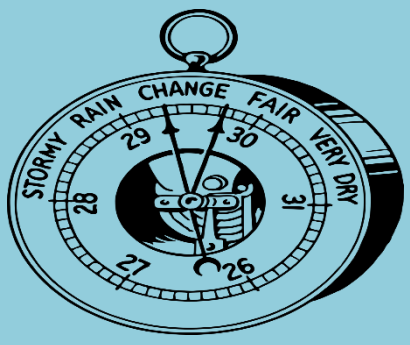


Blue Ridge Barometer

Welcome to the Summer 2024 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 the highlights of our very mild 2023-2024 winter season. You'll learn about a new heat forecast tool, changes to the "Cone of Uncertainty," and the launch of the National Water Prediction Service. We also revisit the April 1974 Super Outbreak that hit southwest Virginia and southeast West Virginia and review important thunderstorm risk categories to keep in mind this summer. All this plus tips on how to stay safe in rip currents, and a fond farewell to a retiring meteorologist. We wish all of you a safe and fun Summer!

Inside this Issue:

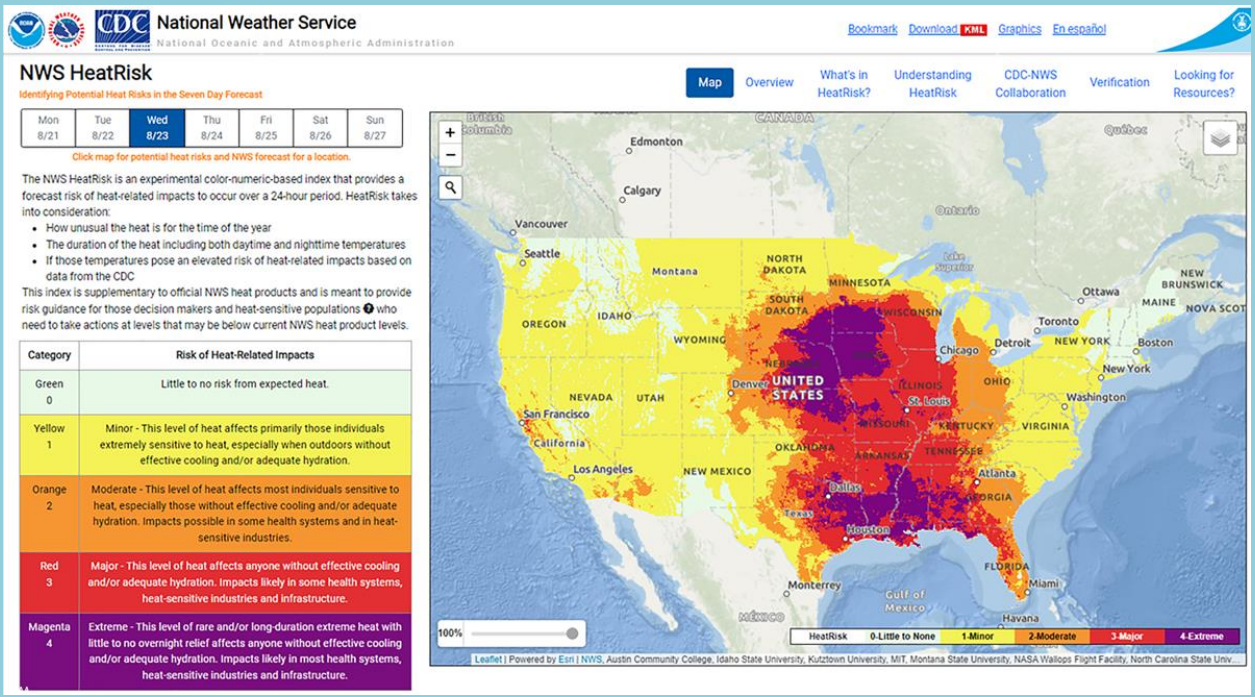
From the Desk of the Warning Coordination Meteorologist

Phil Hysell, WCM

The National Weather Service (NWS) has expanded the availability of a new experimental heat tool, called HeatRisk, to the NWS Blacksburg forecast area. A collaboration with the NWS and the Centers for Disease Control and Prevention (CDC), HeatRisk provides information and guidance for those who are particularly vulnerable to heat and may need to take extra precautions for their health when the temperature rises.

HeatRisk provides historical context for high temperature forecasts, identifying how unusual the heat will be for any given time of year across a spatial area, with coverage across the contiguous U.S. It also identifies temperatures that are expected to bring increased heat impacts over a 24-hour period, up to seven days in advance.

The tool takes into account cumulative impacts of heat by identifying the expected duration of the heat, including both daytime and nighttime temperatures. HeatRisk is divided into a number and color-coded scale — ranging from zero to four and minor to extreme — that identifies the risk of heat-related impacts.



The NWS developed the first HeatRisk prototype for California in 2013 and expanded it to the Western U.S. in 2017. HeatRisk is available across the contiguous U.S. as an experimental product while NWS accepts feedback from the public. Customers can submit feedback through September 30, 2024 by completing this survey offsite link.

HeatRisk complements the heat index and wet-bulb globe temperature, two established NWS heat forecast products for heat stress. To view the HeatRisk forecast:

http://www.wpc.ncep.noaa.gov/heatrisk

Review of 2023-2024 Winter Snowfall

Robert A. Beasley, Meteorologist

After the minimal-snow winter of 2022-2023, who would have thought we would have a second consecutive virtually snowless winter? One snow event in mid-January pushed the snowfall totals above the small values of the 2022-2023 winter. (Blacksburg set a record in 2022-2023 with just 1.4 inches of snow for the entire season.) The exception was Danville, which only recorded a trace of snow for the entire 2023-2024 winter season. What is remarkable, however, is that all five climate stations (Roanoke, Lynchburg, Danville, Bluefield, and Blacksburg) had snowfall totals well below normal for the second consecutive winter season. (See Figure 1.) Danville, in particular, did not even receive a total of one inch of snow in the two winter seasons combined.

Winter 2022 - 2023 Snowfall Totals for the Blacksburg NWS Forecast Area													
Location	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total	Normal	Departure from Winter 2021-2022	Departure from Normal	All Time Minimum	All Time Maximum
Roanoke	0	T	T	T	T	0.4	0	**0.4**	14.8	-11.4	-14.4	T (1919-1920)	62.7 (1959-1960)
Lynchburg	0	0	T	0.1	0.2	0.2	0	**0.5**	11.6	-9.0	-11.1	T (2019-2020)	56.8 (1995-1996)
Danville	0	0	0	T	T	0.5	0	**0.5**	7.6	-8.5	-7.1	0 (2002-2003)	40.5 (1947-1948)
Bluefield	T	0.4	1.2	2.9	4.3	0.5	T	**9.3**	34.6	-24.6	-25.3	2.3 (2000-2001)	101.5 (1946-1947)
Blacksburg	T	T	0.1	0.1	0.8	0.4	0	**1.4**	24.7	-13.1	-23.3	1.4 (2022-2023)	67.4 (1995-1996)

Winter 2023 - 2024 Snowfall Totals for the Blacksburg NWS Forecast Area													
Location	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total	Normal	Departure from Winter 2022-2023	Departure from Normal	All Time Minimum	All Time Maximum
Roanoke	0	T	0.2	3.9	0	0	0	**4.1**	14.8	3.7	-10.7	T (1919-1920)	62.7 (1959-1960)
Lynchburg	0	0	T	2.7	0	0	0	**2.7**	11.6	2.2	-8.9	T (2019-2020)	56.8 (1995-1996)
Danville	0	0	T	T	T	0	0	**T**	7.6	-0.5	-7.6	0 (2002-2003)	40.5 (1947-1948)
Bluefield	0	0.3	4.9	14.2	0.7	0.3	0.6	**21.0**	34.6	11.7	-13.6	2.3 (2000-2001)	101.5 (1946-1947)
Blacksburg	T	T	0.6	2.9	T	T	T	**3.5**	24.7	2.1	-21.2	1.4 (2022-2023)	67.4 (1995-1996)

Figure 1. Comparison of the 2022-2023 and 2023-2024 winter season snowfall totals for the five climate stations within the Blacksburg NWS forecast area.

While the 2022-2023 winter season included the continuation of a weak La Niña, the 2023-2024 season saw the advent of an El Niño. There are many factors that influence temperature and precipitation patterns. However, La Niña typically provides for warmer and drier winters while El Niño favors warmer and wetter winters, which can result in greater snowfall amounts. Both winters featured a subtropical ridge anchored over or just off the Atlantic coast of the southeastern United States.

This resulted in a warm and moist southwesterly flow from the Gulf of Mexico into the eastern United States, ushering in above normal temperatures and above normal precipitation. In fact, the National Center for Environmental Information (NCEI) reported that the 2023-2024 winter season was for the U.S. as a whole the warmest on record and the third wettest in recorded history. The 2022-2023 winter season was not much different.

Looking at the NCEI's 2023-2024 Winter Season Analyses (Figures 2 and 3), we see a winter that featured well above normal temperatures and wet conditions.

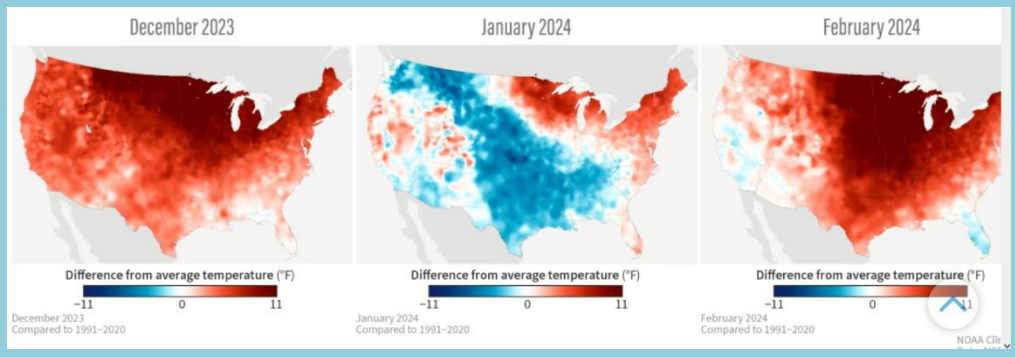


Figure 2. Comparison of the 2023-2024 winter months observed temperatures to normal values. (Source: NCEI)

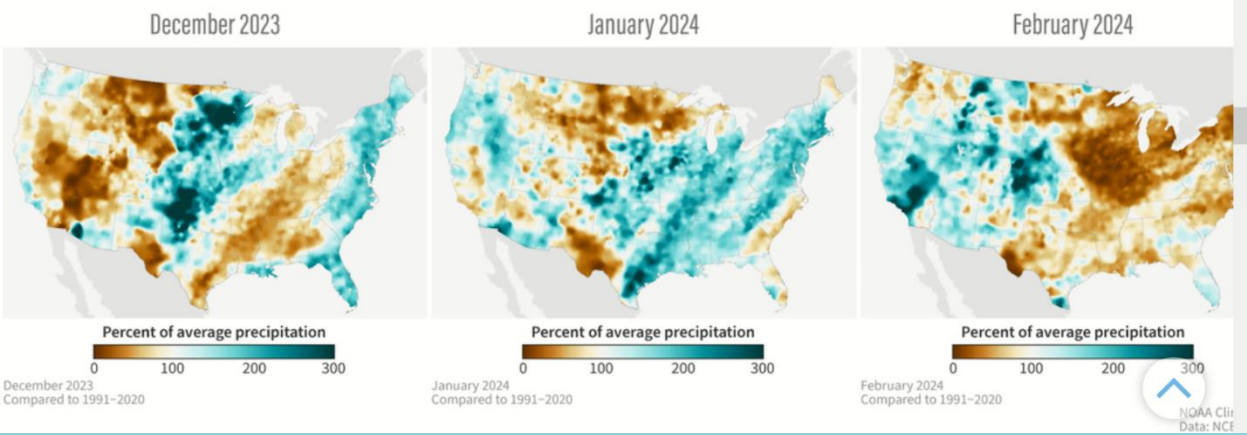


Figure 3. Comparison of the 2023-2024 winter months observed precipitation amounts to normal values. (Source: NCEI)

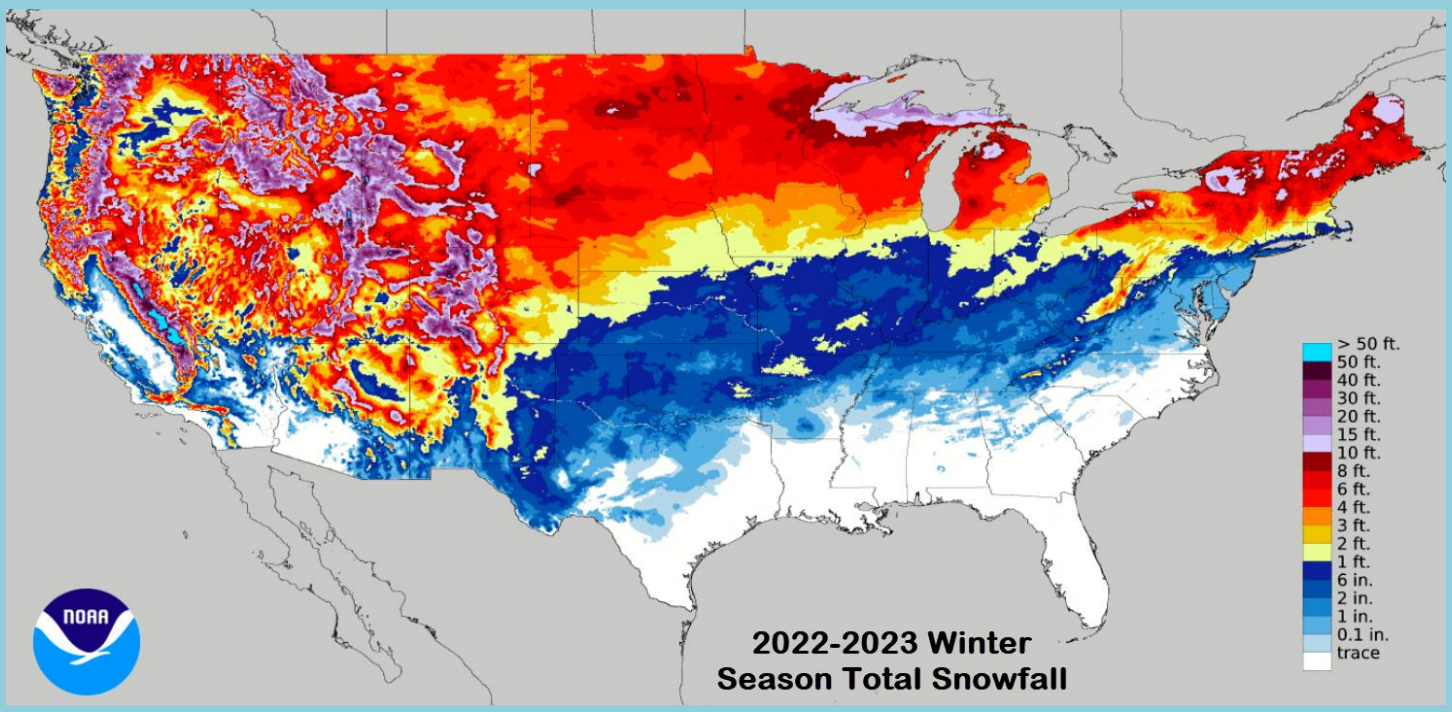


Figure 4. Total observed snowfall for the 2022-2023 (October – April) winter season provided by the National Operational Hydrologic Remote Sensing Center.

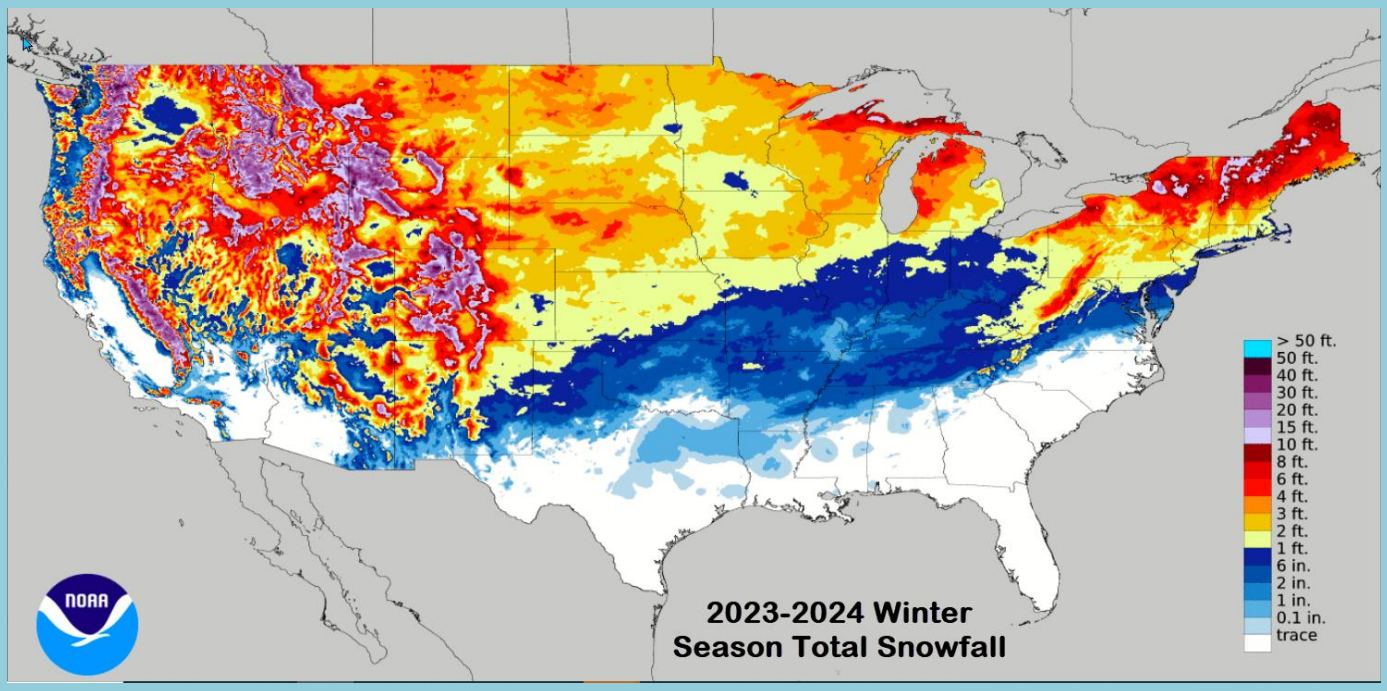


Figure 5. Total observed snowfall for the 2023-2024 (October – April) winter season provided by the National Operational Hydrologic Remote Sensing Center.

The 1974 Super Outbreak

Ben Gruver, Lead Meteorologist

The 1974 Super Outbreak occurred on April 3-4, 1974 and is the second largest tornado outbreak on record. This outbreak still holds the record for the most F5 tornadoes (261-318 mph winds) to occur on a single day (seven). A total of 148 tornadoes occurred within 24 hours on April 3-4, touching down in 13 states, killing more than 300 people, and injuring over 6,000 people.

The hardest hit areas were portions of Ohio, Indiana, Kentucky, and Tennessee. These states had approximately 200 fatalities, most of which occurred on April 3 from 2 p.m. to 10 p.m.

The Appalachian region was not immune to the tornadic outbreak either. Several tornadoes occurred during the early morning hours of April 4, resulting in significant damage in portions of southern West Virginia and southwest Virginia. This more or less debunked the long-standing myth that tornadoes do not occur in the mountains.

On the evening of April 3, strengthening low pressure over the Midwest was accompanied by a pool of deep moisture, which moved from the Gulf of Mexico towards the central and southern Appalachians. This provided ample amounts of "storm fuel," which allowed for tornadic storms to rapidly develop.

By the afternoon of April 3, the storms that would spawn tornadoes in West Virginia and Virginia were located over Indiana and western Kentucky. By nightfall, the line of storms had pushed into eastern Kentucky and Ohio. The storms reached West Virginia and western Virginia in the early morning hours on April 4.

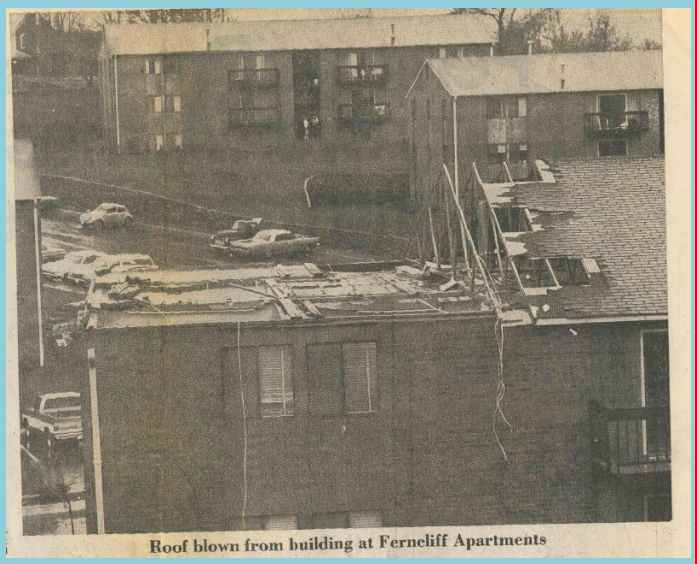
Two tornadoes struck the forecast area between 4 a.m. and 6 a.m. on April 4. The first tornado, an F3 (136-165 mph winds), touched down in Washington County, Virginia and then moved northeast into Smyth County, ultimately impacting areas just to the north of Saltville. Multiple homes and structures were destroyed, and numerous others were damaged. One man was killed when his mobile home was tossed 150 yards and landed on its roof. Several injuries were reported as well.

Overturned Mobile Home in Washington County; Source: The Lebanon News

The second tornado to touch down within the forecast area was in Roanoke, Virginia, the largest population center that is covered by NWS Blacksburg.

The initial touchdown was near the Lynchburg Turnpike between Westside Blvd and Electric Road. A camping trailer and truck trailer were damaged and turned over near the Lynchburg Turnpike, and there was extensive tree damage.

Ferncliff Apartments were badly damaged, and several of the apartments were completely unroofed. Another apartment complex was badly damaged just south of the Roanoke Airport. Multiple homes had portions of the roofs peeled off and several had their roofs completely removed.



Roof blown from building at Ferncliff Apartments

Source: The World News Roanoke

A 60 knot gust (69 mph) was measured at the Roanoke Airport at 6:05 a.m.

Preston Park School was completely unroofed and numerous houses were damaged. Large trees were "wrung off."

Damage estimates were $500,000 to $700,000 (in 1974 terms).

Source: NWS Blacksburg (WSO Roanoke)

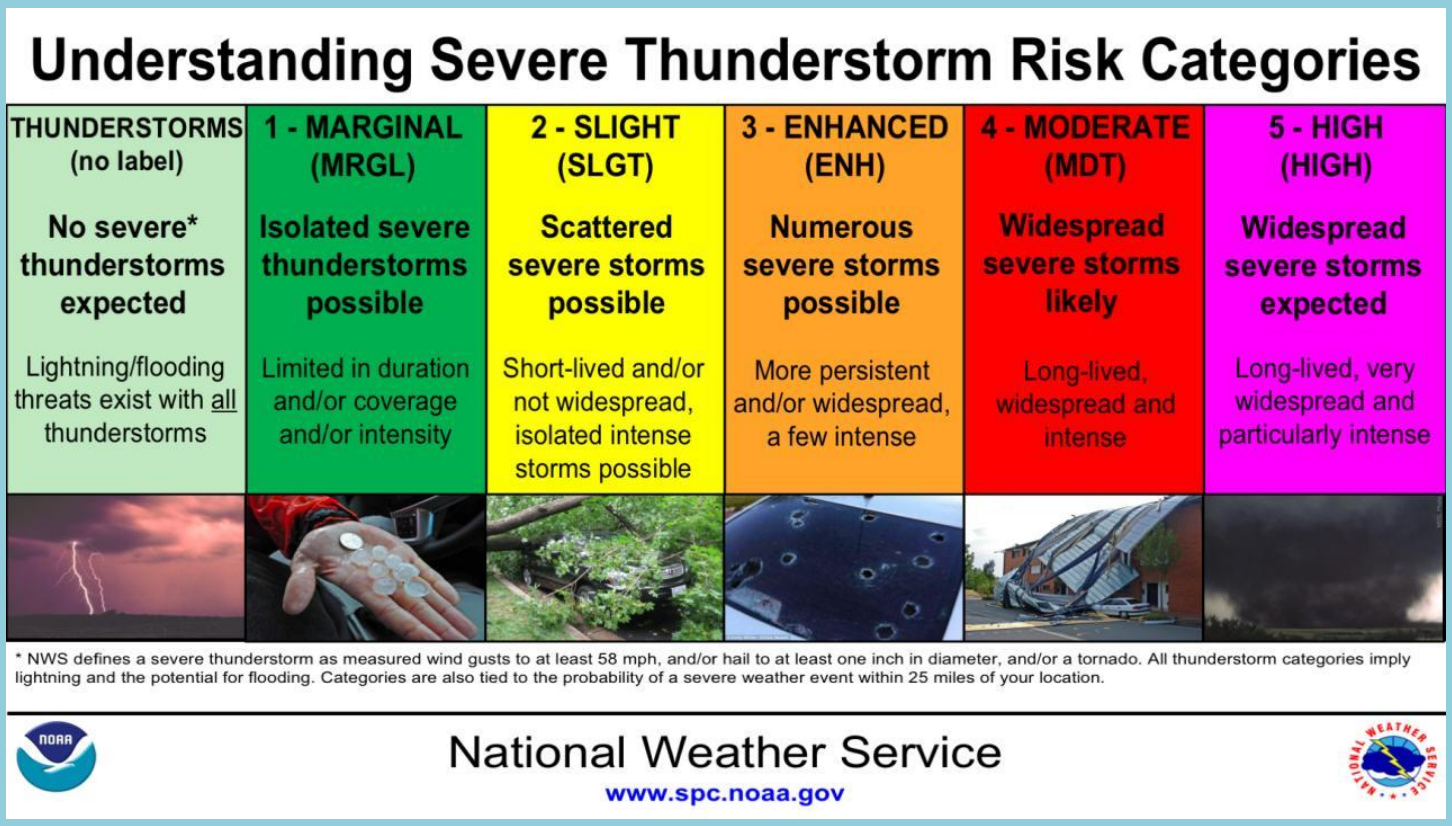
Statistics and Climatology

- Number of tornadoes: 148
- Number of F4 and F5 tornadoes: 30
- States where tornadoes struck: 13
- Deaths: 319
- Injuries: 5,484
- $843 million in 1974, equivalent to $5.6 billion in 2024
- Both NWS Blacksburg and NWS Charleston forecast areas average two tornadoes per year.
- The peak month for tornadoes in the NWS Blacksburg forecast area is April, followed by May and then July and September. In the NWS Charleston forecast area, June is the peak month, followed by April, and then July and May.
- EF2 and EF3 tornado occurrences overwhelmingly favor the month of April in the NWS Blacksburg forecast area, and April and July in the NWS Charleston forecast area.

Convective Outlooks (Thunderstorm Risk Categories)

Stacie Hanes, Lead Meteorologist

The Storm Prediction Center (SPC) is a part of the National Weather Service (NWS). SPC's mission is to provide timely and accurate forecasts and watches for severe thunderstorms and tornadoes over the contiguous United States. Severe Thunderstorm Watches give a "heads up" notification to the public that ingredients are coming together for severe thunderstorms to develop. Likewise, Tornado Watches are issued on days when the atmosphere is conducive to tornadoes. Watches are usually issued a few hours before widespread severe weather develops. The graphic on the next page shows the severe thunderstorm risk categories the SPC uses as part of their convective outlooks to forecast the likelihood of a watch. Additionally, the probabilities you see on the SPC graphics represent the probability of one or more events occurring within 25 miles of a point during the outlook period.



How does the NWS and the SPC decide whether a storm is severe or not? If the NWS believes storms will be strong enough to produce any or all of the following, they are considered severe: hail that is one inch in diameter or larger; wind gusts of 58 mph or greater; and/or a tornado. Although lightning can be deadly, the NWS doesn't use it to define a severe thunderstorm. If it did, every thunderstorm would be severe. Likewise, excessive rainfall may lead to deadly flash flooding, but heavy rain is not a severe criterion either. The flood threat is handled through a separate set of flood and flash flood watches and warnings from your local NWS office. Your local weather office - that's us! - issues warnings when severe weather is imminent or occurring. So, watches mean it may happen, while warnings mean it is happening.

When the SPC issues an outlook or a watch, there is inherently a large amount of uncertainty. It is important not to rigidly associate the type of risk area (e.g., 2-SLGT-yellow) with the severe potential for any given thunderstorm in the risk area. A 2-SLGT-yellow risk forecast does not necessarily mean that the thunderstorms within the risk area will be slightly severe. Sometimes, violent tornadoes occur in 2-SLGT-yellow, 3-ENH-orange, or 4-MDT-red risk areas as opposed to 5-HIGH-magenta.

The reason for this is the weather that causes the violent tornado may be confined to a relatively small area or a conditional, uncertain situation. Another 2-SLGT-yellow risk area may cover several states in which only one or two tornadoes are expected to develop. Some 2-SLGT-yellow situations won't involve a threat of tornadoes or supercells, but instead sustained multicell storms with the possibility for severe hail and wind damage.

SPC's severe weather outlooks forecast events from organized convection (e.g., supercells, squall lines, and multicell thunderstorm complexes) most likely to cause damage and injury from tornadoes, damaging winds, or large hail. Pulse-type thunderstorms consisting primarily of solitary brief severe updrafts are not considered organized. Since almost any thunderstorm can produce a brief severe weather event, it doesn't necessarily mean there is a conflict when a severe thunderstorm warning is issued by a local NWS office outside of an SPC severe weather risk area.

The most specific Convective Outlooks are those issued for the Day 1 and Day 2 periods. SPC forecasters have the most information available to them to differentiate the threats of the individual severe weather hazards. During these periods, the SPC produces probabilistic outlooks for each primary severe weather hazard (tornadoes, damaging wind, and large hail) separately.

By producing separate forecasts for tornadoes, damaging wind, and large hail, the user is given substantially more information upon which to make decisions than in the categorical outlook. Users who are interested in a particular threat (e.g., car dealers concerned about large hail) can make informed decisions.

For more information on convective outlooks and other products issued by the SPC: https://www.spc.noaa.gov/products/.

Weather Witticisms

What did the tornado say to the sportscar?
Want to go for a spin?

What did the lightning bolt say to the old oak tree?
Hang onto your bark. This will be no ordinary spark.

Did you hear about the tornado who got arrested?
They got him for shoplifting.

Did you hear about the tornado at the cheese factory?
Da-brie was everywhere.

Changes to the "Cone of Uncertainty"

Amanda Sava, Meteorologist

One of the most familiar things we see between the months of June and November will look a little different this year. During the current hurricane season, which runs from June 1 to November 30, the National Hurricane Center's (NHC) well recognized forecast cone, or "Cone of Uncertainty," saw some changes. Before diving into the changes, let's first review the cone itself.

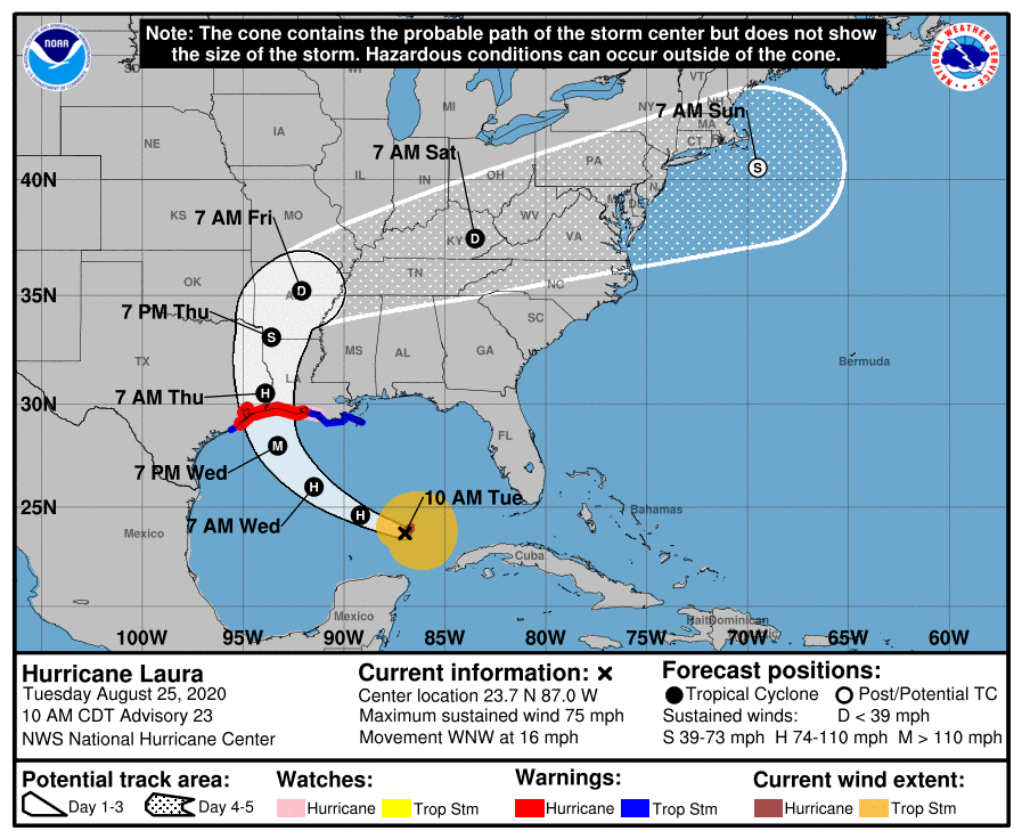


Figure 1. Forecast cone graphic from previous Hurricane Laura in 2020 (not a current forecast).

One of the most important things to remember when viewing the forecast cone is that **impacts can and often do extend well outside of the cone**. The threat of strong winds, heavy rain, tornadoes, and storm surge can extend for miles beyond the edges of the cone. Storm surge is not a threat we are directly concerned with in southwest and central Virginia, southeast West Virginia, and northwest North Carolina; however, it may be for those readers that often travel to coastal areas, or have friends or family living closer to the ocean.

Let's break down the elements of the forecast cone. The center of the tropical storm or hurricane is marked by a black "X," and the time and date of the advisory that was issued. In Figure 2, this cone graphic (not current) is with the 10 a.m. Tuesday August 25, 2020 advisory issued by the NHC. The dark red shaded area immediately outside of the "X" denotes the areas that are potentially being impacted by *hurricane force winds* (74 mph or greater), whereas the orange shading shows the areas that are potentially being impacted by *tropical storm force winds* (39 mph or greater). These represent the maximum possible extent of those winds, so not all areas within those shaded regions will be experiencing winds of that strength.

Figure 2. Example of a forecast cone.

Moving into the cone (Figure 3), we see white letters in black circles, either M, H, S, or D. These show the forecast positions of the storm's center and the times of those positions. The M stands for *major hurricane (winds greater than 110 mph)*, the H means *hurricane (winds from 74-110 mph)*, S represents *tropical storm (winds from 39-74 mph)*, and the D denotes a *tropical depression (winds less than 39 mph)*. These forecasts may change throughout the lifetime of the storm, so continue to monitor each advisory if a storm is expected to impact your area.

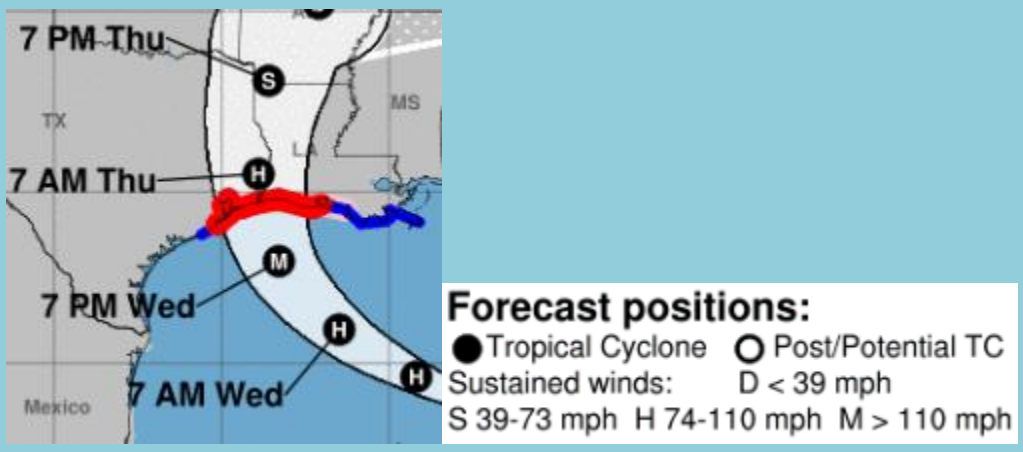


Figure 3. The black circles with M (major hurricane), H (hurricane) and S (tropical storm) show the forecast positions of the center and strength of the storm.

The actual "cone" part of the forecast cone (Figures 4a and 4b) represents the probable track of the center of the storm. It does not show the width or the shape of the entire storm, or where impacts are expected. Again, impacts often extend beyond the edges of the cone. The width of the cone, referring to the white shaded area extending out three days, and the white dotted area extending out two additional days, is determined by the error in the track from the last five years. In other words, the width of those cones is based on how good the NHC's forecast tracks have been in the last five years. Roughly two forecasts out of three, the center of the storm will stay within the cone; one forecast out of three, the center will fall outside of the cone.

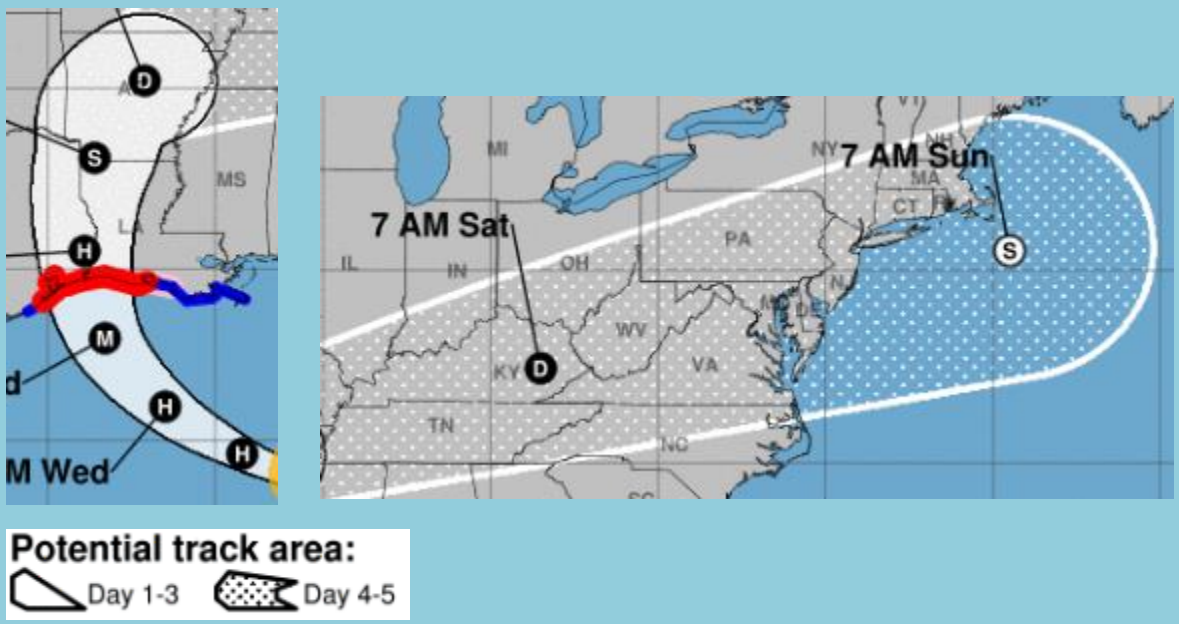


Figure 4a: The potential track of the center of the storm for Day 1 through Day 3. Figure 4b: The potential track of the center of the storm for Day 4 and Day 5. ***Remember, hazards and impacts can occur well beyond the edges of the cone!***

Finally, the forecast cone graphic also depicts current hurricane watches and warnings. Prior to early August, the graphic had only shown watches and warnings along the coast. Now, inland hurricane and tropical storm watches and warnings will also be displayed on the map for both full and intermediate advisories. The goal of this change is to help convey the inland wind threat associated with these tropical storms. This will assist with better and more equitable messaging of the hazards further from the coast. Figures 5a and 5b on the next page reflect the changes.

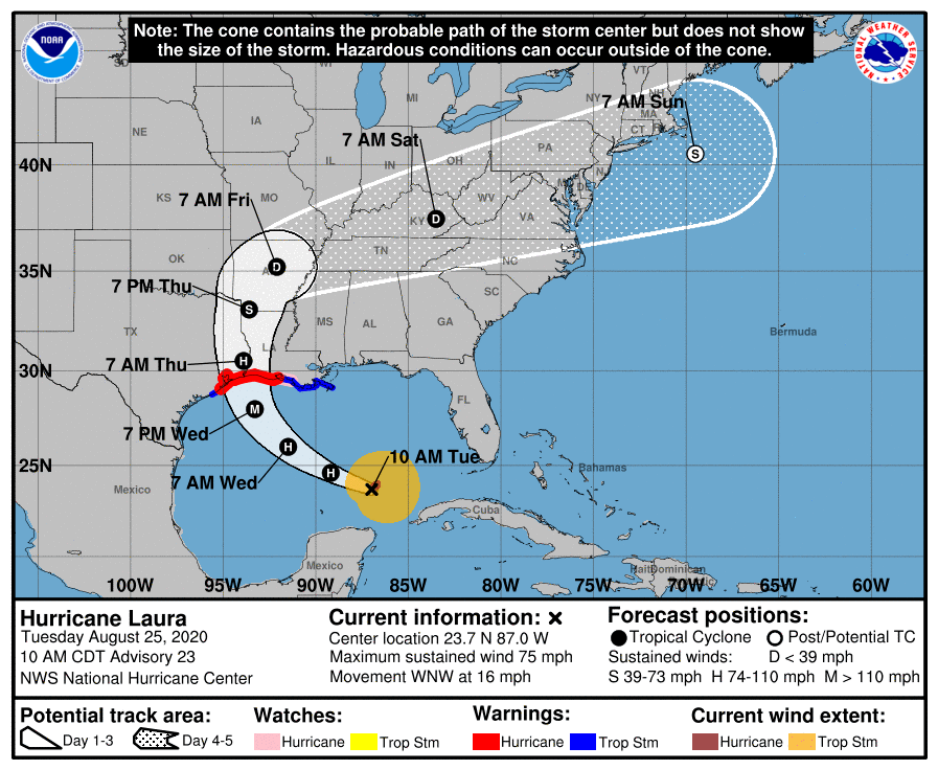


Figure 5a. Prior forecast cone graphic showed only coastal tropical storm and hurricane watches and warnings.

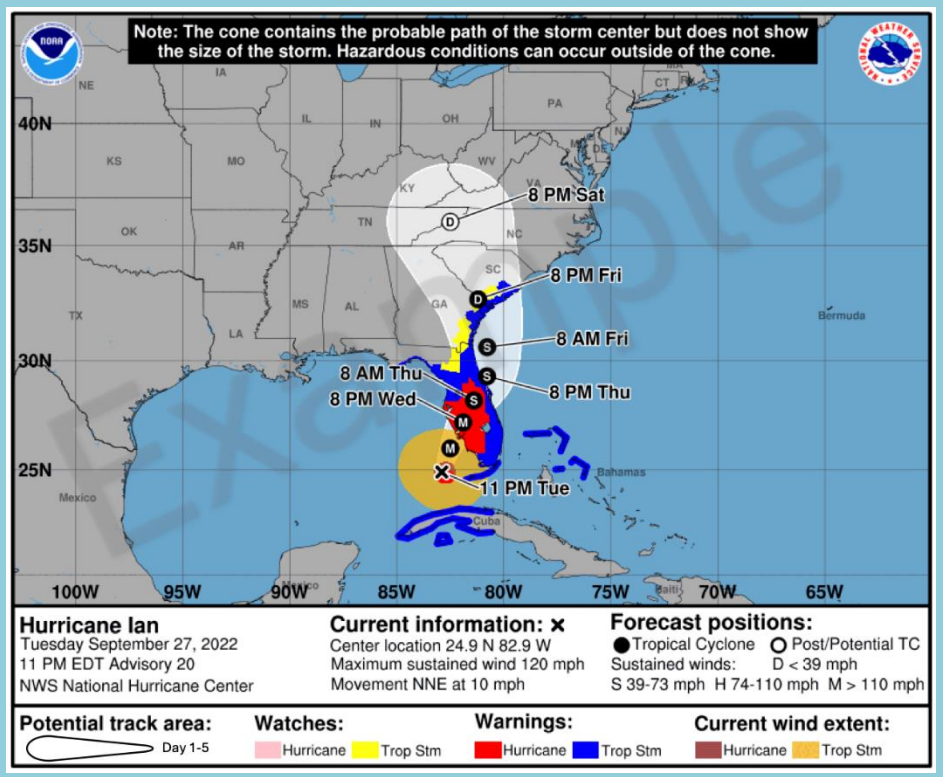


Figure 5b. The new forecast cone graphic displays both coastal and inland tropical storm and hurricane watches and warnings.

Tropical storms and hurricanes are *low probability, high impact* events for our area. They do not happen often here in the central Appalachians, but if and when they do, they can be very dangerous. It is always important to be prepared well ahead of any approaching tropical system. Make an emergency plan and kit, and stay weather aware during hurricane season!

Launch of the National Water Prediction Service

For over twenty years, your Internet source for viewing National Weather Service river observations and forecasts had been the Advanced Hydrological Prediction Service (AHPS). On May 28, 2024, this changed. The National Water Prediction Service (NWPS) became the official Internet source for viewing not only what AHPS provided, but much more. This article will provide a summary of the variety of data available through NWPS. However, for a more thorough review, please visit this user's guide.

The starting point national map below (Figure 1) is the default display and offers color-coded indicators located at specific points along multiple rivers. The colors represent the flood status at each point and also the point's most recent stage or flow observation. The user can zoom in to any portion of the map desired, for a closer look at a specific region of the country.

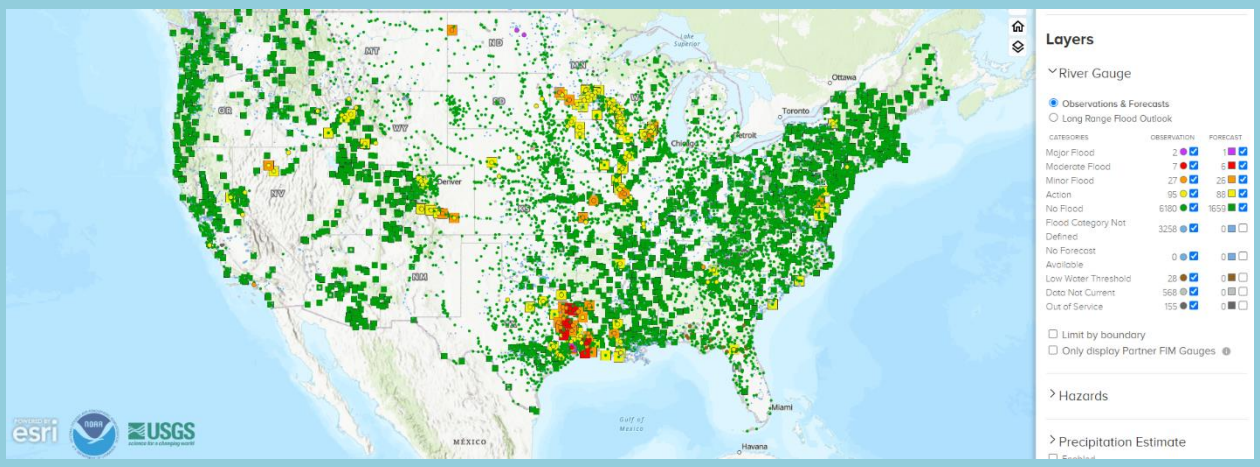


Figure 1. Example of NWPS default display map.

Accumulated precipitation maps (Figure 2) are also available based upon the user's selected time parameters. Again, these are interactive maps, and allow the user to zoom in to a desired location. The map below depicts the one-day total rainfall ending on May 15, 2024.

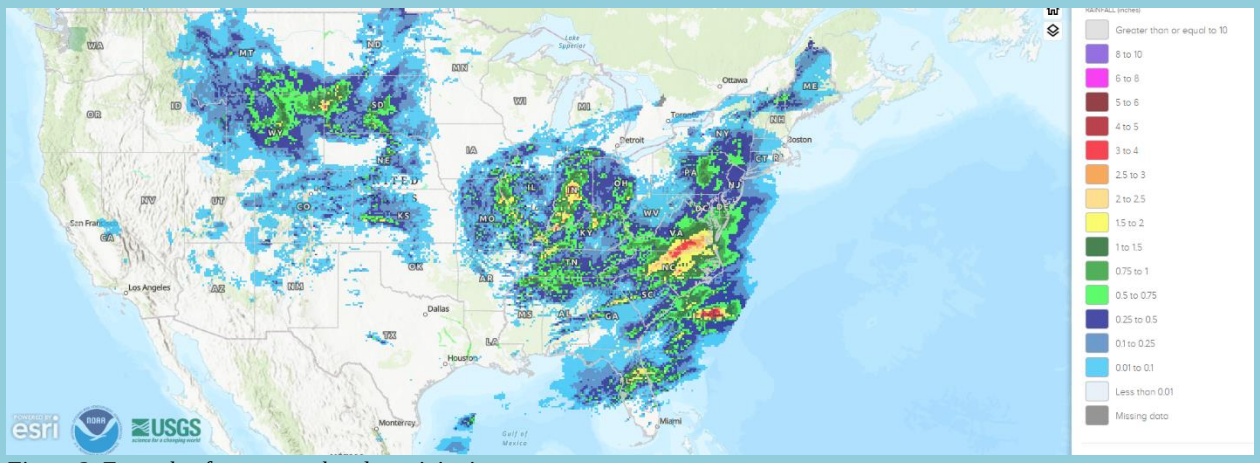


Figure 2. Example of an accumulated precipitation map.

Dynamic hydrographs depict recent river stage or flow observations at a given point, and also the official NWS forecast for the next few days. This page may also include flood impact information, gauge information, photos, recent crests, probability information, a list of collaborative agencies, and other resources. The hydrograph below shows the Sabine River in Gladewater, TX in a moderate flood on June 15 (note the location of the vertical dashed blue line) after being in major flood on June 13. The forecast is to slowly trend lower into minor flood level.

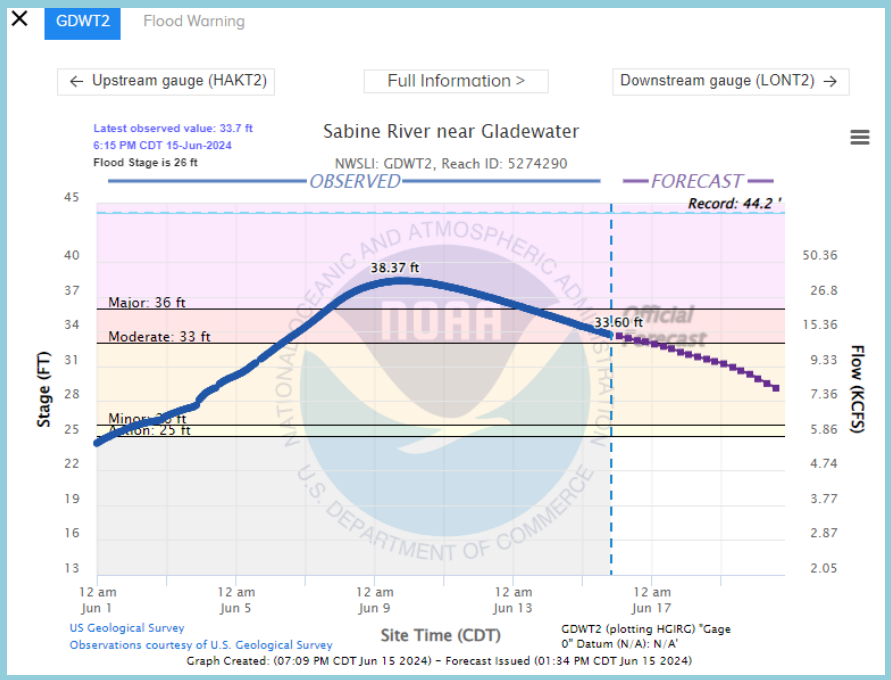


Figure 3. Example of a dynamic hydrograph.

Model river forecasts (Figure 4) are also available from the National Water Model (NWM). If the option to view these forecasts is selected, the user may click on any section of any river and be provided with a modeled river forecast for that section of the river. These are not official river forecasts by the NWS, but the pure output from a computer algorithm, without any human interrogation or manipulation. Below is the model output for the Flint River upstream of Brownsboro, AL.

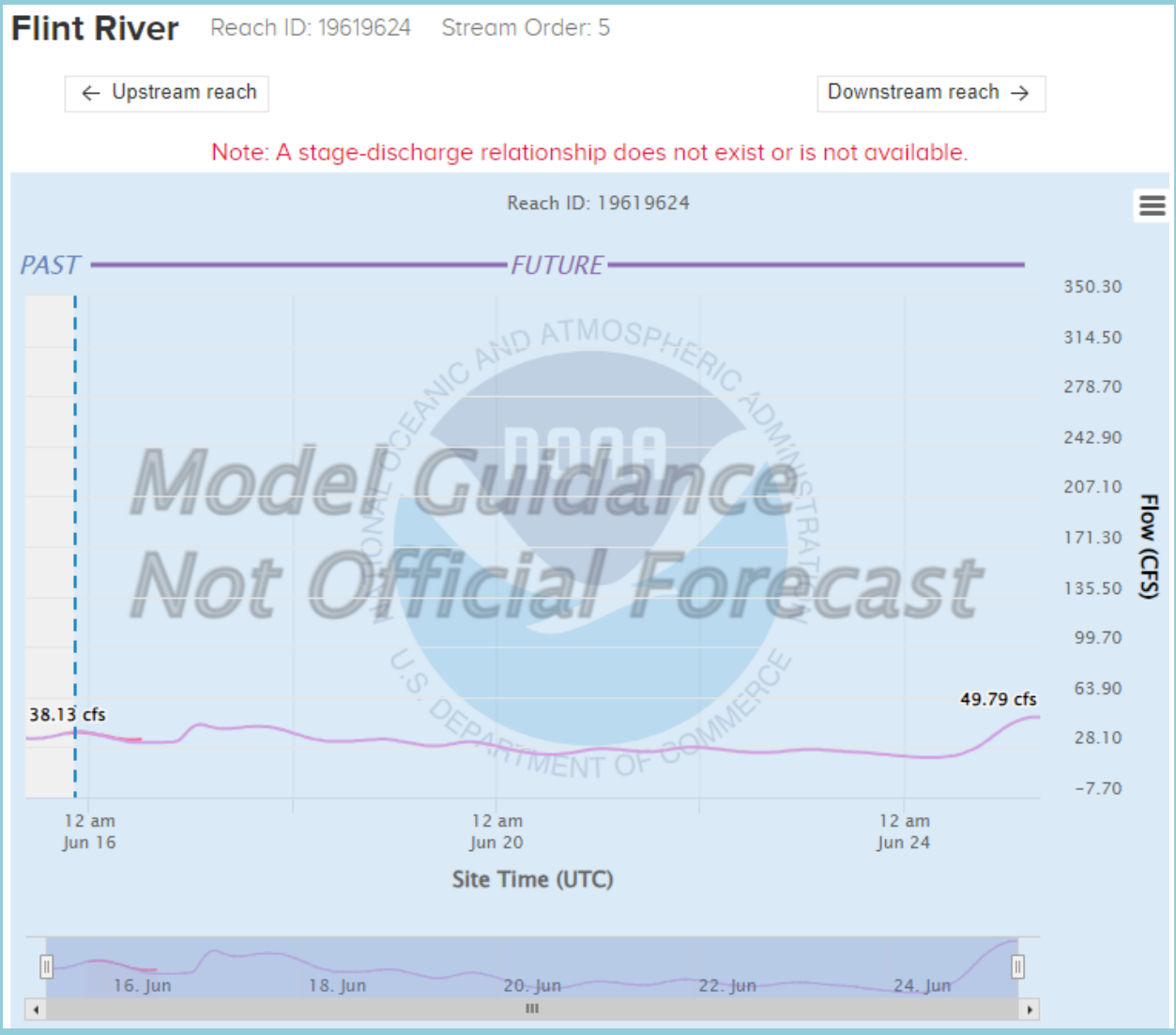


Figure 4. Example of a model river forecast.

Also within the NWPS suite of products are a variety of probabilistic forecasts (i.e. forecasts that offer a percentage of occurrence of a specific value or range of values). You will find three different varieties. The Weekly Chance of Exceeding Levels shows the probability of the maximum stage, flow rate, or volume exceeding a given threshold for 7-day increments over a 90-day period.

The Chance of Exceeding Levels During Entire Period graphics show the probability of the river stage, flow or volume going above given thresholds during either a thirty or ninety day period. The Short-Term Probabilistic Guidance shows the short-range river forecast uncertainty and conveys the range of possible river stages and flows at each time step. Below is an example of a Chance of Exceeding During Entire Period graph for the Roanoke River at Roanoke, VA (Figure 5). The chart shows, based upon a conditional simulation, the probability of this location exceeding a given stage height during the period of May 31, 2024 through August 29, 2024 based upon the current conditions and probabilistic river forecast. Using this graph, the probability of exceeding 4.0 feet is around 30%.

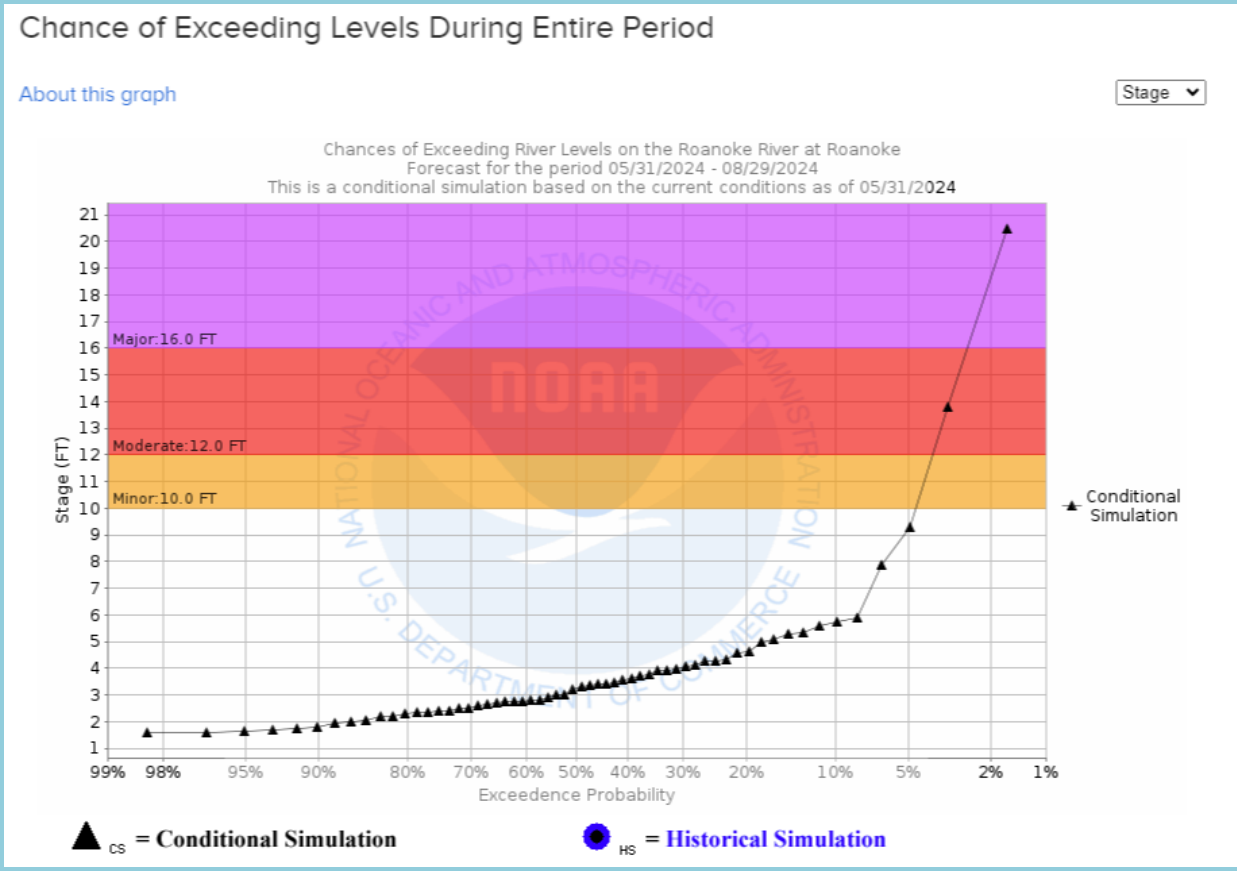


Figure 5. Example of a Chance of Exceeding During Entire Period graph.

Finally, Flood Inundation Maps (FIM) are available for select NWS forecast points, and for other select points where the National Water Model forecast suggests the potential for anomalous high flow. These maps show the approximate area of water inundation around a certain geographical region when the river reaches various flooding thresholds. Figure 6 on the next page shows the expected inundation area in feet (the blue/purple gradient shading) when the river stage is at 29 feet for the Sabine River at Logansport, Louisiana. For our forecast area, FIM will not be available until October 2024.

Figure 6. Example of a Flood Inundation map.

We encourage you to explore the new NWPS page and the user's guide. Try out some of the different features. The more you do so now, the more familiar you will be with the page during times of flooding or anticipated flooding.

Weather Stories: The Weird, Wacky, and Wonderful

You've probably heard the saying, "It's raining cats and dogs." But, did you know that it can actually rain frogs and fish?

Tornadoes are unpredictable. They can last for just a few seconds or expand for miles. They can destroy one house but leave the house next door unscathed. Perhaps the strangest thing tornadoes can do is cause it to rain aquatic creatures.

If a tornado passes over a lake, pond, or river, the extreme suction of the tornadic waterspout can lift fish and frogs right out of the water. Since what goes up must come down, there have been instances of people finding both on the streets after violent storms.

The Library of Congress reports that fish fell on the town of Marksville, Louisiana, in 1947, averaging one fish per square yard. In 2005, a tornado caused thousands of frogs to rain on Odzaci, Serbia. In 2010, hundreds of perch fell from the sky in Lajamanu, Australia.

To learn more:

https://www.loc.gov/everyday-mysteries/meteorology-climatology/item/can-it-rain-frogs-fish-and-other-objects/

What's New In Our Office: Personnel Changes

Our office recently said a very fond farewell to our longest-tenured employee. After 33 years of federal service, **Ken Kostura** retired on December 30, 2023.

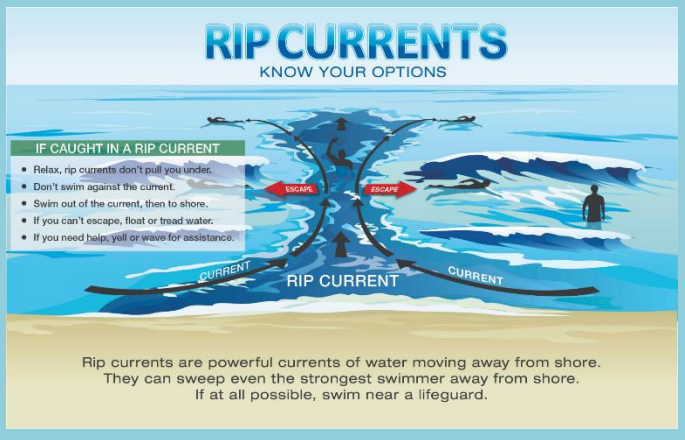
Ken developed an interest in weather during his childhood, after experiencing several significant weather events. He received a B.S. in Meteorology from The Pennsylvania State University in 1986, and spent several years forecasting at AccuWeather after graduation. He joined the National Weather Service as a Meteorologist Intern at the NWSFO in Louisville, KY in November 1990. He was selected as one of the original Journeyman Forecasters at the (then new) Weather Forecast Office in Blacksburg in August 1994.

During his time at our office, Ken either led or was heavily involved in several critical office programs. As the long-time Radar Focal Point, he served as a local evaluation official for the commissioning of the KFCX WSR-88D in 1995 and was very involved in the office's dual polarization upgrade. Very passionate about the aviation program, he was also the WFO's tenured Aviation Focal Point, and served as a member of the ER Top Gun/Aviation Best Practice Team. In this role, he promoted operational excellence and superior performing programs, visited with airport managers, and led a sub-regional aviation workshop. Ken was responsible for getting a TAF (Terminal Aerodrome Forecast) for the Blacksburg airport and played a vital role in guiding the office into Digital Aviation Services. He also helped start the Virginia Tech chapter of the AMS (American Meteorological Society) and served as a mentor to a countless number of students in Virginia Tech's meteorology program.

We will all miss Ken's extensive experience in forecasting for a wide variety of high-impact weather events, as well as his good nature and sense of humor. Thank you, Ken, and best wishes in your retirement!

Kidz Korner

A popular summer destination for many families in our region is their favorite beach along the Atlantic Ocean. While the beach offers plenty of sun and fun, there is one element of the ocean that is **NOT** fun – **RIP CURRENTS**! A rip current is a localized area of water that flows away from the shoreline into deeper waters. These rip currents are typically not more than about 80 feet wide, but can travel away from shore at speeds of up to eight feet per second. If a person gets caught in a rip current, his or her first instinct often is to head directly back to shore, swimming against the flow of the rip current. Unfortunately, the speed of a rip current is faster than a skilled competitive adult swimmer. An individual caught in the rip current who tries to swim directly back to shore can quickly become exhausted in this hopeless attempt and potentially drown if not assisted by others. Fortunately, rip currents don't have to be scary. Below are tips for both avoiding and escaping rip currents that you should know, and also share with the adults in your family.



The first step is to know before you go. Check online for the predicted probability of rip currents occurring at your destination. You or a family member can visit the National Weather Service's Experimental Beach Forecast. When the map loads, zoom into your area of interest and click on the nearest umbrella (Figure 1). When you click on the umbrella you will be presented with a zoomed in image of the coastline. The color of the coastline indicates the risk level for rip currents. White is low, yellow is moderate, and red is high. The image below (Figure 2) shows a high risk for rip current conditions in the Cape Hatteras, NC area.

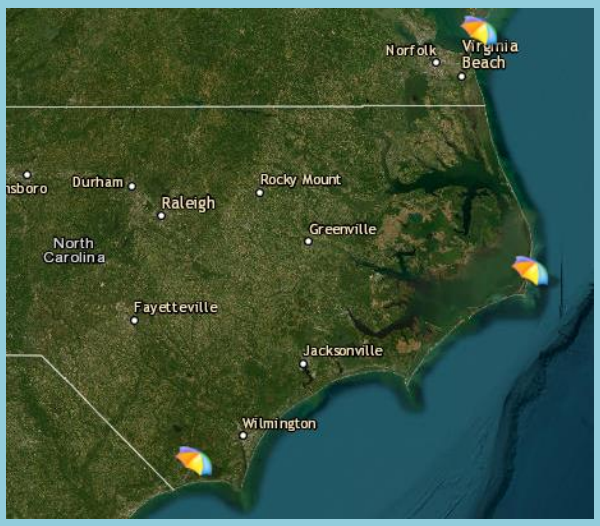


Figure 1. Example of map displaying selectable umbrellas.

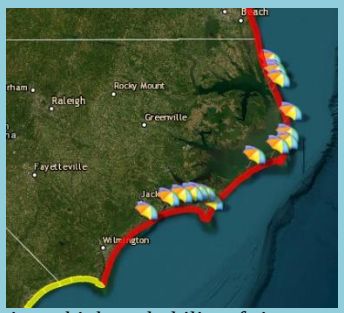


Figure 2. Map showing a high probability of rip currents in the Cape Hatteras, NC area

The next step is to be aware of warning signs once you arrive at your destination. It's not uncommon for beach officials or lifeguards to post flags that highlight the concern for rip currents. Additionally, you and your family members can spot rip currents if you know what to look for. A good indication is a gap or absence of the white foamy water typical of a lengthy breaking wave. In the image below, a lifeguard surveys an area of a rip current where there is a gap in the foamy breaking wave. A flag also marks the spot so swimmers can avoid this area. If you are going to get into the water, avoid these regions to maximize your safety, and swim near where there is a lifeguard stationed.

Photo courtesy of NOAA.

The final step is knowing what to do if you find yourself in a rip current. As mentioned above, DO NOT try to swim directly back to shore. If you realize you are caught in a rip current, yell for help and wave your arms. The quicker a person realizes your dilemma, the sooner someone can start to assist you. You also can help your situation by swimming, but to either the left or the right of the direction that is straight back towards the shore (this is called swimming parallel to the shoreline). This process will allow you to swim out of the rip current. Once free of the rip current, the breaking action of the waves and your swimming will bring you back to shore on a diagonal path. Please visit this rip current safety webpage and watch the included videos that demonstrate this escape method and other aspects of rip currents.

So, to recap...

Know before you go. (What is the risk of rip currents where my family is having their vacation?)

Plan your swimming location carefully. (Visually look for and avoid areas of rip currents. These areas already may be marked by hazard flags. Always swim near where there is a lifeguard.)

Yell for help and swim parallel to the shore if caught in a rip current.

Have fun and stay safe on the beach this summer!

Sunshine

by Gary R. Ferris

Oh the sunshine that filled my day,
All my worries would fade away.
Bringing me joy, laughter, and peace,
Ironing out problems, even the crease.

Up every morning and smiling so bright,
A welcome sight from a hard long night.
Warming my heart with your love and care,
Preparing my day from all that dare.

The comfort of friendship fills my soul,
The joy you bring, you'll never know.
Your glow and brightness fill my heart,
Oh sunshine don't ever part.

What are these clouds that begin to appear,
Is it a sign a storm is near?
I begin to seek shelter, but none is found,
Alone and scared, I stand on the ground.

The cold winds of bitterness begin to blow,
And unforgiving rain starts to flow.
Flashes of anger begin to strike,
Running from trouble, I begin my hike.

The resenting pellets hurt me so much,
And beat on my heart, sore to the touch.
Trapped in the open, I long to hide,
Only to save my stubborn pride.

Where will I go and what will I do?
This storm is mighty and powerful too.
Where is the sunshine I used to know?
Why did you leave and where did you go?

Feeling creative? 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 fall or winter.

Our meteorologists will review the submissions and select a few to include in the newsletter. Maybe yours will be one of them!

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 October 1, 2024. Please email your entries here.

We look forward to hearing from you!

From Piedmont to Mountaintop

In this edition, we have a picture that one of our forecasters captured of mammatus clouds. Mammatus clouds are altocumulus, cirrus, cumulonimbus, or other types of clouds that are shaped like pouches on the bottom. These pouches form when cold air within the cloud sinks down toward the earth. They are often, but not always, associated with severe thunderstorms. One of our meteorologists took this picture of the skies over Salem, Virginia, in January 2024.

Do you enjoy taking weather pictures in your neighborhood? If so, we would really enjoy seeing them! From now through October 1, 2024, 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 X) 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 spring and summer seasons not only bring warmer temperatures, but a wide range of potential weather hazards, including flooding, lightning, and even tornadoes. 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 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 X and Facebook.

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

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