

Historic Winter Storm of January 31-February 2, 2015



Fast Facts

- **Chicago saw 19.3" of snow** at O'Hare which ranks as #5 out of all snowfall events for Chicago. The 16.2 inches recorded on February 1st were the most ever for any February day in Chicago. The snow total on February 1st also made it the 4th snowiest day in any month on record in the city. Likewise, the 0.87" of liquid-equivalent precipitation was a record for the day, exceeding the 0.77" measured on 1 February 2011. There were **33 consecutive hourly observations** in which snow was reported at O'Hare.
- **Rockford saw 11.9" of snow** which ranks as #10 out of all snowfall events for Rockford. The 10.5 inches recorded on February 1st ranked #2 all time for the date and #3 all time for any February day in Rockford. There were **27 consecutive hourly observations** in which snow was reported at Rockford.
- **NWS Chicago saw 15.3" of snow** and the **Midway Airport 3SW Cooperative observer saw 19.2" of snow.**
- The highest amounts of snow reported in the area were **22.0" in Lincolnshire (Lake, IL)**, 21.5" in Oak Lawn (Cook), 20.8" in Elmhurst (DuPage), and 20.0" in Sauk Village and Westchester, both in Cook County, IL.

Overview & Science

Across northern Illinois and northwest Indiana the winter of 2014-2015 had been relatively quiet through the end of January with only a handful of light snow events. As of January 30th, Rockford had received only 11.8 inches of snow for the season, while Chicago had received only 15.5 inches. However, starting on the evening of Saturday January 31st and continuing through Sunday February 1st in Rockford and into Monday the 2nd in Chicago, both locations received more snow in just over a day than they had all season.

The 16.2 inches recorded at O'Hare just during the hours of February 1st (out of 19.3 inches total) were the most ever for any February day in Chicago. The 10.5 inches recorded on February 1st at Rockford (out of 11.9 inches total) ranked #2 all time for the date and #3 all time for any February day in Rockford. For the event as a whole, the 19.3 inches at O'Hare ranks as #5 out of all snow events in Chicago, while the 11.9 inches at Rockford ranks as #10 overall for that city.

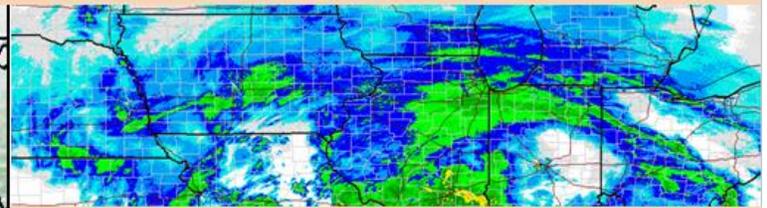
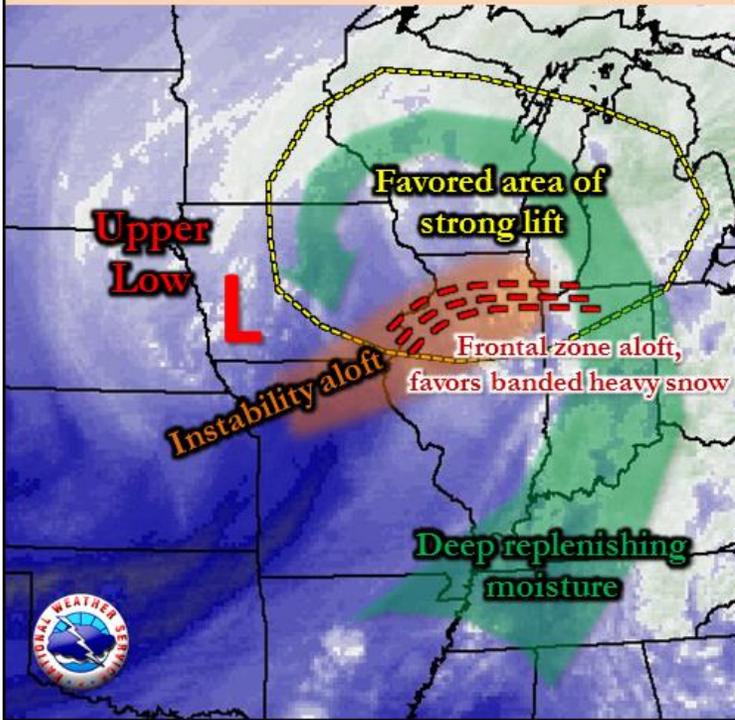
Several ingredients came together to produce this significant snowfall total. A deepening center of low pressure lifting from the Southern Plains through the Ohio Valley pulled rich moisture out of the tropical Pacific Ocean and the Gulf of Mexico and wrapped it into cold Arctic air. Early in the event the relatively mild surface temperatures in the 30s kept snow-to-liquid ratios on the lower end of the spectrum, or close to 10-to-1. As the event progressed and colder air spread into the region, the snow evolved from wet and heavy to very light and fluffy as ratios eventually increased to 30-to-1 or higher. At O'Hare the liquid precipitation total of 0.87" on Sunday was a record for February 1st, exceeding the previous record of 0.77" measured during the Groundhog Day Blizzard of 2011. Had snow-to-liquid ratios been higher earlier in this event, snowfall totals could have approached or exceeded those from the 2011 event.

A tightening pressure gradient around the low center as it moved from central Illinois into central Indiana also supported strong and gusty northeast winds later Sunday afternoon into the evening, producing a period of blizzard to near blizzard conditions with gusts over 35 mph and visibilities around 1/4 mile or less in many locations.

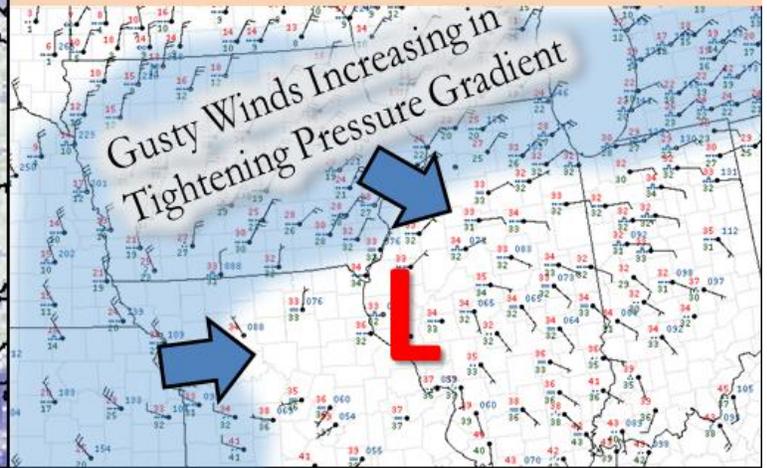
The Meteorology of The Powerful February 1st Winter Storm

11 a.m. GOES Water Vapor Satellite Imagery

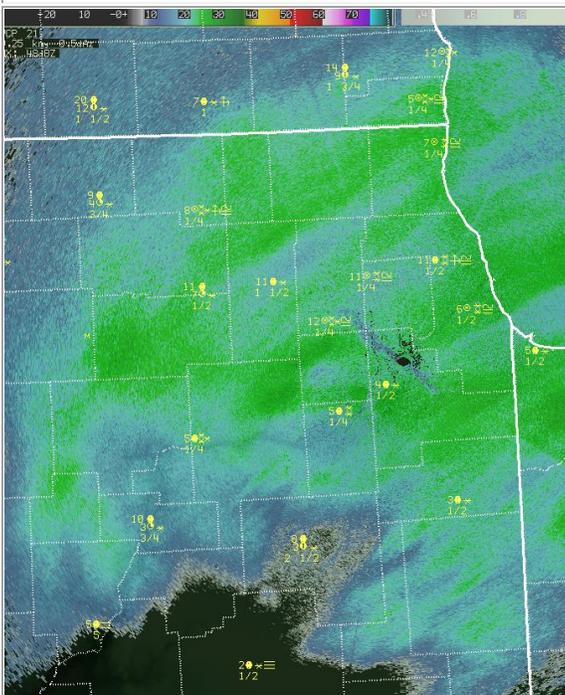
Massive Precipitation Shield = Long Duration Snow



11 a.m. Surface Analysis

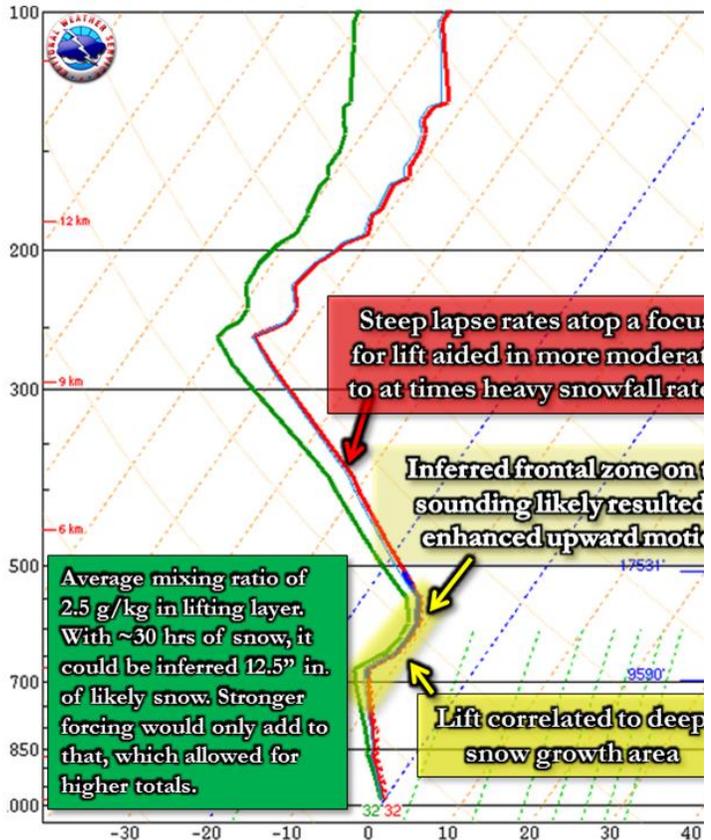


NWS Chicago Radar February 1st: 10 am - 4:30 pm

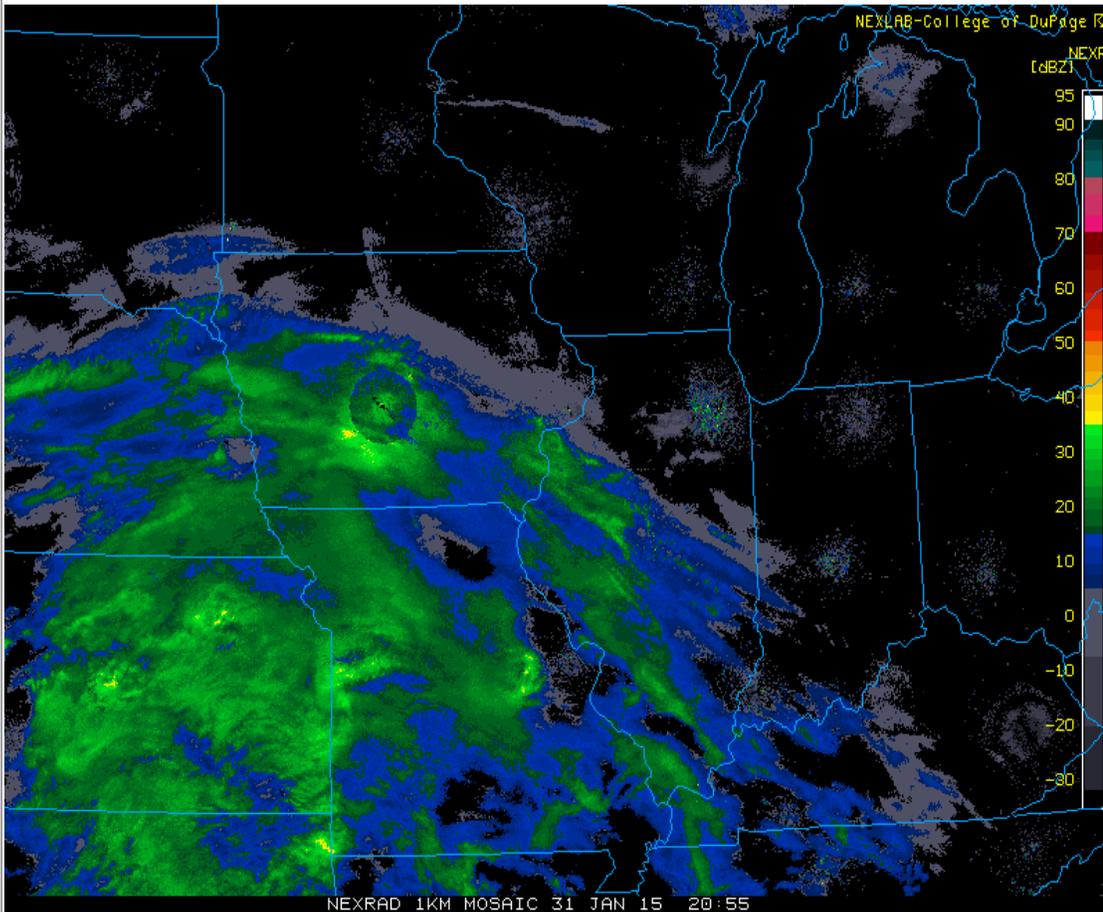


This is a radar loop from the NWS Chicago Doppler Radar from 10 am to 4:30 pm on February 1st, with observations overlaid. The bottom number on the observation plots indicate visibility, and the more asterisks (*) there are, the heavier the snow was falling.

Feb 1, 2015: 6 am NWS Davenport, IA Weather Bal

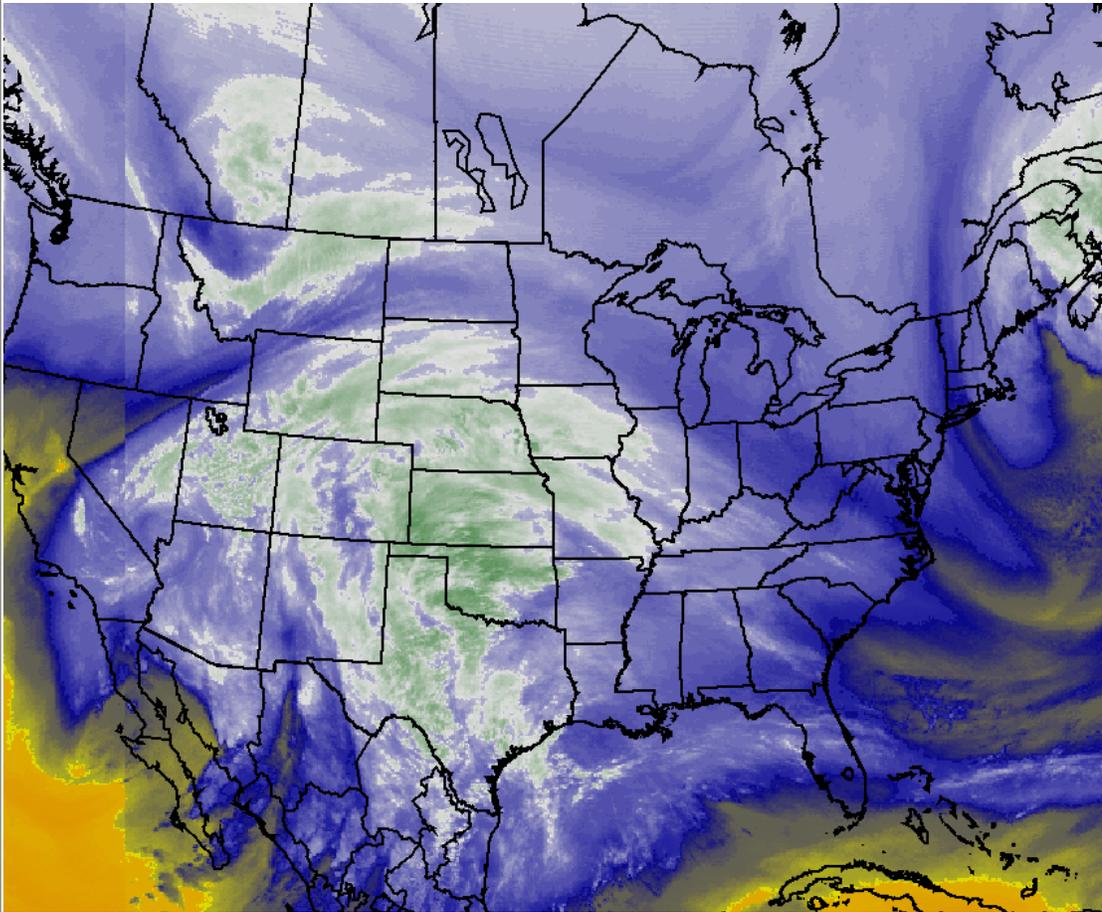


Regional Radar Loop Through Duration of the Event



A rich moisture plume is noted from the eastern Pacific into the Midwest, with even some Gulf of Mexico moisture tapped later in the day Saturday. High moisture values for a system this far north helped to produce a very persistent, long duration, and overall efficient snowfall all the way through early Monday morning.

GOES Water Vapor Imagery from January 31st: 6 am - 4 pm



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Storm Total Ranking

Chicago: #5

Rockford: #10

Chicago's Top 10 Largest Snowstorms

- 23.0 inches Jan 26-27, 1967
- 21.6 inches Jan 1-3, 1999
- 21.2 inches Jan 31-Feb 2, 2011
- 20.3 inches Jan 12-14, 1979
- 19.3 inches Jan 31-Feb 2, 2015**
- 19.2 inches Mar 25-26, 1930
- 16.2 inches Mar 7-8, 1931
- 14.9 inches Jan 30, 1939
- 14.9 inches Jan 6-7, 1918
- 14.8 inches Dec 17-19, 1929

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mobile.weather.gov
February 2, 2015

Rockford's Top 10 Largest Snowstorms

- 16.3 inches January 6-7, 1918
- 16.0 inches March 30-31, 1926
- 15.1 inches January 31-February 2, 2011
- 15.0 inches March 21-22, 1932
- 13.8 inches March 1-2, 1948
- 12.9 inches December 11-13, 1909
- 12.5 inches February 10-11, 1944
- 12.3 inches January 11-14, 1979
- 12.0 inches January 17-19, 1943
- 11.9 inches January 31-February 2, 2015**

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February 2, 2015

Calendar Day Ranking for all February

Chicago: #1

Rockford: #3

Chicago			Rockford		
1	16.2	2/ 1/2015	1	11.5	2/ 6/1911
2	13.6	2/ 1/2011	2	10.9	2/ 1/2011
3	12.6	2/ 9/2010	3	10.5	2/ 1/2015
4	11.1	2/18/2000	4	9.7	2/ 6/2008
5	11.0	2/ 3/1896	5	9.6	2/18/2000
6	10.8	2/ 3/1901	6	8.0	2/26/1912, 2/18/1908,
7	9.7	2/10/1981			2/19/1898, 2/13/1896
8	9.3	2/ 6/1978	10	7.6	2/25/1994
9	9.1	2/ 6/1895			
10	8.9	2/ 9/1885			

Calendar Day Ranking All-Time

Chicago: #4

Rockford: #9

Chicago			Rockford		
1	18.6	1/ 2/1999	1	13.5	3/31/1926
2	16.5	1/13/1979	2	13.0	3/ 2/1948
3	16.4	1/26/1967	3	12.0	3/23/1897, 1/25/1895
4	16.2	2/ 1/2015	5	11.5	2/ 6/1911
5	14.9	1/30/1939	6	11.0	3/21/1932
6	14.4	1/ 6/1918	7	10.9	2/ 1/2011
7	13.6	2/ 1/2011, 3/25/1930	8	10.6	12/15/1987
9	12.6	2/ 9/2010	9	10.5	2/ 1/2015
10	11.5	3/ 2/1954	10	10.4	3/29/1972

Comparing the Top 5 Snowstorms in Chicago

Comparing Chicago's Top 5 Snowstorms					
	Jan 26-27 1967	Jan 12-14 1979	Jan 1-3 1999	Jan 31-Feb 2 2011	Jan 31-Feb 2 2015
Snowfall (inches)	23.0	20.3	21.6	21.2	19.3
Liquid Equivalent (inches)	2.40	1.36	1.39	1.57	1.04
duration of accumulating snow (hours)	~29	~38	~54	~40	~33
average snowfall intensity (inches per hour)	0.8	0.5	0.4	0.5	0.6
peak wind gust (mph)	53	39	43	61	39
maximum snow depth (inches)	23	29	18	18	18
snow stayed on the ground through (number of days)	March 9 42 days	March 6 51 days	January 23 21 days	February 18 16 days	??
Temperatures after the storm	Jan 28-29 low 15/high 28 low 20/high 30	Jan 15-16 low -19/high 9 low -2/high 22	Jan 4-5 low -9/high 5 low -16/high 18	Feb 3-4 low -6/high 16 low 5/high 25	Feb 2-3 low 6/high 19 low 2/high 26

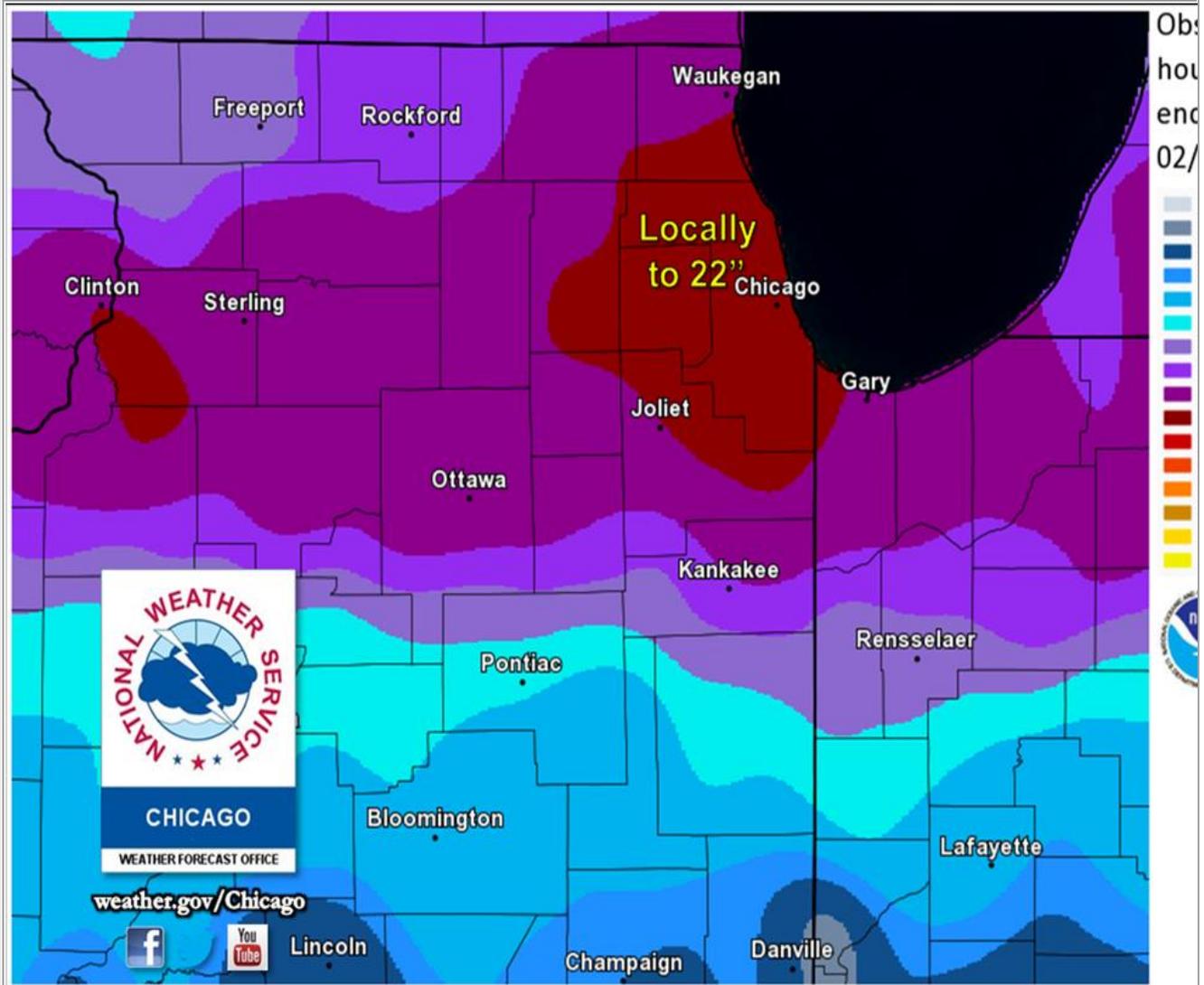

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February 5, 2015

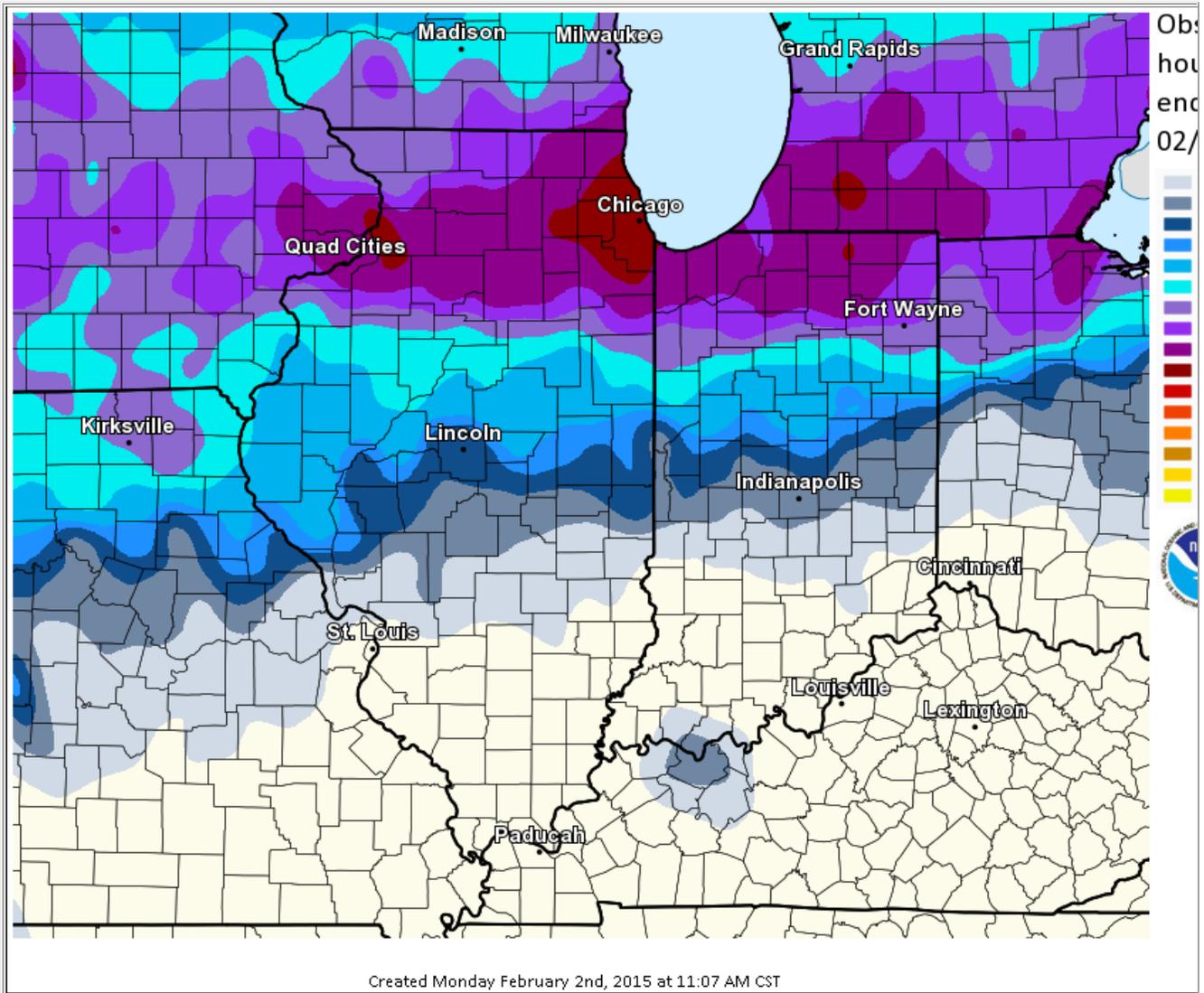
Snowfall Maps

Local Snowfall Map (click to enlarge)



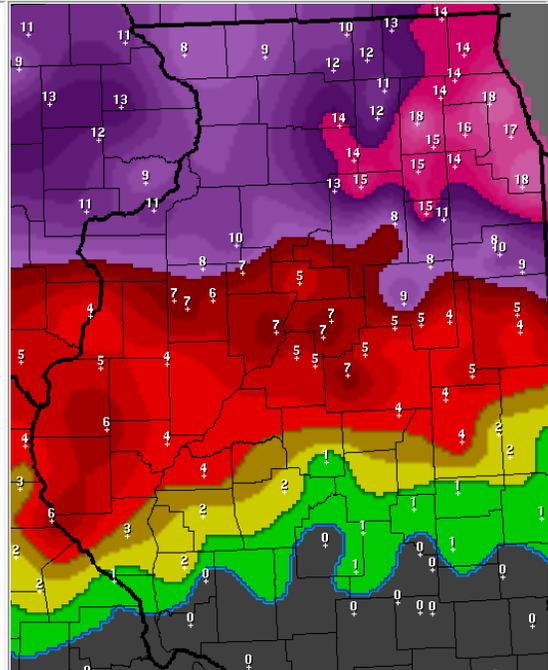
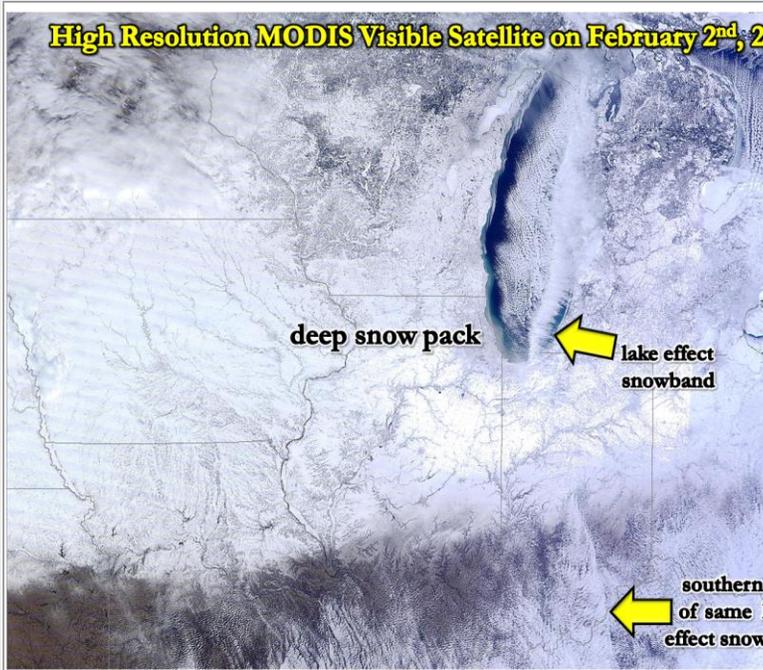
15-18" were reported around the Chicago metro area with locally higher totals.

Regional Snowfall Map (click to enlarge)



MODIS Visible Satellite Image Showing Extent of Snow

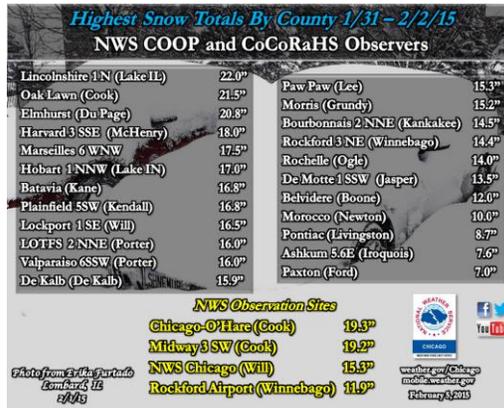
February 2nd Morning Snow Depth



This visible satellite image to the above left shows the deep snow pack blanketing the area in the wake of the winter storm. Also, the lake effect snow band that resulted in the highest totals in the area being in Cook, Lake IL, and DuPage counties, can clearly be seen extending into northwest Indiana. This brought occasional moderate to heavy snow to Porter County into the late morning of February 2nd. Most interestingly, strong convergence (winds of opposing directions coming together) allowed the band to extend all the way through Indiana into northern Kentucky!

Snowfall Amounts and Maximum Observed Wind Gusts

Chicago O'Hare	19.3"
Rockford	11.9"
Chicago Midway 3SW	19.2"
Romeoville (NWS Office)	15.3"



Low Visibility at NWS Chicago on Feb 1st	Low Visibility at NWS Chicago on Feb 1st	Deep Snow Cover at NWS Chicago on Feb 2nd

Service



Weather Story: January 31st, 3:30 pm

MAJOR Winter Storm Tonight Thru Monday
Very Dangerous Travel Conditions

What To Expect

- Precipitation may start as rain/snow mix, esp south of I-80
- Blowing/drifting snow Sunday PM
- Near blizzard conditions possible with very strong northeast winds

Forecast Snow Totals

8 - 10" (Rockford)
 10 - 12" (Chicago)
 12 - 14" (Pontiac)
 8 - 10" (Bloomington)

Precautions

- Only travel & spend time outdoors in a
- If you must travel, check car battery, tire fluid. Carry blanket, food/water, flashlight

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