NORTHEASTERN

STORMBUSTER

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IN THIS ISSUE!

THE ACTIVE 2005 HURRICANE SEASON: HIGHLIGHTED BY THE DEVASTATING HURRICANE KATRINA

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The 2005 hurricane season was forecast to be very active, and by early September, 13 named storms had already developed, the most notable being Katrina, which devastated the Gulf coast states. The tropical depression that spawned Katrina formed over the Bahaman Islands, east of Florida, on August 23rd. The storm intensified into a hurricane as it approached the southeast Florida coast on the 25th, and moved inland between Hallandale Beach and North Miami Beach with wind gusts over 90 mph. It crossed extreme south Florida and emerged over the warm waters of the Gulf of Mexico, where it steadily strengthened. By Friday evening, it had become a Category 2 storm on the Saffir-Simpson Scale, with winds of 100 mph, and a lowest barometric pressure of 28.50 inches. Twenty-four hours later, highest sustained winds reached 115 mph, with a central pressure of 27.73 inches. Atmospheric conditions were highly favorable for further intensification, and on the 28th, Katrina reached Category 5 status, with sustained winds of 175 mph, and a minimum pressure of 26.64 inches. This was the fourth lowest pressure ever measured in an Atlantic basin hurricane, behind only: Gilbert in 1988; the Labor Day storm of 1935, and; Allen in 1980. Katrina weakened slightly before moving inland early on the morning of the 29th near southern Plaquemines Parish, Louisiana. The combination of very high winds, a huge storm surge and torrential rains brought devastation to the Gulf coast. Then, after the storm passed, levee failures in New Orleans caused disastrous flooding. The recovery will be long and hard.

The hurricane season got off to an early start on June 9th with the formation of Tropical Storm Arlene in the northwest Caribbean Sea. Arlene crossed western Cuba, and then moved through the eastern Gulf of Mexico, making landfall near Pensacola, Florida with 60 mph winds. Tropical Storm Bret followed at the end of June, forming in the Bay of Campeche, and moving inland near Tuxpan, Mexico with highest winds of 60 mph. Five named tropical cyclones formed during July, a record for the month, with Dennis and Emily both becoming major hurricanes. Tropical Storm Cindy

formed in the western Caribbean Sea on the 3rd, crossed the Yucatan Peninsula, and moved into the Gulf of Mexico. It moved northward, making landfall over southeast Louisiana at just below hurricane strength. The first hurricane of the season, Dennis, became a tropical storm in the eastern Caribbean on the 5th. It became a major hurricane two days later, with winds of 150 mph. Dennis caused considerable damage as it crossed Cuba, and it eventually made landfall again as a category 3 storm over the western Florida Panhandle. Emily formed east of the Lesser Antilles on July 11th, and became a hurricane near the island of Grenada. Peak intensity (155 mph – just below category 5) was reached south of Hispaniola. Emily crossed the Yucatan Peninsula, and made a second landfall, on the western Gulf Coast on the 20th, 75 miles south of the Texas border. Tropical Storm Franklin formed in the central Bahamas on the 21st, and moved northeast, passing about 200 miles west of Bermuda with its highest winds just below hurricane strength. Tropical storm Gert formed in the Bay of Campeche on the 24th, and moved inland near Cabo Rojo, Mexico the following day.

Above normal tropical activity continued throughout August, with five named storms. Harvey formed northeast of the Bahamas on the 2nd, and passed 50 miles southeast of Bermuda two days later with 65 mph winds. It continued toward Newfoundland over the next few days, never reaching hurricane intensity. Hurricane Irene was a long-lived Cape Verde storm that formed on the 4th, and reached peak intensity (105 mph winds) as it moved through the open waters of the central Atlantic, passing 300 miles southeast of Newfoundland. Jose was a short-lived, weak tropical storm in the Bay of Campeche. Katrina will go down as one of the worst natural disasters in United States history. The month ended with short-lived tropical storm Lee making a brief appearance east of the Lesser Antilles.

September began with the formation of tropical storm Maria on the 2nd, about a thousand miles east of the northern Leeward Islands. It became a large hurricane as it moved north through the central Atlantic during the following week. Hurricane Nate formed between the Bahamas and Bermuda on September 5th, and passed about 100 miles south of Bermuda before weakening in the north central Atlantic. Hurricane Ophelia formed to the southwest of Nate on the 7th, and meandered off the coast of the eastern U.S. for over a week. It produced hurricane force winds across coastal North Carolina before passing just south of Cape Cod on the 17th as a weakening tropical storm. As StormBuster was going to press (September 18th), Ophelia was dying out in the North Atlantic. But tropical storms Philippe (east of the Leeward Islands) and Rita (Bahamas) had just developed, and were forecast to strengthen into hurricanes. With 17 named storms already, the 2005 hurricane season is one of the most active in recorded history. The most active seasons on record are 1933, with 21 storms, and 1995, with 19 storms. How does this year compare with those two? In 1995, the 17th storm didn't take shape until October 7th, and in 1933, the 17th storm took until September 28th to form.

Thanks to the National Hurricane Center for most of the information contained in this article. Their web site is an outstanding resource for information about all aspects of hurricanes and tropical storms.

SUMMER '05: HOTTEST IN NATIONAL WEATHER SERVICE ALBANY HISTORY

Evan L. Heller
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This past summer was Albany's 7th hottest since the beginning of reliable records (as far back as 1795), and the all-time hottest since the inception of the first U.S. Weather Bureau station in Albany way back at the end of 1873. Interestingly, four summers within the previous 10 years remain in the Top 5…1872 (no. 1), 1873 (no. 2), 1870 (tied at no. 3), and 1868 (no. 5). With a 73.5º F mean

temperature, the summer of 2005 came in at no. 7, ahead of yet another pre-weather service summer…1861. In fact, until this summer's placement on the list, only positions 9 and 10 on the Top 10 Hottest Summers list had been occupied by National Weather Service-era summers. A total of 14 out of the 92 days of summer reached or exceeded 90 degrees, with 94º being the warmest reading, on June 26th (a 15th 90 degree day was recorded on September 13th.) July was the only very wet month of the season. Much lower amounts of rainfall during June and August resulted in Albany falling more than an inch and a half short of making the Top 10 Wettest Summers list. The greatest one-day rainfall was 2.18", on July 5th. Here now is a 'summery' of the season.

The Summer of 2005 began on a seasonably warm note…but then it quickly turned hot. The first 90 degree reading of the year was realized on June 8th. June's mean temperature of 72.8º in Albany wound up being a staggering 6.5º above normal, and placed it in a tie for 6th warmest June ever recorded, and the warmest June since the beginning of Weather Service records in 1874. Yet, there were no new daily high temperature records! However, there were four new daily high minimum temperature records, occurring from the 10th to the 13th. These were 74º, 71º, 75º (the high daily minimum temperature for the month) and 73º, consecutively. There were also four new daily high mean temperature records, occurring over the same days. These values were 81.0º, 81.0º, 82.5º (the warmest day of the month) and 81.5º, consecutively. Before all was said and done, the month of June produced eight days that reached 90 degrees or higher. Not all of June was hot. During about the 3rd week, there were a total of seven non-consecutive days of below normal temperatures, but nothing near cold enough to produce records. The balance of days were above normal. Twelve days were 10 or more degrees above normal. The coolest day was the 23rd, with a mean of 63.0º. The warmest reading of the month was 94º, on the 26th. The coolest was 47º, on the 23rd. The lowest maximum daily temperature was 69º, on the 16th. There were two mini heat-waves, one from the 11th to the 13th, and the other from the 25th to the 27th, where temperatures reached 90 degrees or higher each day. The daily mean maximum temperature for June was 83.5º, 6.0º above normal, and the daily mean minimum was 62.2º, 7.2º above normal. June 2005 tied for 64th hottest month of all-time in Albany (since the beginning of Weather Service records in 1874).

Precipitation was near normal in June. The 3.87" total exceeded the normal by just 0.13". Precipitation occurred during exactly half the days of the month, on 12 of which it was measurable. A tenth of an inch or more fell during 11 days, with 0.25" or more on 3 of these. Exactly an inch fell on the 16th, and another 1.77" fell on the 29th, the latter of which established a new daily record. This was the only new daily precipitation record for the month. There were 23 clear, 4 partly cloudy, and 3 cloudy days in June. Thunderstorms occurred on the 6th, 8th, 9th and 29th in Albany, with dense fog materializing on the 20th.

July 2005 was Albany's wettest July in Weather Service history, the 5th wettest since the beginning of record-keeping. 7.54" fell during the month, and this was more than double (4.04" above) the normal. It is Albany's 16th wettest month since 1874. Precipitation fell during 15 days of the month, on 13 of which it was measurable. 0.10" of an inch or more fell on 10 days, 0.25" or more on 8 of these, and 0.50" or more on 6 of those. An inch or more fell on both the 1st and 5th, with 1.59" recorded on the former, and 2.18" on the latter. Both were new daily precipitation records for their respective dates. There were no others. Clear days totaled 18 in July, with 10 partly cloudy, and 3 cloudy days. Thunderstorms occurred on the 1st, 5th, 12th, 14th, 19th, 27th and 31st.

July was comprised of mainly brief periods of alternating above and below normal temperatures, with the entire middle third of the month above normal, and the last few days below. Overall, the month was above normal, but by only 2.7 degrees. The mean temperature was 73.8º. This was warm enough to place July in a 3-way tie for

34th hottest month in Albany since 1874, with August 2005 repeating the result, to join the group and change it to a 4-way tie. However, July was far from making the list of Top 10 Hottest Julys. The mean daily maximum for the month was 83.3º, 1.1º above normal, and the mean daily minimum was 64.3º, 4.3º above normal. The warmest temperature recorded for the month was 91º, on both the 11th and 26th. The 20th was the other day the temperature reached 90º. The coolest temperature recorded was 54º, on the 3rd. The low maximum temperature for July was 68º, on the 8th, while the high minimum of 75º on the 18th was a record tie for that date. This was the only daily temperature record of any kind for the month. The warmest day, with a mean of 81.5º, was also the 18th. The coolest day, with a mean of 65.0º, was the 8th.

August's mean temperature was more above normal than July's, but less so than June's. The average temperature of 73.8º was still an impressive 4.8º above normal. This was just warm enough to place it in a tie for 9th Warmest August. The month also tied with three other months for 34th hottest month in Albany, including July 2005 right next door. The mean daily maximum temperature for August was 83.4º, 3.7º above normal, and the mean daily minimum was 64.2º, which was 5.9º above normal. The high temperature for the month was attained on the 4th, and again on the 10th, when the mercury topped out at 91 degrees. The other day to reach 90º was the 3rd. The low temperature for the month occurred on the 25th, when the mercury dipped to 52º. The low maximum temperature was 72º, on the 19th, and the high minimum was 74º, on the 30th. A high minimum temperature of 73º on the 13th tied a daily record for the date, and was the only new daily record of any kind for the month. With a mean temperature of 81.0º, the 13th was also the warmest day of the month. The coolest day, with a mean of 64.0º, was the 24th.

August precipitation in Albany totaled 3.01", and was 0.67" below normal. Precipitation occurred on 15 days of the month, during 10 of which it was measurable. 0.10" or more occurred during 7 days, with 0.25" or more on 4 of these, and 0.50" or more on 2 of those. More than half of the month's total rainfall occurred during the last two days of the month, thanks to the remnants of the devastating Hurricane Katrina. Thankfully, the impact on our area was little more than a healthy rainfall and some wind. The 30th was the wettest day, with a total of 0.89". There were 20 clear, 9 partly cloudy, and 2 cloudy days. Thunderstorms occurred on the 12th, 13th and 14th, with dense fog on the 26th.

The average temperature for the Summer of 2005 was 73.5º, 4.7º above normal. The mean maximum temperature was 83.4º, 3.6º above normal, and the mean minimum was 63.6º, 5.8º above normal. Rainfall totaled 14.42", 3.50" above normal.

ENJOYING FALL'S COLORS

Evan L. Heller
Meteorologist, NWS Albany

Fall is an exciting time of year. Harvest festivals, Oktoberfests, apple picking and gourd decorating are some of the activities enjoyed by many during the early part of the Fall season. But probably none of these is more popular than leaf peeping. The emotions stirred up by the sight of a canopy of brilliant yellows, oranges and reds often cannot be expressed in mere words. However, being able to experience the colors fall has to offer to maximum benefit usually requires patience, planning and a general knowledge of what works best.

In the northeast, peak foliage usually begins at the higher, northern elevations, anywhere from late September to early October, and works its way to the lowest areas just inland from the southern New England coast and just north of New York City by the last week in October. It then finishes up in these areas by early November.

The leaves of certain types of deciduous trees begin to change color as a result of a decrease in green chlorophyll, triggered by decreasing sunshine and falling temperatures. Various

chemical compounds responsible for producing fall colors, and which actually exist in the leaves throughout summer, are left exposed when the chlorophyll within the semi-transparent leaves begins to break down, resulting in the gradual color change that is observed. These compounds exist to differing degrees within the different types of tree leaves, each compound exhibiting its own unique color. This is why different types of trees exhibit different modes of color change.

There are a number of climatological factors that can affect both fall foliage peak times and color intensities. Studies have shown that long periods of heat and drought can stress trees, adversely impacting color intensity, and bringing about an early onset of color change. Likewise, insect and disease infestations can cause stress, to bring about similar results. The health and integrity of leaves can be adversely affected by viruses, often resulting in drab colors and early leaf drop. There is also a correlation between prolonged warmth and a late onset to color change. This is because the breakdown of chlorophyll, which is affected, in part, by processes triggered by cooling temperatures, is delayed or slowed until cooler weather arrives. It has long been said that a summer with a lot of rain will produce the most dramatic fall colors. The author hasn't seen much past evidence to substantiate this claim, but if this is indeed the case, then we may look forward to one of our best fall color seasons in many years.

If you're amongst the many tens of thousands of people who have taken a fall foliage trip within our region in any given year, then, for one thing, you've learned that you usually need to book your lodging way in advance. You've also undoubtedly experienced the stresses and worries of getting the timing and locations just right, and, of course, of having the weather cooperate. The latter is often the biggest obstacle to a successful foliage vacation. There's only so much one can do to attain positive results. Sometimes it's simply out of our hands. Unfortunately for many, there have been times when what would have been a fine fall foliage weekend has been ruined by rain, or even an early snowfall. For one-day trips, you would be at better advantage leaving yourself a little wiggle space. Keep a close eye on the forecast updates, and consider having a last-minute alternate plan. For example, you might have had your heart set on the Green Mountains of Vermont. But while rain may be in the forecast for that region, improving conditions might be on tap for the Adirondacks of New York. Plan your trip for the off-peak periods. Outside of metropolitan areas, roads are almost always less crowded during the weekdays, allowing you to enjoy your trip at a more leisurely, less hectic pace. And allow plenty of time. If traveling from cities like Albany to any of the surrounding regions, it could be quite a distance to get to where you want to be. Plan on allowing more travel time if most of your trip will be on secondary or country roads. It might also be a good idea to bring along some food and water if planning your leaf peeping activities in more remote locations. Consider utilizing the services provided by your state and local parks. And of course, start off on a full tank of gas, because you never know when you'll come across another service station.

Different people prefer different visual settings. Some people enjoy a mix of some of the dark green colors provided by evergreen forests along with their colorful deciduous trees. Others prefer less green, and more of the 'warm' colors, thus preferring to stay away from the pines and spruces. If you have your sights set on a particular region, it might be of benefit to research the local flora and see if it has the 'right stuff' for you. And while, like many folks, you feel the urgency to take a spin up into the mountains and make the most of the fall colors, you might want to consider more subtle hilly settings instead. Wide roads, like those that are two lanes in each direction, tend to have less overhead tree canopy, allowing for greater infiltration of light, as well as wider vistas. While narrow mountain roads might afford close-up views of individual trees, as well as occasional pull-offs for leaf gathering, they often don't afford the broad panoramas that, say, a slightly hilly, winding road might provide around its turns. In addition, during

foliage season, mountain roads are more popular, and tend to be crowded, making driving and viewing more tasking. It is also important to realize that trees at higher elevations are smaller in size. But if you feel that the mountains are your only choice, consider routes that run along river valleys. They provide tall vistas of brilliant color along the mountain ranges. At higher mountain elevations, choose routes that have frequent scenic pull-offs for distant panoramic views. Relax and allow yourself time to enjoy the colors. Where pull-offs are provided, you can usually walk a short distance along the road and discover many different kinds of trees suitable for leaf picking.

Many people make the mistake of believing that a bright, sunny day is ideal for fall color viewing. In fact, you are better off if there is a thin veil of clouds. A sky cover of cirrostratus, cirrocumulus, altostratus or altocumulus that is just thick enough to block the sun's shadow, but that still allows for bright diffuse sunlight, produces the most vivid colors, which can be easily viewed from all directions, particularly when the air is clear, and visibilities, unrestricted. The best opportunities for encountering such conditions in the fall are just behind cold fronts. The air clears out because the humidity drops, as cool, dry air cannot keep the dry particulates suspended, and the result is improved visibilities. And with cold air moving in across the upper levels of the atmosphere, high and mid level cloudiness often is condensed out. Direct sunlight poses several problems. First of all, if you are traveling in the direction of the sun, a shadowing effect is produced because: a) the sun is in your eyes, and; b) the sun is shining on the other side of the trees. The result is a dull, drab effect in the direction you are traveling, but a brighter, more colorful display for the folks traveling in the opposite direction. To further complicate the situation, the sun in front of you, especially at lower angles, produces glare, and also exaggerates the presence of any haze in the air. Yet another problem is that the sun at low angles often produces a less natural color and adversely affects the color display. Within an hour or so of both sunrise and sunset, the sunlight is both too orange and not bright enough. This can wash out colors by both dulling them and moving them all closer to the orange hue. If planning a one-day round trip on a bright, sunny day, start off by traveling west in the morning, turning clockwise and traveling north during midday, and then back southeast in the afternoon. This way the sun is more or less always at your back, and presents the fall colors to best advantage. The best viewing time on sunny days is the middle part of the day. Somewhat cloudier days provide a greater window of opportunity for maximum visual effect.

For last-minute travel planners, there are a number of on-line fall foliage sites which can be helpful. Most provide easy-to-read maps which are continually updated during the peak season. No matter what strategies you choose, hopefully here you've gained some insight which may help to enhance your enjoyment of the spectacular fall colors the northeast has to offer.

NEW DETAILED POINT AND CLICK WEB MAPS

Vasil T. Koleci
Information Technology Officer, NWS Albany

There are new detailed maps available on the National Weather Service at Albany web page. These maps are all part of the Point and Click Forecast web page. When you access our main web page at http://weather.gov/albany, you will see a web page similar to Figure 1.

After clicking on your county on the main webpage (Figure 1), a Forecast at a Glance page will be displayed (Figure 2). On the bottom right-hand side of the page, there will be a section with a new map display, labeled "Detailed Point Forecast". Figure 3 shows a close-up of this map. You now have the option of either mouse-clicking on the exact city, or anywhere else on the map. The city or town closest to the point clicked will be displayed,

along with its forecast, even if the name does not appear on the map.

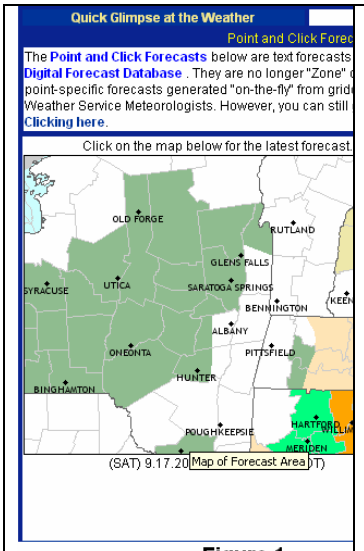

Figure 1

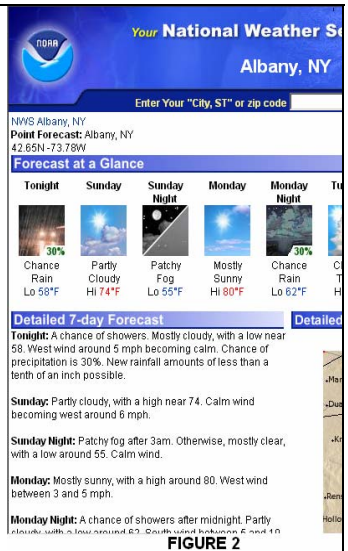

FIGURE 2

Figure 3

These new detailed web maps allow users to now find the forecast for their areas of interest more efficiently.

WCM Words

Ray O'Keefe
NWS Albany Warning Coordination Meteorologist

We are working on getting our Fall Spotter training classes set up. Be sure to check our web site, right where you found a link to this StormBuster edition for the training schedule. We should have it posted in October.

The meteorological and sociological factors associated with Katrina will be studied for years to come. However, one lesson is clear – each of us must be prepared as individuals for emergencies that may arise. September has been designated as National Preparedness Month. National Preparedness Month is a nationwide effort to encourage Americans to take simple steps to prepare for emergencies in their homes, businesses and schools. The National Weather Service and the Red Cross have developed several weather-related preparedness brochures. These brochures and many other weather safety related publications are available on line at: http://www.nws.noaa.gov/om/brochures.shtml. I urge you to review these brochures and develop weather safety plans to address the severe weather threats we in Eastern New York and Western New England face each year.

From the Editor's Desk

It's not too late to send in your favorite articles from StormBuster's past. We will be putting together a special winter issue, celebrating the best of our first ten years. These will be editor's choice, but we would like to base it on input from you, our readers. If you have a personal favorite which you would like to see in our special issue, please send us the title, and indicate which edition of StormBuster it is from. If possible, please also include a copy of the article itself. Please have your requests in by November 15th, addressed to: Raymond.Okeefe@noaa.gov. We here at Northeastern StormBuster wish you a joyous autumn.