

Metro Skywarn Newsletter

Editor: Dave Johnson, NØKBD
Fall 1995

Tornado Video to be featured at Annual Meeting

The Annual Meeting of Metro Skywarn will be held November 11, 1995 at Bloomington City Hall at 2215 W Old Shakopee Road. We will again be treated with a presentation by Scott Woelm, AA0BW, severe weather video highlights. This will be a preview of what maybe used in future training tapes. Among the clips will be some of the five tornadoes taped by Scott during the big out break on July 21, 1995.

We're eager to hear your views on the nets this year. What would you like changed? What did we do well? We'll be reviewing the year, updating spotters on the progress of the Board of Directors over past season.

The National Weather Service and the Metro Skywarn NWS operation moved from it's Airport location out to Chanhassen this year. Leland Helgarson, WB0MLL and Walt Marty, NØRCY got the basic equipment in place since the beginning of the season. It took the rest of the summer to get it all up and running. Just in the last few months, an eighty foot tower went up next to the new Chanhassen office. Just recently three dedicated antennas were mounted on the tower. The radios, packet station and dedicated computer are nearly set up and ready to go for next season.

Secretary Lynn DeLong, NØCVI led a successful fundraising effort this year. He obtained a special purchase of Maxell Weather Radios from Action Radio and organized the sale and accompanying matching grant from Aid Association for Lutherans. Many thanks to Lynn for his very successful effort.

Last year the Board presented a new Constitution and Bylaws at the Annual meeting. Official elections of Directors were held. Since then, the Board has pursued incorporation as a not-for-profit organization with tax-free status. The whole idea is to be able to receive grants and gifts and allow a tax deduction for the giver. Legal advice makes it clear the new structure of the organization was not going to be acceptable to the IRS. So the Board has drafted another version that we are assured will work and we will present it to the membership at the Annual Meeting. If you'd like a copy, send a 9X12 envelope and 3 units of postage to Dave Johnson, 22450 Palisade St. NE, Bethel, Mn. 55005.

Amateur Radio Packet and the Internet: Good Source of Weather Information

Both the local packet network and the Internet are good sources for weather information. Of course, the Internet has nearly limitless information, but some of the Internet

information has made its way to the local packet network.

WXTALK packet bbs is now accessible via the MetroNET packet network. Just connect to a MetroNET node (TLAN, TLANN, TLANW, MNSTP, MNWDBY) and type "c wxtalk". Or you can connect to N0KBD on 145.67mhz. On board you will find one day and two day Severe Weather "Convective" Outlooks and up to the hour current severe weather development called Mesoscale Convective Discussions. With these reports you can get advanced warning of upcoming Severe Weather Watches and Warnings before they are called. Also on board is WX-TALK Digest, a daily email list of discussions among nationally known meteorologists, tornado chasers, and Skywarn spotters. All this information is also available directly from the Internet.

Perhaps by the time you receive this newsletter, the new NWS office in Chanhassen will have up and running a packet mail server. Virtually all locally produced written weather products will be available on the local packet network. This information will be archived and available for forwarding to packet or Internet destinations at WXTALK BBS. Weather forecasts, watches and warnings and special weather updates will be among the listed reports.

Nearly real time NEXRAD radar for a short time was available from the Internet. But that was until the private company contracted with the National Weather Service to distribute that product got the word. There still are sites that have older images available as well as satellite pictures and weather maps.

MINNESOTA TORNADOES 1994

By Scott Woelm, AAØBW

(Editor's Note: It takes many months to confirm tornado activity after the actual events. That's why discussion of 1994 tornadoes occurs in Fall 1995 Newsletter.)

After two extremely active years, the 1994 Minnesota tornado season settled down just a bit. Although the 32 tornadoes that touched down were well above average, the total was far below the 47 tornadoes Minnesota saw in 1993.

The tornado season was much longer than normal in 1994. It started on April 25 and did not end until October 6. The most active day was in August, which is a little unusual for The Land of Ten Thousand Lakes.

On August 7 a total of seven tornadoes touched down across southern sections of the state. It also produced one of the strongest tornadoes of the year, as an F2 tornado tore through parts of Blue Earth County near the towns of Sterling Center and Vernon Center. The tornado damaged several homes and destroyed many farm buildings. Despite lots of opportunity, there were no deaths or injuries.

The second most active day occurred on June 30, which produced a total of 6 tornadoes.

That event had two F1 tornadoes, including one near St. Clair in Blue Earth County that struck a farmstead and injured a woman. Another notable day was April 26.

An F2 tornado ripped through the eastern Twin Cities Metro area in the town of Stillwater, which is located in Washington County. The large tornado was only on the ground for 1 mile, but it was 1300 yards wide. Although there were no fatalities, a three year old boy was injured by flying debris as the tornado passed. The Metro saw two other tornadic events, as brief F0 tornadoes touched down on May 30, and then one month later on June 30.

Just like 1993, the typical 1994 tornado was weak and short lived. The last time the state saw a very strong (F3) or violent (F4 - F5) tornado was on June 16 of 1992. That day also produced the most recent F5 to touch down in the United States.

With a lack of significant tornadoes, and with a solid warning system in place, this was the first year since 1990 in which there were no tornado deaths in Minnesota. The season ended on October 6, as two F0 tornadoes struck in western Minnesota. It's unusual for tornadoes to occur up here in October, but Minnesota has witnessed tornadoes as late as November.

Exceptions

By Scott Woelm AAØBW

During the Skywarn certification classes held each spring, the Instructors will give the class a lesson on the development and nature of severe storms. The class is presented the basic meteorological "rules" of how and why severe thunderstorms form. However, there are always exceptions to the rule.

June of 1995 provided the Twin Cities area with some puzzling severe weather events. Do you recall a few days when there wasn't a WATCH out, and then, a storm went up and suddenly became severe, and then it quickly dissipated? Or how about the days when we were getting severe weather when our surface winds were out of the North? Were you confused by all of this? Well then, this article is for you!

"Pulse Severe"

Yes, things seem very strange when a cell is 65DBZ (level 5/6 on the "old" radar scale) one moment, and almost dead the next. It's called "pulse" severe, and it can be difficult for even a Doppler radar to catch it.

Here's why...

Pulse severe occurs when you have a large amount of energy at many levels in the atmosphere. Those who attended the spring Advanced Class might remember the lesson Bob Adams delivered on CAPE (Convective Available Potential Energy). In a nutshell, CAPE is the measurement of how much energy is available in the atmosphere. The greater the number, the more energy thunderstorms will have, provided they get going.

Often times we will have CAPEs of around 3000jkg (Joules per KiloGram) during the summer months, and that's quite healthy! With surface temperatures in the 90s, and dewpoints in the upper 60s, conditions would "seem" ready for a round of strong to severe storms. However, sometimes there is a problem...

The problem is often found with the winds above the surface. Sometimes, there is absolutely NO upper air support. Simply put, severe storms need some "help" from the winds above the surface to help them "stand up". It's best to have the upper level winds increase with speed and "turn" as they go up with height. On some days last June, the speed of the upper winds actually decreased with height, not very good for severe weather!

Another problem was the lack of a "good" cap in the area. If the atmosphere just above the surface is too warm, it "caps" off the ability for strong to severe storms. On the other hand, if it's not warm enough, and there is good instability hanging around, all kinds of stuff fires. No one cell can take over and become dominant because of the competition for energy.

So, during those few days in June, that's what we saw. Cells that quickly fired up and produced a brief severe event, but with no wind shear to help them "stand up", and with no cap in place to hold off other development, they "pulsed", and then quickly fizzled out.

Strong downburst winds and hail are the most common threat to pulse severe storms, however, brief short lived tornadoes are also possible. That's rare, but they do occur.

Pulse severe storms are very frustrating for both the National Weather Service and Skywarn spotters. The cells can pulse very quickly, so it's tough for even the superb Doppler radar used by the Weather Service to catch it. By the time the folks at Chanhassen can put out the WARNING, the cell has already weakened. By the time a spotter can get into position to report on the storm, it's already in its dissipation stage. All we can do is grin and bear it, and hope that the storms pass without causing any injuries.

"Northwest" moving severe storms with the surface winds out of the "North"
Sounds weird doesn't it? Northwest moving "severe" storms? Well, it happened this past June, and here's why...

This was a situation where the upper winds were once again not conducive for severe weather. They were quite weak and disorganized, and the main "steering winds" aloft were from the southeast. For more organized severe storms (like supercells) we would usually like to see them from the southwest, west or even northwest. In addition, the winds at the surface were from the north. So how did severe thunderstorms form?

Well, a low pressure trough retrograded to the west (probably in response to an upper level low south of Minnesota), and that became the "trigger" for the severe weather. Remember, you need a trigger to set off the instability at the surface, or in other words, a

"match to ignite the gunpowder". The partial clearing of the skies allowed the atmosphere to reach its "convective temperature", and the trough provided the "lift" needed to start things off. As the storms fired, the upper winds "pushed" them to the northwest, and right into the north winds that were at the surface.

In most severe weather situations, you need a "southerly" component to the surface winds to bring in the good Gulf moisture to feed the storms. Well, with 70 degree temperatures and mid 60s dewpoints already in place, the storms had plenty of energy to work with. As they moved "northwest", they were "force fed" by the north winds at the surface. So thus, they had enough energy fed into them to become severe. By the way, that can put the "updraft" area of the storm towards the north/northwest of the cell. Normally, it's best to position yourself to the southeast of the cell, but not in this case. Talk about getting turned around!

That makes this type of storm pretty tough to spot, but for the most part, they are usually not tornadic. It can happen, but just like in "pulse severe" storms, the upper winds just are not ready to deliver a tornado. It's pretty hard for a storm to produce a tornado when the good wind shear isn't there. However, there was enough energy back in June to set off some WARNINGS, and to produce a few reports of severe across Wisconsin and Minnesota.

So here's a couple of "exceptions to the rule" for you to tuck away for a rainy day - sorry!

Antenna is critical to Skywarn Participation

A handheld on a rubberduck antenna is usually not adequate during Metro Skywarn Nets. Severe thunderstorms sometimes cause very poor conditions on two meters. Marginal signals at times cannot compete with the static. If you have to use a handheld, use a mobile or base antenna and if possible an amplifier to ensure adequate repeater access.