



The Lake Breeze

The Newsletter of the Buffalo Forecast Office

*Thomas Nizio, Meteorologist In Charge
Judith Levan, Warning Coordination
Meteorologist, Editor*

National Weather Service Forecast Office
587 Aero Drive
Cheektowaga, NY 14225

www.weather.gov/buf

Hail Storm Rakes the Area!

Western and central New Yorkers experienced a rare meteorological phenomenon on June 16, 2008—large, damaging hail. Many areas received large hail not just once, twice in the same day. Over 40 such reports were received from seven counties in western and central New York.

There were a number of ingredients that came together to produce this event. The most significant were the warm humid air mass near the surface and the increasingly cold air mass advecting in above. The atmosphere above chilled to the freezing mark at only around nine thousand feet—lower than twelve to fifteen thousand feet usual in summer thunderstorms while surface temperatures were in the upper 70s and lower 80s. This resulted in extreme instability and allowed for thunderstorm clouds to bubble up rapidly by midday. In addition, we had a typical convergence zone developing north of Buffalo as a weak cold front began to move into the area from Ontario with its northwest winds encountering resistance from the prevailing southwest wind off Lake Erie.

Although the entire area was under some risk for severe weather that day, initial indications were for the greatest risk across the southern tier and into the Finger Lakes region and away from any stabilizing affects from the lakes. The activity actually focused on the main lake convergence boundary between Lakes Erie and Ontario. The first cells exploded over Niagara and Orleans counties shortly before 1 pm

and reports of hail came in almost immediately. For the next two hours, cell after cell rolled along a similar path across southern Niagara, southern Orleans, Monroe, Wayne and northern Cayuga counties—many of which had quarter size hail. There was one particularly strong cell which pushed a bit further south shortly after 2 pm and moved across Buffalo's North Towns with 1 to 1.5 inch diameter hail across Tonawanda and Amherst with the largest reported near the UB North Campus producing some car damage. This cell continued on into Genesee county by 3 p.m.

The activity waned for next few hours but Mother Nature was not through with us yet. After some additional heating due to clearing skies, more hail filled cells developed from Lockport to Brockport around 530 p.m. Yet another formed over Grand Island by 630 p.m. and this would turn out to be the most damaging of the day as it intensified and rolled southeast right across the heart of Buffalo's most densely populated northern and eastern suburbs. During the next 45 minutes over a dozen reports were received from the public with hail over an inch in diameter from the Town of Tonawanda, Amherst, Kenmore, North Buffalo, Cheektowaga, Depew, Alden and finally Darien. There was a particularly nasty swath across the Snyder section of Amherst with golf ball sized hail that damaged hundreds of automobiles as well as awnings on homes. Many long time residents had never seen such hail in over 50 years of residence.

While the hail did result in property damage, far more devastating was its affect on agriculture. The fruit and vegetable crops sustained heavy damage. In addition to ripening fruits such as strawberries and cherries, immature tree fruits, such as apples, peaches and pears, were permanently damaged. Vegetable crops will have to be watched to see what affect the hail had on developing plants. Estimates of losses are already in the millions of dollars and Governor Paterson has aid from the Federal government.

*Steve McLaughlin
Senior Forecaster
Stephen.McLaughlin@noaa.gov*

INSIDE THIS ISSUE:

Dog Days of Summer	2
NOAA Weather Radio on the Web	2
Excessive Heat	3
Town of Amherst— <i>StormReady</i>	3
Open House a Success	4
Weather Info at Travel Plazas	4
UV Index	5
Virtual Tour of the Hurricane Center	6
Links to Weather Safety Information	6

The “Dog Days” of Summer

The term "dog days" goes way back to the ancient Romans who coined the phrase. They called the hot sultry weather of early July through September "caniculares dies" or "days of the dogs" after the constellation of Canis Major, within which Sirius, the Dog Star, is found. As the hottest and most humid days of summer generally coincided with the period Sirius rose and set with the sun, the Romans believed that heat from Sirius was increasing the heat of the sun.

Throughout this issue of The Lake Breeze, you will find valuable information on how to keep yourself and your family protected during the rest of the summer season.



Experimental Prototype of NOAA Weather Radio on the Web

Some NOAA Weather Radio broadcasts are now available on the internet. In an experimental program, the NWS has a webpage that posts NOAA Weather Radio broadcasts to the internet in .mp3 format. The purpose for providing broadcast text in this format for web users is that it can be especially useful for locations where normal NWR broadcasts can not be received due to distance from the transmitter or, terrain effects that would either block or decrease the quality of the reception. Also allowing users to choose to listen to a broadcast via a menu allows them to get their information more quickly than having to listen through a typical broadcast cycle that may last tens of minutes especially during severe weather mode. This service also can be beneficial to visually impaired users who can listen to the broadcasts rather than relying on a screen reader to interpret the text.

The current version (Phase 1) does not include short fused warning products (TOR, SVR, FFW, and SMW) which are planned to also be included in Phase 2.

You can find the webpage at: <http://www.erh.noaa.gov/nwr/index.php>

The NWS is always seeking to improve availability and quality of NWS products and services based on user feedback. You'll find a link to provide any comments or feedback concerning the products on the website or you can send an email to daniel.hagarty@noaa.gov. The feedback period for this experimental service extends until March 2, 2009.

	<p>WATCH</p> <p>Conditions are favorable for severe weather in or near the watch area. Watches are issued for tornadoes, severe thunderstorms and flash floods.</p>
	<p>WARNING</p> <p>The severe weather event is imminent or occurring in the warned area. Warnings are issued for tornadoes, severe thunderstorms, flash floods and river flooding</p>

Normally, NOAA Weather Radio All Hazards transmitters broadcast on one of seven VHF frequencies from 162.400 MHz to 162.550 MHz. The broadcasts cannot be heard on a simple AM/FM radio receiver. However, there are many receiver options, ranging from handheld portable units to desktop and console models. Prices can vary from \$20 to \$200.

Many receivers have an alarm feature, but some may not. Among the more useful features in a receiver are:

Tone alarm: The NWS will send a 1050 Hz tone alarm which will activate all the receivers which are equipped to receive it, even if the audio is turned off. This is especially useful for warnings which occur during the night when most people are asleep.

SAME technology: SAME, or Specific Alert Message Encoding allows you to specify the particular area for which you wish to receive alerts.

Selectable alerting of events: While SAME allows you to specify a particular area of interest, some receivers allow you to turn off the alarm for certain events which might not be important to you.

Battery backup: Since power outages often occur during storms, having a receiver with battery backup can be crucial.

External antenna jack: While most receivers come with a whip antenna which can usually be extended out from the unit, depending on your location you may need an external antenna to get a good reception. Some receivers come with an external antenna jack (normally in the back of the unit) which will allow you to connect to a larger antenna (indoors or outdoors).

The natural hazard of lightning causes hundreds of injuries, dozens of deaths, and spark wildfires often during the warm season months. Each year, in the continental United States, over 20,000,000 cloud-to-ground lightning strikes are recorded.

Excessive Heat — The Silent Killer

Heat is a silent killer that does not have the same visual impact as other weather hazards such as tornadoes and hurricanes. However preventive measures can be taken to help avoid the devastating effects of excessive heat.

From 1997 to 2006, excessive heat was the top weather-related killer causing more fatalities per year than lightning, tornadoes, and winter storms combined.

The nws collaborates with public and private sector organizations, academia, the medical community and the media to continually create and deliver new and enhanced excessive heat products and services.

Extensive information about heat waves and heat safety can be found online at:

<http://noaawatch.gov/themes/heat.php>

Elderly persons, small children, chronic invalids, those on certain medications or drugs, and persons with weight and alcohol problems are particularly susceptible to heat reactions.

The following heat wave safety tips are recommended:

- * Slow down. Strenuous activities should be reduced, eliminated or rescheduled to the coolest time of the day.
- * Dress in lightweight light-colored clothing to reflect heat and sunlight.
- * Drink plenty of water or other non-alcoholic fluids. Drinking alcoholic beverages should be avoided.
- * Do not take salt tablets unless directed to by a physician.
- * Spend more time in air-conditioned places.
- * Avoid prolonged exposure to the sun.
- * Never leave any person or pet in a closed, parked vehicle.

*Extreme temperatures bring about uncommon risks for routine daily activities (e.g. recreation) and also cause hardship for certain industries (e.g. energy, transportation, agriculture, healthcare, tourism). The potential benefits of improved GOES-R satellite data will result in "more accurate temperature forecasts contributing to improved energy demand expectations and savings in the electricity and natural gas sectors" valued at: **\$512 million in 2015 and \$2.56 billion from 2015-2027** (Centrec, 2007).*

Town of Amherst is **StormReady**

The Town of Amherst, in Erie County, New York has completed a set of rigorous warning criteria necessary to earn the distinction of being StormReady®.

StormReady encourages communities to take a new, proactive approach to improving local hazardous weather operations and public awareness. StormReady arms communities with improved communication and safety skills needed to save lives and property – before and during the event.

The Town of Amherst becomes the fifth municipality in the State of New York to be a StormReady Community. The recognition will be in effect for three years when the town will go through a renewal process.

The nationwide community preparedness program uses a grassroots approach to help communities develop plans

to handle local severe weather and flooding threats. The program is voluntary and provides communities with clear-cut advice from a partnership between local National Weather Service forecast offices and state and local emergency managers. StormReady started in 1999 with seven communities in the Tulsa, Okla., area. There are now more than 1,200 StormReady communities across the country.

To be recognized as StormReady, a community must:

- Establish a 24-hour warning point and emergency operations center;
- Have more than one way to receive severe weather forecasts and warnings and to alert the public;
- Create a system that monitors local weather conditions;
- Promote the importance of public readiness through community seminars;
- Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises.



NWS Buffalo Open House a Huge Success

The staff of the National Weather Service in Buffalo would like to thank all those who chose to share a part of Sunday, June 8 with us for our open house.

The event, last held in 2005, attracted 900 visitors this year. All were able to gain an insight into how, and why, warnings, forecasts, and other various weather products are created and disseminated to our varied users.

The National Weather Service would like to express our special thanks to those agencies and groups which made our open house so successful.

- * US Coast Guard
- * US Coast Guard Auxiliary
- * US Army Corps of Engineers
- * Dunkirk Light House Smithsonian Exhibit
- * Lancaster Emergency Management
- * New York State Emergency Management Office (NYSEMO)
- * Cheektowaga Police
- * US Air Force and US Navy Recruiters
- * SUNY Brockport Meteorology
- * Buffalo State Meteorology
- * The Buffalo Weather Experience Center (BWEC)

- * General Albert J. Myer Historical Tent
- * New York Power Authority
- * Niagara Frontier Transit Authority (NFTA)
- * NFTA Police

Again, thanks to all those who attended. We look forward to seeing you all again at our next open house.



Science and Operations Officer Dave Zaff takes time to explain the technology behind the Weather Event Simulator, an important training tool used by NWS forecasters.

Pilot Project to Disseminate Weather Information at Travel Plazas

National Weather Service Buffalo is working in partnership with the New York State Thruway Authority (<http://www.nysthruway.gov>) to make weather information available to travelers on the New York State Thruway. Weather conditions are critical to private as well as commercial travel. Motorists may choose to wait out the approaching storm or avoid the blinding lake-effect snows. During the October 13th, 2006 lake effect storm, some motorists were stranded in their vehicles on the Thruway for up to 18 hours. WFO Buffalo and the NYS Thruway Authority are hoping to avoid similar incidents in the future.

A test project at four Travel Plazas (Angola, Pembroke, New Baltimore and Guilderland) is currently underway. Utilizing the FLARE program, written by Jason Burks, Information Technology Officer at NWS Huntsville Alabama, monitors located at the rest stops display current weather conditions, radar and satellite loops and current surface maps. Forecasts for major cities scroll at the bottom of the display during routine conditions but are replaced with any



active Watches or Warnings that may be in effect for that region. The monitors also display information on Missing Children and will be utilized to disseminate active AMBER alerts.

The economic benefits of improvements in short-term ice formation and fog condition forecasts (e.g. more than 2 hours notice) exceeds \$29 million/year derived from rerouting efficiencies in the trucking industry (Adams et al., 2004). Weather sensing, data fusion, and forecasting services create an economic benefit of \$590 million/year from improved travel safety and national delay reduction.

NWS' UV Index

UV Index: What is it?

The *UV Index* is a next day forecast of the amount of skin damaging UV radiation expected to reach the earth's surface at the time when the sun is highest in the sky (solar noon). The amount of UV radiation reaching the surface is primarily related to the elevation of the sun in the sky, the amount of ozone in the stratosphere, and the amount of clouds present. The UV Index can range from 0 (when it is night time) to 15 or 16 (in the tropics at high elevations under clear skies). UV radiation is greatest when the sun is highest in the sky and rapidly decreases as the sun approaches the horizon. The higher the UV Index, the greater the *dose rate* of skin damaging (and eye damaging) UV radiation. Consequently, the higher the UV Index, the smaller the time it takes before skin damage occurs.

There are two prices to pay for overexposure to UV radiation: a severe sun burn following an intense short term overexposure, and the more serious skin cancers developing after long term overexposure. *Melanoma*, the more deadly of the two types of skin cancer occurs when the patient has been subjected to several intense short term overexposures. Non-melanoma skin cancers, which are almost 100% curable, occur in people who are overexposed for very long periods of time, like construction workers, farmers, or fishermen. Long term overexposure to UV radiation has been linked to the formation of cataracts in the eyes as well.

Nature of UV Radiation

Ultraviolet(UV) radiation is a specific part of the sun's entire spectrum of wavelengths. UV radiation can be further sub-divided into three parts. UV-C is characterized by wavelengths less than 280 nm. Although highly dangerous to plants and animals, this part of the UV spectrum is completely absorbed by stratospheric ozone and does not reach the earth's surface. UV-B ranges in wavelengths between 280 and 320 nm. Ozone absorbs much of the shorter wavelength radiation, but this absorption weakens as 320 nm is approached. Plants and animals are particularly affected by this part of the UV spectrum. UV-B effects to humans are reddening of the skin (erythema) and reduction of vitamin-D synthesis in the short term, development of skin cancer, cataracts and suppression of the immune system in the long term. The wavelengths of UV-A radiation range between 320 and 400 nm. Ozone absorbs very little of this part of the UV spectrum. UV-A radiation is needed by humans for the synthesis of vitamin-D; however, too much UV-A causes photoaging (toughening of the skin), suppression of the immune system and, to a lesser degree, reddening of the skin, and cataract formation.

UV Index: How to use it!

The greater the UV Index is the greater the amount of skin damaging UV radiation. How much UV radiation is needed to actually damage one's skin is dependant on several factors. But in general the darker one's skin is, (that is the more melanin one has in his/her skin) the longer (or the more UV radiation) it takes to cause erythema (skin reddening). For those who always burn and never tan the times to burn are relatively short compared to those who almost always tan. The EPA has devised general guidelines as far as what to do to protect oneself from overexposure to UV radiation.

2 or less: Low Danger

A UV Index reading of 2 or less means low danger from the sun's UV rays for the average person:

Wear sunglasses on bright days. If you burn easily, cover up and use sunscreen.

3 - 5: Moderate

A UV Index reading of 3 to 5 means moderate risk of harm from unprotected sun exposure.

Take precautions, such as covering up, if you will be outside. Stay in shade near midday when the sun is strongest.

6 - 7: High

A UV Index reading of 6 to 7 means high risk of harm from unprotected sun exposure. Apply a sunscreen with a SPF of at least 15. Wear a wide-brim hat and sunglasses to protect your eyes. Protection against sunburn is needed. Reduce time in the sun between 10 a.m. and 4 p.m. Cover up, wear a hat and sunglasses, and use sunscreen.

8 - 10: Very High

A UV Index reading of 8 to 10 means very high risk of harm from unprotected sun exposure. Minimize sun exposure during midday hours, from 10 a.m. to 4 p.m. Protect yourself by liberally applying a sunscreen with an SPF of at least 15. Wear protective clothing and sunglasses to protect the eyes. Take extra precautions. Unprotected skin will be damaged and can burn quickly. Seek shade, cover up, wear a hat and sunglasses, and use sunscreen.

11+: Extreme

A UV Index reading of 11 or higher means extreme risk of harm from unprotected sun exposure. Try to avoid sun exposure during midday hours, from 10 a.m. to 4 p.m. Apply sunscreen with an SPF of at least 15 liberally every 2 hours. Take all precautions. Unprotected skin can burn in minutes. Beachgoers should know that white sand and other bright surfaces reflect UV and will increase UV exposure.

You can find the daily UV Index on the web at: http://www.cpc.ncep.noaa.gov/products/stratosphere/uv_index/uvi_map_big.gif

Take a Virtual Tour of the National Hurricane Center

A tour of the NOAA National Hurricane Center is now as close as your computer with the inauguration of a new virtual online tour of the famous forecast center.

The Web site, <http://www.nhc.noaa.gov/nhctour.shtml>, provides panoramic views of different areas of the facility, accompanied by audio and text descriptions.

“This is an especially useful tool for students who are learning about tropical cyclones and weather forecasting,” said Bill Read, director of NOAA’s National Hurricane Center. “It also shows how the different branches of our facility work together for the best possible forecasts.”

Included in the virtual tour are the National Hurricane Center operations, the Tropical Analysis Forecast Branch op-

erations, the Chief Aerial Reconnaissance Coordination - All Hurricanes, the Federal Emergency Management Agency liaison, Media & Seminar, NOAA Miami Regional Library, and the Miami National Weather Service forecast office.

The state-of-the-art tour permits the visitor to move around each room in a circle, stop, back up, and zoom in. The audio feature describes the function of each room with a text window available for the hearing-impaired.

“The center is busiest during the hurricane season, but is staffed every day around the clock during the offseason as well.” said Chris Burr, director of the Tropical Analysis Forecast branch. “Visitors to the site will learn why this is so important, especially for marine interests.”

Links to Weather Safety Information

Want to learn more about weather safety and how you can be prepared? Here are some additional links to information available on the web.

- Thunderstorm, Tornado and Flood Awareness
<http://www.weather.gov/om/severeweather/index.shtml>
- Heat Safety
<http://www.weather.gov/om/heat/index.shtml>
- Lightning Safety
<http://www.lightningsafety.noaa.gov/>
- Rip Currents
<http://www.ripcurrents.noaa.gov/>
- Air Quality Awareness
<http://www.weather.gov/airquality/>
- Flood Safety Awareness
<http://www.weather.gov/floodsafety/>
- NOAA Weather Radio
<http://www.weather.gov/nwr/>
- Weekly U.S. Hazards Assessment
http://www.cpc.noaa.gov/products/expert_assessment/threats.html



National Weather Service Forecast Office
587 Aero Drive
Cheektowaga, NY 14225
Phone: 716-565-0204
Fax: 716-565-9002

EDITORS NOTE:

Published quarterly, each of issue of “The Lake Breeze” contain articles about our operations, products and services, and interesting weather submitted by various members of our staff and NOAA Headquarters. If you have a comment about our programs, or an idea for something you’d like to see included in an upcoming issue, we’d like to hear from you. You can email me at judith.levan@noaa.gov.

Judith Levan

Warning Coordination Meteorologist