

SPRING 2011



ISANTI COUNTY SKYWARN

NEWSLETTER

2010: A Record Year

It has never happened before. For the first time ever, Minnesota led the entire country in tornado touchdowns. With 104 tornadoes, not even the much larger state of Texas could surpass us. This shattered the old yearly tornado record of 74 set back in 2001.

We also shattered a daily record for tornadoes. On June 17, Minnesota saw 48 tornadoes, crushing the old record of 26 set on June 16, 1992. Also on this day Minnesota saw 3 tornadoes rated EF-4 (wind speeds estimated between 166 – 200mph).

But the crazy year started earlier than that. Should we start back in March? Until just a few years ago, March was Minnesota's snowiest month. Not in 2010! The Twin Cities NWS office has absolutely no snowfall in the entire month.

However it did snow on the morning of May 8th, enough to cover cars, houses, and lawns, although it didn't stay long. Just two weeks later temps would climb into the 90's.

How about the monsoon that hit us on September 22nd - 23rd? The city of Amboy had more than 10 inches of rain during that event. Since then, water levels on lakes and rivers remained high throughout the year and this event will contribute to the major flooding expected in 2011.

On October 26th, we saw a "storm" of a different kind. This one brought mostly wind, but set a Minnesota record for the lowest recorded barometric pressure. It was recorded at Bigfork, MN with a pressure reading of 28.21" at 5:13pm.

First snowfalls usually don't drop that much snow on us, mostly and dusting to an inch. However in 2010, on November 12th – 13th, areas around the metro received 8 – 12" of snow. This was after we started November very warm, getting into the 50's on the 10th.

On December 10th the Twin Cities had its 5th largest snowfall ever. We shoveled and plowed a whopping 17.1" of snow.

By the time we were celebrating the New Year, we had set a record for the most snow in the month of December. We went over 33" for the month.

Because of the big rainfall in September, and near record snowfall during the winter season, you can bet that the top weather story of 2011 will be record flooding. The Red River valley and the Minnesota River near Mankato and Shakopee will be in the news, but we'll keep an eye on the Rum River.

Back to Basics

From time-to-time it is good to get away from the equipment spotters now have available to them and get back to the basic fundamentals of spotting.

One of the basics is the four ingredients needed for severe weather: Moisture, Instability, Lift, and Shear.

Moisture is a humid atmosphere, most likely from gulf moisture working its way north, or from evapotranspiration (moisture given off by crops—no really, it does affect the atmosphere).

Instability occurs when the sun heats the ground and the air above it. The warming of that air and the increase in humidity cause that air mass to become unstable. If there is cooler, drier air aloft, the tendency would be for that warm, moist air to rise. That would be instability.

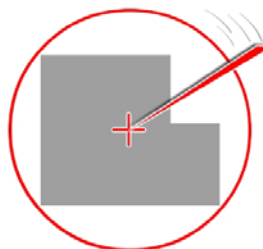
Lift is what starts the air rising. In Minnesota this is often a front, such as a cold front. When a cold air mass collides with warmer air, the warm air tends to rise and condense. This can become the focus for thunderstorms if other ingredients are present.

Shear is wind that varies in direction with height. Maybe at the surface the wind is blowing from the southeast. Then 5000 feet above the ground it may be blowing from the southwest. At 15,000 feet above the ground the winds are out of the west. That is wind shear. This shear will cause that rising air to start to spin or rotate. And when storms start to rotate bad things can happen!

(continued on page 2)

Did you know?

The average lead time for a tornado warning is about 13 minutes!



Back To Basics (continued)

Another basic is identifying the updraft areas of strong storms.

The strongest updrafts have clearly defined edges, like cauliflower. It looks like you can actually touch the edge of the cloud. Weaker storms have fuzzy or wispy looking edges. Storms that are past their mature stage also get that fuzzy look to them.

These are just a few reminders about a few basic things to remember when spotting. Keep safe.

Website Tidbits

The launching of the new website, www.isantiskywarn.org, on February 15, 2008 has been a success. Since then we've had 11,043 hits to the main page. We have had a total of 13,073 total page views.

Here are some other facts:
Day of the week with the most visits: Friday.

Day of the week with the fewest visits: Saturday.

Top 3 hours of the day with the most page views:

1. 3pm – 4pm
2. 10pm – 11pm
3. 5pm – 6pm

Month with the most page views: April, 2010.

Other than the homepage, the page that gets viewed the most: StormCenter page. The Amateur Radio page is 3rd.

The average time spent on the website: 10 min 40 secs.

In the past few days we've had visitors from Wisconsin, Illinois, Iowa, Texas, and England.

Wasn't It Supposed To Storm Today?

A few times a year you may hear a TV meteorologist talk about the atmosphere being "capped." But what does that mean?

Usually the higher up in the atmosphere you go, the colder it gets. This is what allows rising air to condense to form clouds. However, when the atmosphere is capped, the higher up you go the *warmer* it gets. So, warm, moist air at the surface will NOT rise and therefore, thunderstorms cannot form. Something needs to happen to either cool that warm air aloft or move it out of the way.

Here is a good way to think about the cap. When you put a pot of water on the stove and bring it to a boil, what happens to the steam? It rises and it will continue to rise because there is nothing to stop it. That steam will soon evaporate, but in the atmosphere it would condense and form clouds. But if you take a lid and cover that pan, the steam can only rise up to the cover. Think of the pan's cover as the cap. It prevents that warm, moist air from rising. So, no clouds or thunderstorms can develop.

Sometimes we can have all of the ingredients necessary for severe weather, a good forecast, and a good target, but Mother Nature has other plans. This is why it doesn't thunderstorm on those days when the NWS & SPC thinks it will.

Spotter Network

Are you signed up at Spotter Network? This is a great tool that spotters can use with radar programs to see their location (and the locations of other spotters) right on the radar. You can also make storm reports that will show up on the radar. The NWS will see these reports because they are using Spotter Network also. Isanti County Skywarn has several members that use it with the GRLevel3 radar program.

However, to make reports via Spotter Network, you have to take their online training class and pass a test. This ensures accurate reports.

Skywarn Training In Cambridge

Do you want to become a storm spotter? Do you want to get more information about severe weather?

The Isanti County Office of Homeland Security and Emergency Management and the National Weather Service will be providing Skywarn Training on Tuesday, April 5th at 6:30pm. This training will take place at the Cambridge Intermediate School's lecture hall. There is no fee for the training but pre-registration is required. Please contact Mari Bostrom at 763-689-8306 no later than March 31st to register.

This class will be taught by a meteorologist from the Twin Cities National Weather Service office.

Radio Frequencies

Most Isanti County Skywarn spotters are ham radio operators. This is the easiest way to make weather reports. In 2008 a channel line-up was created for Isanti County Skywarn hams. The following frequencies were assigned:

Channel #1: 146.640 (146.2)

This is the repeater in Cambridge and will be used for contact with net control.

Channel #2: 145.230 (127.3)

This is the repeater in Crown and will be used as a back-up. We did use this frequency at least once this year when the .64 repeater was down. It is advised to use the tone on receive also because of interference from a repeater in Wyoming, MN on that same frequency.

Channel #3: 146.550 (CSQ)

This is a simplex frequency that can be used for spotter-to-spotter contact.

Channel #4: 146.580 (CSQ)

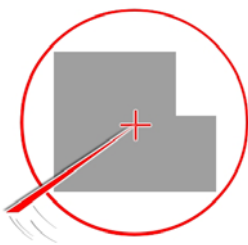
This is another simplex frequency that can be used for spotter-to-spotter contact.

Metro Skywarn Repeater Change

Metro Skywarn has made a change to their repeaters. They are no longer using 146.850. Instead, the north and east metro can contact net control on 147.120 (CSQ). The other two repeaters (147.210 and 147.000) are still being used also.

Did you know?

The average cost of a NOAA weather radio is only \$40.



Weather Myths

On occasion, we still hear some of these myths and wonder why people think they are fact.

Myth: Opening your windows before a tornado will equalize the air pressure inside and outside your home.

Fact: The small change in air pressure isn't enough to make your home explode. What destroys a home is the flying debris. There is a video of the Parkersburg, IA tornado that shows this very well. A home is completely destroyed before it is even touched by the tornado. Flying debris compromises the structure and then the roof is peeled off. When that happens the home just falls apart. Pressure had nothing to do with it.

Myth: If on the highway, you should take shelter under a highway overpass.

Fact: You should NEVER take shelter under a highway overpass. Winds may actually accelerate under the bridge (like in a wind tunnel). Many people have made the decision, to hide under an overpass, and died. Your best bet is to take cover in a ditch and cover your head.

Myth: When seeking shelter in your basement during a tornado, you should go to the southwest corner.

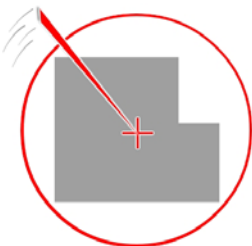
Fact: It has been found that more debris collects in the corners of destroyed structures. Instead take shelter under a stairway or in a small interior room like a closet or bathroom.

Myth: Heat Lightning.

Fact: There is no such thing. It is lightning from a distant thunderstorm.

Special Thanks

A special "Thank You" to Kim Diers, KC0WWT. She usually works net control, juggling both communication with spotters and relaying info to and from the NWS.



Shelf Clouds

As a spotter, the most important thing you can do is to know what you are looking at as it relates to storm structure. You should know the difference between a wall cloud and a shelf cloud. You should know the difference between the updraft area of the storm and the downdraft area. You should know the difference between inflow and outflow.

Increasingly there seems to be a lot of reports of funnels or tornadoes from storms that are clearly not rotating and clearly outflow dominant.

A good example of this is a shelf cloud. A shelf cloud is a low hanging, horizontal, wedge shaped cloud associated with a thunderstorm's gust front. Meaning, it is attached to, but out ahead of the storm. The top of the shelf is often smooth with rising motion on the leading edge. The underside is often ragged, rough and turbulent. You can sometimes see what appear to be "shark's teeth" on the bottom of the shelf cloud. And this is where the confusion seems to set in.

These "teeth" can look very much like funnel clouds. However spotters seem to forget one very important thing—**IT CANNOT BE A FUNNEL CLOUD IF IT IS NOT ROTATING!** Far too often there are reports of funnels from this area of the storm and most of the time they are incorrect reports because the spotter failed to properly identify storm structure.

Now when you are dealing with Mother Nature, you never say "never" and you never say "always." Can funnels and tornadoes be associated with shelf clouds? Yes. HOWEVER they are almost always at one of the ends of the shelf cloud where you may find some rotation.

So, sometimes there might be a debris cloud seen under the shelf cloud so it must be a tornado right? WRONG! Shelf clouds will often produce downbursts (a strong downdraft resulting in an outward burst of damaging winds on or near the ground). This can cause damage similar to a tornado.

Some good points to remember:

1. Shelf clouds are usually located on the front side of the storm. Tornadoes are usually located on the backside.
2. Shelf clouds are an indication of strong outflow (cooled air rushing out of the storm). Tornadoes need a strong inflow of warm, moist air.
3. Shelf clouds usually cause strong, "straight-lined" winds. Damage, such as tree damage, usually all goes the same direction (trees all laying the same way). Tornadoes leave debris scattered in every direction.

By failing to properly identify storm structure, you may report inaccurate information. Meteorologists are then put in a tough spot. While their radar may not be showing rotation, a spotter is reporting a funnel. Should the NWS issue a warning or not? If they issue a warning, sirens are sounded and the warnings are broadcast to the public. However, if the warning doesn't seem to be true, the public loses trust in the NWS. Poor reporting may diminish the importance of warnings in the eyes of the public and then spotters have achieved the complete opposite of what they set out to do.

Want To Be A Ham Radio Operator

The fastest and easiest way to make reports of severe weather is by ham radio. Many meteorologists at the NWS are ham radio operators. It is easy. Just pass a test with a few questions. You no longer need to know morse code to become a ham. Here are some organizations that can help:

American Radio Relay League (ARRL) <http://www.arrl.org>

East Central MN Amateur Radio Club (ECMARC) <http://k0dmf.us/ecmarc>

Anoka County Radio Club <http://www.anokaradio.org/>

Twin Cities FM Club <http://tcfmc.org/>

Twin Cities Repeater Club <http://www.tcrc.org/>

For more information, check out our website. Click on the "Amateur Radio" page. The very first article is titled "Become A Ham Radio Operator." Click on the link.

Weekly Skywarn Net

Join us on the 146.640 (146.2) repeater every Tuesday evening for our weekly Skywarn net. Connect with other spotters, ask questions, and brush up on your ham radio skills.

Minnesota Skywarn Workshop

The 6th annual Minnesota Skywarn Workshop will be held on Saturday, April 9, 2011 at the University of St. Thomas in Minneapolis. This is a new location this year due to the construction on the St. Paul campus.

This is NOT a Skywarn training class. It is an all day workshop that always has a fantastic line-up of speakers. Guest speakers range from National Weather Service meteorologists from various forecast offices, to storm chasers, to employees of the NWS and Storm Prediction Center. This year's keynote speaker will be Dr. Paul Markowski from Penn State University.

The Workshop's goals are:

- 1) Train spotters to improve their observations and reporting skills,
- 2) Equip spotters with the latest tools and technologies, and
- 3) Connect Skywarn spotters from across the state and to attract new spotters.

Check out the website at www.mnskywarnworkshop.org.

Severe Weather Awareness Week

This year, Minnesota's Severe Weather Awareness Week will take place from April 11th – April 15th. It is a chance to educate communities, employers, and schools about severe weather, tornadoes, flooding, warnings, and heat. As usual, Thursday will be Tornado Drill Day with activities during the 1pm and 6pm hours.

Donations Excepted

We will gladly accept donations no matter how small. Donations can be put towards website costs, purchasing of replacement radio equipment/antennas, printing of the newsletter or other literature, or even for donations to the WR0P repeater.

If you'd like to make a donation to Isanti County Skywarn, go to our website (www.isantiskywarn.org) and click on the "Support Us" page. There you will find a widget that uses PayPal to make a donation to us.

We appreciate your help and the support of our community.

Did you know?

In 2010, the NWS changed the severe criteria for hail size from $\frac{3}{4}$ " to 1" diameter.

Reports Via Email

We know that all of our members are not licensed ham radio operators, but we want you to participate anyway. One way you can do this is to send in your reportable conditions via email. We have set up the following email address for this:

reports@isantiskywarn.org.

This can be used for reports that are not life-threatening (such as hail or wind damage). This is similar to the NWS eSpotter program but these emails will go to our net control operator to be passed on to the NWS.

For emergency situations, such as a tornado, you are encouraged to call 9-1-1 and give your information to the dispatcher.

Twitter & NWS

In 2010, the NWS experimented with storm reports via Twitter. Through an experimental program, the National Weather Service was searching for tweets that contain significant weather information (snowfall, severe weather, flooding, etc.).

It is currently unknown if this program will continue, but if you'd like more information, go to: www.weather.gov/stormreports.

Join Our Group

If you are interested in volunteering your time and giving something back to your community, why not join our group? If you'd like more information contact Aaron at aaron@isantiskywarn.org.

Pictures Or Comments?

Do you have any weather related pictures you like to have added to the website? Do you have comments or other questions? Let us know. Send your comments and pictures to Craig at admin@isantiskywarn.org.

Spotter Safety First

Don't forget that the safety of you, the spotter, is most important. Spot from a safe location. Never block the roadway. Take cover when there is lightning. And only spot from home at night. Thank you for your help.

www.isantiskywarn.org

