National Weather Service Forecast Office Chicago

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September is National Preparedness Month – Are You Prepared?

by Jim Allsopp, Warning Coordination Meteorologist

Everyone should have a hazardous weather preparedness plan that encompasses all hazards, for all seasons. There should be a plan in place for the home, workplace, and school.

1) Be Familiar with the Threats

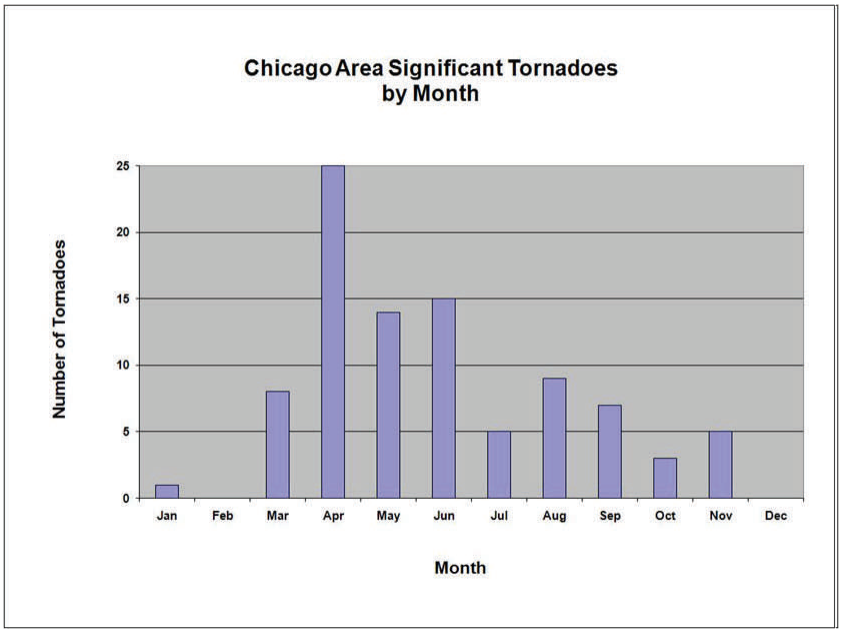
The first step is to be familiar with the potential weather threats that could impact this area.

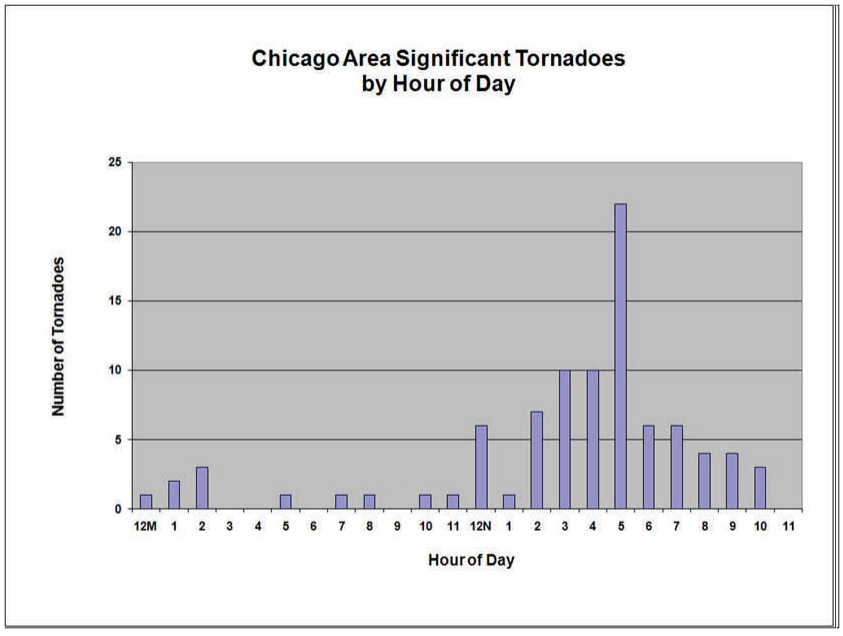
- Thunderstorm hazards including;
  - Tornadoes
  - Damaging winds
  - Destructive hail
  - Flash floods
  - Lightning
- Winter Weather hazards including;
  - Heavy snow, sleet, and freezing rain
  - Wind chill
- Hydrologic hazards including;
  - River flooding
  - Lakeshore flooding
- Non-Precipitation hazards including;
  - Excessive Heat
  - High winds

September is National Preparedness Month – Are You Prepared? (cont)

Heat, winter hazards, and flooding pose the greatest dangers to travelers and people outdoors, and they are also the greatest weather-related killers. However, thunderstorm hazards are the most destructive and potentially dangerous to people indoors - in homes, schools and businesses – so preparedness plans should start with these hazards.

Tornadoes are most common in the spring and early summer months but they can occur in any month of the year under the right conditions. January 7, 2008 a tornado struck near Poplar Grove in northern Illinois. Severe storms and tornadoes are mostly likely in the mid afternoon through early evening, but they can occur anytime. Businesses with a second shift, families with children who are home alone for a period of time after school, and schools which are dismissing students or conducting after school athletics or other activities need to plan accordingly.





September is National Preparedness Month – Are You Prepared? (cont)

2) Monitor the Weather

The next step is to be able to monitor weather conditions and receive forecasts, watches, and warnings for hazardous weather. The best methods to receive information about hazardous weather are;

NOAA Weather Radio
Internet
Local community alerts
A reliable commercial radio or TV station

You can keep up with the latest weather information and receive warnings with a tone alarm by monitoring NOAA Weather Radio. Every school, home, and business should have a weather radio. These radios can be purchased for $30 to $80 at electronics stores, department stores, and sporting-outdoors stores. Look for a radio with the Public Alert icon. That means the radio is programmable and can be set to alarm for your specific county and for specific hazards. It also means your radio has a battery backup in case commercial power goes out. For more information about NOAA Weather Radio, visit http://www.crh.noaa.gov/lot/?n=nwr.

Another good source of information is the National Weather Service, Chicago watches and warnings web page at www.crh.noaa.gov/hazards/lot. From this page you can monitor Doppler radar, check the daily Hazardous Weather Outlook, see the latest information on watches and warnings, and view incoming storm reports from spotters. Warnings are displayed graphically and you can easily see if your location is inside the warned area.

Some communities or counties provide local alert radios to schools and businesses, or pager or text messaging services to the public for severe weather, as well as other non-weather emergencies. Check with your local emergency management agency. Many communities also operate sirens for severe weather emergencies. ***Remember, sirens are outdoor warning systems and should not be your primary method of receiving tornado warnings.***

You can also stay informed by monitoring a reliable commercial radio or TV station, or cable TV.

Large facilities such as schools, hospitals, nursing homes, and businesses should have one or more trained storm spotters who can watch the sky when storms threaten, or when a warning is issued. The NWS trains spotters how to identify cloud features and other environmental clues that might indicate a storm capable of producing a tornado, damaging winds, or hail. Having a trained spotter on the premises can help get people to shelter more quickly. The NWS offers free spotter training classes throughout the area from mid February through April. For a complete schedule, check our web page, weather.gov/chicago after about mid January.

Schools, hospitals, nursing homes, and businesses must also have a method of notifying everyone in the facility of the warning. This can be done through intercom, flashing lights, alarms, pop-up messages on internal computer networks, or pagers. Redundancy is important in case of power or equipment failure. Schools must also be able to communicate severe weather information with bus drivers.

September is National Preparedness Month – Are You Prepared? (cont)

3) Shelter

Once you know the storm is headed your way, it's time to take action. For tornadoes, it's best to be below ground, if possible. A basement is usually the best shelter. Within the basement, go under the stairs, or a heavy piece of furniture. If no basement is available, then get to a small interior space on the lowest floor. Closets, bathrooms and halls are generally good places. Stay away from windows and exterior doors. Abandon mobile or temporary structures for more substantial shelter. Most tornadoes move from the south, southwest, or west. So the impact of wind and flying debris is often greatest on the south and west facing sides of a building. Contact your local emergency management agency, fire department, or NWS office for assistance in severe weather planning. Although interior halls are usually the safest places, there are exceptions. Most roofs will not support a collapsing brick or cinder block wall or chimney coming down. Administrators of schools, hospitals and other large buildings should consult a structural engineer when making plans. In steel and concrete high-rise buildings it is not necessary to get to the lowest floor. Just move to interior rooms, hallways, or stairwells. Stay away from windows.

4) Plan, Train, and Practice

Once the method of receiving and disseminating warnings has been established, and shelter areas are selected, all employees, students, and residents should be made aware of the plan. Signs should be posted designating shelter areas. Have plans for all times of the day, but especially for the afternoon and evening hours. Practice the plan to make sure it works. Conduct drills regularly.

Some things to consider;

Who will receive the warning after normal business hours when regular office personnel are not there?
How long will it take to get everyone to shelter?
Do people have to pass through dangerous areas to get to safe shelter?
Can people with special needs receive the warning and get to shelter?

September is National Preparedness Month – Are You Prepared? (cont)

5) After the Disaster

If a tornado or severe storm does strike your home or facility, what should you do next? Have an emergency supply kit with items such as;

First aid kit
Drinking water and non-perishable food
Flash lights and spare batteries
Blankets and clothes

Know how to shut off gas and electricity. Don't go into a flooded basement if there is an electrical danger. Don't touch downed power lines. Have a designated meeting place and a method to account for everyone.

For more information on how to develop your disaster plan, contact your local emergency management agency, FEMA, or American Red Cross.

New TAF Format Goes into Effect November 5, 2008

By Andy Krein, Aviation Program Leader

Effective with the November 5, 2008 1800 GMT issuance, the National Weather Service will implement a format change to the Terminal Aerodrome Forecasts (TAFs) from a 24 Hour Format to a 30 Hour Format. This format change is driven by the need of the international aviation community to support flight planning for long haul flights in excess of 14 hours. In some circumstances, these long haul flights can be up to 18 hours in duration. While the current information in the TAF meets the operational service needs of the air carriers to conduct and plan a safe flight, international carriers identified a need to have a longer forecast period than the current 24 hours for the TAF. In the U.S, the National Weather Service (NWS) will provide a 30-hour TAF for 32 airports (see Table 1 on the next page for the complete list) which provide long haul flight operations. For the Chicago/Romeoville National Weather Service office, this includes O'Hare International Airport.

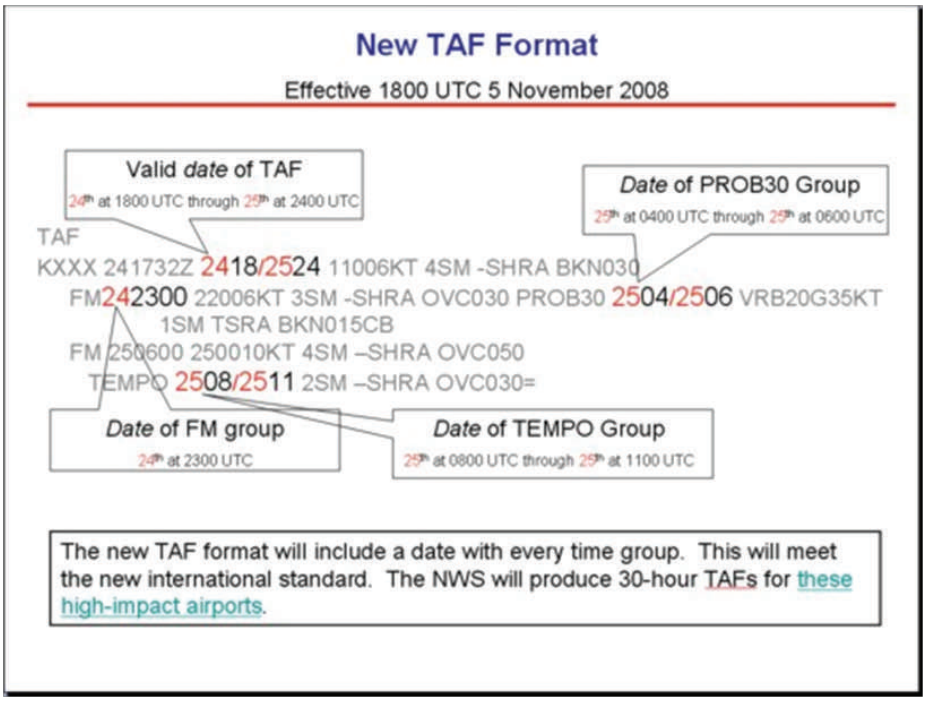
To satisfy the requirement to have a TAF valid for the entire period of a planned flight, it was decided that a TAF with a valid period of 30 hours was necessary. With the current 24 Hour Format, only the time element is provided and the user must determine, based on the issuance time, when the date changes within a TAF. To avoid confusion, a format including the date and time was devised to ensure there is no misunderstanding.

New TAF Format Goes into Effect November 5, 2008 (cont)

Table 1
Airports for 30 Hour TAF

KATL The William B. Hartsfield Atlanta International
KBDL Bradley International
KBOS General Edward Lawrence Logan International
KBWI Baltimore-Washington International
KCLE Cleveland Hopkins International
KCVG Covington/Cincinnati
KDEN Denver International
KDFW Dallas/Fort Worth International
KDTW Detroit Metropolitan Wayne County
KEWR Newark Liberty International
KIAD Washington Dulles International
KIAH Houston – George Bush Intercontinental
KIND Indianapolis International
KJFK John F. Kennedy International
KLAX Los Angeles International
KMKE General Mitchell International
KMSP Minneapolis-St Paul International/Wold-Chamberlain
KOAK Metropolitan Oakland International
KONT Ontario International
KORD Chicago-O'Hare International
KPHL Philadelphia International
KPIT Pittsburgh International
KSAN San Diego Int'l – Lindbergh Field
KSDF Louisville, Int'l Standiford Field
KSEA Seattle-Tacoma International
KSFO San Francisco International
KSLC Salt Lake City International
KSTL Lambert-St Lewis International
KSWF Stewart International
PANC Ted Stevens Anchorage International
PHNL Honolulu
PAFA Fairbanks

New TAF Format Goes into Effect November 5, 2008 (cont)



Decoding the new TAF Format

The format change involves identifying the date associated with each time group. As shown in the example below, the previous TAF code is modified by adding the appropriate date before the forecast hour.

Example of 30-hour TAF:

TAF
KXXX 241732Z 2418/2524 (1)11006KT 4SM -SHRA BKN030
FM242300(2) 22006KT 3SM -SHRA OVC030 PROB30 2504/2506 (3)
VRB20G35KT 1SM +TSRA BKN015CB
FM 250600 250010KT 4SM -SHRA OVC050
TEMPO 2508/2511(4) 2SM -SHRA OVC030=

(1) Valid Period: Indicates the valid time of the 30-hour TAF where 2418 is the 24th day at 1800 UTC and 2524 is the 25th day at 2400 UTC (or 0000 UTC on the 26th).

(2) FM Change Group: Indicates a significant and rapid change to a new set of prevailing conditions, in this case starting at 2300 UTC on the 24th.

(3) PROB30: Indicates the probability of occurrence of a thunderstorm or other precipitation event in this case occurring during the two-hour period between 0400 UTC and 0600 UTC on the 25th.

(4) TEMPO Change Group: Indicates a temporary fluctuation in forecast conditions in this case in the two-hour period between 0800 UTC and 1100 UTC on the 25th.

New TAF Format Goes into Effect November 5, 2008 (cont)

Example of how a current format TAF will look in the new format

The change affects the date/time groups in the TAFs. The valid time of a TAF becomes ddhh/ddhh from the present ddhhhh.

TEMPOs and PROBS will also change, hhhh in both groups' changes to ddhh/ddhh. FROM groups change from hhmm to ddhhmm.

dd is the date of the month ie 17 or 17th.

hh is the hour ie 22 or 2200GMT

mm is minutes 15 or 15 minutes after the hour

Example: The present form…

KABC 131128Z 131212 14005KT P6SM SCT025 OVC040
TEMPO 1216 OVC025
FM1600 13015G23KT P6SM OVC015
FM2100 13015G22KT P6SM OVC008
TEMPO 2101 1SM -SN
FM0100 09015KT 3SM BR OVC006
TEMPO 0105 2SM -SN BLSN
FM0500 01015KT 5SM BR OVC006=

Becomes: 30-hr TAF...

KABC 131128Z 1312/1418 14005KT P6SM SCT025 OVC040
TEMPO 1312/1316 OVC025
FM131600 13015G23KT P6SM OVC015
FM132100 13015G22KT P6SM OVC008
TEMPO 1321/1401 1SM -SN
FM140100 09015KT 3SM BR OVC006
TEMPO 1401/1405 2SM -SN BLSN
FM141500 01015KT 5SM BR OVC006=

Or: 24-hr TAF...

KABC 131128Z 1312/1412 14005KT P6SM SCT025 OVC040
TEMPO 1312/1316 OVC025
FM131600 13015G23KT P6SM OVC015
FM132100 13015G22KT P6SM OVC008
TEMPO 1321/1401 1SM -SN
FM140100 09015KT 3SM BR OVC006
TEMPO 1401/1405 2SM -SN BLSN
FM140500 01015KT 5SM BR OVC006=

Skywarn Recognition Day

by William Wilson, Lead Forecaster

Ham radio operators at the 2006 Skywarn Recognition Day at NWS in Romeoville

Skywarn Recognition Day was developed in 1999 by the National Weather Service and the American Radio Relay League. It celebrates the contributions that volunteer Skywarn spotters and Amateur Radio Operators (Hams) make to the National Weather Service for public safety. Spotters, using radio in the Amateur Radio frequencies report severe weather such as flash floods, tornadoes and damaging wind to local county network control radio operators. Then the reports are relayed by radio to the National Weather Service Office in Romeoville. The meteorologists use these reports in preparing warnings for Illinois and Indiana.

The SkyWarn Recognition Day will be Saturday, December 6, 2008, beginning at 0000 UTC (600 p.m. CST). It will last 24 hours. Amateur Radio Operators will come to operate radios, communicating on most of the amateur radio bands, at the National Weather Service Forecast Office in Romeoville Illinois. We will make contacts with amateur radio operators at other National Weather Service Offices across the United States and across the world. If you are an amateur radio operator, come by the Forecast Office in Romeoville during Skywarn Recognition Day. HAMs are welcome to come by and operate.

Storm Damage Surveys

By Jim Allsopp, Warning Coordination Meteorologist

After tornadoes or other major storm or flood events, local National Weather Service offices sometimes conduct damage surveys. The primary purpose of conducting damage surveys is to maintain an accurate climatological database of tornado, flood and severe weather occurrences. Some benefits of surveys include;

- Determine if wind damage was from tornadoes or downburst/straight-line winds
- Determine beginning and end points, width, and intensity (EF scale) of tornado and/or wind damage swaths
- Determine accuracy and effectiveness of watches and warnings
- Document storm damage for case studies, which are used by NWS meteorologists to gain a better understanding of severe storms, and improve ability to warn and forecast similar events in the future
- Document impacts from major flood events for use in future forecasts and warnings

Storm Damage Surveys (cont)

The NWS does not have the staffing and resources to survey every severe weather occurrence. Events that typically warrant a survey include;

- Tornado or suspected tornado. (However some small weak tornadoes are not surveyed if damage was minor and isolated, in remote locations, and there are indications from spotter or eyewitness reports and/or radar that leaves no doubt that a tornado did occur.)
- High-end downburst/straight-line wind events
- Major or near record river flooding, or flooding with significant impact, especially on a major population center
- Flash flooding that has significant impact, especially on a populated area

Most damage surveys are done from the ground but sometimes aerial surveys are conducted with assistance from the Civil Air Patrol, particularly for major tornadoes. Ground surveys are usually coordinated with local emergency management officials. In addition to NWS meteorologists, the NWS occasionally asks for assistance in surveying from private sector meteorologists and emergency management officials. In rare, violent (EF4-EF5) tornadoes, highly experienced damage survey experts and wind engineers from elsewhere in the country may be called on to assist in surveying damage.

Photo of tornado path in farm field, Kankakee County, April 2004 – NWS photo. Aerial survey courtesy of WBBM-TV Chicago.

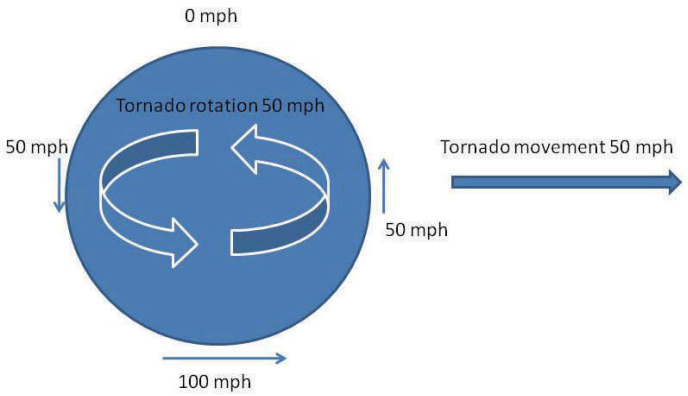
In cases where meteorologists are tasked with determining whether damage was from a tornado or from a downburst, some things that are considered include;

- Atmospheric conditions. Was the atmosphere conducive to producing a tornado?
- Radar indications. Using base reflectivity, base velocity, and storm-relative velocity images from NWS Doppler radars in Romeoville and surrounding sites, as well as O'Hare and Midway Terminal Doppler radars, NWS meteorologists look for clues that would indicate organized low level rotation or indications of a downburst or straight winds
- Eyewitness and spotter descriptions of the storm, and photographs or videos of the cloud features
- Indications of tornadic motion in the damage and debris

Storm Damage Surveys (cont)

Some of the clues that would suggest a tornado include;

- Narrow concentrated path of damage. Microbursts also have narrow paths at times, but often straight-line wind damage will be more widespread.
- Indications of convergence. Usually a downburst will push trees and debris in one direction, or may have a somewhat divergent or “splat” pattern.
- Indications of rotation. Mud or insulation blown back against the direction of storm movement. Objects or debris picked up and thrown to the left of the path of the storm. However, trees and debris can be blown mostly in one direction with a small, weak, fast moving tornado. For example, in a tornado moving east at 50 mph with a 50 mph rotational speed, winds will be 100 mph from west to east on the south flank of the tornado, but near zero from east to west on the north flank of the tornado. Thus, the damage pattern of a small, fast moving tornado could look similar to that of a microburst. (See diagram below)
- Indications of uplift. Downbursts tend to push trees and object over, whereas tornadoes have a combination of strong uplift and strong wind.



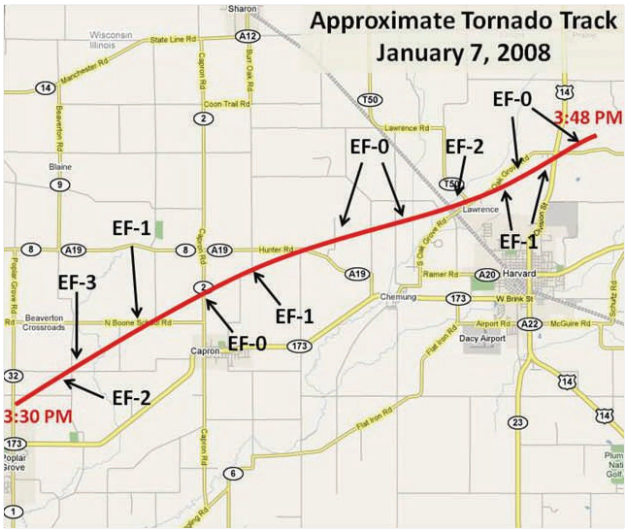
In some cases it’s like a forensic science. Meteorologists go to “the scene of the crime” and put together clues to make a determination. Some myths that do not necessarily indicate a tornado include;

- Trees or signs that appear to be “twisted”. Tornadic rotation is generally on a larger scale than a tree. The asymmetric shape and weight of a tree, or a weak or rotted branch could cause a tree or limb to fall in a direction different then the motion of the storm. Also, small eddies or swirls can occur in “straight-line” winds as the wind moves around and over clumps of trees, buildings, and terrain features.
- “Tree tops are sheared indicating a funnel or tornado aloft”. Friction from the ground allows winds to be stronger at tree top level than at ground level in both tornadoes and downbursts. In heavily wooded areas, homes and buildings are somewhat protected from strong winds by the canopy of trees. In marginal wind or tornado events, the tree tops may take the brunt of the wind.
- Eyewitness reports of a “loud roar” or “freight train” sound. Strong winds and flying debris, whether blowing in a circle or blowing in a straight line, can produce a lot of noise.

Storm Damage Surveys (cont)

NWS meteorologist evaluates tornado damage in Boone County, January 2008 – NWS photo

Results of damage surveys are typically posted on the NWS Chicago web page as soon as possible, generally within 24 hours of the event. However, it may take several days to complete surveys for large outbreaks. The reports typically include a description of the damage, estimated intensity of the wind, maps of the damage path, radar images, pictures of the damage, and pictures of the storm when available.



Map of tornado path over Boone and McHenry Counties, January 2008

For more information on the EF scale click here.

Congratulations to Our New StormReady Communities!

By Jim Allsopp, WCM

Batavia - July 22, 2008

Batavia ESDA Weather Officer Mark Davis, Batavia Mayor Jeffery Schielke, NWS Warning Coordination Meteorologist Jim Allsopp

Pontiac - July 22, 2008

Pontiac Police Chief Dale Newsome, Mayor Scott McCoy, and Fire Chief John Cummins

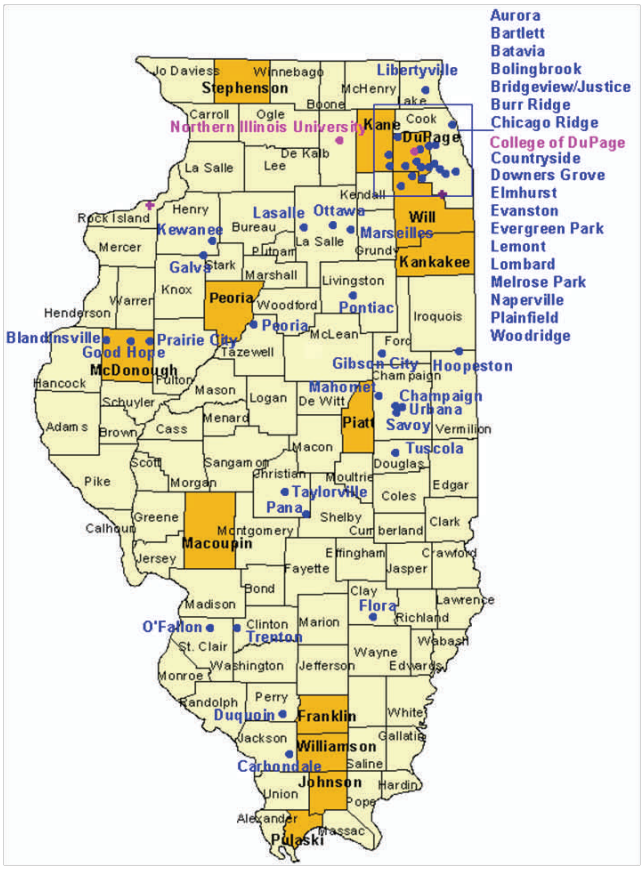
Congratulations to Our New StormReady Communities! (cont)

Libertyville - May 21, 2008

College of DuPage - March 11, 2008

Evanston - March 11, 2008

There are now 33 StormReady locations in the NWS Chicago area of responsibility across northern Illinois and northwest Indiana. There are 58 for the entire state of Illinois, and nearly 1,400 nationwide, as of mid September.



StormReady communities in Illinois as of Sep. 15, 2008

StormReady communities must have

- An Emergency Operations Center and 24-hour Warning Point
- Redundant methods of receiving watches and warnings from the NWS
- Redundant methods of disseminating warnings to the community, including NOAA Weather Radios in all public buildings and schools
- Redundant methods of monitoring radar and weather conditions in the area
- Trained storm spotters and communications with NWS
- Educational outreach programs in the community
- Annual severe weather exercises
- A documented hazardous weather plan

In most communities, the StormReady program is overseen by the emergency management agency, police or fire department. For more information about the StormReady program, click here.

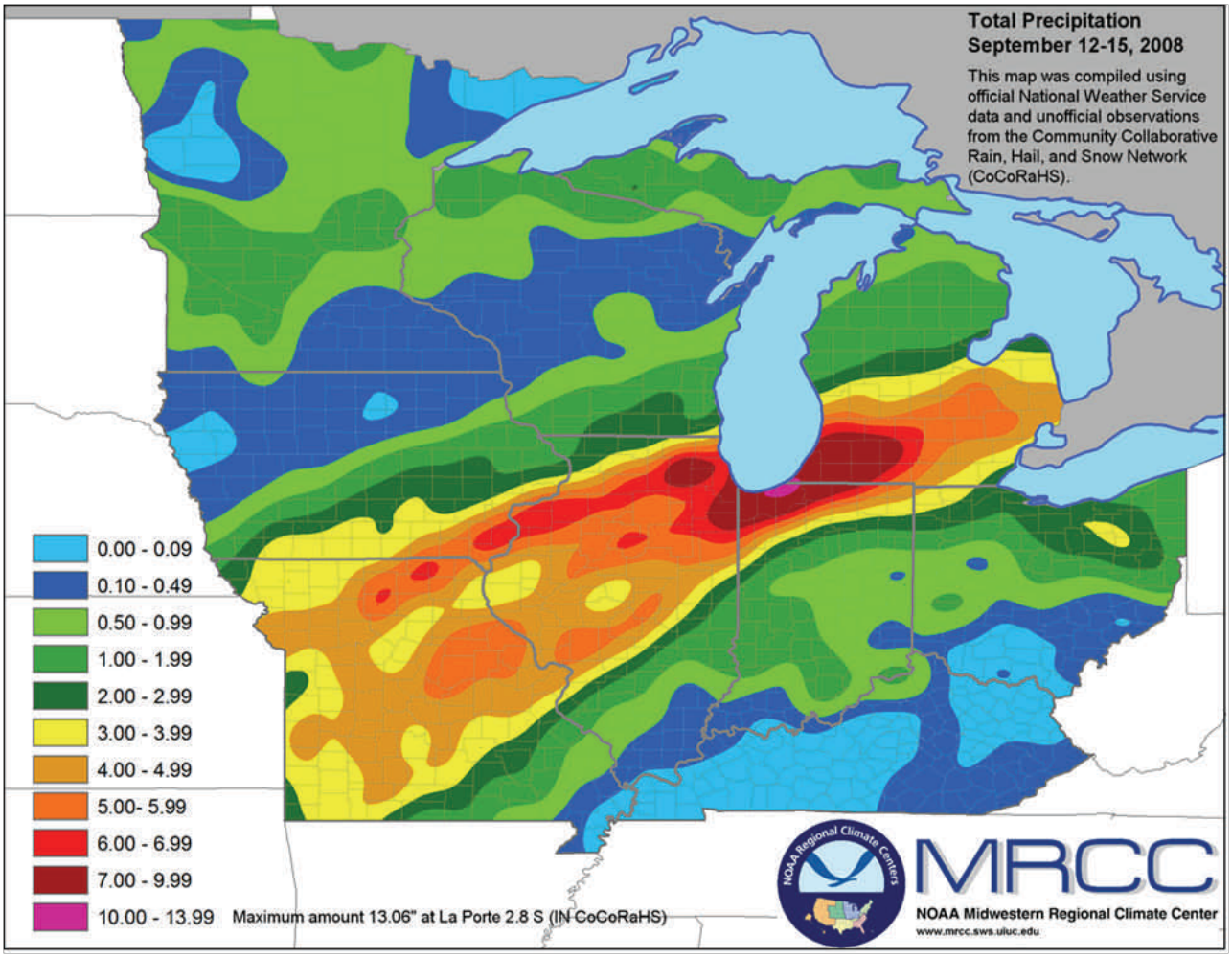
Record Flooding in Northern Illinois and Northwest Indiana

By Bill Morris, Service Hydrologist

Torrential rainfall over portions of northern Illinois and northern Indiana resulted in record and near record flooding on streams throughout the area. Rivers were still in flood, some still experiencing record flooding at the time of this writing.

A combination of a stalled frontal boundary and moisture laden air being swept northward in advance of Hurricane Ike brought the initial rounds of very heavy rainfall and flash flooding to the area. Late in the event, remnants of Ike provided an addition 1 to 3 inches of rain over already saturated ground and swollen streams. Total 3 day rainfall reports ranged between 6 and 11 inches.

The U.S. Geological Survey reported 20 new record peak discharges measured at river gage locations in Illinois. Several locations in northwest Indiana experienced record peaks as well.



Record Flooding in Northern Illinois and Northwest Indiana (cont)

New Record Crests at NWS River Forecast Points

Location	Flood Stage	Peak this event	
Illinois River at Morris	16	24.84 9/16/2008	Previous record was 23.91 on July 14, 1957
Illinois River at La Salle	20	33.79 9/16/2008	Previous record was 32.05 on Dec 5, 1982
Kankakee River at Shelby, IN	9	13.18 9/18/2008	Previous record 12.98 on Mar 24, 1982.
Little Calumet River at Munster, IN	12	17.31 9/14/2008	Previous record was 15.66 on Nov 28, 1990

Illinois River at Peru, IL 9 /16/2008

Record Flooding in Northern Illinois and Northwest Indiana (cont)

Illinois River at Morris, IL

During the flood event, hydrologists from the US Geological Survey (USGS) were out making measurements during this record flood event and providing that information to the National Weather Service.

USGS Hydrologist David Schrader makes a wading road overflow measurement at the USGS gage at On the East Branch Du Page River in Bolingbrook, IL