STORMBUSTER

A Newsletter for Emergency Managers & Storm Spotters

Winter Edition, 2002/2003

The "Freaky Fall" of 2002

By Hugh Johnson and Evan Heller

After a warm and fairly dry summer, the Labor Day weekend rang in the new season dry and uneventful. A soaking rain grazed portions of the Mid Hudson Valley, southern Taconics and Litchfield County, but otherwise, the area remained dry. Thunderstorms rumbled across much of the region during the predawn hours of the 4th. The storms didn't bring much rain to the immediate Capital District, but points south picked up several inches that, luckily, did not cause any real flooding problems. For the first time since 1991, temperatures in Albany reached, and even exceeded, the 90 degree mark during September. A high of 91° on the 9th was the warmest reading for the month, and a high of 90° was recorded the very next day. Despite the unusual warmth, these readings were several degrees shy of the daily records. A strong cold front brought in much cooler air on the 11th. More significantly, the front interacted with Hurricane Gustav, sitting hundreds of miles to the east out over the Atlantic Ocean, to produce an unseasonably steep pressure gradient. The result was strong winds that buffeted the region on the afternoon of the 11th. The long-term drought had resulted in weakened tree root systems, and many trees came down throughout the region. Up to 35,000 people were temporarily without power. The remainder of the month saw the moisture remnants of several tropical storms pelt the region. One of these systems deposited 1.58" of rainfall at Albany on the 15th, and it wound up being the wettest day of the month. The monthly precipitation total of 3.37" was very close to the normal for the month. However, many other localities reported amounts up to twice that, thus putting a real dent in the long-term drought. Due to the influx of some tropical air, the monthly average temperature was well above normal. There were no frosts or freezes reported anywhere. In fact, the coldest reading at Albany was a low of 42° on the 29th. The monthly average of 65.0° was 4.4° higher than normal, and made it the warmest September since 1961. There were 22 clear days during the month, and only 2 cloudy ones.

The sunny, warm and dry end to September spilled into the early part of October. The warmest day of the month was the 2nd, when the temperature reached a high of 82°. Then, an overall long-term weather pattern change took place. For several months, a long-wave ridge had been parked along the eastern seaboard. Now, that was replaced by a large trough, while a new ridge set up shop west of the Rockies. The net result of this scenario was a change to a much colder and stormy pattern, as polar, and eventually arctic, air was allowed to filter down from Canada. The trough dug deep toward the Gulf of Mexico, allowing several small nor'easters to rip up the coast. The pattern change was noticeable by the Columbus Day weekend, during which there was well over an inch of rain, below normal temperatures, and virtually no sunshine. After reaching a high of 60° on the 13th, the mercury never again cracked the 60 degree mark for the remainder of the month, and all but 3 days averaged below normal. The season's first widespread freeze took place on the morning of the 15th, when the mercury dipped to 29°. Eight more October mornings saw temperatures dip to or below freezing at Albany, with the lowest reading, 21°, occurring on Halloween. On the morning of October 22nd, the season's first snowfall took place at many locations. Officially, 0.5" of snow fell at Albany, to make this the earliest snowfall since 1987, and a record snowfall for the date. Also, this was the shortest span between snowfalls. Last season's latest measurable snowfall was the latest measurable snowfall event ever recorded in Albany. Additionally, an inch and a half of the white stuff was recorded at Caroga Lake, and 3.5" fell at Lake Pleasant, in Hamilton County. Another daily record was established on the 22nd, a low maximum temperature, as the high for the day reached only 43°. It was the month's only record daily temperature of

any kind. Due to the stormy pattern, 4.02" of precipitation fell at Albany during the month, nearly an inch above normal. There were no flooding problems, but the drought condition was further alleviated. A new daily precipitation record was established at Albany on the 12th, with 0.75", while the most precipitation for any one day was 1.57" on the 16th, falling a little short of a record for that date.

November continued where October left off, cold and wet. A daily record low was tied on the 2nd, when the mercury got down to 19 degrees, the season's first low in the teens. The season's second nuisance snow coated the ground on the 3rd, with 0.7". A little more snow fell on the 6th in the Capital District. Further north, several inches of very slushy snow accumulated. The weight of the snow, along with the fact that many trees had still not dropped their leaves, brought many trees down in the Lake George Saratoga region. At the height of the storm, nearly 40,000 customers were without power. A brief, but notable, warmup took place between the 8th and the 12th. The temperature soared to 70° on the 11th despite plenty of clouds, to eclipse a daily record. The last 60° day of the month took place on the 15th. Then, immediately, the pattern became much colder and stormier. The following day, the biggest nor'easter of the season began pummeling the region. 3.4" of snow fell at Albany on the 16th, the season's second daily snowfall record. Sleet and freezing rain built up to an inch thick on many surfaces throughout the region. The ice coated trees, many with most of their leaves still intact. This resulted in many more trees and limbs coming down than would ordinarily have been expected. Litchfield County was especially hard-hit, and, at one point, most of the people in that county were without power. Some schools there were closed for three days, and some people were without power for more than a week. On the back side of the storm, another 2.4" of slushy snow fell late on the 17th into the 18th. Nearly 4" of snow fell the day before Thanksgiving (November 27th), causing some travel difficulties. Thanksgiving Day itself was cold, but at least it was dry and somewhat sunny. Another round of the white stuff coated the ground for Black Friday, causing many more fender benders. November went into the record books as having received a foot of snow, making it the seventh snowiest November of all time. For the first November in four years, precipitation was above normal, 4.86" compared to the normal of 3.33". Ironically, the average mean temperature of 38.6° was only 0.6° below normal. Despite the colder than normal days, lots of clouds kept temperatures slightly milder at night. Speaking of clouds, there were only 5 days without them, and there was only 25 percent of the possible amount of sunshine received.

The average seasonal temperature at Albany of 50.5° is just 0.8° above normal, while the seasonal precipitation total of 12.25" is 2.40" above normal. The snowfall total of 12.5" is a whopping 7.3" above normal.

Overdue for a Significant Ice Jam season?

by Bob Kilpatrick

The last three winters have been abnormally warm and rather uneventful as far as river ice was concerned. While ice is a fact of life in this area, the problems caused by river ice vary from year to year, with our fall and winter weather the biggest factor.

Last winter, temperatures from December through February averaged almost 8 degrees above normal at Albany. The average temperature for January 2002 was 31.3 degrees while February averaged 31.6 degrees, just barely below freezing. Therefore, not much ice formed in the rivers last winter.

December 2000 was cold, averaging 22 degrees at Albany or about 4 degrees below normal. But, heavy rain in the middle of the month flushed out any ice that had formed, and much of the cold came later in the month followed quickly by temperatures several degrees warmer than normal in January and February.

What were some "bad" years? Looking into the history books, the following months were noteworthy: January and February 1976; March 1979; February 1981; February 1988; March 1993; and January 1997.

The weather in several of those winters followed a characteristic pattern for an active ice-jam season. First, there was a period of prolonged, bitter cold. For example in the winter of 1976, temperatures in early January, normally the coldest time of the year, averaged 10 degrees below normal. In the winter of 1979, temperatures early in February were much below normal, and remained below normal through late February. In the winter of 1980-81 temperatures in early January were 15 degrees below normal. For the second part of the pattern, the period of cold was followed by an abrupt change to warm weather, along with a good dose of rain and temperatures that briefly climbed well above freezing. This melted off at least part of the snow pack, and sent a surge of water into the rivers. As water levels in the rivers came up, the ice was floated off and moved down-river to the first obstruction, such as thick ice behind a dam, a shallow wide section, a bend, or an island or

two. There the ice stopped, and piled up, creating a jam or blockade.

So how does that pattern fit with this winter? First of all, statistically, we're overdue. We haven't had a real bitter, sub-zero period of weather for several years. Also, the weather pattern for the last two months suggest that something might happen this winter. Consider that temperatures for the last half of November averaged 1.5 degrees below normal, and temperatures for the first 10 days of December have averaged nearly ten degrees below normal!

You can help us. First of all, if you find out from someone (such as an ice fisherman) how thick the ice on a river or lake is, please let us know about it. Even if you don't know how thick it is, it is also helpful to let us know how much of a river is ice covered, especially when ice covers parts of rivers that are normally free-flowing. Finally, if you see water backing up behind ice or overflowing the normal riverbank, that may imply an ice jam. It may be around a bend where you can't see it, but please notify us anyway. For direct reports via the internet go to http://cstar.cestm.albany.edu:7775/Hydrology/hyd_forms/ICE_REPORT.htm. Or call our 800 number.

Research on the May 31 1998 F3 Tornado

by Ken LaPenta

F3 or greater intensity tornadoes are rare in eastern New York and Western New England with only six since 1950. On May 31, 1998, an F3 tornado struck Stillwater and Mechanicville, NY, injuring 66 people and causing 71 million dollars in damage. The tornado was part of a widespread severe weather outbreak across the Northeast that killed 5, produced 30 tornadoes, 369 reports of wind damage and 151 reports of large hail. A cooperative research venture between the National Weather Service and the University at Albany has been studying the storm. We hope to publish our findings during 2003.

The upper level pattern that produced the May 31, 1998, tornado outbreak began to evolve over a week earlier. An upper level closed low moved south into Hudson's Bay on May 26th and remained there for much of the next week, finally moving through the Canadian Maritimes on June 4-5th. Upper level troughs rotating around it spawned three major northeastern United States severe weather outbreaks (May 29th, May 31st and June 2nd). The May 31st outbreak was enhanced by a second short wave that ejected out of another closed upper level low that moved south from the Gulf of Alaska (May 20-24th) to the coast of California (May 30th). At high levels of the atmosphere, the coupling of two strong (140+ mph) jet streams helped generate a large area of enhanced upward vertical motion. In response to the strong upper-level winds, unseasonably strong surface low pressure (986 millibars) strengthened as it moved from the northern Plains States through the Great Lakes into eastern Canada. A very strong low-level jetstream (60+ mph) provided the mechanism to rapidly transport a very warm, moist airmass over the Ohio Valley into the Northeast and contributed to high directional wind shear in the lower troposphere.

During the afternoon of May 31st, the warm front associated with the surface low moved through eastern New York. In the warm airmass, conditions were favorable for supercells and tornadoes. Terrain may have played a role in further enhancing the tornadic potential of the Mechanicville storm as it moved into the Hudson Valley. The southwest low-level flow was channeled to a more southerly direction in the valley, increasing low-level wind shear. The south flow also transported warm, moist air northward more rapidly than over higher terrain, increasing instability.

A line of thunderstorms in western New York at noon intensified and moved east, producing locally severe weather as it reached central New York at 2:30 p.m.. At that time, a small cluster of isolated storms developed about 30 miles to the east of the line. One of these storms intensified as it moved east-northeast. By 3:45 p.m., it had turned severe and was about 20 miles ahead of the line. The lead cell moved into the somewhat more unstable and more highly sheared environment of the Hudson Valley about 4 p.m. Tornado touchdown occurred at 422 p.m., about the time the outflow from the line of storms to the west caught up with the lead cell. Twenty minutes prior to tornado touchdown storm-relative velocity radar data showed weak convergence near the surface with cyclonic rotation at higher altitudes. The stronger rotation aloft gradually worked down, reaching the lowest radar elevation scan five minutes prior to touchdown. At tornado touchdown, radar showed a rotational velocity of about 60 mph with strong circulation extending up more than 25,000 feet.

WCM Words

by Dick Westergard

Seven Advanced Spotter Training classes were presented in October and November. To those who attended, thank you. John Quinlan and I will be mailing out the replacement cards a few of you

requested, but as usual, since advanced sessions are for people who are already certified spotters, cards will not be mailed to everyone who attended.

StormBuster is a newsletter primarily for our trained SkyWarn spotters. Reader articles, or suggested topics, are always welcome. Do you have any ideas? Drop me an e-mail or a snail mail note.

The usual reminder of what we'd like you to call us about. First, during the Winter (November through April) - 1) Snowfall of 4 inches or more in 24 hours. 2) Any Freezing rain or drizzle. 3) One inch or more of rain in 4 hours or less. 4) Ice jams or Flooding, including bankfull or near bankfull streams. 5) Damaging winds. 6) Measured rainfall - 1.5 inches or more in 4 hours. During the convective season, (May through October) the reporting criteria are - 1) Tornadoes, water spouts, funnel clouds, wall clouds. 2) Damaging Winds (58 mph or more). 3) Any hail. 4) Damaging lightning. 5) Flooding, including bankfull or near bankfull streams. 6) Measured rainfall - 1.5 inches or more in 4 hours.

Get your reports to the National Weather Service by the quickest means possible. Possible communications links include: Amateur Radio, the 800 number you were given at your training, and the "Severe Weather Report" form on the internet at: http://cstar.cestm.albany.edu:7775/Severe_WX

Due to the high cost of printing and mailing hard copies, StormBuster is now primarily an electronic newsletter. If you, or any of your friends who are spotters, have any difficulties viewing this electronic version, please drop me an e-mail. Given the limited demand, this will be the last quarterly StormBuster mailing via USPS. If you do not have internet access at home, most local libraries have internet connections available to the public. If you or a friend do not currently get e-mail notification when StormBuster is posted, please drop me an e-mail. I'll be happy to add more names to my e-mail list of spotters.

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