

# Weather Home Companion



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## Local Cooperative Observers Receive National Honors

For the first time in ten years, two COOP Observers from the Davenport office County Warning Area, were selected for national awards. Eugene Frye, Cedar Rapids #1, and James Blaess, Clinton #1, were both presented the John C. Holm Award for Outstanding Service to the Cooperative Observer Program. A minimum of 25 years service, support to

**Hats off to James Blaess and Eugene Frye, recipients of the John C. Holm Award**

community services, and error free observations and

forms are part of the grading process.

Individuals are nominated by the Davenport NWS Office and selected by folks at the NWS Headquarters. We are proud of them for the superb job, and the dedication necessary to perform at such high standards. We hope this year's nominees will be just as successful.

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## 10 Year Anniversary of the Raritan, Illinois Tornado

**Mike McClure and Scott Doering**

It happened 10 years ago, but the victims of the violent tornado that struck Raritan, Illinois on May 13, 1995, likely remember it as if it happened yesterday. The tornado was rated F4, and still to this day ranks as the most violent tornado to impact the National Weather Service Quad Cities service area in the era of the Doppler radar. The Village of Raritan in eastern Henderson County suffered the brunt of Mother Nature's fury that day, but several other towns also suffered damage from Niota to Dallas City, Lomax, Disco, Terre Haute and Roseville.

The weather map on the morning of May 13, 1995, showed low pressure in eastern Kansas with a warm front extending



Damaged Illinois farmstead from the May 13, 1995 tornado.

through central Missouri. During the afternoon, low pressure moved northeast to near Fort Madison, Iowa with the warm front extending east toward Macomb, Illinois. The supercell thunderstorm that eventually spawned this violent tornado developed over Clark County, Missouri at around 3

pm. The storm produced a funnel cloud over Fort Madison, Iowa then continued to track east along the north side of the warm front, before spawning the tornado just after crossing the Mississippi River into west central Illinois.

*(continued on page 2)*

### TORNADO TRIVIA

IOWA TORNADOES 1980-2004

**1180** TOTAL NUMBER OF TORNADOES IN 25 YEAR PERIOD

**641** NUMBER OF TORNADOES RANKED F0

**46** NUMBER OF TORNADOES RANKED F3 AND HIGHER

**120** GREATEST NUMBER OF TORNADOES IN ONE YEAR (2004)

**57** GREATEST NUMBER OF TORNADOES IN ONE MONTH (MAY 2004)

**4-7 PM** MOST FAVORABLE TIME FOR F3 OR GREATER TORNADOES (72% HIT DURING THOSE HOURS)

**MAY-JULY** MOST LIKELY MONTHS FOR TORNADOES (71 % OF TOTAL)

SOURCE: IOWA TORNADO CLIMATOLOGY 1980-2004, CRAIG COGIL NWS, JOHNSTON/DES MOINES IA

## 10 Year Anniversary of the Raritan, Illinois Tornado (continued from page 1)

The following summary of the damage was taken from storm data, which was based on the results from the National Weather Service Quad Cities storm survey team and eyewitness accounts.

### Hancock County

The tornado started out as an F0 when it first touched down south of Niota, Illinois, and based on damage surveyed the following day, grew to F3 intensity by the time it reached Dallas City. The Dallas City School received major damage and one older home was blown off its foundation. Several mobile homes were destroyed and a car was rolled six feet up a hill. The tornado continued to the northeast and strengthened, reaching F4 intensity about one mile northwest of Disco, Illinois.

At this time the tornado was just about on the county line between Hancock and Henderson counties and struck the Maxine Clover farm site. The Clover's brick home was totally destroyed with only a few parts of walls still standing. The tornado appeared to be about one half mile wide.

### Henderson County

The tornado then continued to the northeast where it struck the Dick Edmunds farm site. The Edmund's 17 year old brick home was destroyed along with most of the other farm buildings. Sixty animals had to be destroyed.

As the tornado crossed Highway 94 just south of Terre Haute it only produced F0 to F1 damage, but still appeared to be about one half mile wide by the scoured dirt path through area farm fields.

***The tornado was rated F4...  
the most violent to impact the  
NWS Quad Cities area in the  
era of Doppler radar.***

### Raritan

It was nearing 4:30 pm and the tornado was now bearing down on Raritan, Illinois. The Wendell Shaner farm site, located about 1.5 miles southwest of Raritan, was hit at this time. Mr. Shaner was thrown about 70 yards out of his home into a field east of the house. He received broken ribs and other internal injuries. The Shaner farmstead was totally destroyed. Where the home had been located there was nothing left but the basement stuffed full of debris. Hundreds of dead hogs were scattered along and up a hill to the northeast of the homestead.

The tornado then clipped the southeast corner of Raritan. Damage was mostly limited to areas along and south of Main Street. The Carl Huss home was totally destroyed. He was in the basement at the time the tornado struck and received a large bruise on his back when cement blocks were pulled in from the west side of the basement as the home was shredded off its foundation.

The 137 year old farmstead of John and Bev Livermore was also hit at about this time. Mr. Livermore was in the basement with his two grandchildren when the tornado struck. The home heating fuel tank, located in the basement, was sucked up and thrown 50 yards away from the house.

Mr. Livermore literally had to lie on his grandson to keep him from being pulled out of the basement.

The Richard Likes home, also on the east side of Raritan, was totally blown off the foundation and pushed 50 yards into the field to the east. This is about the time the tornado appeared to reach its maximum width of .6 miles.

Damage in Raritan was estimated at 2 million dollars. Twenty five homes were destroyed, 48 homes were damaged and 10 farmsteads received heavy damage. Seventy five other homes received damage of a lesser nature. Hundreds of farm buildings in the area were damaged or destroyed, and hundreds of head of livestock were killed by the tornado or later had to be destroyed due to injury. One to two miles northeast of Raritan the large and violent tornado weakened. The storm survey showed F0 to F1 damage continuing across Warren County before ending roughly 6 miles southwest of Abingdon, Illinois in Knox County.

On Sunday, May 14, 1995, while most people throughout the country were celebrating Mother's day, many residents across Warren, Henderson, and Hancock counties, spent the day picking up the debris and rubble in the aftermath of a violent tornado. The loss of property was estimated over three million dollars, but no dollar amount can be placed on the emotional impact felt by the tornado's victims. Many will likely be watching the sky as May 13 rolls around, hoping the next spring storm will not wreak havoc like the one 10 years ago.

"It didn't bother me until I came up here and everything was gone— every tree, every building, everything. I couldn't believe it."

- Maxine Clover, southern Henderson County\*

"I think we had some extra forces standing there holding us down."\* - Vicky Ferguson, farm east of Niota, IL

"I Could feel somewhat of a pull. I was prayin' if it took me it'd leave my kids."\*

-Mike Dowel, Dallas City

"Nobody was killed and that's a miracle. I lived in this town for 61 years and I've never seen a tornado like this."\*\*

- Ruth Olsen, Raritan IL

\*Used with permission from the *Hancock County Journal-Pilot*, May 17, 1995

\*\*Used with permission from *The Hawkeye*, May 14, 1995



## What To Do When a Heat Wave Strikes

Long periods of stifling heat are common across the Midwest during the summer months. Often the heat is accompanied by high humidity which adds to the heat stress. It's during these oppressively hot periods that precaution against the elements is vital.

The NWS issues a **Heat Advisory** when:  
1) An afternoon HI (heat index) of 105 degrees is forecast for three hours, with an intervening overnight minimum air temperature of 80 degrees or greater, or 2) anytime the HI is forecast or observed to be 110 degrees or greater.

The NWS issues an **Excessive Heat Warning** when the HI will be 115 or greater for 3 hours or more and the HI will be 80 or greater for 24 hours.

Between 175 and 200 Americans die annually from summer heat. Why is the heat so

deadly? The body cools itself by perspiration, which evaporates and cools the body. Add extreme heat and humidity, and evaporation is slowed and the body must work extra hard to maintain a normal temperature. Elderly people, young children, the overweight, and those who are ill are most at risk.

The National Weather Service has devised the "Heat Index" or HI, which is used to measure how hot it really feels when relative humidity is added to the actual air temperature. An HI of 90 to 105 means sunstroke, heat cramps and heat exhaustion are possible with prolonged exposure or physical activity. A HI of 105 to 130 means sunstroke and heat cramps are likely with prolonged exposure or physical activity. It's important to note that the Heat Index values were devised for shaded conditions. Exposure to the full sun can increase HI values by up to 15 degrees.

You can prepare yourself and family for

### Heat Wave Safety Tips:

1. **Drink more NON-alcoholic beverages**
2. **Wear light color and loose fitting clothes**
3. **Stay inside air conditioned places as much as possible. Check on those who live without air conditioning, especially the elderly. If you don't have air conditioning, stay near a fan.**
4. **Do outdoor activities in the early morning and evening hours, when temperatures are at their coolest.**

excessive heat and humidity by listening for advisories and warnings issued by the National Weather Service (NWS).

## You're a What? An HMT?

### Bill Elliott, HMT

While most of the people that work at NOAA's National Weather Service Offices are Meteorologists, there is another group of folks that work very hard behind the scenes. Welcome to the world of the HMT, or, known in weather circles as a Hydrometeorological Technician. Whew, that's a real mouthful, but what does it really mean?

### Hydrology

Let's break it down into pieces, so it all makes a little bit more sense. First is Hydro, or hydrology, meaning water. When COOP observers, snow observers, or severe weather spotters call in with their data, most of the time an HMT answers the phone. Routinely, day after day, HMTs receive precipitation reports, compile them into a summary, quality control the reports, then transmit the information to the rest of the world. This information goes to two very important sources. First, the information is sent to the regional RFC, or River Forecast Center. There, the information is used for ground truth, and added to the model input to forecast floods along the nation's waterways. Secondly, it goes to the public. Whether you are a farmer trying to plant or harvest crops, a homeowner trying

to figure out the best time to mow your yard, or a contractor that wants to lay concrete, this is important information.



### Meteorology

The second piece is Meteorological, or the science of the atmosphere, weather and atmospheric phenomena. Not too long ago, HMTs took weather observations, a minimum of 24 times a day, and 365 days of the year. Now with automation, the HMT collects data, ensures it is correct and meteorologically sound. The HMT is also the COOP Observer contact. All of the equipment used by the COOP Observers is maintained by the HMT, and all of the tapes and forms sent to the local Forecast Office are

quality controlled by the HMT. The HMT also is responsible for launching an upper air balloon twice a day that measures temperature, pressure, humidity, and winds as it rises to near 100,000 feet.

### Technician

Lastly, the "T" for technician. Webster's dictionary defines a technician as, "an expert in a technique, as one whose occupation requires training in a specific technical process". For an HMT, experience is the main ingredient of their knowledge. The HMT, while not required to have a four year degree in meteorology, generally has been around the weather field for a long period of time. Most have prior military, or private sector experience, and have seen weather across a wide variety of climate zones. The HMT has a wide array of experience, and is indeed, "an expert in a technique", of weather.

Now that you know a little bit more about what an HMT is and does, maybe the moniker won't be quite as mysterious. However, Hydrometeorological Technician is still a mouthful.

# COOP NEWS

Bill Elliott, HMT

## When Is Zero More Than Nothing?

For our COOP Observers, the answer to this question should be an easy one! When is zero more than nothing? When it's a precipitation measurement!

Even though precipitation isn't observed on a particular day, a "zero" entry on the NWS Form B-91 or B-92, is still required. There should never be a blank space on the B-91 or B-92 in the precipitation column. This zero information is useful for drought monitoring products, and ensures data wasn't accidentally omitted. If for some reason, precipitation measurement wasn't possible, an "M" for missing should be entered. Of course, when precipitation is observed during the 24 hour observation period, the entry is to the nearest one hundredth of an inch, i.e., 1.33 or 0.57. This column includes liquid precipitation, melted snow, etc. Refer to page 19, paragraph 2.4 National Weather Service Handbook No. 2.

In the next column to the right, snow, ice pellets, or hail is reported in inches and tenths. This is frozen precipitation. An entry in this column might look like, 1.7 or 0.8. The only relationship to the previous column, is that this column is a direct measurement of solid precipitation that has fallen during the 24 hour observation period. Trust your measurements. For more information refer to Section 2.5, pages 20 and 21, in National Weather Service Handbook No. 2.

And finally, the last precipitation column contains the total amount of frozen precipitation on the ground at the time of observation. This column many times doesn't match the amount in the previous column, because this is the amount left on the ground, including new snow that might have fallen since the last observation. This total would include old snow from a previous storm, plus new snowfall. The total is to the nearest inch, like 6, 12, or 0. If there is one-half inch or more on the ground, the total is rounded up to 1. When there is less than a half inch, like .4, then the snow depth is "T" for a trace. Until there is no snow on the ground, a trace is the measurement if less than a half inch. When the snow is gone and the ground is bare, the entry on the form is 0(zero). After zero is observed, no further observations for snow depth are required until the next snow event.

The instructions for entries in these columns, and any other column, are included on the cover of your book of forms, whether it is B-91s, or B-92s. If the instructions are unclear to you, or you have any questions concerning proper entries in these columns, please call our reporting line and ask for Mike Zenner, Terry Simmons, or Bill Elliott to answer your questions or concerns.

## New Comers to COOP

Over the last couple of years, several new COOP Observers have joined the team. We welcome them to our team, and thank them for their time and efforts.

**Ted Sharpe** at La Harpe, Illinois, takes over for his father who was a 50 year observer.

**Robert Spoerl** in Elizabeth, Illinois.

**Tim Minks** at Columbus Junction, Iowa.

Thank you all.

## Electronic Versions of Observation Forms Not Accepted

The National Climatic Data Center, NCDC, has asked that all COOP Observers refrain from using electronic versions of NWS Form B-91, or B-92, due to imaging equipment limitations. The imaging equipment used by the Contractors to read the forms, are unable to read data due to the number of non-standard electronic versions being used. Until the limitations are resolved, NCDC requests all observation forms be hand written. COOP Observers that don't have forms on hand, should contact your local Weather Forecast Office for pads of B-91 or B-92 forms.

## Completion of NWS Form B-91/B-92

Instructions for completing the NWS Form B-91 and B-92 are on the front and rear cover of the pads of Forms. The legend at the top of the form needs all of your station information, the month, year, and time of observation. Please ensure the entire form is completed and signed.

# 3 Minutes to Safety: How Severe Weather Preparedness Saves Lives



Before and after photos of the Parson's Manufacturing plant near Roanoke Illinois. Despite the awesome destruction from the F4 tornado, there were no injuries or fatalities at the plant.

On July 13, 2004 at 2:41 pm, an F4 tornado carrying devastating winds up to 240 mph struck Parson's Manufacturing near Roanoke, Illinois. It was shift change, with about 140 people in the plant. Cars were lofted and mangled. I-beams were twisted.

No one was killed; in fact, no one was even injured. Looking at the devastation, you may wonder "How can that be?" The answer: Parson's Manufacturing established and practiced an extraordinarily effective severe weather plan.

Each year an average of 25 tornadoes touch down in eastern Iowa and western Illinois. Imagine if a tornado like the one at Roanoke struck the location where you work. Would you be prepared? Would all employees be safe? Is there an effective severe weather safety plan in place? Do you routinely practice this plan?

At the National Weather Service, our main mission is "the protection of life and property". As part of this mission, we, at the Quad Cities NWS office, have recently developed a program to assist safety policy makers through a newly created **Severe Weather Preparedness Workshop**. More information and materials can be found on our web site:

[www.crh.noaa.gov/dvn/preparedness/industry/index.htm](http://www.crh.noaa.gov/dvn/preparedness/industry/index.htm)

A more general approach to severe weather preparedness has also been developed and given the moniker **Plan—Practice—Monitor—Act**. This is an effective, *comprehensive* approach to severe weather preparedness. Its basic elements are outlined below. More information can also be found on our website:

[www.crh.noaa.gov/dvn/preparedness/ppma.htm](http://www.crh.noaa.gov/dvn/preparedness/ppma.htm)

Plan	Practice	Monitor	Act
<ul style="list-style-type: none"> <li>◆ Develop a plan for your circumstances (business, school, home, etc)</li> <li>◆ Know the threats in your situation (consider lightning, flood, flash flood, hail, blizzard, etc)</li> <li>◆ Address each threat as it applies to your employees</li> <li>◆ Consider time of day, different shifts, special needs.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Schedule training meetings: Ensure everyone knows the plan</li> <li>◆ In house drills: Practice the plan. Evaluate time needed to take shelter and the suitability of shelters</li> <li>◆ Utilize Annual Severe Weather Awareness Weeks with tornado drill</li> <li>◆ Re-evaluate your plan</li> </ul>	<ul style="list-style-type: none"> <li>◆ Designate a Weather Watcher</li> <li>◆ This is simply a person responsible for keeping tabs on the weather. Depending on the circumstances, they might use NOAA radio, monitor local TV radio for information, or even deploy local spotters. The Designated Weather Watcher is an important key to the success of any plan. They allow everyone else to go about their business by taking the responsibility of monitoring the weather for the group.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Establish action criteria, based on watches, warnings, reports, etc, and time needed to reach shelter.</li> <li>◆ Initiation of action— communication. Have a backup plan for power failures.</li> <li>◆ Determine where people will go. FEMA recommended saferooms, otherwise lowest floor, interior room, without windows.</li> <li>◆ Determine shelter space needs, considering peak staff hours, such as shift changes, and also potential visitors.</li> <li>◆ Leaders must show those not familiar with plan and shelter location, and allow enough time to reach shelter.</li> <li>◆ Utilize an "all-clear" system.</li> </ul>

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## **A Day in the Life of a Warning Forecaster**

**Andy Ervin**

As a warning forecaster, I begin each day looking over satellite and surface observation data. The surface data is mostly found on maps, which are printed and analyzed by hand. Even though it's 2005 and the world runs on computers it seems, the best way to see the weather in the finest detail is to analyze it, by picking it apart and drawing lots of lines with colored pencils. After looking at the data, I look over computer generated model forecasts.

If there is a threat of storms, we often talk with other meteorologists at the Storm Prediction Center. They are the source of daily severe weather outlooks, as well as severe thunderstorm and tornado watches.

If it looks like severe weather may occur, we prepare for the worst possible scenario that seems reasonable. This starts by making sure there will be enough people available on hand when storms are expected. During severe weather, it is common to have three to four times the regular staffing. Though things are very busy, each person has a specific duty during severe weather.

We have folks who answer Storm Spotter phone calls, communicate with TV stations and other media, analyze maps, monitor the All Hazards NOAA Weather Radio, and help pass information to the warning meteorologists.

As a warning forecaster, I use the highly advanced 88D Doppler Radar, which provides a live feed of information about the storms to me in incredible detail. This type of radar can help me detect small scale rotations in severe thunderstorms that may be tornadoes. Storm spotters' information is combined with information from the radar to make decisions on whether to issue a warning.

After the warning is issued, it is instantly broadcast on TV, radio, and All Hazards NOAA Weather Radio, and you get the information you need to keep you safe!

