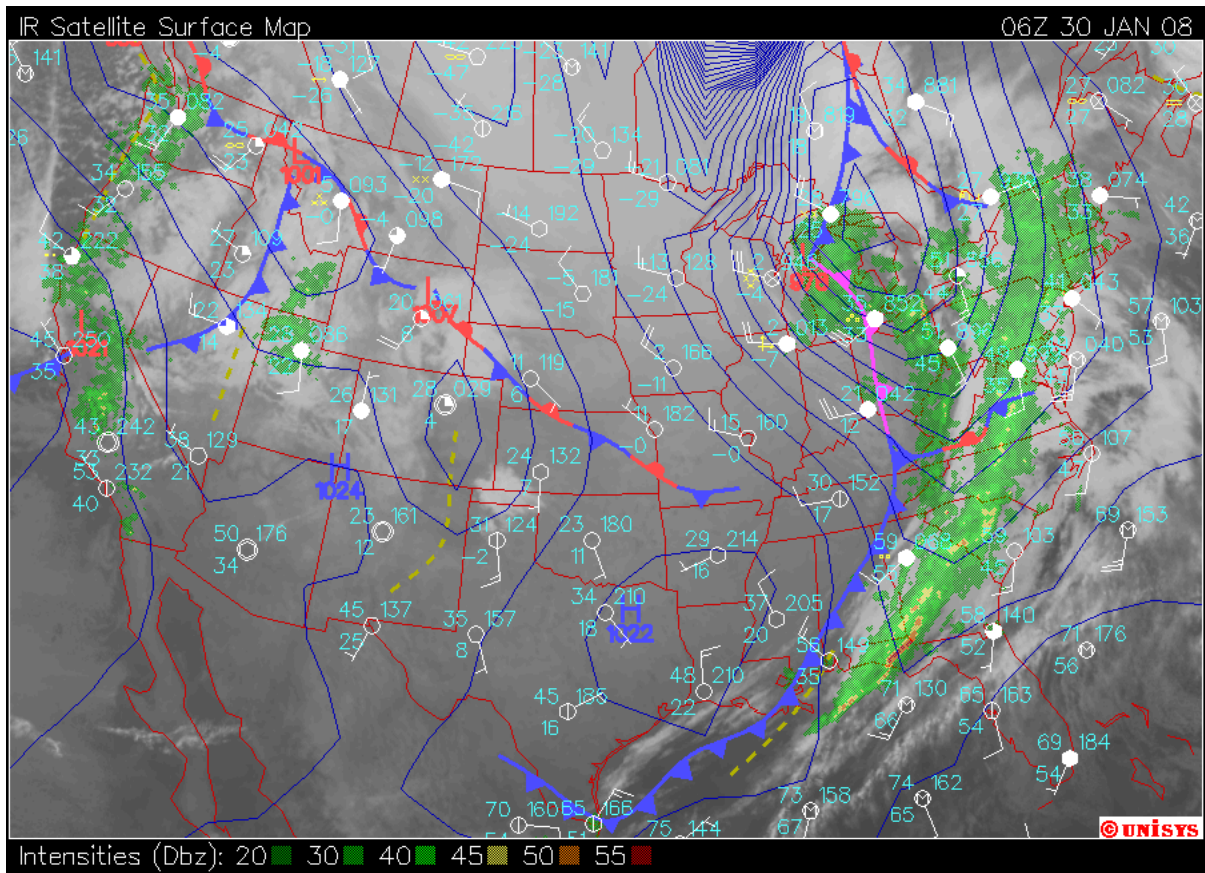


Figure 16. January 29th 2008, at 5 PM



**Figure 17. January 30th 2008, at 1 AM**



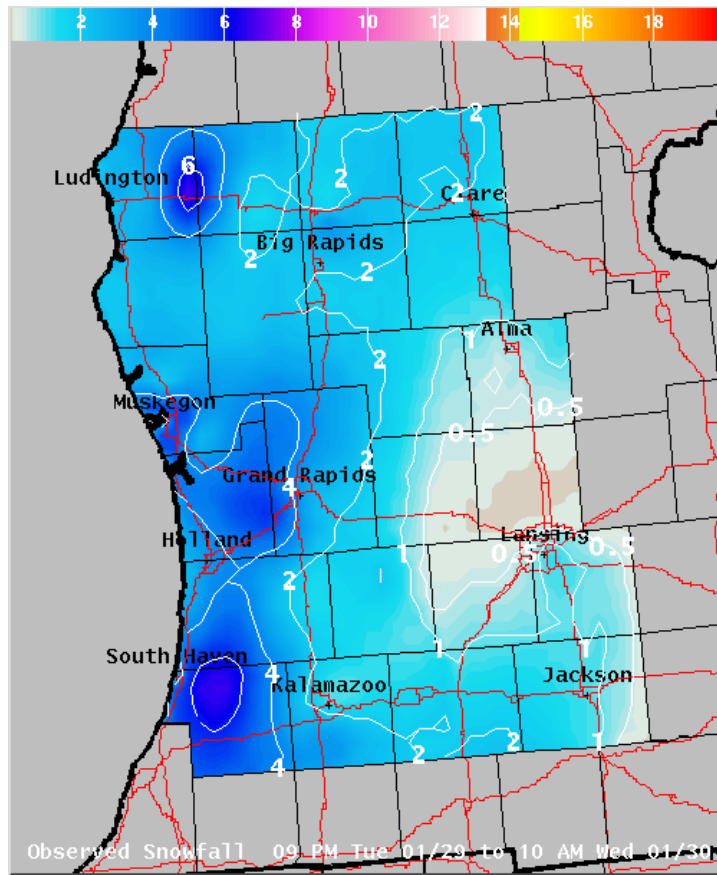
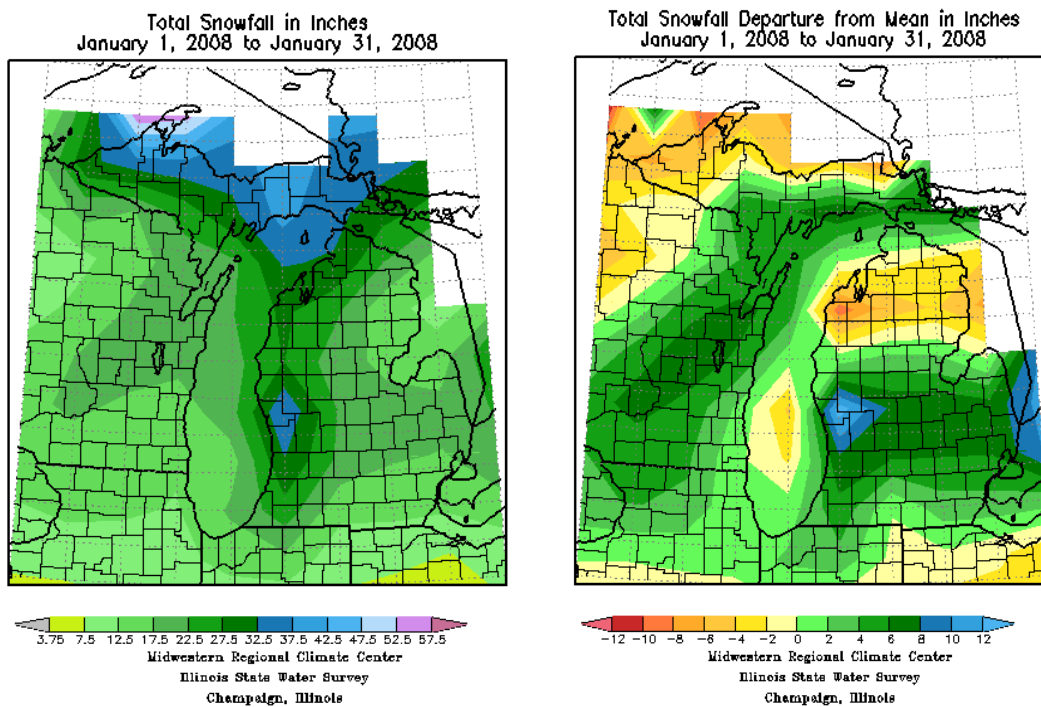


Figure 18. Snowfall total from the 29th at 10 am through the 30th at 10 am.



a)

b)

**Figure 19.** Western Great Lakes snowfall (a) and departure from normal (b) for January 2008 (courtesy of the Midwestern Regional Climate Center).

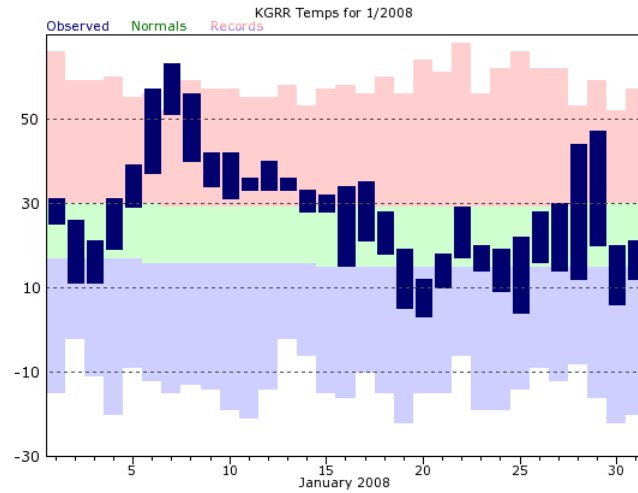
Snowfall was above normal over just about all of southwest and south central Lower Michigan in January 2008. Given the frequency of snowstorms, this would make sense. Since most of the storms were southern plains lows interacting with an arctic front, the pattern of above normal snowfall makes sense too. Areas between Grandville, Holland and Muskegon had around 40 inches of snow in January of 2008.

## Temperature Section

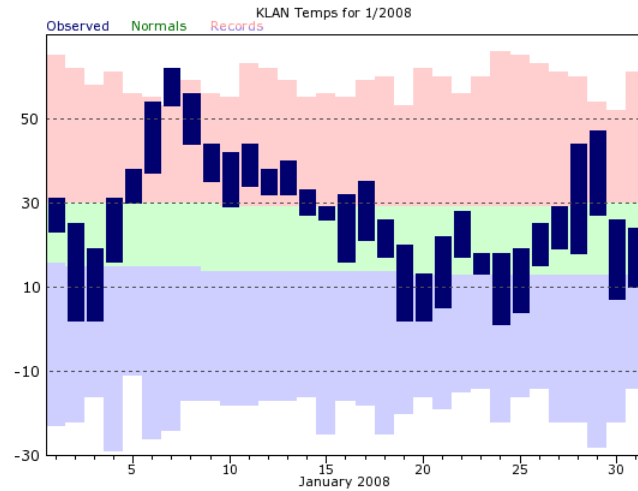
As seen on the chart in fig. 24, temperatures were well above normal over most of the area for January 2008. Areas near the Lake Michigan shore, south of Holland were near normal.

**Table 1.** Temperature, Precipitation and Snowfall amounts for January 2008.

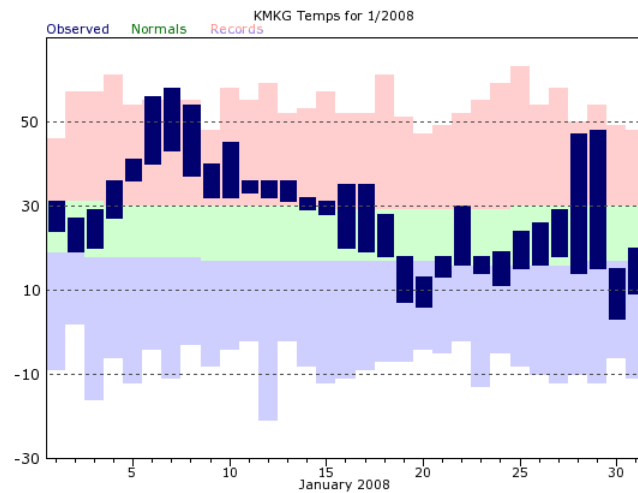
<u>Site:</u>	<u>Temperature</u>	<u>Precipitation</u>	<u>Snowfall</u>
Grand Rapids	26.6 °F	3.76 Inches	28.3 Inches
Normal	22.4 °F	2.03 Inches	21.1 Inches
Departure	+4.2 °F	+1.73 Inches	+7.2 Inches
Lansing	26.3 °F	2.81 Inches	15.2 Inches
Normal	21.6 °F	1.61 Inches	14.0 Inches
Departure	+4.7 °F	+1.20 Inches	+1.2 Inches
Muskegon	27.2 °F	4.56 Inches	38.3 Inches
Normal	23.5 °F	2.22 Inches	34.4 Inches
Departure	+3.7 °F	+2.34 Inches	+3.9 Inches



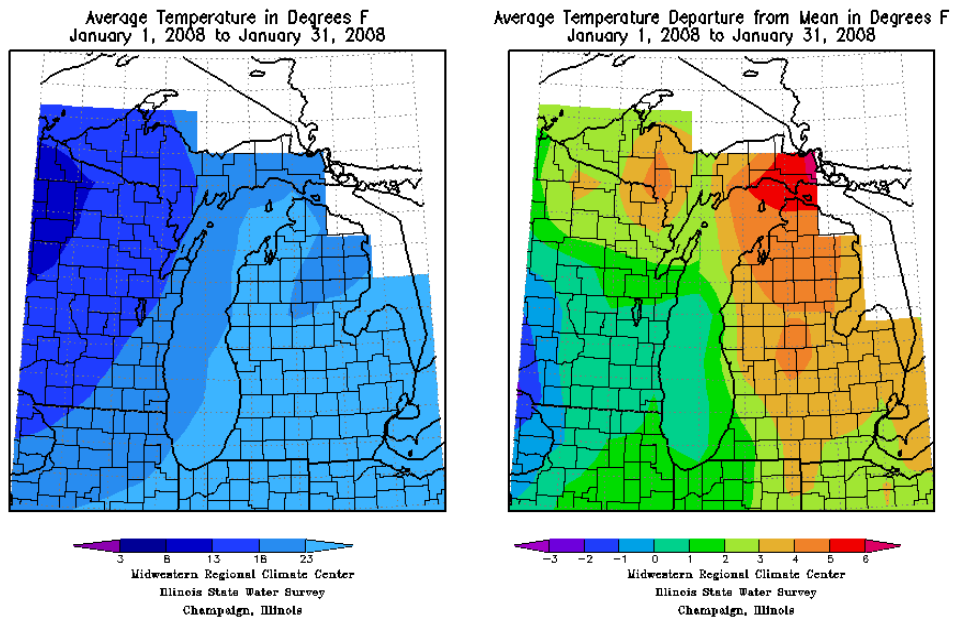
**Figure 20.** Grand Rapids Daily Temperatures January 2008. Dark blue bars represent the actual temperature range recorded for each day. The green area represents the normal range of temperatures. The upper (lower) bound of the pink (blue) shaded area represents the record maximum (minimum) temperature for that day.



**Figure 21.** As in Figure 21, except for Lansing.



**Figure 22.** As in Figure 21, except for Muskegon.



a)

b)

**Figure 23.** Western Great Lakes average daily temperature (a) and departure from normal (b) for January 2007 (courtesy of the Midwestern Regional Climate Center).