National Weather Service
Chicago

School Guide

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Introduction

On April 8, 1999 at 5 p.m. the skies were partly sunny and the temperature was in the 70s in Hamilton, Illinois. Several sporting events were scheduled for that evening in the Hamilton School District, including a baseball game and a track meet. At 6:52 p.m. an F3 tornado struck Hamilton, including the baseball field and track where the events had been planned. No one was hurt. No one was even there. Why? Because a school official was aware that there was a risk of severe weather that day. He called the National Weather Service that afternoon, and based on a real-time assessment of the potential for severe weather, made the tough decision to cancel the events, in spite of the current tranquil conditions. He undoubtedly saved lives.

We are the National Weather Service, Chicago Forecast Office, serving north-central and northeast Illinois, and northwest Indiana. Our mission is to protect lives and property from the effects of extreme weather, including everything from fog to lightning, tornadoes to blizzards, and wind chill to heat waves. We provide information to help officials and local school decision-makers anticipate the effects of all types of weather on staff, students, and activities. We want to help you plan and prepare for the variety of weather conditions that we face here in the Midwest.

Background and Mission:

"The National Weather Service provides weather, hydrologic, and climate forecasts and warnings … for the protection of life and property and the enhancement of the national economy."

This mission is carried out by a highly trained workforce amidst a network of weather offices located throughout the United States and its territories. Through this network, the National Weather Service provides data to several user communities around the clock. Information is made available to the private sector through such outlets as the NOAA Weather Radio - All Hazards, NWS web pages, and the Emergency Managers Weather Information Network, to meet specific and unique individual, corporate, and educational needs.

The National Weather Service offers:

- Warnings and Forecasts for Severe Weather, Winter Weather and Non-Precipitation Hazards
- Warnings and Forecasts for the Aviation, Hydrologic, Marine, and Fire Weather Communities
- Digital and Text Forecasts for Various Weather Parameters through 7 Days
- Forecasts for General Weather Trends beyond 7 Days
- Spot Weather Forecasts for Emergency Management and Land Management Agencies in support of HAZMAT and Wild Fire Containment
- High-Quality Data Collection and Historical Databases of Climate Phenomena
- Preparedness information for all seasons

For the National Weather Service in Chicago, this means constantly striving to provide accurate weather and hydrologic services to the best of our ability for the residents in North-central and Northeast Illinois and Northwest Indiana.

This guide is designed to outline the support available to all schools by our office. Chicago School Guide created and updated by Jennifer Schuller. For further information about our office, products, or services, contact Jim Allsopp at (815) 834-0600, ext. 726 or Jim.Allsopp@noaa.gov

Last Updated August 18, 2011

Hazardous Weather

It was July 13, 2004 at about 4:30 pm in the afternoon. A tornado packing winds over 200 mph tracked near Roanoke, Illinois, striking Parsons Manufacturing. Cars and semi trucks were tossed. I-beams were twisted. The factory was demolished. There were 140 people in the building at the time. No fatalities. No injuries. Not even a scratch.

What is the secret to this amazing success story? It can be boiled down to Bob Parsons, the owner of the company, and his commitment to protecting his employees from the very real danger of severe weather in the Midwest. Mr. Parsons instituted an extraordinarily effective severe weather strategy that went far beyond putting a plan on paper.

It started with his severe weather plan – including construction of 3 tornado shelters in the facility. They practiced. In fact, they had had a tornado drill at the factory one week before the tornado struck. They monitored the weather using a designated weather watcher – the security staff who monitored their weather radio and the sky. When the time came to act, it only took 3 minutes to get everyone to safety.

Each piece of the puzzle is critical. If you take any single piece out, you don't have the whole picture; you don't have the same outcome.

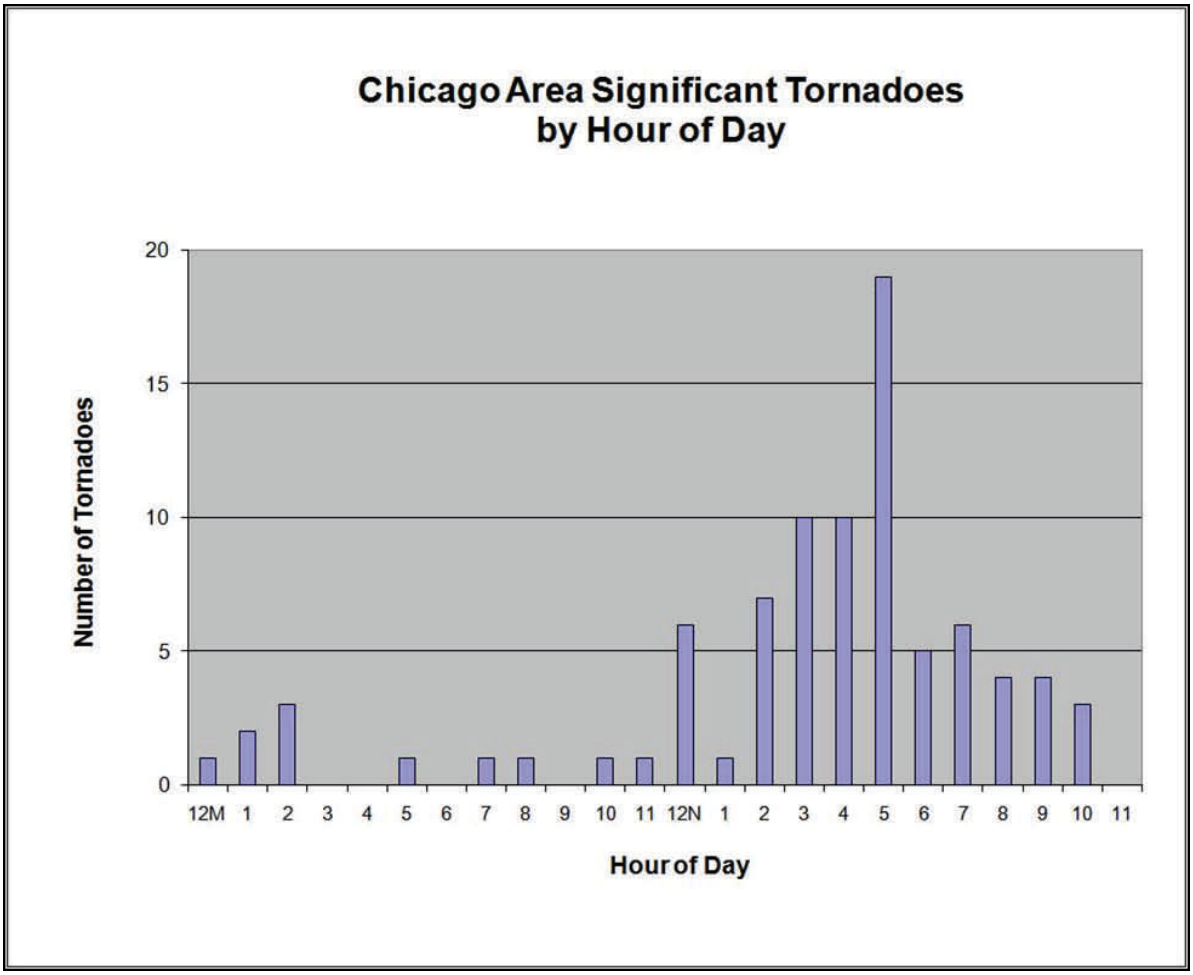
Hazardous Weather Close to Home:

August 28, 1990 Plainfield, IL
Around 3:30 PM, Plainfield Central High School took a direct hit from a F5 tornado a day before school was to start. Three were killed at the high school, 26 others died throughout the town and over 300 were injured.

April 21, 1967 Belvidere, IL
A tornado struck the high school at 3:50 PM as students were boarding buses. Sixteen buses were tossed or rolled over; 11 children were killed and another 140 were hospitalized.

October 14, 1992 Oak Lawn, IL
Two parents were struck by lightning while they waited outside a school to pick up their children.

Peak tornado time is in the late afternoon, right when school is getting out and outdoor activities are taking place.



Graph of significant tornadoes (f2 or greater) in the 8-county Chicago metro area by hour of day.

Plan:

An Effective Hazardous Weather Plan

Plan

- Know the threats
- Address each threat as it applies to your faculty, staff, and students (Flash Flood, Hail, Blizzard, Extreme Heat/Cold, Tornado, Extreme wind, Lightning)
- Consider time of day
    - peak tornado occurrence is 2-7 pm
    - peak high wind occurrence is 6-9 pm
    - no matter the time, plans need to be made for when anyone is present in the building or on the grounds including weekends.
    - tornadoes usually move from the south, southwest, or west. Therefore south and west facing sides of a building may suffer more damage.

Practice

- Training meetings: Make sure everyone knows the plan
- Drills: Practice the plan
    - Evaluate time needed
    - Evaluate suitability of shelters
- Severe Weather Awareness Week

Monitor

- Designated Weather Watcher
- Available information: before, during, after
    - Outlook: what to expect that day, tomorrow, beyond
    - Watch: within a few hours
    - Warning: occurring severe thunderstorm, tornado
- Your eyes: the spotter network, NOAA website
- Your ears: NOAA All Hazards Radio

Act

- Be proactive, stay ahead of the storms
- Determine when to take action
    - Based on watches, warnings, reports, other?
    - Consider how much time you need for people to reach shelter
- How will action be initiated?
    - Means of communication
    - Backup plan
- Where will people go?
    - Recommended saferooms
    - Lowest Floor
    - Interior of Building
    - Small roof spans
    - Area without windows
    - Enough space
    - Enough time to get there
- How will you communicate an “all-clear”?

Plan:

Identifying Safe Areas in Your Facility

The greatest dangers from tornados and high wind are roof failure, breaking glass, and flying debris.

- **The most dangerous locations in schools are generally large rooms with big expansive roofs such as cafeterias, gyms, and auditoriums.**
- Rooms with large windows that may shatter when struck by airborne missiles or pressure stresses are also extremely dangerous.
- Do not open windows. This may actually result in greater damage and wastes valuable time seeking shelter. Close classroom doors behind you as you exit into hallways and other shelters.
- The best protection is offered by small interior rooms, bathrooms, and windowless, interior hallways that are away from exterior doors
- In multi-level schools, always evacuate the upper level and move to the lowest available levels. When time permits, evacuate temporary buildings.
- Some schools designed in the open-classroom concept may have a less than desirable amount of safe space.
    - In this case, you will need to prioritize the space available.
    - Start with (1) interior, lower level non-load bearing walls; then (2) interior walls of upper levels, exterior walls of lower levels, and interior glass; (3) exterior walls of upper levels; (4) rooms with large roof spans, mobile, or temporary classrooms; and (5) windows in exterior walls.

You may wish to use the ranking above and prioritize your safe areas, filling students in those locations first. When developing your local plan, it is best to have an engineer advise your school on the safest areas since they understand the design of your particular facility. The list above is based on broad generalities.

For details on engineered tornado shelters, visit FEMA's web site at:
http://www.fema.gov/hazard/tornado/to_saferoom.shtm

Special Considerations

- One complication to activating a full "Call to Action" plan is if it occurs during class changes when the halls are crowded and students may not know where to go. It may be best to hold classes beyond regular dismissal time until the severe weather threat has passed.
- Likewise, at the end of the school day, students may need to be held from boarding busses until the danger has passed.

Special Considerations for Winter Weather

- Teachers and bus drivers should be taught to recognize symptoms of frost bite and hypothermia. Delaying school hours may or may not solve the problem of students standing at bus stops in the cold. Bus stop shelters would help protect the students from the exposure to wind.

Special Considerations for Heat

Humidity adds to the effects of heat. In any kind of hot weather, heat disorders such as cramps, heat exhaustion, and heatstroke are possible. Students should be kept out of the sun and strenuous activities should be eliminated. Encourage students to drink lots of water and wear light-colored, light-weight clothing. Teachers, coaches, and bus drivers should know the symptoms of heat disorders.

Practice:

Severe Weather Awareness Week

Practice makes perfect. Practicing your severe weather emergency plan through periodic severe weather drills and severe weather safety training is critical to success. Drills not only teach students and instructors the actions they need to take, but will allow you to evaluate your plan's effectiveness.

Two drills per year are recommended: one in the fall as an introduction for new students and teachers, and the second in the early spring. You may wish to conduct the spring drill in conjunction with Severe Weather Awareness Week. Each state designates a week each year as Severe Weather Awareness week. Within that week, a date and time is set for a tornado drill. At that time, a test tornado warning will be issued and disseminated. This allows you the opportunity to test your communications and strategy, beginning to end.

Illinois usually designates the first week of March as Severe Weather Awareness Week. Indiana dates are usually in mid March.

Tornado drill dates and times can be found at:

Nationwide:
http://weather.gov/om/severeweather/severewxcal.shtml

Illinois:
www.state.il.us/iema

Indiana:
www.indiana.gov/dhs

Monitor:

Designated Weather Watcher

The designated weather watcher is key to the success of any severe weather plan. ***The designated weather watcher monitors weather information, allowing everyone else to focus on the activities at hand.*** During school functions such as sporting events, graduations, etc, it is especially important to designate a weather watcher to keep tabs on changing conditions and alert the decision makers to any impending hazard.

- **Choose a designated weather watcher:** This must be someone who is always keeping an eye on the weather and someone who school decision makers can have instantaneous contact with at any time, and be a trusted source. This role is critical in order to have a heads up on any weather that's coming.
    - Have a weather watcher at outdoor athletic events when thunderstorms are possible. Someone other than the coach or referee should keep an eye and ear out for lighting and thunder.

- **Pick a main location:**
    - A television, computer with internet and NOAA All Hazard Radios should be located in the main office area, or where the person(s) responsible for enacting the plan will be.
    - In this area is where there are generally a number of people around who could hear the weather alert and for an emergency be close to the public address (PA) system.

- **Know what is expected:** Typically someone would start the day by reviewing the Hazardous Weather Outlook (HWO), the Storm Prediction Center (SPC) and the local NWS page for an overview of any anticipated hazardous weather that day.

    - HWO: is available on the local NWS web site and on NOAA All Hazards Radio.
      SPC: www.spc.noaa.gov NWS: www.weather.gov/chicago
    - For more about the HWO's, see the descriptions of our products on pages 9 and 10 and more about SPC on page 14 of this guide

- **Hazardous weather monitoring:** All advisories, watches, and warnings are available at www.weather.gov/chicago and NOAA All Hazards Radio.
    - If severe weather is expected, know who to inform. The administrators of the building, coaches, etc. so they can take action and change plans like practices, games or late school release if necessary *ahead* of time.
    - Keep an eye on the weather, severe or not, throughout the day to watch for changes.

- **Look at Radar:** A very useful tool to use is the Doppler Radar.

    - The local radar can be found on the front page of the local NWS site: www.weather.gov/chicago
    - Can see the intensity of the storm, its movement and speed (when animated) to get a better idea where it's at and how it will affect you.
    - Your local NWS site will provide you with all the up-to-date resources you need quickly.

- **Weather Radio Ready:** Warnings are broadcasted within seconds of being issued by the National Weather Service.
    - The radio should be set at all times in "Alert" mode.
    - It's the key to being up to date with critical weather information. With back up batteries it may be your only source of information when the power is out. A handheld NOAA Radio can be used for outdoor activities.

Monitor

Text Services from the NWS

The National Weather Service provides a number of text services which can assist you in decision-making for weather-sensitive activities. All of these products are available 24-7 on our web page and via NOAA All Hazards Radio.

Hazardous Weather Outlook - A narrative outlook which discusses the potential for significant weather during the next 7 days with an emphasis on the next 24-48 hours.
www.crh.noaa.gov/hazards/lot

- The timing, location, amount and duration of snow, blowing snow, ice, rain, wind, severe weather, flooding/flash flooding, extreme heat/humidity, and freezes/frosts are discussed.
- This product is designed for decision makers such as emergency managers, police/fire departments, school districts, transportation departments, severe weather spotters, etc.

Watches (both Winter and Summer) - Watches are issued to indicate that hazardous weather is possible but there is still some uncertainty on timing, location or intensity.

- **Severe Thunderstorm Watch** - indicates severe weather (large hail 1 inch or greater and/or damaging straight-line winds 58 mph or greater) is possible in and close to the Watch area.
- **Tornado Watch** - indicates tornadoes are possible in and close to the Watch area.
- **Flash Flood Watch** - indicates flash flooding is possible in and close to the Watch area.
- **Winter Storm Watch** - issued 18 to 48 hours in advance of winter weather conditions (blizzards, snow, blowing snow, ice, wind chills, or combinations thereof) that may become hazardous or life threatening.

Warnings - Issued when life-threatening conditions exist or are imminent.

- **Severe Thunderstorm Warning** - A severe thunderstorm (hail 1 inch or greater and/or straight-line wind 58 mph or greater) is indicated by radar or has been reported by a reliable source.
- **Tornado Warning** - A tornado is indicated by radar or spotted by a reliable source.
- **Flash Flood Warning** - Heavy rains are or will shortly result in life-threatening circumstances due to overflowing streams or creeks, mud slides, dam breaks, water over roadways, etc.
- **Extreme Heat Warning** – Max Heat Index (HI) 110 F or greater and a minimum HI of 75 F for 48 hours. For Chicago/Cook County: 3 consecutive days with peak HI of 100-105 F, 2 days of HI 105-110, or any day with HI of 110 or greater.
- **High Wind Warning** - Sustained winds ≥ 40 mph for 1 hour or more or gusts ≥ 58 mph.
- **Blizzard Warning** - Sustained wind or frequent gusts ≥ 35 mph, considerable blowing and drifting of snow, and a visibility of ¼ mile or less.
- **Ice Storm Warning** – Ice accumulations ¼ inch or more.
- **Winter Storm Warning** - 6 inches of snow in 12 hours or 8 inches in 24 hours, sleet accumulations ½ inch or more, or a combination of freezing and frozen precipitation and/or high winds which produce a significant threat to life and property.
- **Wind Chill Warning** - Wind chill values -30F or colder

Advisories - Issued when conditions are hazardous but not life threatening if reasonable caution is used.

- **Air Quality Advisory** – During periods of poor air quality as determined by the IL EPA or IN IDEM.
- **Dense Fog Advisory** – Widespread visibility ¼ mile or less
- **Heat Advisory** - Heat Index exceeding 105 F.
- **Wind Advisory** - Sustained winds 30 mph or greater for 1 hour or more, or gusts 45 mph or greater.
- **Freezing Rain Advisory** – Freezing rain or drizzle with minor ice accumulations.
- **Wind Chill Advisory** - Wind chill values -20 to -29 F.
- **Winter Weather Advisory** - Hazardous (but not generally life-threatening) conditions of
    - snow - generally 3-5 inches
    - blowing snow - visibility less than ¼ mile due to blowing
    - sleet – less than ½ inch accumulation
    - combination of winter precipitation

Forecasts and Observations –

- Short Term Forecast - our primary method for communicating forecasts of short-term (one to six hours in advance) weather and hydrologic conditions. Usually issued for non-severe weather.
- Zone Forecast - forecasts issued for each county twice daily and updated as required which contain the basic forecast elements (maximum and minimum temperatures, precipitation type and probability, wind, clouds, etc.) For the next 1 to 7 days.
- Hourly Observations - a collection of weather observations made shortly after the top of the hour which contain temperature, current weather, wind, dew point, air pressure and seasonally, the wind chill or heat index.

Monitor

NOAA All Hazards Radio

NOAA All Hazards Radio provides a continuous broadcast of weather information direct from the local NWS office. Special radios needed to receive the broadcast are available at many electronics stores.

About the Broadcast

- Recorded weather messages are repeated every three to five minutes. Routine programming includes current conditions, the 7-day forecast, and recent river stages.
- During severe weather, the National Weather Service preempts the routine weather broadcast and substitutes the warning messages.

All-Hazards

- NOAA All Hazards Radio broadcasts alerts for all types of hazards - not just weather! The broadcast includes emergencies such as earthquakes, chemical releases, oil spills, nuclear emergencies, AMBER alerts, and national emergencies.
- It is the single source for the most comprehensive weather and emergency information available to the public.

Local Coverage

- Currently, 11 NOAA All Hazards Radio transmitters serve the area covered by WFO Chicago. (See Appendix C for a complete listing.) Each station covers an area approximately 40 miles from the antenna site. The effective range depends on many factors, particularly the transmitter height, terrain, receiver quality, and present weather.

For schools, we recommend:

- A radio with the tone alert feature and SAME capability. This type of radio will sound an alarm when a warning is issued for your specific county. (You control the programming of this radio.)
- A battery backup in case of a power failure.
- Consider a portable radio for your security, principal, coaches, or athletic director.
- Look for the "Public Alert" icon. It means the radio has SAME and battery backup.

Remember to:

1. Replace the back-up battery yearly to make sure it will work in the case of a power failure.
2. Place the radio in a central location where the alarm can be heard by the decision makers.
3. Make sure the radio is in stand-by mode, ready to alarm when a warning is issued.
4. Monitor the weekly tone-alert test to make sure your radio is working properly and receiving the tone alert signal. (Tests are conducted every Wednesday around 11 am.) ***Be aware that some brands/models of radios do not sound an audible alarm for the weekly test.***

NOAA All Hazards Radio is the ***smoke detector of severe weather***.

References:

Appendix C: Coverage Map and local station listing
Appendix D: FIPS codes for programming radios
National NOAA Weather Radio Page: www.weather.gov/nwr
Local NOAA Weather Radio Page: www.crh.noaa.gov/lot/?n=nwr

Monitor:

Information Superhighway: weather.gov/chicago

- Whether you need tomorrow's forecast or last month's climate data, WFO Chicago Internet page features a wealth of information that is sure to fulfill many of your weather-related needs.
- To provide a quick assessment of current weather at a glance, links to local forecast and hazardous weather information, radar images, and weather headlines are front-and-center.
- Also accessible are details on NOAA All Hazards Radio, weather event write-ups, our online newsletter, top news archive, and links to a variety of weather data.
- To support your preparedness and safety needs, an abundance of information is also available on our website.

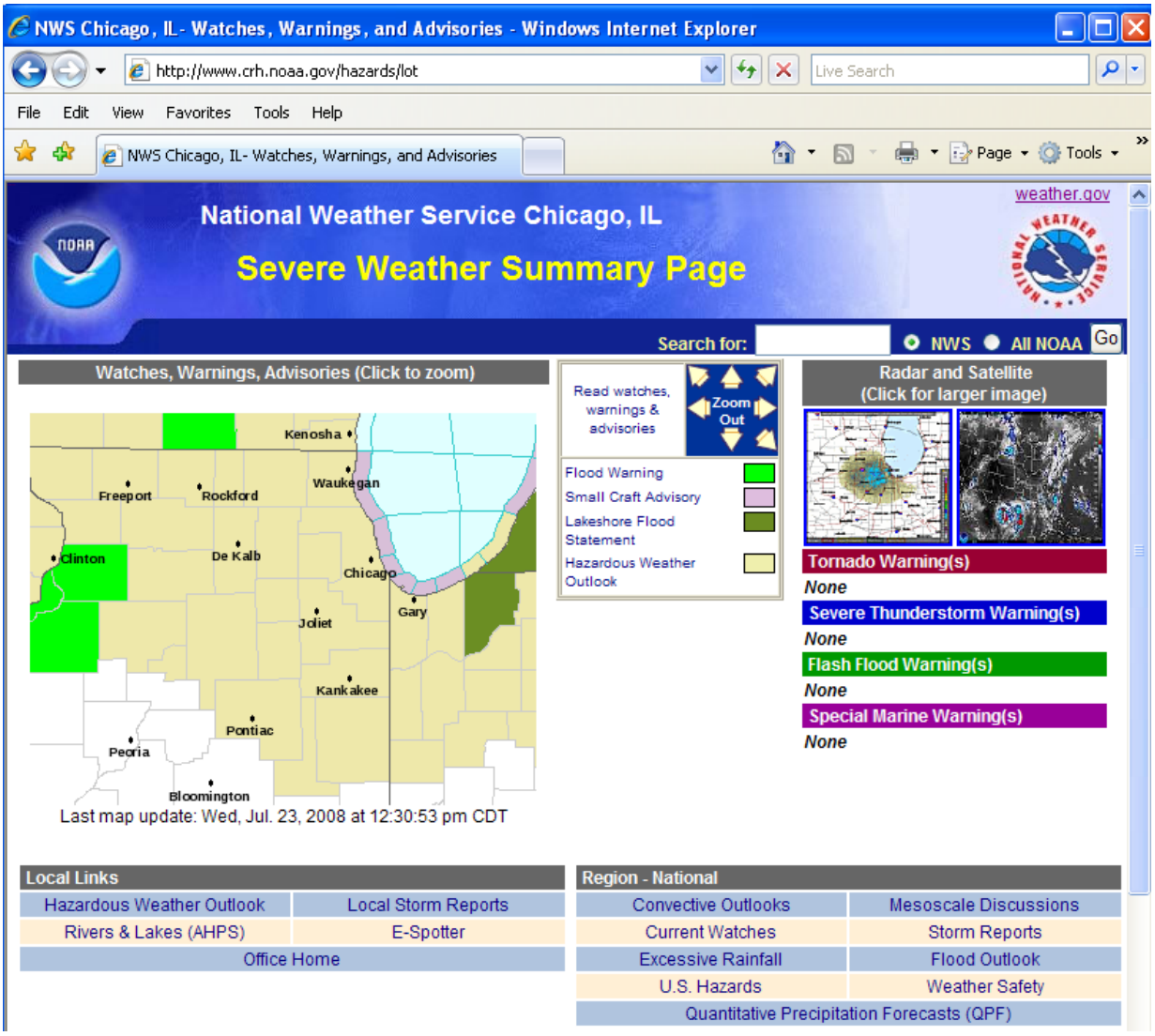
Right at your fingertips there is:

- ***Hazardous weather and hydrologic information*** (outlooks, warnings, storm reports)
- ***Radar and satellite images***
- ***Forecast Information*** (public, hydrologic, aviation, and fire weather)
- ***Current observations*** (both general weather and hydrologic)
- ***Climate data*** (daily, monthly, and record information)

Severe Weather Summary Page: crh.noaa.gov/hazards/lot

It provides a complete overview of the current severe weather information at your fingertips on one page.

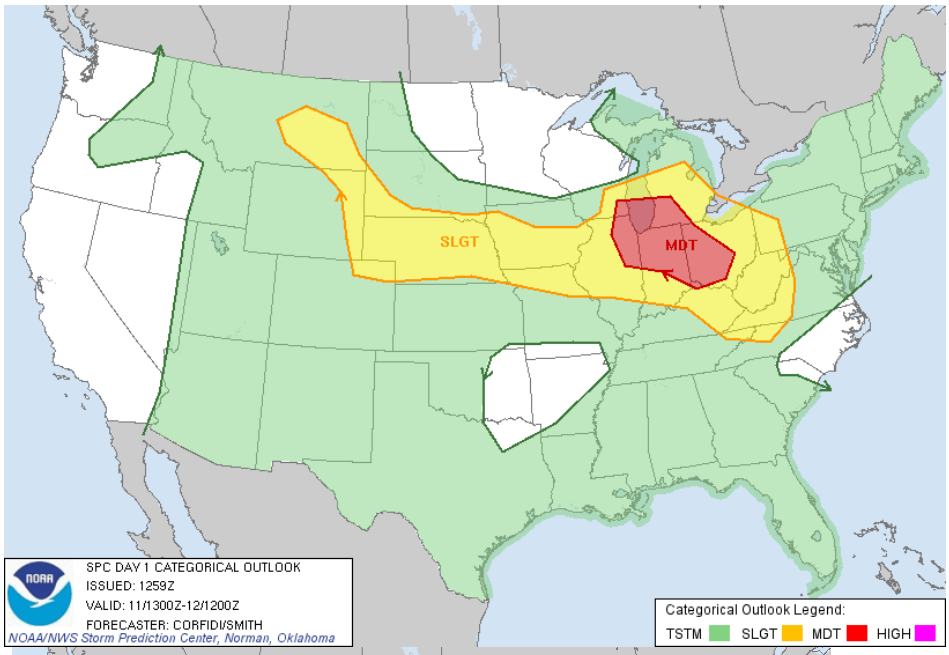
- Simply to go to the Chicago NWS home page and click “Watches / Warnings” on the left hand side of the page.
- Or go to www.crh.noaa.gov/hazards/lot



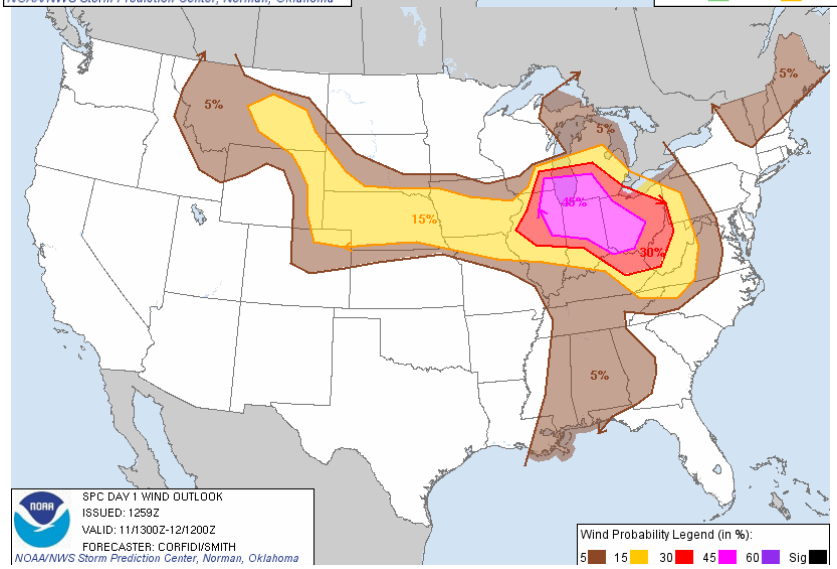
Storm Prediction Center (SPC): www.spc.noaa.gov

SPC provides an outline of areas expected to have severe weather that day to two days out. The outlines are categorized:

- See Text (Brown line): There is no severe outlook for the labeled area, but be aware of the potential for a threat to develop.
- Slight Risk (Green line): Risk implies severe thunderstorms are expected but in small numbers and/or low coverage.
- Moderate Risk (Red line): Implies a greater concentration of severe thunderstorms, and in most situations, greater magnitude of severe weather.
- High Risk (Pink line): Implies that a major severe weather outbreak is expected, with great coverage of severe weather and enhanced likelihood of extreme severe (i.e., violent tornadoes or very damaging convective wind events).



Day 1 Convective Outlook



There are also probabilistic tornado, hail and high wind outlooks that show the probability percentages of each within the convective outlook as well.

Day 1 Wind Outlook

Act:

School Severe Weather Safety

Reminder: Always take into account the time it will take to move people to the safest places.

Alerting Staff, Teachers, and Students to a Weather Emergency
Most schools utilize a public address (PA) system to talk directly to students and teachers.
You may need to make special arrangements for:

- Outdoor activities
- Mobile classrooms or detached gymnasiums that are not part of a PA / intercom system
- Handicapped or learning-disabled students, who may require assistance in taking action.
- Have backup plan in case power/ PA system goes out

Outdoors: Outdoor activities will be the most susceptible to weather hazards with lightning being the greatest threat. Officials involved in outdoor activities, such as sporting practices and events should be aware of the risks of lightning and severe weather.

- If thunder is heard or lightning is seen, outdoor activities should be delayed with students and spectators moved to safety immediately. Do not wait for the rain.
- The delay in activities should last until thunder has not been heard and lightning not seen for 30 minutes.

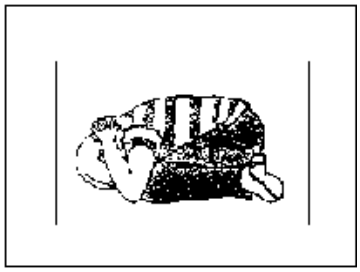
Indoors: Use as much information as possible about the type of storms, expected impact and time of impact on your school district to assess the risk. A plan may work best with phases of activation.

- For instance, outdoor activities are usually the most susceptible to weather hazards and may be delayed or cancelled first.

The Tornado Safety Position: For extremely high winds or tornadoes, assume the tornado safety position. Sit, facing an interior wall. Bend over and cover your head and neck with your hands.

Determining When to Hold Departure of School Buses
Buses provide no protection from severe storms.

- You will want to consider holding the departure of students to buses whenever watches or warnings are in effect, taking into account:
  - (1) the time it will take before all students reach their homes (including time for the students to walk from their bus stop to their home)
  - And (2) when the storms are expected to impact your district. The school would provide a far safer environment.



After the Event
Once the storm has past, stay alert for the possibility of additional storms. If your school sustains damage, shut off the gas and electricity for safety purposes. Do not attempt to evacuate students through damaged areas.

Act:

School Bus Weather Safety

All school bus drivers should be trained to handle severe weather situations. The primary concerns are flooding and tornadoes, but high wind, heavy snow or ice, extreme heat or cold, and wind chill also pose a threat.

Tornadoes:

- Bus dispatcher should have a NOAA All Hazards Radio with tone alert.
- We recommend that all bus drivers attend Skywarn Spotter training if possible.
- Don't drive during a "Tornado Warning".
- **You cannot outrun a tornado.**
- Get to a well-constructed building whenever possible.
- If shelter is not available, evacuate students through both exits at the nearest ditch or depression on the downwind side of the road.
    - Students should lie flat in a low place and cover their heads.
    - Move the bus away from the students, radio the base station, and remove the first aid kit.

Flooding:

NEVER ATTEMPT TO DRIVE THROUGH FLOOD WATERS! If your bus route takes you across small streams and creeks or along a river, you should determine an alternate route. Sudden (flash) flooding poses the greatest threat.

- **Turn Around And Don't Drown**. It is better to be safe than sorry.
- If the water is too deep to see the road, DO NOT CROSS. The road may have been undermined or the water may be deep enough to stall the bus.
- Do not enter underpasses that are filling with water.
- If the water appears to be flowing, do not enter. The bus will act as a barrier and the water will attempt to lift and move the bus.
- If water is flooding over or around a bridge, do not cross it, it might collapse from the weight of the bus. The foundation of the bridge may have been compromised.
- If caught in flood waters, abandon the bus and seek higher ground immediately.

Exposure to Heat and Cold:

- Children awaiting the school bus in the morning, standing exposed to a cold wind without proper clothing for protection, may develop frostbite or hypothermia.
- School bus drivers and teachers should be taught to recognize symptoms of hypothermia, frost bite, and exhaustion, and heat stress.

Lightning

- An enclosed metal vehicle is generally a safe place in lightning. Students should not be released when lightning is observed in the area.

Education Related Services

On the Web

NWS Chicago Preparedness & Education Page .....www.crh.noaa.gov/lot/?n=education
Digital Library for Earth System Education *(Resources screened by the NSF)* .....www.dlese.org
JetStream *(NWS weather education)* ..... www.srh.weather.gov/jetstream
NOAA Education Resources *(comprehensive list of weather resources)* www.education.noaa.gov
Masters of Disaster .....www.redcross.org/disaster/masters
NWS Teacher Resources..... www.nws.noaa.gov/om/edures.shtml
NWS Weather Education and Outreach Links.....www.weather.gov/education.php
NOAA Teacher at Sea Program .....teacheratsea.noaa.gov
American Meteorological Society Education Programs ..... www.ametsoc.org/amsedu
University Corporation for Atmospheric Research.... www2.ucar.edu/education-professional-training

Classroom Resources

These materials may be borrowed from the local NWS office for your use in the classroom. Contact the office to find out what resources are available to you.

- Weather Station Kit
- Weathercycler teaching unit
- Master of Disaster Classroom Kits Grades: K-2, 3-5, and 6-8
- Brochures
    - http://www.weather.gov/os/brochures.shtml

Speakers and Office Tours

Under "Local Information" → "Our Office" on the web
http://www.crh.noaa.gov/lot/office/outreach.php

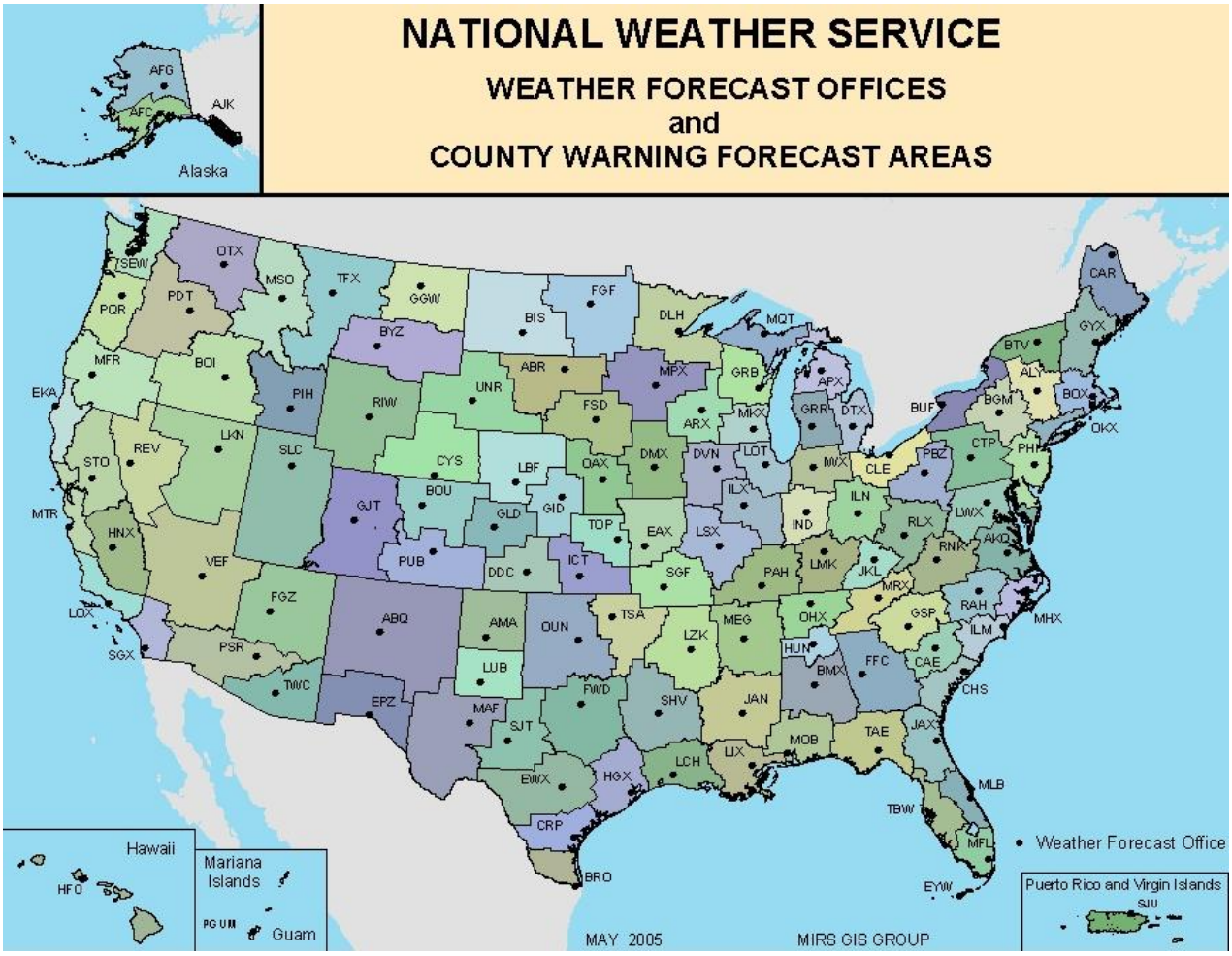
Spotter Training

Available February-April throughout the area. Classes are free and open to anyone. They take about 2 hours. A schedule is usually posted on the NWS web page in January.

Attendees learn about: severe storm development and structure, what part of the storm severe weather is most likely going to occur, and what cloud formations and other environmental clues to watch for. Also, how to report severe weather to local authorities for relay to NWS.

Appendix A: Service Area Configuration

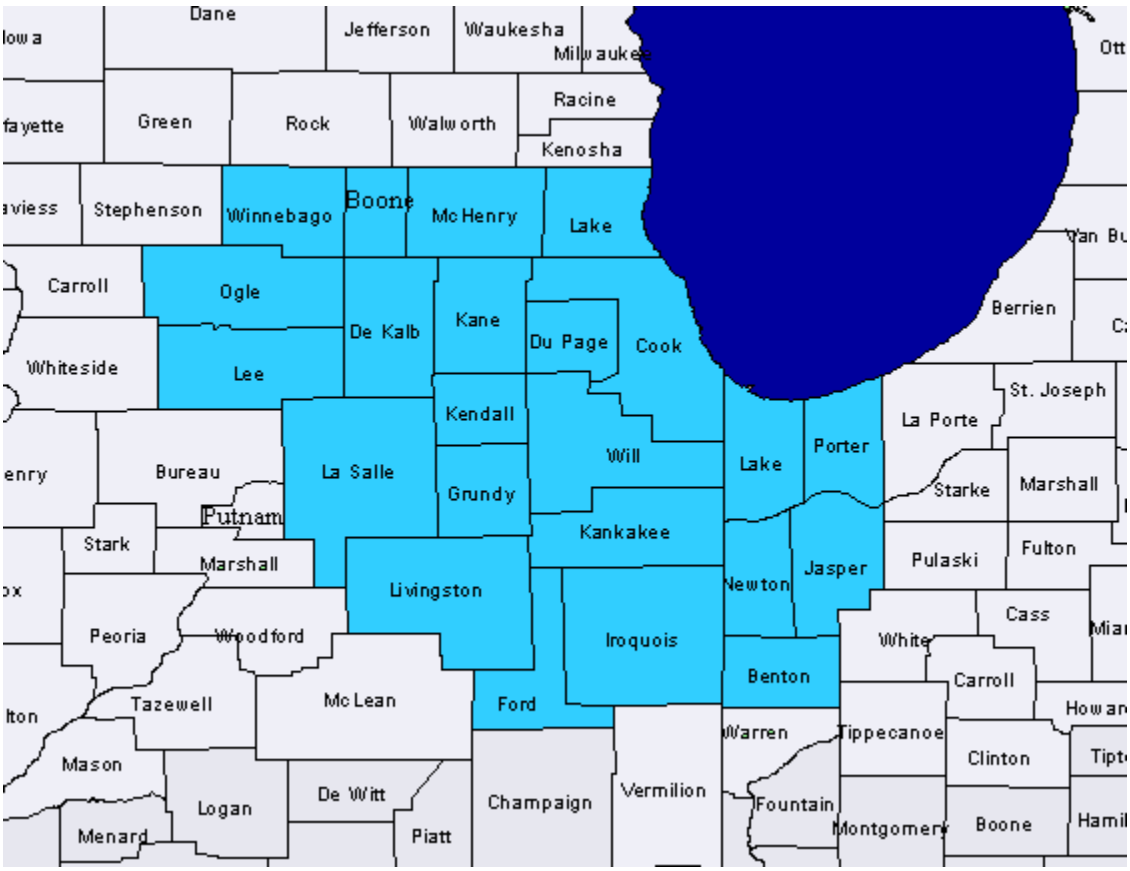
There are 122 National Weather Service Weather Forecast Offices (WFO). Numerous WFO's are located throughout the United States. Each WFO is responsible for maintaining a database of digital forecast grids within its forecast area for a running 7-day period. The always-current forecast grids become a part of the larger National Digital Forecast Database, which is accessible to everyone. Each office also issues public, aviation, hydrologic, and short-term forecasts. Finally, the WFO disseminates a variety of hazardous weather warnings and statements for all counties within its warning area.



Service Area Configuration cont.

WFO Chicago's area of responsibility encompasses 23 counties, comprised of 18 in Illinois, 5 in Indiana. Immediately surrounding WFO Chicago are other offices located in: Lincoln, Illinois; Davenport, Iowa; Sullivan, Wisconsin; North Webster and Indianapolis, Indiana.

The following map details the county configuration for the Chicago Service Area. WFO Chicago's area of responsibility encompasses the counties in blue:



Appendix B: Wind Chill and Heat Index Charts

Wind Chill Chart

Wind (mph)	Temperature (°F)																	
Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes, 10 minutes, 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

Heat Index (Apparent Temperature) Chart

The **Heat Index** (HI) is the temperature the body feels when heat and humidity are combined. The chart below shows the HI that corresponds to the actual air temperature and relative humidity. NOTE: This chart is based upon shady, light wind conditions. **Exposure to direct sunlight can increase the HI by up to 15°F**

Heat Index	General Effect of Heat Index on People in Higher Risk Groups
80 to 89° - Caution	Fatigue possible with prolonged exposure and/or physical activity.
90 to 104° - Extreme Caution	Sunstroke, heat cramps and heat exhaustion possible with prolonged exposure and/or physical activity.
105 to 129° - Danger	Sunstroke, heat cramps or heat exhaustion likely, and heatstroke possible with prolonged exposure and/or physical activity.
130° or higher - Extreme Dangert	Heat/sunstroke highly likely with continued exposure.

Relative Humidity (in percent)

Air Temp (in F)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
120	107	111	116	123	130	139	148														
115	103	107	111	115	120	127	135	143	151												
110	99	102	105	108	112	117	123	130	137	143	150										
105	95	97	100	102	105	109	113	118	123	129	135	142	149								
100	91	93	95	97	99	101	104	107	110	115	120	126	132	138	144						
95	87	88	90	91	93	94	96	98	101	104	107	110	114	119	124	130	136				
90	83	84	85	86	87	88	90	91	93	95	96	98	100	102	106	109	113	117	122		
85	78	79	80	81	82	83	84	85	86	87	88	89	90	91	93	95	97	99	102	105	108
80	73	74	75	76	77	77	78	79	79	80	81	81	82	83	85	86	86	87	88	89	91

Dew Point (in F)

Air Temp (in F)	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85
104	110	110	110	110	110	110	111	112	113	114	115	116	117	118	119	121	122	124	125	127	128	130	132	133	136	137
102	108	108	108	108	108	108	109	110	110	111	112	113	114	116	117	118	119	121	122	124	126	127	129	131	133	136
100	106	106	106	106	106	106	106	107	108	109	110	111	112	113	114	115	117	118	119	121	123	124	126	128	129	132
98	103	103	103	103	103	103	104	105	105	106	107	108	109	110	111	113	114	115	117	118	120	121	123	125	127	129
96	101	101	101	101	101	101	101	102	103	104	105	106	107	108	109	110	111	112	114	115	117	118	120	122	124	127
94	98	98	98	98	98	98	99	100	100	101	102	103	104	105	106	107	108	109	111	112	114	115	117	119	122	124
92	96	96	96	96	96	96	97	97	98	99	99	100	101	102	103	104	105	106	108	109	110	112	114	116	119	121
90	94	94	94	94	94	94	94	95	95	96	97	98	98	99	100	101	102	103	105	106	107	109	110	113	116	117
88	88	88	88	89	89	90	90	90	91	92	93	94	95	96	97	98	99	100	101	103	104	106	108	110	112	114
86	86	86	87	87	87	88	88	89	89	90	91	91	92	93	94	95	96	97	98	100	101	102	104	106	108	110
84	84	84	85	85	85	86	86	87	87	88	88	89	90	90	91	92	93	94	95	96	97	98	100	101	103	-
82	82	83	83	83	83	84	84	85	85	86	86	87	87	88	88	89	89	90	91	92	93	94	95	-	-	-
80	80	81	81	81	82	82	82	82	83	83	83	83	84	84	85	85	85	86	86	87	87	-	-	-	-	-

Appendix C: Local NOAA All Hazards Radio Coverage

Radio Transmitters:

Chicago - KWO-39 162.55 MHz

Crescent City - KXI-86 162.50 MHZ

Crystal Lake - KXI-41 162.50 MHz

DeKalb - WNG-536 162.55 MHz

Dixon - KZZ-55 162.525 MHz

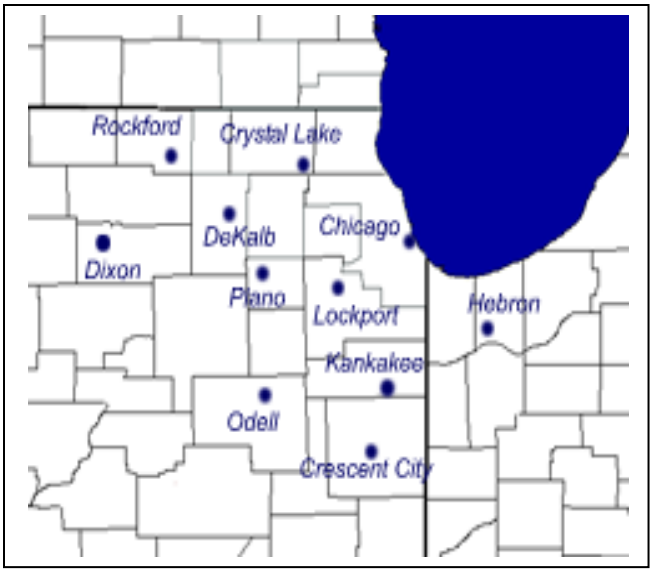
Hebron, IN - WNG-689 162.45 MHz

Kankakee - KZZ-58 162.525 MHz

Lockport - KZZ-81 162.425 MHz

Odell - WXK-24 162.45 MHz

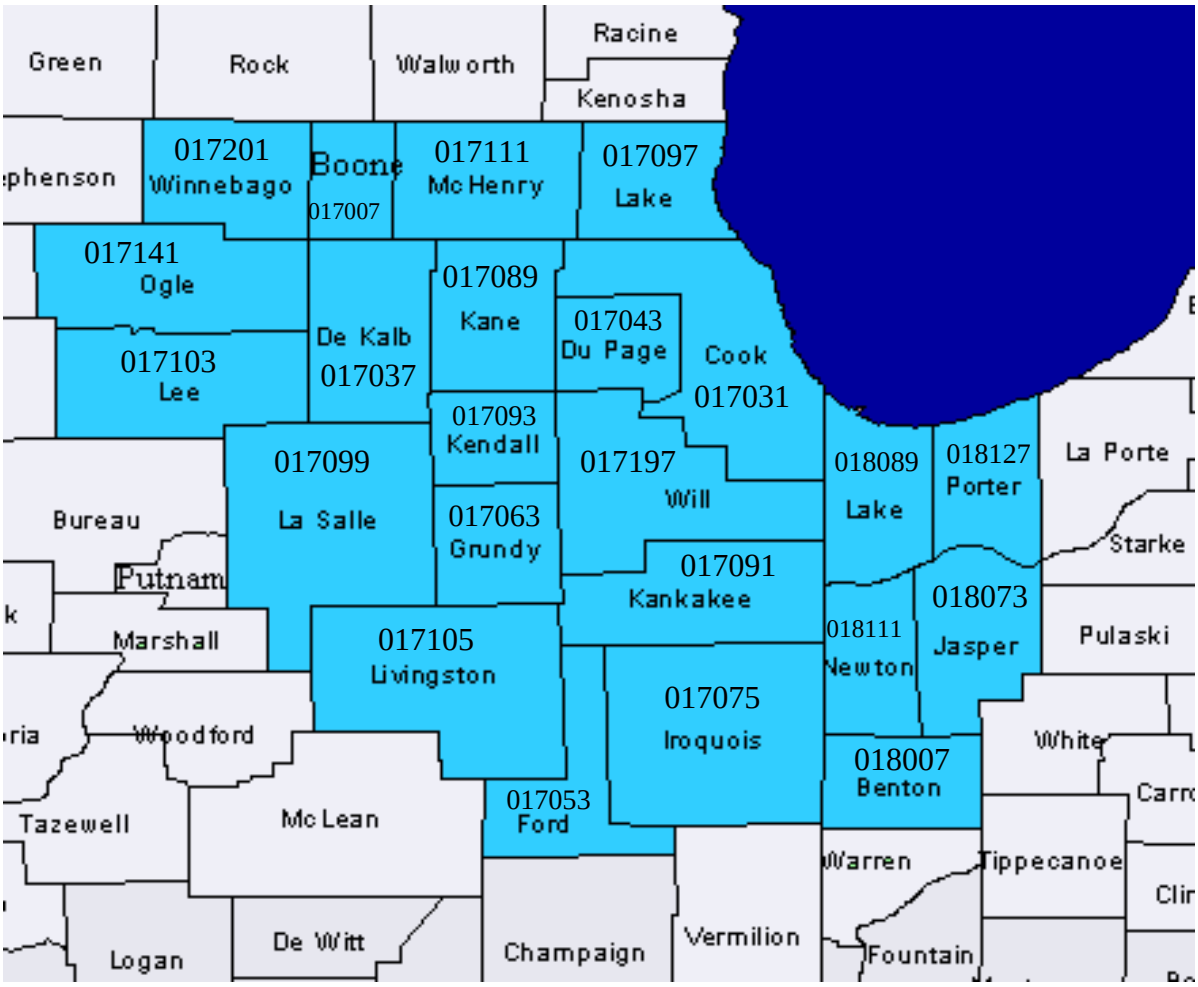
Plano - KXI-58 162.40 MHZ



Visit www.weather.gov/nwr/ or www.crh.noaa.gov/lot/?n=nwr for more information.
For marine weather information...tune to KWO-39 Chicago, KZZ-81 Lockport, or KXI-41 Crescent City

County	Radio Transmitter(s)		County	Radio Transmitter(s)
Benton, IN	Crescent City		Lake, IL	Chicago, Lockport, Crystal Lake
Boone	Crystal Lake, De Kalb, Rockford		Lake, IN	Chicago, Lockport, Kankakee, Hebron
Cook	Chicago, Lockport, Crystal Lake		La Salle	Plano, Odell
Du Page	Chicago, Lockport, Plano		Lee	DeKalb, Rockford, Dixon
DeKalb	DeKalb, Rockford, Plano		Livingston	Odell
Ford	Crescent City, Odell		Mc Henry	Crystal Lake
Grundy	Lockport, Plano, Odell		Newton, IN	Crescent City, Kankakee, Hebron
Iroquois	Crescent City, Kankakee, Odell		Ogle	DeKalb, Rockford, Dixon
Jasper, IN	Hebron		Porter, IN	Chicago, Hebron
Kane	Lockport, De Kalb, Plano		Will	Lockport, Kankakee, Plano, Odell
Kankakee	Lockport, Crescent City, Kankakee, Odell		Winnebago	DeKalb, Rockford
Kendall	Lockport, Plano			

Appendix D: Area County FIPS (SAME) Codes



Area County FIPS (SAME) Codes cont.

FIPS (SAME) Codes for the Chicago Region

ILLINOIS		ILLINOIS (cont.)		INDIANA	
Boone	017007	Kendall	017093	Benton	018007
Cook	017031	Lake	017097	Jasper	018073
DuPage	017043	La Salle	017099	Lake	018089
DeKalb	017037	Lee	017103	Newton	018111
Ford	017053	Livingston	017105	Porter	018127
Grundy	017063	Mc Henry	017141		
Iroquois	017075	Ogle	017141		
Kane	017089	Will	017197		
Kankakee	017091	Winnebago	017201		

About FIPS (SAME) Codes

- The codes for your local area of concern, called FIPS numbers, or SAME codes, should be programmed into a NOAA All Hazards Radio.
- While each situation is unique, it is usually a good idea to include warnings for an adjacent county especially when located near a county border.

A Caution about Programming Your Radio

- Remember that your radio will only alert you for counties *within the station's listening area that you are tuned to,* so check the coverage of the local station before you program your radio.
- If you take your radio on the road with you and frequently travel between two different transmitters, you can usually program multiple counties.

For FIPS codes for other areas, visit http://www.weather.gov/nwr/indexnw.htm or call 1-888-NWR-SAME.

Appendix (E): RSS Feeds and NWS Mobile

RSS Feeds

Really Simple Syndication (RSS) is a family of web formats used to publish frequently updated digital content. It is available for the web or your cell/pda and is most commonly used to update news articles and other content that changes quickly, RSS feeds may also include audio files (PodCasts) or even video files (VodCasts).

RSS provides an easy way to keep updated with news and information that's important to you, and helps avoid the conventional methods of browsing or searching for information on the web. The content can be delivered directly to you without cluttering your inbox with e-mail messages. This content is called a "feed."

Visit http://www.weather.gov/rss/ for more information and to subscribe to an RSS Feed.

Some available RSS Feeds include:

- Hurricane/Tropical Cyclones
- Severe Weather
- River Conditions/Hydrology
- Local Storm Reports
- Forecasts
- Observed Conditions

Available Podcasts include:

- NOAA Weather Radio
- Forecasts
- Climate Outlooks

NWS MOBILE

Get weather information sent to your cell phone and mobile devices.
You will need a cell phone or PDA equipped with a WAP microbrowser and an account with a wireless ISP in order to use this feature.

The National Hurricane Center (NHC) offers:

- Tropical Cyclone text advisories and selected graphics
- Aircraft reconnaissance messages
- TAFB marine text forecasts and discussions
- Satellite imagery courtesy of NOAA's Satellite Services Division

Appendix F: Works Cited:

Allsopp, Jim. "Is Your School Ready for a Weather Disaster? Planning for Severe Weather." 1-6.

"National Weather Service Quad Cities School Guide." National Weather Service. 18 June 2008. Quad Cities National Weather Service. <http://www.crh.noaa.gov/images/dvn/downloads/school_guide.pdf>.

"NOAA's NWS RSS Library." National Weather Service. 22 July 2008. NOAA. 24 July 2008 <http://www.weather.gov/rss/ >.