NORTHEASTERN STORM BUSTER

Emergency Manager & Storm Spotter Magazine

Fall, 2012 *- VOL. 17, NO. 4*

Evan L. Heller, Editor
Steve DiRienzo, WCM/Contributor
Ingrid Amberger, Webmistress

FEATURES

DEPARTMENTS

HOT SUMMER

Brian Montgomery
Senior Meteorologist, NWS Albany

The summer of 2012 has concluded, and as we look back…it was hot. Looking back through this year's data for Albany, New York, we find thirteen days where the temperature met or exceeded 90 degrees. The normal number of days a year we reach 90 degrees is approximately ten. The all-time record number of 90 degree days in a year was set back in 1955, with a total of 32! You might ask if there has been a summer where the Capital Region never observed a 90 degree day. The only year in the nearly 140 years of record-keeping that this occurred was in 1998.

If we look at 95 degree days, Albany achieved this only once this year, on July 17th. The all-time record for the number of days reaching 95 degrees or more was eleven, again having occurred in 1955. Our yearly normal is just under two days. Below are tables showing the top ten years for each of the two aforementioned temperature categories. Due to ties within the 95 Degree table, more than ten are listed. (Data from xmACIS and local special climate tables).

Days Greater Than or Equal To 90 Degrees:

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0	0	0	0	0	2	19	11	0	0	0	0	32
1944	0	0	0	0	3	4	9	11	0	0	0	0	27
1949	0	0	0	0	1	8	11	7	0	0	0	0	27
1988	0	0	0	0	0	5	12	10	0	0	0	0	27
1953	0	0	0	0	0	7	6	6	5	0	0	0	24
1941	0	0	0	1	2	6	7	3	2	1	0	0	22
1959	0	0	0	0	1	3	7	8	2	0	0	0	21
2002	0	0	0	1	0	1	8	9	2	0	0	0	21
1939	0	0	0	0	0	3	9	7	1	0	0	0	20
1952	0	0	0	0	0	4	11	3	1	0	0	0	19

Days Greater Than or Equal To 95 Degrees:

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1955	0	0	0	0	0	0	8	3	0	0	0	0	11
1944	0	0	0	0	0	2	2	5	0	0	0	0	9
1953	0	0	0	0	0	1	2	2	4	0	0	0	9
1988	0	0	0	0	0	1	3	2	0	0	0	0	6
1963	0	0	0	0	0	0	5	0	0	0	0	0	5
1964	0	0	0	0	0	1	4	0	0	0	0	0	5
1968	0	0	0	0	0	1	4	0	0	0	0	0	5
1941	0	0	0	0	0	1	3	0	0	0	0	0	4
1947	0	0	0	0	0	0	0	4	0	0	0	0	4
1948	0	0	0	0	0	0	0	4	0	0	0	0	4
1949	0	0	0	0	0	0	2	2	0	0	0	0	4
1952	0	0	0	0	0	1	2	1	0	0	0	0	4

□

2012: A HOT SUMMER…BUT NOTHING EARTH-SHATTERING

Evan L. Heller
Climatologist, NWS Albany

Each month of summer was up to around 3 degrees above normal in Albany. June was closest to normal, but both the highs and lows were all above normal for all three months…all within about 3 degrees of the normal. This made for a summer that was on the hot side…yet free of daily temperature records. In fact, the only records worth noting are that both July and August did crack into the Top 200 Hottest Months of all-time (Tables 3b and 3c) lists. July had a mean of 74.8°, putting it in a tie for 30th place, and August had a mean of 72.2°, placing it in a 13-way tie for 152nd position. Neither was a top ten July or August. The highest reading of the season, 98°, recorded on the 17th (Table 1), stood out in stark contrast to the 94° runner-ups, which both occurred in June. This was also the hottest day of the season, with a mean temperature of 84.0°, given the 70° low for the date, which was the mildest low temperature recorded for any date. It was an all-around hot day. There were a total of ten 90°+ dates for the three summer months, 13 for the year-to-date (Table 2b). August 5th could be considered the muggiest day of the season as the morning low stayed up at 72°, the highest low temperature recorded for the season at Albany (Table 1).

July was the wettest month of summer, yet only about a quarter of an inch above normal (Table 1). June recorded the greatest deficit, before the beginning of the turnaround from a moderate drought situation. An inch or more of rainfall was recorded on only one date…July 15th, and during 52 percent of the days, it was bone dry (Table 2a), with 75% of the days without at least measureable rainfall. The total seasonal deficit of rainfall was 2.21" (Table 1). There were no precipitation records of any sort.

Even though severe weather amounted to far less than last year, there were still a respectable number of days where thunderstorms were recorded at Albany International Airport…17 out of 92 (Tables 4a-c). While the highest peak wind for the season, 40 mph, was recorded on July 24th, a 36 mph wind gust recorded the day before established the only daily record of any kind for the entire season when the previous record gust for the day, 35 mph from 1991, was broken.

STATS

	JUN	JUL	AUG	SEASON
Avg. High/Dep. F.m Norm.	78.0°/+0.1°	85.5°/+3.2°	83.0°/+2.6°	82.2°/+2.0°
Avg. Low/Dep. Fm. Norm.	57.1°/+0.6°	64.1°/+2.7°	61.5°/+1.6°	60.9°/+1.6°
Mean/ Dep. Fm. Norm.	67.5°/+0.3°	74.8°/+3.0°	72.2°/+2.1°	71.5°/+1.8°
High Daily Mean/date	81.5°/20th&21st	84.0°/17th	81.0°/4th	
Low Daily Mean/date	55.5°/4th	67.5°/20th	62.5°/19th	
Highest reading/date	94°/20th & 21st	98°/17th	92°/4th	
Lowest reading/date	46°/7th	53°/10th	49°/30th	
Lowest Max reading/date	59°/4th	74°/20th	75°/19th & 29th	
Highest Min reading/date	70°/22nd	70°/17th	72°/5th	
Ttl. Precip./Dep. Fm. Norm.	2.15"/-1.64"	4.41"/+0.29"	2.60"/-0.86"	9.16"/-2.21"
Ttl. Snowfall/Dep. Fm.Nor.	0"/-	0"/-	0/-	0"/-
Maximum Precip./date	0.90"/12th	1.07"/15th	0.72"/28th	
Maximum Snowfall/date	-	-	-	

Table 1

NORMALS, OBSERVED DAYS & DATES

NORMALS & OBS. DAYS	JUN	JUL	AUG	SEASON
NORMALS				
High	77.9°	82.3°	80.4°	80.2°
Low	56.5°	61.4°	59.9°	59.3°
Mean	67.2°	71.8°	70.1°	69.7°
Precipitation	3.79"	4.12"	3.61"	11.37"
Snow	0"	0"	0.1"	0"
OBS TEMP. DAYS				
High 90° or above	4	5	2	11/92
Low 70° or above	1	1	4	6/92
High 32° or below	0	0	0	0/92
Low 32° or below	0	0	0	0/92
Low 0° or below	0	0	0	0/92
OBS. PRECIP DAYS				
Days T+	16	14	14	44/92/48%
Days 0.01"+	12	11	10	33/92/25%
Days 0.10"+	5	9	5	19/92/21%
Days 0.25"+	3	6	4	13/92/14%
Days 0.50"+	2	5	3	8/92/11%
Days 1.00"+	0	1	0	1/92/1%

Table 2a

NOTABLE TEMP, PRECIP & SNOW DATES	JUN	JUL	AUG
90° Event Value/Date | Remarks	94°/20th	90°/4th	90°/3rd
90° Event Value/Date | Remarks	94°/21st	92°/6th	92°/4th
90° Event Value/Date | Remarks	92°/29th	91°/12th	-
90° Event Value/Date | Remarks	90°/30th	91°/13th	-
90° Event Value/Date | Remarks	-	98°/17th	-
1.00"+ value/date	-	1.07"/15th	-

Table 2b

RECORDS

ELEMENT	JUNE	
none	-	-

Table 3a

ELEMENT	JULY	
Daily Maximum Wind Speed/Direction/Date/ | Previous Record/Direction/Year	36 mph/WNW/23rd	35 mph/W/1991
200 All-Time Hottest Months Avg. Value/Rank | Remarks	74.8°/30th	2-way tie

Table 3b

ELEMENT	AUGUST	
200 All-Time Hottest Months Avg. Value/Rank | Remarks	72.2°/152nd	13-way tie

Table 3c

ELEMENT	SUMMER	
none	-	-

Table 3d

MISCELLANEOUS

JUNE

Avg. wind speed/Dep. Fm. Norm.	6.6 mph/-0.8 mph
Peak wind/direction/date	37 mph/W/25th
Windiest day avg. value/date	12.7 mph/11th
Calmest day avg. value/date	2.1 mph/10th & 15th
# Clear days	3
# Partly Cloudy days	22
# Cloudy days	5
Dense fog dates (code 2)	3rd, 6th & 8th
Thunder dates (code 3)	3rd, 6th, 8th, 23rd & 25th
Sleet dates (code 4)	none
Hail dates (code 5)	none
Freezing rain dates (code 6)	none

Table 4a

JULY

Avg. wind speed/Dep. Fm Norm.	5.5 mph/-1.3 mph
Peak wind/direction/date	40 mph/SW/24th
Windiest day avg. value/date	9.4 mph/24th
Calmest day avg. value/date	2.2 mph/6th
# Clear days	1
# Partly Cloudy days	26
# Cloudy days	4
Dense fog dates (code 2)	16th & 21st
Thunder dates (code 3)	1st, 14th, 17th, 23rd & 24th
Sleet dates (code 4)	None
Hail dates (code 5)	None
Freezing rain dates (code 6)	None

Table 4b

AUGUST

Avg. wind speed/Dep. Fm Norm.	4.5 mph/-1.7 mph
Peak wind/direction/date	30 mph/S/5th
Windiest day avg. value/date	10.9 mph/5th
Calmest day avg. value/date	0.6 mph/24th
# Clear days	4
# Partly Cloudy days	25
# Cloudy days	2
Dense fog dates (code 2)	2nd & 20th
Thunder dates (code 3)	1st, 5th, 9th, 10th, 11th, 16th & 27th
Sleet dates (code 4)	None
Hail dates (code 5)	None
Freezing rain dates (code 6)	None

Table 4c□

HEADING TOWARD AN "EL NIÑO" WINTER

By Hugh Johnson
Meteorologist, NWS Albany

The water temperatures of the central Pacific have warmed quite a bit. It now appears that we are heading into the positive phase of the El Niño-Southern Oscillation (ENSO), with a weak to perhaps moderate El Niño this upcoming winter.

During the past two winters, the ENSO had been in its negative phase (La Niña), meaning the central Pacific waters have been colder than normal. As you might recall, those winters took on completely different characteristics. The winter of 2010-11 was cold and snowy in our region, while last year was mild with very little snow. In fact, 2011-12 was officially our third least snowiest season on record!

The effect of any El Niño on our winter is much like that of any La Niña. Our weather can vary quite a bit from one El Niño to another. The winter of 2002-03 featured a moderate El Niño, and turned out to be very cold with record-breaking snow. The winter of 2009-2010 was also a moderate El Niño winter.

In the Capital District and points northward, snowfall was below normal, but south and west of the Capital District, snowfall was above normal, mainly due to an epic late-season snowstorm. Unlike 2003, spring came early in 2010.

If the developing El Niño were to become strong, it would be increasingly likely that this upcoming winter would be mild and wet. This is exactly what happened in 1997-98, our last really strong El Niño. However, since this one is forecast to be moderate at most, it will not necessarily be all that mild this winter.

There are many other climatic factors that help influence our winter. Perhaps an even more important factor for the northeast is the North Atlantic Oscillation (NAO). Last year, the NAO was strongly positive. When in a positive phase, low pressure resides over Iceland, and persistent high pressure is stationed over the Azores. This setup usually keeps arctic air and most storms north of our region, and this is exactly what happened last year.

This is a more challenging teleconnection to forecast compared to the ENSO. There are some indications that the NAO is somewhat tied to two other teleconnections.

The first is the Quasi-Biennial Oscillation (QBO). Approximately every two years, the QBO,

which is a measure of stratospheric winds, switches from east to west. During the past year and a half or so, the QBO has been in the positive phase, with a westerly wind direction. When in this phase, the NAO tends to be more positive.

Sometime during the upcoming winter, the QBO will likely switch into the negative mode. This would feature easterly stratospheric winds. In this phase, a weaker westerly flow could allow for more northern latitude blocking. This would mean high pressure over Iceland and lower pressure over the Azores. As a result, the NAO would be favored to transition to a more negative phase, allowing more arctic air to infiltrate the U.S. The storm track would be pushed further south, potentially producing more nor'easters.

The other teleconnection that might help determine the fate of our winter is the Pacific Decadal Oscillation (PDO). This teleconnection, discovered less than 20 years ago, is a much slower one to change, lasting up to several decades (as opposed to months or years). This is determined by the temperature of the extreme southern and northern portions of the Pacific. Right now, the PDO is in the cold phase, where it will likely remain for at least the next several years. In this phase, the waters in the extreme southern and northern Pacific are colder than normal, despite the warming in the central Pacific waters. Usually during the cold phase of the PDO, any El Niño that does form is rarely strong, but remains weak to occasionally moderate. There is some evidence that the cold phase of the PDO favors the negative phase of the NAO, although not last winter.

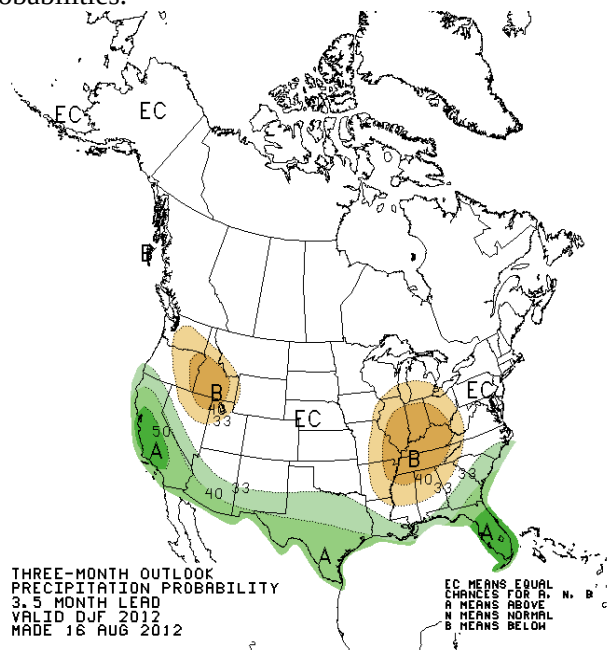
Other atmospheric factors, too complex to discuss in this article, will likely help determine the fate of our winter. However, assuming the QBO will be transitioning into the negative phase during the first half of the winter while the PDO remains in the cold phase, with the presumed weak to moderate El Niño, it appears that this upcoming winter should be somewhat colder and snowier than last year.□

HOW DO YOU INTERPRET CLIMATE OUTLOOK PRODUCTS?

Ingrid Amberger
Senior Meteorologist, NWS Albany

The Climate Prediction Center (CPC) issues monthly and seasonal (3-month) temperature and precipitation outlooks on the third Thursday of each month in terms of departures from normal. The contours on these outlook maps show the total probability (%) of three categories: above (A); below (B), and; the middle (normal) category (N). The sum of the probabilities of these three categories is 100%. The categories are based on the 1981-2010 normals, and represent the coldest or driest third of years (10 years) defining the B category, the warmest or wettest third defining the A category, and the remaining 10 years in between defining the middle (normal - N) category. The colored shading on the maps indicates the degree of confidence the forecasters have in the category. The darker the shading, the greater the level of confidence.

To make it possible to display three categories on one map, we assume that when either A or B is the most likely category, the probability of the middle category remains at 33.33% for most situations. When the forecasters decide that one of the categories is the most likely one, they assign probabilities which exceed 33.33% to that category, and label the map with an "A" or "B" in the center of the region of enhanced probabilities.



Forecasters use many forecast tools to look for signs that an area/region of the country will have a tendency or enhanced probability to be in either the above (A) or below (B) category. The forecast probabilities given on the map generally fall far short of complete confidence (100%) in any single category. When the probability of the above (A) or below (B)

category is greater than 33.33% by some amount, the probability of the opposite category declines by that amount, while the probability of the middle category remains at 33.33%.

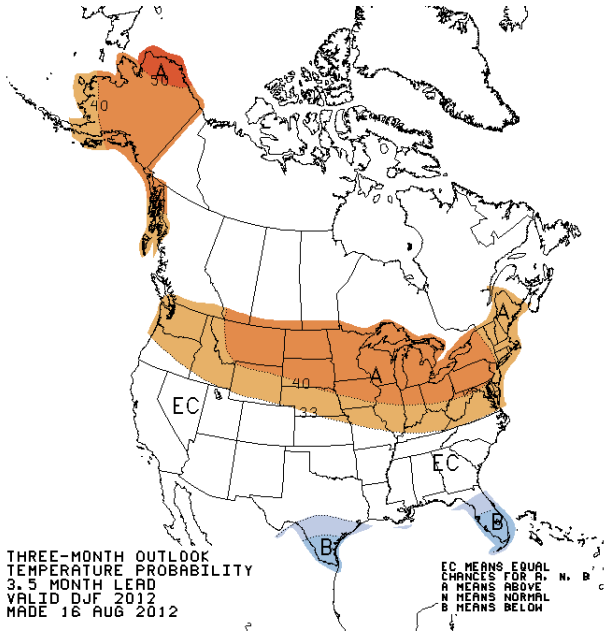
When probability values of the favored category reach 70% or higher, the probability of the opposite category is fixed at 3.3%, and the probability of the middle category is adjusted to values (less than 33.33%) which cause the sum of the three probabilities to equal 100%. In areas/regions where the forecasters have no forecast tools which favor the chance of either 'above' or 'below', the chance of both of these categories is defined to be 33.33% each, and the region is labeled "EC", which stands for Equal Chances.

Interpretation of the 3-month temperature outlook for the Northern Plains and Great Lakes region (map below) shows there is a 40% chance the average temperature for December, January and February will be above normal. The most likely category is 'above normal', but there's still a 33.33% chance for 'normal' and a 26.67% chance for 'below normal'. The 26.67% below normal comes from the calculation 100% - (40% + 33.33%) = 26.67%.

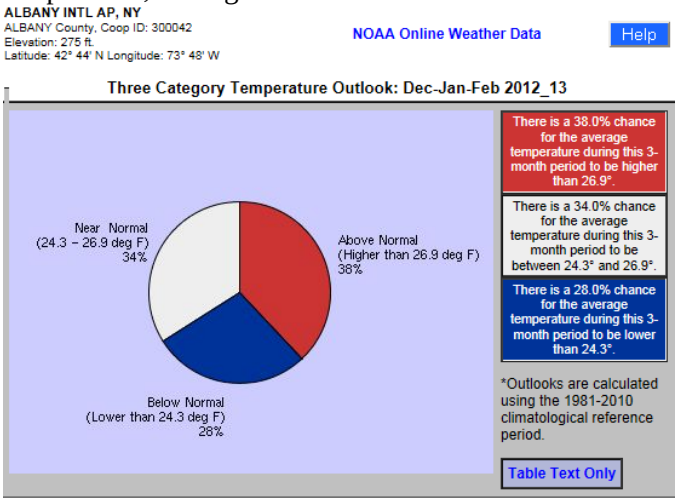
Local Three-month Temperature Outlooks (L3MTO) are generated from the seasonal outlooks issued by CPC using a method of statistical downscaling. The transformation from a large scale to a small scale creates a more detailed forecast for a particular location out of a forecast for a larger area. This is done for 32 locations in east central New York and adjacent western New England. The L3MTO is available in several formats: tables; text discussions, and; graphical outputs including Pie Charts, Temperature Range Graphs and Probability of Exceedance (POE) curves. The L3MTO is released simultaneously with the national product on the third Thursday of every month.

FALL SKYWARN SPOTTER TRAINING SESSIONS…

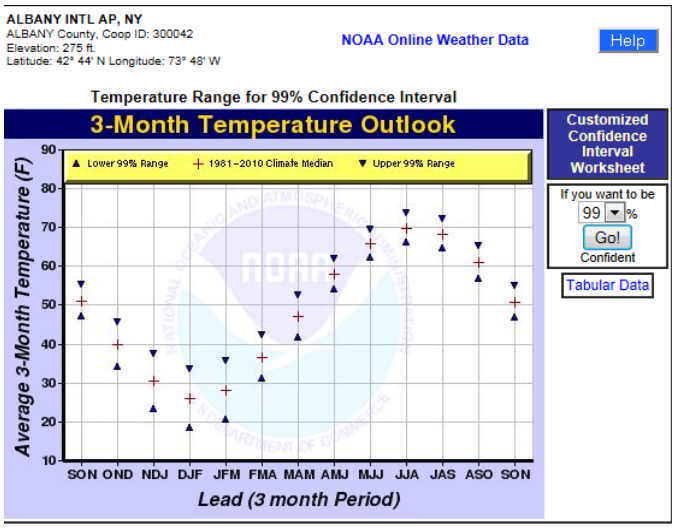
Check for them at:
http://www.erh.noaa.gov/er/aly



The pie chart is the simplest of the product formats, and shows the expected chance for the 3-month temperature to occur in each of three categories: Above Normal; Near Normal, and; Below Normal. The larger the pie slice, the higher the chance of occurrence.



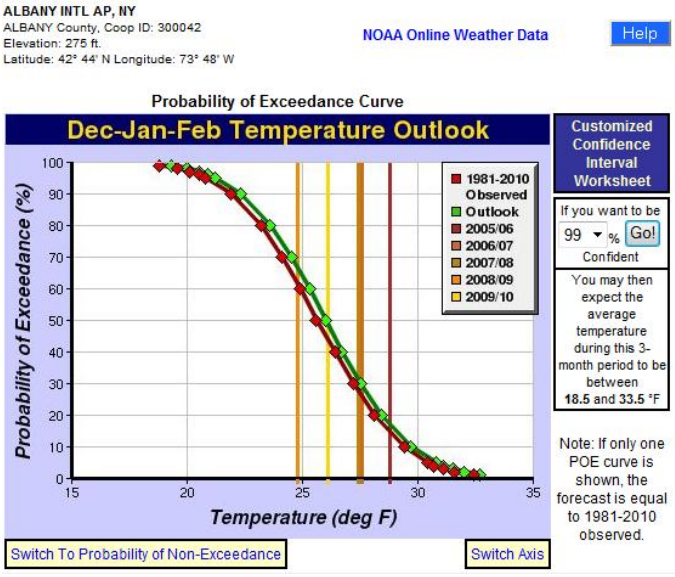
The Temperature Range Graph shows the expected range of the average 3-month temperature. It can be viewed for five confidence intervals: 99%, 95%, 90%, 75%, and 50%.



Current % Confidence Interval Table

	SON	OND	NDJ	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON
Median	51.1	39.9	30.4	26.0	28.1	36.7	47.2	57.9	65.9	69.9	68.4	61.0	50.9
99%	55.2 47.0	45.6 34.2	37.6 23.2	33.5 18.5	35.6 20.6	42.4 31.0	52.6 41.8	61.8 54.0	69.5 62.3	73.8 66.0	72.3 64.5	65.1 56.9	55.0 46.8

The Probability of Exceedance (POE) Graph provides the most detailed outlook information in the L3MTO suite. It shows the expected chance (y-axis, in percent) that the average 3-month daily mean temperature will exceed (or be greater than) the temperatures shown on the x-axis. The graph contains a red curve 1981-2010 normal for the period, and a green curve forecast/outlook for the period.



Climate Prediction Center:
http://www.cpc.ncep.noaa.gov/
Local 3-Month Temperature Outlook:
http://www.nws.noaa.gov/climate/l3mto.php□

COOP CORNER

Timothy E. Scrom
Observing Program Leader

Welcome to a new section of the Northeastern StormBuster. During the past year, we have seen the promotion of two of our Met Interns. As a result, we've hired two new Met Interns in their place. Now that they have come up to speed with their office duties, we are taking advantage of their talents in reorganizing some office functions. They will be taking over the task of visiting some Cooperative Weather Stations, while I concentrate more on our automated equipment. Both of these young men will officially begin station visitations in October.

We also want to use this space to make you aware of changes to the Cooperative Observer Program, and to occasionally remind you of things that need to take place.

The Data Collection process…

- *Over the summer, Albany completed the transition over to an All-Digital Reporting Network. Henceforth, all new Cooperative Observers will be required to transmit their data via* ***WeatherCoder III*** *(a computer-based entry system), or* ***IV-ROCS*** *(a telephone-menu-based system).*
- *With fall in the air, winter can't be far behind. Now is the time to inspect your snowboards and measuring sticks for any problems. If you find any…just call in to the office on the Coop Lines (800 #s), between 6 a.m. and 2 p.m.. We can assist you with any problems.*
- *Remember…starting November 1st, please remove your inner tubes and funnels from your rain gages. This will allow you to accurately measure any early-season snowfall, and prevent damage to the equipment.*
- *New Snowfall (the past 24 hours) is measured to the nearest tenth of an inch. The computers will only accept your data in the format of X.X.*
- *Total Snowfall is measured to the nearest whole inch. The computer will not accept tenths or hundredths of an inch (XX).*

- *If you have automated rain gages, don't forget to add the antifreeze. The antifreeze with which we have provided you is environmentally friendly.*
- *Please try to enter your data each day before 9 a.m. Your data is valuable in helping us produce new and accurate forecasts, and to verify old ones. Putting in a whole week's worth of data all at once reduces the value of your information because then your data is not available as fresh.*
- *And finally, if you're using WeatherCoder III to enter your data, please remember to review your daily entries, correct as needed, and close out your form at the end of the month. Your closing out of the monthly form is your digital signature verifying that all the data is accurate, correct, and ready to be included in the official record.*

If you have problems…

- *Please remember to contact us so we can schedule repairs. Anyone who takes your call can assist you. You no longer have to ask for a specific person.*

In the next issue, we'll discuss what happens to your data once you've sent it in.□

From the Editor's Desk

Albany has just experienced an above-normal temperature summer…and our first article breaks down the numbers of 90 and 95 degree days for the season. Continuing on in this climate-packed edition of Northeastern StormBuster, our second article is our usual summary of Albany's climatology for the season, while our third article takes a sneak peak as to what we might expect for our upcoming winter, and why. Our fourth and final feature article is designed to help you better understand how to interpret some of the National Weather Service's climate products. We hope you enjoy these selections as we at last cool off from the heat…and we look forward to presenting you with our year-end issue in just a few short months. Until then, enjoy the pumpkins and the turkey.□

WCM Words

Steve DiRienzo
Warning Coordination Meteorologist, NWS Albany

Members of the NWS staffed an outreach booth at the Adirondack Balloon Festival near Glens Falls on September 21, 2012. It was a beautiful day, but the balloons couldn't be inflated or get airborne because it was too windy. This was a great disappointment to the crowd in attendance.

This event illustrated how the weather can affect peoples' activities, and also illustrated how many industries such as aviation are affected by the weather. Hot air balloons have a very narrow operating window when it comes to wind speeds; 10 MPH or less. Another example is agriculture. Plants need certain temperatures and precipitation to grow.

A great link to get a detailed version of your local weather is:

http://forecast.weather.gov/gridpoint.php?site=aly&TypeDefault=graphical

Check it out and see if your planned activities will be affected by the weather.

Here at the National Weather Service, we strive to be the source of unbiased, reliable and consistent weather information. We're here to answer your weather and water questions 24 hours a day, 7 days a week. If you have concerns, please call us. If you have comments on StormBuster, or any of the operations of the National Weather Service, please let me know at Stephen.Dirienzo@noaa.gov.□