NWS Forecast Office Chicago

CHICAGO


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## Behind the Scenes at the Chicago National Weather Service Office

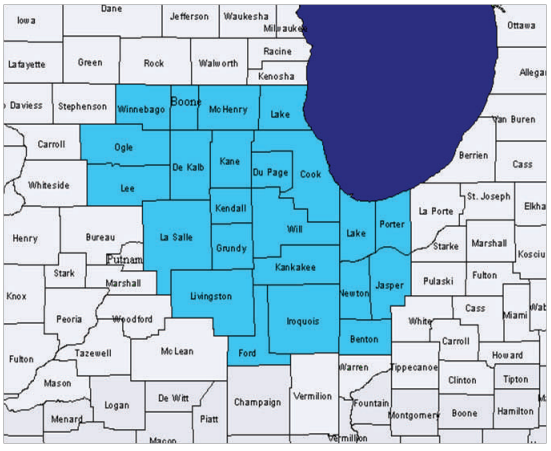
**By Jim Allsopp, Warning Coordination Meteorologist**


Weather impacts everyone and many people have a fascination with weather. Here is a glimpse into your local National Weather Service (NWS) office. The NWS provides a variety of weather and river forecasts, and climate services to the area on a routine basis, and is responsible for issuing watches, warnings, and advisories for hazardous weather.

### Who is the NWS?

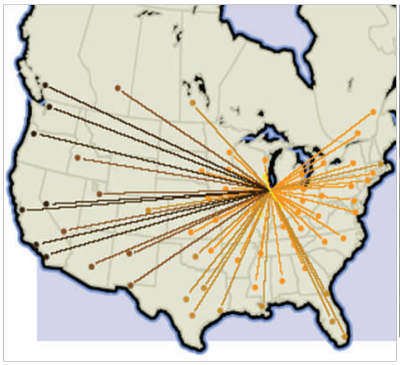
The NWS is part of National Oceanic and Atmospheric Administration (NOAA), which comes under the U.S. Department of Commerce. The NWS office in Chicago is one of 122 Warning and Forecast Offices (WFO) located across the country, as well as in Guam and Puerto Rico. In addition there are 13 River Forecast Centers, and 9 National Centers, such as the Storm Prediction Center in Norman, Oklahoma, and the National Hurricane Center (Tropical Prediction Center) in Miami, Florida. There are also 21 Center Weather Service Units located at the FAA's Air Route Traffic Control Centers, including one in Aurora, IL.

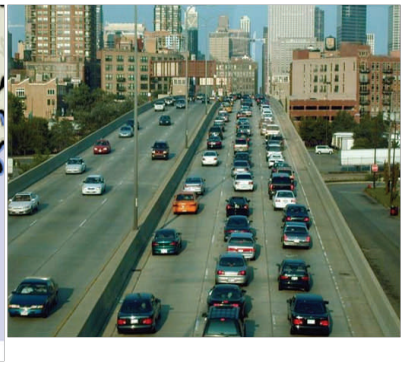
WFO Chicago is located at the Lewis Airport in Romeoville. This office serves a 23 county area in northern Illinois and northwest Indiana, as well as boaters on the open waters of Lake Michigan.




*NWS Chicago county warning area and forecast service area*

The Chicago NWS office serves the weather needs for;





- Approximately 10 million people in a 23 county area
- The world's busiest airspace with 1.3 million flights and 95 million passengers passing through O'Hare and Midway each year, combined
- Mariners on Lake Michigan – the 5th largest freshwater lake in the world
- Transportation on 8 Interstate highway systems

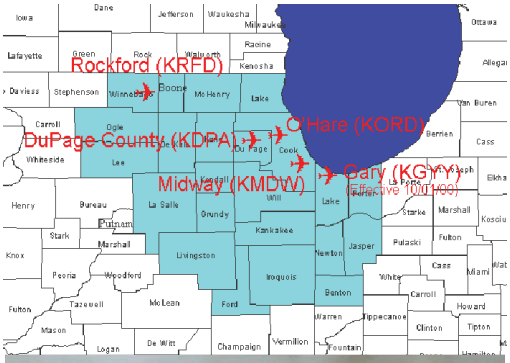
**What does the Chicago NWS office do?**

Most people are familiar with the public forecast program. This includes;

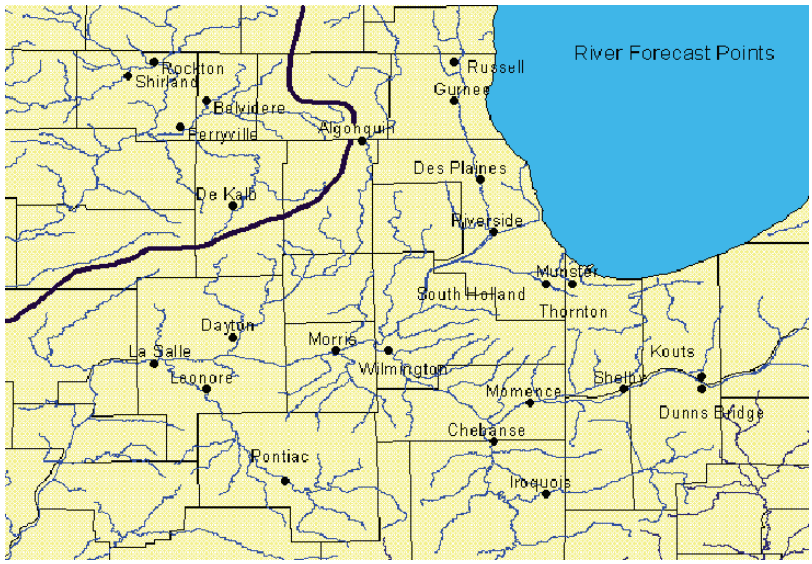
- Hazardous weather watches, warnings, advisories for
  - Winter hazards
  - Non-Precipitation hazards (heat, high wind, dense fog, etc.)
  - Severe Storms
  - Flood (river, lakeshore, areal)
- Maintaining and updating part of a national gridded forecast database (graphical forecasts of temperature, wind, sky cover, weather, and other elements)
- Zone (county) forecasts – issued routinely at 400 AM and 330 PM
- Hazardous Weather Outlook – issued daily at 430 AM & 430 PM, and also at 1100 AM from spring through fall
- Short Term Forecasts - As needed

In addition to the public weather program, NWS Chicago also provides forecasts and warnings for ;

- Aviation Program – Terminal Forecasts for five airports in the area
- Marine Program – Forecasts, watches and warnings for boaters on Lake Michigan
- Hydrologic Program – River forecasts, watches and warnings for the Rock and Illinois River basins
- Fire Weather – Forecasts and data, mainly for national parklands including Indiana Dunes National Lakeshore, Midewin National Tallgrass Prairie, and Fermilab
- Climate Services – including maintaining the official climate records for Chicago and Rockford








NWS Chicago accomplishes the mission with a full time staff of 23 people, including;

- Meteorologist in Charge
    - Administrative Assistant
- Science Operations Officer
- Warning Coordination Meteorologist
- 11 Forecasters
    - 5 Lead Forecasters
    - 5 Journeymen Forecasters
    - 1 Meteorologist Intern
- 3 Hydro-met Technicians (including Observation Program Leader)
- 1 Service Hydrologist
- 1 Information Technology Officer
- 1 Electronics Systems Analyst and 2 Electronic Technicians

Normal operational staffing is three people 16 hours a day, and two people 8 hours a day, 365 days a year. There are always two forecasters on duty and there is a meteorological technician two shifts a day. The forecasters are required to have at least a bachelor's degree in meteorology or atmospheric sciences.

**What does the NWS do when there is severe weather?**

The primary mission of the NWS is to save lives and protect property by issuing watches and warnings for severe local storms and tornadoes. During severe weather operations, the two or three person operation expands to eight to twelve people. Additional positions would include;

- Event Coordinator – Oversees the entire severe weather operation, assigns duties, ensures good communication internally and externally
- Warning Decision Meteorologist and Warning Applications Meteorologist – Usually two forecasters working as a team to monitor Doppler radar, and spotter reports, issue warnings and follow-up statements. For large scale events two warning teams may be required.
- NOAA Weather Radio (NWR) Monitor – Monitors NWR broadcasts for 11 transmitters
- Ground Truth – Collects storm damage reports from Skywarn spotters, county and local officials, and issues Local Storm Reports
- Flash Flood Monitor – If there is a flash flood concern in addition to severe storms
- Mesoanalyst – Monitors local changes in meteorological conditions which might impact warning decisions

In addition the NWS calls in the “Ham Team”. The “Ham Team” is one or two volunteer amateur radio operators, who monitor storm damage reports from various ham radio networks around the region.

*The NWS Chicago HAM Team monitors amateur radio spotter reports during severe weather.*

**What does the NWS do when the weather is quiet?**

During periods of tranquil weather, NWS personnel are involved in many activities. Each staff member may have one or more areas of expertise and will serve as a program leader. The program leader keeps up with the latest science and technology and shares that information with the rest of the staff. Program areas include fire weather, marine weather, severe weather, winter weather, climate services, and more. NWS personnel also work with other federal, state and local government agencies, and organizations such as emergency management, law enforcement, FEMA, USGS, US Coast Guard, and others, to ensure a smooth flow of weather information. The office also works closely with the local media to ensure a clear and unified message is delivered to the public, especially during hazardous weather. The Chicago NWS office has an extensive outreach program, providing educational information and presentations to schools, businesses, and civic organizations. Some staff members do local research, write papers for professional journals, or present at professional conferences. There are also ongoing training opportunities to keep the staff at the cutting edge of the science.

## 35th Anniversary of the April 1974 Super Outbreak of Tornadoes

**By Jim Allsopp, Warning Coordination Meteorologist**

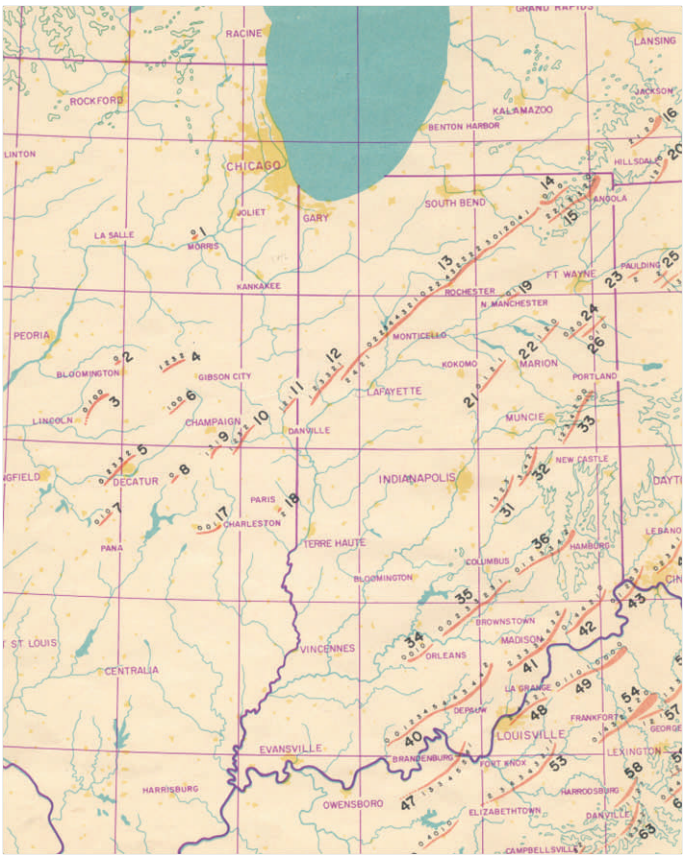
This spring marks the 35th anniversary of the April 3-4, 1974 “Super Outbreak” of tornadoes. It was the worst tornado outbreak in U.S. history with 148 tornadoes touching down in 13 states over the east half of the country over a 24 hour period. The tornadoes killed 315 people, and injured more than 5,000. The combined damage paths of the tornadoes covered more than 2,500 miles. Total damages were estimated at $600 million in 1974 dollars (approximately $2.6 billion in 2009 dollars). Six of the tornadoes were rated F5 and another 23 were rated F4. One of the most devastating tornadoes was an F5 that ripped through the town of Xenia, Ohio.

*Xenia, Ohio Tornado April 3, 1974. Photo by Fred Stuart*

Two of the 148 tornadoes affected parts of northeast Illinois and northwest Indiana. The very first tornado of the outbreak struck near Morris in Grundy County at 1:10 p.m. CDT. This brief tornado was rated F0 with only about $1000 in property damage. The storm that produced this tornado produced a funnel cloud earlier near Flanagan in Livingston County. Other funnel clouds were reported during the afternoon in north of Gibson City in Ford County, and near Bradley in Kankakee County.

In the Chicago metro area, hail the size of ping pong balls fell. Funnel clouds were reported in Oak Park and Evanston. Trees were damaged by high winds and torrential rain fell, causing flooding of streets and underpasses. The Edens Expressway was closed for five hours because it was under six feet of water.

Around 4:30 p.m., a tornado swept through the south-east corner of Benton County in northwest Indiana. This tornado was rated F3 and had a path length of 26 miles and maximum width of about 700 yards. There were no fatalities or injuries from this tornado. It first developed 11 miles west of Attica in Warren County and dissipated north of Otterbein in Benton County. The storm that produced this tornado created another tornado in nearby White County. That tornado leveled the town of Monticello and went on to be the longest tracked tornado of the day, with a total path length of 109 miles. The tornado was up to one half mile wide. (http://www.crh.noaa.gov/iwx/?n=superoutbreak)




*Partial map of the Superoutbreak by Dr. T. Fujita*

Large, destructive tornado outbreaks will occur again over northeast Illinois and northwest Indiana. The **key** to surviving a tornado is preparedness.

- Be familiar with severe weather threats in the area.
- Have reliable, redundant methods of receiving watches and warnings from the National Weather Service. A tone-alert NOAA Weather Radio is a great source for warnings.
- Ensure someone in your home, work place, or school, is paying attention to the weather if you are not.
- Know where the best tornado shelter area is in your home, your work place, and at your children's school.
- Have a severe weather preparedness plan and make sure everyone is familiar with the plan.
- Practice your plan to make sure it works by conducting periodic tornado drills.

For more information on the Super Outbreak, visit http://www.publicaffairs.noaa.gov/storms/

For more information on severe weather preparedness and safety, visit http://www.nws.noaa.gov/om/severeweather/index.shtml

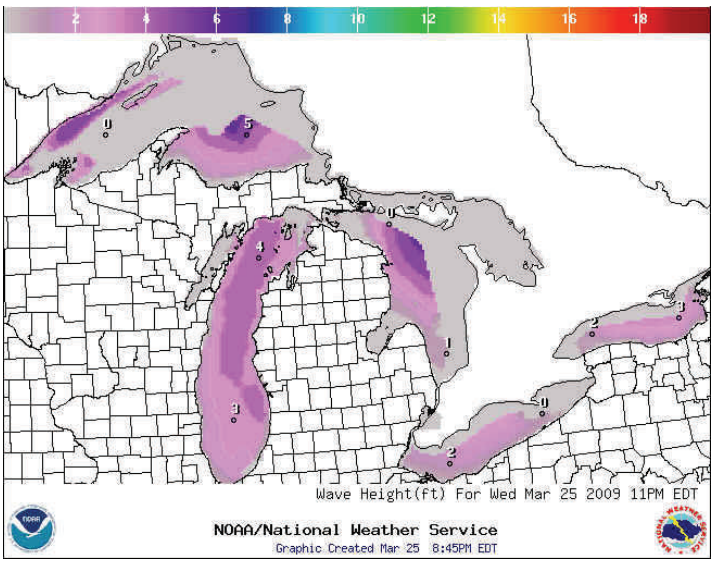
For more information about Chicago area tornadoes, visit http://www.crh.noaa.gov/lot/?n=SigChiTorn

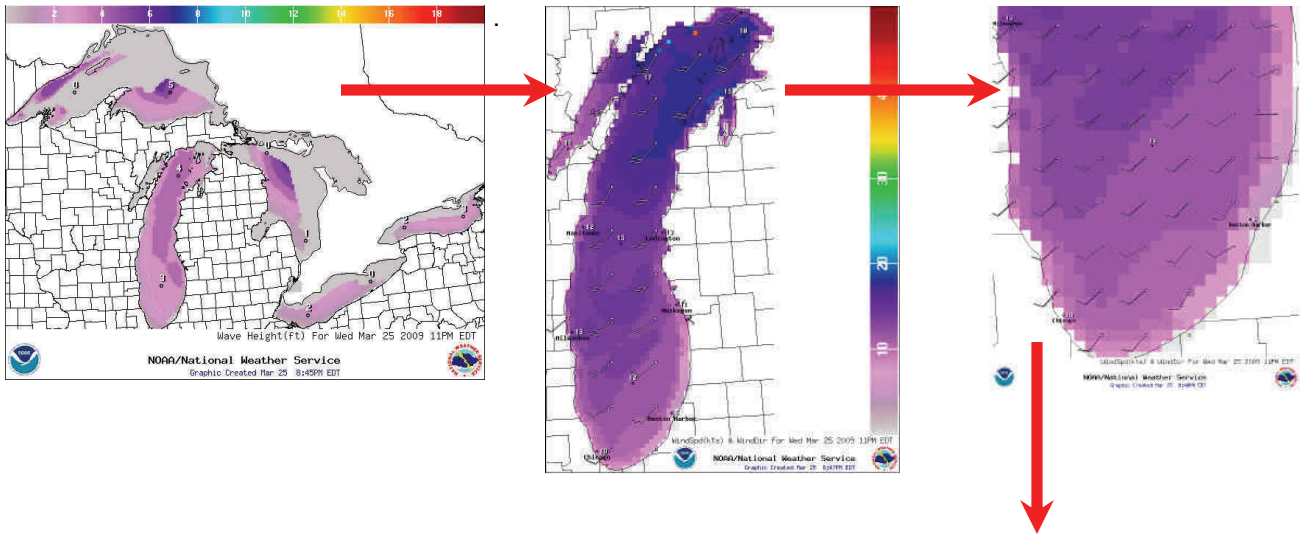
## Great Lakes Marine Portal - The Best Place to Get Your Marine Forecast!

**By Amy Seeley, Hydro Meteorological Technician and Marine Outreach Focal Point**

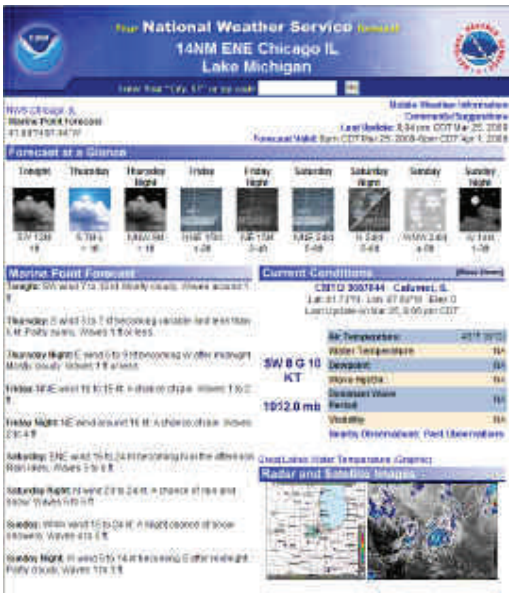
In November 2007, the National Weather Service created a website (http://www.weather.gov/greatlakes/) specifically for mariners on the Great Lakes. It was created to bring together, into one location, the great abundance of marine information available for the entire Great Lakes system. From this site commercial mariners, recreational boaters and the general public are able to access:

- **A Great Lakes focused selection of Graphical Forecasts derived from the National Digital Forecast Database (NDFD).**

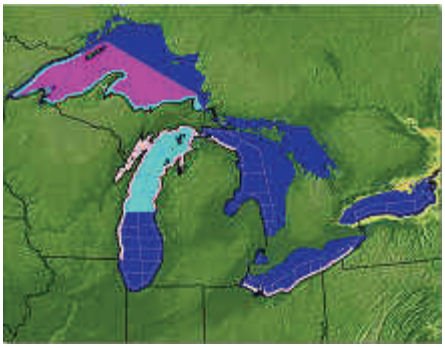





**By "drilling down", or clicking successively over a water (or land) area, users will be able to get a Point and Click forecast for the latitude and longitude of the area clicked.**




- The public is able to quickly retrieve marine observations for any location around the Great Lakes in addition to Radar and Satellite information for the region.
- Water Temperature and Water Level information is readily available for each of the Great Lakes.
- All text products issued by each of the National Weather Service offices around the Great Lakes has been organized for each lake.
- A graphical depiction of all Hazards (Warnings, Advisories, etc) in effect or the Great Lakes.



- The public has access to special data sets including Bathymetry and Shoreline maps, Geomorphology, Tides and Currents.
- Finally, links to Safety Information, Education and Science Resources, our Partners and to all the NWS offices around the Great Lakes will be just a mouse click away.

http://www.weather.gov/greatlakes

## Severe Weather Safety: Flash Floods

**By Elizabeth Zbacnik, Valparaiso University, Meteorology Student Volunteer**

Springtime is here, and with its arrival comes the occurrence of rain and thunderstorms. Heavy rain, slow moving thunderstorms, or sequential storms that rain on the same area can all produce dangerous flash floods. A flash flood is defined as a rapid rise of water along a stream or low-lying urban area that poses a threat to life or property. Flash flooding is the number one cause of deaths associated with thunderstorms, mainly because people underestimate the power of moving water. In order to not become a victim, you need to know how to protect yourself, your family, and your friends in the event of a flash flood.

The terms Flash Flood Watch and Flash Flood Warning are heard often during the spring and summer when thunderstorms and/or heavy rain are predicted to occur. But what exactly do these terms mean?


*Flooding at O'Hare Airport September 14, 2008*

The terms Flash Flood Watch and Flash Flood Warning are heard often during the spring and summer when thunderstorms and/or heavy rain are predicted to occur. But what exactly do these terms mean?

- **Flash Flood Watch** means that conditions are favorable for flash flooding to occur.
- **Flash Flood Warning** means that flash flooding is occurring, imminent, or highly likely. When a warning is issued you should immediately move to higher ground if you are near a creek or small stream, or if you are in a flood-prone area.

Flash floods occur in all 50 states. There are, however, some places where they are more common. Heavily urbanized areas, for instance, are prone to flash floods because there is more concrete and asphalt than bare ground. This results in more rapid flooding of roads, low-lying areas, and drainage areas. Storm drains may become overwhelmed, which could lead to flooding of streets. Heavy rain falling on dry soil or frozen ground can also produce flash flooding.

*Vehicles submerged in flood water on the Edens Expressway September 14, 2008*

Before a flash flood occurs it is a good idea to have an evacuation plan in place. This way everyone in your family knows where to go if evacuation is necessary. Also develop a plan for what to do if family members become separated from each other. There are some supplies that should be kept close at hand in the event of a flash flood. These include;

- a battery-powered portable NOAA Weather Radio – All Hazards,
- flashlights with extra batteries,
- non perishable food that requires little cooking,
- drinking water,
- first-aid supplies.

The first step towards staying safe is to be aware of the upcoming weather. A good way to do this is to listen to weather forecasts through the radio or TV, or to check the internet. NOAA Weather Radio – All Hazards provides information 24 hours a day about any current weather watches or warnings in your area. It will also sound a tone alarm day or night when a flash flood warning is issued for your area.

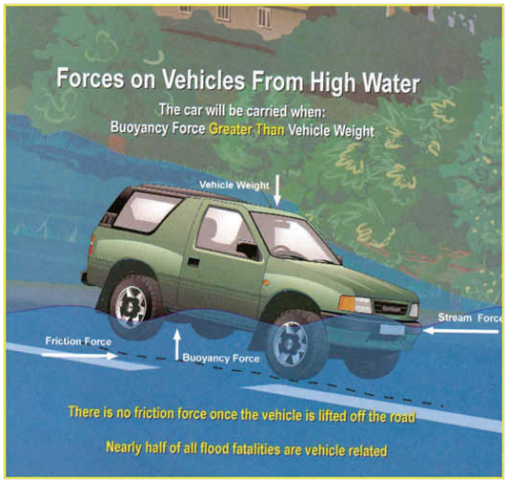
When a flash flood does occur, immediately get to higher ground. If you have to drive, try to avoid roads next to streams or roads that cross streams, as they may be flooded. Keep in mind that underpasses and viaducts can quickly fill up with water even if the adjacent road is dry. If you encounter flooded roads, DO NOT attempt to drive through them but instead find another route. About half of flash flood deaths occur in vehicles. Even if you drive an SUV or a truck, no vehicle is safe to cross the water. It only takes two feet of water to make most vehicles float. If you do drive through water and your vehicle stalls, abandon it and seek higher ground as long as it is safe to do so. Be extra cautious when driving at night because flash floods are most common at night and flooded roads are more difficult to see.

Do not walk, play, or swim in flooded creeks, ditches, or retention ponds, and keep children away from flooded areas. It only takes six inches of swiftly moving water to knock a person off their feet. Also it is hard to tell what sort of debris may be in the water that can drown a person if they get caught in it. Be cautious entering a flooded basement as there may be an electrical hazard.

*Flooding on August 7, 2007. A car drove into a retention pond. Driver was helped by residents.*

The most important points to remember from this article that will protect you are:

- Have an evacuation plan in place before a flash flood occurs;
- Keep a kit of emergency supplies on hand;
- Be aware of upcoming weather, either by TV, internet, radio, or NOAA Weather Radio;
- If you encounter a flooded road, TURN AROUND, DON'T DROWN. Two feet of water is enough to float most vehicles;
- SUVs and trucks are not safe to drive through water;
- Be extra cautious at night since flooded roadways are difficult to see;
- DO NOT walk, play, or swim in flooded creeks, ditches, retention ponds, and keep children away from flooded areas. It only takes six inches of rapidly moving water to knock a person off their feet;




Most flash flood victims are people who become trapped in their vehicles because they underestimated the power of moving water. Remembering these safety tips will make sure that you do not become a flash flood victim.

For more information on weather and flash flood safety visit:

www.weather.gov

http://www.weather.gov/floodsafety/

http://www.weather.gov/os/water/ahps/pdfs/Floodsbrochure_02_06.pdf

## Spring Across the Chicago Forecast Area

**by Andy Boxell, NWS SCEP/Student Trainee, Valparaiso University Meteorology Student**

After a winter of above average snowfall in both Northern Illinois and Northwest Indiana, many folks are surely looking forward to the longer days and warmer temperatures of Spring. While astronomical Spring began at 6:44 AM CDT on the morning of March 20th, meteorological Spring is normally defined as the entire months of March, April and May.

Climatological averages for Chicago show that 7.6 inches of snow normally fall during Spring, with March averaging 6 inches. The temperature for the three month period averages 47.9 degrees, with March averaging 37.3 degrees and May warming up to an average of 58.7 degrees. Spring is the second wettest season (second only to Summer), with an average of 9.71 inches of precipitation falling. The climatological averages for Rockford are similar, with 7.0 inches of snow normally falling during Spring, with an average of 5.6 inches in March. Springtime temperatures are nearly identical to Chicago, with a seasonal average of 47.9 degrees. March temperatures average 36.1 degrees, with a gradual warm-up to an average of 47.9 degrees in April, and a May average of 59.6 degrees. Rockford's average precipitation is just a bit higher than Chicago's, with an average of 10.04 inches falling over the three month period.

During these three months, the region normally sees some of the largest variety of weather of the entire year. Spring can bring both intense late-season snowstorms and outbreaks of severe thunderstorms as well as significant swings in temperature. These rapid changes in weather across the Midwest often result in impressive climatological records for the greater Chicago area. Since record keeping began in 1871, Chicago's coldest Spring occurred in 1873, when temperatures averaged a chilly 42.4 degrees. The warmest Spring occurred in 1977, with the average mercury reading was a balmy 56.2 degrees. The driest Spring on record was in 1887, when only 2.73 inches of precipitation fell. The wettest Spring occurred when a whopping 17.51 inches of precipitation fell during March, April and May of 1983. In the Spring of 1926, a record 29.7 inches of snow fell in Chicago.

So, how is this Spring shaping up so far? Though the season is less than a month old, both Chicago and Rockford are above average so far for temperature and precipitation, and well below average for snowfall. Through March 20th, Chicago has had an average temperature of 37.8 degrees with 3.14 inches of precipitation falling, well above the March average of 2.65 inches. Chicago has recorded only .9 inches of snow, well below the monthly average of 6 inches. Rockford has had an average temperature of 37.0 degrees, which is about a degree above normal. Precipitation has totaled 2.89 inches, about 0.5 inches above normal. Snowfall for Rockford in March has totaled only a trace. The monthly average is 5.6 inches.