NORTHEASTERN STORM BUSTER

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WHAT WILL THE UPCOMING WINTER BE LIKE?

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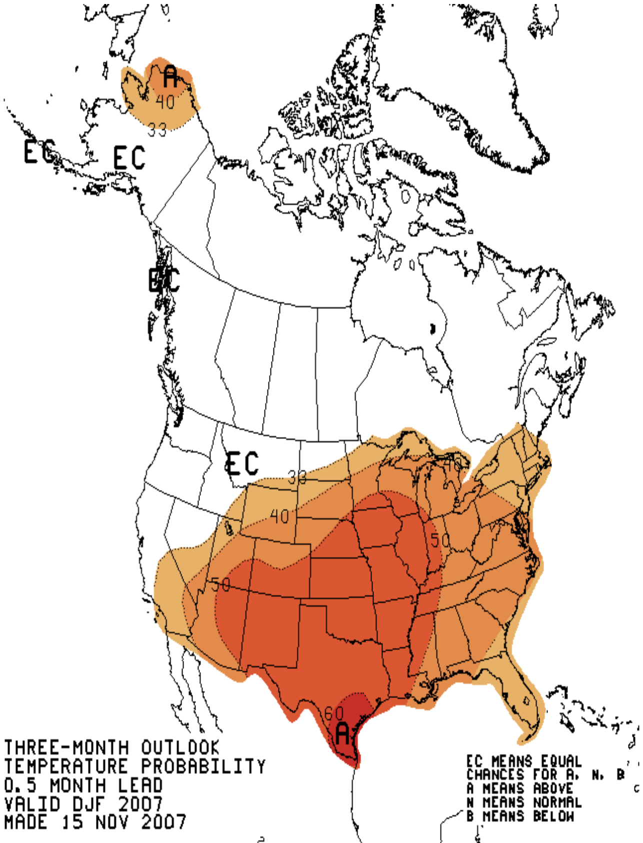
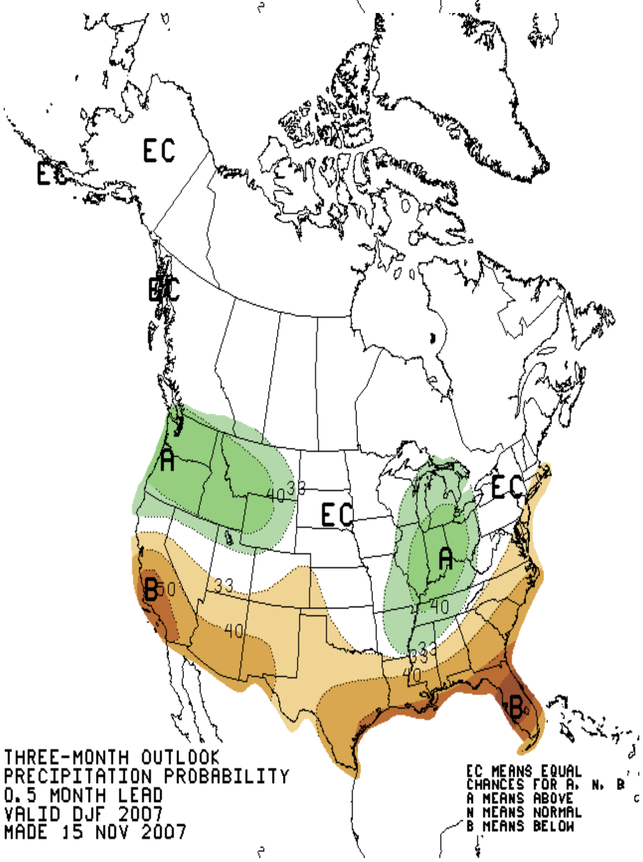
What will the 2007-08 Winter be like? Inquiring minds want to know. This is evident in the number of phone calls the Albany Weather Forecast Office has received from people asking just that question: What will this winter be like?

The official winter season includes the months December, January and February. However, in eastern New York and western New England, winter often runs from November to April, and in some years, winter weather can stretch from October to May. The official winter forecast is produced by the National Oceanic and Atmospheric Administration's Climate Prediction Center (CPC) near Washington D.C., and is based on long-range models, recent trends and La Niña influences. The official CPC forecast for winter (Dec., Jan., Feb.) for eastern New York and western New England shows that odds are that temperatures will be above normal; and that precipitation will be near normal. This article will look at the upcoming winter in a statistical way, by comparing past winters to the 2007-08 Winter.

The biggest factor affecting our weather this winter appears to be the strong La Niña in the equatorial Pacific. La Niña conditions are expected to continue throughout the winter, as La Niña conditions tend to peak in late winter or early spring. Looking as far back as 1950, there have been 18 winters dominated by La Niña conditions. Although weather in our area has been quite variable during La Niña winters, some La Niña signatures show up in the statistics.



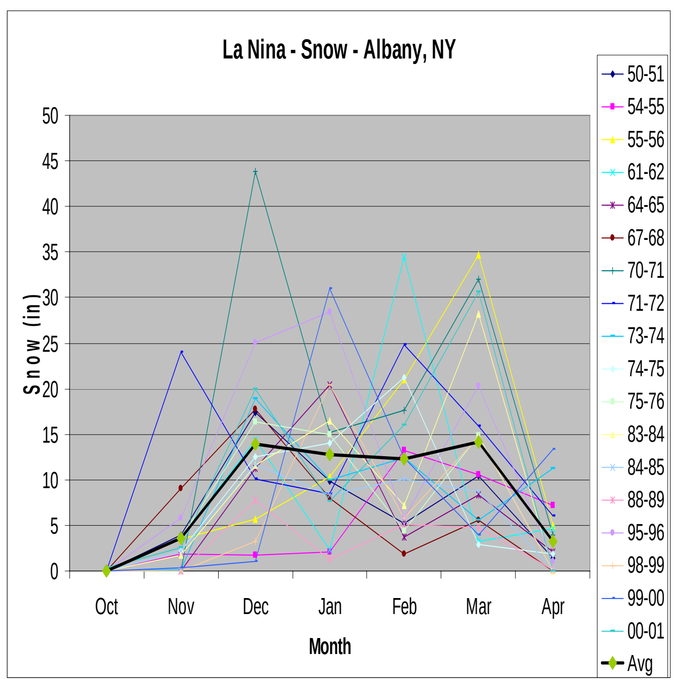


Statistically, during La Niña winters, temperatures at Albany, New York tend to be below normal in December and January, and above normal in February. For the early onset winters, October tends to be above normal, with November near normal. March and April temperatures are usually below normal.

During La Niña winters, snowfall at Albany averages about 60 inches, which is 3 inches above the 1950-2007 average of 57 inches. Snowfall tends to be slightly above normal in December, below normal in January (despite colder than normal temperatures), and slightly below normal in February. October and November snowfall is near normal, with March snowfall about 40% above normal. April snowfall is usually slightly below normal.

For precipitation, December tends to be slightly wetter than normal, January, drier than normal (the reason for less snow), and February, wetter than normal. October and November precipitation is usually below normal, with March precipitation above normal, and April precipitation again below normal.

The following graphic shows snowfall by month at Albany for the 18 La Niña winters since 1950. The thick black line shows the average snowfall for each month.



One can see that there is a great deal of spread in the monthly totals from year to year. For the winter months, December has the biggest standard deviation, followed by February. March snowfall averages about 4 inches above normal at Albany. Looking at daily snow depth, we find that, at Albany, only 3 of 18 La Niña winters had less than 40 days with at least one inch of snow on the ground (1954-55, 1964-65 and 1988-89).

La Niña winters have historically had some extreme winter weather. Both the snowiest winter recorded at Albany (1970-71 – 112.5 inches), and one of the least snowiest winters at Albany, (1988-89 – 19 inches) were La Niña winters. The snowiest winter during the 1980s in the Lake Effect belt downwind of Lake Ontario (1984-85 - Old Forge, NY - 289 inches) was a La Niña Winter. The 1995-96 season saw 13 Nor'easters impact the northern Mid-Atlantic and New England states in December and January, followed by a great snowmelt flood in late January which was the flood of record in some places.

So, what will the upcoming winter be like? Statistically, for here at Albany, based on past La Niña winters since 1950, there is a 50% chance of a white Christmas (one inch or more of snow on the ground). This is less than the 60% long term probability of a white Christmas. There's an 80% chance we'll have 40 or more days with at least an inch of snow on the ground, but only a 60% chance for 50 or more days with at least an inch of snow on the ground. There is a 60% chance of seeing at least 50 inches of snow for the winter, a 28% chance for 70 inches or more this winter, and an 11% chance of seeing less than 40 inches for the winter. There is an 89% chance that we'll have a cold stretch that lasts long enough to make ice thick enough for producing ice jams should a quick thaw occur.

Of course, statistics are only a rough guide. As the monthly snow plot above shows, there is a lot of variability in winter weather. We'll just have to wait and see how things actually turn out.

THE MILD AND STORMY FALL OF 2007

Evan L. Heller
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The fall season, for climatological purposes, began September 1st. But the first month of fall seemed only like an extension of summer…with above normal temperatures and plenty of thunderstorm activity in the Albany area. The mean temperature in Albany for September was 64.3º, 3.7º above normal. The average high of 75.3º was 4.0º above normal, and the average low of 53.3º, 3.4º above. The highest reading attained during the month was 90º, and this occurred on the 7th. The following day, the 8th, the mercury bottomed out at just 70º. This was the high minimum daily temperature for the month. But the warm day was actually the 26th, with its 89º record high reading and 69º low, combining for a mean temperature of 79.0º. The low daily mean was 52.0º, occurring on the 16th, the same date as the occurrence of the month's low maximum reading, 62º. The lowest reading of the month, 40º, occurred the very next day, on the 17th. The only record for the month was the 89º high on the 26th. This tied the daily high temperature record for the 26th, from 1920.

Precipitation for September totaled 2.74", just 0.57" below normal. Much of this amount came from severe thunderstorms that rolled through Albany on the 9th. Other severe thunderstorms occurred on the 11th and 27th, the latter date on which there were a number of hail reports outside of Albany, and a flash flood in Amsterdam that closed roads and necessitated water rescue operations. Other, non-severe, thunderstorms occurred on the 8th and 28th. The latter date saw the peak wind for the month as the direct result of a thunderstorm, when the wind measured 40 mph from the west. There were 8 days with rainfall in September, all measurable. On 5 of those days, there was 0.10" or more, on 3 of which there was 0.25" or more. On two of these days, 0.50" or more fell, with one day receiving over an inch. This was 1.23", received on the 9th. The average wind speed for September was 5.5 mph. The windiest day was the 14th, with an average speed of 12.7 mph, and the calmest day was the 18th, with an average speed of just 0.8 mph. There were 23 clear, 4 partly cloudy and 3 cloudy days during the month, and dense fog occurred on the 17th, 18th, 19th and 21st.

As above normal for temperature as September was, October was about twice as above normal. The monthly mean of 56.8º was a whopping 7.5º above normal. This was warm enough for the month to place 4th amongst the Top Ten Warmest Octobers in Albany. The average high for the month was 66.5º, 6.8º above normal, placing it in 7th position for Top Ten Warmest Mean Maximum Octobers. The average low was 47.1º, 8.3º above normal, placing it in a tie for 6th Warmest Mean Minimum October. As warm as October was, and there were a total of fourteen 70+ degree days, there were no new daily temperature records. The warmest day was the 6th, with a mean temperature of 72.0º. The month's high reading of 85º that day helped result in this mean value. The high minimum temperature for the month occurred on the 19th, when the mercury got down to only 60º. On the cold side of things, the 29th won all three prizes, recording both the low temperature reading for the month, 29º, and the low maximum temperature for the month, 50º, and thus winding up with a daily mean of 39.5º, the lowest of the month. Also, the growing season ended on this date, as it was the first day the thermometer dipped to at or below freezing. It happened one more time the very next day. Halloween was a warm, dry day, and the last day of the season Albany reached the 60s. November would arrive to mark the beginning of a reversing trend right off the bat.

The 5.53" of rainfall was 2.30" above what's normal for October, but the month still fell short of making the Top Ten Wettest Octobers list. There was one precipitation record for the month, a maximum daily precipitation record, when, on the 27th, 1.67" was recorded. The balance of the rainfall for October fell during 16 days, each with less than an inch. Measurable rain fell on 13 days in October, on 11 of which it 0.10" or more. Of these 11 days, 8 recorded 0.25" or more, with half of those receiving 0.50" or more. A backdoor cold front on the 6th produced the only thunderstorm day, resulting in just over a half inch of rain for Albany. There was no severe weather in October, and the 6th officially brought the thunderstorm season to a close. There was also no snow during the month, and this was 0.2" below normal. Dense fog was recorded on the 12th, 18th, 21st and 26th, and there were 13 clear, 10 partly cloudy and 8 cloudy days. The windiest day in Albany was the 23rd, with an average wind speed of 13.0 mph. With a 0.3 mph average wind speed, the 5th was the calmest day of both the month and the season. The peak wind speed for October was 41 mph, from the west-northwest on the 12th. The average wind speed for the month was 6.0 mph.

November 2007 was the coldest November in 10 years. It was the first November in 35 years to fail to reach 60º on any day. In fact, the last time a November day reached only 57º, the warmest reading this month, was way back in 1917. Most of the days of the month were below normal for temperature, and the departures off the highs and lows were consistent. The average high at Albany was 46.0º, 1.5º below normal, the average low, 29.2º, 1.6º below normal, resulting in a monthly mean of 37.6º, 1.6º below normal. The 1st and 15th tied for 'warm day', with daily means of 47.0º. The high minimum daily temperature for the month occurred on the 15th, when it was 39º. However, the highest temperature for the month was attained the previous day, on the 14th, when the mercury reached 57º. On the coldest day of November, the 24th, the lowest temperature measured, 14º, was the lowest such November reading at Albany in the last 5 years. The daily mean was 23.0º. The month's low maximum reading occurred on both the 23rd and 24th…32º. The mercury dipped to freezing or below 22 days during the month, and like October, there were no daily temperature records.

The 3.04" total rainfall that fell at Albany during November was 0.27" below normal. The greatest daily amount occurred on the 15th, when a record 1.48" fell. The previous record for the date was 0.94", set way back in 1887. There were no other records of any kind during November. Rainfall occurred on 18 days during November, on 12 of which it was measurable. A tenth of an inch or more occurred on 7 of these days, with a quarter inch or more on 4 of those. Only the 15th recorded a half inch or greater. An Arctic cold front arrived on Thanksgiving Day, the 22nd, to make it one of the windier Thanksgivings in the area. The peak wind for the month was on this day, when it was 45 mph from the west-northwest. The windiest day was actually the 29th though, with an average wind speed of 16.5 mph, while the calmest day was the 9th, with an average speed of just 1.5 mph. The monthly average wind speed was 7.8 mph. There were 8 clear, 14 partly cloudy and 8 cloudy days during November. Dense fog occurred on the 14th and 21st, and there was sleet and freezing rain on the 20th. The first snowfall of the season in Albany occurred on the 16th, the first measurable snow, on the 20th. Total snowfall for the month was just 0.4", 4.7" below normal, making it the fifth November in a row with below normal snowfall.

Wrapping up the Fall 2007 season, Albany's mean high for the 3-month period was 62.6º, 3.1º above normal, and the mean low was 43.2º, 3.4º above normal. This resulted in a mean for the season of 52.9º, 3.2º above normal. Precipitation totaled 11.31", 1.46" above normal, making this the 6th fall season in a row with above normal precipitation at Albany.

NWS ALBANY ESTABLISHES ANNUAL STEPHEN R. PERTGEN MEMORIAL AWARD

John S. Quinlan, Senior Forecaster at NWS Albany, New York, has established the Stephen R. Pertgen Memorial Award For Outstanding Contributions to the Albany SKYWARN Program. The award was named in honor of the late Stephen R. Pertgen, who was the Data Acquisition Program Manager at NWS Albany. Mr. Jack Evans, a SKYWARN Spotter in the Town of Sunderland, Bennington County, Vermont, was the very first recipient of this award, which came in the form a wooden plaque. The award was presented by both John, and Stephen's wife, Virginia Pertgen. Our congratulations go out to Mr. Evans. A master plaque housed at NWS Albany will display a running history of all the annual award recipients, a name plate to be added each year.

THE DANGERS OF SNOW SQUALLS

Brian J. Frugis
Meteorologist, NWS Albany

Most people are aware of the dangers associated with typical winter storms, such as the coastal Nor'easters that we deal with on occasion during the winter months. The large amounts of snow and ice they can produce over a one- to two-day period can profoundly impact travel. Lake-effect snow is another winter hazard, although this is more or less confined to locations close to the lakeshore, and thus doesn't typically have a profound impact on eastern New York and western New England. However, there is another winter danger, which can come about quite suddenly, and which can impact any portion of eastern New York and western New England. This is the frontal snow squall, the wintertime cousin of a thunderstorm. While snow squalls rarely produce large amounts of snow, their quick-hitting nature can pose a great deal of danger, especially to those traveling on roadways.

Snow squalls develop in a similar fashion to summertime thunderstorms. These squalls usually develop in a line, either along or ahead of a powerful arctic cold front. A strong upper-level disturbance can also produce squalls. In the summertime, thunderstorms will develop along a frontal boundary separating warm, humid air from cooler, drier air. Comparatively, in winter, snow squalls may develop along a boundary separating chilly air from more brutal arctic air pouring south from far northern Canada. As this extremely cold air moves in, both at the surface and aloft, the air being displaced is forced to rise and produce some vertical growth to the squalls (about 5,000 to 10,000 feet worth). As a rule, though, winter squalls don't grow nearly as tall as summertime storms. The most difficult pro-squall ingredient to rustle up during winter is moisture. While summertime humidity is easily drawn north from the Gulf of Mexico and Atlantic Ocean, wintertime moisture is usually quite limited, especially with the seasonal pattern of frequent cold frontal passages that usher in cold, dry air masses from the north and west. However, the Great Lakes, and more specifically, Lake Ontario for our region, can help provide just enough additional moisture to help produce the snow squalls. Although frontal snow squalls are rare, they can occur a few times each winter season if all the right ingredients come together.

So, what exactly can be expected during a snow squall? Like thunderstorms, snow squalls are short-lived events, usually less than 30 minutes in duration. They usually are fast-moving due to the strong winds aloft associated with either the arctic frontal boundary itself or a powerful upper-level disturbance. Within this brief period, heavy snow can occur, easily reducing visibility to below one mile. In addition, winds can gust over 35 m.p.h., producing blowing snow, which reduces visibilities even further. This is caused by stronger winds aloft being brought down to the surface by the heavier precipitation. In some of the strongest snow squalls, thunder and lightning may also be observed, as with a summertime thunderstorm.

The main concern with snow squalls is that visibility can drop from unrestricted to less than a quarter of a mile in mere seconds. This is a danger to drivers, especially when driving at high speeds. The most dangerous highways are those that are oriented east-to-west, such as Interstate-90 and Interstate-84, since snow squalls will generally be moving west to east along a cold frontal boundary. As the visibility quickly lowers, it causes many drivers to slam on their brakes in a panic reaction. This can cause them to either skid off the road on freshly fallen snow, or cause other motorists to collide with them from behind. Many such multiple-car accidents have occurred on I-80 in Pennsylvania due to wintertime snow squalls.

Many times, snow squalls will produce only an inch or two of accumulation. However, it takes only a thin coating of snow to make roads dangerous, especially when the visibility is reduced. Since snow squalls usually produce only a minimal amount of accumulation, winter storm watches and warnings are rarely issued for them. The National Weather Service still has ways of keeping the public informed about snow squalls. Short-term forecasts (NOWCASTS) and, sometimes, Special Weather Statements (SPSs), will be issued when these squalls will be heading towards your area. These products can be easily found on the front page of our website (http://www.weather.gov/albany), or by listening to NOAA Weather Radio. These statements will let you know exactly when the squalls can be expected, and their estimated speed and direction of movement. In addition, you can keep up with the forecaster's thinking ahead of time by reading our Area Forecast Discussion (AFD), also posted on our website. Forecasters will often express their opinions about whether or not snow squalls will be of concern. Keeping informed about impending snow squalls can aid you in your decision on whether or not you should alter your travel plans. Remember, it's always best to arrive at your destination safely, even if it means being a little late.

As always, we appreciate reports of any real-time weather hazards. If you encounter a snow squall, let us know, but wait until conditions improve and it's safe to do so. Information on your location, estimated lowest visibility, and amount of accumulated snow encountered will be helpful in letting others know about the impending danger.

LET IT SNOW!
(REPORTING SNOWFALL TO NWS ALBANY)

Vasil T. Koleci
Information Technology Officer, NWS Albany

John S. Quinlan
Senior Meteorologist, NWS Albany

As you are probably aware, the National Weather Service Forecast Office at Albany issues numerous Public Information Statements during major winter storms, in order to keep the public updated on the progression of these storms. We need your snowfall readings.

The National Weather Service at Albany has a special on-line severe weather reporting form (http://cstar.cestm.albany.edu:7775/Severe_WX/svrwx.htm), where spotters can enter their snowfall amounts. If you are an official weather spotter, we encourage you to use this form to send in your snowfall amounts, as well as the water content of the snow. We would also appreciate additional weather information, such as ice accumulation with freezing rain.

The snowfall and water content values should be your total for the storm at the time of measurement. Please include your SKYWARN ID #, location, and the time you took your observation. Once you have entered your information and submitted it to us, an alarm message will pop up on our computer console to alert us to your report.

Remember to adhere to the National Weather Service's Snowfall Measurement Guidelines, especially the rule of "no more than one snowfall measurement every six hours". This will ensure that everyone is measuring snowfall in the same fashion, allowing for easy and accurate comparison of measurements between locations. The following is the link to the National Weather Service's Snow Measurement Guidelines: http://www.wrds.uwyo.edu/wrds/wsc/reference/snowmeas.html

WCM Words

Raymond G. O'Keefe
NWS Albany Warning Coordination Meteorologist

It's winter! No surprise then that much of this edition is devoted to winter weather – forecasting it, reporting it, and staying safe during it. And as Vasil and John remind us – we need your snowfall reports – during and after storms.

I had the opportunity to attend the awarding of the first Stephen R. Pertgen Memorial Award to Jack Evans last month. It was honor to see Jack earn the award. His contribution to the Skywarn program over the years stands as a model for all of us to follow. The presentation ceremony was particularly moving because Steve's wife and daughter made the trip to Bennington, Vermont to make the presentation to Jack.

From the Editor's Desk

It's just one week before Christmas as I type this. We're already into what looks like could be a very eventful winter. We've had two major winter events already, each producing about 8 1/2 inches of snow at Albany. Our lead-in article may give you some insight into whether the current trend will continue. Another article we have deals with snow squalls, which are of particular significance in our counties. The holiday season will soon be behind us, but a long, cold winter lies ahead. We wish you all the best the New Year has to offer. Stay warm, and enjoy the reading!