



Meeting Minutes

**American Meteorological Society
Chicago Chapter
March 4, 2008**

Meeting held at the Lewis University Aviation Center.

Meeting opened by Ed Fenelon, President, followed by attendees' self introductions.

Treasurer Ray Waldman not present: Treasurer's report deferred until next meeting.

Secretary William Johnson reported on the upcoming change of chapter officers:

- President Ed Fenelon to cede the Chair to Mark Russo
- Mark Russo to be succeeded as Vice President of the Chapter by Al Krol
- Treasurer Waldman and Secretary Johnson to continue in their current posts

Johnson also reminded attendees of the Severe Weather Seminar to be hosted by Tom Skilling at FermiLab in Batavia on April 5. Requested volunteers to set up and staff a table for the AMS chapter at the event.

Two formal presentations were given at the meeting:

Nathan Marsili, Forecaster, NWS Chicago/Romeoville presented **"A Review of the February 5th-6th Snowstorm across Northern Illinois and Northwest Indiana"**

Gino Izzi, Sr. Forecaster, NWS Chicago/Romeoville presented a review and analysis of **"The 2007 August 23rd Lower Great Lakes Derecho"**

(Note: Mr. Izzi is currently slated to give this same presentation during the Severe Weather Seminar at FermiLab.)

February 5th-6th Snowstorm

Mr. Marsili began with a quick review of the long list of significant winter weather events in Northern Illinois, a wild ride that included a rare mid-winter tornado in Boone County on January 7, and a severe arctic outbreak that followed.

As an aside, the Rockford Star reports Rockford is already \$2 million over budget with regard to road maintenance due to the costs incurred from multiple storms and snowfalls.

For the storm under discussion, snowfall totals were in the range of 10" to 15" in the northern half of the Chicago metro area, with 15" to 20" reported in Madison and southern Wisconsin.

The storm began as a strong warm convection event. 850 MB winds very strong and cyclonic, centered in MO and moving into IL during the afternoon. Temps remained in the low 30's with dew points around the 30 degree mark.

A significant feature of the event was the very strong gradient of snowfall and rain across the Chicago Metro area. The rain / snow line persisted from Ogle and Lee counties to the west, eastward along I-80, with only a few inches of accumulation along the line, rain all night immediately south, but continued snow overnight in suburbs just 30 miles to the north and west, yielding the 10'-15" totals.

Forecasts did not predict this stark contrast well. In summary, the upper level low pressure system evolved much more slowly than predicted by the models. In the second phase of the event, deformation forcing produced the bulk of the snow.

Neither the NAM nor the GFS at 12 Z showed the vorticity that actually occurred. The 0:00 Z RUC was more accurate in displaying the vorticity.

Marsili then presented a review of Martin's TROWAL (TRough Of Warm Air aLoft) model (1998) and posited that this event conformed fairly well to Martin's model.

In this case the TROWAL developed fairly quickly from 14-19 Z, peaking about 18 Z. IR satellite loop for that time frame was presented that also showed hints of cooling cloud tops along the TROWAL line.

06 Z RUC (12 hour forecast) for 6-18 Z Feb 6 began to show the TROWAL more clearly.

Marsili acknowledged that the TROWAL changed the timing of the event, but does not, by itself, explain the snowfall amounts that occurred.

RUC correlated very well with F vector convergence toward the end of the event, suggesting to Marsili that RUC has some possibility for use with "Now-Casting" snowfall amounts in similar events (18-20 Z in this case).

Before beginning his presentation covering the "**The 2007 August 23rd Lower Great Lakes Derecho,**" Gino Izzi tagged on to Nathan Marsili's presentation by bringing up a couple images which showed a distinct TROWAL in southern Minnesota that had occurred in the prior 24 hours, on the trailing side of a storm that rolled through the

Midwest. The TROWAL was evident along an approximately 18-mile wide swath which ended up producing snow of 6" in 3 hours in Springfield MN, with only minor accumulations either side of the TROWAL..

As part of his initial evidence of the strength of the storm(s) of August 23, 2007, Izzi presented reports from the Chicago metro electrical utility, Commonwealth Edison, regarding their total equipment and infrastructure damage. In summary, they were quoted as saying that they sustained more damage in this event than they had in any prior event since a major ice storm in the 1980's.

The Derecho began in Northwest and North Central Illinois in the early afternoon. There were two distinct supercells involved, one of which moved from WC IL E-NE at 70 mph, eventually churning through the city of Chicago, crossing Lake Michigan and continuing to cause damage in SE Michigan. The other supercell originated somewhat farther north, taking an easterly path, rolling through the northwest and northern suburbs of Chicago, as well as through the City proper. The timing of these two supercells was essentially synchronous as they met and merged over the City of Chicago.

The net result was significant EF1 damage across an extraordinarily large area, essentially 50-60 miles north to south and 25 miles east to west, in a highly populated metro area, between 2:30 and 4:30 PM, as schools were letting out and the rush hour was beginning. From news reports and feedback from ComEd, the public did not, could not understand the scale of damage to the electrical grid, but they were very well aware of the resulting gridlock and structural damage.

At this point Izzi paused to review the criteria required to declare a Derecho, which includes:

- A concentrated swath of strong storm activity
- With Chronological progression of wind reports
- And at least 3 reports of EF1 damage within 3 hours.

The observations and post storm surveys confirmed that this event easily met all criteria for a Derecho.

Taking the clock back, Izzi reviewed the origins of the Derecho. It began as a large pool of >70 F surface air ahead of a short wave in Iowa. Mesoscale RUC showed unusually strong winds of 50-55 knots at 3 KM above the surface..

Morning temps in northern IL were in the 80's, with full sunshine. The storms transitioned to surface-based events by Mid-day.

As the two aforementioned supercells moved eastward, the two bow-echos crossed the region just to the north and to the south of the NWS office in Romeoville.

Izzi reviewed the differences between mesovortices and mesocyclones. He then summarized that the northern system had the stronger and longer lasting mesovortices,

which developed just south of DeKalb Illinois. (Side note: DeKalb is home to Northern Illinois University. It was move-in day for undergraduates who were caught in the developing storm around 14:00 hours.)

The best radar data was obtained from the O'Hare and Midway airport terminal doppler as they were facing essentially directly into the path of the oncoming mesovortices, while the Romeoville radar returns were essentially orthogonal to the storm paths (passing to the north and south, as previously mentioned), yielding less rich data.

The southern mesovortex did produce a short-lived tornado near Winfield Illinois.

Izzi did attempt to conduct an immediate survey, but the widespread power outages resulting in traffic control outages, combined with severe flooding along the Des Plaines river made it very difficult to make immediate progress.

Among other reports, in a cemetery just outside of the near-north Wrigleyville neighborhood in Chicago, there were multiple 100 year-old oak trees "just mowed down."

Izzi presented a map provided by Com Ed showing infrastructure damage by operating district, overlaid with a rough map he constructed of the paths of the southern mesovortex (which spawned the Winfield tornado) and the northern mesovortex, showing fairly convincing correlation of the damage to the central areas of each storm's swath.

To conclude the talk, Izzi recounted the classic quote from Chicago's colorful Mayor Daley following the Derecho, as the city was being chastised in the media for not activating the tornado warning sirens in the city: "We can't go blowing the sirens every time a couple of thousand trees get blown down!"

Some additional follow-on discussion occurred, covering both technical and non-technical issues, including the value of differing methods of communicating storm intensity in NWS broadcasts and messaging.

The meeting concluded with closing remarks by Ed Fenelon, including a reminder that the next meeting would be a joint session with the Valparaiso University chapter of the AMS, at the same location (Lewis University) on Tuesday April 1.

Minutes recorded by Chris Thomas