National Weather Service

Skywarn Spotter Program

What is Skywarn

- A nationwide volunteer network of severe weather "storm spotters." This program was originally developed by the National Weather Service (NWS) in the late 1960's on how the public can Identify, Evaluate, and Report severe weather events. Today there are over 286,000 volunteers and some 200 Skywarn groups.

History of Skywarn

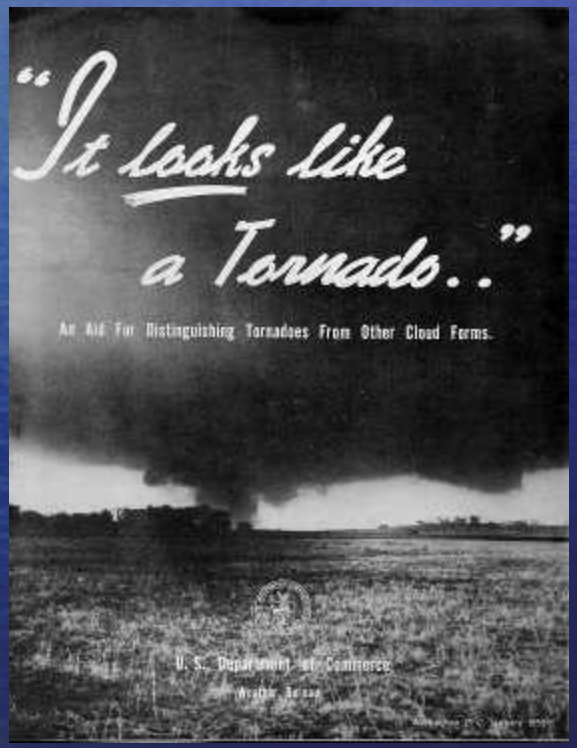
- During 1942 and 1943, the US Weather Bureau, now known as The National Weather Service, cooperated with the military in setting up volunteer storm spotter networks to protect military installations and recognized the value of first hand real time information. The primary concern was for lightning near ordnance plants, but the program grew substantially during the war, and the spotter mission expanded to include other hazardous weather, including tornadoes. After WWII, spotter networks were maintained for military installations.

Reporting Handbook

One of the first handbooks made in 1956

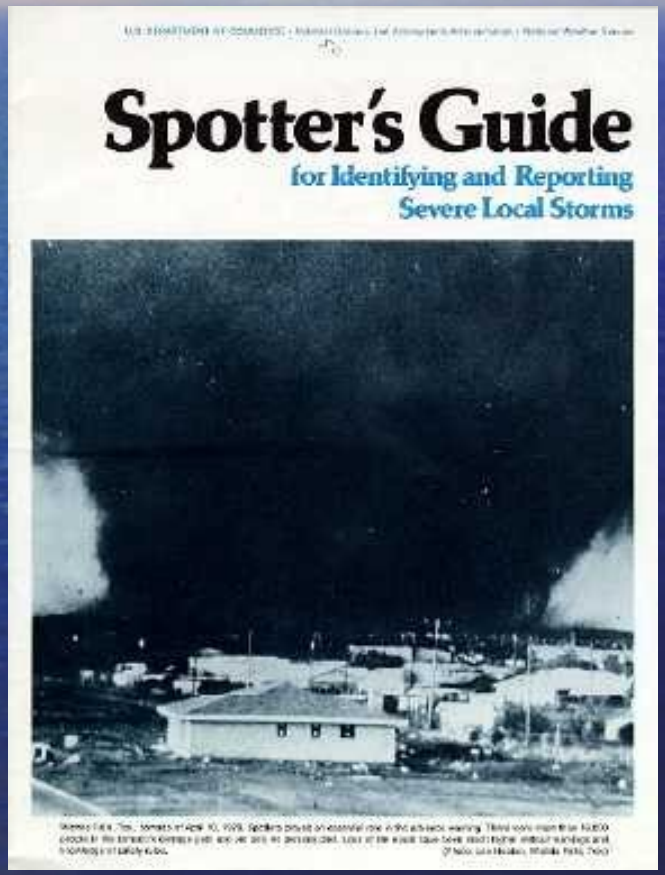
- The Weather Bureau decided to train severe weather spotters to provide real time data.
- On March 8, 1959, the Weather Bureau held the first training course in Wellington, Kansas for 225 severe weather spotters.

Official Weather Bureau Handbook



1959

Spotter's Handbook Revision



1981

Slide Shows

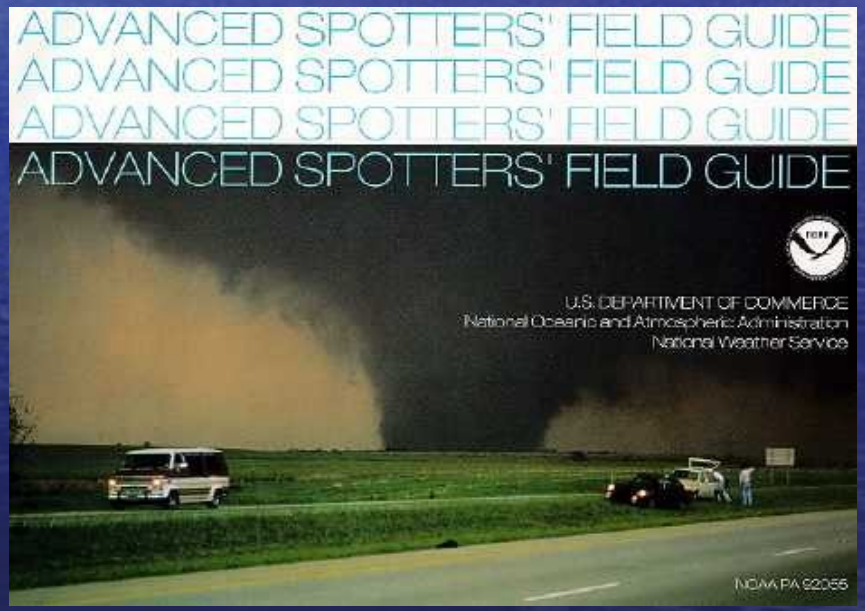
- As a supplement, a couple of slide shows were developed. Les Lemon, Al Moller and Chuck Doswell were instrumental in the production of these slides

1978

1988

Advanced Spotter Guide

- In 1992, this familiar guide contained updated severe weather information.



Skywarn and Ham Radio

- A large percentage of storm spotters are licensed ham radio operators. Virtually all weather service offices have ham radio station setups. During selected severe weather events ham radio operators and other volunteer spotter networks activate their frequencies to submit reports to local NWS offices. These radio frequencies can be heard on most programmable police scanners. Ham radio operators have their own reporting criteria.

Spotter Do's and Don'ts

- Do...attend spotter classes as much as possible.
  Do...surf the web for additional information on spotting, severe weather, etc. (including Storm Prediction Center)
  Do...have a watch, pencil, note pad, cell phone, and colored Quick Spotter Reference Guide with you when spotting
  Do...make an effort to provide an accurate report - the time, location, condition (what you experienced/saw), and location

- Do...provide in your report what direction you are looking at while viewing a rotating wall cloud, funnel cloud, or tornado, since you can't accurately determine, in the heat of the battle, how far away the wall cloud/funnel cloud/tornado is from your position
  Do...spot with a partner, especially if you are mobile - two heads are better than one in this business!
  Do...place the safety of you and your family first, your report is second priority

- Don't...assume you know everything there is to know about spotting - keep an open mind - you'll learn something new every year
  Don't...make it difficult for emergency response people (emergency management, law enforcement, fire fighters, Red Cross, etc.) to do their job - don't get in the way
  Don't...just take pictures and video of a wall cloud or tornado and forget to relay your spotter report

- Don't...assume that you have a tornado just because you see something that looks like a funnel cloud - you must see some indication of ground-based, rotational effects (rotating debris/dirt) underneath or very close to the funnel cloud in order to classify it as a tornado - and there may be very little of any funnel cloud

On-Line Spotter Training

- You can get an idea about spotter training by visiting:

http://www.mke-skywarn.org/storm_spotters.html

Frequently Asked Questions

- Who Activates Spotters ?

  The National Weather Service may request spotter activation in a particular region and time, but it is up to the groups and individual spotters as to when they activate. Emergency managers, police and fire personnel, and ham radio groups may all have different activation requirements

- Who Organizes Spotters?

  It varies by county and organization. Most emergency management personnel and volunteer groups are self organized and all work with the their local NWS Warning Coordination Meteorologists.

- Storm Spotter or Chaser ?

  Both spotters and chasers sometimes perform similar functions. Spotters typically will remain in their community and report their observations from their home, office, or vehicle. Chasers will drive several hundred miles a day to intercept forecasted storms for scientific research, to take personal or media pictures, or for storm chaser tours.

- Where Do I Spot From?

  You can storm spot from any location; at home, at work, or on the road. All stationary spotters must have a safe location to move to, and mobile spotters must have planned escape routes should the situation become life threatening. PRIORITIES (1) Your personal safety, (2) Accurate reports, (3) Communication devices to relay your reports.

- What If I Make A Mistake ?

  Always double check your information before sending, however, there a times when a mistake is made. Correct your error as quickly as possible making sure you indicate your report is corrected information.

- Where Do I Get Training ?

  Every year the National Weather Service provides spotter training in various counties. You can attend a spotter class in any county. It does not need to be in the county you reside in.

What to Report

- Wind gusts of 50 mph or higher (58 Severe)
- Hail >0.50” (Severe 1.00”)
- Flooding of areas that don’t normally flood
- Wall Clouds
- Funnel Clouds
- Tornadoes

How to Estimate Winds

My Version

- Trees in Full Leaf – Average length of broken branches and add 40.
- Trees that are leafless – Average length of broken branches and add 48.
- If drought conditions are present expect around 20% less trees to be toppled in severe winds >74 mph. In very wet conditions, expect at least twice as many.

How to Make a Report

- State your call, community and a one word description of your report.

  (e.g.) N9VID, Northbrook, Hail

  When net control responds, give your entire report and be precise and as short as possible. Don’t say 15 words when 10 will do.

Where Do I Spot From ?

- Needless to say, if you live in a group of trees, spotting a tornado is nearly impossible until you have about 20 seconds left to get to shelter.

  Pick a spot that has a clear view in the direction of the storm. If you have a GPS, note the latitude and longitude and make a note of it.

How to Measure Hail and Wind

- Wind – Estimated or Measured
- Hail – Use a ruler or calipers. Do not estimate hail size as it is very difficult to do especially from inside. Do so when it is safe. Do not venture outside during hail to avoid injury.

How to Report Wall Clouds and Tornadoes

- Wall clouds occur on the back side of a t-storm. Do not confuse them with shelf clouds or scud found on the front side of a t-storm. Report funnel clouds, not as a tornado, if you do not see debris rotation on the ground. However, you may see the rotation of a tornado debris cloud on the ground without seeing the condensation cloud. Never report a tornado with an EF scale as the strength cannot be determined by site.

The Do and Do Not During Storms

- Severe T-Storms can produce tornados with or without warning.
- In tornados

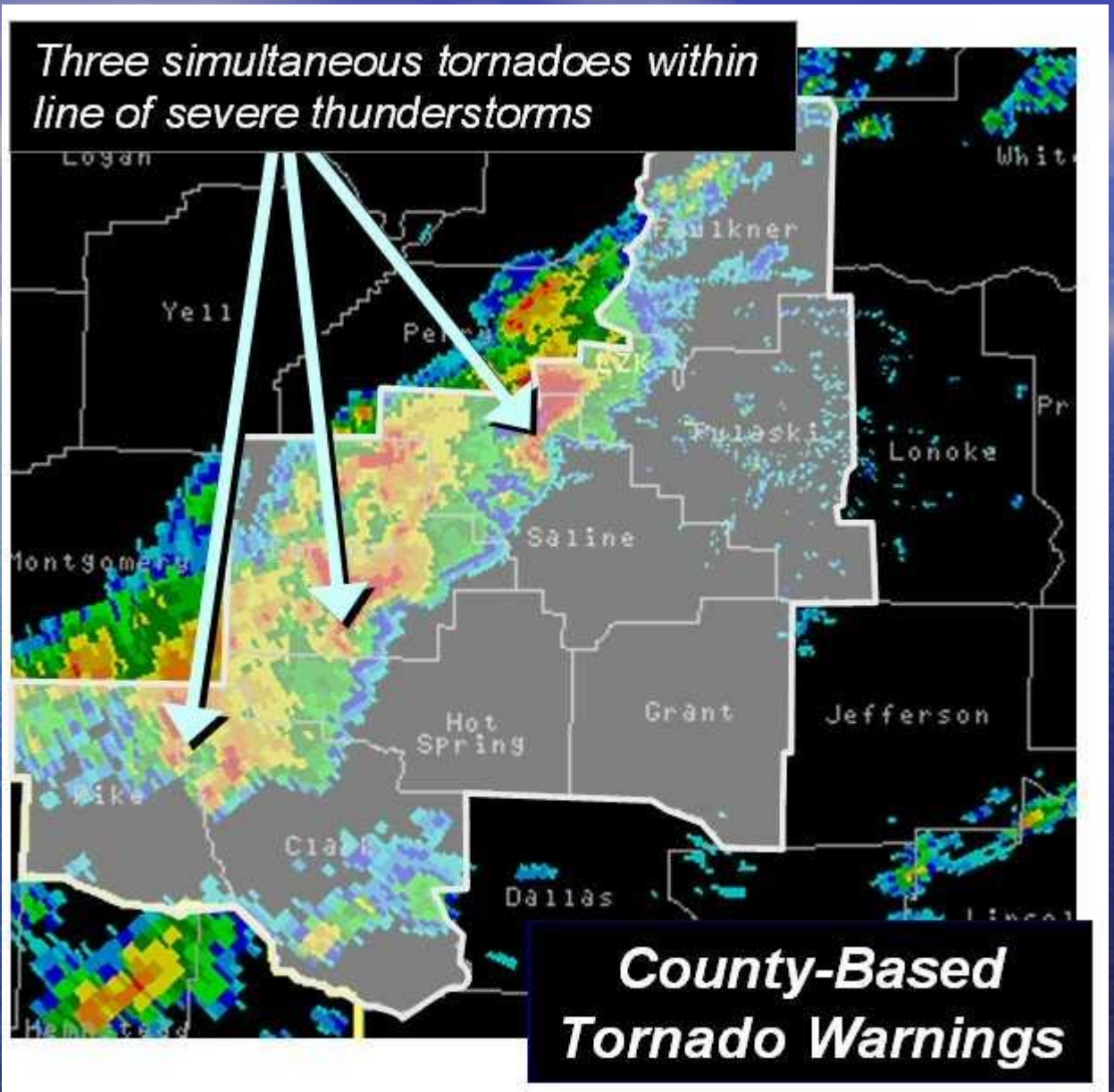
  Do – Get into the lowest part of a building under heavy furniture or in a ditch.

  Do Not – Stay in you car or get under a bridge. For those that remember the movie Twister, do not walk up to the tornado with a bottle of booze and throw it in while telling the tornado to have a drink.

Thunderstorm Safety

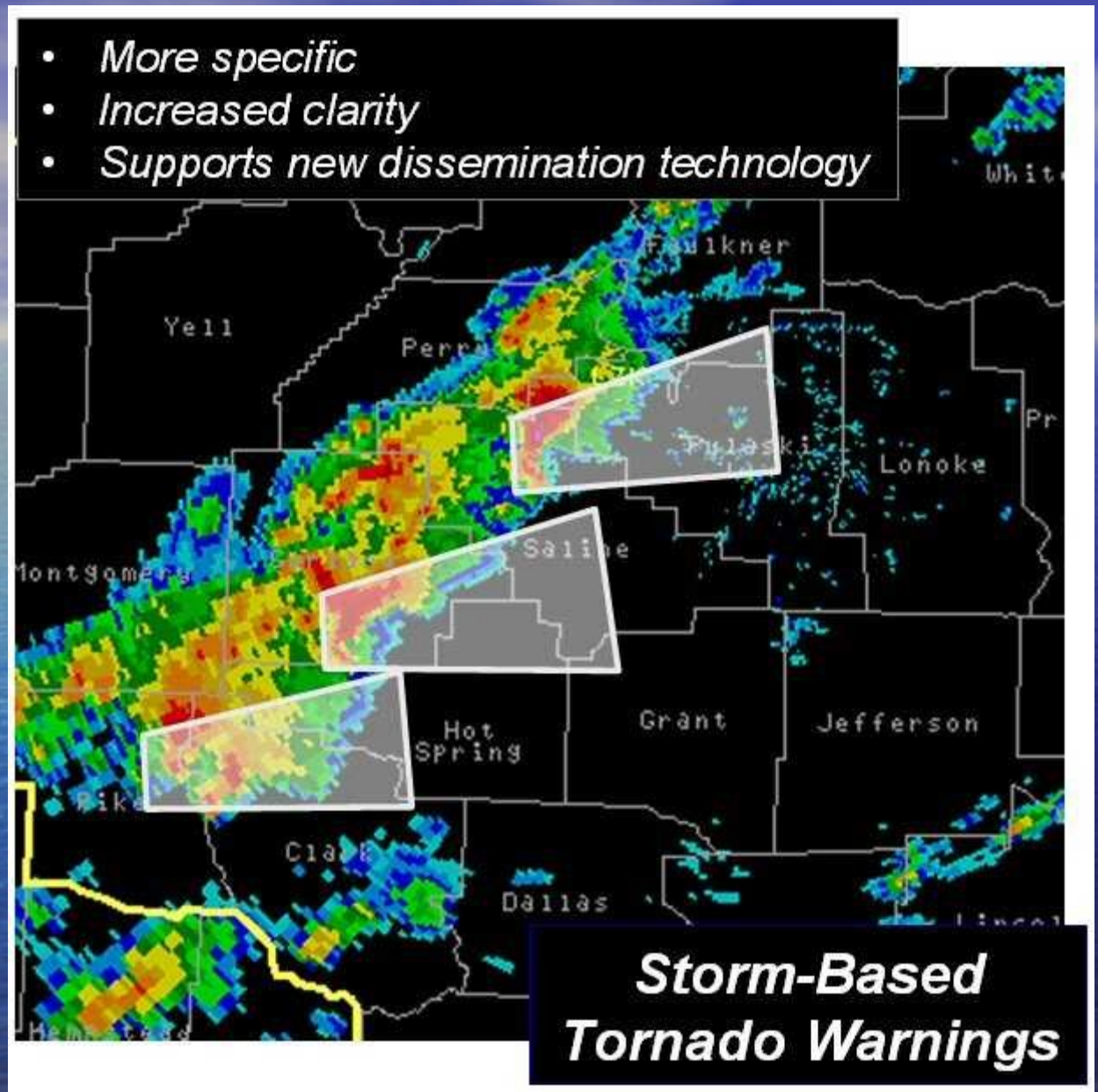
- Do not use the telephone during severe lightning events.
- Do shut off electronic equipment. Back up power supplies are great for low voltage and power surges but will do little in a direct strike.
- Thunderstorms can produce winds as strong as a EF-2 tornado.

Storm Based Warnings



8 counties under warning

Almost 1 million people warned



70% less area covered

~600,000 fewer people warned

Warning Methodology

- The Warned Area Is Defined By Latitude And Longitude And Depicted By Polygons
- Utilizing Doppler Radar Algorithms, The Calculated Movement Of Severe Storms Can Be Indicated
- All Of This Information Is Appended To The Bottom Of The Warning Message

IMPORTANT!!!

More Than One Warning Can Be In Effect For A County At the Same Time!

Q & A

- **Will NOAA Weather Radio Work?**
  - Yes. The County FIPS Codes (Lake – 017097, McHenry - 017111) Will Still Be Used To Alarm NOAA Weather Radios And The Emergency Alert System (EAS).
- **Are There Any Changes To The Format Of The Warnings?**
  - Tracking Information Will Follow The Lat…Lon That Lists The Vertices Of The Polygon. This Will Begin With TIME…MOT…LOC, Followed By The Time Tracking Begins (In GMT), The Direction And Speed Of The Feature (KTS), And The Location Of The Feature (LAT/LON).

Q & A

- **If A Severe Thunderstorm Warning Is Upgraded To A Tornado Warning, And The Exact Same Polygon Is Used, Is The Severe Thunderstorm Warning Technically Canceled Even Though A Cancellation Message Is Not Sent Out?**
  - Yes, To Avoid Confusion, The Tornado Warning Supersedes The Severe Thunderstorm Warning.

Q & A

- **If a Severe Thunderstorm Warning is upgraded to a Tornado Warning, and the polygon is slightly different, does the SVR stay in effect? If so, is the SVR in effect only for the area outside of the new TOR?**
  - Yes, the part of the SVR not in the TOR stays in effect. As in the previous case, the TOR takes precedence in the area where it overlaps an existing SVR.

Q & A

- **Can a Severe Weather Statement (SVS) update a warning with a different polygon? If so, can the updated warning contain fewer counties that the original warning?**
  - Yes, on both questions. A warning can shrink in size (it can not become larger). If a county is removed, the warning would be segmented with a continue (CON) section for the valid counties, and a cancelled (CAN) section for those counties removed. If it is smaller and a county is not removed, it will be reflected in the LAT...LON section, but not in the county codes

Warning Message - Header

WFUS53 KLOT 072126
TORLOT
ILC007-111-072200-
/O.NEW.KLOT.TO.W.0002.080107T2125Z-080107T2200Z/

BULLETIN - EAS ACTIVATION REQUESTED
TORNADO WARNING
NATIONAL WEATHER SERVICE CHICAGO/ROMEOVILLE IL
325 PM CST MON JAN 7 2008

What, Where, When

THE NATIONAL WEATHER SERVICE IN CHICAGO HAS ISSUED A

* TORNADO WARNING FOR...

  NORTHERN BOONE COUNTY IN NORTH CENTRAL ILLINOIS...

  NORTHWESTERN MCHENRY COUNTY IN NORTHEAST ILLINOIS...

* UNTIL 400 PM CST...

Location, Direction and Impact

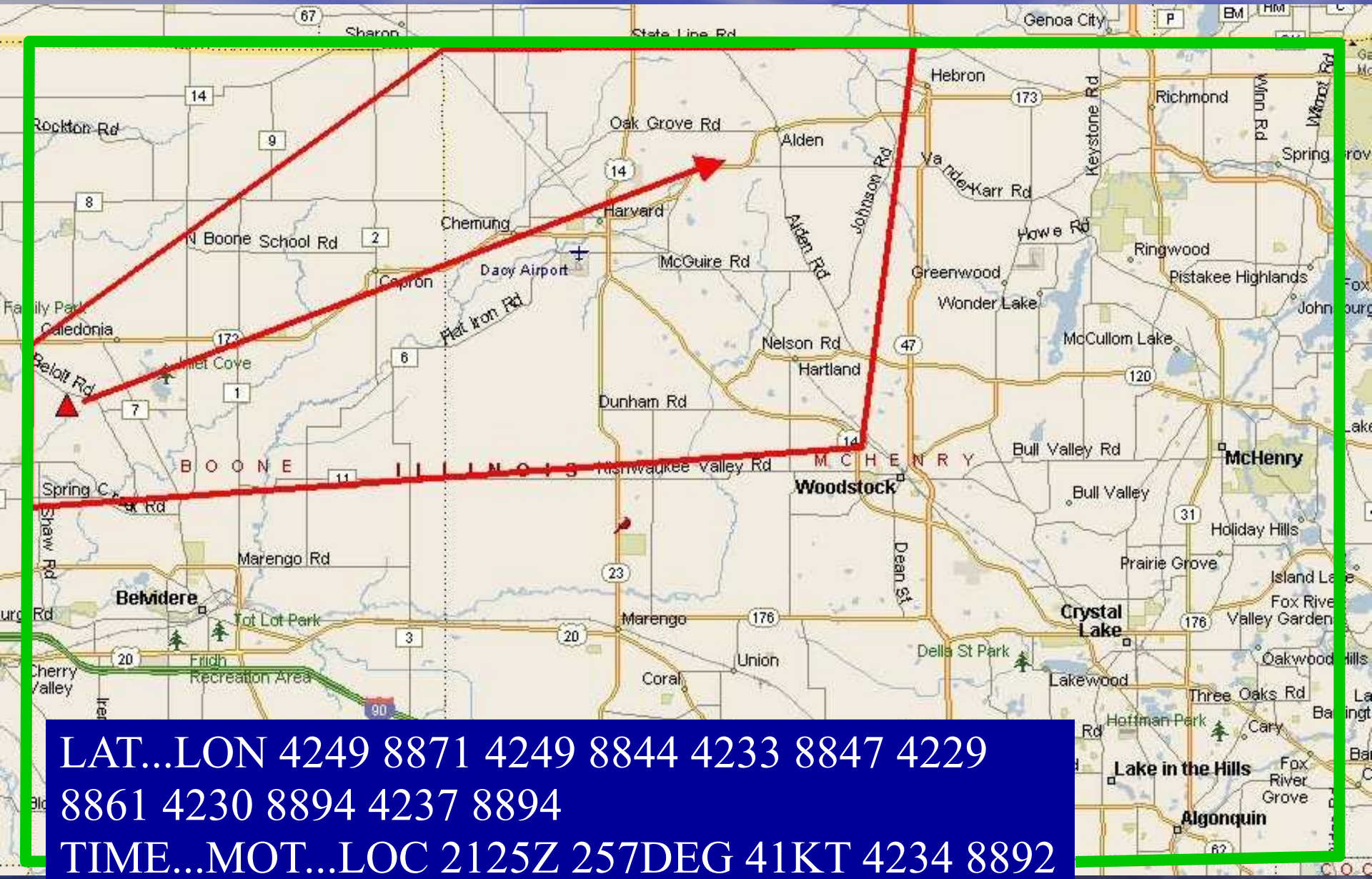
* AT 322 PM...NATIONAL WEATHER SERVICE RADAR INDICATED STRONG ROTATION IN A SEVERE THUNDERSTORM 8 MILES WEST OF POPLAR GROVE... MOVING EAST AT 45 MPH.

* THE TORNADO WILL BE NEAR...
  POPLAR GROVE BY 330 PM...
  CAPRON BY 340 PM...
  HARVARD BY 345 PM...

SBW Message

LAT...LON 4249 8871 4249 8844 4233 8847 4229 8861 4230 8894 4237 8894

TIME...MOT...LOC 2125Z 257DEG 41KT 4234 8892

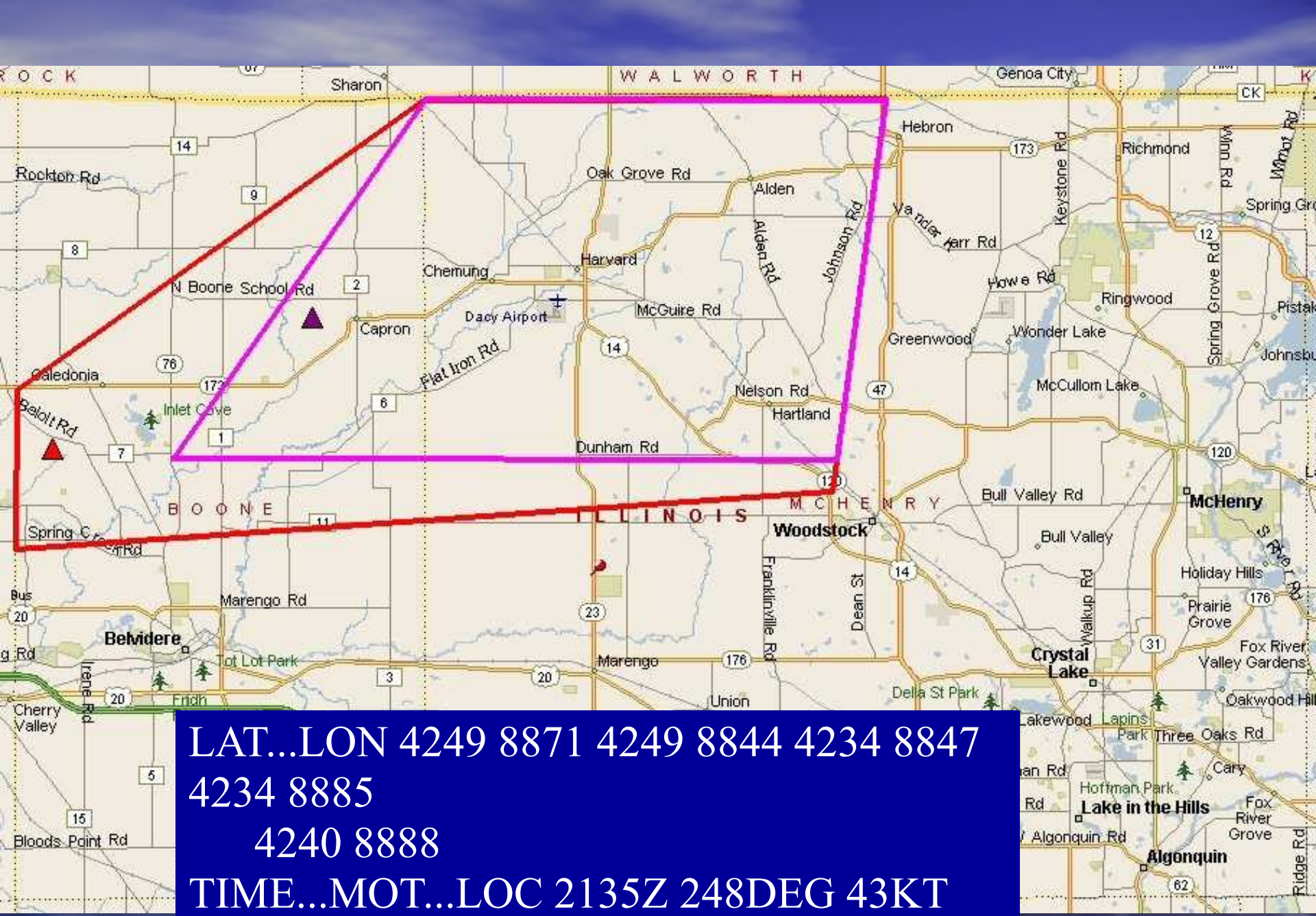

LAT...LON 4249 8871 4249 8844 4233 8847 4229
8861 4230 8894 4237 8894
TIME...MOT...LOC 2125Z 257DEG 41KT 4234 8892
Genoa City
Hebron
Richmond
Oak Grove Rd
Alden
Harvard
Chemung
N Boone School Rd
Clapron
Daey Airport
McGuire Rd
Greenwood
Wonder Lake
Ringwood
Pistakee Highlands
McCullom Lake
Caledonia
Beloit Rd
Nelson Rd
Hartland
Dunham Rd
Bull Valley Rd
McHenry
Woodstock
Bull Valley
Holiday Hills
Prairie Grove
Marengo Rd
Belvidere
Tot Lot Park
Marengo
Union
Coral
Crystal Lake
Della St Park
Lakewood
Three Oaks Rd
Oakwood
Fox River Valley Garden
Lake in the Hills
Algonquin
Fox River Grove
Cherry Valley
Rockton Rd
Spring Creek Rd
Shaw Rd
Johnson Rd
Alden Rd
Dean St
Keystone Rd
Kane Rd
Karr Rd
Howe Rd
Spring
Hoffman Park
Cary
B O O N E
I L L I N O I S
M C H E N R Y

335PM Severe Wx Statement

AT 331 PM CST...TRAINED WEATHER SPOTTERS REPORTED A TORNADO. THIS TORNADO WAS LOCATED JUST NORTH OF POPLAR GROVE...OR ABOUT 9 MILES NORTH OF BELVIDERE...MOVING EAST AT 45 MPH.

THE TORNADO WILL BE NEAR...
HARVARD BY 345 PM CST...

LAT...LON 4249 8871 4249 8844 4234 8847 4234 8885
4240 8888
TIME...MOT...LOC 2135Z 248DEG 43KT 4240 8877


LAT...LON 4249 8871 4249 8844 4234 8847
4234 8885
4240 8888
TIME...MOT...LOC 2135Z 248DEG 43KT
4240 8877

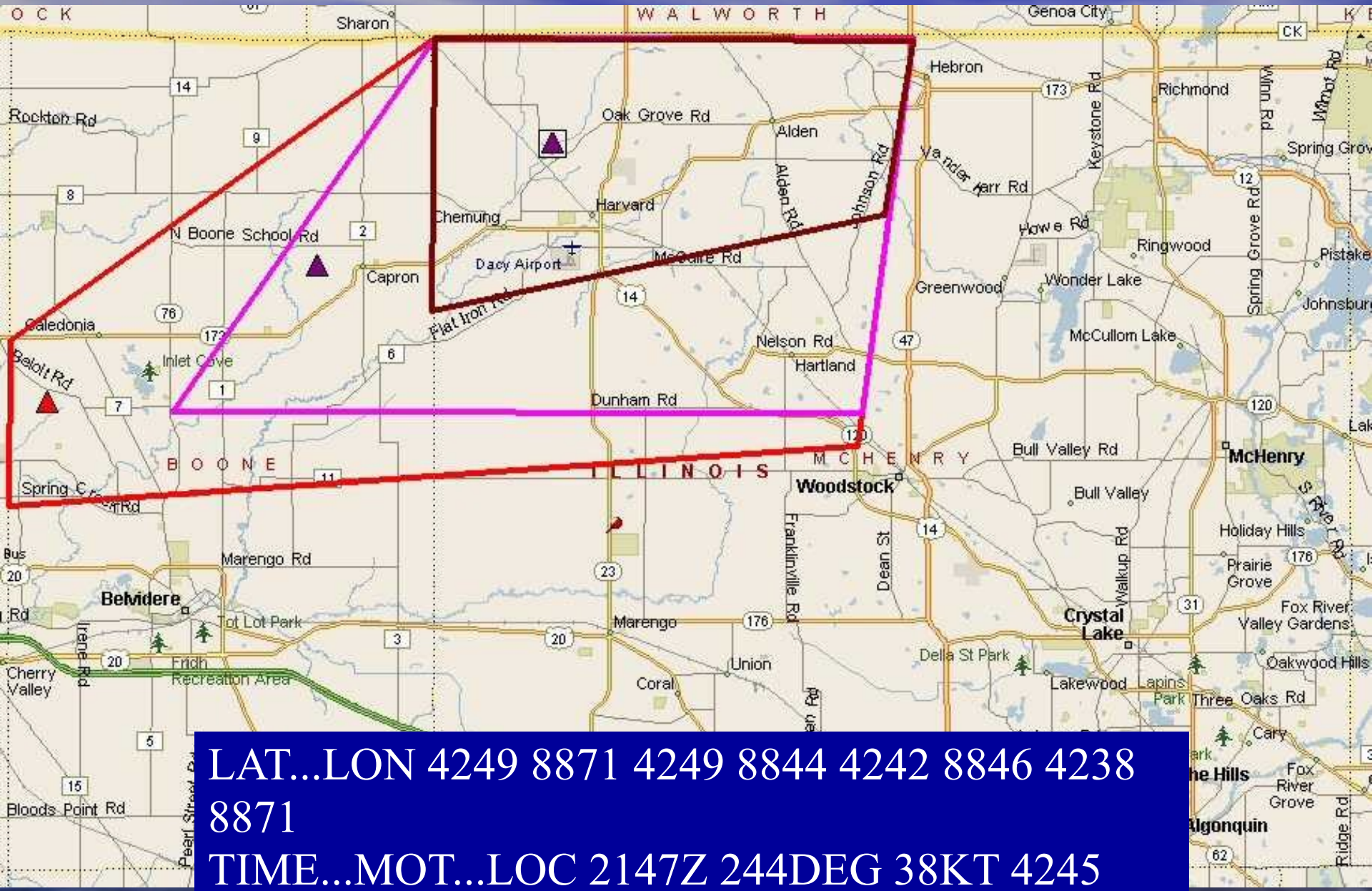
345PM Severe Wx Statement

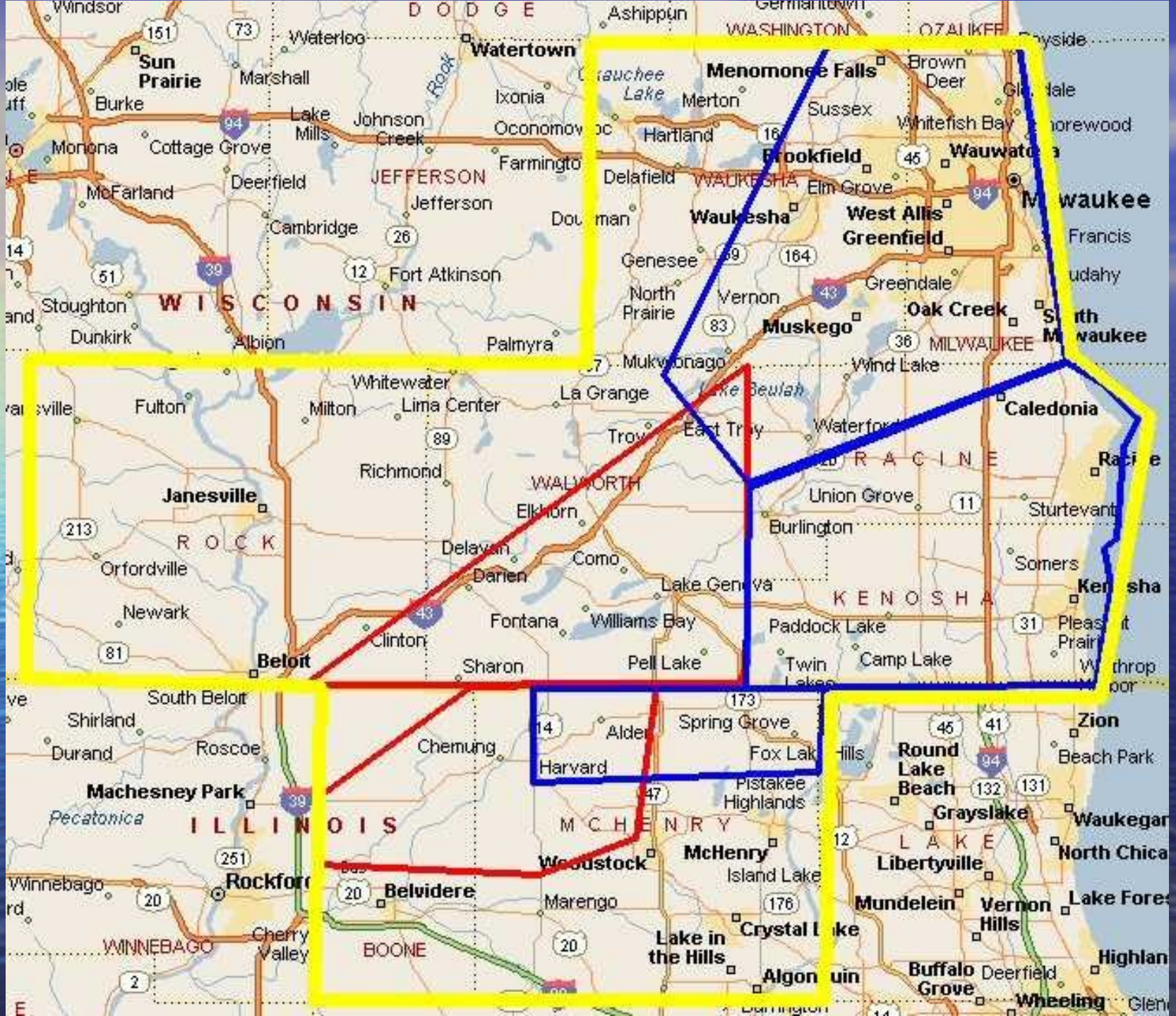
ILC111-072200-
/O.CON.KLOT.TO.W.0002.000000T0000Z-080107T2200Z/
MCHENRY IL-
347 PM CST MON JAN 7 2008

AT 345 PM CST...NATIONAL WEATHER SERVICE DOPPLER RADAR CONTINUED TO INDICATE A TORNADO. THIS TORNADO WAS LOCATED NEAR HARVARD...MOVING NORTHEAST AT 40 MPH AND HAS A HISTORY OF PRODUCING DAMAGE.

THE TORNADO WILL BE NEAR...
RURAL NORTHERN MCHENRY COUNTY AT 400 PM CST

LAT...LON 4249 8871 4249 8844 4242 8846 4238 8871
TIME...MOT...LOC 2147Z 244DEG 38KT 4245 8864


LAT...LON 4249 8871 4249 8844 4242 8846 4238 8871
TIME...MOT...LOC 2147Z 244DEG 38KT 4245 8864


Windsor
DODGE
Ashippun
Germantown
WASHINGTON
OZAUKEE
Waterloo
Watertown
Sun Prairie
Marshall
Rock
Ixonia
Lake Mills
Johnson Creek
Oconomowoc
Monona
Cottage Grove
Deerfield
JEFFERSON
Farmington
McFarland
Jefferson
Cambridge
Fort Atkinson
WISCONSIN
Stoughton
Dunkirk
Albion
Palmyra
Whitewater
La Grange
Lake Beulah
Fulton
Milton
Lima Center
Janesville
Richmond
WALWORTH
Elkhorn
ROCK
Delavan
Como
Darien
Orfordville
Newark
Fontana
Williams Bay
Clinton
Beloit
Sharon
Pell Lake
South Beloit
Shirland
Durand
Roscoe
Chemung
Harvard
Machesney Park
Pecatonica
ILLINOIS
MCHENRY
Woodstock
McHenry
Belvidere
Marengo
Island Lake
Rockford
Winnebago
Cherry Valley
WINNEBAGO
BOONE
Lake in the Hills
Crystal Lake
Algonquin
Menomonee Falls
Brown Deer
Lauchee Lake
Merton
Sussex
Whitefish Bay
Hartland
Brookfield
Wauwatosa
Delafield
WAUKESHA
Elm Grove
Milwaukee
Waukesha
West Allis
Greenfield
Genesee
Greendale
North Prairie
Vernon
Oak Creek
Muskego
MILWAUKEE
Mukwonago
Wind Lake
Caledonia
Waterford
East Troy
RACINE
Union Grove
Burlington
Somers
KENOSHA
Lake Geneva
Paddock Lake
Camp Lake
Twin Lakes
Pell Lake
Spring Grove
Fox Lake
Pistakee Highlands
Round Lake Beach
Grayslake
LAKE
Libertyville
Mundelein
Vernon Hills
Buffalo Grove
Deerfield
Wheeling
Zion
Beach Park
Waukegan
North Chicago
Lake Forest
Highland

For More Information

- Storm Based Warnings
  - Any National Weather Service Website – search Storm Based Warnings
- Additional Radar and Photo Imagery from January Tornado Event
  - National Weather Service Chicago
    - Link to Archived News Stories
  - National Weather Service Milwaukee
    - Link to Storm Write-ups


UNITED AIRLINES

Lake County RACES/ARES

Analysis, BUFKIT Data available
NWS Area Forecast Discussion
Local Severe Weather Outlooks as well as
Severe Weather Operations
NWS Outlooks
Lake County Skywarn (LCS)
Local Conditions
5 Doppler Radars;
LaCross, Davenport, Springfield,
Milwaukee and Chicago
All Radars Auto-Update
Weather Discussions in our Blog Section
Severe Weather Event Summaries
Hazard Level Forecasts
Satellite
Tutorials

http://www.lakecountyskywarn.org