

The Lake Breeze

NATIONAL WEATHER SERVICE BUFFALO, NY
FORECAST OFFICE

Photo Credit: David Church

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Fall 2019

Welcome to the latest issuance of The Lake Breeze.

The region has already experienced colder than normal temperatures with a few lake effect rain and snow events. Preparedness is key for getting through a winter in Western and North Central NY. Spend time getting yourself winter-ready.

- Heather Kenyon, Editor

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A Note from NWS Buffalo Management

By Mike Fries, Warning Coordination Meteorologist

Much like the seasons are changing outside, with leaves falling and snow flying around, so too are things at your National Weather Service. Our office has recently completed our seasonal workshop in preparation for the change of seasons, including additional training for snow forecasting, satellite procedures, radar updates, upper level patterns conducive to cold air outbreaks, and a host of other topics. These workshops help reinforce seasonal skills for our staff, as well as introduce new techniques to our meteorological repertoire to improve our forecast and warnings services for the future.

In addition to the change of the season, we will have some new personnel in the office, too! We are set to welcome another new meteorologist to our crew at the NWS Buffalo. Just like several of the current staff, this new meteorologist is a western New York native. Elizabeth Jurkowski will be the newest addition to our staff this month. She comes to the NWS Buffalo on the heels of finishing graduate education at Plymouth State University, her undergraduate degree from SUNY-Oswego, and the completion of a Pathways Program project at the NWS Milwaukee, WI. She did important work on the verification of the National Blend of Models that is becoming a common collaboration tool amongst all NWS offices across the country. She will join a healthy corps of SUNY-Oswego educated meteorologists at the office. All of the staff at the NWS would like to welcome Elizabeth to the team!

We are confident that new tools, techniques, and faces will help us to continue to evolve and improve our services this winter. We look forward to the winter and are confident that our office is prepared to do our part in promoting safety through the winter season by keeping you warned and informed.

Meet the Observer—Gene Pacia, COOP Observer, Youngstown, NY

By Dan Kelly

In 1993, while Gene Pacia was approaching retirement, a student got him into weather observing. At the same time, the National Weather Service in Buffalo was ramping up the snow spotter program. Mr. Pacia was in the perfect location, Youngstown, NY in northwestern Niagara County. Youngstown averages less snow than many other locations in western NY but does get lake effect snow from Lake Ontario, which is roughly a half mile north of Gene's house.

In 1996, Gene Pacia became a Cooperative Observer. A Cotton Region Shelter and standard rain gauge were installed at his location. Gene has kept meticulous records ever since, even to the point of developing his own averages and record extremes. Before the site became "paperless reporting," Mr. Pacia would include addition-

(continued next page)



Gene Pacia with the 20 year Length of Service Award

Meet the Observer (continued)

al pages of statistics and monthly figures along with his B-91 report form each month! His hard work and dedication as a Coop Observer was recognized by the National Weather Service in December 2018 and he was presented with the John Campanius Holm Award, an honor given to only a handful of observers every year.

Gene Pacia was presented with the John Campanius Holm Award surrounded by several of his friends and fellow retired teachers. The Holm Award is named for a Lutheran Minister who was the first known person to have taken weather observations in the American Colonies in 1644 and 1645! Mr. Pacia keeps very busy when he is not working on his weather records. He is a devout Catholic and attends church several days a week in Youngstown, North Tonawanda or nearby Wilson. Additionally, you can find Gene reading or attending mass at the Fatima Shrine in Lewiston, NY. If that isn't enough, he also is a dedicated volunteer for Meals on Wheels at St. Vincent DePaul.

Despite being in his middle 80s, Gene is still very active and enjoys traveling. He travels to his cabin a few hours north of Toronto and has even been to Poland. When he is away, Mr. Pacia ensures that someone is available to take the daily weather observations!

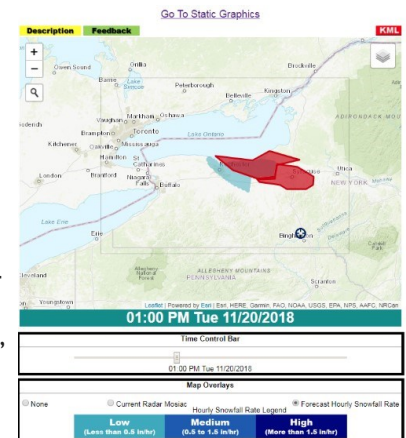


Gene Pacia was presented with the John Campanius Holm Award surrounded by friends and fellow retired teachers

Lake Effect Warnings and Polygons

By Dave Zaff

Lake Effect Snow Warnings will return to Western NY for the upcoming winter season. Last year, the NWS consolidated the warning into a Winter Storm Warning. But due to partner concerns and feedback from you, Lake Effect Snow Warnings are back. Interestingly, last year, the NWS Buffalo was allowed to continue experimenting with a lesser-known polygon-based Lake Effect Snow Warning. The polygons are focused on impact and not tied to NWS zones or geopolitical boundaries like counties. The polygons, created by NWS forecasters, much like tornado and severe thunderstorm warnings, can cover smaller portions of counties. Unlike those short-fused warnings however, Lake Effect Snow Warning polygons can also change in both space and time. As an example, a standard Lake Effect Snow Warning might be issued for Southern Erie County for 24 hours, while a polygon may be focused near the Southtowns for 6 hours, with a second polygon later focused further south over the higher terrain and Boston Hills for the next 18 hours.



In our first test, we issued experimental Lake Effect Snow Warning polygons just for areas east of Lake Ontario. We then expanded it to lake effect snow downwind of both Lake Erie and Lake Ontario. Last year, we further expanded the experiment to include NWS Albany and NWS Binghamton in order to focus on NWS collaboration. This winter, we are going to expand again with NWS Cleveland joining in.

Local studies have shown the experiment is an improvement over the standard warning product. As an example, on average, an individual is typically underneath a polygon-based warning for nearly half the amount of time as a standard warning. To view Lake Effect Snow Polygons, visit www.weather.gov/buf, scroll to the bottom of the page and find Hazards-Lake Effect Snow Polygons.

Q & A with NWS Buffalo - Dan Kelly, Observation Program Leader

By Heather Kenyon

What is an Observation Program Leader at the National Weather Service?

The Observing Program Leader is in charge of the observing programs within the office, such as the Cooperative Observer network and the upper air (weather balloon) observations. In Buffalo, we have 68 volunteer Cooperative Weather Observers. As the OPL, I am responsible for maintaining the temperature and precipitation gauges at their locations, finding new observers if needed and quality controlling the data before it is archived. This involves a lot of traveling, as the sites need to be visited at least once per year. In the winter, the focus shifts to snow measurements. Our office participates in the NY Snow Survey every 2 weeks, by taking snow water equivalent readings in the Buffalo Creeks Basins. In addition, sometimes the River Forecast Centers will request snow surveys to get an idea of how much water is located in the snow pack for their river forecast models. Finally, the OPL is responsible for keeping the station history files for the Coop and the Climate sites up to date.

What is the best part of the job?

There are so many good things about the job, like traveling all over the western NY, Genesee Valley and the Tug Hill regions. Additionally, I enjoy working with the data that is collected, and ensuring that it is correct before it becomes part of the climate record for the United States.

How and when did you become interested in meteorology?

Growing up in Minnesota, there is a wide variety of weather, from the hot humid summers, to the very cold and windy winters, and from severe thunderstorms and tornadoes to blizzards with sub-zero windchills. I can remember when I was 6 or 7, the sky turned this eerie yellow/green color, then shortly thereafter the strong winds struck, knocking down large elm trees all over the neighborhood. After that storm, I decided that I wanted to understand the natural forces that caused this destruction.

What is the most challenging part of the job?

One of the challenging parts of the job can be finding observers in certain locations. Some of the Coop sites have histories going back well over 100 years. In order to maintain the integrity of the climatological record, certain criteria must be met when relocating a station, such as it should be no more than 5 miles or 100 feet in elevation difference from the original location.

This can make finding a new weather observer difficult at times.

During your career at the National Weather Service, what weather event stands out and why?

One event that stands out, was back in 2004 an F-4 tornado struck near the town of Roanoke IL, and I got to go on the storm survey. The tornado turned and destroyed a large manufacturing plant, which made parts for Caterpillar, just outside of Roanoke. There were about 110 people inside the plant, but everyone walked away unharmed. It was truly an eye opening experience to see such devastation, with the lack of injury. A true testament to the foresight of the owner of the plant to have a severe weather emergency plan and to actively hold tornado drills.

What do you like to do outside of work?

Outside of work, I enjoy traveling, spending time with my family, biking and riding trains with my son.



Dan Kelly, Observation Program Leader taking a snow core measurement

2019– 2020 Winter Seasonal Outlook

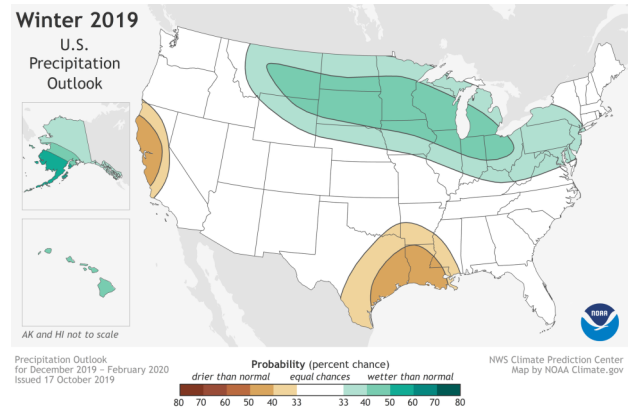
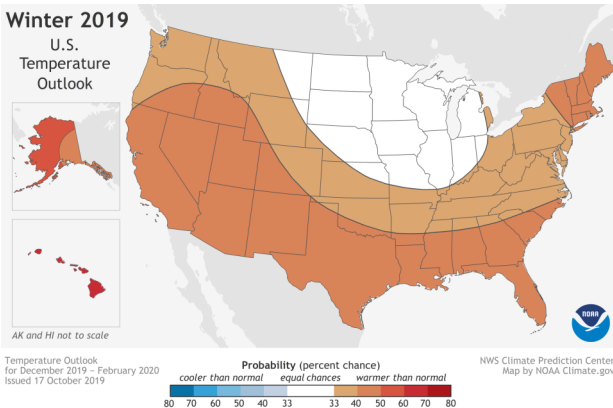
By David Thomas

It's November and snowflakes have started to fly. To plan for winter, the National Oceanic and Atmospheric Administration (NOAA) released their winter outlook for the United States.

The El Niño Southern Oscillation (ENSO) is one of the better winter outlook signals. This index looks at water temperatures in the equatorial Pacific Ocean. The water temperature departure from normal has a major influence on wind circulations and the jet stream over North America. A highly anomalous ENSO index can increase confidence for cooler or warmer than normal air temperatures for the upcoming winter season. This index can be predicted very well months to even a year in advance, making it a useful tool for compiling a winter season outlook. This winter the ENSO is forecasted to be neutral, meaning the water temperatures near the equatorial Pacific will be near normal.

The 2019-20 winter outlook for much of the country, including Western and North Central New York, is to have greater odds for warmer than normal temperatures for the winter months of December, January and February. However, since the ENSO signal will be weak, we look to other climate patterns in the tropics and oscillations closer to the North Pole and mid-latitudes. These include the Arctic Oscillation and North American Oscillation which will play larger roles. These oscillations are much harder to predict more than a few weeks to a month in advance so while odds favor a warmer winter, confidence will not be as high as a winter that was under a stronger signal from ENSO.

Precipitation is also favored to be above normal. Precipitation in this case includes both snowfall and rainfall through the three winter months of December, January and February. Sometimes the difference for above or below normal snowfall in a winter season is placement of where lake effect snow occurs. Through a typical winter our region of WNY and NCNY averages 10 lake effect snow events a year, with an event defined as producing at least 7 inches of snow. As we get into the winter months, now would be a good time to prepare for the harsh winter conditions. This includes dusting off those gloves, boots and hats, getting snow removal equipment ready to use, and preparing an emergency winter car kit.



The Fall Storm Season is Upon Us

By Jason Alumbaugh

As the days get shorter, the nights get longer and leaves start to pile up on the ground, we know that fall is finally here. Another sign of fall are windier periods that we are accustomed to in the Great Lakes. For the larger ships on the Great Lakes, as well as the occasional recreational boater, it is a time of increasingly rough weather on the Great Lakes.

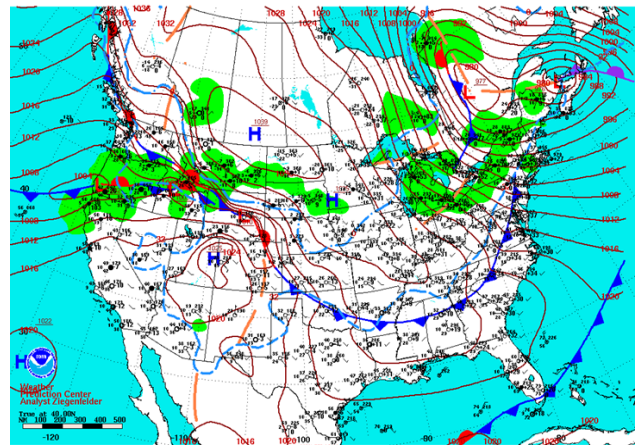
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The Fall Storm Season is Upon Us (continued)

When meteorologists forecast the winds and waves on the Great Lakes, we look at two primary elements to better pin down our forecasts; gradient of pressure and instability. When strong low pressure systems pass across the region, it is the gradient of pressure immediately ahead of, or just behind the low that can typically cause the strongest winds and associated higher waves on the Great Lakes. This effect is further enhanced if strong high pressure builds in just behind the low. Between the increasing winds and shifting wind directions, these types of weather setups can be very hazardous for boating on the Great Lakes with sharp wind shifts and sudden increasing winds.

The second element that has direct bearing on the strength of the winds and height of the waves is the over-water instability. When all things are equal with similar pressure patterns and pressure gradients in place, we expect to see stronger winds and higher wave heights when cold air is flowing over warmer lake waters (unstable) than when warmer air flows over colder lake waters (stable). The peak unstable season is fall into early winter, while the peak stable season is spring into early summer when a low-level inversion develops near the surface of the water. The inversion acts to limit stronger winds from mixing down to the surface, which also results in lower wave heights. In the marine community this low-level inversion is known as the marine layer. The marine layer helps explain why you can look at the water surface and see nearly calm conditions, while a flag or wind instrument near the shore indicates much stronger winds.

As we head into the fall storm season, we encourage you to follow the changing weather patterns along with us. One source for looking at daily weather maps is <https://www.wpc.ncep.noaa.gov/dailywxmap/>. On this site, you can also look at past weather maps for almost the last 20 years.



A surface pressure map from the morning of February 25, 2019, showing powerful low pressure that brought 70 to 80 mph winds across much of western and north central New York.

Winter Weather Awareness Week November 3-9

By Mike Fries

The National Weather Service features awareness weeks for differing varieties of hazardous weather throughout the year. The goal is to provide an increased focus on certain types of weather in a seasonally appropriate manner. These weeks focus on the threats specific types of weather pose to and provide tips and strategies to better deal with their effects on your life. The end result of these efforts is to create a population that is better equipped to deal with the effects of hazardous weather in the effort to create a Weather Ready Nation.

All of the National Weather Service offices that service New York State will be recognizing Winter Weather Awareness week during the week of November 3-9. During this period, the NWS offices will be sending out Facebook safety-related posts, pertinent tweets regarding winter tips, and daily public information statements on winter hazards, preparation information, and safety related information. All of these collectively work together to utilize multiple platforms to reach more people than we have ever been able to in the past to better spread information that we hope to increase public awareness and safety going into the new winter season.

So as we watch the leaves changing color and eventually falling outside, we know based upon where we live, snow and ice season is approaching. The time is right to start to prepare your car, your family, and your house for the upcoming winter season. Watch for our posts on Facebook, Twitter, and via our traditional public information statements for some great information to help keep you and your family safe this winter.

Puzzle Corner from NWS Buffalo

S V T O I Z I Q U A U T Z W G S
 E C A B A Z S C F Q S I O Y A N
 I S O F D I N R E X D N S O E O
 R H C S K R I S Z S S M C Q S W
 R O V S C G A V N R K O X N L A
 U V A S I K R Z E O C A O Q E N
 L E U D O Q G D Z T W W T X T G
 F L B Y N I N T O I F M T E X E
 F R A C S U I H T L L J A J S L
 O P B N H I Z F A E T B D N M P
 V F P T R T E K E U E E G J Y V
 N T T T X M E H A D Q L Q B Q R
 U S J T B R R J T C G O S V P O
 L A K E E F F E C T A X O Z A Q
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 F N H E B B C O E A R M U F F S

Winter Word Find

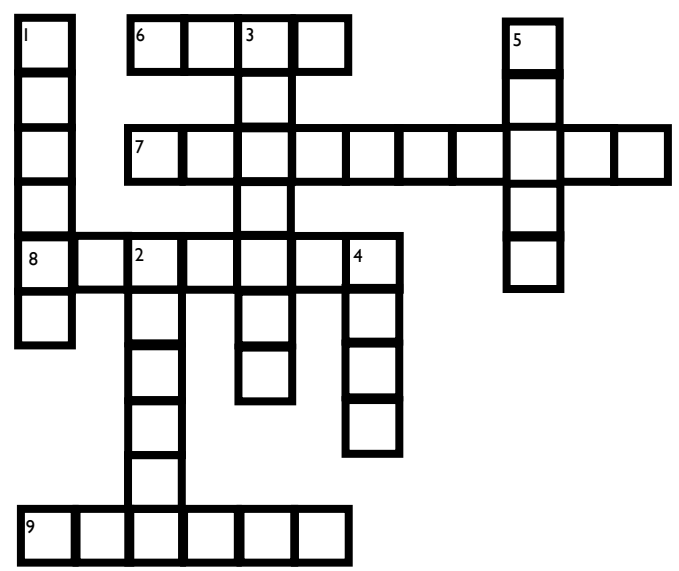
The following winter words are hidden. See if you can find all listed words

- Blizzard
- Flurries
- Hot Cocoa
- Scarf
- Sleet
- Snowman
- Coat
- Freezing Rain
- Ice Skates
- Shovel
- Snow angel
- Thunder snow
- Earmuffs
- Frigid
- Lake Effect
- Skis
- Snowflake
- Wind chill

Crossword Puzzle

The following words associated with wind storms fit into the crossword puzzle. There are no clues.

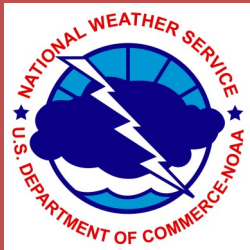
- Breezy
- Seiche
- Windy
- Damage
- Turbulence
- Warning
- Gusting
- Howl
- Gale



Answers: 1. Damage 2. Seiche 3. Warning 4. Gale 5. Windy 6. Howl 7. Turbulence 8. Gusting 9. Breezy

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warnings for the
protection of life
and property and
enhancement of the
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SKYWARN® News

By Jon Hitchcock, Meteorologist

This spring and summer saw a near average amount of severe weather across western and north central New York. The National Weather Service in Buffalo issued 106 Severe Thunderstorm Warnings this year through early November, which is very close to the 20 year average of about 100. We received nearly 200 reports of severe weather, such as wind damage and large hail. Many of these reports came from our trained SKYWARN spotters! There were no tornadoes confirmed so far this year in our forecast area.

Severe weather is most common from spring through early fall, but can happen any time of year. We are also entering our season of strong non-thunderstorm winds, produced by strong low pressure systems moving through the Great Lakes region. With this in mind, you should still be prepared for the possibility of dangerous winds and power outages. That said, many of us are thinking about the turn of seasons to cold and snow. Reports of snow and ice from volunteer spotters play a critical role in the ability of the National Weather Service to forecast and convey the impacts of winter storms. Here are some tips and reminders for measuring snow.

The best method to measure snow is to use a snow board. This can be any board, approximately 2 feet x 2 feet. The board needs to be white, or other light color so it does not absorb energy from the sun and melt the snow. Place the snow board well clear of tall objects such as your house, trees, and fences. Mark the snow board with a pole so you can find it after it snows! Once it snows, use a ruler to measure the snow on the board to the nearest tenth of an inch. Measure as soon as you can following the snowfall to avoid melting, drifting, and excessive settling. Clean the snow off the board no more than once a day, or after an event ends to prepare for the next snowfall. If your snow board becomes affected by drifting or is blown bare, take several measurements at different locations and compute an average.

We use snow and ice reports for a myriad of different things at the National Weather Service. Reports during a winter storm can help to fine tune the forecast snow and ice amounts, and timing of precipitation type changes. Following the storm, snowfall reports create a history of the event that can be used for climate records, research projects, and planning for similar future storms. Thank you in advance for your help with snowfall reports this winter!



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