Blue Ridge Barometer

Welcome to the Fall 2022 edition of Blue Ridge Barometer, the biannual newsletter of the National Weather Service (NWS) office in Blacksburg, VA! In this issue, you will find articles of interest about the weather and climate of our County Warning Area (CWA), including highlights of the 2022 tropical season and a summary of the spring and summer tornadic activity in our region. You'll also learn about the new Impact-Based Snow Squall Warnings, and our outreach to rural communities. All this plus personnel updates, a quick way to convert Fahrenheit to Celsius, and even a crossword puzzle to celebrate our newsletter's ten year anniversary. We wish all of you a safe and joy-filled Fall and Winter!

From the Desk of the Editor

The Fall 2022 edition of the *Blue Ridge Barometer* marks the ten year anniversary of this newsletter's first publication. While the name of the newsletter has changed over time, what has not changed is the dedication of our writers to providing accurate, interesting, and even sometimes amusing, information about meteorology, hydrology, climatology, and National Weather Service technology. Thank you to the women and men throughout the years who have contributed articles and helped make every issue interesting and unique in some way.

Also, much appreciation to you, our readers, for the interest you have shown in learning more about the weather, and for the feedback you have provided over the past decade. Your comments have helped us fine-tune the presentation and content of this newsletter, and allowed us to gauge the usefulness of the information we share. Thank you!

Our goal is to continue providing quality content over the next ten years and beyond. As always, we will continue to welcome your suggestions and input, as well as any questions you may have about the *Barometer*. Feel free to email me at any time.

Stay safe, and enjoy the beauty and majesty of the season!

An Analysis of Summer 2022 Temperatures and Rainfall

Meteorologically, summer spans the timeframe of June, July, and August (JJA). This article will explore how hot or cold and dry or wet the summer months and season were in comparison to the 30-year (1991-2020) climatological normal conditions. Our five primary climatological locations (Blacksburg, VA; Bluefield, WV; Danville, VA; Lynchburg, VA; and Roanoke, VA), all averaged warmer than normal for the season.

Of the five, Lynchburg was the highest above normal with a 77.2°F average for the season, or 3.1°F above normal. Additionally, only Danville experienced one of the three months of summer with a monthly average below normal. August 2022 in Danville averaged 76.3°F which was 0.2°F below normal. Please review the "Temperatures and Departure from Normal in °F" table for the full summary of each location.

Temperatures and Departure from Normal in °F								
Location	June Avg	June Dep	July Avg	July Dep	Aug Avg	Aug Dep	JJA Avg	JJA Dep
Blacksburg, VA	69.4	1.5	74.6	2.9	71.8	1.4	71.9	1.9
Bluefield, WV	67.6	0.5	71.2	0.9	69.7	0.4	69.5	0.6
Danville, VA	74.7	0.8	79.2	1.3	76.3	-0.2	76.7	0.6
Lynchburg, VA	75.4	3.4	79.4	3.4	76.8	2.3	77.2	3.1
Roanoke, VA	75.6	1.8	79.8	2.0	76.5	0.3	77.3	1.4

Shades of red for positive departures and shades of blue for negative departures

For rainfall, the seasonal totals compared to normal were quite variable across the area. On the wet side, Bluefield, WV, was 4.17 inches above normal, whereas on the dry side, Danville, VA, was 3.10 inches below normal. A parameter that was consistent among the five climatological sites was a drier than normal June, ranging from 0.24 inches below normal at Bluefield, WV, to

3.24 inches below normal at Roanoke, VA. Danville, VA, was the only site of the five to be consistent each month on the dry side. The other four sites had months drier than normal and months wetter than normal. Please review the "Rainfall and Departure from Normal in Inches" table for the full summary of each location.

Rainfall and Departure from Normal in Inches								
Location	June Total	June Dep	July Total	July Dep	Aug Total	Aug Dep	JJA Total	JJA Dep
Blacksburg, VA	1.29	-2.98	5.35	1.14	6.47	2.90	13.11	1.06
Bluefield, WV	3.90	-0.24	7.01	2.65	4.90	1.76	15.81	4.17
Danville, VA	2.47	-1.51	3.31	-1.57	3.45	-0.02	9.23	-3.10
Lynchburg, VA	2.16	-1.66	9.47	5.28	2.64	-0.58	14.27	3.04
Roanoke, VA	1.42	-3.24	5.28	1.00	4.32	0.95	11.02	-1.29

Shades of green for positive departures and shades of tan for negative departures

2022 Tropical Season Summary: Very Different from 2020 and 2021

Robert Anthony Beasley, Meteorologist

What happened to the tropical season in 2022? After back-to-back years (2020 and 2021) with active to very active tropical seasons, 2022 brought a marked decline in the number of tropical cyclones within the Atlantic basin. Consequently, as one would expect, this resulted in a significant decline in the number of tropical systems to impact the weather within the Blacksburg, VA, National Weather Service (NWS) Forecast Area as well. As of the writing of this article in mid-October 2022, just one named tropical cyclone in late September and one tropical depression early in the season impacted the Blacksburg NWS forecast area in 2022. This significant decrease in tropical-related weather impacts locally mirrored the broader pattern of the tropical Atlantic basin as a whole, which saw the lowest amount of tropical activity since 2014 (Figure 1). In fact, August 2022 was the first time since 1997 that no hurricanes formed within the Atlantic basin during the month of August. The lack of activity in the tropical Atlantic during the 2022 tropical season was also in sharp contrast to its eastern tropical Pacific counterpart, which proved to be extremely active during the summer months, especially July through the first half of September. Compare Figure 2 (2022 Atlantic Basin Tropical Cyclone Activity) with Figure 3 (2022 Eastern Pacific Basin Tropical Cyclone Activity) as well as Figure 4 (2021 Atlantic Basin Tropical Cyclone Activity) and Figure 5 (2020 Atlantic Basin Tropical Cyclone Activity).
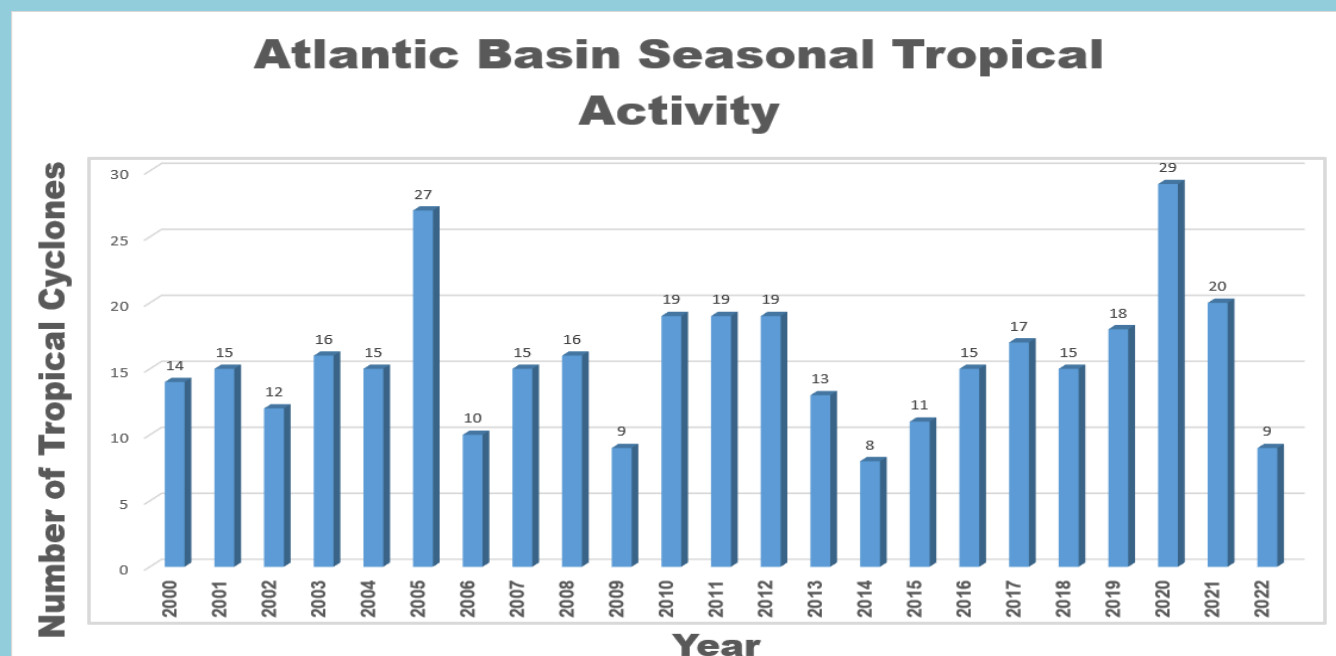

Figure 1. Atlantic Basin Seasonal Tropical Activity from 2000 to 2022 (through 10/15/22). Source: National Hurricane Center
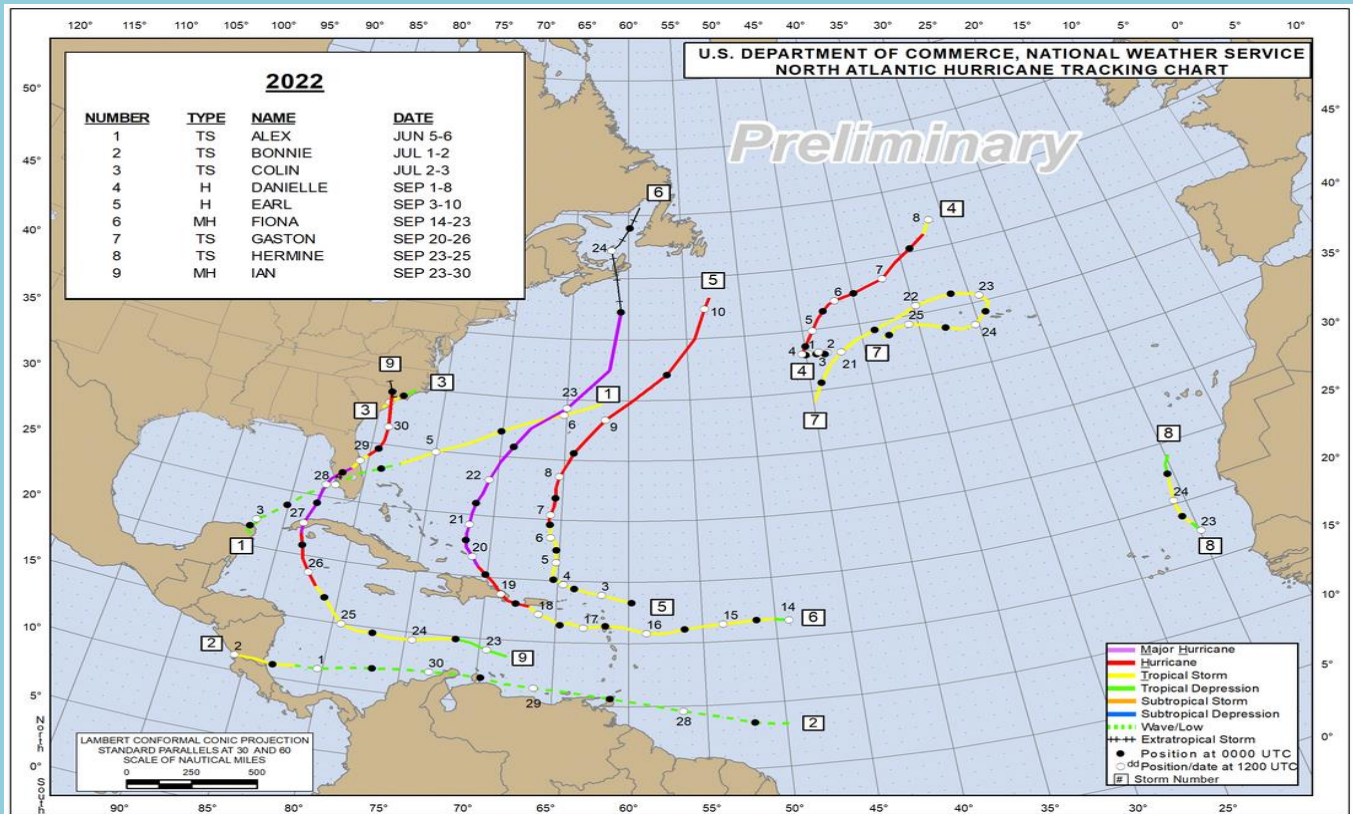
Figure 2. Atlantic Basin Seasonal Tropical Activity for 2022 (through 10/15/22). Source: National Hurricane Center.
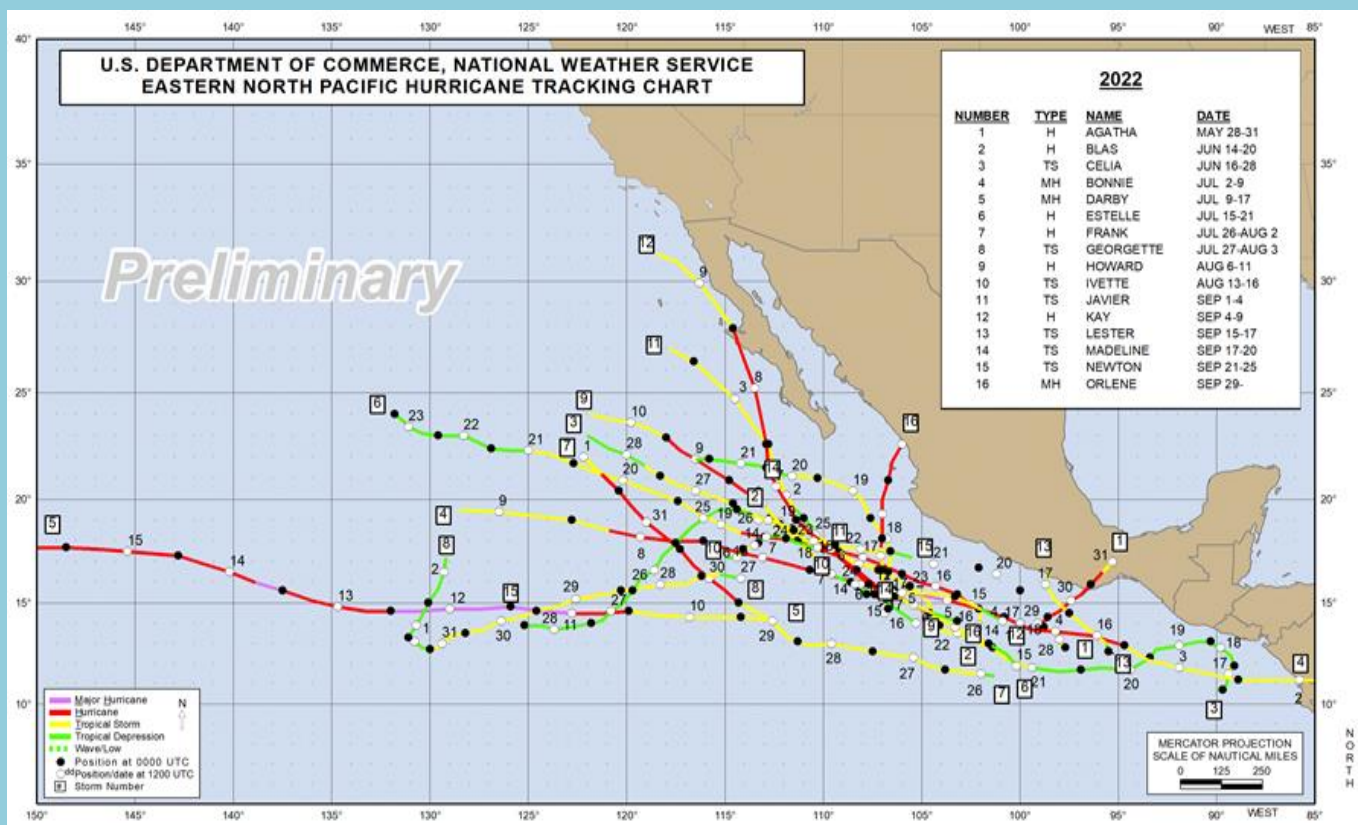

Figure 3. 2022 Eastern Pacific Basin Tropical Cyclone Activity (as of 10/15/22). Source: National Hurricane Center.
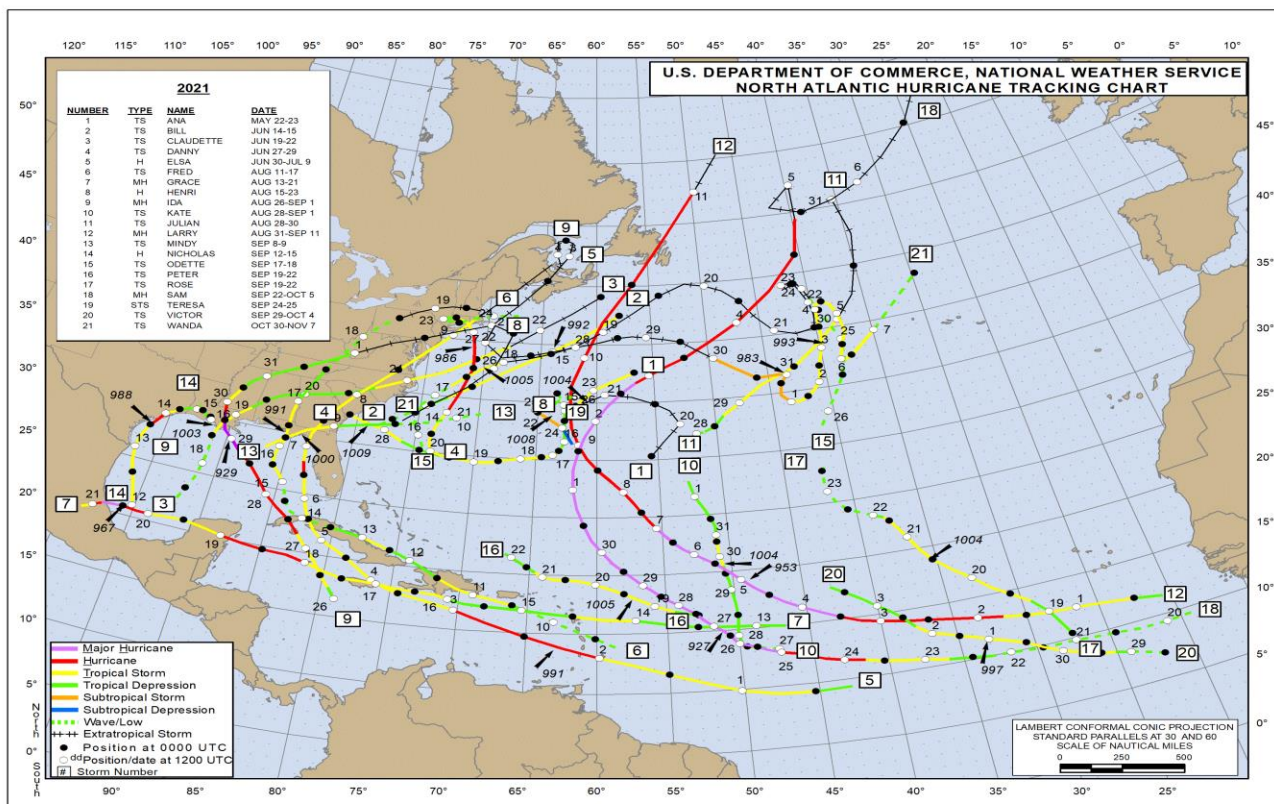
Figure 4. 2021 Atlantic Basin Tropical Cyclone Activity. Source: National Hurricane Center.
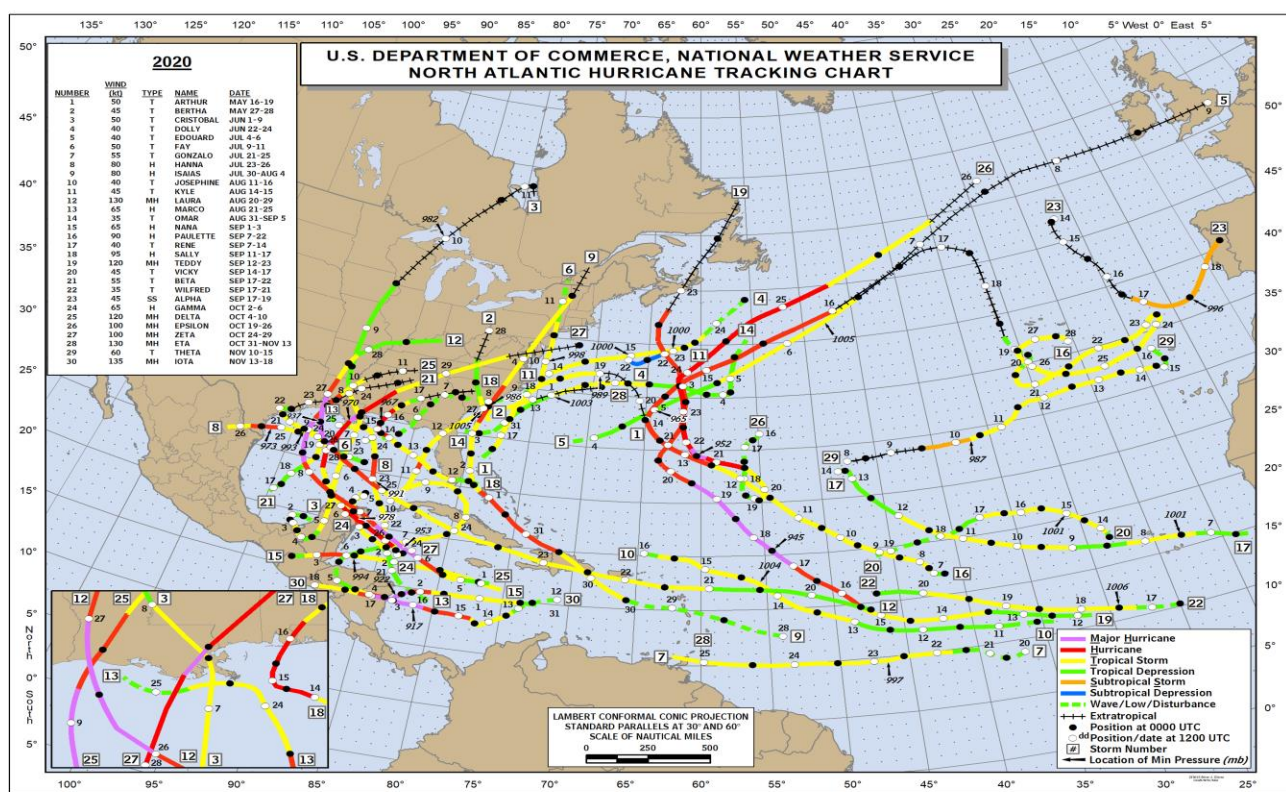

Figure 5. 2020 Atlantic Basin Tropical Cyclone Activity. Source: National Hurricane Center.

Although there was minimal tropical cyclone activity in 2022 overall, the one hurricane to impact the United States is one that nobody will forget anytime soon, given the massive and widespread destruction it inflicted across the Sunshine State. Hurricane Ian made landfall near Fort Myers, FL on September 28, as a high-end Category 4 hurricane (winds of 150 mph). Early data show it tracked northeast across the Florida peninsula while weakening to a strong tropical storm. As Ian exited the east-central coast of Florida, it turned north toward South Carolina and restrengthened to a Category 1 hurricane. Ian once again made landfall along the South Carolina coast on September 30. Ian then weakened to a tropical depression as it tracked northward through the Carolinas and into Southwest Virginia, very near Roanoke, on October 1 (see Figure 6). The northern remnants of Hurricane Ian brought very heavy rain and strong gusty winds to much of Southwest and South-Central Virginia overnight on September 30. Wind gusts to 40 mph were common across Southwest and South-Central Virginia, as well as neighboring North Carolina during the evening and overnight hours of September 30. Lynchburg, VA, reported a wind gust of 47 mph around midnight on September 30. Hurricane Ian ultimately weakened and did not require the issuance of a Tropical Storm Warning for any part of the Blacksburg NWS Forecast area.

Table 1 provides a list of observation sites within the Blacksburg NWS forecast area recording wind gusts greater than 40 mph associated with the remnants of Hurricane Ian, while Figure 7 shows the rainfall associated with the remnants of the hurricane.

Location	Maximum Wind Gust Reported (mph)
Glade Valley, NC (Alleghany County)	47
Sparta, NC (Alleghany County)	41
Mt. Jefferson, NC (Ashe County)	43
Caswell Game Lands, NC (Caswell County)	43
2SSE Wilbar, NC (Wilkes County)	53
Hot Springs, VA (Ingalls Field – Bath County)	43
Lynchburg City, VA	53
Rustburg, VA (Campbell County)	51
Lambsburg, VA (Carroll County)	60
1E Lambsburg, VA (Carroll County)	58
Roanoke City, VA	44
0.7E Mountain Lake, VA (Giles County)	60
4.1W Rugby, VA (Grayson County)	50
Bent Mountain, VA (Roanoke County)	44

Table 1. Wind gusts of 40 mph or greater associated with the remnants of Hurricane Ian as they moved through north central North Carolina and southwest/south central Virginia September 30 – October 1, 2022.
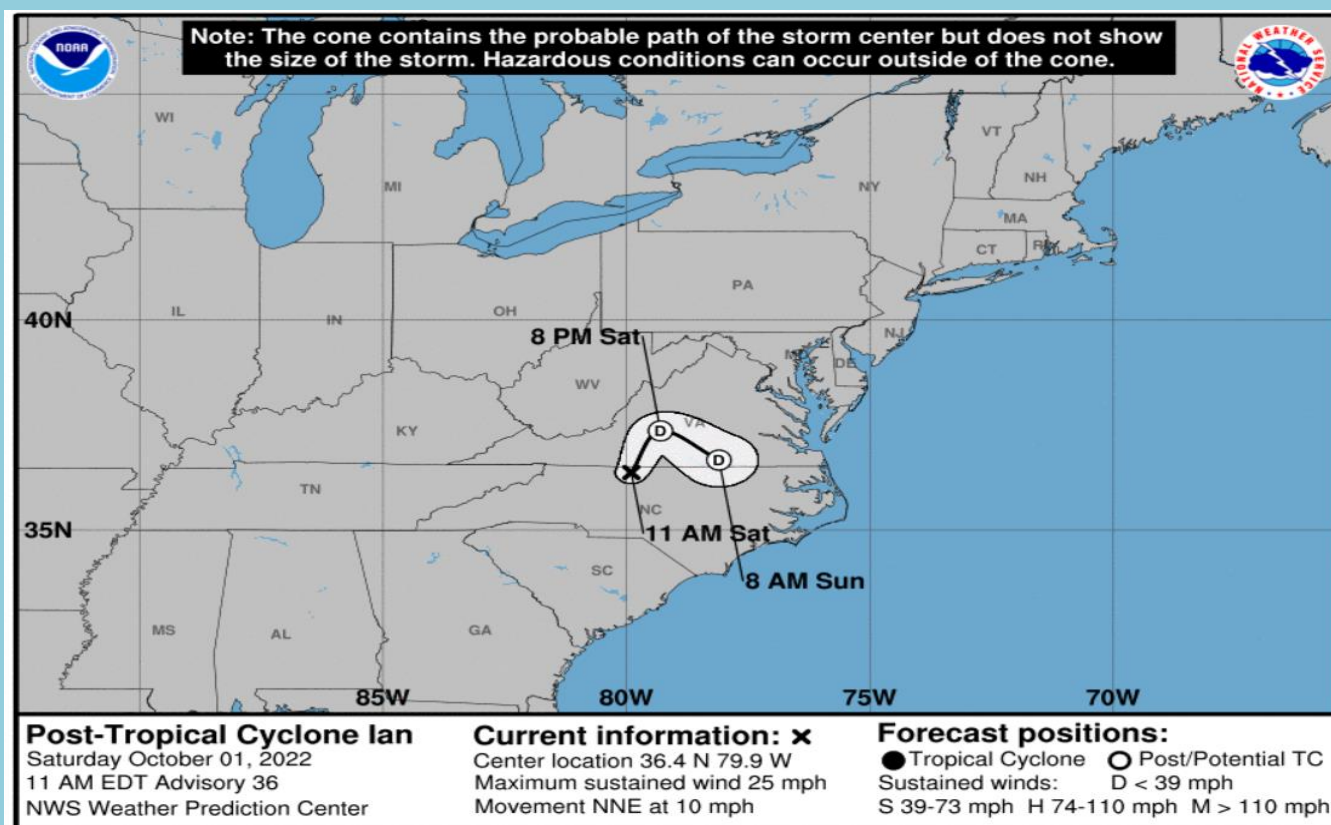
Figure 6. Graphic from the National Hurricane Center depicting the final remnants of Hurricane Ian as it tracked into southwest and south central Virginia September 30 – October 1, 2022. Source: National Hurricane Center.
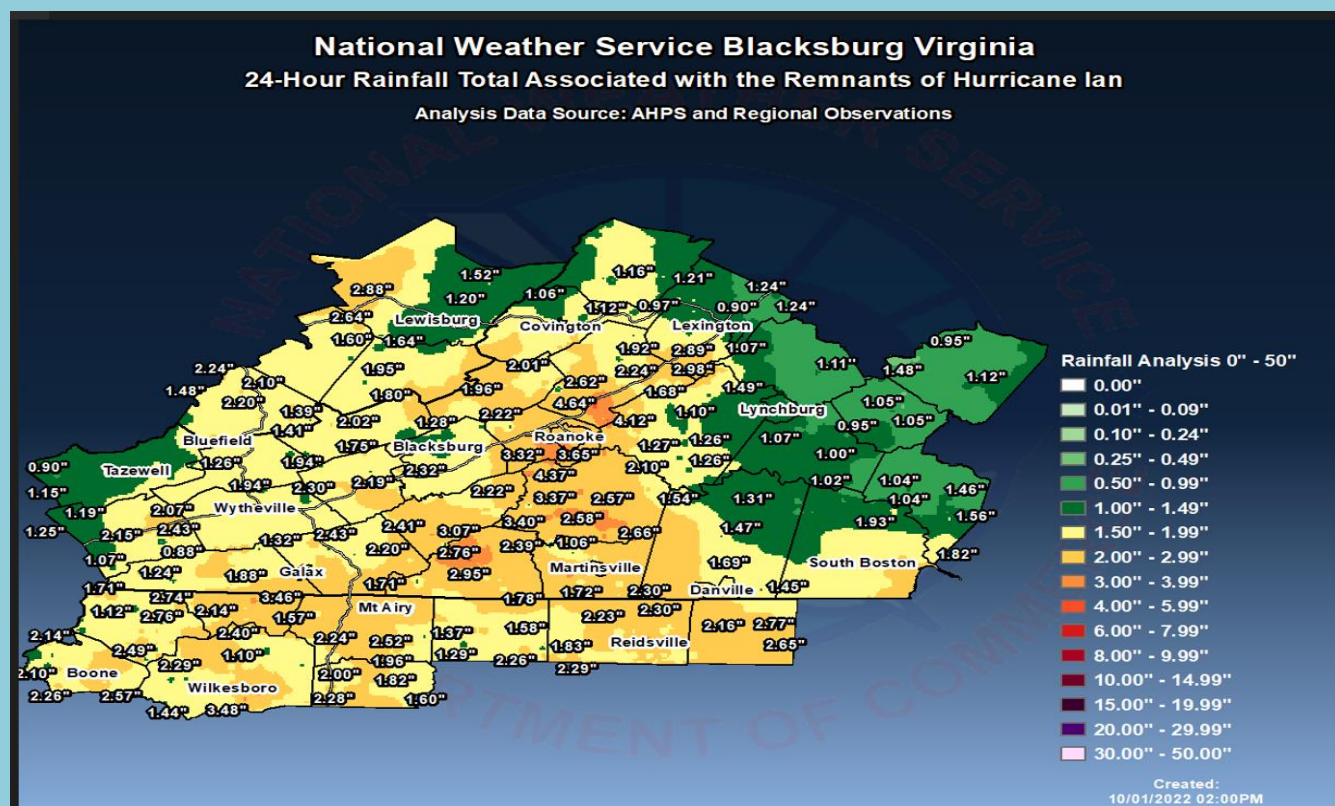

Figure 7. Rainfall associated with the remnants of Hurricane Ian from September 30 – October 1, 2022.

An Active Spring and Summer for Tornadoes

Amanda Sava, Meteorologist

Late this past spring and into the summer months, NWS Blacksburg surveyed and confirmed eight tornadoes in Southwest Virginia and Northwest North Carolina. While this is not the largest number of tornadoes to occur in the area in a single calendar year, it is the most since 2018, when there were 14 confirmed tornadoes. May was the most active month, with six of the eight confirmed tornadoes, while the other two formed in June and July. Four tornadoes developed during the afternoon and evening of May 26, and into the morning of May 27. This was the most active severe weather event of the year (Figure 1).

Climatologically, most tornadoes occur in the mid- to late spring in our area, usually in April and May, as this time of year is very favorable for organized severe thunderstorms (Figure 2). Then, tornado activity decreases somewhat through the summer as storms become more isolated and scattered. Tornadoes have been observed in the forecast area in every month of the year, except for December. The earliest tornado this year developed in March. Tornado activity commonly peaks in the afternoon to early evening hours, between 1:00 PM Eastern Daylight Time (EDT) and 7:00 PM EDT. This was the case for the majority of tornadoes in the forecast area this year. However, the tornado that occurred in Bedford, Virginia, developed at 7:24 AM EDT.
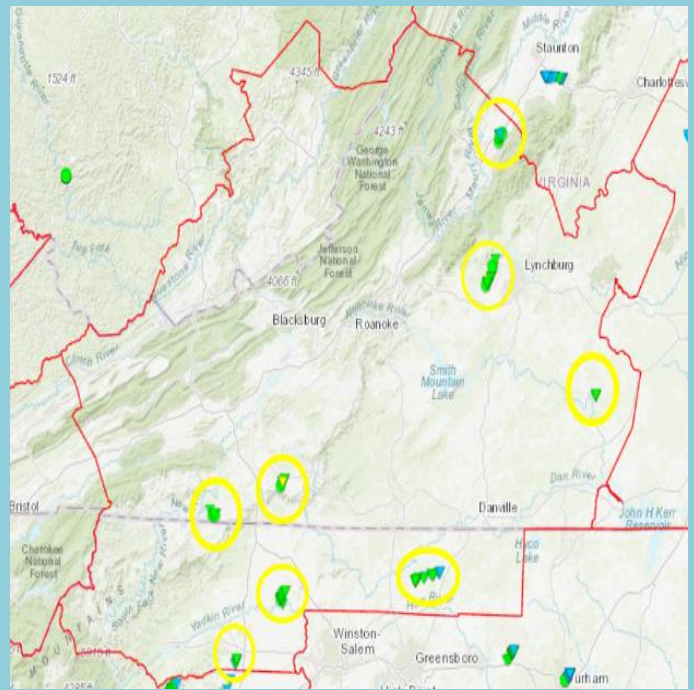

Figure 1. *Map with NWS Blacksburg country warning area with tornado damage points and paths from January 1, 2022 to October 1, 2022. Each yellow circle indicates a tornado event.*
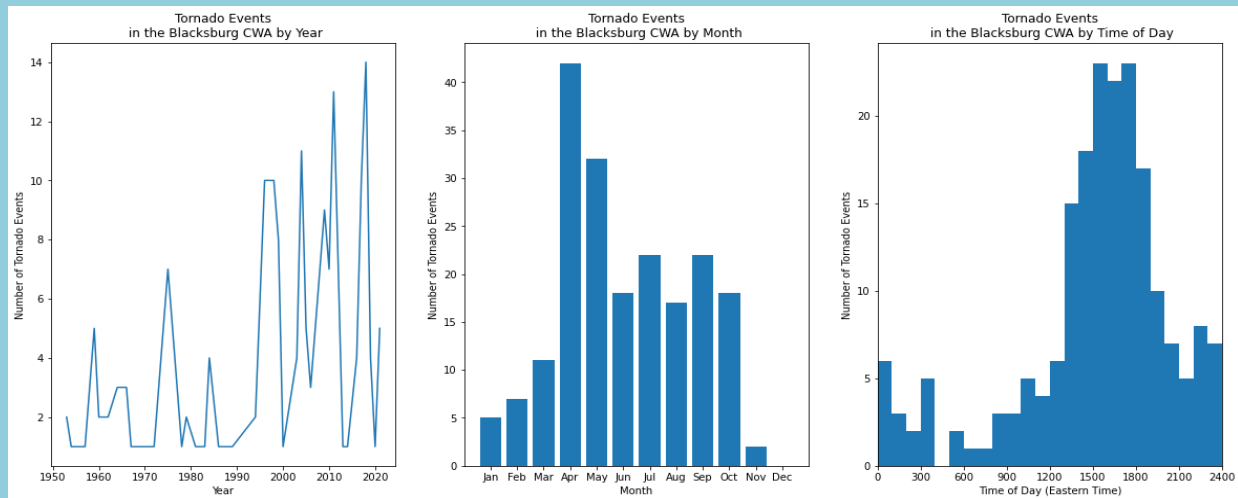
Figure 2. Tornado events in the National Weather Service Forecast Office Blacksburg county warning area by year (left), by month (middle), and by time of day (right). Source: Nolan Meister and Reggie Roakes.

The first tornado of the year occurred in March in Carroll County, Virginia. This was generated by rising air in the unstable area behind a warm front moving northward into southwest Virginia (Figure 3). Over a month later, from May 6 into May 7, a cold front moved northeastward from Northwest North Carolina into Southwest Virginia. Enhanced low level shear and daytime heating contributed to the great amount of atmospheric instability.
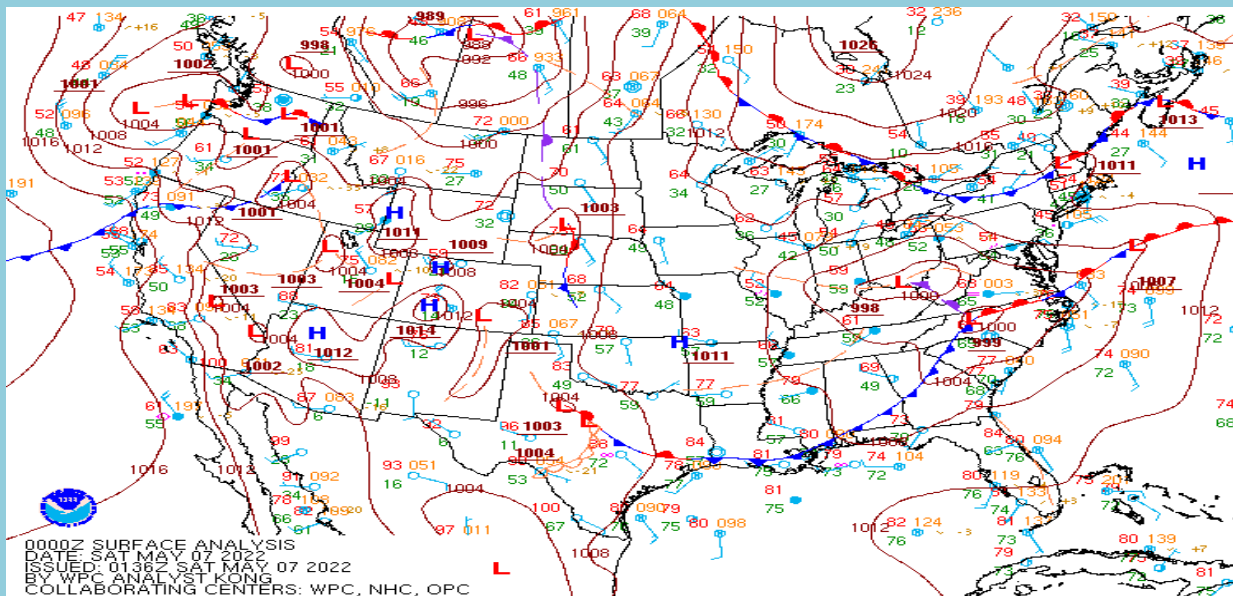

Figure 3. Surface analysis valid for 05/07/2022 at 0000 UTC, issued by the Weather Prediction Center.

Several rounds of organized thunderstorms formed along and in advance of the front. Two of the storms developed enough rotation to generate tornadoes, one in Rockingham County, North Carolina and one in Rockbridge County, Virginia.
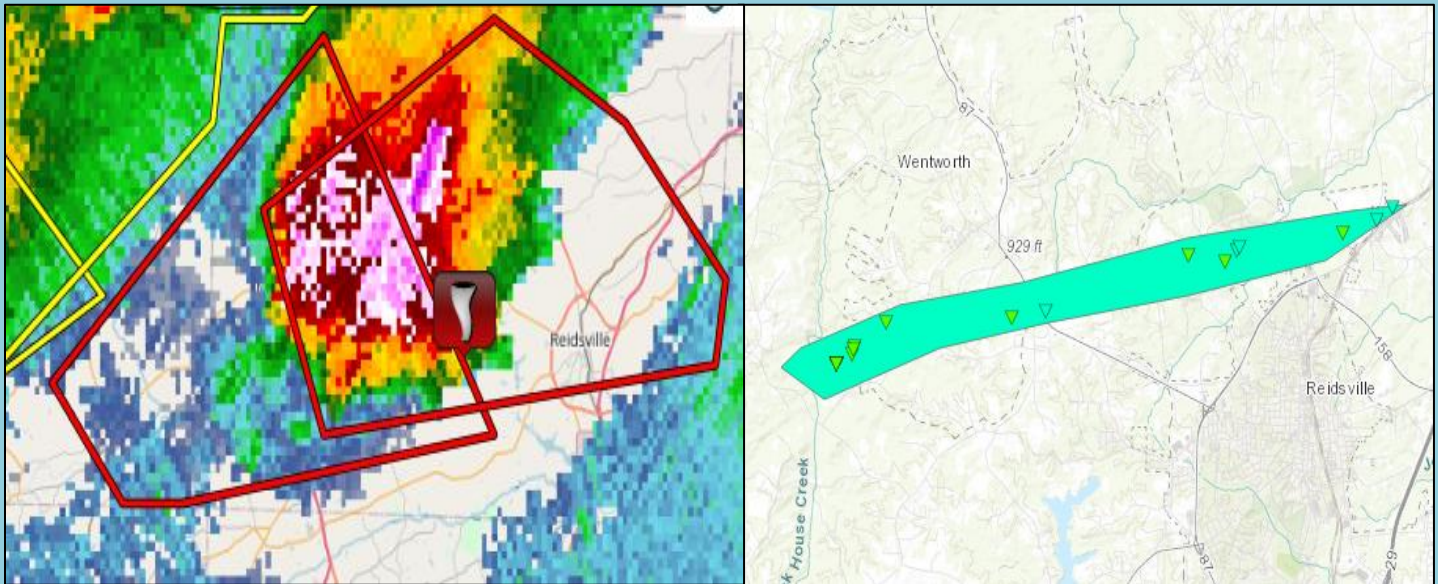

Figure 4. (left) Tornado warning polygons (red outlines) and confirmed tornado location (red box with tornado icon) with radar imagery, and (right) Tornado path (cyan colored polygon) and damage indicator data points (green upside down triangles) from an EF1 tornado in Wentworth, North Carolina in Rockingham County on 05/06/2022.

On May 26 and May 27, the most active event of the year resulted from an upper level low pressure system over the Ohio Valley that pushed a warm front north into northern North Carolina. A strong cold front in advance of this low pressure system moved into Southwest Virginia. Moisture increased ahead of a pre-frontal trough that developed at the surface east of the Appalachians. Strong daytime heating contributed to destabilizing the atmosphere. Enhanced moisture, combined with strong deep-layer shear and ample instability, created an environment favorable for multicell and supercell thunderstorms to develop along and ahead of the fronts. Some of these thunderstorms generated two tornadoes in North-Central North Carolina on May 26, and two in Southwest Virginia as the storms moved northeasterly on May 27. The Bedford County tornado (Figure 5) was rated an EF2, damaged over 15 residences and 35 other buildings, and caused three injuries. The final tornado of the year formed on July 5 in Grayson County, Virginia, as a warm front lifted northward into the Mid-Atlantic from the Carolinas. Instability in the atmosphere increased as a result of daytime heating, and plenty of moisture was present, leading to thunderstorm development. Eventually, one of the storms generated a tornado.
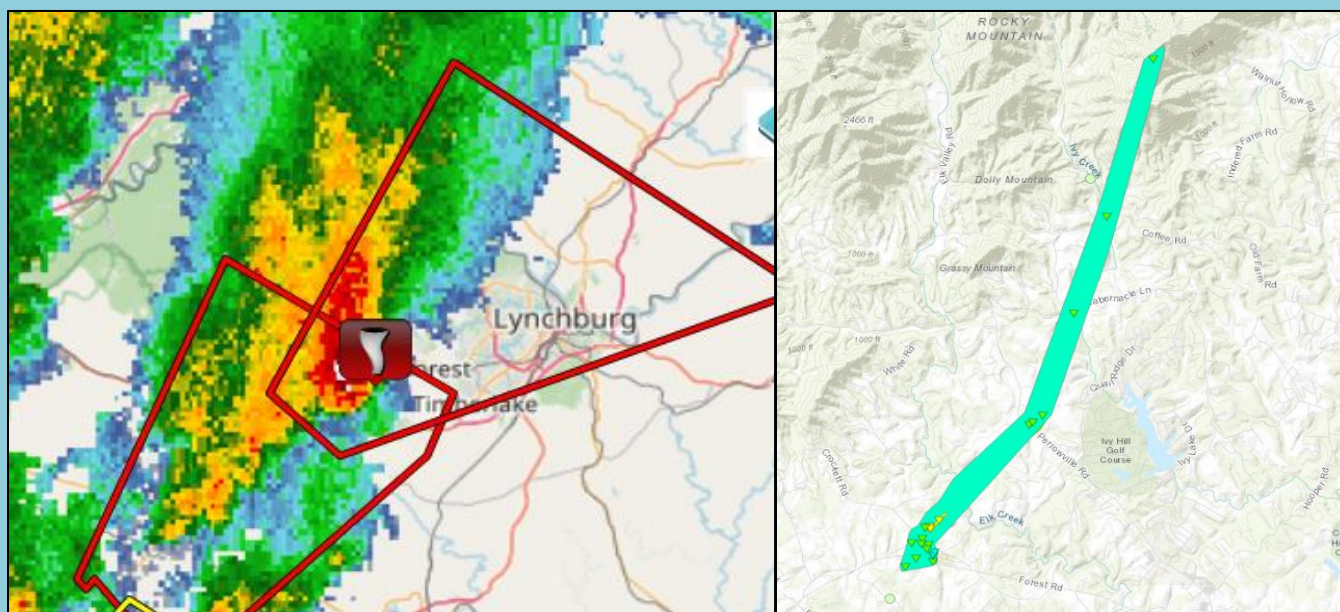
Figure 5. (left) Tornado warning polygons (red outlines) and confirmed tornado location (red box with tornado icon) with radar imagery, and (right) tornado path (cyan colored polygon) and damage indicator data points (green upside down triangles) for an EF2 tornado in Goode, Bedford County, Virginia on 05/27/2022.
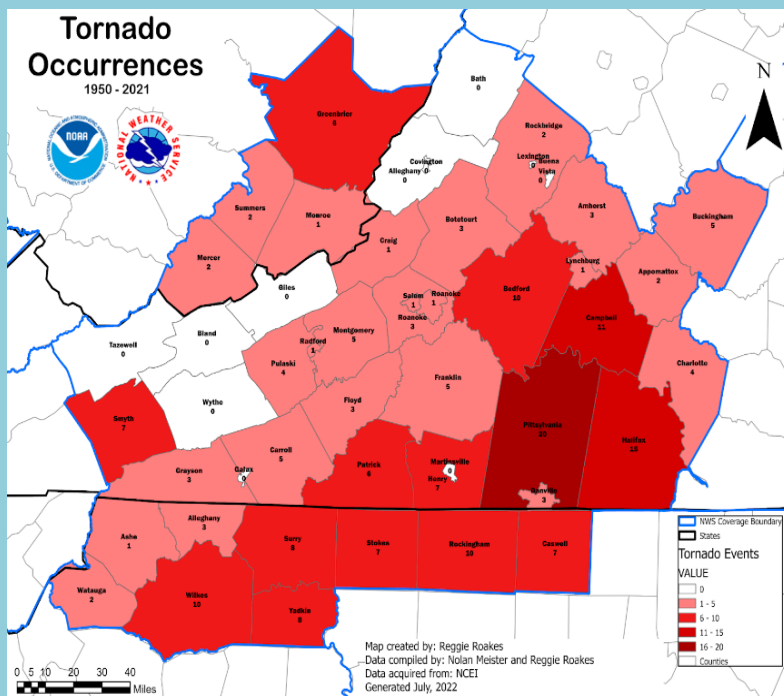
One of the eight tornadoes was rated with an EF0 intensity on the Enhanced Fujita scale. Five tornadoes were rated as EF1 intensities, and two were rated as EF2 intensities. Meteorologists from NWS Blacksburg determine these ratings based on damage to trees, buildings, and other structures surveyed after the event. The Enhanced Fujita scale is a standardized way to describe tornado intensity based on wind speed, and ranges from an EF0 to an EF5. Most tornadoes that form in the Mid-Atlantic are on the lower end of the intensity scale.

Tornado Event	EF Rating
Carroll, VA Mar 23, 2022	2
Rockingham, NC May 6, 2022	1
Rockbridge, VA May 7, 2022	0
Yadkin, NC May 26, 2022	1
Surry, NC May 26, 2022	1
Charlotte, VA May 27, 2022	1
Bedford, VA May 27, 2022	2
Grayson, VA Jul 5, 2022	1

Figure 6. Ratings of each tornado event in 2022 on the Enhanced Fujita Scale.

Each of the counties where tornadoes formed this year have had tornadoes previously. Figure 7, on the next page, shows the number of tornado events that have occurred per county from 1950 to 2021, and illustrates that more tornadoes are observed in the foothills of, and east of, the Blue Ridge Mountains. It is important to keep in mind that this may also be influenced by differences in population density, and thus in storm reporting.

Figure 7. *Tornado occurrences for each county in the National Weather Service Forecast Office Blacksburg county warning area. Research by Nolan Meister and Reggie Roakes.*

In summary, tornadoes are not a common occurrence in the NWS Blacksburg forecast area, but neither are they extraordinarily rare. This year was active, with eight tornadoes across the forecast area, but it is not the most active on record. It is always important to be prepared, have an emergency plan in place, and multiple methods of receiving warnings.

Weather Witticism

In her article above, *Barometer* writer, Amanda Sava, provides excellent information about how meteorologists measure the intensity of tornadoes using the Enhanced Fujita scale. While everyone is familiar with the damage tornadoes can cause trees, buildings, and other structures, not everyone knows what the different tornado intensities can do to COWS. To help with this, we share with you the MOOjita Intensity Scale:

M-Scale	Cow Damage
M0	Cows in an open field are spun around parallel to the wind flow and become mildly annoyed.
M1	Cows are tipped over and can't get up.
M2	Cows begin rolling in the wind.
M3	Cows tumble and bounce.
M4	Cows are airborne.
M5	STEAK!
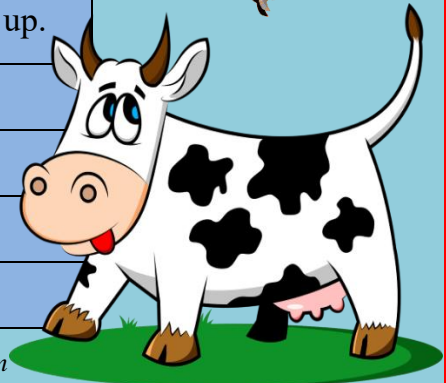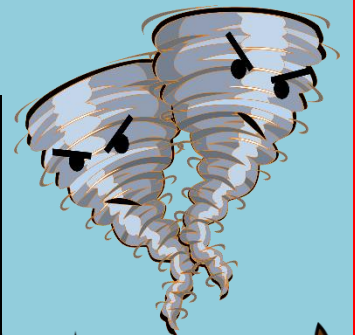
Source: Southwest California SKYWARN (citing the internet): www.swskywarn.org/Humor.htm

Coming this Winter: Impact-Based Snow Squall Warnings

Phil Hysell, Warning Coordination Meteorologist

The NWS will implement the use of Impact-Based Warning (IBW) tags for Snow Squall Warnings (SQWs) on or after November 7, 2022. IBW tags are machine-readable tags that will be appended to the bottom of SQWs and will be used to characterize the snow squall impact and source information. Currently, Wireless Emergency Alerts (WEAs) are triggered for all SQWs. Once the IBW tags are implemented, WEAs will be limited to only those SQWs with the Snow Squall Impact tag of "Significant."

Snow Squall Warning Tags	Explanation
IMPACT TAG	
General (No Tag)	To be used frequently for snow squall conditions, but mitigating actions, combined with societal context, will reduce the threat to safe travel.
Significant*	Used only when snow squalls pose a substantial threat to safe travel, such that WEA is warranted to alert all devices in the path.
SOURCE TAG	
Radar Indicated	Evidence on radar and near storm environment is supportive, but snow squall conditions are not confirmed.
Observed	Snow squall conditions are confirmed by ASOS, spotter, webcam, law enforcement, emergency management, or other visibility observations.

The NWS is aiming to improve the public response to SQWs. The benefits of these changes include:

- Activating WEA only for snow squall events that require immediate action, as indicated by a snow squall impact tag of "Significant."

- Allowing for the overnight issuance of SQWs without WEA activation.

- Mitigating perceived WEA overuse for marginal events by allowing for partner and public notification without WEA activation.

When a snow squall hits, visibility can drop to almost nothing in an instant. There is no safe place on a highway during a snow squall, but if you get stuck on the road, be sure to reduce your speed, turn on your headlights, and don't slam on your brakes. For more information on snow squalls, visit: https://www.weather.gov/safety/winter-snow-squall

Weather Awareness Outreach for Rural Populations

Stacie Hanes, Lead Meteorologist

The WARN (Weather Awareness for a Rural Nation) initiative is a grass-roots effort by the National Weather Service to enhance the weather understanding and awareness of communities that might not have access to scientific data and communication technology often taken for granted in the 21st century. This project takes into consideration the cultural aspects of those groups that avoid the use of modern technology, yet can still benefit from the advancements of meteorological forecasts and warnings to better protect themselves during severe weather.

Advances in communication have allowed the public to receive warnings via cell phones within seconds of their issuance, and numerous smartphone apps allow users to stay ahead of the weather. Unfortunately, these technological advances that help people in harm's way do not help off-the-grid individuals - and communities, like the Amish - who eschew modern technology. The WARN initiative is an effort to bridge this gap in modern weather knowledge and warning reception, by providing the latest information in the form of printed flyers, in-person training, and NOAA Weather Radio.

In Southwest Virginia, Charlotte, Giles, Halifax, Pittsylvania, and Tazewell Counties all have Amish populations. In southeastern West Virginia, Greenbrier and Summers Counties have Amish communities, and in northern North Carolina, Yadkin County has a settlement.

For these communities, we first added separate automated phone lines that the Amish could use to receive a forecast (540-553-8920, Option 6). Forecast areas were partitioned based on clusters of Amish communities. Although they do not typically use phones, many Amish have businesses and could check the weather by phone while at work. In addition, if the weather looks threatening, a leader in the community could utilize the phone number to get an area-specific forecast.

In September, three forecasters went to Amish communities in order to conduct face-to-face outreach. They visited a number of Amish businesses, including furniture stores, produce and fruit markets, surplus stores, and restaurants, in order to distribute flyers and pamphlets made specifically to promote the phone lines we had created for rural locations. The flyers and pamphlets also

covered the main weather hazards most likely to be faced by the Amish: flash flooding in hilly terrain, being struck by lightning while outside working, heat exhaustion, hypothermia, and frostbite.

Outreach continues to these communities in order to promote the new phone lines, as well as to spread information about how to best mitigate exposure to weather hazards. Knowledge about how to recognize and deal with a weather disaster is invaluable to communities that eschew technology and may spend much of their time outdoors.

Double Plus Thirty: A Quick Way to Convert From Celsius to Fahrenheit

On July 19, 2022, news media were sharing the report from the Met Office in the United Kingdom that for the first time in recorded history, temperatures across the UK had topped the 40ºC mark. This is quite a remarkable feat given the UK consists of islands (surrounded by tempering waters) located at latitudes farther north than any portion of the US Lower 48. This story in itself is an interesting one, and can be read here.

For those of you who noticed this 40ºC UK news story back in July, what was your first thought? "How meteorologically could this happen?" "I wonder how accurate the thermometers used in recording these temperatures are?" Likely not! Instead, your first question may have been "What is 40ºC

in degrees Fahrenheit?" Perhaps some of you with this question proceeded to take your smartphone, located and then opened a conversion app, entered 40ºC, and were then presented with a result of 104ºF. Others may have taken a longer approach and tried to remember the conversion equation of $F = (C \times 9/5) + 32$, using paper or a calculator to come to the same answer. Still others may have simply wished that the media had done the work for them and presented the temperature in Fahrenheit.

The good news is there is a simple calculation to get a close approximation of temperatures in degrees Fahrenheit if degrees Celsius are known. One could argue this process is quicker than any app, because you can do it easily in your head. It is called the "double

and add thirty" method. This approximation works best for temperatures within the common range experienced by most people on the planet. First, double the known Celsius value. In the case of the UK 40°C value, 40 x 2 = 80. Next, you add 30 to the value you just computed.   80 + 30 = 110. The approximate value in degrees Fahrenheit of 40 degrees Celsius is 110.

The table shown below demonstrates this method applied to degree Celsius values that range from -40°C to 40°C in 5°C increments. The sweet spot, where exact also equals the approximation, is 10°C, with a result of 50°F. For every 5°C above or below 10°C, our approximate value differs from exact by multiples of either plus or minus 1°F. With 40°C being six multiples of 5°C greater than 10°C, our approximate value (110°F) is 6°F higher than the exact value of 104°F.

Celsius	Fahrenheit (exact)	Fahrenheit (approximate)	°F Approximation Error
-40	-40	-50	-10
-35	-31	-40	-9
-30	-22	-30	-8
-25	-13	-20	-7
-20	-4	-10	-6
-15	5	0	-5
-10	14	10	-4
-5	23	20	-3
0	32	30	-2
5	41	40	-1
10	50	50	0
15	59	60	1
20	68	70	2
25	77	80	3
30	86	90	4
35	95	100	5
40	104	110	6

While there is some error in this quick approximation method, it is relatively small. When all you need is a good "ballpark figure," this method will help you quickly and easily convert a temperature in degrees Celsius to degrees Fahrenheit.

Here's a quick drill. Use the "double plus thirty" method to convert the following temperatures in degrees Celsius to degrees Fahrenheit:

8°C = ___°F   32°C = ___ °F

17°C = ___°F   -6°C = ___ °F

What's New In Our Office: Personnel Changes

This fall, our office is saying goodbye to two invaluable meteorologists and hello to a brand new Science and Operations Officer.

Erik Taylor

Our office will miss the contributions of Erik Taylor as he embarks on the next stage of his career at our neighboring office in Sterling, Virginia. In 2020, Erik joined the National Weather Service as a Meteorologist here at WFO Blacksburg. In addition to routine forecast, impact-based decision support services (IDSS), and warning duties at our office, Erik helped lead the social media team, was a member of the Community Preparedness & Office Tour team, and assisted on the Hydrology Team. His graphic design skills were often on display not only in our social media posts and IDSS, but also on our website's Weather Story.

Prior to joining the NWS, Erik was a Broadcast Meteorologist for seven years. From 2017-2020, he was a Meteorologist and Digital Weather Content Producer at WMAR-TV in Baltimore. From 2015 to 2017, he served in the same broadcast role at WOWK in Charleston, WV. From 2013 to 2015, he was at WBBJ in Jackson, TN. He has received several broadcasting awards over his career, including station employee of the month and the Virginia AP Best Weathercaster in a Large & Small TV Market in 2015 and 2017.

Erik graduated with a B.S. in Meteorology in 2013 from Rutgers University. While obtaining his degree, Erik volunteered for a year at WFO Mount Holly, NJ, quality controlling buoy research from the New Jersey Coast and Delaware Bay region, and interned for a year at CBS KYW-TV News Philadelphia as a Meteorologist.

We wish Erik the very best!

Adam Baker

Our office is happy to announce the arrival of Adam Baker, our new Science and Operations Officer. Adam has been at WFO Peachtree City, GA, since 2012, and a Lead Meteorologist there since 2018. He served as the R2O/Training Lead of the office's Research to Operations - Operations, Training, and Development Team, working

with staff to solve operational issues, developing fiscal year training plans for the staff, and leading operationally-focused training workshops. He also co-led the office's Student Volunteer Program, mentored both students and fellow meteorologists, and provided high-profile IDSS across WFO Peachtree City's County Warning Area.

Adam has a strong interest in convective weather, which originated from experiencing the 1993 Storm of the Century, Hurricanes Bertha and Fran in 1996, and as he says, "pretty much every thunderstorm." He has completed collaborative research in this area with academic and NWS partners at many levels.

Having grown up in the eastern North Carolina town of New Bern, and previously worked at the Atlanta NWS office, Adam can claim to have lived in the birthplaces of both Pepsi and Coca-Cola. He started his NWS career at WFO Indianapolis, IN, and volunteered at WFO Raleigh, NC while completing his Bachelor of Science and Master of Science degrees in meteorology from North Carolina State University.

In addition to meteorology, Adam enjoys hunting, fishing, and rooting for the Carolina Panthers.

Welcome aboard, Adam!

Reggie Roakes

Our office bids a fond farewell to Reggie Roakes, who is leaving our office for WFO Flagstaff, AZ. A graduate of Mississippi State University, he originally moved to the Blacksburg area three years ago to begin working at WFO Blacksburg. He was already very familiar with our region, since his family is originally from the Lynchburg area, and his father is an alumnus of Virginia Tech.

In addition to routine forecast and warning duties at our office, Reggie focused on expanding his knowledge of fire weather. Recently, he became a certified Incident

Meteorologist, which allows him to be deployed to large-scale emergency response events, specifically wildfires. When not forecasting, Reggie put his college minor in GIS to use, building maps and products for our office. Recently, he began utilizing those skills at the regional and national level.

An avid outdoorsman, Reggie says he will miss the beauty of the area with its many hiking, kayaking, flyfishing, and running opportunities, plus the readily available surplus of breweries. We will miss his initiative and drive to make our office the best it can be.

Good luck, Reggie!

## Kidz Korner

Amanda Sava, Meteorologist

In most Christmas movies, families wake up to see a beautiful blanket of crisp white snow on the ground on Christmas morning. Sounds picture perfect! But what are our chances of seeing snow on Christmas this year? Will we see snow on the ground on December 25, or will we have to keep dreaming of a white Christmas?

*National Weather Service, Weather Forecast Office, Blacksburg, VA*

Every year near the end of October, a national office called the Climate Prediction Center releases a Winter Weather Outlook. The Outlook states what we can expect across the entire country for the winter months of December, January and February. Although it doesn't indicate exactly what each day will look like, it does tell us if we are likely to have warmer or colder than normal temperatures, and more or less precipitation overall. During the winter, precipitation could mean rain, freezing rain, sleet, or more excitingly, SNOW! The most recent seasonal outlook for December, January, and February was issued on September 15, 2022,

by the Climate Prediction Center. That outlook showed that Blacksburg was expecting above average temperatures. In other words, there is about a 40% to 50% chance of experiencing warmer than normal temperatures during those months. You can see our seasonal temperature outlook in the chart below.
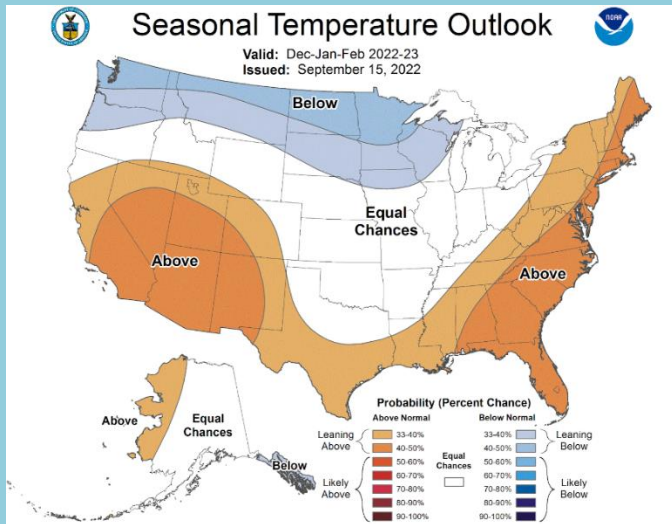
Seasonal Temperature Outlook issued by the Climate Prediction Center, valid for December 2022, January 2023, February 2023. Issued on September 15, 2022.

Again, the Outlook doesn't say exactly what days those warmer temperatures will occur, or what exactly those temperatures will be. The Outlook looks at those three months as one whole, and describes what we can likely expect from the entire season itself. It also shows that we in Blacksburg have equal chances of experiencing above or below average precipitation during the winter months. However, this doesn't tell us if that precipitation will be rain or snow. The next chart displays the seasonal precipitation outlook for this December, January, and February.
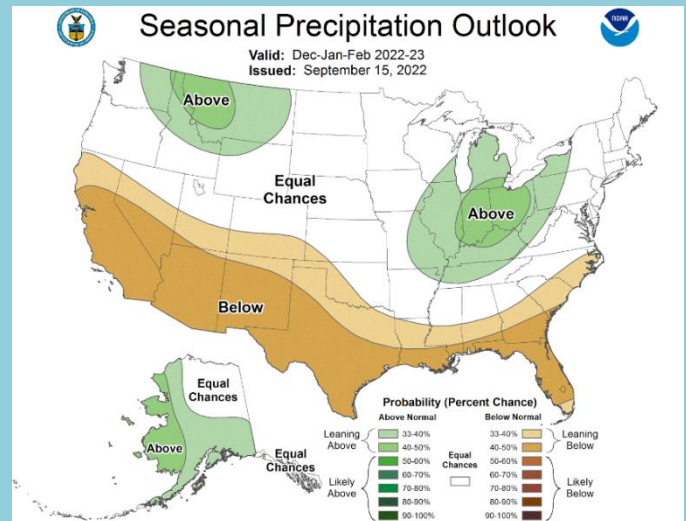
Seasonal Precipitation Outlook issued by the Climate Prediction Center, valid for December 2022, January 2023, February 2023. Issued on September 15, 2022.

That's what the Climate Prediction Center forecasts for this winter. We can also look at past years to tell us more about the chances of a white Christmas. The snowiest Christmas recorded in Blacksburg, Virginia, was over 100 years ago, in 1914, when a total of nine inches fell on December 25. If you love the snow, that would have been awesome! The snowiest December day recorded in Blacksburg actually happened the day after Christmas, December 26, 1969, with 14 inches of snow. Unfortunately, or maybe fortunately if you aren't a fan of snow, we didn't get any snow last Christmas. Since 1952, we have only had measurable snowfall on Christmas morning four times. Warning! Math ahead! If you divide the number of Christmases we've seen snow (4 Christmases) by the number of years in the period of record, or how many years we have data for (69 years), that gives us the percent of years we've had a white Christmas, which is only 6%! *(Data provided by NWS Blacksburg and xmACIS2).*

Looking at the statistics, it doesn't look so promising for a white Christmas this year. But there is always a chance. Until then, I'll keep dreaming of having a white Christmas here in Blacksburg. How about you?

Snow in Maui

Author Unknown

I can't wait to wear my winter boots.

They are purple and bright sea green.

My brother likes to make fun of them,

Because he's really very mean.

I can't wait to wear my mittens,

Even though they don't match my shoes.

Who cares if purple and green don't go

With hot pink and baby blue?

My mom says don't wear boots and mittens,

'Cause I'll get hot and then complain.

But, she doesn't know how excited I'll be

If we get snow, instead of rain.

I can't wait to make a snowman,

Boots on feet, and mittens on hands.

But, since it rarely snows in Maui,

I'll have to build my snowman out of sand.

Would you like to see your art or writings included in the next edition of Blue Ridge Barometer? If you are between the ages of 3 and 17, we would love to see your hand-drawn artwork, short poems, or short stories about the weather. For the next edition, we are looking for art and writings that involve the spring or summer.

To submit your original drawing, poem, or story, scan your artwork or writing into a .jpg computer image file (with the help of an adult, if needed). You can also write your poem or story using Word and save it as a .doc or .docx file. Please keep any written material to 500 words or less. Artwork may also be completed using drawing or painting software, submitted as a .jpg file.

When submitting your drawing, poem, or story, please include your first name and first initial of your last name, age, and the city/town where you live. All entries should be submitted no later than April 1, 2023. Please email your entries here.

We look forward to hearing from you!

10th Anniversary Crossword Puzzle

As we reflect on the past ten years of our newsletter's existence, we want to offer you a fun way to look back on the topics we have covered. Within the following crossword puzzle you will find twenty clues to items that we discussed – only one clue from each of our twenty newsletters, including this one. To aid in your quest for answers, here is a link to where you can find all the newsletters.

Click on the crossword puzzle below for a printable version of the puzzle and its clues. Good luck!
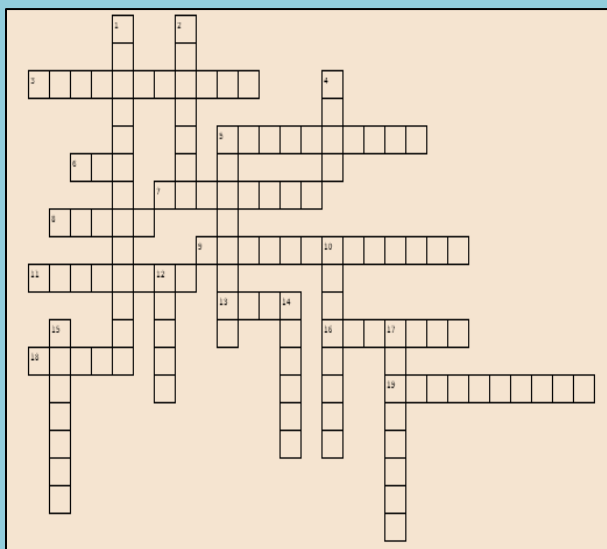
When you are finished, click on the blurred-out crossword puzzle for the answers.
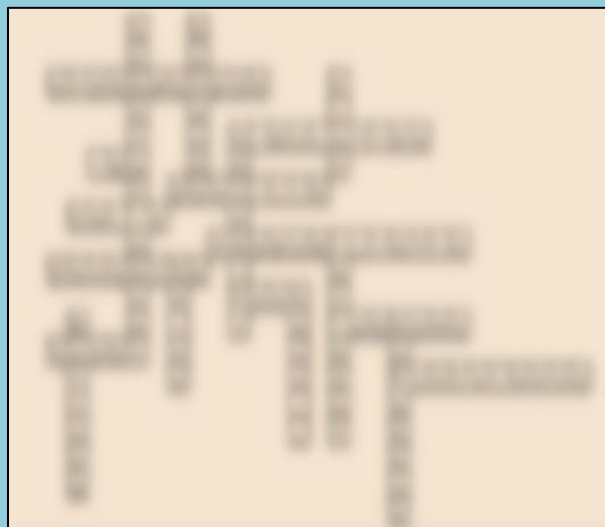
More Weather Witticisms

How do you move a piece of furniture at the weather station?

With four casters.

Husband: Looks like we're going to have Santa's favorite weather for Christmas this year.

Wife: Oh, is it going to snow?

Husband: No. Rain, dear.

Don't trust big changes in the weather.

It's just a front.

From Piedmont to Mountaintop

In this edition, we have two pictures submitted by our meteorologists. The first is a particularly interesting photo of a mixture of altocumulus translucidus and altocumulus perlucidus clouds in the sky. Altocumulus clouds are typically found during settled weather, and precipitation from these clouds is rare. Even if rain does fall, it doesn't reach the ground. These types of clouds are made of a mixture of ice and water, giving them a thinner and more airy appearance than the big and fluffy lower level cumulus.

A popular term for a sky covered with extensive altocumulus clouds is "mackerel sky," when clouds are arranged in waves, and blue skies appear through the gaps. Some say the pattern resembles the scales on a mackerel. In other countries like France and Germany, these clouds are known as "sheep clouds," because their pattern can sometimes resemble a flock of sheep.

The second picture was snapped by a meteorologist's passenger as they drove down Interstate 81-N near the James River. They were headed to the Virginia Safari Park in Natural Bridge when they spotted what they believed was a llama in the sky, or perhaps an ostrich or a sheep. What animal do you see?

As you can see, our meteorologists enjoy taking pictures of the weather in our neighborhood. However, we would really enjoy seeing pictures from yours! From now through April 1, 2023, we invite you to take some weather-related photos and share them with us. Please include with your photos your first name, the first initial of your last name, and where and when you took the picture. We will include your photos in upcoming newsletters and credit them appropriately. Also, by submitting a picture, you agree that we can use it on one of our social media platforms (Facebook and Twitter) or in our local community outreach presentations (for example, a SKYWARN class). Photos used in these forums will also be credited appropriately.

Stay Safe & Stay Involved!

The fall and winter seasons not only bring cold temperatures, but a wide range of potential weather hazards, including flooding, lightning, snow, and ice. Check out the NWS Weather Safety page for information on all types of weather hazards. If you are interested in helping the NWS with storm spotting and verification, please consider participating in the SKYWARN program. Additionally, the NWS can always use new rain/snow observers for the CoCoRaHS network, especially in West Virginia!

To keep up to date on what's happening in our office in between newsletters, please visit our website: https://www.weather.gov/rnk or follow us on Twitter and Facebook.

For questions or comments about this newsletter, please contact the editor or via snail mail at:

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