CHICAGO

National Weather Service Forecast Office

Spring 2012

Volume 10, Issue 1

Inside this issue:

Are You Prepared for Severe Weather at an Outdoor Event?

By Jim Allsopp, Warning Coordination Meteorologist

As the weather turns warmer and the days grow longer, many people make plans to attend large outdoor events such as concerts, professional sports, fairs and festivals. Many people also look forward to camping, boating, biking and hiking. Part of the planning for these events revolves around the weather. If it's going to be chilly, take a sweatshirt; if it will be sunny, bring the sunscreen; if it's raining, take an umbrella or poncho, or cancel plans. But what should you do if thunderstorms are in the forecast?

Thunderstorms pose a number of hazards to people exposed to the elements outdoors, including lightning, hail, damaging winds, flash flooding, and even tornadoes. Last summer concert stages were collapsed by storms in Ottawa, Canada, Tulsa, Oklahoma, Indianapolis, Indiana, and Hasselt, Belgium. Twelve people were killed and dozens were injured in these events. Twenty six people were killed by lightning across the country last year. Most were either working outdoors or involved in recreation outdoors.

Stage collapse at Indiana State Fair August, 2011. Photo by Indianapolis Star

Website:

weather.gov/Chicago

815-834-1435

Here are some outdoor thunderstorm tips;

Before you go out

- Check the forecast. Go to www.weather.gov/chicago, or your favorite weather web site, or listen to NOAA Weather Radio for the latest information. Don't rely on the forecast you heard last night. The weather changes, and forecasts are continuously updated with the latest information.
- If thunderstorms are in the forecast, check the Hazardous Weather Outlook. The Hazardous Weather Outlook will provide details on specific thunderstorm threats and give the most likely time and location for thunderstorms to occur.

When you arrive at the event

- Become familiar with the venue. Where are exits, restrooms, or potential shelter areas?
- Are there potential hazards in case there is lightning or high winds? Look for things such as overhead power lines, tree limbs, or loose objects that can become airborne or that could collapse in high winds, like signs, trash cans, or temporary structures like stages or scaffolding.
- Can you see the sky to the west (direction most storms come from)?

During the event

- Monitor the weather with a smart phone app or portable NOAA Weather Radio. While the National Weather Service does not provide cell phone apps, there are many available from private vendors. You can view radar images and have severe weather warnings sent to your phone as text messages. Check with your phone service provider or phone manufacturer's app store.
- Take protective action if thunderstorms approach. Do not wait for an announcement from the event organizer. Some event organizers work closely with local emergency management, monitor weather, and have specific severe weather emergency plans. Some do not. The personal safety of you and your family are **YOUR** responsibility! If you feel there is a significant threat from the weather, move to a safe location.

Here are some safety tips for specific threats.

Lightning

- *There is no safe place outdoors when lightning is occurring!* Get inside an enclosed building. Picnic shelters, gazebos, porches, tents, and awnings are NOT enclosed buildings and they offer NO protection form lightning. An enclosed metal vehicle with the windows up is safe from lightning.
- Lightning often strikes the tallest object. Avoid being next to isolated tall trees, power poles or other objects that might be lightning targets. Do not be in an open field where you are the tallest object. At stadiums, get down to lower levels and indoor spaces if possible.
- Water is a good conductor of electricity. Do not be in a swimming pool or out boating on a river or lake if there is a lightning threat.
- If you see lightning or hear thunder, it is not safe to be outdoors. Do not wait until it starts to rain to take action. Lightning can strike several miles from the parent thunderstorm in places where it is not raining. Blue sky may be visible. Remember, "When lightning roars, go indoors!"

Lane Stadium, Blacksburg VA, August 2000. Photo Courtesy Eric Brady, Roanoke Times

Heavy Rain and Flash Flooding

- Do not park or camp in a low lying area, or near a creek, stream, or drainage ditch if heavy rain is expected.
- If your clothes become wet and temperatures drop, hyperthermia is possible, even in summer.

Hail

- Cover your head and seek shelter. Picnic shelters, gazebos, porches, tents, and awnings may provide temporary shelter from hail, but they offer NO protection form lightning, which also occurs with most hail storms.
- If you experience large hail, the size of golf balls or larger, you are likely in the core of a dangerous supercell thunderstorm. Supercells are also capable of producing tornadoes, damaging winds, heavy rain and frequent lightning. Move to sturdy shelter as quickly as possible.

Jogger injured by hail in Iowa, April 2010. Photo by Pat Crawford

High Winds

- Be aware of loose lightweight objects than can become airborne, such as trash bins, or signs
- Be aware of tall objects that can topple or collapse, such as tree limbs, power lines, scaffolding, or temporary stages
- Be aware of large fabric covered objects that can act as sails, such as tents, awnings, trampolines, or stage backdrops.
- Seek shelter in a sturdy building and stay away from windows.

Tornadoes

- Have a NOAA Weather radio or a cell phone app that can alert you when a tornado warning is issued for your area. Know where you are! Warning areas are described as portions of counties. Specific cities, highways and other landmarks are referenced in National Weather Service warnings. Warnings can be displayed graphically as a small polygon or box overlaid on a map or radar display.
- Move to substantial shelter. The best shelter is underground in a basement. The next best shelter is reinforced concrete. If no basement or concrete shelter, go to a small interior room on the lowest floor, away from windows. A good rule of thumb is to put as many walls between you and the tornado as possible. If you are camping or at an outdoor fair or festival with no shelter available, lie flat in a low spot, get behind a wall, berm, or embankment, lie flat and cover your head.
- Temporary structures, campers and mobile homes are poor tornado shelters. More than 40% of tornado fatalities occur in mobile homes. Vehicles can be pelted or damaged by blowing debris or they can become airborne and get crushed. Do not try to escape in your vehicle.

It is important to have a severe weather plan for any outdoor activity. Make sure everyone in your group knows the plan. Make sure to monitor weather by using a portable NOAA Weather Radio or smart phone app. Take action and get to shelter if severe weather threatens.

Have a safe spring and summer!

Severe Weather Season is Here – Is Your Family Prepared?

By Suzi Voss, Student Volunteer

Spring has made a gloriously early arrival in Illinois. The burst of warm weather has undoubtedly motivated you to open the windows, do some spring cleaning, work on outdoor home projects, and send the kids outside to burn off some energy. You set your clocks ahead on March 11th and changed your smoke detector batteries, so you're ready for spring, right? Maybe not.

If you've lived in Illinois long enough, you've probably heard the saying, "If you don't like the weather, just wait a minute because it will change." This is especially true in springtime; the change from the cold of winter to the warmth of summer ushers in the threat of severe weather in our area. Storms can develop or intensify very quickly. It is important to educate yourself and your family so you are not caught unprepared.

Schools in Illinois are required to perform tornado drills periodically so that students and staff know exactly where to go and what to do if a tornado warning is issued. Similarly, most towns test their tornado sirens the first Tuesday of each month, the National Weather Service tests the NOAA Weather Radio tone alert each Wednesday at 11:00 a.m., and television and radio stations test their emergency alert systems on a regular basis. You probably have talked to your children about what to do in the event of a fire in the home, and may have even performed practice fire drills with them, but have you discussed what to do if there is a severe thunderstorm or tornado warning? Have you performed a tornado drill in your home? The following tips will help you and your family stay prepared and safe this spring.

First and foremost, know the difference between a watch and a warning. A **watch** is issued when conditions are favorable for severe weather to develop. The skies may be sunny, but as mentioned earlier, conditions can change quickly. A **warning** is issued when a tornado or severe thunderstorm has been sighted or is indicated by Doppler radar. Simply stated, remember that watch means to "watch" the sky for conditions to possibly change, and warning means to take cover immediately. Don't brush off severe thunderstorm watches/warnings; hail and straight-line winds in some severe thunderstorms can be even more damaging than a tornado!

Make sure the entire family knows the safest place in your home to take cover, should a tornado warning be issued. In most cases, you may only have a few minutes to reach safety, and you won't have time to think about where the tornado shelter should be. The safest place is underground, in a basement or crawlspace. If you do not have a basement, seek shelter on the lowest level in an interior closet or bathroom, away from windows. In the basement, get under a heavy object, such as a workbench or pool table, if possible. Wherever your chosen tornado shelter is, make sure to keep it accessible at all times. You will not have time to clean out a closet or clear a path to the crawlspace once a tornado warning is issued.

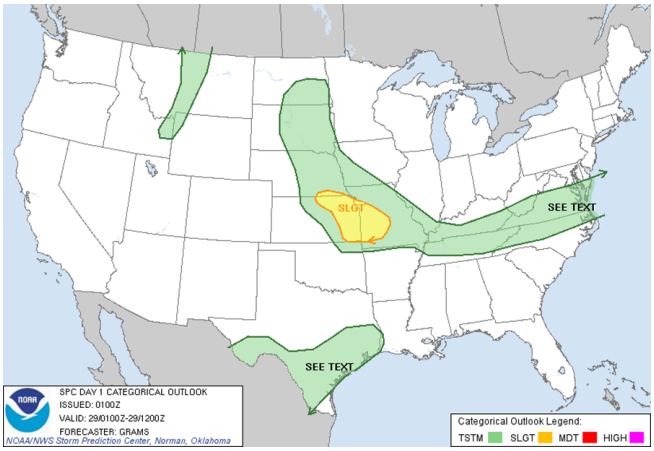
Purchase a NOAA Weather Radio for your home. They are inexpensive (about $30) and available at many department stores, sporting goods stores, and online retailers. They are easy to set up and will sound an alarm whenever a watch or warning is issued for your location. Most models have a battery backup option, so alerts will come through even if the power is out. If your family tends to be "on the go" quite a bit, there are rechargeable weather radios that can be taken with you. They are the size of a walkie-talkie or large cell phone, convenient enough to be thrown in a sports bag or in the car when you are away from home.

Selection of NOAA Weather Radios

Many people have apps for their cell phones that provide weather information and sound an alert when a watch or warning is issued. While these are a great tool, they should not be the only source of severe weather information. The main downfall of cell phone weather apps is that you may not hear the alert if a warning is issued when you are sleeping. The alert tone volume of a weather radio can be set loud enough for the entire family to hear it, should it sound in the middle of the night. Another downfall is that cell phone weather apps are configured to only "poll", or check, weather warning information at certain time intervals. In most cases, the lowest time interval available is fifteen minutes. It is possible that a warning may be sent to your cell phone when it is already too late to get to safety. Lastly, do not depend on a tornado siren to alert you of a tornado warning. They are designed to be an OUTDOOR warning system, not indoor! With air conditioners running, televisions blaring, MP3 headphones on, and so many other distractions in the home, it is unlikely a tornado siren will always be effectively heard inside. For these reasons, a weather radio is a vital part of the household, just like a smoke detector.

Practice tornado drills at home. This way, knowing where to go and what to do when the weather radio alerts you will become second nature. Chances are, the kids will think the drills are kind of fun as well.

Educate yourself about severe weather and educate your kids. Make it a habit to check the weather together each morning, not only for the general forecast, but to see if any severe weather might be expected. You can visit NOAA's Storm Prediction Center website (http://www.spc.noaa.gov/products/) and see a graphic outlining areas that may be at risk for storms each day.



Storm Prediction Center Website

In addition, the Chicago National Weather Service issues a "Hazardous Weather Outlook" each day that outlines any severe threat in our area and the expected timing (www.weather.gov/chicago). It is updated, as necessary, throughout the day. Checking these two websites puts you ahead of the game – you won't be surprised if a watch is issued later in the day if you read in the morning that severe weather is a possibility. Set the Chicago National Weather Service website as the homepage on your computer so you can see at a quick glance what's happening with the weather.

If you'd like to learn even more, the National Weather Service offers free storm spotter classes throughout the late winter and early spring in several different locations (http://www.crh.noaa.gov/lot/?n=spotter_talks). These classes teach the public about severe thunderstorms and tornadoes and how to identify them in the field. If you have children that are roughly junior high age or older, and have a passion for storms, attending a storm spotter class could be a fun family activity. And you never know, or she may grow up and become a meteorologist. Most of us in this career field have had a passion for weather from a very early age.

In addition to becoming a trained storm spotter, another great way to get involved with weather and contribute to your community is to become a CoCoRaHS precipitation reporter. Each morning, CoCoRaHS volunteers check a rain gauge in their backyard and report the amount of precipitation online. It is quick, easy, and something with which kids can assist. When you see rainfall or snowfall amounts on the news, many of those reports come from CoCoRaHS observers.

These tips will not only keep your family safe but also provide a fun educational experience as well. Please feel free to contact the National Weather Service office at 815-834-1435, if you have any questions severe weather safety. Enjoy your spring.

For more information on CoCoRAHs, visit www.cocorahs.org.

Baseball Opening Day Weather in Chicago

By Jim Allsopp, Warning Coordination Meteorologist

Anyone who has attended a Cubs or White Sox game in April knows it can be downright chilly at either ball park. People like to take pride in the fact that the city's football team is tough enough to endure "Bear Weather" in an outdoor stadium in fall, but many of the Bears' games are played in better weather than either baseball team has to endure in April, primarily due to the cooling affects of chilly Lake Michigan.

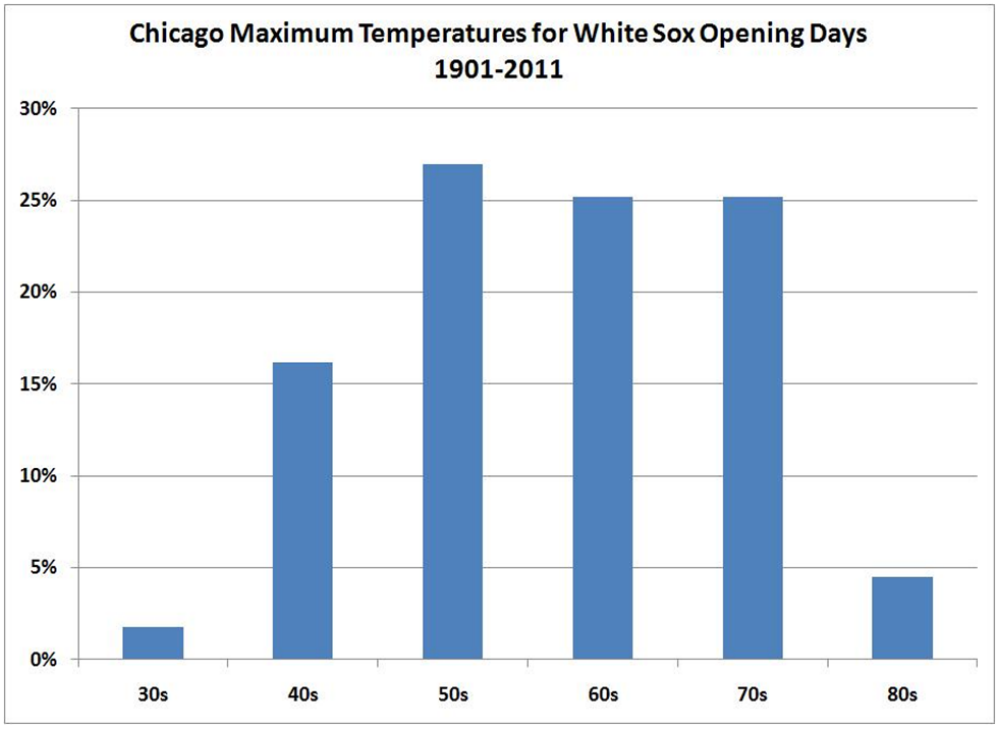
Old Comiskey Park - photo by Frederick J Nachman

The Chicago White Sox (White Stockings) have been playing since 1901 and the Cubs (White Stockings, Colts, Orphans) since 1876. For direct team comparisons, we will look at an equal number of years for both teams. Data on opening day history comes from Baseball Almanac. Keep in mind that the official weather records have been moved from downtown Chicago to the University of Chicago, to Midway Airport, to the current location of O'Hare Airport over the years. Temperatures can vary considerably from one location to another on any given day, but especially between the lakefront and inland airport locations in early spring. Also, for this study we only looked at the maximum temperature for the calendar day, which is not necessarily representative of the temperature at game time.

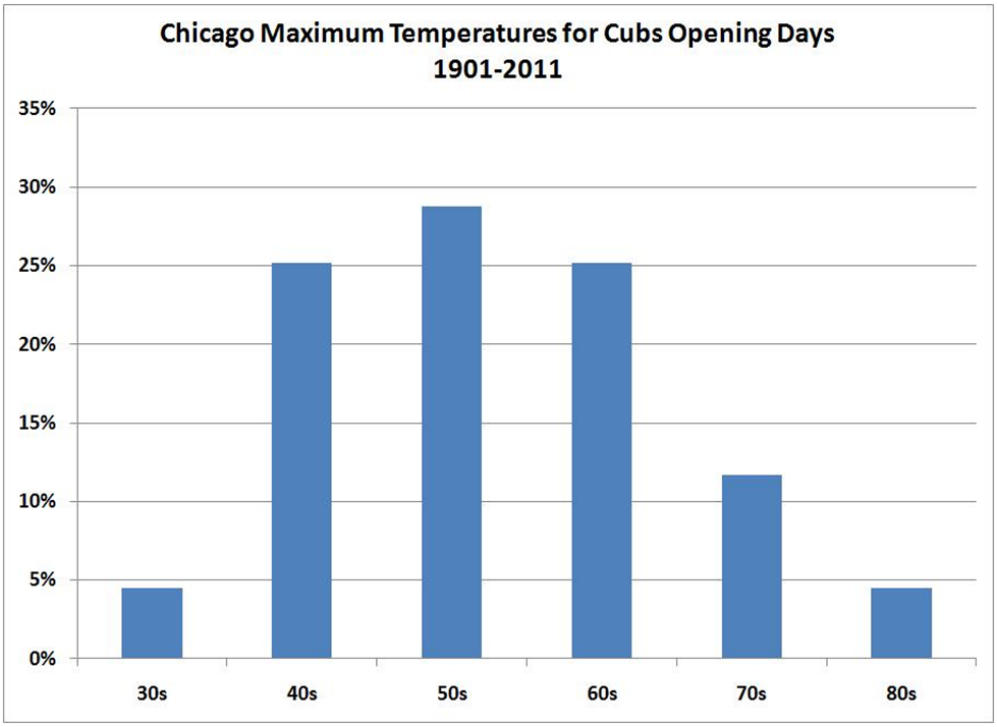
Wrigley Field photo courtesy mycubstoday.com

Here are some fun facts about opening day in Chicago;

The average high temperature for opening day for the White Sox was 61.2F. The baseball gods did not look down on the Cubs as favorably, as their average high temperature was 56.5F from 1901 through 2011. The Cubs had far more opening days in the 30s and 40s than the White Sox. This may be due to the location of Wrigley Field on the north side of the city where winds from the northeast, east or southeast could bring chilly Lake air in to the stadium. The White Sox ballpark on the south side is primarily impacted by northeast or east winds.



Graph of Chicago Maximum Temperatures for White Sox Opening Day



The White Sox had record high temperatures of 86 degrees on opening day on both April 12, 1977 and April 19, 1985. The Cubs had Chicago's warmest opening day when the thermometer registered 88 degrees on May 8, 1889, though it is not a record for the date.

The White Sox coldest opening day was 38 degrees on April 18, 1907. The Cubs coldest opening day was April 8, 2003 when the temperature struggled to 32. That was a record for the coldest maximum temperature for April 8.

The earliest opening day for the Cubs was March 30, 2000 and for the White Sox April 2 in 2006 and 2007. The latest opening day for the Cubs was June 6, 1885 and the latest for the White Sox was May 2, 1919. Most opening days were in May from 1876 to 1900 and almost all opening days were in April post 1901. Opening day never started before April 10 until the late 1960s. Accumulating snow is extremely rare after mid April and therefore was rarely a factor in opening day until recent years.

The Cubs opener was snowed out in April 1975 after 9.8 inches of snow fell on April 2 and 3. The snow stuck around for several days. The season got underway April 10. The Cubs opening day was snowed out April 7, 2003 when 3.0 inches fell. On April 9, 2007 the Cubs got opening day in with the Houston Astros, but the following game set for April 11 was postponed by a 3.0 inch snow.

Snow at Wrigley Field April 7, 2003. Photo by David Durochik, SportPics

The White Sox home opener was postponed due to cold and snow on April 6, 2009 after 2.1 inches fell on April 5. But the worst snow impact to the opening of a baseball season was in 1982. A heavy wet 9.4 inches of snow fell in Chicago on April 5, the day the Sox were set to open their home season. Temperatures were in the 30s to lower 40s for the next several days. The entire slate of games through April 10 was postponed. When the Sox were back in town to attempt their home opener again on April 16, heavy rain postponed them. They finally played their first home games in a doubleheader with the Twins on April 17.

White Sox snowed out April 6, 2009. Photo by Charles Rex Arbogast, AP

Northerly Island to Get an Upgrade to the Weather Equipment and an Expansion of the Types of Data - Update

By Bill Nelson, Observation Program Leader

The lone piece of weather equipment currently in use by the National Weather Service (NWS) on Northerly Island, formerly known as Meigs Field, is an automatic temperature/dew point unit. The data from the unit is sent to the NWS's Chicago Forecast Office in Romeoville by dedicated phone line. From there, it is disseminated to the public and media. This unit will be replaced by a more extensive package of instrumentation which is currently being installed and scheduled to be on line by June 1.

First, here is some background on Meigs Field.

Merrill C. Meigs Field Airport was a single strip airport that operated from December 1948 until March 2003. It was built on Northerly Island, the man-made peninsula that was also the site of the 1933–1934 "Century of Progress" in Chicago.

Northerly Island, a 91- acre peninsula that juts into Lake Michigan and owned by the Chicago Park District, is the only lakefront structure to be built based on Daniel Burnham's 1909 "Plan Of Chicago". It is located just south of the Adler Planetarium and east of Soldier Field.

- December 10, 1948 - Airport opened and became the country's busiest single-strip airport by 1955.
- June 30, 1950 - The airfield was named for Merrill C. Meigs, publisher of the *Chicago Herald and Examiner* and an aviation booster.
- 1952 - The air traffic control tower was built. In the mid 50s weather equipment was installed to take the necessary elements of a weather observation, which included temperature, dew point, wind direction and speed, pressure, and cloud height.

- 1961 - The terminal was dedicated.
- 1970s - Meigs Field became a critical facility for aero-medical transport of patients and transplant organs to downtown.
- Late 1980s - Meigs Field commuter airline service to the public peaked.
- Early 1990s - The Chicago-area Tuskegee Airmen, Inc. provided free airplane rides every month and aviation education to Chicago youth at Meigs Field. Thousands of children took their first airplane rides there until 2003.
- October 15, 1992 - A Boeing 727 that was donated from United Airlines to the Chicago Museum of Science and Industry made its final landing at Meigs, on its way to be transported to the museum to become an exhibit.

- Late 1990s - The charting of two FAA instrument approaches allowed for landings in poor weather conditions. The runway at Meigs Field was nearly 3,900 by 150 ft (1,200 by 46 m). In addition, there were four public helicopter pads at the south end of the runway, near McCormick Place.

- March 31, 2003 - The airport was closed when large X-shaped gouges were bulldozed into the runway surface. The mayor stated that safety concerns required the closure due to the post-September 11 risk of terrorist-controlled aircraft attacking the downtown waterfront near Meigs Field.

- August, 2003 - Construction crews had finished the demolition of Meigs Field. Northerly Island is now a park that features prairie grasses and strolling paths. All weather equipment, except the temperature/dew point unit, had been removed by FAA and NWS personnel.

- April 12, 2005 - Northerly Island becomes an official NWS Cooperative site so that the temperature data can be preserved.

- June, 2005 - The 7,500 seat Charter One Pavilion opened, which hosts music concerts in the summer.

- March, 2007 – Recognizing that the current temperature/dew point unit will become obsolete and spare parts scarce, the NWS begins the process of obtaining replacement equipment and negotiating with the city of Chicago for a new location on Northerly Island.

- February, 2011 - The city of Chicago signs a lease allowing for the new weather equipment to be installed at a previously surveyed location.
    - NWS gave final approval of the types of sensors to be included in weather station and the necessary funding.
    - Elements to be taken are: Temperature/ dew point; wind direction and speed; rainfall – pressure may be added at a later date.

- February, 2012 – Installation of the equipment tower completed.

- March, 2012 – Electrical power and phone line connections to the tower completed. Installation of sensors on the tower completed.

- April, 2012 to May, 2012 – Testing of the sensors, data flow, and dissemination.

- June 1, 2012 – Target date for the flow of data to the public.

(Some of the above data is from Wikipedia, the free encyclopedia, and the Chicago Park District.)

Chicago downtown/lakefront temperatures have been carried in public service reports and used in NWS forecasts for Chicago for 50 plus years. The original site was at Grant Park and the reports are of historical significance to the millions of residents. Individuals of the Chicago media have commented that lakeshore readings are one of the most important pieces of information they can have to provide their viewers and listeners.

The current Lakefront observations are used by forecasters to create forecasts and warnings for the downtown area of the City of Chicago. Temperature and dew point measurements (to calculate relative humidity) are also essential data for NWS and for the City of Chicago Office of Emergency Management and Communications (OEMC) for Heat and Wind Chill Warning services. The city utilizes this data for critical decision making in determining the need for the opening of cooling centers or warming centers.

The additional data coming from the new equipment will enhance the weather information provided, and expand the forecast process:

- Wind data would provide NWS Chicago with high impact one minute wind information that it requires to better support aviation weather forecast services to the two major airports in Chicago (Midway and O'Hare). The wind information will also provide valuable information to the public forecaster for the heat and wind chill warning services in the urban core.
- Rainfall - Real-time rainfall data would be used for flash flood monitoring and warning, and useful in calculating mean areal basin precipitation for the river forecast program. With a highly urbanized area like Chicago, it takes as little as one inch of rain in an hour to cause flash flooding or urban flooding problems. This data is also used by the River Forecast Center in Minneapolis MN.

An example of the current temperature/dew point sensor unit.

Temperature/dew point readout unit in the NWS office.

The new weather station will look similar to this and will be able to take temperature/dew point, wind direction and speed, and rainfall data.

Seeking Severe Weather Information?

By Matt Friedlein, Lead Meteorologist

The NWS provides severe weather information on the web in many formats, including that which can be accessed on your mobile device. This includes not only critical warnings and watches during severe weather threats, but also preparedness information and post-event write ups. This is a quick and easy guide on how to find some of the most pertinent severe weather information.

Preparedness

Weather safety always begins with preparedness. Safety guides and general planning information to help you and your family prepare and practice for what to do in case of severe weather are available from our web page. These can be found by clicking on Preparedness on the left-hand side of our home page. On that page, school administrators can find a school guide designed by our office. Even a thunderstorm safety book for the little ones is available. To understand what a watch is, this NWS YouTube video will help. And don't forget lightning safety, which needs to be practiced whenever thunderstorms are present, severe or not.

Ahead and During a Severe Weather Threat

The NWS in Chicago will be providing a Severe Weather Monitor once again this convective season, which can be found throughout the year at http://www.crh.noaa.gov/lot/?n=severe_briefing. The monitor has been enhanced even further than last year, and is encouraged to be your one-stop shopping for the latest weather information before and during a severe weather event. The following will be a tutorial of the monitor page.

National Weather Service Weather Forecast Office

Chicago, IL

weather.gov

Home Site Map News Organization Search for: NWS All NOAA Go

Severe Weather Briefing Page - *National Weather Service Chicago*

Find us on Facebook

Severe storms | Flooding/Heavy Rain | Winter | Extreme Heat

Spotter activation statement:

SPOTTER ACTIVATION WILL NOT BE NECESSARY THROUGH TONIGHT.

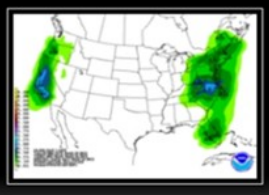
Click image to open multimedia briefing

Click image to open daily weather story

MD | WW | D1 | D2 | D3

Click for SPC Meso Disc. TEXT

Day 1 QPF | Day 2 QPF | Day 3 QPF

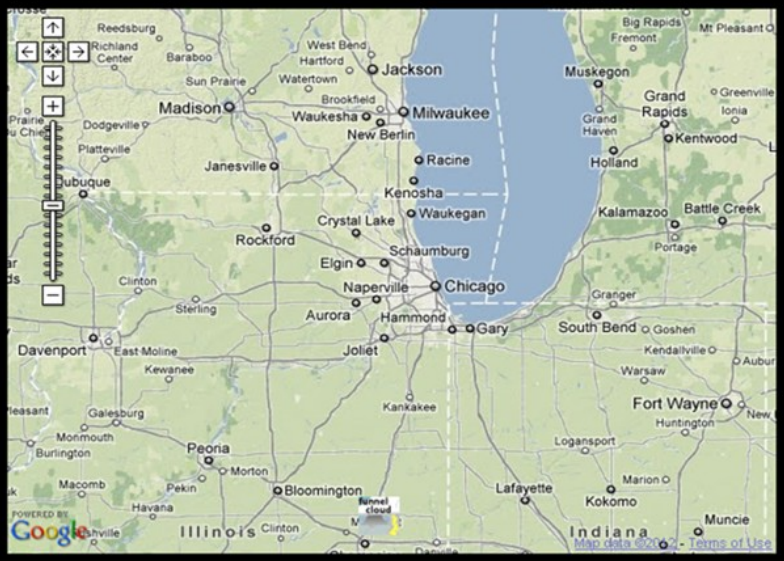


Click image for HPC Day 1 QPF

- LSR Summary
- Espotter
- Skywarn
- CoCoRaHS
- Preparedness
- Recent Events
- Contacts
- NWS Reference Guidebook
- Help on this page

WWA map | Local radar | Regional radar | LSR display | Image swap | Local time 00:31:03 | UTC 00:31:03

Local Storm Reports



AFD | HWO | ZFP | SVR | TOR | SPS | PNS | LSR | NOW | G-Now

Current Version Previous Versions: 1 2 3 4

Local Storm Report

```
000
NWUS53 KLOT 240219
LSRLOT

PRELIMINARY LOCAL STORM REPORT
NATIONAL WEATHER SERVICE CHICAGO/ROMEOVILLE IL
918 PM CDT FRI MAR 23 2012

..TIME...    ...EVENT...       ...CITY LOCATION...      ...LAT.LON...
..DATE...    ....MAG....       ..COUNTY LOCATION..ST..  ...SOURCE....
             ..REMARKS..

0916 PM      HEAVY RAIN        PARK FOREST              41.48N 87.69W
03/23/2012   M1.69 INCH        COOK                IL   TRAINED SPOTTER

             SINCE NOON YESTERDAY 3/22. 0.46 INCHES SINCE 4PM TODAY.


&&

$$

BMD
```

1. Image display area, which will display images #2 through #6.
2. A map of warnings, watches, and advisories.
3. Radar graphic from the local area.
4. A composite of multiple radars from across the Midwest.
5. A clickable and zoom capable map of local storm reports.
6. Click this to load images #2 through #6.
7. Play controls for the image display area.
8. A colored box depicting the activation status of Skywarn spotter spotters.
9. A multimedia briefing used ahead of and during most potential high impact weather events.
10. The latest NWS Chicago Graphical Weather Story.
11. Nationwide graphics of active mesoscale discussions and watches from the SPC, as well as their outlooks for severe weather through the next three days.
12. Nationwide forecast precipitation.
13. A summary of local storm reports.
14. Various links to other pertinent information.
15. NWS product display area, where options in #16 can be displayed.
16. NWS products including the latest warnings, hazardous weather outlook, forecast discussion, local storm reports, and short term graphicast.

Weather on Your Mobile Device

The NWS does offer some data viewable through your mobile device directly through NWS links, while our private sector partners have many methods and apps to view NWS observational, forecast, and watch and warning data. For an NWS link to save in your mobile device to help you more readily and easily see weather information, visit http://mobile.weather.gov/. The NWS Storm Prediction Center also has a mobile page available for accessing their Mesoanalysis data, which can assist Skywarn Storm Spotters and other weather-savvy decision makers.

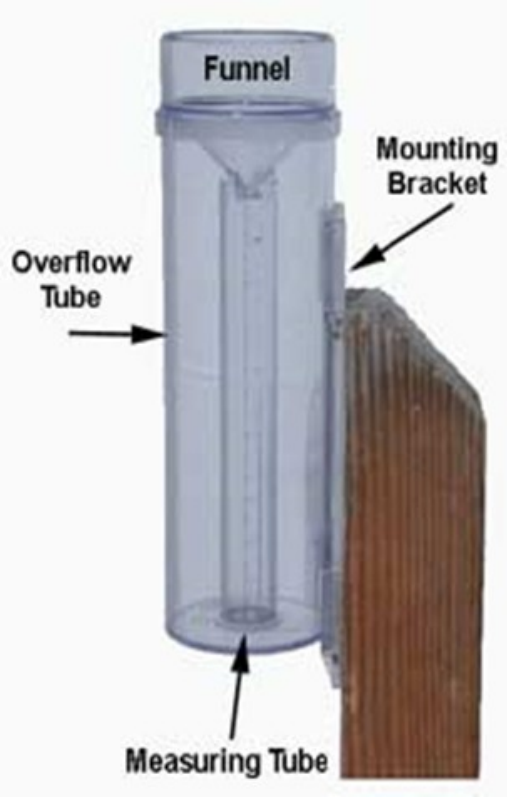
The Many Uses of CoCoRaHS Data

By Bill Morris, Hydrologist and Illinois Regional CoCoRaHS Coordinator

Every morning, volunteers across the nation walk out to read their backyard rain gauges and submit their reports via a website. These reports provide a detailed snapshot of precipitation during the past 24 hours. These dedicated “citizen scientists” are part of the Community Collaborative Rain, Hail, and Snow network known as CoCoRaHS. The more volunteers that participate, the more accurate a precipitation analysis can be. Illinois joined CoCoRaHS in December 2006 and Indiana joined in early 2006.

Join the CoCoRaHS Team

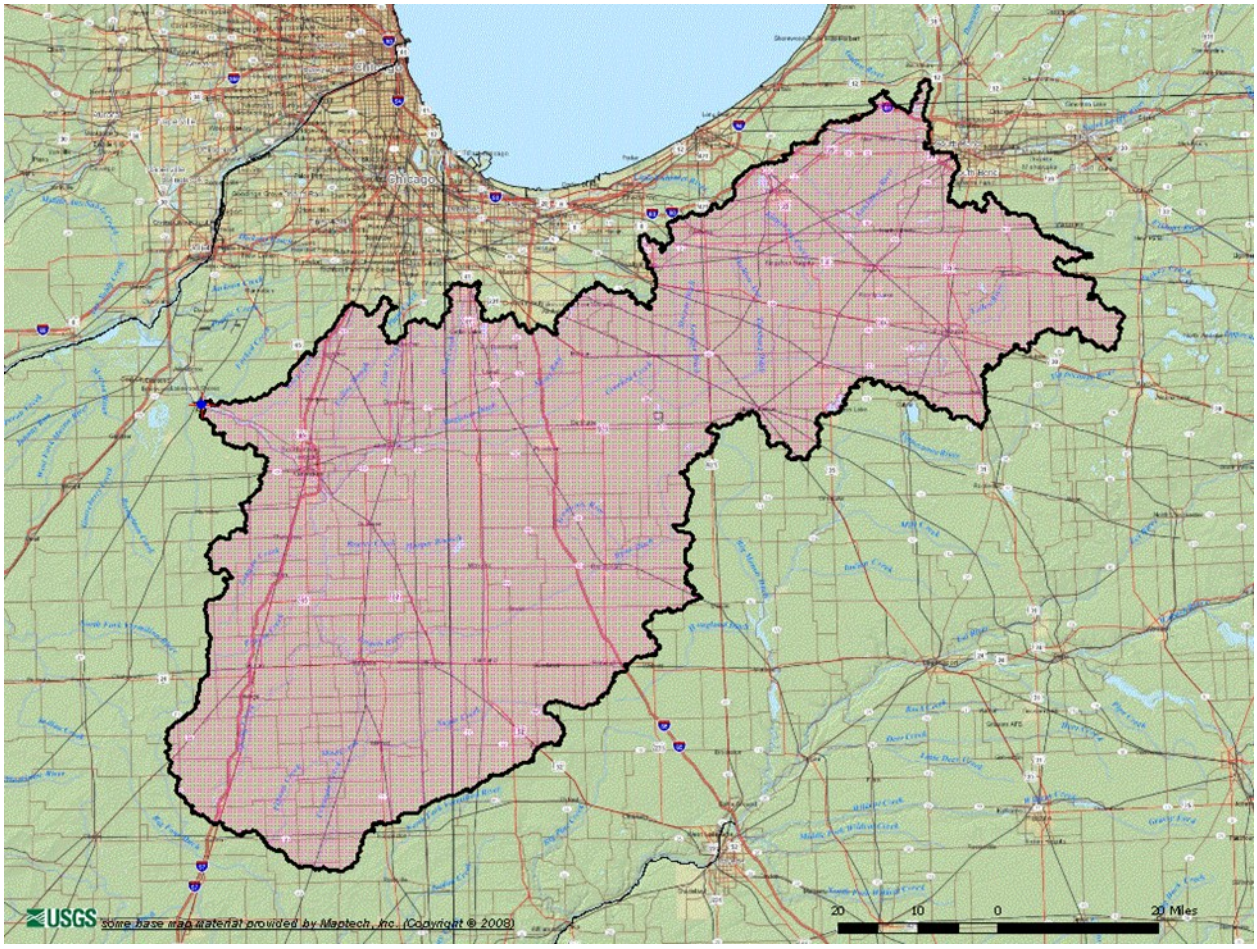
If you are interested in measuring rain, hail, and snow from your backyard, CoCoRaHS needs you! Observers purchase and install the official CoCoRaHS rain gauge. Using the same rain gauge is important for consistency and accuracy. Access to the internet is necessary to submit the reports to the CoCoRaHS web page. Online training slide shows are available for new observers and classroom training session are conducted during certain times of the year. To learn more about CoCoRaHS please visit: http://www.cocorahs.org



CoCoRaHS rain guage

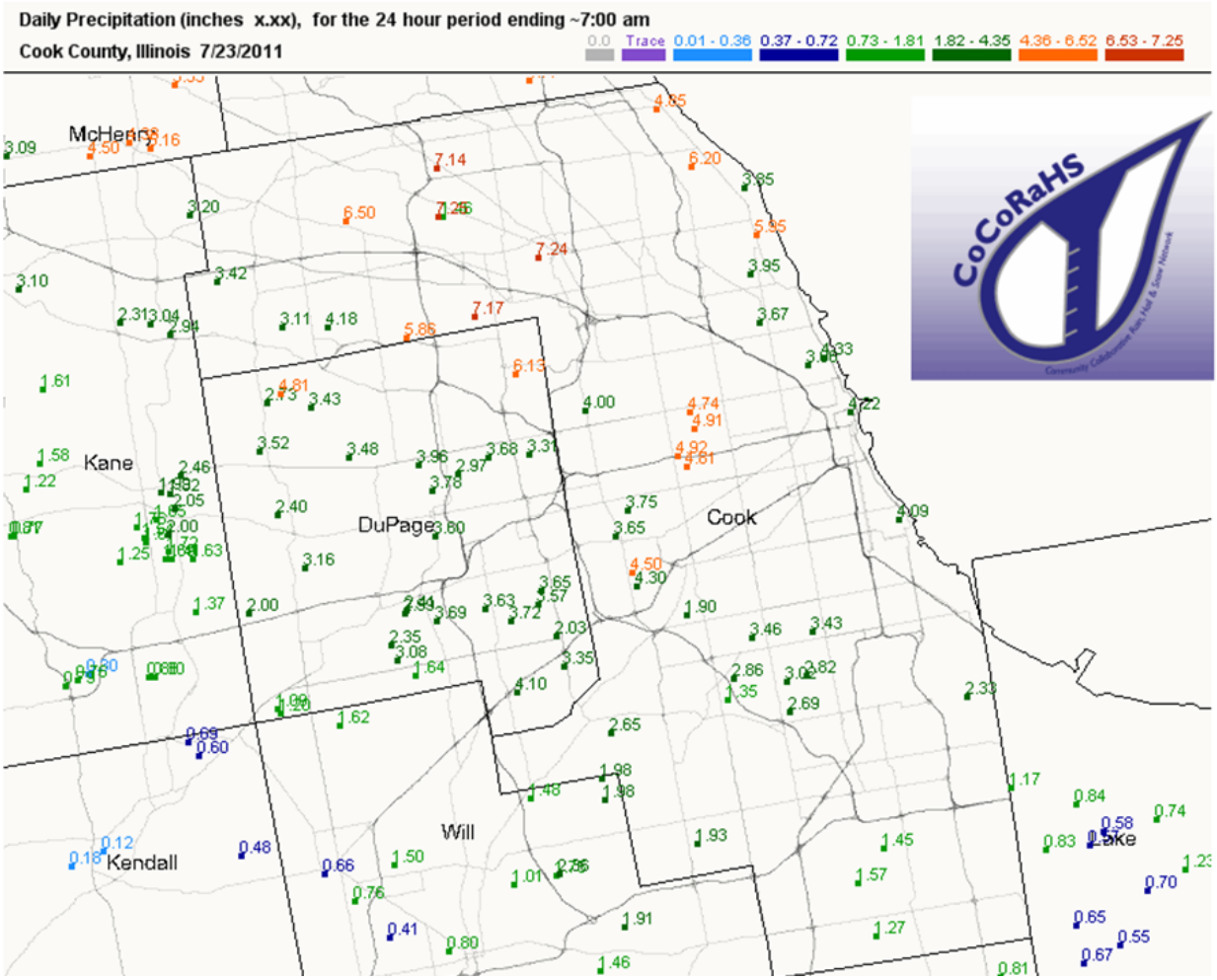
Daily Reports

A whole host of agencies and entities utilize the CoCoRaHS data. Within the National Weather Service, daily reports are used to determine precipitation patterns and for the river forecast and flood warning program. An important input to a river forecast is precipitation. Hydrologists need to know how much rain fell over the area in order to determine how much of that rain will runoff into area streams. Precipitation data is collected within geographical areas upstream from a river location known as watersheds or river basins . As an example, the image below indicates the watershed for the Kankakee River near Wilmington, IL..



Kankakee River near Wilmington, IL watershed courtesy USGS

The Kankakee River at Wilmington, IL drains an area of 5,150 square miles. The more CoCoRaHS and NWS Cooperative Observer reports received within this watershed, the more accurate the precipitation analysis is, and ultimately the river forecasts.



July 23, 2011 CoCoRaHS Rainfall Reports

Special Reports of Hail, Heavy Rain, or Snow

In addition to daily reports, CoCoRaHS observers can submit special “Significant Weather Reports” when heavy rain or snow is observed. This information is extremely useful during flash flood or winter storm events. CoCoRaHS significant weather reports are useful in delineating areas of intense rainfall from summer thunderstorms that produce flash flooding. The record setting heavy rainfall event at Chicago O’Hare last summer on July 23, 2011 provided an excellent example of the value of CoCoRaHS data.

Observers can also submit special hail reports indicating hail size and duration and other pertinent information when known. Significant weather or special hail reports from CoCoRaHS observers are often included in Local Storm Reports issued from NWS offices. This data may also be included in follow up statements to tornado, severe thunderstorm, or flash flood warnings.

```
NWUS53 KLOT 301233
LSRLOT

PRELIMINARY LOCAL STORM REPORT
NATIONAL WEATHER SERVICE CHICAGO/ROMEOVILLE IL
733 AM CDT FRI MAR 30 2012

..TIME...    ...EVENT...      ...CITY LOCATION...     ...LAT.LON...
..DATE...    ....MAG....      ..COUNTY LOCATION..ST.. ...SOURCE....
             ..REMARKS..

0655 AM      HAIL             2 SE MENDOTA            41.53N 89.09W
03/30/2012   M0.25 INCH       LA SALLE           IL   COCORAHS
```

Drought Reporting

CoCoRaHS observers can now provide information on impacts from extended dry periods or during drought conditions utilizing an optional drought reporting page. Impact data from droughts entered by CoCoRaHS observers are utilized by the National Drought Mitigation Center (NDMC) as part of the Drought Impact Reporter.

Drought conditions can develop gradually and can be difficult to track. Information provided by CoCoRaHS observers can help scientists determine where drought is present or beginning to develop. To learn more about reporting drought conditions as a CoCoRaHS observer, go to: www.cocorahs.org/Content.aspx?page=droughtimpactreports

---

This article provides only a mere sampling of how CoCoRaHS data is used in an operational environment. The National Weather Service Chicago Forecast Office would like to extend our thanks to the dedicated network of CoCoRaHS observers for their timely and accurate precipitation data.

Unusually Mild Winter of 2011-2012

By Sean Poulos, Student Volunteer

When looking back upon the winter of 2011-2012, one may consider it the year without a winter. Especially when compared to the past several winters. Several factors influenced the mild conditions the area experienced. These included the phases of the Arctic Oscillation (AO) and North Atlantic Oscillation (NAO). The statistics used are for meteorological winter known as the time frame from December 1st through the end of February.

Temperatures in Chicago were well above average consistently from December thru February leading to the overall winter average temperature being an astounding 6.4 degrees above the average of 26.4 degrees. This ranks the winter of 2011-2012 as the 9th warmest in Chicago since records have been kept dating back to 1872. Rockford saw similarly warm temperatures this past winter with the overall average temperature being 6.0 degrees above the average of 24.2 degrees. The winter of 2011-2012 was therefore the 3rd warmest in Rockford since records began there in 1906. The very mild temperatures this past winter resulted in Chicago and Rockford experiencing many more 40 degree days than are typical during the winter months. Chicago saw 50 days at or above 40 degrees or roughly 55% of the days. This tied for 6th on the most 40 degrees days Chicago has ever had during the winter months and was the most since the winter of 1931-1932. As for Rockford, they saw 41 days at or above 40 degrees which was 45% of the days. This ranks Rockford tied for 4th in most 40 degree days during the winter months.

Chicago Top 10 Warmest Winters (Dec-Feb)

Rank	Winter	Average Winter Temp
1	1877-1878	37.2
2	1931-1932	35.7
3	1879-1880	35.2
	1881-1882	35.2
5	1889-1890	34.7
6	1875-1876	33.6
7	1997-1998	33.2
8	1918-1919	33.1
9	2011-2012	32.8
	1920-1921	32.8

Rockford Top 10 Warmest Winters (Dec-Feb)

Rank	Winter	Average Winter Temp
1	1931-1932	32
2	2001-2002	30.9
3	2011-2012	30.2
4	1997-1998	30.1
	1920-1921	30.1
6	1930-1931	29.9
7	1982-1983	29.2
8	1991-1992	29
9	1908-1909	28.7
10	1943-1944	28.5

Chicago: 40 Degree Days		
Rank	Winter	# of 40 Degree Days
1	1881-1882	61
2	1877-1878	54
3	1879-1880	53
4	1889-1890	52
5	1875-1876	51
6	1931-1932	50
	2011-2012	**50**
8	2001-2001	49
9	1932-1933	45
	1998-1999	45

Rockford: 40 Degree Days		
Rank	Winter	# of 40 Degree Days
1	1932-1933	48
	2001-2002	48
3	1943-1944	43
4	1931-1932	41
	2011-2012	**41**
6	1927-1928	39
7	1933-1934	38
8	1920-1921	36
	1923-1924	36
10	1930-1931	35

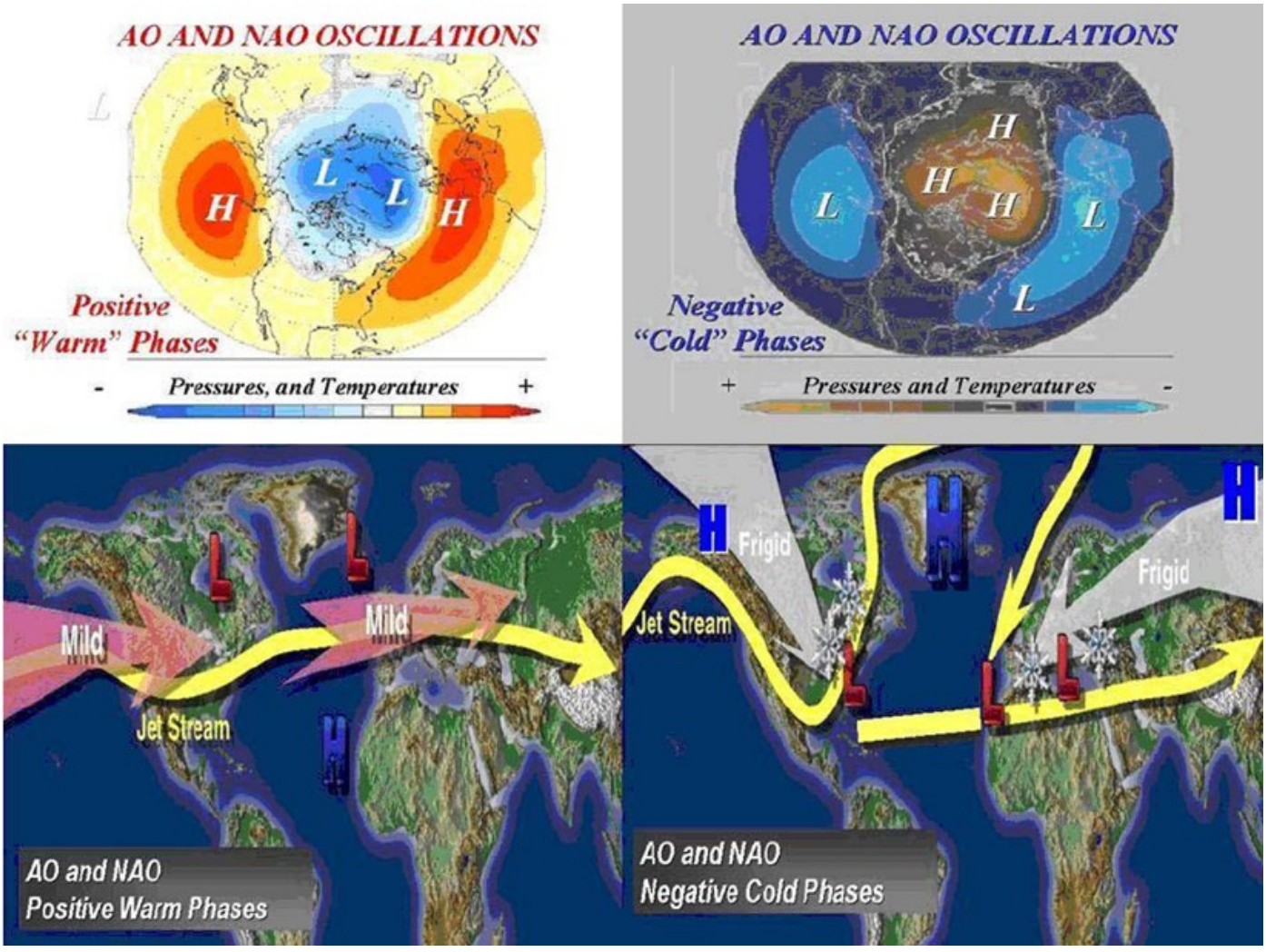
The mild temperatures this past winter resulted in snowfall being below average for both Chicago and Rockford. The winter snow season started off extremely slow, as both cities received less than 2 inches of snow in the month of December, which was well below the average of 8 – 10 inches the area typically has. January and February actually saw relatively near normal snowfall which is why this winter didn't rank historically in least snowy winters.

Also, the snow the area did have didn't stick around very long. Due to the warm temperatures the snow melted quickly, which led to Chicago and Rockford ranking in the top 10 for least amount of days with at least one inch of snow on the ground. The lack of snow cover also allowed arctic outbreaks that did invade the area, which were few and far between this past winter, to be modified. This resulted in both Chicago and Rockford having no low temperatures below 0 throughout the entire winter. This was historic for Rockford, as it was the first winter season since records began to not have below 0 temperatures at least once. For Chicago, this was one of 13 other winters not to have a temperature drop below 0 and the first time since the winter of 1982-1983.

Rockford: Least Amount of Days with 1 inch or More of Snow on the Ground		
Rank	Winter	# of Days
1	2002-2003	14
2	2001-2002	18
3	1998-1999	21
	2011-2012	21
5	1967-1968	23
6	1955-1956	24
7	1953-1954	26
8	1997-1998	27
9	1991-1992	28
10	1980-1981	29

Chicago: Least Amount of Days with 1 inch or More of Snow on the Ground		
Rank	Winter	# of Days
1	1931-1932	8
	1936-1937	8
	1948-1949	8
4	1905-1906	10
5	1889-1890	12
6	1890-1891	13
	1921-1922	13
	1930-1931	13
	2011-2012	13
10	1943-1944	14
	1952-1953	14
	1982-1983	14

Many people believed this winter was going to be a repeat of the one before it due to the influence of La Nina. What many people don't realize is La Nina winters aren't associated with colder than normal temperatures for northern Illinois. Winter temperatures rely more on the Arctic Oscillation and North Atlantic Oscillation indices rather than the El Nino Southern Oscillation. Even though La Nina and El Nino events do influence our weather, they do so in association with the AO and NAO. The NAO and the AO are naturally occurring oscillations that represent flip flops in atmospheric pressure between the high latitudes and the mid latitudes of the Northern Hemisphere. The main difference is that the NAO is just localized to the North Atlantic Ocean. During positive phases of the AO, there is relatively low atmospheric pressure across Polar Regions, with higher pressure in the mid-latitudes. This leads to the cold air staying locked up for the most part in the high latitudes and air flows from west to east across the United States leading to warmer than average temperatures across the majority of the country. Similarly the positive phases of the NAO are associated with below-normal heights and lower atmospheric pressure across high latitudes of the North Atlantic and above normal heights and higher atmospheric pressure over the mid-latitudes including the eastern United States. The negative phases of the AO and NAO are the exact opposite of the positive phases.



Now that we have an understanding of what the AO and NAO are, we can relate them to temperatures across northern Illinois this past winter compared to the winter before it. Starting in December the AO and NAO were highly positive, and for the most part remained positive just to a lesser degree through the end of February. The one exception was that the AO went negative for a time from mid-January through early February. At this same time the NAO was still positive which allowed for the mild temperatures to continue across our region. Even though both the past 2 winters were influenced by La Nina, this didn't lead to the same conditions over the region. In fact, it seemed like polar opposite winters when comparing the winter of 2010-2011 vs. 2011-2012. The reason for this was the AO and NAO indices were both negative for December 2010 and January 2011 before becoming slightly positive for February. This shows that the AO and NAO indices play a large role in determining the temperatures during the winter months.

Making seasonal predictions out one to three months is quite difficult, but if you want to be even close to accurate the NAO and AO indices need to be taken into account especially for the winter months. This past winter did not pan out like some forecasters believed it would because the cold air was bottled up in the high latitudes for the majority of the winter. No blocking pattern developed over the high latitudes which would have allowed cold air to dive into the United States like in the past several winters. This allowed the winter of 2011-2012 to be very mild.