The Four Seasons
National Weather Service Burlington, VT
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SPRING 2021

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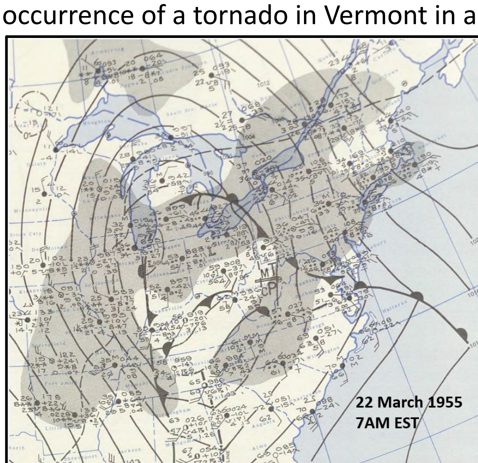
Letter from the Editors

Welcome to our spring newsletter! We certainly began the season with a flurry of active weather, headlined by a rare March tornado in Vermont. Accordingly, a thorough meteorological explanation of the Middlebury kicks us off in this issue. Then we have a wide ranging collection of articles from long-term drought, to a severe weather season primer, to a new North Country snowfall climatology, to a fun staff interview. Not included but coming this spring are improvements to the Lake Champlain forecast, commencement of aviation forecasts for the Northeast Kingdom International Airport, and resumption of SKYWARN courses. While all seasons mark change, this particular spring has the promise of better days ahead. Thanks for reading and keep your eyes on the skies!

An Analysis of the EF-1 Tornado in Middlebury, Vermont

-Peter Banacos, Matt Clay, and Brooke Taber

The Middlebury tornado was an exceptionally rare early season event. The only other documented March tornado in Vermont was an F2 in Shaftsbury on 22 March 1955. However, a review of synoptic weather data and Bennington County newspaper clippings suggest that the widespread damage on 22 March 1955 was likely caused by a downslope windstorm, common to the western slopes of the Green Mountains in association with strong synoptic low pressure systems (Fig. 1). Surface temperatures that day hovered in the 30s. The damage on 22 March 1955 was apparently mischaracterized as a tornado in the National Severe Weather Database. As such, we are confident that the Middlebury tornado is the earliest occurrence of a tornado in Vermont in a given calendar year, dating back through at least 1950.




The Bennington Evening Banner
23 March 1955

Utility Lines, Woods, Homes Hit By Near Gales

Extensive property damage was reported this morning in the wake of a multi-fisted storm which lashed Bennington County and a large part of New England for nearly 35 hours, beginning early Monday evening.

Various sources said today that damage to public utility lines, communications systems, wooded areas and house and farm property was widespread throughout the County area.

The storm, alternating in the form of rain, sleet, hail, snow and even thunderclaps was borne along by near gale proportion winds. It brought weather to the County which was termed "not unusual," for this time of the year, however.

Paul Bohne Sr., official weather station recorder, said gusts of winds rated at 60 miles per hour were noted during the storm and an average blow of from 35 to 40 miles per hour characterized the day's weather.

Figure 1: Surface analysis from the Daily Weather Maps series valid at 7AM EST on 22 March 1955 (left). A portion of a front-page newspaper article describing the storm in the Bennington Evening Banner on 23 March 1955 (right).

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Synoptic and Mesoscale Environment

At the surface, a warm front extended from low pressure near the International Border in northern New York into northern Vermont, before dropping south across central Vermont into southern New Hampshire on 26 March 2021 at 1 PM EDT (Fig. 2). A sharp cold front was quickly moving across the Adirondack and approaching the Champlain Valley at this time. Temperatures in the warm sector were well into the 60s with surface dewpoints in the upper 50s to near 60 °F across the Champlain Valley, creating enough instability to promote severe thunderstorm development ahead of the cold front. Drier air followed the convective storms, with a northwesterly wind shift late in the afternoon.

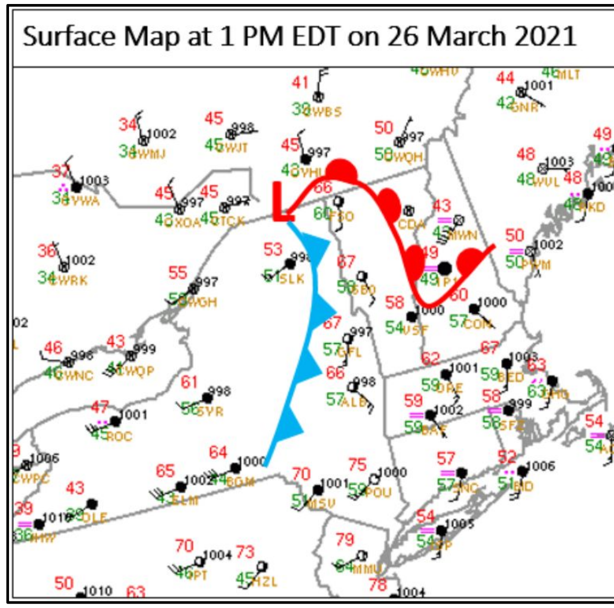

Figure 2 (right): Surface map at 17Z (1 PM EDT) on 26 March 2021 with standard station model plots shown. The temperature at Middlebury (K6B0) had reached 67 °F, the high for the day.

Partial clearing and surface heating within the synoptic dryslot allowed for boundary layer destabilization during the late morning and early afternoon leading up to the tornado. The visible satellite imagery at 12:33 PM EDT (Fig. 3, below, left) shows an axis of clearing skies across the Champlain Valley ahead of the approaching cold front. This clearing was critical in destabilizing the boundary layer prior to the cold front, for the development of severe thunderstorms capable of producing tornadoes because of the strong near-surface and deep-layer shear present. The infrared satellite image (Fig. 3, below, right) shows the colder/higher cloud development, indicating deeper convection near Middlebury, VT at 1739Z (1:39 PM EDT).

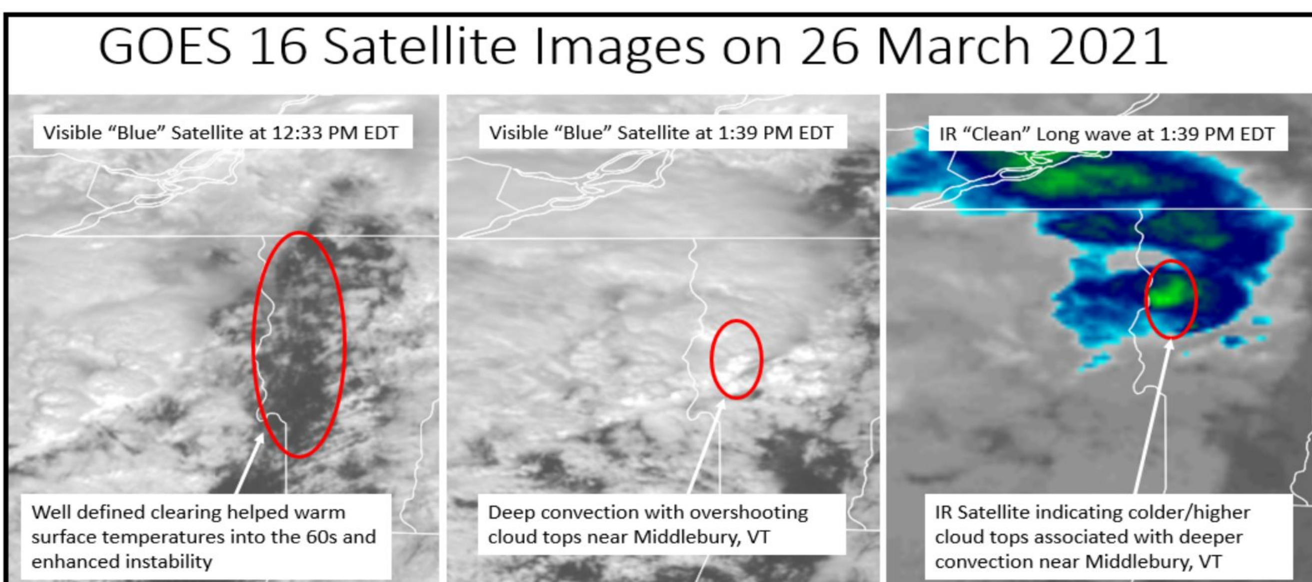

Figure 3: GOES-16 satellite visible "Blue" 1633Z (12:33 PM EDT, left image), Visible "Blue" at 1739Z (1:39 PM EDT, middle image), and Infrared "Clean" at 1739Z (1:39 PM EDT, right image) on 26 March 2021. The tornadic storm is indicated by the red oval in the middle and right panels.

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The combination of boundary layer dew points near 60 °F and steep mid-level lapse rates maximized available surface-based instability. As clearing and insolational heating developed during the midday hours, low-level lapse rates steepened into southwestern VT and SBCAPE values increased 400-500 J kg^{-1} over a 3-hr period (Fig. 4). That said, SBCAPE likely did not exceed 1000 J kg^{-1} for this event; the tornado occurred in a low-CAPE, high shear environment.

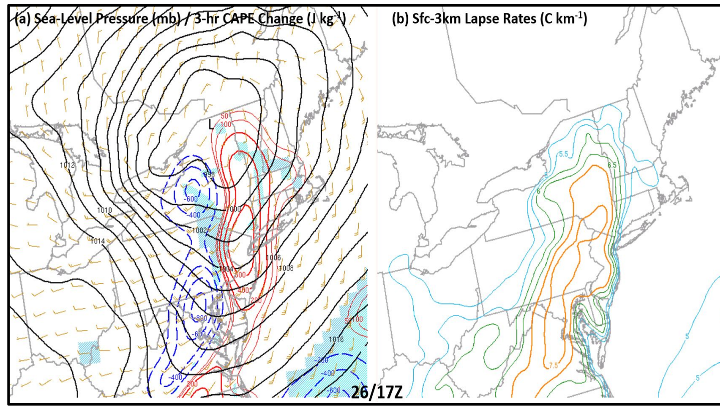

Figure 4: (a) The 3-hour change in SBCAPE (positive (negative) change in red (blue), J kg-1) and sea-level pressure (mb, black lines), and (b) the surface-3km AGL mean lapse rate (C km-1) valid at 26/17Z (1 PM EDT on 26 March 2021)

Radar

With strong large-scale forcing, an impressive line of convection formed east of Lake Ontario during the late morning hours on 26 March 2021. It didn't take long for the developing line to strengthen within the cyclone warm sector, especially as surface-based instability increased with daytime heating ahead of the line. A combination of unidirectional mid-level shear and veering low-level shear lead to a Quasi-Linear Convective System (QLCS) developing across the North Country. Within this QLCS, there were a number of bowing segments with portions of the bow that showed brief low level rotation. This type of radar reflectivity structure is often referred to as a Line Echo Wave Pattern (LEWP, Fig. 5).

Figure 5: Base Reflectivity from the KCXX radar at 1:30 PM (left) and 140 PM (right) show the evolution of the dynamic bow as it moves across Addison County in Vermont. The white 'X' denotes where the tornado touched down. Notice the notch as the apex of the bow depicting the rear inflow jet and how it forces the front of the bow to accelerate eastward. In addition, you can see the area where the downdraft wrapped back into the main line of storms in what is referred to as a bookend vortex.

As the rear inflow jet fed into the storm, parts of the storm would collapse and create a downdraft which then wrapped back into the bow. These were the primary source of the rotation observed on radar during the late morning and afternoon hours. One such example of the aforementioned rotation was one that moved across Horseshoe Lake, New York during the early afternoon hours but no damage or funnel clouds were reported. As the convective line entered a more favorable environment, the first reports of wind damage began coming in between Schroon Lake, Ticonderoga and Crown Point. By the time the line of storms moved into Vermont, a dynamic bow echo evolved over the southern Champlain Valley and produced scattered wind damage as it moved eastward across Addison and Washington Counties. The tornado that impacted Middlebury, Vermont developed within the areas of enhanced rotation as a downdraft on the northern end of one of the bows wrapped back into the main line of storms. The embedded tornado was short-lived, which makes it nearly impossible to detect by the WSR-88D as the update time between base reflectivity and velocity data is roughly 3 minutes between low-level scans when Supplemental Adaptive Intra-Volume Low-Level Scan (SAILS) is used.

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Storm Survey

An NWS Storm Survey performed during the early evening on 26 March 2021 determined that a tornado touched down just northeast of Juniper Lane, causing limb damage before throwing a barrel into a house and shattering a window. As the tornado tracked northeastward, multiple softwood trees were either uprooted or had snapped trunks. Once the tornado crossed Painter Road, it forcibly removed an attached garage from a house, caused a full collapse of the garage and did significant damage to the shingled roof. A car was also flipped on its side at the residence. As the tornado continued to move northeastward, it removed roofing from multiple farm buildings and uprooted additional softwood trees. Once the tornado moved northeast of the farm, it entered a field where it snapped over a dozen additional trees at mid-trunk level before dissipating over the field. This tornado injured two people during the brief touchdown.

Figure 6: This picture was taken north of Painter Hill Road where the most significant damage associated with the short-lived tornado occurred. Shingle damage to both the north and south facing side of the house was noted. In addition, an attached garage was removed from the foundation and thrown 10 feet where it collapsed. This damage is what led the survey team to rate the tornado as a high end EF-1.

Summary

Start Location: 1.4 miles northeast of Middlebury in Addison County in Vermont at the end of Juniper Lane

End Location: 2.0 miles northeast of Middlebury in Addison County in Vermont north of Painter Road

Date/Time: 1:40-1:41 PM on March 26, 2021

Estimated Max Wind Speed: 110 MPH

Maximum EF-Scale Rating: EF1

Maximum Path Width: 75 Yards

Injuries: 2

Fatalities: 0

Figure 7: Between 6 and 12 large softwood trees were completely uprooted with many of these trees falling on powerlines. In addition, 12-24 softwood trees were snapped at mid-trunk level both north and south of Painter Hill Road.

For the full article, visit this webpage:	https://www.weather.gov/btv/***A-Multiscale-Analysis-of-the-26-March-2021-EF-1-Tornado-in-Middlebury-Vermont***

Drought Conditions to Start Spring - Will they Persist?

By Seth Kutikoff

According to the United States Drought Monitor, which is produced through a partnership that includes the National Oceanic and Atmospheric Administration, the current drought intensity and extent over the NWS Burlington forecast area is the highest since 2000 for early spring. 77% of the forecast area is classified as in drought.

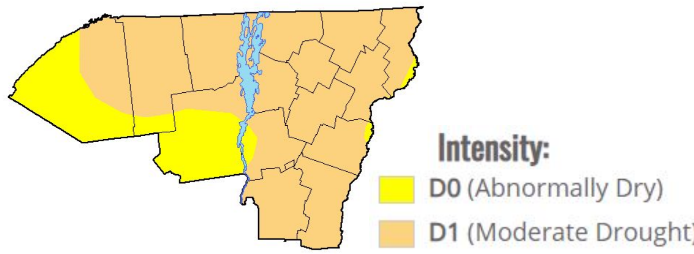

Figure 1: Drought status in the North Country as of April 20.

Note that typically we look at hydrological, or long-term, drought conditions in the North Country that need upwards of six months to develop and impact our rivers and stream flows. While there have been a few dry springs during the last couple of decades, moderate drought in the March through May period has been rare in our region, with a 5% extent of moderate drought occurring just a few times:

Time	Location	Impacts	Notes
Late May 2015	Southern Vermont and St. Lawrence Valley	Extremely low streamflow. Low groundwater	Record warm month in Burlington, VT. Culmination of lowest 10th percentile January to May precipitation in NY and VT.
Early May 2010	Southwestern St. Lawrence County	None noted due to drought, but warmth and subsequent frost/freeze impacted crops.	Short term drought with below normal precipitation in April and May. Prior months saw near normal wetness.
March 2002	Vermont, except northern Champlain Valley	Low water supply. Shallow wells and ponds went dry. Many homes were without water.	Long term drought caused by a very dry previous spring and summer that caused many record low river flows in the fall.

Table 1: Previous moderate drought events during the spring months and associated impacts in BTV forecast area.

What can we learn from the past?

Above normal precipitation in March marked a turning point in drought conditions in 2002, and a gradual reduction of drought conditions resulted in April and May. Soil moisture and area rivers recovered to normal, with slower response of groundwater. A wet March by itself did not remove long-term drought, as snow melt that represents several months of precipitation contributed to most of the drought relief. As it so happened, while short-term recovery occurred during the spring, a dry summer sent river levels across the North Country to very low levels, including record low flows at Otter Creek.

So the 2002 spring season is the last one to see extensive drought conditions in the North Country. As a result, the NY Department of Environmental Conservation had the North Country under a Drought Watch through the first part of May, with recommendations to conserve water. This watch is consistent with the description of moderate drought conditions, which typically result in the request of voluntary water-use restrictions. The current drought is similarly a result of long-term (6 to 12 month) dryness from last spring/summer, particularly in the St. Lawrence Valley and northeastern Vermont.

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How did we get here?

Precipitation has been well below normal over just about any time period going back through the past year, especially over northern Vermont. In fact, in the summer edition of the 2020 Four Seasons newsletter we reported on the dryness across the region, which resulted in quite a few reports of wells drying up from July through October, especially in eastern Vermont.

This data is plotted in an interactive map, as seen on the right. In the spirit of Citizen Science Month, this would be a great time to submit an observer report of drought conditions through a form accessed at drought.gov. Well water at most USGS monitoring sites in the region remains well below normal due to the long-term lack of precipitation. For example, on March 7 the Hartland, VT site showed the lowest water level in 50 years for the month of March, continuing a trend of mainly well below normal groundwater levels since last summer. A similar story appears in Brasher Falls, NY relative to a 66 year period of record. While the recent wet weather and snow melt has left streamflow near normal, only small improvements to groundwater were observed.

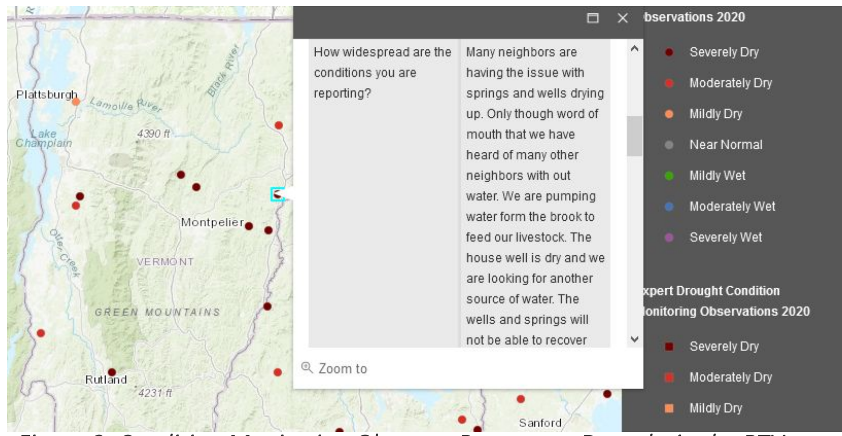


Figure 2: Condition Monitoring Observer Reports on Drought in the BTV forecast area indicating impacts in 2020.

Departure from normal precipitation is a good indicator for time ranges of 3 to 6 months for hydrological drought. The map on the right shows precipitation deficits since the beginning of 2021 (ending April 23) that have added to the existing deficits.

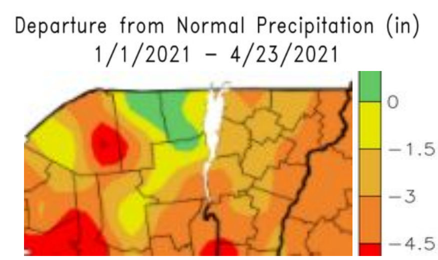


Figure 3: Rainfall deficits have grown by more than 3 inches in parts of the North Country so far in 2021.

Any good news on the horizon?

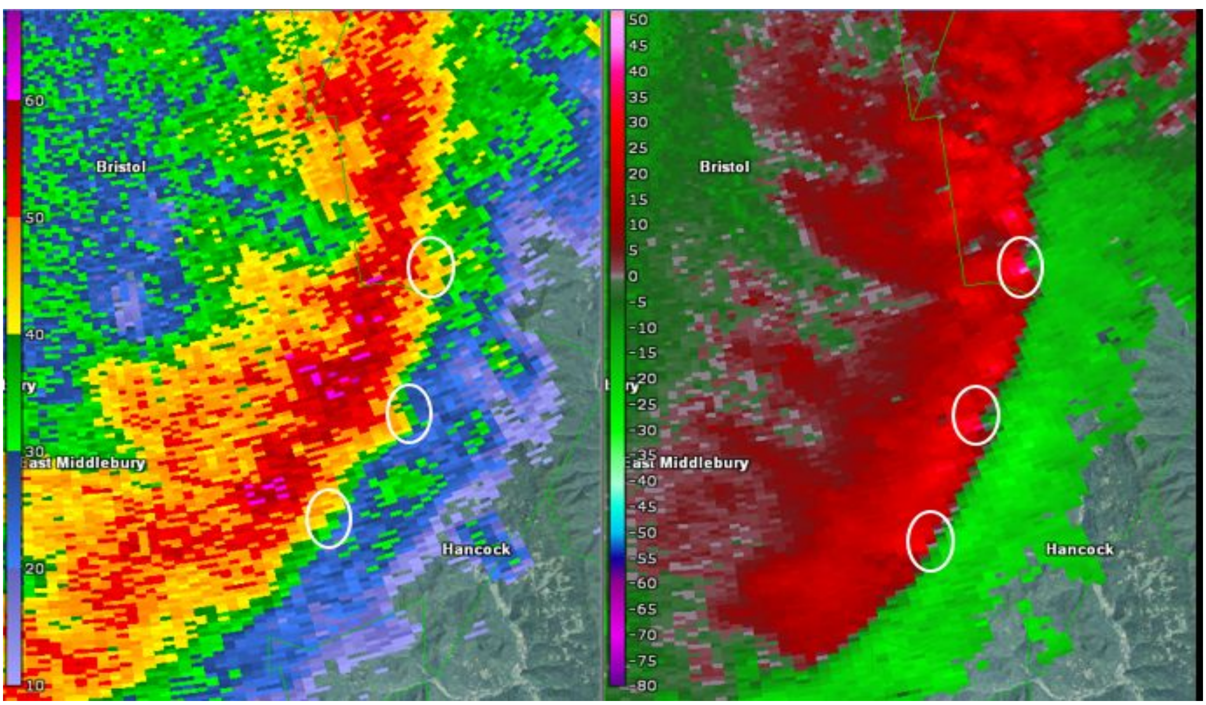
According to the Climate Prediction Center, drought removal is likely by the end of July. However, on a seasonal scale, challenges to climate prediction are tied to ENSO. The existing pattern of La Nina, which historically favors wetter than normal conditions during the spring across the North Country, is transitioning into an ENSO-neutral pattern between April and June, which . While some various seasonal-scale model data shows improvement in drought conditions through the spring, there is fairly high variability. We will be carefully monitoring, along with the Northeast River Forecast Center and Climate Prediction Center, precipitation patterns through the spring and how they will impact the current drought conditions. Additionally, dry conditions across the area along with the loss of snowpack has set the stage for unusually high fire danger early this spring which is now easing off with greenup occurring. Our fire weather program in coordination with the US Forest Service will continue daily monitoring of soil moisture, winds, and humidity levels.

Severe Weather Season Across the North Country

By Brooke Taber

This year severe weather awareness week across Northern New York into all of Vermont is April 25th through May 1st. The main goal of severe weather awareness week is to provide the public with information about severe weather, review severe weather safety measures, and think about a plan when severe weather occurs. The mission of the NWS is to issue timely and specific severe weather watches and warnings in an effort to save lives and reduce property damage.

Forecasters at the National Weather Service in Burlington, VT are on continuous weather watch, monitoring and communicating potential hazards associated with severe thunderstorms. Doppler radar is the primary source to examine thunderstorm structure and the potential threats for severe winds, large hail, heavy rainfall, and even weak tornadoes. In addition, we utilize high resolution satellite imagery and numerical models to investigate thunderstorm development and potential convective storm mode.



KCXX doppler radar reflectivity (right image) and storm relative velocity (left image) on 4 May 2018 at 8:24 PM.

Severe Weather is most frequent during the summer months of June, July, and August. During a 24 hour period, severe weather is most frequent during the mid to late afternoon hours when peak heating occurs and instability is the highest. The number of days with thunderstorms across Vermont and Northern New York ranges from 20 to 30 days with nearly a third of these days experiencing severe weather. A severe thunderstorm is defined as a thunderstorm that can produce damaging winds in excess of 58 mph, large hail of 1 inch or larger, or even a tornado. The primary severe weather threat from thunderstorms is damaging winds across our region, with large hail a secondary threat.

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Heavy rain which may cause flooding and deadly lightning are also hazards in a severe thunderstorm. Historically, flooding is the number one natural disaster in loss of property and life in Vermont and Northern New York. Most flash flooding is caused by very heavy rainfall rates from thunderstorms, across complex or mountainous terrain.

As always if you witness severe weather, please communicate with us on Facebook or Tweet@NWSBurlington with your reports. In addition, you can send a report via our webpage at the following address: https://www.weather.gov/btv/stormreport. Please include the what, where, and when with your reports and remember if reporting hail, please include the size. Your severe weather reports are very helpful to our warning operations, while providing ground truth of what forecasters are examining from Doppler radar data.

Storm damage in Shelburne, VT on 4 May 2018. Photo by Brooke Taber (NWS BTV)

Updated Snowfall Climatology Now Available!

By Robert Haynes

Each decade, the climatological data across designated locations is updated to reflect the latest "normal" values at that observing site. With the year 2020 now completed, this process is underway across the globe. On a local level, we're updating our regional snowfall climatology page using data from our dedicated volunteer observers reporting decades of weather observations, including snowfall and snow depth, across the North Country. In 2007, two student volunteers, Ryan Aylward and Jordan Scampoli, created the framework to generate box and whisker plots for COOP sites across our forecast area. This project would not be possible without your time and effort and it helps us communicate seasonal weather impacts. So your weather observations are important, and we try to make the most of your efforts. Thank you!

For your review, this data can be found at weather.gov/btv/climoSnowfall (not updated with the 1990-2020 information at time of writing). We will take a brief glance at select locations here. Each location has at least 30 years of data during the cold season, and relatively little missing data within that 30 year period. Wherever possible and reasonable, missing data or shifts in locations were supplemented with

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with nearby CoCoRaHS or COOP data. The median and each of the different percentiles were calculated for each site across the new 30 year period (1990-2020) and were plotted via a box and whisker plot.
Here's an example of the box and whisker plot for Burlington, Vermont for the monthly snowfall totals (Figure 1).

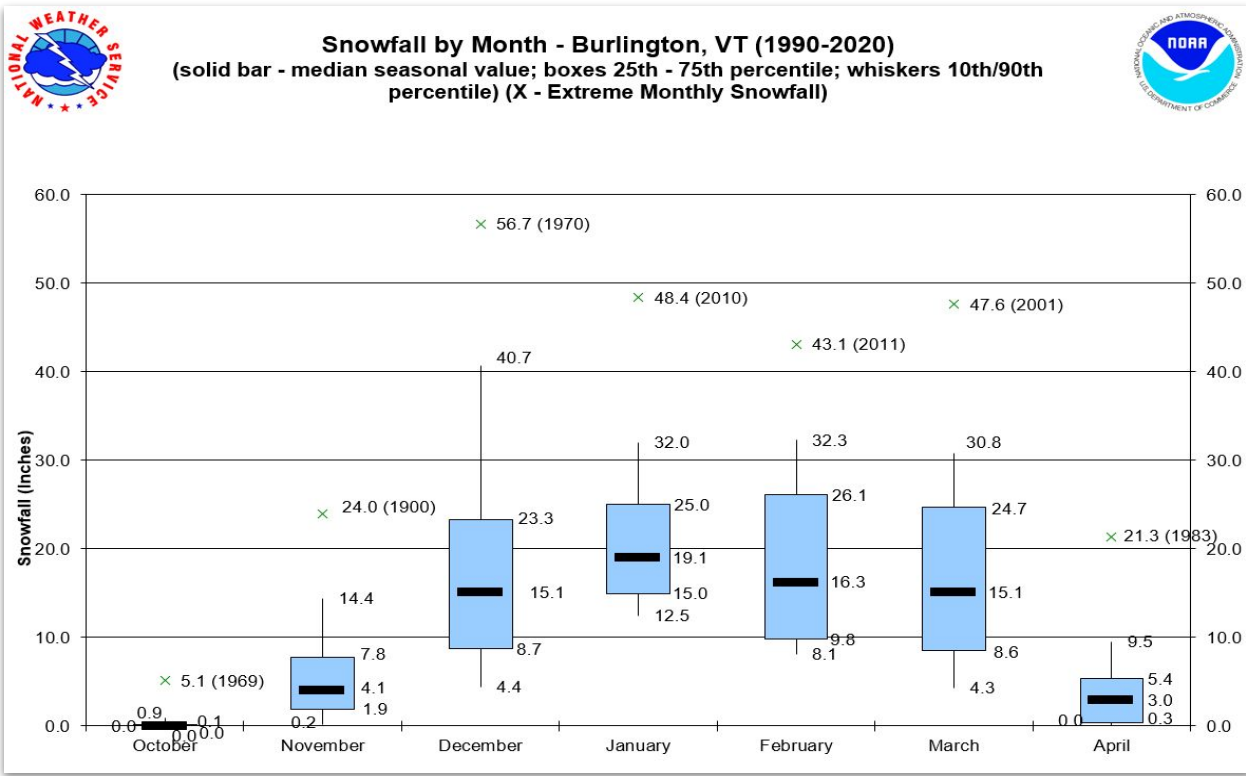

Figure 1: Box and whisker plot of monthly snowfall accumulations (inches) for the cold season months for Burlington, Vermont. The box and whisker was generated from the 30 year period from 1990-2020, but the monthly maximum snowfall was taken from the entire period of record for the observing site.

The "x" marks the greatest accumulation of snow for the month with the year it occurred. The whisker below marks the 90th percentile, the top edge of the box marks the 75th percentile, the black bar measures the median or 50th percentile, the bottom edge of the box marks the 25th percentile, and the bottom whisker marks the 10th percentile. Their value is placed beside their respective location. The minimums have been omitted since a consistent method for verifying legitimate minimum snowfall accumulations from sites with nearly 100 years of observations and more recent sites could not be established. It was decided to remove them for now.

Simply analyzing the changes across one location does not tell the whole story for the region. A storm track that might be favorable for one observing site might not be favorable for another, especially with our complex terrain. It is useful to look for trends across many places and to remember that there's more to the North Country than just the Burlington area. With that, here's a scorecard comparing some of the changes to median monthly snowfall for a few select observing sites (Figures 2-4).

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Select Sites for November	1990-2020 Median Snowfall in Inches
Burlington, VT	4.1 (-1.4)
St. Johnsbury, VT	3.7 (-0.6)
Rutland, VT	3.4 (-0.1)
Tupper Lake, NY	6.5 (-0.5)
Canton, NY	4.5 (-1.0)

Select Sites for January	1990-2020 Median Snowfall in Inches
Burlington, VT	19.1 (-0.4)
St. Johnsbury, VT	18.7 (-1.0)
Rutland, VT	15.8 (+0.3)
Tupper Lake, NY	21.0 (0.0)
Canton, NY	17.8 (-2.0)

Select Sites for March	1990-2020 Median Snowfall in Inches
Burlington, VT	15.1 (+1.9)
St. Johnsbury, VT	15.7 (+1.6)
Rutland, VT	11.7 (+3.7)
Tupper Lake, NY	17.3 (+4.3)
Canton, NY	11.0 (-0.4)

Select Sites for December	1990-2020 Median Snowfall in Inches
Burlington, VT	15.1 (+0.9)
St. Johnsbury, VT	17.7 (-2.3)
Rutland, VT	16.4 (+2.9)
Tupper Lake, NY	20.0 (-0.1)
Canton, NY	14.5 (-3.9)

Select Sites for February	1990-2020 Median Snowfall in Inches
Burlington, VT	16.3 (+4.5)
St. Johnsbury, VT	16.8 (+3.2)
Rutland, VT	14.2 (+1.2)
Tupper Lake, NY	20.1 (+0.1)
Canton, NY	15.3 (+0.8)

Select Sites for April	1990-2020 Median Snowfall in Inches
Burlington, VT	3.0 (+0.3)
St. Johnsbury, VT	3.0 (-0.6)
Rutland, VT	1.0 (-0.1)
Tupper Lake, NY	2.0 (-1.5)
Canton, NY	1.3 (-1.0)

Figure 2 (above): Tables for the median snowfall for each month of the cold season across several sites across the North Country. The change from the 1977-2007 median snowfall is contained within parentheses.

Select Sites for November	1990-2020 Median Snow Days
Burlington, VT	5 (0)
St. Johnsbury, VT	5 (0)
Rutland, VT	3 (+1)
Tupper Lake, NY	3 (-1)
Canton, NY	2 (-2)

Select Sites for January	1990-2020 Median Snow Days
Burlington, VT	14 (-1)
St. Johnsbury, VT	15 (0)
Rutland, VT	10 (-1)
Tupper Lake, NY	12 (0)
Canton, NY	9 (-4)

Select Sites for March	1990-2020 Median Snow Days
Burlington, VT	9 (-1)
St. Johnsbury, VT	9 (0)
Rutland, VT	5 (-1)
Tupper Lake, NY	7 (0)
Canton, NY	5 (-3)

Select Sites for December	1990-2020 Median Snow Days
Burlington, VT	12 (0)
St. Johnsbury, VT	13 (+1)
Rutland, VT	8 (-1)
Tupper Lake, NY	10 (0)
Canton, NY	9 (-1)

Select Sites for February	1990-2020 Median Snow Days
Burlington, VT	12 (+2)
St. Johnsbury, VT	12 (+2)
Rutland, VT	8 (+2)
Tupper Lake, NY	11 (0)
Canton, NY	8 (-2)

Select Sites for April	1990-2020 Median Snow Days
Burlington, VT	2 (-1)
St. Johnsbury, VT	3 (0)
Rutland, VT	2 (+1)
Tupper Lake, NY	1 (-1)
Canton, NY	1 (-1)

Figure 3 (above): Same as Figure 2, but looking at the median number of snow days, which is when any measurable snow was recorded.

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Select Sites for November	1990-2020 Median Snow Depth (inches)
Burlington, VT	0.2 (0)
St. Johnsbury, VT	0.2 (0)
Rutland, VT	0.1 (0)
Tupper Lake, NY	1.0 (0)
Canton, NY	0.3 (-0.2)

Select Sites for January	1990-2020 Median Snow Depth (inches)
Burlington, VT	4.1 (-0.6)
St. Johnsbury, VT	6.9 (-2.6)
Rutland, VT	3.4 (-0.1)
Tupper Lake, NY	9.2 (-0.4)
Canton, NY	4.8 (-0.6)

Select Sites for March	1990-2020 Median Snow Depth (inches)
Burlington, VT	2.9 (+0.7)
St. Johnsbury, VT	5.6 (0)
Rutland, VT	2.1 (+0.8)
Tupper Lake, NY	11.1 (-0.1)
Canton, NY	3.1 (+0.1)

Select Sites for December	1990-2020 Median Snow Depth (inches)
Burlington, VT	1.6 (-0.2)
St. Johnsbury, VT	3.0 (-1.0)
Rutland, VT	2.0 (+0.2)
Tupper Lake, NY	5.1 (-0.7)
Canton, NY	2.5 (0)

Select Sites for February	1990-2020 Median Snow Depth (inches)
Burlington, VT	5.9 (-0.4)
St. Johnsbury, VT	10.6 (-1.4)
Rutland, VT	4.6 (+0.7)
Tupper Lake, NY	12.6 (-3.9)
Canton, NY	5.4 (-0.1)

Select Sites for April	1990-2020 Median Snow Depth (inches)
Burlington, VT	0.1 (0)
St. Johnsbury, VT	0.1 (+0.1)
Rutland, VT	0.0 (0)
Tupper Lake, NY	0.4 (0)
Canton, NY	0.1 (-0.1)

Figure 4: Same as Figure 2 and 3, but recording the median monthly snow depth.

Here are some interesting bullet points from each of the different scorecards.

- **The month of December has seen locations with large shifts in median snowfall both positive and negative, and some with little change.**
- **Canton, New York has seen a reduction in snow days across most months of the cold season.**
- **Most every site selected here had increased median snowfall values for February and March compared to the 1977-2007 climatology.**
- **Despite increasing snowfall in February and March, snow depths reflected little change or even decline in the cases of Tupper Lake and St. Johnsbury.**
- **Of the selected sites, St. Johnsbury seems to struggle more with maintaining a snowpack as compared to the 1997-2007 climatology.**

We also actively look at 4” and 6” thresholds since they are roughly consistent with our winter weather advisory and winter storm warning criteria. Though not listed here, you can review them at the website listed earlier to get a sense of how often you might expect to be under winter weather advisories and warnings. Such information is useful to planners, and useful for us when considering seasonal forecasts.

As with many things in life, our climate changes over time. We’ve given just a small snapshot of some of the differences between the climatology of 1977-2007 and 1990-2020. We’ve taken a quick view at some changes, like how Canton, New York has seen a noticeable reduction in the number of snow days. Will these changes continue their course over the coming years, or will they reverse? Without the dedicated work of weather observers keeping the books for so many years, seeing these changes over time would be far more difficult. Thanks to our citizen scientists and observers!

If you have any questions or are interested in helping us fill any gaps, please contact our Observation Program Leader, Marlon Verasamy, at Marlon.Verasamy@noaa.gov.

Meet A Forecaster:

Matthew Clay

As part of our Meet a Forecaster series, we decided to sit down with Matthew Clay, a meteorologist at our office originally from New Orleans, Louisiana.

What made you want to become a meteorologist?

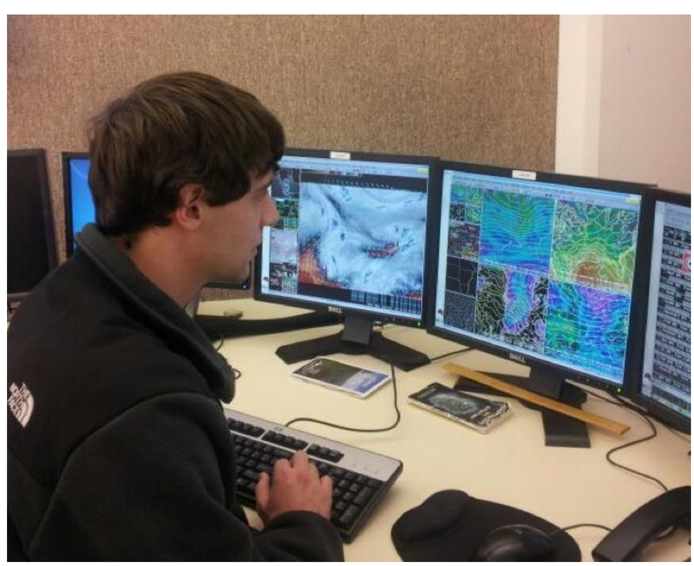
I know it sounds cliche, but ever since I was a young kid weather was something that always fascinated me. I remember making handwritten forecasts of high and low temperatures and tracking hurricanes on maps we could get at the grocery store. One of my first memories as a kid was Hurricane Andrew and how we had originally evacuated from New Orleans to Baton Rouge. Andrew ended up making landfall slightly west of where they originally expected and we ended up driving back to New Orleans through blinding rain, gusty winds and swerving past downed trees in the roadways. My fascination only grew with time but it wasn't until my freshman year in high school that I decided to pursue meteorology as a career when the brother of a friend told me he was going to school for meteorology. The rest is history and here I am now.

What was it like living in New Orleans during Hurricane Katrina? Did it influence your decision to become a meteorologist?

Hurricane Katrina continues to shape the culture of New Orleans and the surrounding area. We were underneath a mandatory evacuation and relocated to Monroe, LA initially as the hurricane made landfall. I remember staying up all night watching as each new radar image came in and saw the storm take a shift eastward as it approached the coast. We ended up being displaced for well over a month and had to move from hotel to hotel for a while but we met a lot of really nice people who brought food and other basic necessities through our stays. Hurricane Katrina occurred during my senior year of high school and I was already in the process of applying to meteorology programs at multiple universities and only further convinced me that meteorology wasn't just an interest but my passion.

Tell us a bit about your NWS career. Which offices have you worked at?

I've now been with the National Weather Service for a little over 11 years. When I was a junior in college, I applied for a student internship known as SCEP (Student Career Employment Program) and got accepted at the Lake Charles Weather Forecast Office. I did this for one and a half years before receiving a full time offer at NWS Little Rock in March of 2010. I worked in Little Rock for 3 years before moving to NWS Anchorage for almost 5 years before



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ultimately moving to NWS Burlington where I have been for the past three years. It's been a fun adventure traveling around the country and forecasting all sorts of weather. Heck, I even met my wife in Anchorage who is also a meteorologist here in Burlington!

What are some of your most notable forecasting events?

One of the most notable events I worked in Little Rock was a significant winter storm (yes winter storms do occur in the south) where we received over a half of an inch of freezing rain followed by around 10 inches of heavy wet snow. Most of the state was without power for over a week due to the extensive damage to the electrical grid and this was my first true introduction to winter weather. Another big event was in April of 2011 where we had 13 confirmed tornadoes in one night with 3 tornadoes simultaneously on the ground. We actually evacuated to our storm shelter as a tornado touched down just 5 miles northwest of the office.

The Bering Sea in Alaska was one of the most interesting places I've ever forecasted for as strong low pressure systems could bring hurricane force winds to the region. In November of 2014, the remnants of Typhoon Nuri moved into the Bering Sea and underwent rapid intensification, ultimately dropping to 920 mb which is the lowest pressure ever recorded in the northern Pacific. We had widespread hurricane force winds and waves over 40+ ft in height that flipped "unflippable" buoys in the western Bering Sea. With this occurring during the crabbing season, we had multiple captains from the fishing fleet featured on *Deadliest Catch* call and get forecasts. It was interesting afterwards to see the episode with Nuri impacting the Bering Sea on the show.

What can you be found doing outside of work?

I've taken up cycling over the last 3 years and love to explore Vermont on my bike. It's nice to experience the microclimates of the valleys and higher terrain over the region and it has helped familiarize myself with our forecast area. I've also recently gotten back into running and am planning to run the Vermont City Marathon in 2021 or 2022. Basically, I enjoy anything and everything outdoors which is why Vermont interested me and my wife.

The Four Seasons

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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:
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http://www.weather.gov/btv/stormreport

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