NY CoCoRaHS Newsletter

January 2023

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Welcome to the second edition of the New York CoCoRaHS newsletter! This edition will explore the importance of CoCoRaHS snow reports and provide tips on how to take those measurements correctly. For instance, CoCoRaHS observations were integral in determining the extent and severity of the major lake-effect snowfall event in November. Please email cocorahs@cornell.edu if you'd like to provide feedback, be featured in our observer profile, or submit a photo for use in the newsletter. Thanks for reading!

- Samantha Borisoff, NYS Coordinator

Photo by NY-TM-38

Observer Recognition

We appreciate all of our volunteers! Consistent precipitation reports, even the zeros, are essential to the CoCoRaHS network and those who use its data. As a special thank you to those observers who report nearly every day, we have created the golden, silver, and bronze raindrop awards. This newsletter is highlighting observers who reported 99% (golden raindrop), 95% (silver raindrop), and 90% (bronze raindrop) of all days from June 1 through December 31.

Golden Raindrop

NY-AB-1
NY-AB-21
NY-AB-32
NY-AL-11
NY-BM-52
NY-CB-15
NY-CB-16
NY-CB-24
NY-CL-7
NY-CL-12
NY-CM-21
NY-CQ-5
NY-CQ-9
NY-CQ-22
NY-CQ-39
NY-CQ-42
NY-CR-1
NY-CR-3
NY-CY-5
NY-CY-14
NY-CY-26
NY-CY-34
NY-DL-32
NY-DT-10
NY-DT-12
NY-DT-24
NY-DT-29
NY-DT-32
NY-DT-34
NY-DT-35
NY-ER-50
NY-ER-56
NY-ER-57
NY-ER-59
NY-ER-63
NY-ER-75
NY-ER-102
NY-ER-158
NY-ER-189
NY-ER-194
NY-ER-219
NY-ES-5
NY-FK-7
NY-GR-6
NY-GR-7
NY-GR-14
NY-GR-15
NY-HM-8
NY-HM-10
NY-HR-18
NY-KN-25
NY-LV-8
NY-LW-3
NY-LW-12
NY-LW-13
NY-MD-22
NY-MG-1
NY-MG-5
NY-MR-15
NY-MR-65
NY-NG-2
NY-NG-12
NY-NG-27
NY-NG-30
NY-NS-34
NY-NS-46
NY-NS-65
NY-NS-66
NY-OD-2
NY-OD-21
NY-OD-43
NY-OD-67
NY-OG-10
NY-OG-71
NY-OL-5
NY-ON-15
NY-OR-4
NY-OR-17
NY-OR-18
NY-OR-21
NY-OS-1
NY-OS-15
NY-OS-20
NY-OS-38
NY-OT-11
NY-PT-2
NY-QN-33
NY-QN-39
NY-RC-1
NY-RL-8
NY-RN-1
NY-RN-13
NY-RN-20
NY-SC-2
NY-SC-17
NY-SC-27
NY-SF-16
NY-SF-44
NY-SF-73
NY-SF-77
NY-SF-84
NY-SF-85
NY-SF-92
NY-SF-110
NY-SF-114
NY-SF-123
NY-SF-127
NY-SF-138
NY-SL-6
NY-SR-4
NY-ST-3
NY-ST-30
NY-ST-41
NY-TG-15
NY-TM-4
NY-TM-23
NY-UL-20
NY-UL-29
NY-UL-31
NY-UL-34
NY-UL-37
NY-UL-39
NY-WC-6
NY-WC-18
NY-WC-22
NY-WN-6
NY-WR-21
NY-WY-10
NY-WY-11
NY-YT-12

Silver Raindrop

NY-AB-10
NY-AB-23
NY-AB-47
NY-AB-66
NY-BM-4
NY-BM-21
NY-CB-19
NY-CB-23
NY-CM-24
NY-CN-2
NY-CN-16
NY-CQ-41
NY-CT-25
NY-CY-2
NY-CY-8
NY-DL-23
NY-DL-25
NY-DL-28
NY-DL-34
NY-DT-8
NY-ER-96
NY-ER-122
NY-ER-135
NY-ER-166
NY-ER-177
NY-ER-178
NY-ES-11
NY-FL-7
NY-GN-6
NY-GN-20
NY-GN-23
NY-HM-1
NY-HM-9
NY-HR-16
NY-HR-23
NY-JF-30
NY-MD-16
NY-MG-2
NY-MG-3
NY-MR-21
NY-MR-23
NY-MR-50
NY-NS-42
NY-OD-23
NY-OD-60
NY-OG-46
NY-OG-52
NY-OG-70
NY-ON-17
NY-ON-22
NY-SC-16
NY-SF-7
NY-SF-100
NY-SF-103
NY-SF-148
NY-SR-29
NY-TG-28
NY-TM-5
NY-UL-38
NY-WN-18
NY-WR-17

Bronze Raindrop

NY-BM-7
NY-CQ-34
NY-CQ-35
NY-CT-22
NY-CY-35
NY-DT-37
NY-ER-39
NY-ER-54
NY-ER-72
NY-ER-98
NY-ER-138
NY-ER-151
NY-ER-208
NY-ER-211
NY-ER-242
NY-ER-245
NY-GN-13
NY-MR-84
NY-NG-32
NY-NG-55
NY-OD-19
NY-OT-31
NY-RN-15
NY-RN-23
NY-SF-2
NY-SF-62
NY-SF-74
NY-SF-80
NY-SR-40
NY-SR-57
NY-ST-10
NY-ST-33
NY-SY-11
NY-TG-26
NY-TM-42
NY-TM-45
NY-UL-16
NY-UL-19
NY-WC-11
NY-WC-20
NY-WR-10
NY-YT-8

Observer Profile

by Dan Kelly, NWS Buffalo

Jim Maryinuk with a friend who stopped for a rest.

Each newsletter, we will introduce you to a CoCoRaHS observer. This time, we are featuring Jim Maryinuk, the Oswego County Coordinator. Jim became a CoCoRaHS observer in 2009. He also has been a dedicated Cooperative (Coop) Weather Observer for the National Weather Service (NWS) at his home near Palermo for the past 11 years. During that time, he has measured a total of 1,766.8 inches of snow with an average of 135.9 inches of snow per year. In addition, Jim reports frost depth every day to the NWS, which helps with river flood forecasting during the spring snowmelt season. Jim established a Coop weather station in 2012 at Lock O-3 on the Oswego Canal, where he was the Chief Lock Operator. Jim retired in 2017 after 30 years with the New York State Canal Corporation. While at Lock O-3, he took snow depth and snow water equivalent observations for the bi-weekly snow survey organized by the Northeast Regional Climate Center.

Mr. Maryinuk, a lifetime resident of Palermo, lives on the farm that has been in his family for five generations and over 100 years! On the Maryinuk Farm, he primarily grows asparagus, but also grows a lot of varieties of organic lettuces and a wide range of berries, some of which can not be found in a typical grocery store such as Saskatoon and Haskap. A variety of animals also live on the farm. Over the years, several school groups have stopped by the farm, including a group of about 30 children from Syracuse a few years ago. Jim and his wife of 32 years, Linda, made doughnuts for their guests. He remembers one boy was sitting and eating a doughnut when he felt someone trying to take the doughnut away from him. Thinking it was one of his friends playing a joke on him, the boy turned around to find himself face to face with one of the goats. Startled, the boy ran onto the bus and the goat actually followed him to his seat and wanted to ride on the bus back to Syracuse!

Being a farmer, Mr. Maryinuk is really in tune with the weather. He has experienced first hand some of the changes in the weather patterns over the past few years. The Maryinuk Farm has experienced a snow drought. The lake effect snow bands that in the past have brought several inches of snow to his farm have shifted farther north. With very sandy soil on the farm, it is difficult for the soil to retain moisture, so he has found himself having to rely on irrigation more and more. Additionally, Jim has noticed that the summers have been noticeably warmer over the last 20 years or so, equating the summer sun in New York to that of October weather in Florida. He also noted that he sees the maple trees in his area dying from the warmer weather. Jim used to grow raspberries on the farm; however, a non-native fruit fly has spread north into the area. Instead of spraying pesticides on the plants, he has looked into other varieties of berries.

Jim and Linda are very active in their church, the Fellowship Baptist Church in Parish. He is a licensed minister at his church and holds services twice a week at the Seneca Hill Nursing Home in Oswego. Jim's mom was a resident at Seneca Hill, and he would play his accordion for her when he would visit. Many of the residents would come by and stand at the door to hear Jim play. After seeing the joy on all of their faces, he made it a tradition to play for the residents on a regular basis.

Jim and Linda have three children and one granddaughter.

Winter Precipitation Measurement

by Dan Kelly, NWS Buffalo

While parts of Erie County, including Buffalo, have seen a surplus of snowfall since October, several places in New York have snowfall deficits. For instance, Syracuse typically sees 62.7 inches of snow between October 1 and January 20 but this year the site has only accumulated 21.2 inches, a deficit of 41.5 inches! Meanwhile, Central Park has yet to see measurable snow (0.1 inches), currently ranking as the site's second latest first snowfall since recordkeeping began in 1869! Whether your area has seen little snow or lots of it, below are some helpful snowfall measurement tips and reminders.

Measuring Snowfall Dos and Don'ts

Please see the comments on the next page or contact your NWS Office for more information

DO:

- ✓ Measure snow on a snowboard.[1]
- ✓ Before it snows start with the snowboard on the ground.[2]
- ✓ Clear the snowboard once per day after the designated observation time.[3]
- ✓ Place the snowboard on top of the snow after clearing the board.[4]
- ✓ Take supplemental readings and report to the NWS – Do NOT clear the snowboard after these supplemental readings.[5]
- ✓ Use a driveway marker to mark the location of the snow board.[6]

DON'T:

- ✗ Measure snow on the ground, sidewalk, asphalt, decks, picnic tables, cars, etc...[A]
- ✗ Place the snowboard on an elevated surface.[B]
- ✗ Clear the snowboard more often than every 24 hours.[C]
- ✗ Leave the snowboard on the ground after clearing it.[D]
- ✗ Measure in snow drifts or areas that have been disturbed by animals or people.[E]

Comments:

1. Snowboards can be made using a 24"X24" piece of plywood. Make sure it is painted white to reduce melting due to absorbed heat in the snowboard!
2. Before the snowstorm start with the snowboard on the ground if the snow depth is zero, or on top of the snowpack if there is snow on the ground.
3. Make sure you only clear the snowboard once per day after your designated observation time.
4. Placing the snowboard on top of and level with the snowpack will give you a good starting point for your next observation. Also consider placing a weight on the board to prevent it from blowing away. Be careful though that the weight is not too large that the snowboard sinks in the snow, and not too large that it obstructs the measurement.
5. Since snowfall is defined as the maximum depth of the snow on a snowboard in the 24-hour observational period...supplemental observations are encouraged when the snow stops to properly document the snowfall. Remember you do not have to wait until your next observation time to submit the report. You are encouraged to submit these supplemental reports using the Significant Weather Report Form in CoCoRaHS. Your NWS Office will appreciate this report!
6. Trying to find a white board in the snow can be difficult. Use a driveway marker or flag to mark the position of the snow board to make it easier to find.

A. Measuring on concrete or asphalt can lead to artificial heating and melting of the snow before it can be measured.

B. Placing the snowboard or measuring snow on an elevated surface will lead to erroneous readings as elevated surfaces are unprotected from the impacts of wind.

C. NEVER clear the snowboard more often than once per day after your designated observation time. Clearing more frequently can lead to grossly inflated snowfall totals!

D. Leaving the snowboard on the ground after clearing it may lead to an artificially inflated reading due to blowing and drifting snow. Always place the snowboard on top and level with the snowpack after clearing.

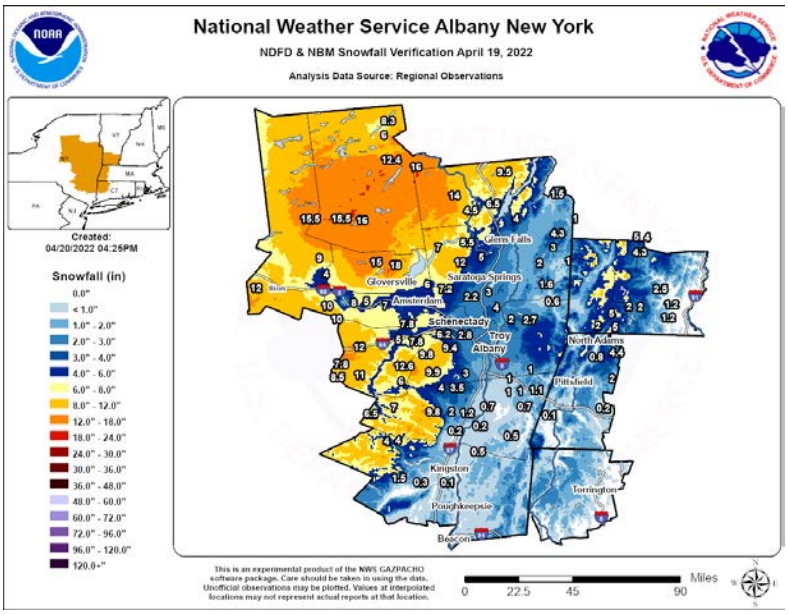
E. Sometimes finding the right location to measure snow can be tough. Changes in wind direction can impact where drifting occurs. Plan ahead and try to avoid placing your snowboard in areas prone to drifting. If drifting does occur, carefully take a reading in your rain gauge before melting the snow down. Be sure to note that the rain gauge was used to measure the snow in the

For more information on snow measuring, please read the NWS Snow Measuring Guidelines or contact your NWS Office

2022 Review

2022 was New York's 19th warmest year since recordkeeping began in 1895. The state's annual average temperature of 46.5°F was 0.5°F warmer than normal. Notably warm months included the 12th warmest May, the ninth warmest August, and the 14th warmest November. New York's annual precipitation totaled 42.84 inches, which was slightly below normal. The state saw its 12th wettest February, 13th wettest April, and 19th wettest September. A few major weather events of 2022 are highlighted below.

NWS Albany: April 18–19, 2022 Late Season Heavy Wet Snow Event by Christina Speciale

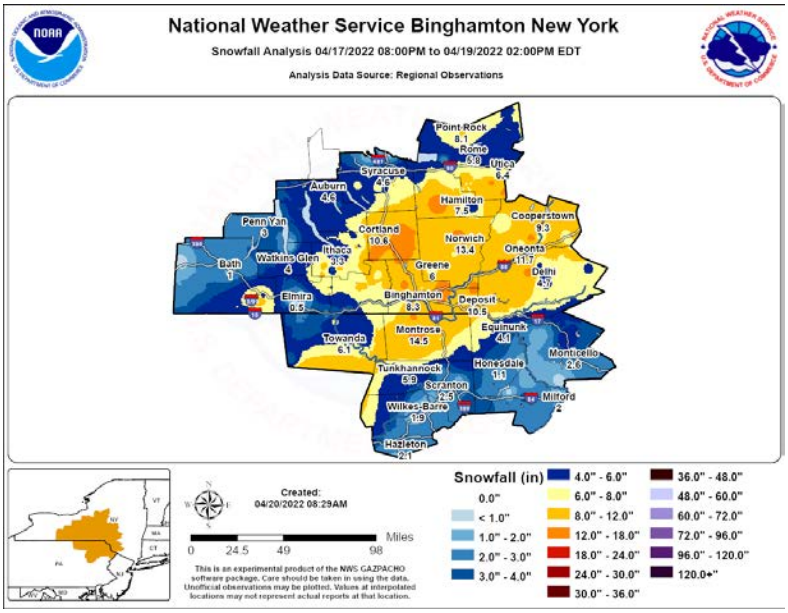


A strengthening coastal low tracking up the Eastern Seaboard and into western New England led to widespread precipitation overspreading much of Upstate New York during the day on April 18 into the overnight hours. Precipitation started out as rain given temperatures in the 50s and dew points in the 20s. However, as we lost daylight, precipitation continued and the temperatures quickly cooled due to a process called "wet-bulb cooling." This is a process where temperatures can cool in response to precipitation evaporating as it falls through dry air. In this case, the exact track of the storm was key in determining if precipitation would transition to snow through evaporation or stay as rain, especially in the valley. With it tracking east of the Hudson River, that enabled enough cooling to occur to result in a transition over to snow for the higher terrain as well as the valley. The time of day (nighttime) also was favorable for precipitation to turn to snow. The higher terrain and hill towns transitioned to heavy wet snow first followed by the valley. Interestingly, given the strength of the storm and high snowfall rates, lightning was actually noted during the early morning hours of April 19 by CoCoRaHS observers!

A challenge with many winter weather situations is the snow to liquid ratios (SLRs) or how much water will be in the snow and this event was no exception. With temperatures cooling only into the low to mid 30s, the snow stayed wet and featured a high water content. On average, SLRs typically range 10–12:1 in Upstate New York but in this case, the marginal temperatures led to much lower SLRs ranging 4–8:1. This resulted in heavy, wet snow with snow amounts very elevation dependent. Snowfall totals reached 10–18 inches in the Adirondacks and Catskills, 6–10 inches in the Helderbergs and even 1–4 inches in the immediate Capital District around Albany. Luckily, this event took place before leaf out so trees were still bare. However, strong winds occurred as the initial precipitation evaporated and saturated the air resulting in power outages as heavy, wet snow weighed down on the trees. Most of the power outages took place in the southern Adirondacks and Upper Hudson Valley. This was the final winter weather event of the 2021–2022 winter season and a rather rare and significant late season event.

2022 Review

NWS Binghamton: Central New York's 2022 Weather Event to Remember by Jim Brewster



The marquis weather event of 2022 in Central New York was the powerful late season winter storm that brought over a foot of snow to many areas from April 17–19. This storm formed along the Atlantic seaboard near the Virginia Capes and moved toward southern New England. Late season winter storms are not uncommon in our region, but this storm system was unique in that near surface temperatures remained cold enough to keep precipitation all snow, but not quite cold enough to produce the typical mid-winter light and fluffy characteristic. The snow that fell over Central New York had a low snow-to-liquid ratio, and was therefore very dense which allowed it to readily stick to newly budding tree limbs and also powerlines. This effect resulted in hundreds of downed lines and power outages leaving tens of thousands of people in the dark for days. In some cases, power remained out for over a week. Once again, the volunteers of NY CoCoRaHS showed their mettle in providing accurate snowfall, depth and liquid equivalents during this challenging time when many were likely feeling the after effects of this storm.

NWS Burlington: Heavy Rain and Ice Jam Flooding on February 17–18, 2022 by Seth Kutikoff

Courtesy of Eric Day

On February 18, 2022, the East Branch of the Ausable River reached its second highest reported level at 15.82 feet due to an ice jam, surpassing the observed water level from a previous ice jam on January 12, 2018 by over 2 feet. Major flooding closed roads, flooded cars, and water entered homes and businesses. Cars were submerged beneath flood waters near Au Sable Forks. Videos on social media platforms of the event depicted flooded roadways downtown, with reports of water in basements along Intervale Road. Additionally, light ice accretion and snow accumulations, locally 7–8 inches by the International Border, were observed across much of northern New York following widespread heavy rainfall amounts in the range of 1–2 inches in less than 24 hours as temperatures temporarily surged into the 45–50 degree range. The large warmup and precipitation also led to sharp river rises aside from the Ausable River.

2022 Review

NWS Buffalo: Major Lake-effect Snow Event November 16–20, 2022 by Bob Hamilton

Courtesy of Dan Kelly

In mid-November an epic lake effect snow event occurred east of both Lakes Erie and Ontario. After measurable snow fell Wednesday into Thursday morning, November 16–17, the first substantial lake snows developed Thursday afternoon in the wake of an exiting surface low over the St. Lawrence Valley. Cold air wrapping around the backside of this storm initially led to disorganized lake snow that was mixed with rain, keeping accumulations light and generally restricted to the higher terrain. After nightfall, the lake snows off Lake Erie quickly organized into a well-defined plume within WSW winds as temperatures around 4,000–5,000 feet dropped to 16°F. Moderate to heavy snow with rates of up to 2 inches per hour fell from Dunkirk across southern Erie County into Wyoming County for much of Thursday night. As is typically the case with a stronger early season lake snow event, thundersnow occurred within 15 miles or so of the lake. A counterclockwise shift in the winds pushed a band of heavy snow northwards to the Buffalo area before the heaviest snow settled to the southern suburbs. Many areas picked up a foot of snow by daybreak Friday, November 18. Off Lake Ontario, a band of heavy snow over Oswego County Thursday evening pushed north to Watertown overnight. While the band was generating snowfall rates over 1 inch per hour, its transitory nature helped to limit snowfall accumulations. Occasional thundersnow was found within the well-organized band Thursday late evening.

On Friday, persistent WSW winds positioned a stationary band of heavy lake snow over central and southern Erie County. The immediate southern suburbs of Buffalo were targeted with the heaviest snowfall, as a layer of stable air around 20 feet promoted snowfall rates of 4–6 inches per hour. The higher snowfall rates were often accompanied by rumbles of thunder. While travel restrictions were already in place for the New York State Thruway, the intensity of the snowfall eventually led to the Thruway's closure south of Buffalo and the decision to relocate Sunday's NFL game in Orchard Park. Meanwhile, WSW winds off Lake Ontario supported a 25-mile-wide band of moderate to heavy lake snow that was centered over central Jefferson County and extended across northern Lewis County. This band brought over a foot of snow to the Watertown area with snowfall rates occasionally reaching 3 inches per hour and thundersnow not uncommon.

Courtesy of John Jarosz

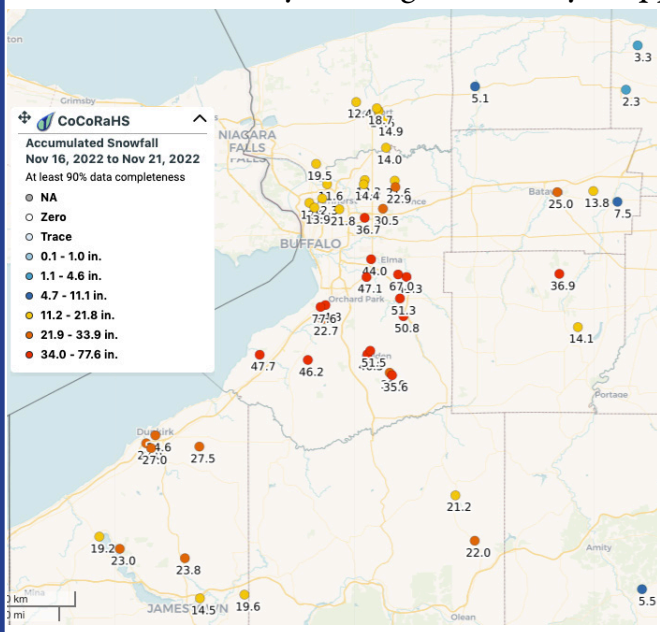
2022 Review

Courtesy of Robert Bellinger

Another upper-air disturbance approached the Lower Great Lakes Friday evening. During the night, the well-defined band of moderate to heavy lake snow that extended from the Chautauqua County lakeshore across southern Erie County to Wyoming County steadily marched north, passing through the Buffalo metro area after midnight with a burst of snow that deposited in excess of a foot of accumulation in this period alone! A very similar scenario unfolded east of Lake Ontario, however that band was disorganized. Fresh nighttime accumulations across Jefferson and northern Lewis County were closer to six inches.

On Saturday, the winds had shifted counterclockwise to SSW over both lakes. The impressive Lake Erie snow band over the Buffalo area pushed to the north across Niagara County, spending several hours centered over the Niagara Peninsula. This gave a much needed break to Buffalo and its immediate southern suburbs, while nearly a foot of snow fell over areas to the north that had seen little accumulation up to this point. Meanwhile, the Lake Ontario snow band made its way north of Watertown, spending most of Saturday over the Thousand Islands region and Kingston, Ontario.

Late Saturday evening, the Lake Erie band over the Lower Niagara River began to push south as a reinforcing cold front approached from the northwest. The band pushed through the Buffalo metro area with snowfall rates of 3–5 inches per hour, enhanced by a cold front. Many areas picked up another 6–10 inches of snow. By late Saturday night, the band had re-oriented itself over the Southern Tier. The band remained strong on mostly westerly winds until after daybreak Sunday when some drying of the atmosphere and a wind shift to the WNW caused the activity to become disorganized. As the layer of stable air lowered below 8,000 feet Sunday night, the lake snows off Lake Erie finally tapered off to scattered nuisance snow showers and flurries. The band off Lake Ontario over the Thousand Islands acted very much the same. It was positioned well north of Watertown Saturday evening then slowly dropped south during the course of the night. It generated 2–4 inches per hour snowfall rates as it made its way to the Tug Hill by daybreak Sunday. The band continued south where it impacted Oswego County with another 6 inches or so on Sunday.



Final snow accumulations were measured in feet, with 3–6 feet just south of the New York State Thruway, across Erie and southwestern Genesee and western Wyoming Counties. At the Buffalo Airport around 3 feet of snow was measured, and 1–2 feet fell across Niagara County and the western Southern Tier. East of Lake Ontario up to 5 feet of snow fell across eastern Jefferson and northern Lewis counties. Upwards of 3 feet of snow also fell across inland Oswego County.

10th Anniversary of Sandy

by Samantha Borisoff

Flooding at LaGuardia Airport. Photo courtesy of NWS OKX

Causing an estimated $81.9 billion in damage, Sandy is the fourth costliest weather disaster in the U.S. behind Hurricanes Katrina, Harvey, and Maria. In New York City, Sandy caused an estimated $19 billion in damage and was responsible for 43 deaths. The New York City Metropolitan Transit Authority declared that it was "the worst disaster in the 108-year history of the subway system." The storm destroyed over 300,000 homes in New York.

Sandy made landfall along the New Jersey coast near Atlantic City on October 29, 2012. Sandy's storm surge arrived at high tide, producing record-high water levels at several coastal sites from Maryland to Massachusetts, as well as along the Delaware River at Philadelphia, PA, and the Hudson River at Poughkeepsie, NY, with those records remaining in place 10 years later. The storm churned up large waves, with offshore wave heights up to 32.5 feet. The large waves and high water levels breached dunes, caused devastating flooding and damage, and severely eroded shorelines.

More than 10 inches of rain fell in parts of Maryland, New Jersey, and Delaware, with up to 4.50 inches in New York. In fact, October 2012 remains Delaware's wettest October on record. Farther west, up to 36 inches of snow fell in West Virginia. For Beckley, WV, October 2012 is still the snowiest October on record. Also, multiple sites including New York City and Binghamton set records for all-time lowest surface pressure due to Sandy.

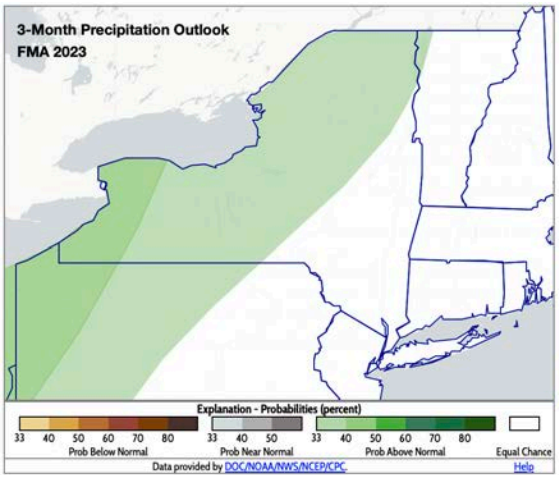
The storm produced gusty winds across many parts of the Northeast, with Sandy's strongest peak wind gust of 96 mph on the northern shore of Long Island. Around 8.5 million customers lost power in the U.S., including nearly 3 million in New York City and Long Island, with some without power for months. Because of debris and flooding, hundreds of roads were closed or impassable across the region. A fuel shortage led to gas rationing for up to two weeks in 12 New Jersey counties, in New York City, and on Long Island. The New York Stock Exchange was closed for two consecutive days, which was the first time that happened because of weather since 1888.

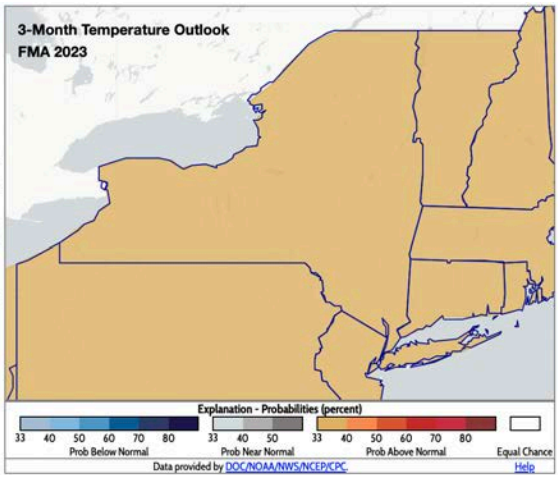
Wind damage from Sandy in Miller Place, NY, on Long Island. Photo courtesy of NWS OKX

For more information, visit the National Weather Service's "Hurricane Sandy: 10 Years Later" website here: https://storymaps.arcgis.com/stories/a2051beb42b044c58a82d671b28bbb17

Outlooks

by Samantha Borisoff





The three-month period from February–April is expected to be wetter than normal for western, central, and northern New York, according to NOAA's Climate Prediction Center. "Normal" varies by location: normal precipitation for February–April in Rochester is 7.61 inches, in Buffalo is 8.75 inches, in Syracuse is 8.98 inches, and in Watertown is 9.16 inches. Equal chances of below-, near-, or above-normal precipitation were predicted for the rest of the state. It is important to note that "precipitation" includes rain and the liquid equivalent of snow and ice, so wetter than normal does not necessarily mean snowier than normal.

The temperature outlook for February–April favors above-normal temperatures for all of New York. Normal average temperatures for February–April include 27.5°F in Lake Placid, 32.0°F in Watertown, 33.8°F in Binghamton, 35.2°F in Syracuse, 35.4°F in Buffalo, 36.9°F in Albany, 41.0°F in Islip, and 44.1°F in New York City. While the three-month period is expected to be warmer than normal, most areas will still see some colder-than-normal days during these months.

Photo by NY-TG-26

Contacts:

State Coordinator:
Samantha Borisoff - cocorahs@cornell.edu

Eastern New York (NWS Albany):
Christina Speciale - christina.speciale@noaa.gov

Central New York (NWS Binghamton):
Jim Brewster - james.brewster@noaa.gov

Western New York (NWS Buffalo):
Dan Kelly - dan.kelly@noaa.gov
David Thomas - david.thomas@noaa.gov

Northern New York (NWS Burlington):
Seth Kutikoff - seth.kutikoff@noaa.gov

Southern New York (NWS New York):
Tim Morrin - tim.morrin@noaa.gov