NY CoCoRaHS Newsletter

January 2024

Contents:

With the heart of snow season upon us, it is a good time to review how to measure and report winter precipitation. CoCoRaHS has created training slideshows and instructional videos that include all sorts of helpful information. Still have questions? Feel free to reach out to your county or regional coordinator or me!

If you'd like to provide feedback, be featured in our observer profile, or submit a photo for use in the newsletter, please email cocorahs@cornell.edu. Thanks for reading!

- Samantha Borisoff, NYS Coordinator

Photo by NY-TG-20

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-23
NY-AB-47
NY-AB-66
NY-AL-11
NY-BM-1
NY-BM-21
NY-BM-52
NY-CB-15
NY-CB-16
NY-CL-12
NY-CM-21
NY-CQ-5
NY-CQ-9
NY-CQ-22
NY-CQ-42
NY-CR-1
NY-CR-3
NY-CY-5
NY-CY-8
NY-CY-14
NY-CY-26
NY-CY-34
NY-DL-25
NY-DL-28
NY-DL-32
NY-DT-8
NY-DT-12
NY-DT-24
NY-DT-29
NY-DT-32
NY-DT-34
NY-DT-35
NY-ER-50
NY-ER-53
NY-ER-56
NY-ER-57
NY-ER-59
NY-ER-75
NY-ER-102
NY-ER-135
NY-ER-158
NY-ER-166
NY-ER-178
NY-ER-189
NY-ER-194
NY-ER-219
NY-ES-5
NY-FK-7
NY-GR-6
NY-GR-14
NY-GR-15
NY-HM-8
NY-HM-10
NY-HR-18
NY-JF-30
NY-KN-25
NY-LV-8
NY-LW-3
NY-LW-12
NY-LW-13
NY-MD-16
NY-MD-22
NY-MG-1
NY-MG-3
NY-MR-15
NY-MR-65
NY-MR-89
NY-NG-2
NY-NG-12
NY-NG-27
NY-NG-30
NY-NS-34
NY-NS-46
NY-NS-70
NY-OD-21
NY-OG-10
NY-OG-46
NY-OG-71
NY-ON-15
NY-OR-4
NY-OR-17
NY-OR-21
NY-OR-23
NY-OS-15
NY-OS-38
NY-OT-11
NY-QN-33
NY-QN-39
NY-RL-8
NY-RN-1
NY-RN-13
NY-SC-2
NY-SC-27
NY-SF-16
NY-SF-44
NY-SF-73
NY-SF-77
NY-SF-92
NY-SF-103
NY-SF-114
NY-SF-123
NY-SF-127
NY-SF-138
NY-SF-158
NY-SL-6
NY-SR-4
NY-ST-3
NY-ST-30
NY-ST-41
NY-TG-15
NY-TM-4
NY-TM-18
NY-TM-27
NY-UL-28
NY-UL-29
NY-UL-31
NY-UL-34
NY-UL-44
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-32
NY-BM-4
NY-BM-56
NY-CB-23
NY-CQ-35
NY-CT-22
NY-CT-25
NY-CY-2
NY-ER-54
NY-ER-63
NY-ER-98
NY-ER-122
NY-ER-261
NY-FL-12
NY-GN-13
NY-GN-20
NY-GN-23
NY-GR-7
NY-HR-16
NY-HR-24
NY-MG-5
NY-MR-21
NY-MR-23
NY-NS-42
NY-NS-65
NY-OD-2
NY-OD-19
NY-OD-23
NY-OD-67
NY-OG-70
NY-OG-79
NY-OL-5
NY-OS-1
NY-PT-2
NY-RC-1
NY-RL-13
NY-SC-17
NY-SF-80
NY-SF-85
NY-SF-100
NY-SF-110
NY-SL-21
NY-SR-29
NY-ST-50
NY-TG-28
NY-TM-23
NY-TM-45
NY-WC-11
NY-WN-18
NY-WR-17
NY-YT-8

Bronze Raindrop

NY-AL-2
NY-BM-7
NY-BM-14
NY-BM-55
NY-CB-19
NY-CQ-41
NY-DL-23
NY-DL-34
NY-DT-37
NY-ER-138
NY-ER-151
NY-ER-177
NY-ER-211
NY-ER-245
NY-HM-9
NY-JF-47
NY-MD-10
NY-MR-50
NY-MR-90
NY-NG-32
NY-NS-66
NY-OG-12
NY-OG-61
NY-OT-31
NY-OT-35
NY-RL-11
NY-RN-15
NY-RN-20
NY-SC-16
NY-SF-2
NY-SF-7
NY-SF-84
NY-SF-89
NY-SR-40
NY-SR-59
NY-ST-10
NY-TG-26
NY-TG-31
NY-UL-16
NY-UL-19
NY-UL-21
NY-UL-37
NY-UL-38
NY-UL-39
NY-WC-32
NY-WR-10
NY-WS-10

Observer Profile: NY-BM-14

by Joanne LaBounty, NWS Binghamton

Each newsletter, we will introduce you to a CoCoRaHS observer. This time, we are featuring one of the original New York CoCoRaHS observers, Ted Champney.

Ted began his career as a meteorologist at the National Weather Service (NWS) in Binghamton in 1989. He is the longest serving meteorologist at the Binghamton office and one of the very rare cases of a NWS meteorologist who has spent his entire career at one location. This makes him the "go-to" person for climatology and hydrology expertise at NWS Binghamton. Ted joined the CoCoRaHS program in central New York in 2007 when New York state joined CoCoRaHS. These rain and snow observations are used every day at the Binghamton office. His motivation early on was to see how precipitation compared between his location, a Cooperative Weather Station about 2 miles north of him, and the Binghamton Regional Airport about 7 miles to the south. He finds the infinite variations in rain and snow amounts fascinating, especially with thunderstorm rain. Ted is also an avid gardener, and he was interested in knowing how much rain fell in his backyard. Central New York's weather patterns can be quite diverse, with lake-effect snow, thunderstorms, and varying precipitation events throughout the year. Ted's attention to detail in his CoCoRaHS observations and regular reporting play a crucial role in capturing these changes. His involvement with CoCoRaHS isn't just about data collection; it's a reflection of his passion for environmental stewardship.

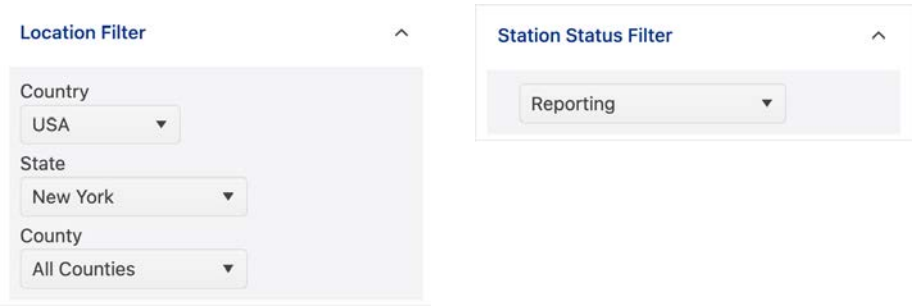
Ted is a native of New Hampshire and he and his wife, Stephanie, have two daughters and two grandsons. Ted's contribution to the community goes beyond being a CoCoRaHS participant. He is a volunteer firefighter for his community of Whitney Point for the past 10 years. Not only does he respond to the call when needed, but he participates in the fire department's fundraising and community events, such as handing out cider and donuts at the station on Halloween. Ted is the NWS Binghamton office recycling focal point and heads the yearly office campaign to collect donations for CHOW (the Community Hunger Outreach Warehouse) leading up to Thanksgiving. He is also known to bake treats including banana bread and ginger snaps to share with his co-workers. Besides gardening, Ted enjoys deer hunting in the fall.

CoCoRaHS Data Explorer

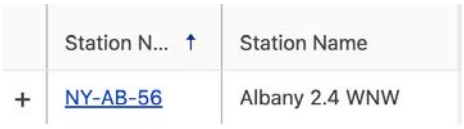
by Seth Kutikoff, NWS Burlington

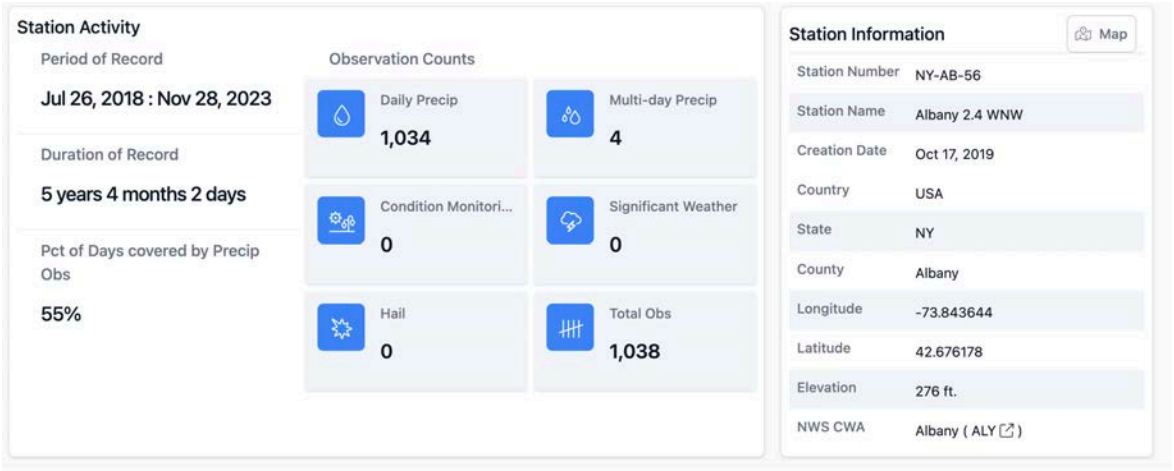
As of December 23, there were 641 active CoCoRaHS stations in New York state. Of those stations, 78 reported during the fall (September–November) of this year. The observer who had the most days of activity is up to 7248 daily observations, or nearly 20 years! The highest elevation site is at 2496 ft. in Delaware County. All of this information can be obtained from the new Data Explorer before even digging into the precipitation data. Have you used the Data Explorer yet? You can go directly to your station via the map or browse sites via the website https://dex.cocorahs.org/

A list of NY stations is obtained in the Station History Search via the location and station status filters:



For the station of interest (as an example, Albany 2.4 WNW), when you click on the + you'll see the Station Activity and Station Information:

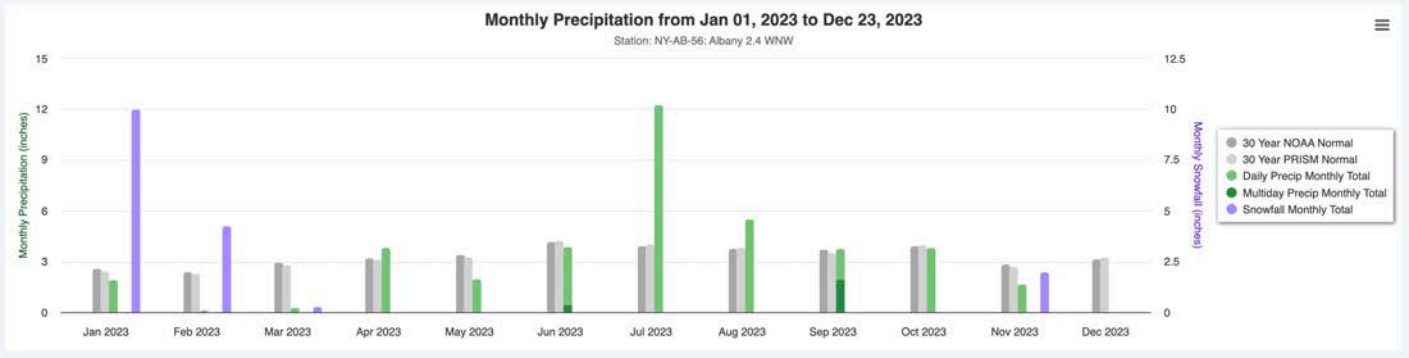




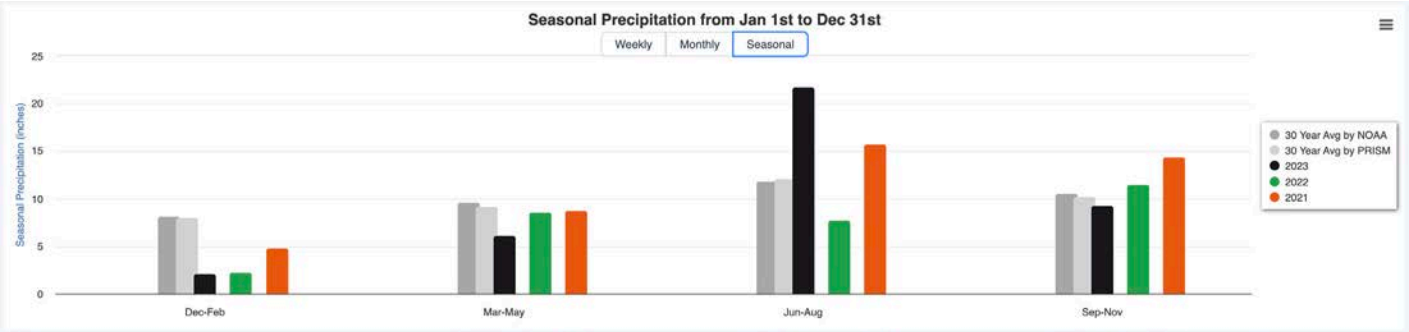
Clicking on the Station Number takes you to the station's data explorer, including a station overview (the main page), climatology, precip summary, year-over-year graph, precip calendar, precip distribution, obs calendar, and obs tables. There's a lot there! Each page has a plain language explanation of the data displays (e.g., how your precipitation departure from normals are calculated) by clicking on the ⓘ symbol. Note the more consistent you are with measurements over a long period of time, the more meaningful the data will be.

CoCoRaHS Data Explorer

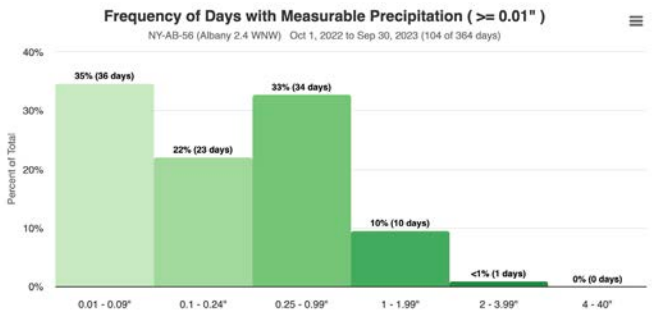
There are many graphs that can be printed or saved to your computer. One such graph on the Precip Summary tab is your monthly precipitation in comparison to climate normals. Note you can adjust the time frame however you'd like.

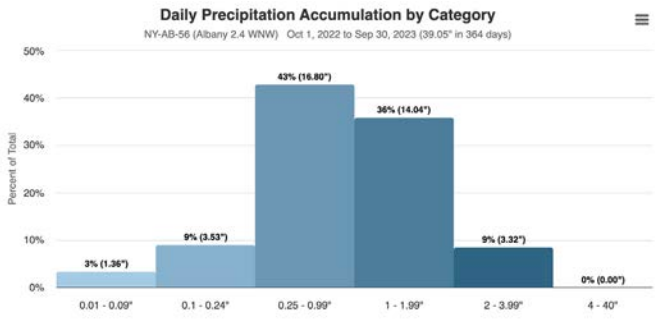


How about an annual comparison, grouped into seasons? Find it in the Year-Over-Year tab:

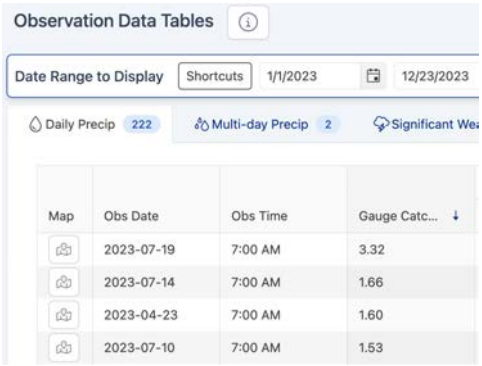


And what does the precip distribution do? It allows you to see how often you measure precipitation in different amounts and how much of your total rainfall fell in these bins. Below you can see that while 1" events are relatively rare (10% of measurable precip days), they contribute to 36% of the total precipitation.





Finally, if you just want an easy-to-browse journal of your observations, the Obs Table includes daily observations in one place, including the notes you took, and any significant weather reports and condition monitoring you have done. If you sort them you can quickly find your heaviest rainfall/snowfall, as shown here.

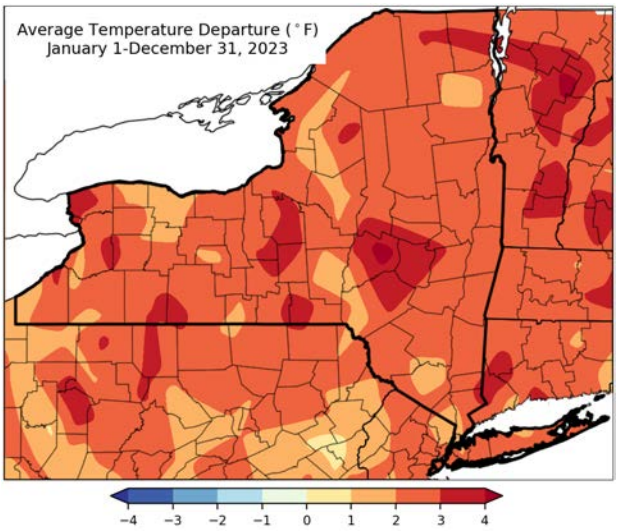


Winter Weather Safety

Below are some important winter safety reminders from National Weather Service. Additionally, please do not risk your personal safety to take observations. If conditions are dangerous, stay inside and enter an accumulated value when it's safe to go out. We appreciate your dedication, but your safety is the top priority!

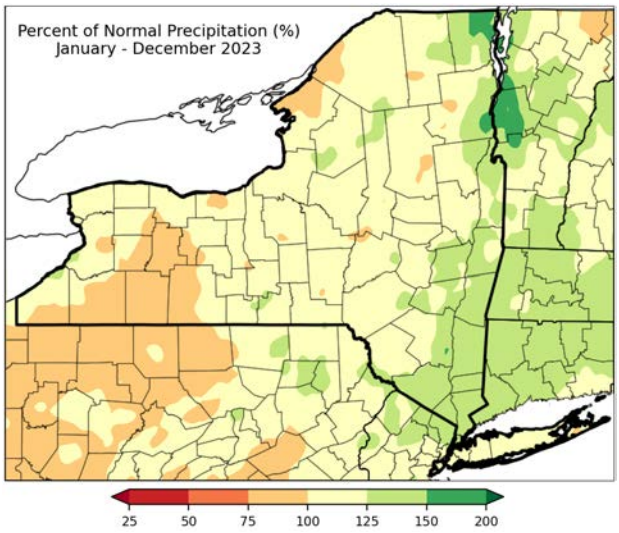
2023 Weather Summary

New York State Summary by Samantha Borisoff



2023 was New York's third warmest year since recordkeeping began in 1895. The state's annual average temperature of 48.2°F was 2.2°F warmer than normal. Notably warm months included the second-warmest January, the ninth-warmest February, the seventh-warmest April, the ninth-warmest October, and the second-warmest December.

Locations such as Binghamton, Albany, Islip, and Central Park experienced their warmest year on record. Meanwhile, 2023 was among the 10 warmest years on record for places like Syracuse, Buffalo, Rochester, and Watertown.



2023 was New York's 16th-wettest year on record with an annual precipitation total of 46.95 inches, which was 3.40 inches above normal. The state saw its 19th-wettest January, fourth-wettest July, eighth-wettest August, and third-wettest December. However, May was the state's 20th driest.

The year ranked among the 10 wettest years on record for sites such as Albany, LaGuardia Airport, and Kennedy Airport.

The greatest precipitation total at a New York CoCoRaHS site was 70.77 inches, or close to 6 feet, at NY-RL-8. A close second was NY-WC-11 with 70.35 inches. The five wettest sites are listed below.

Six New York CoCoRaHS sites pushed past 100 inches, more than 8 feet, of snow in 2023. The greatest accumulation of 144.5 inches, over 12 feet, was at NY-LW-3, which resides in the lake-effect zone east of Lake Ontario, also called the Tug Hill region.

A few notable weather events of 2023 are highlighted on the next two pages.

538 Stations with 126806 Reports over 365 Days

Station Number	Station Name	Daily Precip Sum in.	Multi-Day Precip in.	Total Precip in.	Daily Snow Sum in.	# of Reports
NY-RL-8	Stony Point 0.7 NW	70.77		70.77	7.6	365
NY-WC-11	Peekskill 0.4 N	62.41	7.94	70.35	6.5	341
NY-WC-34	Thornwood 0.7 NW	57.26	11.94	69.20	0.0	330
NY-UL-38	Highland 2.3 NW	65.45	2.94	68.39	12.9	351
NY-RL-11	New Hempstead 0.6 SE	66.79	1.27	68.06	10.6	340

538 Stations with 126806 Reports over 365 Days

Station Number	Station Name	Daily Precip Sum in.	Multi-Day Precip in.	Total Precip in.	Daily Snow Sum in.	# of Reports
NY-LW-3	Constableville 1.2 NW	48.79		48.79	144.5	365
NY-WR-21	Brant Lake 1.7 ENE	60.24		60.24	117.3	365
NY-ES-5	Schroon Lake 3.5 SW	59.28		59.28	113.0	365
NY-HM-8	Long Lake 1.2 N	49.15		49.15	111.1	364
NY-HM-10	Lake Pleasant 2.3 WSW	51.02		51.02	103.8	362
NY-FK-7	Saranac Lake 6.2 N	51.68		51.68	103.7	365

2023 Weather Summary

NWS Buffalo: Lewis County EF-3 Tornado by Heather Kenyon and David Thomas

On the evening of August 7, 2023, an EF-3 tornado moved across southern portions of Lewis County, New York. This was the first EF-3 tornado in New York State since 2014. The tornado touched down in the Town of Lewis and ended in the Town of Turin. It had an estimated peak wind speed of 140 mph with a path length of 16 miles and path width of 700 yards.

A Mesoscale Convective Vortex (MCV) moved from the western Southern Tier in the mid afternoon of August 7 to Kingston, Ontario, by evening. In Central New York, low level wind shear increased through the afternoon with 0-1 km shear increasing to greater than 25 kts and 0-1 km Storm Relative Helicity (SRH) increasing to greater than 200 m2/s2 by 7 pm. This fast and turbulent flow primed the lower atmosphere for tornadic activity within any supercell development.

Strong thunderstorms formed on the eastern edge of the MCV as it crossed the Finger Lakes region during the late afternoon of the 7th of August. The storms then grew in strength as they interacted with higher instability found across Oswego and Lewis counties. These storms went from producing wind damage across the Finger Lakes to spawning tornadoes in the southern Tug Hill region. Multiple rotating storms featuring velocity couplets on radar moved through Oswego, Lewis, and Jefferson counties on the evening of the 7th. The most significant tornado, an EF-3, struck the towns of Lewis, West Leydon, and Turin, damaging barns, a motel, a ski resort, and houses and uprooting and defoliating numerous trees. Another tornado was confirmed in southwest Lewis County.

In addition to the tornadoes, a trailing boundary from the MCV stalled across Onondaga, Oswego, and Lewis counties into the early evening. Showers and thunderstorms trained over the same area resulting in rainfall rates of 2-4"/hour. A moisture-laden atmosphere dumped heavy rain on areas that were previously struck with severe weather and even washed a few roads out in Oswego and Lewis counties. Thankfully there were no injuries or deaths from this eventful evening of August 7.

Photos courtesy of NWS Buffalo

2023 Weather Summary

NWS Burlington: Northern New York Annual Summary by Seth Kutikoff

Flooding damage in Ellenburg in July 2023.
Photo courtesy of FEMA Region 2

It was an eventful year across northern New York with long-time observers reporting more annual precipitation than any recent year. A highlight was the Pi Day Storm, which produced widespread 1 to 3 feet of snowfall in Essex County. Measured snow depths were as high as 41" in Olmstedville following this storm, part of a year in which total precipitation in the Adirondacks was well above normal. In contrast, parts of the St. Lawrence Valley managed to miss out on some of the big storms and finished with near or even below-normal precipitation. That being said, observers across the North Country measured a lot of rain this summer, especially in July when 4 to 8 inches of rain was measured in the western Adirondacks and points west, with 7 to 12 inches in eastern portions of northern New York. Another active period occurred in late November into December, leading to an above normal snowpack in the Adirondacks. That set the stage for a significant flood event in mid-December as a strong, warm storm produced heavy rain and wiped out high elevation snow.

Photo courtesy of NWS Binghamton

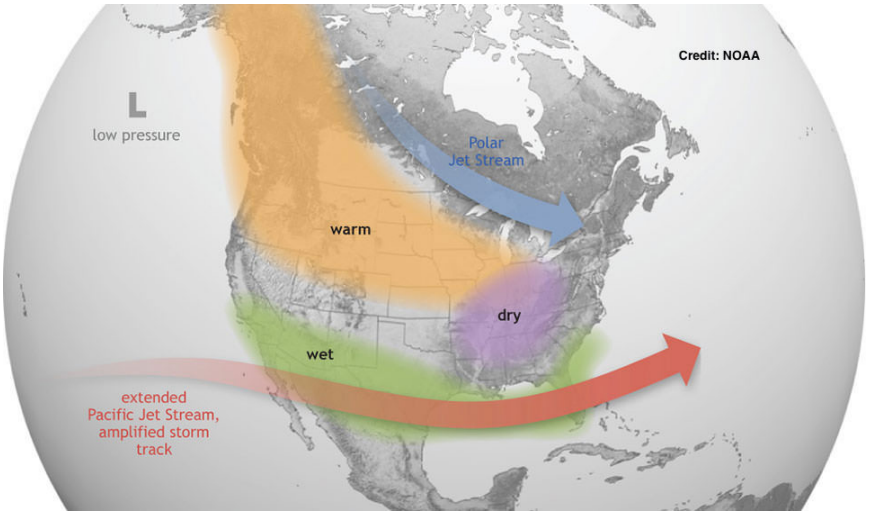
NWS Binghamton: Central New York's Weather Year in Review - 2023 by Jim Brewster

Out of several noteworthy weather events that occurred during the past year, the most unusual one to remember was the time in June when wildfire smoke blanketed Central New York for a few days. From June 6–8, 2023, smoke from hundreds of raging Eastern Canadian wildfires drifted in on northerly winds from the edge of a large area of high pressure centered over the upper Great Lakes. This smoke became progressively thicker leading to very poor air quality across the region. The air quality index rose to the "very unhealthy" and "hazardous" levels over those 72 hours. On one of the days in Syracuse, the Air Quality Index climbed well over 200 resulting in a noticeable smoky smell and irritation to the eyes, nose, and breathing passages. Travel was even hampered as visibilities around the area dropped to around one mile at times.

The State posted air quality alerts for the hazardous breathing conditions where the fine smoke particulates caused irritation and difficulties for many individuals. Schools and other groups canceled outdoor activities and many people limited themselves to being indoors much of the time. Daily temperature trends during this time were noticeably cooler than what would typically occur on a normally sunny June day and this cooling even helped to suppress the all too common pop up afternoon showers and thunderstorms.

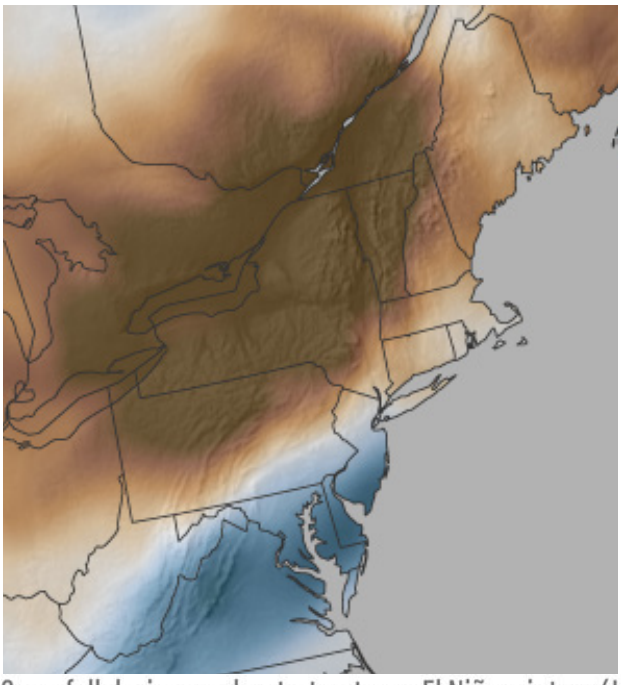
El Niño Conditions

by Samantha Borisoff, NYS Coordinator



An El Niño develops when sea surface temperatures are warmer than average in the equatorial Pacific Ocean for an extended time. This affects the position of the jet stream, which impacts weather patterns in the U.S., especially in the winter. The favored storm track is across the southern U.S. and up the East Coast, with several studies noting an increased frequency of nor'easters during El Niño winters. Strong El Niño events, like the current one, are particularly associated with this increase. This increased storminess tends to be tied to above-normal precipitation, more high-tide flooding days, and the potential for above-normal snowfall in coastal areas.

Conversely, this storm track typically means limited storms across the northern U.S., making drier-than-normal conditions more likely in western New York. Snowfall patterns can also be affected by El Niño, as shown by the map below from NOAA. Data from the Binghamton National Weather Service office showed that during 10 past winters with similiar setups (El Niño and other patterns), Binghamton saw below-normal snowfall in eight of those winters, while Syracuse saw below-normal snowfall in seven. However, the office also noted that expected above-normal temperatures this winter "may keep the Great Lakes warmer for longer." This means the lakes could be capable of generating lake effect snow, possibly more of it and longer into the season, if enough cold air moved across the region. More information on the connection between El Niño and lake-effect snowfall in western and north central New York can be found on the next page.



Snowfall during moderate-to-strong El Niño winters (Jan–Mar)

1959–2023 (detrended) vs. 1991–2020 average

difference from average snowfall (inches)

−10 −8 −6 −4 −2 0 2 4 6 8 10

NOAA Climate.gov
Data: ERA5

It is important to note that each El Niño is different and other factors can affect winter conditions, such pre-exisiting global snow cover patterns or climate variability associated with the Arctic Oscillation and North Atlantic Oscillation. These patterns are less able to be forecast far in advance compared to El Niño, meaning it is uncertain how much they will affect the upcoming winter. Additionally, individual storm tracks can influence where precipitation falls as rain versus snow.

El Niño Conditions

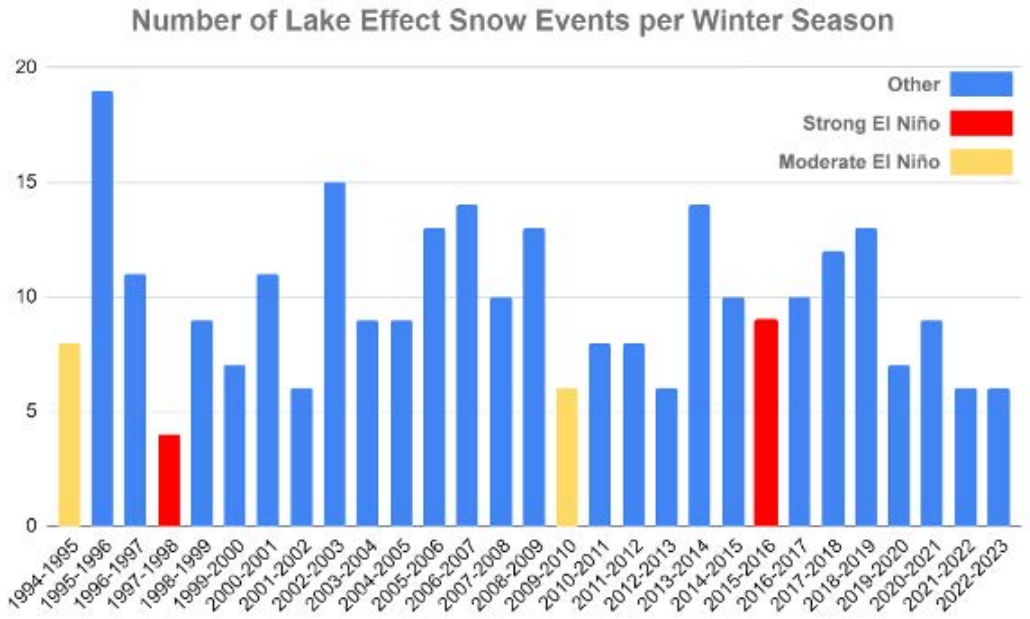
El Niño Impacts on Lake Effect Snow Events for Western and North Central NY by David Thomas

For more than 25 years, the National Weather Service in Buffalo has been archiving storm summaries of major lake effect snowstorms that occur downwind of Lakes Erie and Ontario. The definition of a major lake effect snowstorm is any lake effect-driven event that produces 7 inches of snow or greater in at least one given location. On average there are 10 lake effect snow events in the winter season.

Though a small set of cases, several trends have been noticed over the years, especially when breaking down the events by El Niño-Southern Oscillation (ENSO) phase. During weak El Niño and La Niña phase winters it is not uncommon to see a greater-than-normal number of lake effect snow events. However, as the El Niño signal strengthens the resultant fast west to east Pacific jet stream also strengthens and becomes unfavorable for cold air masses to drop southward across the eastern Great Lakes and produce lake effect snow bands.

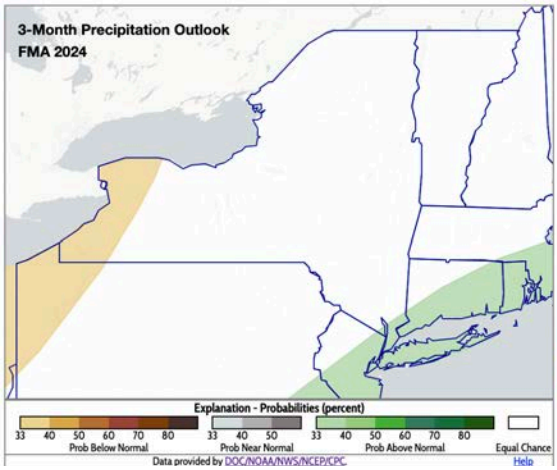
During the moderate El Niño winter of 2009–10 there were only 6 lake effect snow events, and during the strong El Niño winter of 2015–16 there were 9 lake effect snow events. Regionwide and including general snow events, snowfall measured from observers accumulated about 7 inches below normal during the 2009–10 moderate El Niño winter, and snowfall accumulated about 39 inches below normal during the strong El Niño winter of 2015–16. The strong El Niño winter of 1997–98 featured one of the fewest amount of lake effect snow events on record, with just 4 lake effect snow events all season long.

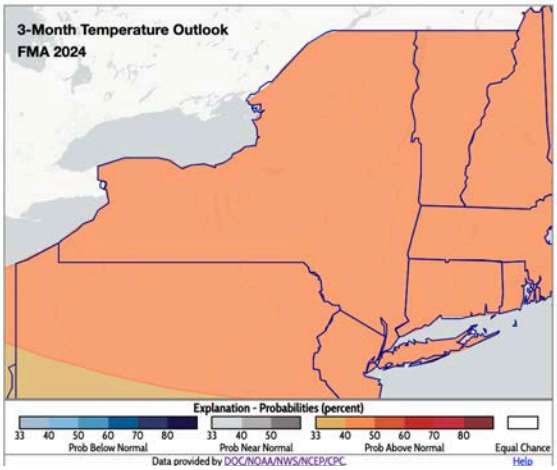
Now strong phased El Niño winters are not without significant weather. In recent years strong phased El Niño winters have produced: record low March surface pressure (1973), the memorable January ice storm in the Saint Lawrence Valley (1998), and the 6th greatest one-day snowfall in Rochester (February 2016). So, we cannot let our guard down through the remainder of this upcoming winter season.



Outlooks

by Samantha Borisoff, NYS Coordinator





For February–April, NOAA's Climate Prediction Center favors drier-than-normal conditions for far western New York and wetter-than-normal conditions for extreme southeastern New York, tied to the favored El Niño storm track along the East Coast. Equal chances of below-, near-, or above-normal precipitation was forecast for the rest of the state. Normal precipitation for the period includes 7.61 inches in Rochester, 8.48 in Albany, 8.75 inches in Buffalo, 8.98 inches in Syracuse, 9.16 inches in Watertown, and 11.86 inches in Islip.

Above-normal temperatures are favored for February–April across New York. Normal average temperatures for the period include 27.5°F in Lake Placid, 32.0°F in Watertown, 33.8°F in Binghamton, 35.4°F in Buffalo, 36.9°F in Albany, and 44.1°F in New York City.

Contacts:

State Coordinator:
Samantha Borisoff - cocorahs@cornell.edu

Eastern New York (NWS Albany):
Deanna Marks - deanna.marks@noaa.gov
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):
Joe Pollina - joseph.pollina@noaa.gov
Tim Morrin - wmtmorrin@gmail.com

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