The Four Seasons

National Weather Service Burlington, VT

VOLUME V, ISSUE I

SUMMER 2018

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Letter from the Editors

Welcome to the Summer edition of The Four Seasons, a quarterly newsletter issued by the National Weather Service in Burlington, VT. In this edition we review a wet microburst that occurred over Waitsfield Vermont earlier this month. We go over some important thunderstorm and rip current safety tips. We'll examine the 4 May severe weather event that impacted the North Country. We also will look at how biases impact our severe weather climatology, and look at the climate section of our website so you can pull up climate data from home whenever you want. Thanks for reading, we hope you enjoy the newsletter and have a great summer!

A Review of the 18 June 2018 Waitsfield, VT Wet Microburst

-Brooke Taber, Rebecca Duell, Andrea LaRocca, & Robert Haynes

Scattered strong to locally severe storms tracked across the North Country during the afternoon hours on June 18, 2018. A warm, moist tropical air mass (from the remnants of Hurricane Bud) was in place over New England and New York ahead of a cold front sagging south from Canada. While cloud cover limited surface heating, the air mass itself was sufficiently unstable to allow for thunderstorm development in the early afternoon. Due to the moist characteristics

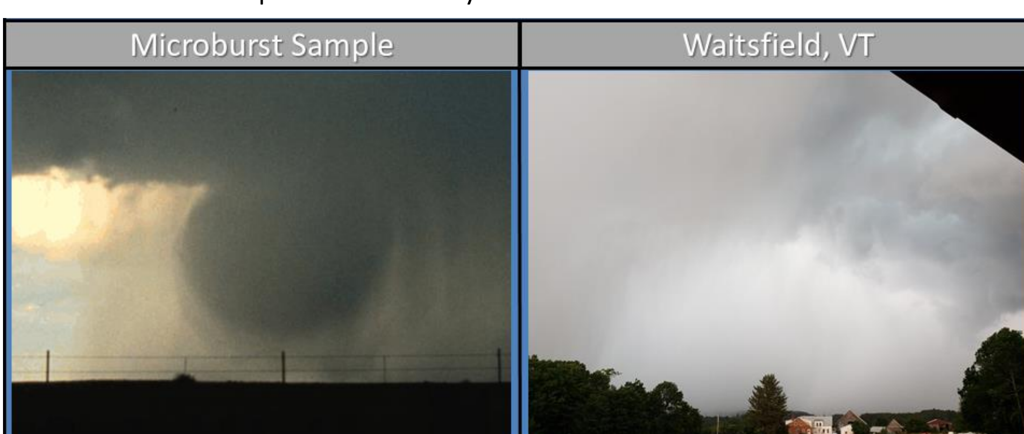

Figure 1: Image of a wet microburst from National Weather Service Birmingham (left), and an image displaying the rain shaft moments before microburst damage was observed at Waitsfield, VT courtesy of Meggie McLaughlin (right).

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of the air mass, storms that did develop produced very heavy rainfall rates, along with several damaging wet microbursts. These severe storms caused up to 16,000 people in Vermont to lose power, with additional power outages occurring in northern New York. The strongest microburst produced significant property damage and downed 3 to 4 dozen trees in the vicinity of Waitsfield, VT. The National Weather Service (NWS) in Burlington, VT conducted a damage survey, and determined that the microburst damage path was over a mile long and up to a quarter mile wide. The damage extended from the ridgeline on Hemlock Hill across the Mad River Valley to near the base of Mt. Waitsfield.

Pre-Storm Environment:

The GOES-16 visible satellite image (Figure 2) showed extensive cloud coverage across the North Country, but enough breaks occurred to warm surface temperatures well into the 80s, which, combined with rich moisture, produced enough instability to support severe thunderstorms. The taller/puffy cauliflower looking clouds in Figure 2 indicate where stronger thunderstorms were located. The red dotted lines outline where boundaries where located, while the blue line with triangles shows the position of an approaching cold front over Canada. These low-level boundaries helped to enhance low-level convergence and resulted in numerous rounds of showers and thunderstorms.

The 2 PM EDT Albany, New York sounding (Figure 3) also indicates an environment supportive of wet microbursts. The layer of drier air with strong winds present aloft in the 400mb to 600mb layer enhances evaporative cooling, which increases the potential for damaging surface winds within downbursts. Furthermore, steepening low-level lapse rates from warming surface temperatures helps to accelerate air parcels to the surface within a convective environment. Outside of the dry air present in the mid-levels, the column contained ample moisture to support wet microbursts. Precipitable water (PW) is one way that we measure the amount of moisture present in the atmosphere. It is the amount of liquid water that would be measured at the surface if all the water in the column above were precipitated out. 1.74 inches of PW was measured in this sounding, which is near the daily record max. This is indicative of a very moist atmosphere, which can support heavy rain along with wet microbursts.

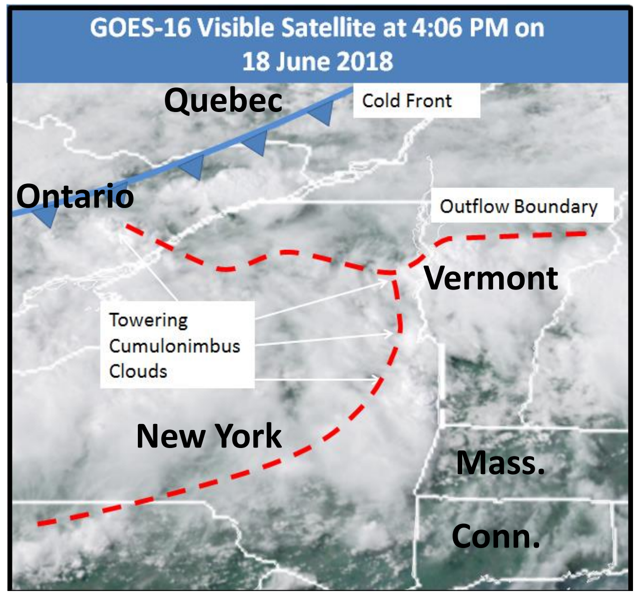

Figure 2: GOES-16 visible satellite image, at 4:06 PM EDT on 18 June 2018.

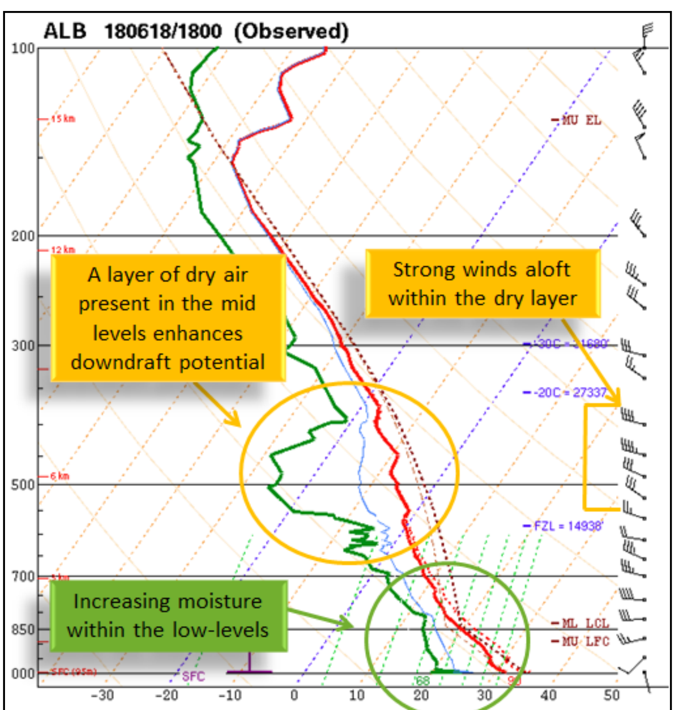

Figure 3: Upper air sounding from Albany, NY at 2:00 PM EDT on 18 June 2018

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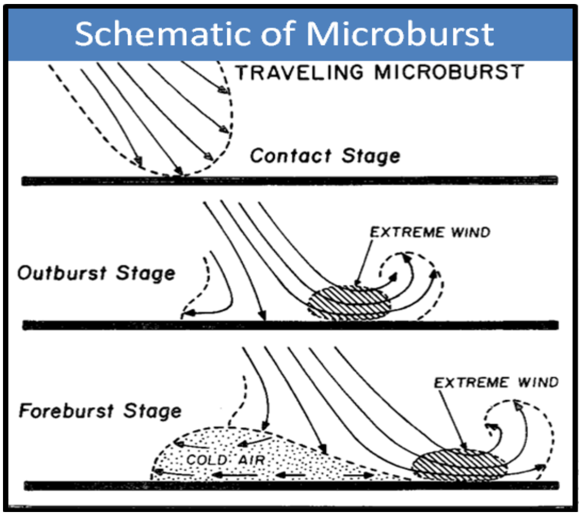

Figure 4: Schematic of microburst (photo courtesy of Fujita 1981, Tornadoes and Downbursts in the Context of Generalized Planetary Scales).

Description of Microbursts:

Figure 4 shows a schematic evolution of a microburst. A microburst is an intense small-scale downdraft produced by a thunderstorm. A microburst is often associated with a sudden burst of damaging winds, that can knock down trees, power lines, and can cause significant property damage. In very moist environments, cloud water descends with the downdraft, leading to a wet microburst. Wet microburst are accompanied by significant precipitation rates, which helps to transport severe winds from aloft to the surface, when deep layer mixing is present.

Waitsfield Wet Microburst:

Figure 5 below shows KCXX 1.8° base reflectivity (left) and 1.3° base velocity (right) of a bowing segment within the larger line of storms moving east-southeast through central Vermont. The base reflectivity shows a sharp reflectivity gradient along the leading edge of the bowing segment, which indicates an area of strong low-level convergence.

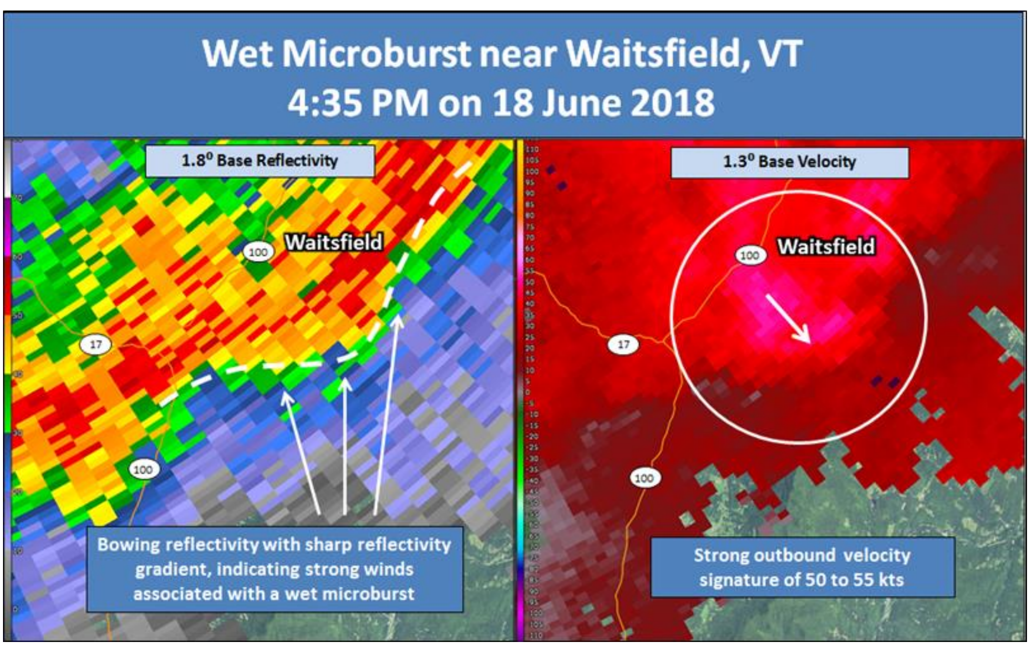

Figure 5: KCXX 1.3° base reflectivity (left) and velocity (right) near Waitsfield, VT at 4:35 PM EDT on 18 June 2018.

Examination of radar scans between 4:20 PM EDT and 4:35 PM EDT (not shown) reveals an even sharper leading edge reflectivity gradient in the minutes leading up to the microburst, indicating the presence of a strong updraft within the storm. Base velocity values of 50-55 kts are observed around 4:35 PM EDT near Waitsfield along and just behind the leading edge of the bowing segment of the storm. These strengthening low-levels winds indicate the location of the microburst as the downdraft within the storm descended to surface.

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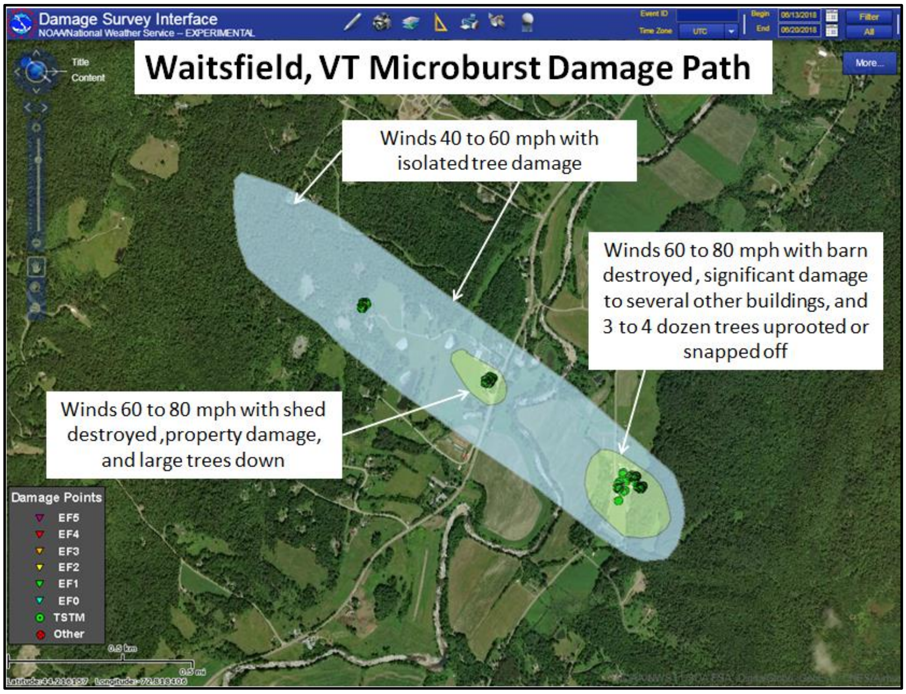


Figure 6: Waitsfield, VT microburst damage path, based on National Weather Service storm survey.

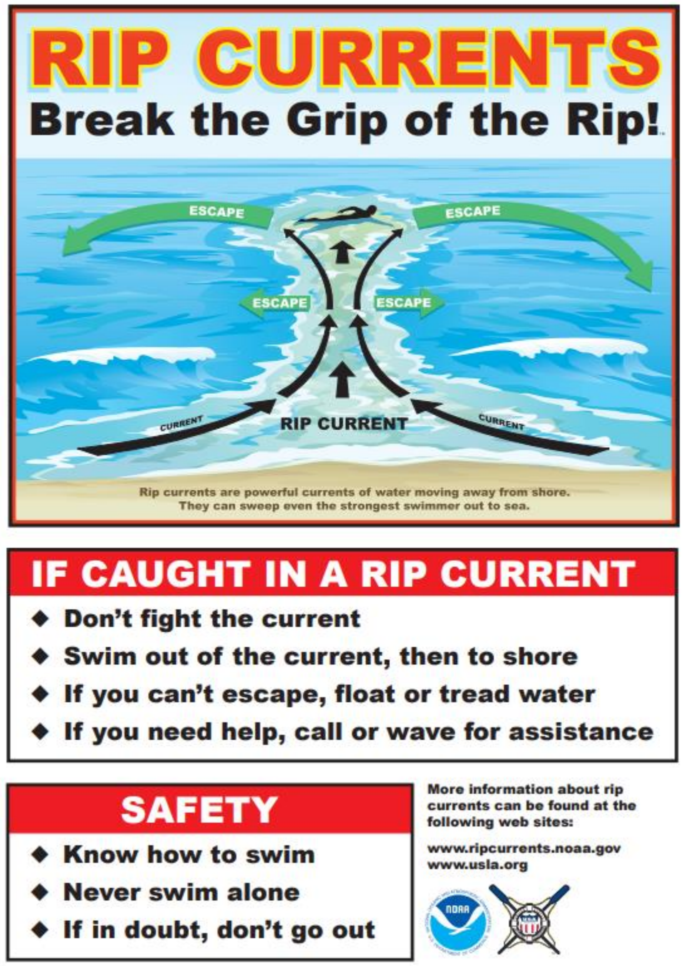
Figure 6 shows the damage path as the storm moved southeastward across the Mad River Valley near Waitsfield, Vermont. The microburst left a swath of isolated tree and property damage across the valley, initially with all damage indications pointing to straight-line winds from the northwest to southeast. The southeastern terminus of the damage path contained the most significant tree and property damage, consistent with winds of 60 to 80 mph spreading outward (divergent pattern) upon reaching the surface (a typical damage signature of a microburst). The light blue/whitish color in the image above outlines where the NWS survey team saw isolated wind damage with estimated speeds of 40 to 60 mph. Meanwhile, the light green areas show two enhanced regions of wind speeds of 60 to 80 mph with significant tree and property damage observed.

Figure 7: Collapsed hay barn (left) and snapped pine trees (right) 1 mile south-southeast of Waitsfield, VT. Pictures from NWS Storm Damage Survey.

Rip Current Safety

-Jessica Neiles

For families that are planning a trip to the beach this summer, it is important to realize the dangers of rip currents before swimming in the ocean. The majority of rip current fatalities each year are visitors from non-coastal locations. Rip currents are powerful currents of water moving away from shore and are the leading surf hazard for all beachgoers, especially for weak or non-swimmers. According to the United States Lifesaving Association, 80 percent of surf beach rescues are attributed to rip currents and more than 100 people die annually from drowning when they are unable to escape a rip current.



Rip currents form when waves break near the shoreline, piling up water between the breaking waves at the beach. One of the ways this water returns to sea is to form a rip current, a narrow jet of water that moves swiftly offshore, roughly perpendicular to the shoreline. Under most tide and sea conditions the speeds are relatively slow, however under certain wave, tide and beach profile conditions the speeds can quickly increase to become dangerous to anyone entering the surf, even the most experienced swimmers. Rip currents can be very narrow or extend in widths to hundreds of yards. The seaward pull of rip currents varies from just beyond the line of breaking waves to hundreds of yards offshore.

Some of the clues beachgoers can use to identify rip currents include: a channel of churning, choppy water, an area having a notable difference in water color, a line of foam, seaweed or debris moving steadily seaward, or a break in the incoming wave pattern. The above clues may or may not indicate the presence of rip currents and rip currents are often not readily or easily identifiable to the average beachgoer. If you are concerned about the possibilities of rip currents occurring in the surf, it is best to ask an on-duty lifeguard before entering the water.

If you are caught in a rip current, remain calm to conserve energy and think clearly. Never fight against the current. Swim out of the current in a direction parallel to the shoreline. When out of the current, swim at an angle away from the current and toward the shore. If you are unable to swim out of the rip current, float or calmly tread water. When out of the current, swim toward shore. If you are unable to reach shore, draw attention to yourself by waving your arms and yelling for help.   If you see someone in trouble, don't become a victim yourself, many people drown while trying to save someone else from a rip current. Get help from a lifeguard, or if one is unavailable, have someone call 9 1 1. Throw the rip current victim something that floats such as a life jacket, cooler or inflatable ball. Yell instructions on how to escape. For more information on rip currents, please visit www.ripcurrents.noaa.gov or, if you are at the beach, ask a lifeguard.

Severe Weather Climatology Biases Across the North Country

-*Andrea LaRocca and Peter Banacos*

Severe weather records for National Weather Service Burlington, Vermont (BTV) date back to the 1950s. These records include reports of tornadoes, hail and convective wind gusts (both measured and estimated through damage reports). This climatology is comprised of severe weather reports during the warm season from May – September 1950–2016. To make it into the official storm report database, a storm report must meet specific NWS criteria of a severe thunderstorm. The criteria (as of January 2010) includes: measured or estimated convective wind gusts of at least 58 mph, hail at least 1” in diameter, or a tornado. Prior to 2010, hailstones greater than 0.75” were considered severe. These reports have been retained to accurately represent severe weather reporting throughout the majority of the historical record. The domain covered includes all of BTV’s county warning area (CWA) and Bennington and Windham counties in southern Vermont. These counties were included for a complete climatology of the Vermont.

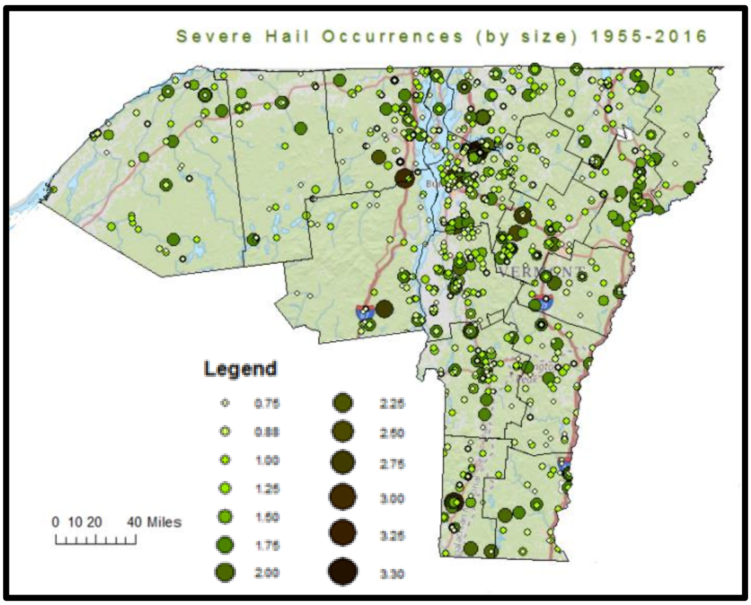


Figure 1: Severe hail reports by size from 1955-2016. Markers indicate size of hailstone diameter.

Both severe hail and wind reporting are subject to biases based on the population distribution of the domain covered. The population of BTV’s CWA is primarily concentrated around the Burlington metro area, with smaller population centers around Montpelier and Rutland, Vermont, and Plattsburg, New York, with relatively sparse population elsewhere. Nearly one-third of the state of Vermont resides in the Burlington metro area (Burlington, South Burlington, Winooski, Colchester, Essex, Essex Junction, Milton and St. Albans) with over 210,000 people estimated as of 2012. This concentration of population, and subsequently reports, around the Burlington area is apparent in both hail and wind reports (Fig. 1 and 2). Consistent with the distribution of population, Figures 1 and 2 show a strong association between road networks and reports, as well as secondary clusters around the cities of Montpellier, Rutland and Middlebury, VT, and Plattsburgh, NY. With lower population densities, however, the concentration of reports is respectively less. A similar relationship can be established over the Adirondack Mountains and portions of Vermont, including the Northeast Kingdom and areas within the Green Mountains, with exceedingly small population densities

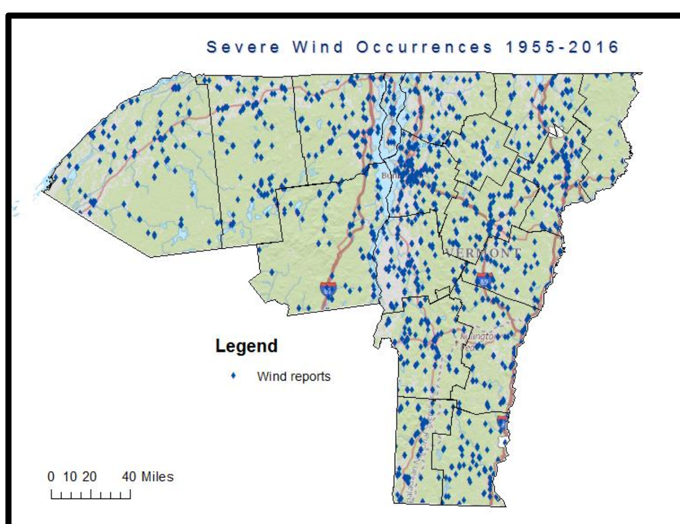


Figure 2: Severe wind reports (both measured and estimated) from 1955-2016.

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corresponding to sparse coverage of reports. The lack of reports across these areas does not mean that severe weather does not happen there, but rather it is less likely to be observed and/or reported. The only severe criterion which is not affected by population is tornado reports. Figure 3 shows that tornado reports during this period appear to be seemingly random and are tied more closely to terrain features than population centers.

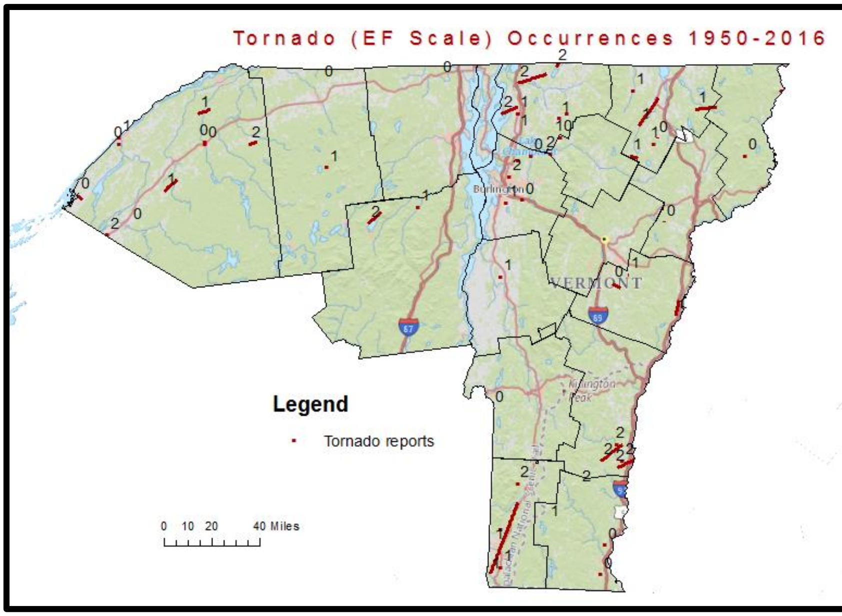

Figure 3: Tornado reports and Enhanced Fujita (EF) scale ranking 1950-2016.

Biases within the severe weather database are not only a function of population, but the inherent uncertainly that comes with approximating severe weather observations. Wouldn't it be convenient if every severe storm tracked over a weather observation site, where wind gusts could be measured, or have hailstones fall in the backyard of a meteorologist's house? Unfortunately, nature isn't that cooperative. This means that estimates are made to wind gusts based on damaged sustained to trees and buildings , or of the hailstones that fall by comparing them to easily identifiable objects, such as coins or common objects. Figure 4 shows that these approximations, as well as the severe criteria, can skew the size distribution of reported hailstones.

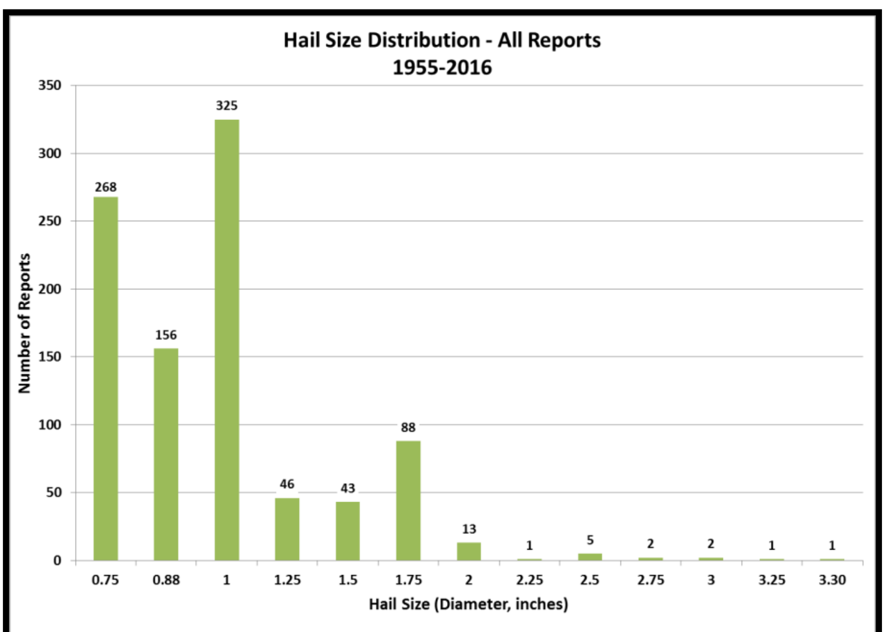

Figure 4: Hailstone size distribution with frequently reported sizes for comparison.

Similar to previous studies which looked at the distribution of reports, the same internal artifacts were present within this database, although some were not as pronounced as others. Population biases were most noticeable in hail and wind reports, with little impact on tornado reports. Hailstones were also subject to biases due to the approximation of hailstone size.

For a more detailed analysis of the severe weather climatology across the North Country, the full write up can be found online at: https://go.usa.gov/xUcMu111111

A Summary of the 4 May 2018 Severe and High Wind Event Across the North Country

- Brooke Taber and Peter Banacos

During the late afternoon and evening hours on Friday, 4 May 2018, a widespread severe weather event affected northern New York and Vermont with damaging winds, large hail, and localized flash flooding. Much of the event damage was caused by intense straight line winds and microbursts, with radar estimated near-surface wind speeds of 60 to 80 mph with the strongest storms. Downed trees and lines caused numerous power outages, including nearly 25,000 customers across Vermont at its height Friday night. Shelburne, Vermont was one of the hardest hit communities, with estimates of hundreds of trees down in the village.

Large hail was also observed with some of the supercell storms, with up to golf ball sized hail (1.75" diameter) reported in Richford, Vermont around 7 PM. Figure 1 (right) shows the North Country storm reports from 4 May 2018. This severe weather was followed by damaging winds associated with a strong pressure gradient from strong low pressure passing north of the Saint Lawrence Valley.

Figure 2 (below) shows maximum wind gusts observed on the evening of May 4th. Observed wind gusts included a 79 mph gust at a Malone mesonet site in northern New York and 64 mph gust at Massena, New York, while the top of Whiteface observed a gust to 105 mph. Meanwhile in Vermont, local gusts exceeded 50 mph, but were generally not quite as intense as across northern New York.

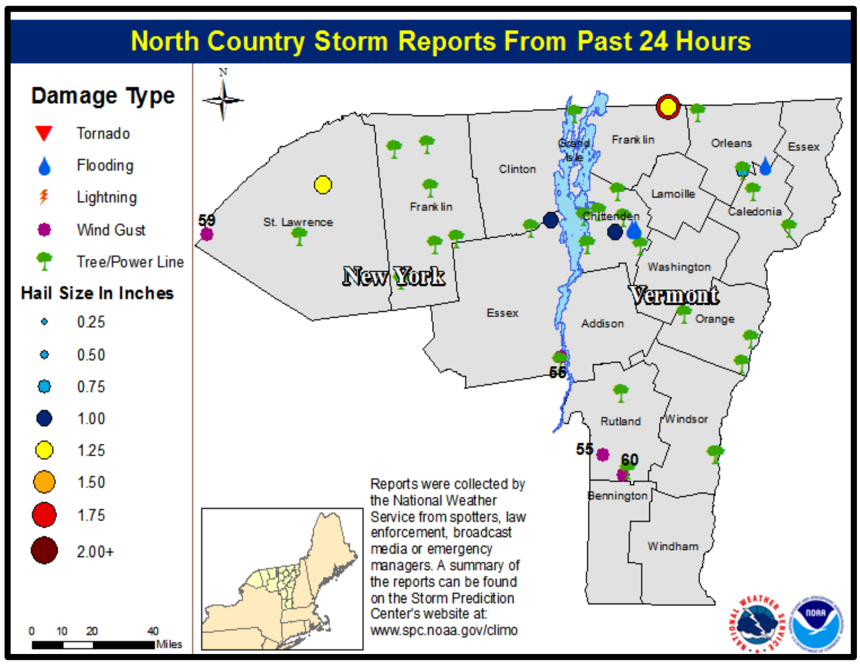

Figure 1 (above) : North Country storm reports from 4 May 2018.

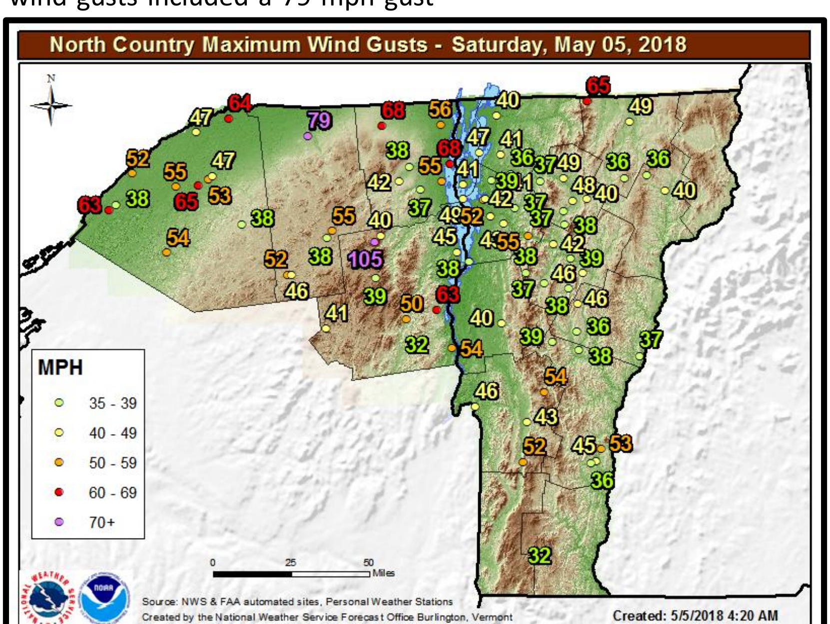

Figure 2 (left) : Maximum observed wind gusts ending at 4:20 AM EDT on 5 May 2018.

Richford, Vermont:

The mini supercell thunderstorm that impacted Potsdam earlier in the evening continued to track along a

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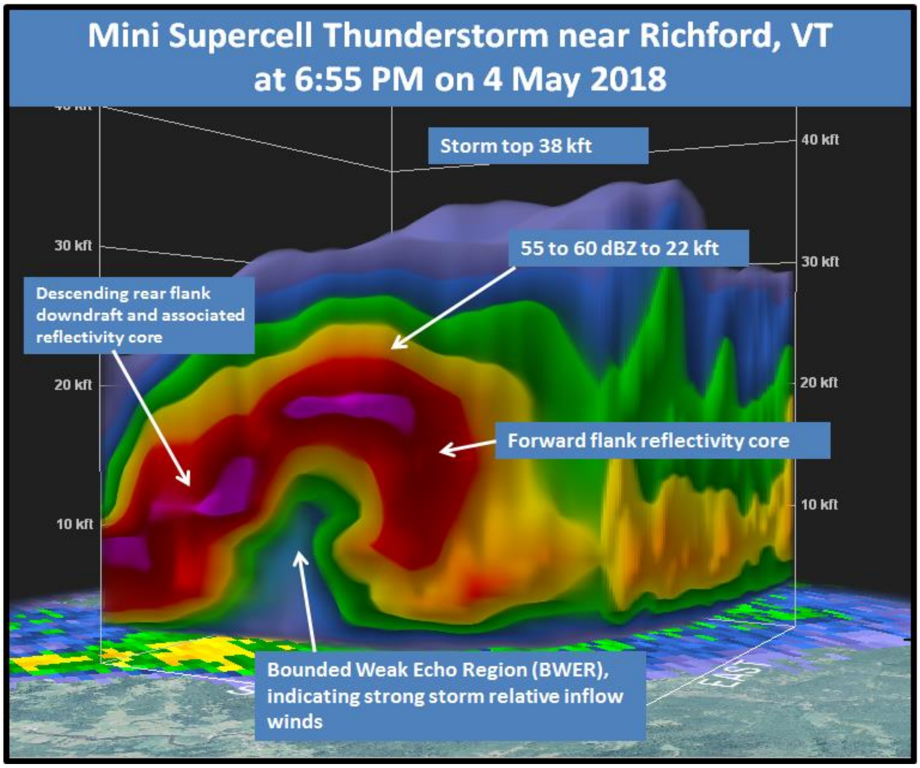

Figure 3: KCXX reflectivity cross section near Richford, Vermont at 6:55 PM EDT on 4 May 2018.

warm front and produced additional large hail in Richford, VT. Figure 3 shows the KCXX reflectivity cross section at 6:55 PM EDT and associated storm structure. A well defined Bounded Weak Echo Region (BWER) is present and the Echo Top (ET) of this particular storm was around 38,000 ft. The storm's updraft remained strong, with a 55 to 65 dBZ reflectivity core extending upward to 27,000 ft. In Figure 3, note how the strongest reflectivity core is elevated above an area where radar echoes are weak to non-existent. It is this region that is referred to as a BWER. Meteorologists can infer that the updraft is so strong that it is able to suspend rain and/or hail aloft, and not fall to the ground (hence, the lack of echo returns below the strong reflectivity core). Storms that have this particular signature are capable of producing severe weather. The reflectivity structure of this mini supercell featured forward flank and rear flank descending reflectivity core, which featured heavy rainfall, high winds, and large hail. The updraft/downdraft interaction on the southwest flank of the storm would be the favorable location of a potential tornado if shear and instability parameters and terrain were favorable.

This mini supercell thunderstorm did exhibit a hook-like feature near Richford, VT with a tight mid-level cyclonic rotational couplet. Figure 4 (right) shows KCXX 1.8° base reflectivity (left) and storm relative velocity (right). The east-west orientation of the Missisquoi River Valley helped to enhance the low-level storm relative inflow and created an environment favorable for some rotation and the potential for a brief spin up. However, as this inbound/outbound couplet quickly tracked east and interacted with the Green Mountains near Jay Peak, the low-level rotation was disrupted, along with any potential tornado threat.

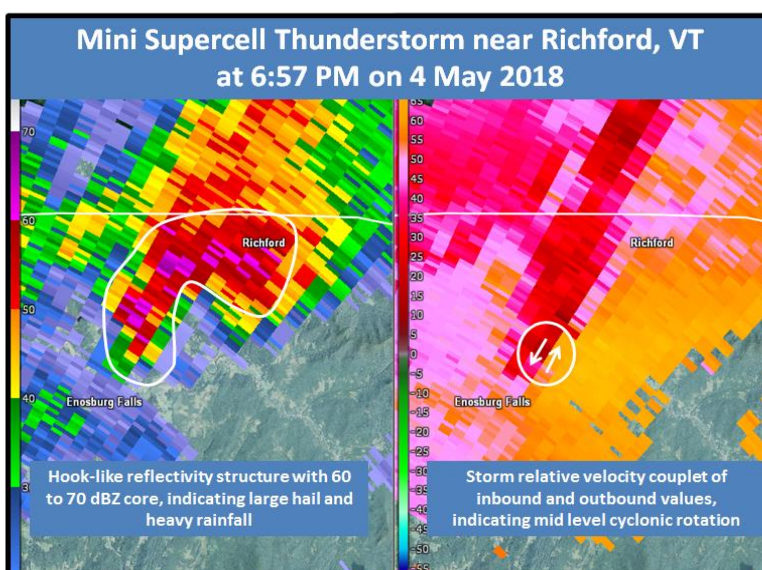

Figure 4: KCXX 1.8° reflectivity (left) and storm relative velocity (right) near Richford, VT at 6:57 PM EDT on 4 May 2018.

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Shelburne, Vermont

During the evening of May 4th, Shelburne, VT received two powerful thunderstorms that produced scattered trees and power outages throughout the town, along with 1.50” diameter hail. The first thunderstorm impacted the area around 7:06 PM EDT with several interesting radar signatures. Figure 5 shows KCXX 0.5° reflectivity (left) and storm relative velocity (right). This included a pure divergence wind signature on the forward flank, with another enhanced area of inbound winds of 55 to 65 knots (blue/purple color) associated with a descending reflectivity core of 60 to 65 dBZ (red/purple color). In addition, Figure 5 shows a tightening south flank reflectivity gradient, along with a broad cyclonic rotational couplet of inbound and outbound velocities. Figure 6 (right) shows wind damage from these thunderstorms.

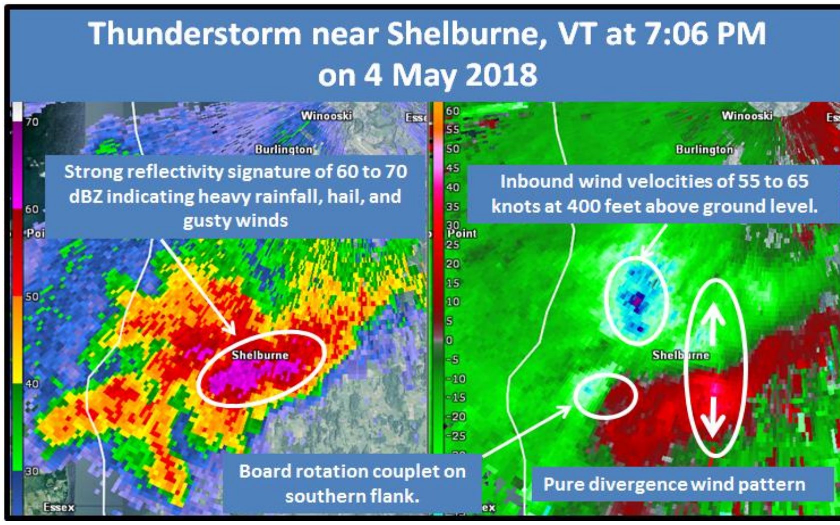
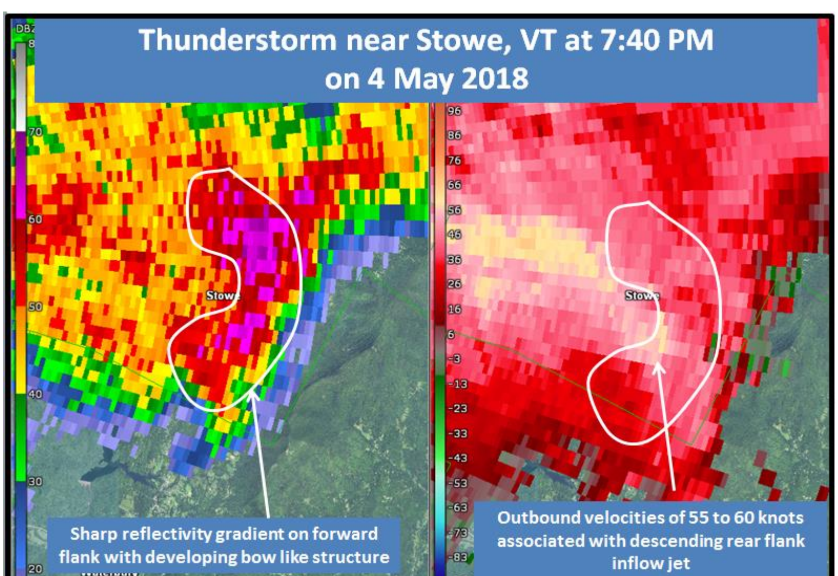


Figure 5 (above): KCXX 0.5°reflectivity (left) and velocity (right) near Shelburne, VT at 7:06 PM on 4 May 2018.

Figure 6 (above) : Wind damage from thunderstorms in Shelburne, VT on 4 May 2018. Photo taken by Brooke Taber.

Figure 7 (below) : KCXX 1.4°reflectivity (left) and velocity (right) near Stowe, VT at 7:40 PM on 4 May 2018.



Stowe, Vermont

Figure 7 (left) shows the KCXX 1.4° reflectivity (left) and velocity (right) near Stowe, VT at 7:40 PM EDT. The direction of the highest winds occur perpendicular to the convective line, or from the west, in this case. The average forward speed of the bow echo was near 45 knots (55 mph) across central VT, with the apex of the bow moving up to 55 knots across that region. The forward speed of linear convective structures typically provides a rough estimate of the associated surface winds, and the forward motion met

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NWS severe criteria of 50 knots in this case. The KCXX radar observed Doppler velocities were near 60 knots at 5000 feet AGL near Stowe (See Figure 7). This bow echo structure produced numerous areas of trees and power lines down in the Stowe area on the evening of May 4th.

In conclusion, the May 4 2018 severe weather event was a multifaceted event resulting in several types of storm damage. Storm structures ranged from mini-supercells to a well-defined QLCS with multiple bowing segments on 4 May. While some large hail was reported (up to 1.75” in diameter), damage was caused primarily by microbursts and straight line winds with numerous reports of trees and power lines down. The WFO BTV issued 15 severe thunderstorm warnings and subsequently received 41 reports of severe weather.

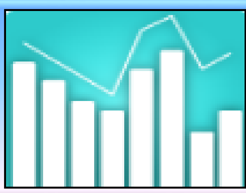
The intensity of the shortwave trough approaching from the eastern Great Lakes combined with a strong cold front and low-level jet to produce additional damaging gradient winds in the post-frontal air mass during the late evening hours on May 4th. Some of these wind gusts exceeded 70 mph across northern New York. Combined with saturated soil conditions, many trees were uprooted and resulted in additional power outages during the overnight hours into Saturday morning (5 May 2018). The WFO BTV issued High Wind Warnings across northern New York and Wind Advisories in Vermont for these unusually intense post-frontal gradient winds.

Brooke Taber

Thunderstorms occur between 20 and 30 times a year on average across the North Country and come with many different weather hazards. These hazards include: tornadoes, severe winds, large hail, frequent lightning, and flash flooding. Lightning strikes in the United States kills about 50 people and injure hundreds of others each year. If thunder is heard, then the storm is close enough for a lightning strike, it is important to seek safe shelter immediately. If thunder becomes louder or more frequent it is a sign that lightning activity is approaching, increasing the risk for lightning injury or death.

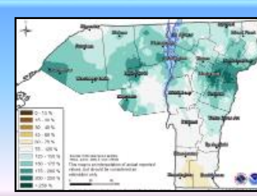
Remember when thunder roars go indoors!! When you hear thunder, immediately move to safe shelter: a substantial building with electricity or plumbing, or an enclosed, metal-topped vehicle with windows up. Stay away from windows and doors, and stay off porches. You should also stay off corded phones and avoid touching electrical cords or equipment while thunderstorms are in your area, as the electricity from lightning can easily travel through the cords and shock you. Stay in your safe shelter for at least 30 minutes after you hear the last sound of thunder to make sure the thunderstorm has completely moved past your location.

In addition to lightning, thunderstorms can produce hail, damaging winds, tornadoes, and flash flooding. More than 50% of flood deaths are due to someone driving or walking into floodwaters. 6 inches of fast moving flood water can knock an adult off his or her feet and sweep them away, 12 inches can carry a small car, and 18 to 24 inches of water can carry away larger vehicles. If flash flooding is a threat, move to higher ground and remember Turn around Don’t Drown!!! For more on Thunderstorm safety, please go https://www.weather.gov/safety/thunderstorm to lean more.

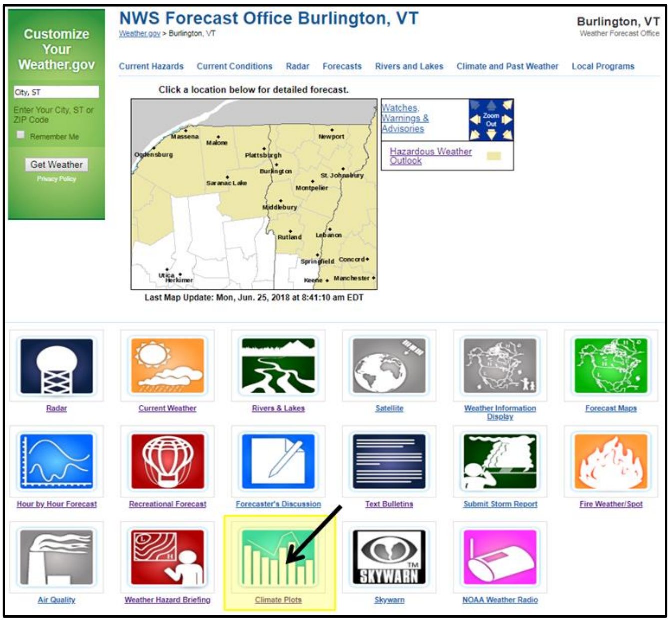


Inside our Website: Finding Past Weather Data

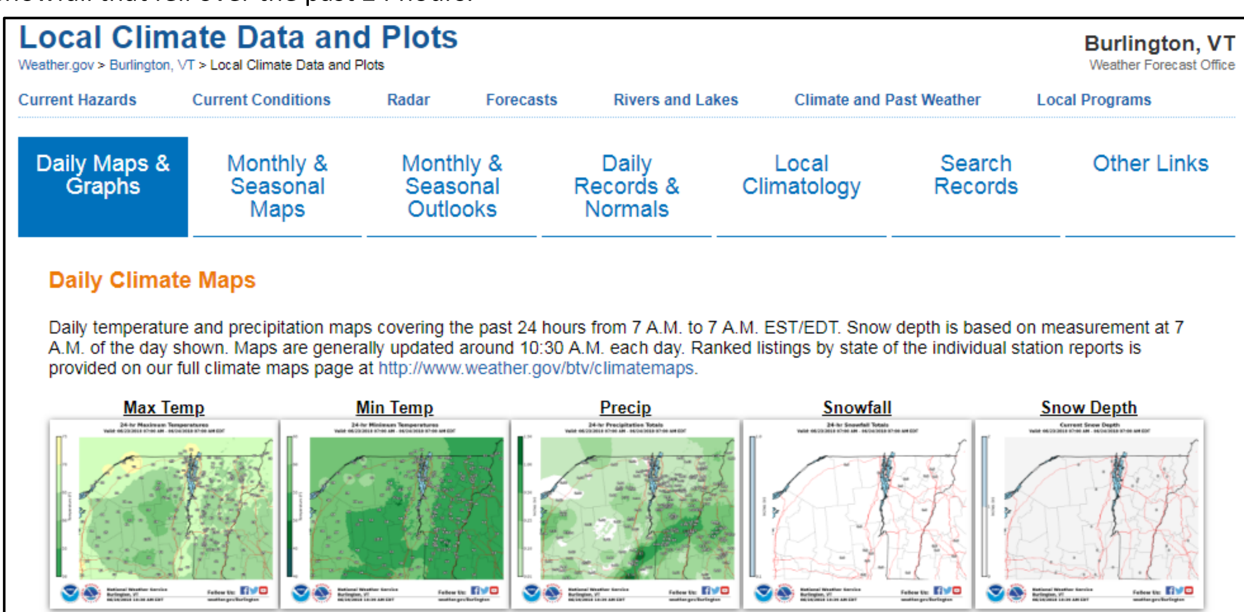
- Eric Evenson



Are you looking to find climate data online? Our website has lots of climate data that you can access online at any time. This section will highlight the steps to access weather information on the National Weather Service Burlington, Vermont website (weather.gov/btv/ or weather.gov/Burlington). To access a wide variety of climate information click the Climate Plots icon in the lower part of our main page.



You will be taken to our climate page (weather.gov/btv/climate), which begins with a display of our Daily Climate Maps. You can click on each image for larger views of temperatures, precipitation, and snowfall that fell over the past 24 hours.



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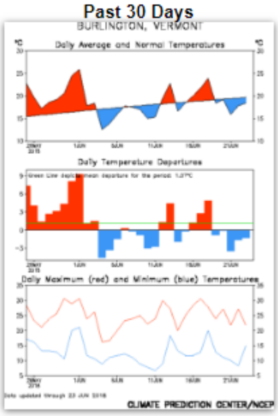
Below the daily climate maps you will find information on recent temperature and precipitation in Burlington, Vermont over the past 30 days, 90 days, and the past 365 days.

Recent Temperatures & Precipitation in Burlington, VT

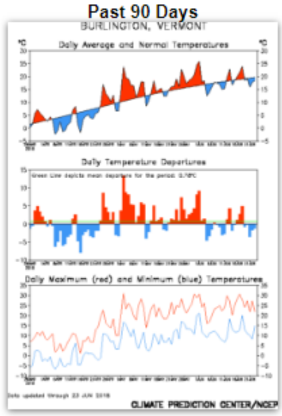
Temperature

Graphs of daily average temperatures, their departures from normal, as well as daily maximum and daily minimum temperatures over the past 30-, 90-, and 365-days. Shading reflects daily departures from normal using standard convention: red for warmer than normal, blue for colder than normal.

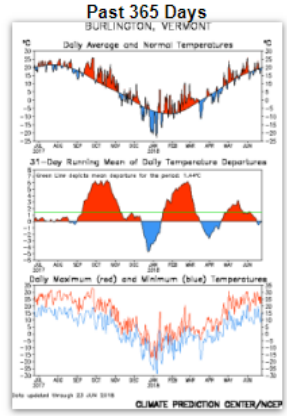
Past 30 Days



Past 90 Days



Past 365 Days



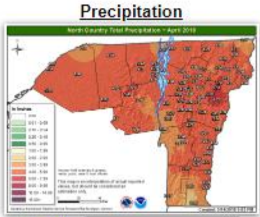
Note above the daily climate maps are tabs to other information such as monthly climate maps, monthly and seasonal outlooks, daily records and normals, and local climatology to name just a few. Below is an example if you select the Monthly & Seasonal Maps tab.

Daily Maps & Graphs | **Monthly & Seasonal Maps** | Monthly & Seasonal Outlooks | Daily Records & Normals | Local Climatology | Search Records | Other Links

Monthly Climate Maps

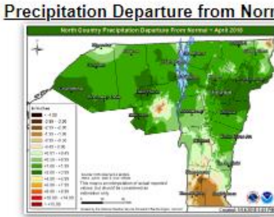
Monthly temperature and precipitation maps calculated using official NWS Cooperative Observer, CoCoRaHS and ASOS data. Maps are generally updated around the second week of the following month.

Precipitation



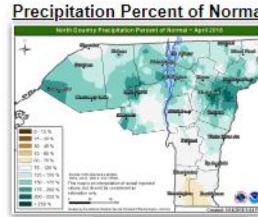
Archive:

Precipitation Departure from Normal



Archive:

Precipitation Percent of Normal



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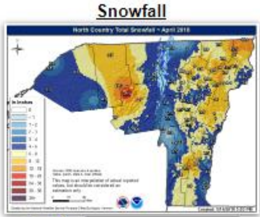
Snowfall



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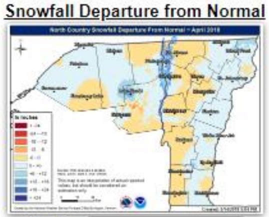
Snowfall Departure from Normal



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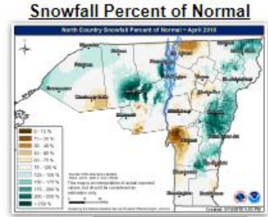
Snowfall Percent of Normal



Archive:

...Continued from Page 13

Want to learn more about daily records and normal? Simply click on the Daily Records & Normals tab and pick your site and the calendar date.

Daily Maps & Graphs | Monthly & Seasonal Maps | Monthly & Seasonal Outlooks | **Daily Records & Normals** | Local Climatology | Search Records | Other Links

Records and Normals

Select the climate site, then click on the date below

Burlington, VT | Montpelier, VT | St. Johnsbury, VT | Massena, NY

January						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

February						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29						

March						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

April						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Another tab with interesting climate information is the Local Climatology tab, which houses a variety of average temperature and precipitation information, extremes, Holiday climatology, and graphs of Lake Champlain lake level and temperature data.

Daily Maps & Graphs | Monthly & Seasonal Maps | Monthly & Seasonal Outlooks | Daily Records & Normals | **Local Climatology** | Search Records | Other Links

Burlington, VT Top 10 Records

Temperatures

- Monthly Average Temperatures
- Monthly Average Max Temperatures
- Monthly Average Min Temperatures
- Annual Temperatures
- Annual Max/Min Temperatures
- Seasonal Average Max/Min & Average Temperatures

Precipitation & Snowfall

- Monthly Precipitation Totals
- Annual Precipitation Totals
- Seasonal Precipitation Totals
- Monthly Snow Totals
- Annual Snow Totals
- Seasonal Snow Totals
- Greatest/Least Snowfall

Burlington, VT Extremes

- Temperature Extremes
- Precipitation Extremes
- Highest and Lowest Temperature Occurrences
- Burlington Heat Waves
- Historical Monthly Snowfall - Burlington, VT
- Top 20 Greatest Snowstorms
- Earliest/Latest Snowfalls

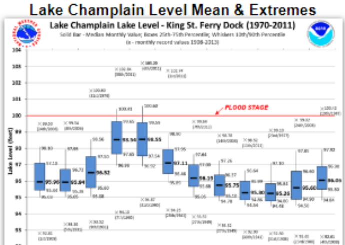
Burlington, VT Climatology for Holidays and Other Significant Dates

- New Year's Day
- Valentine's Day
- Town Meeting Day
- St. Patrick's Day
- Memorial Day
- Independance Day (July 4th)
- Labor Day
- Halloween
- Election Day
- Veterans Day
- Thanksgiving Day
- Christmas Day

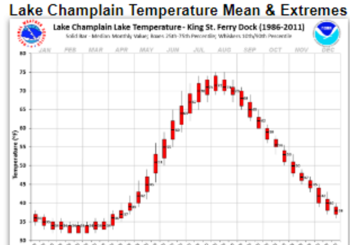
Local Climatological Graphs

Lake Champlain level (in ft) and lake temperature (in degrees F) graphs. Observations taken from the King St. Ferry Dock in Burlington. Lake levels are broken out into monthly box-and-whisker charts, while the lake temperatures are broken out into box-and-whisker charts over a 10-day period. See graphs for interpretation of box-and-whisker charts.

Lake Champlain Level Mean & Extremes



Lake Champlain Temperature Mean & Extremes



The Four Seasons

Volume V, Issue I

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We Need Your Storm Reports!

Please report snowfall, flooding, damaging winds, hail, and tornadoes. When doing so, please try, to the best of your ability, to measure snowfall, estimate hail size, and be specific as to what damage occurred and when. We also love pictures!

For reports, please call:
(802) 863-4279
Or visit:
http://www.weather.gov/btv/stormreport

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