Blue Ridge Thunder
Newsletter of the NWS Blacksburg, VA

Welcome to the fall 2019 edition of 'Blue Ridge Thunder' the biannual newsletter of the National Weather Service (NWS) office in Blacksburg, VA. In this issue you will find articles of interest on the weather and climate of our County Warning Area (CWA) and the people and technologies needed to bring accurate forecasts to the public.

Weather Highlight:
Early October Heat Wave
Peter Corrigan, Sr. Service Hydrologist

After a very warm and dry September, early October 2019 saw nearly unprecedented heat for several days. Numerous daily and all-time October record highs were recorded from October 1st through 4th at the official climate sites and nearly every NWS COOP site. The unusual autumnal heat wave peaked on the afternoon of October 3rd when many sites approached or exceeded all-time October heat records. Among the most impressive readings were the 98°F in Roanoke (tied for 2nd highest ever in October, after 99° on October 6th, 1941), Lynchburg reached 97° (2nd highest after 98° on October 6th, 1941), Danville 98° (2nd highest after 100° on October 6th, 1941) and Blacksburg 94°. (the highest October reading on record since 1952). The reading at Blacksburg was the 3rd day in a row of 90F or higher. The map below shows the main culprit for this record heat wave: an elongated ridge of high pressure aloft and at the surface allowing for strong heating over very dry ground.
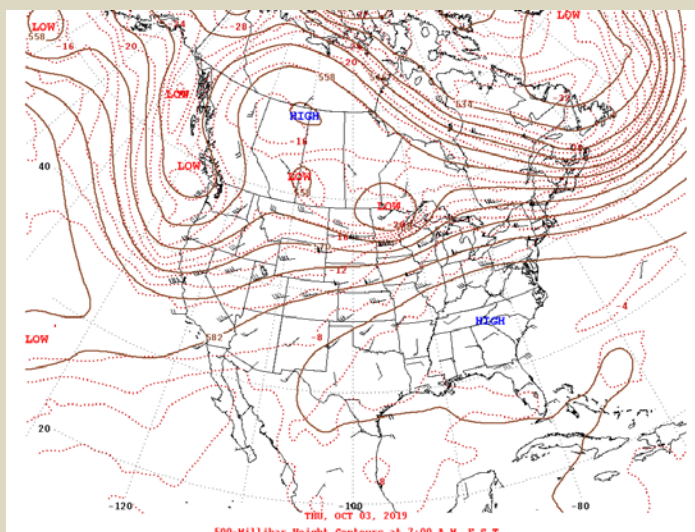
**500-mb Height Contours: 700 AM EST, Oct. 3, 2019**

The heat was not confined to the local area but covered much of the eastern 1/3 of the U.S. Cities from New York to Florida and west to Arkansas set or tied all-time October heat records. In the southeastern U.S. a number of stations reached 100°F for the first time ever in October, including Tuscaloosa, AL which peaked at 101°F and Meridian, MS at 102°F. According to unofficial sources at least 10 states set or tied all-time October records including Washington D.C. at 98°F on October 2nd and New York State (95° at JFK and LaGuardia airports on October 2nd).
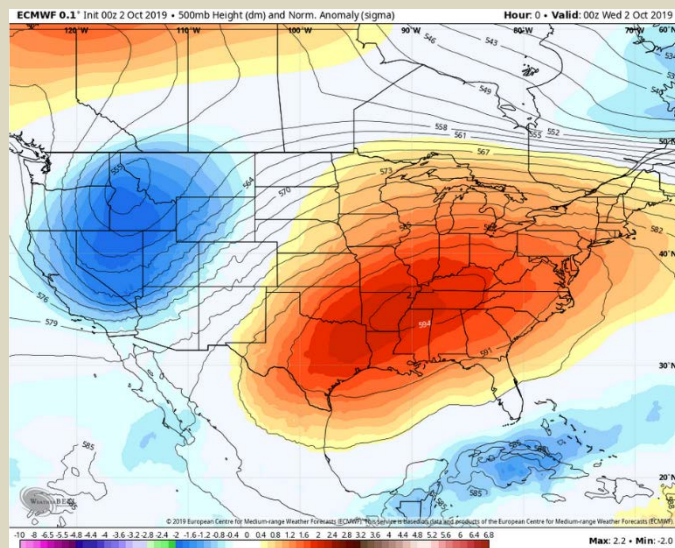
500-mb height anomaly, Oct. 2, 2019

According to the published climate records (back to November 1952) Blacksburg had never reached 90F in the month of October. However, there was another Blacksburg station that has not yet been added to the readily available climate records. At this site (located on the Virginia Tech campus) the early October 1941 heat wave certainly rivaled our 2019 event as the temperature reached 91°F for three straight days (Oct. 6-8). Yet 1941 and 2019 remain the only years in the climate record that Blacksburg has reached 90F in October and that includes records dating back to 1893! The daily weather map (shown below) for October 6, 1941 shows the sprawling Bermuda high in a perfect position to deliver heat to the eastern U.S. Similar to 2019, many other cities set record highs in that 1941 heat wave including Richmond, Washington, D.C., Philadelphia and New York City. Note the low pressure area approaching Miami, FL, that was a hurricane that crossed Florida and caused extensive damage! So which was worse, 1941 or 2019?
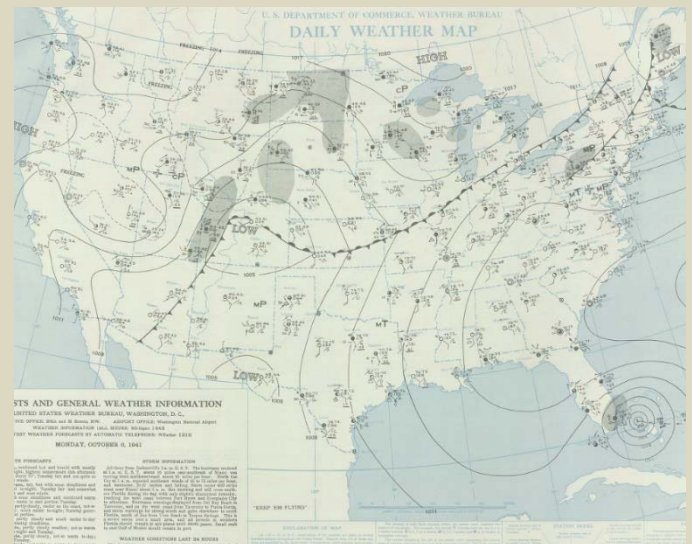

Daily Weather Map from October 6, 1941

'Flash' Drought!

Peter Corrigan, Sr. Service Hydrologist

As discussed in the 'Weather Highlight', a record setting late season heat wave scorched much of the region in early October. But September was extremely warm and dry as well. The heat was accompanied by severe rainfall deficits over that period causing an unusually rapid onset of drought conditions. The term 'flash drought' has come into increasing usage in the [scientific literature](#) on this subject and is defined as 'relatively short periods of warm surface temperature and anomalously low and rapidly decreasing soil moisture'. The definition was certainly met in September and early October. September temperatures were easily the highest since records began at Blacksburg in 1952 at 70.7°F (old record 69.2° in 2018). It was also in the top 5 warmest Septembers at the longer-term climate sites--Roanoke (2nd), Lynchburg (3rd), Bluefield (4th), and Danville (6th). September rainfall was 0.75" across the COOP network vs. the climatological mean of 3.82" or just under 20 percent of the normal. The COOP site at Danville 2 SE (DNVV2) had zero rain the entire month, a very unusual occurrence in our area. The images below from the [U.S. Drought Monitor (USDM)](#) below show the progression of the drought:

The drought was extinguished almost as quickly as it began, due to a very wet October. Mean precipitation during October was 6.50" versus the long-term mean of 3.13" or 208 percent of the normal. Several stations has over 10 inches of rain! The month eclipsed 2018 (6.15") as the wettest October since CWA-wide records began in 1996. The impacts from the drought were almost exclusively in the agricultural sector, especially the impact on hay and pasture land due to the time of the year. Monetary damages are difficult to assess but could be significant.
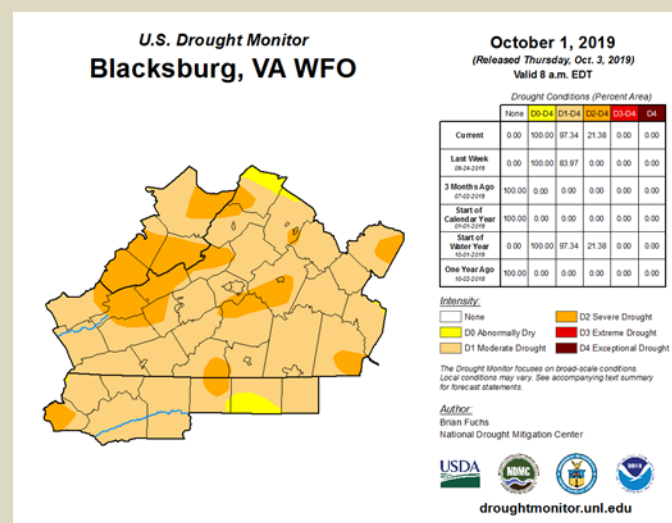
USDM - Peak of the Drought, early October
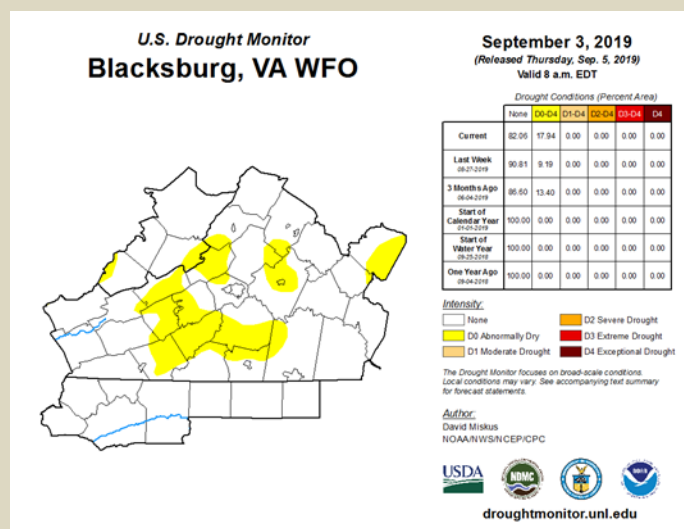
USDM - Onset of dry conditions, early September
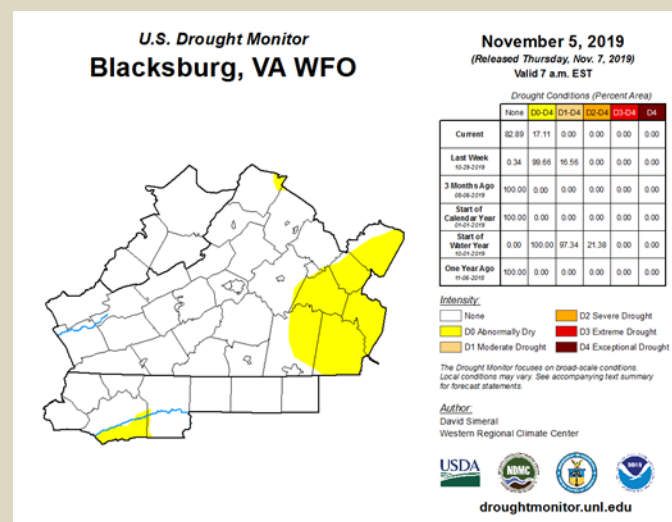
USDM – The drought is gone, late November

Summer 2019 Climate Summary

Peter Corrigan, Sr. Service Hydrologist

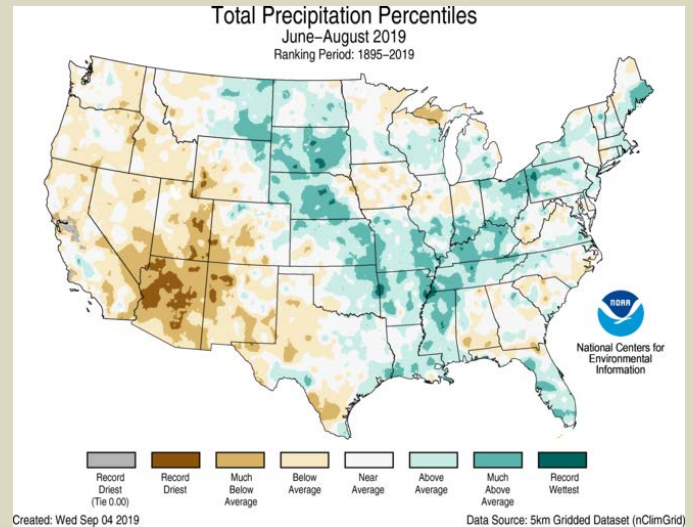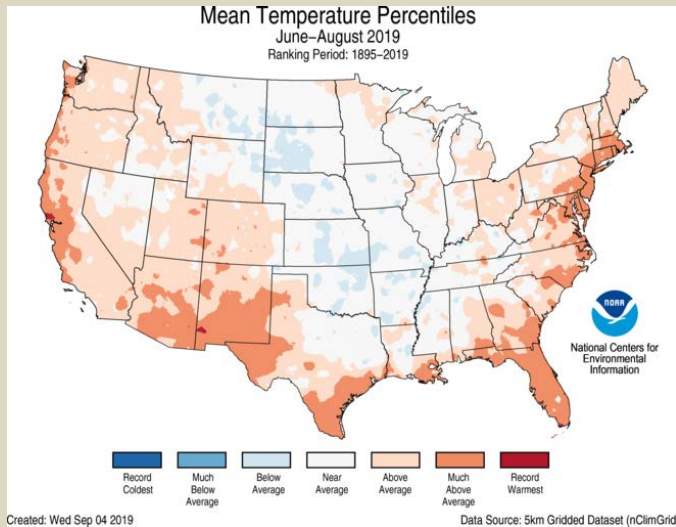The summer of 2019 (June through August) was generally above average for temperature across the Blacksburg CWA and nationwide, except for portions of the Midwest. Precipitation was near to slightly above normal across much of the CWA (figure below, right), and much wetter again over the Midwest and dry over the southwestern U.S.

The table below shows temperature and precipitation rankings and anomalies (departures from normal) for the five official climate sites in the CWA, which agree to the maps above for the most part. No climate site reached 100°F during the summer, but the number of 90°F days was well above normal. At Roanoke, the 45 days above 90°F was just over double the average of 22 days. Rainfall was fairly close to normal and variable due to local thunderstorms, although Bluefield came in with well below average rain amounts.

Local climatological statistics for summer 2019 (Jun-Aug)

Climate Site	Average Temperature (Anomaly)	Rank (Warmest =1)	Summer Maximum Temp. (°F)	No. of days T≥ 90°F	Total Precipitation (Anomaly)	Station Period of Record
Blacksburg, VA	71.3 (+1.6)	t-12th	93	6	11.07 (-0.78)	1952-2019
Roanoke, VA	76.5 (+1.5)	t-11th	99	45	13.36 (+1.93)	1912-2019
Lynchburg, VA	75.6 (+1.9)	t-41st	98	40	10.27 (-0.97)	1893-2019
Danville, VA	76.4 (-0.3)	t-60th	98	44	12.29 (-0.12)	1916-2019
Bluefield, WV	69.1 (-2.6)	t-75th	87	0	7.96 (-3.61)	1909-2019

2019 Atlantic Hurricane Season

No tropical systems affected the CWA in 2019. The season as a whole featured above normal activity, with 18 named storms, versus the 1981-2010 average of 12.1 named storms. Of the 18 storms, 6 reached hurricane status (6.4 average) with 3 becoming majors (2.7 average). Another measure of tropical activity is Accumulated Cyclone Energy (ACE) which is compiled by Colorado State University. The ACE measure showed a slightly above average season at 124.1 versus the climatological normal of 101.4. Yet over a third of all the ACE was due to a single storm, Hurricane Dorian. Dorian, which formed on August 24 became a rare Category 5 storm with a lowest central pressure of 910 mb, tying it for the 5th strongest (by pressure) land-falling Atlantic hurricane. The storm stalled out over the Bahamas and had catastrophic impacts, killing at least 65 and causing $7 billion in damage. Another storm, Hurricane Lorenzo, accounted for nearly a quarter of all ACE for 2019 and became known for being the easternmost Category 5 Atlantic Hurricane on record. Otherwise, impacts to the United States were minimal in the 2019 hurricane season.
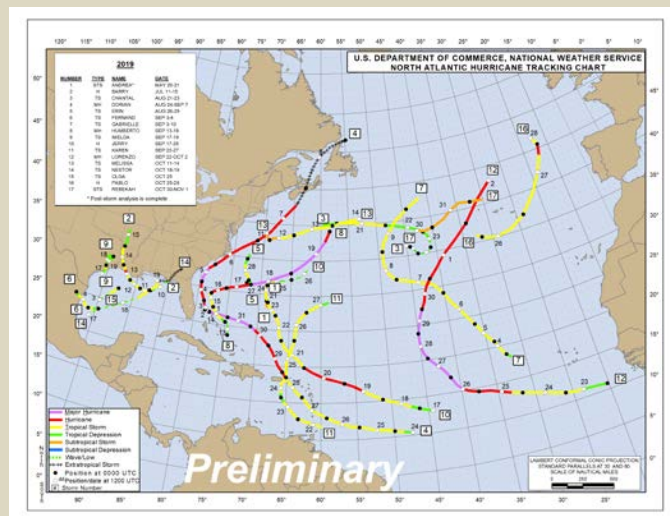
Tracks of 2019 Tropical Cyclones

Winter 2019-2020 Outlook: Another Warm One?

Last winter was warmer than normal (see Blue Ridge Thunder, Spring 2019) with only one significant snowstorm, but winter weather lovers will probably not like the NWS Climate Prediction Center (CPC) outlook for the upcoming 2019-2020 winter as shown in the two figures below:
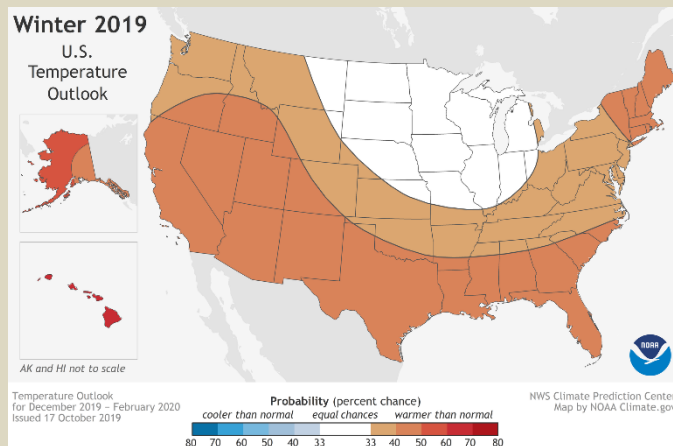
Winter (Dec-Feb) Temperature Outlook
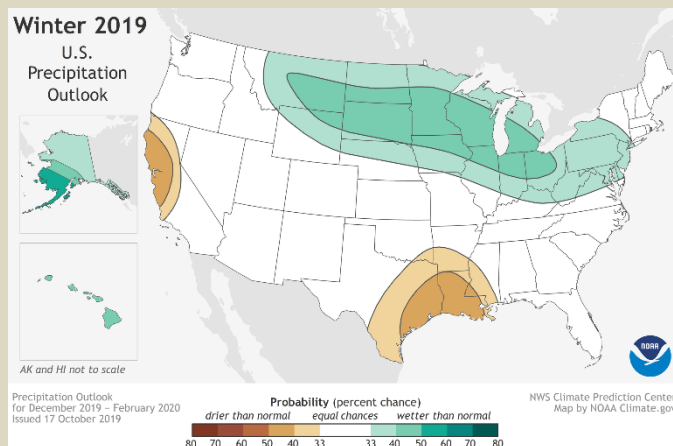
Winter (Dec-Feb) Precipitation Outlook

One of the key prediction tools used to make seasonal forecasts is the El Niño/Southern Oscillation. However, as discussed in the most recent ENSO Diagnostic Discsusion, CPC continues to project an ENSO-neutral condition during the upcoming winter. So what other tools are available

to construct long-term forecasts in the absence of an El Niño or La Niña? Well, CPC meteorologist Mike Halpert explains all that in a recent ENSO blog.

Tips on Measuring and Reporting Ice Accretion from Freezing Rain
Steve Keighton, Science and Operations Officer

As we enter a new winter season, accurate measurements of snow and ice are critical for our situational awareness, improved forecasts, and event verification. Measuring ice accretion from freezing rain can be especially tricky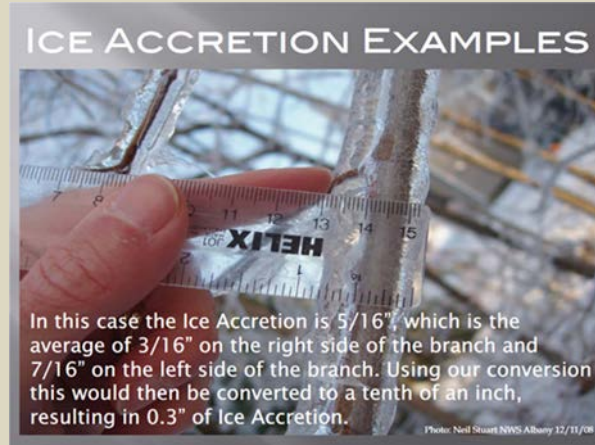, and should be separate from measurements on the ground of snow and sleet. While ice can accrete on ground surfaces like sidewalks and roads (which of course can be very dangerous), what we use for official reports is the measurement of ice on an <u>elevated</u> flat surface, such as a picnic/patio table or a flat railing (we do <u>not</u> recommend the top of a car). However, sometimes this is not possible because one is not conveniently close, or there has been a combination of snow/sleet and freezing rain, which conglomerates, making the separate measurement of the freezing rain practically impossible. Often people report the average width of <u>radial</u> ice collecting on a small branch/limb, a small round railing, or perhaps a fence wire.

Any of these methods for measuring ice is appropriate, but there are two very important considerations: 1) it is measured accurately using a ruler and the correct method for radial or flat ice (see image below); and 2) you tell us whether you measured the flat ice accretion or the radial ice accretion.

In this case the Ice Accretion is 5/16", which is the average of 3/16" on the right side of the branch and 7/16" on the left side of the branch. Using our conversion this would then be converted to a tenth of an inch, resulting in 0.3" of Ice Accretion. *Photo: Neil Stuart NWS Albany 12/11/08*

Measuring radial ice

In this case the Ice Accretion measured from the top of the metal post is 0.5". *Photo: Neil Stuart NWS Albany 1/15/07*

Measuring flat ice

When sending us the report, by far the best way is by including a close-up photo of your ruler measuring the ice, and you can email it to rnk.skywarn@noaa.gov or post it on social media, also providing your specific location (address or lat/lon) and the time it was measured. If you cannot send a photo, please specify how it was measured in the comments of your report (via the email address above or through the on-line submission form at: https://inws.ncep.noaa.gov/report/index.html).

We will send out all ice accretion reports we get in terms of flat ice, and there is an easy conversion we can use if you measure and report the radial ice. The average radius around a small branch or wire (so measure one side, then the other, and average the

two), is generally 4/10 (40%) of the overall flat ice accretion that you would have measured had a flat elevated surface been right next to your limb. Thus we would multiply a radial ice measurement by 2.5 to get the flat ice equivalent. Flat ice is what we forecast, and what our automated sensors at airports are designed to measure as well, so that's what we'll be using when we send out reports and create maps of ice accretion from significant ice storms. For a more in-depth explanation and the source for these images, please see:

https://www.cocorahs.org/media/docs/Training_IceAccreation.pdf

Finally, when possible the ice measurements need to be made before any begins to melt (so watch the temperature closely), but please also be sure to put your safety first, as many injuries can occur walking across ice on a paved surface. Thank you in advance for your winter weather reports!

Focus on COOP:
James Withrow – McRoss, WV
Nick Fillo, Observing Program Leader

The NWS in Blacksburg recently lost a great friend as Cooperative (COOP) weather observer James Withrow passed away in October 2019. Like many other observers, each morning, rain or shine Mr. Withrow called his weather observations into the NWS from his station located 3 miles east of the community of McRoss, WV. Whether speaking over the phone or visiting his station in person, Mr. Withrow was always extremely friendly and outgoing. He loved to discuss topics such as hunting, fishing, West Virginia University sports and his concern about clear-cutting of nearby land.

James Withrow accepts an award in 2019 for 30 years of weather-observing service by his family

Mr. Withrow was the husband of long-time weather observer Velma Withrow, who was the primary observer for the station from January 1989 until her passing in December 2016. Very passionate about weather, Mrs. Withrow provided the NWS with very detailed hand-written observations. After his wife's passing, Mr. Withrow agreed to continue providing daily observations in her memory despite initially not having the same level of interest in weather.

The Withrows became weather observers when the previous station located in the community of McRoss (1955-late 1988) closed. Their multiple decades-worth of weather observations have proven invaluable as their station was located in the far western part of Greenbrier County, WV and routinely observes some of the highest snowfall totals in the forecast area for NWS Blacksburg due to its high elevation (3230 feet) and location in the upslope-enhanced precipitation section of the county.

New NWS Meteorologist Career Progression Program

Steve Keighton, Science and Operations Officer

Until this summer, new entry-level meteorologists in the National Weather Service, often known as "Met Interns", were able to systematically progress through a number of Government Schedule (GS) pay grades each year as long as they were performing satisfactorily. After reaching the GS-11 level, they would have to competitively bid on vacant "General Forecaster" positions at the GS-12 level, usually in other offices around the agency. This year, under a new agreement between NWS management and the labor union, entry level meteorologists, now simply called "meteorologists", can progress all the way through the GS-12 pay grade without having to competitively bid on a vacant position. This annual progression through the grade levels is predicated on their demonstration of performance across a wide variety of specific duties and tasks, including teamwork and forecasting competence, so the progression is not automatic.

Ultimately, this means not only can a new meteorologist remain in a location where they started if they desire and move up the ladder to GS-12 level in a timely fashion, but there is also greater incentive for them, as well as their office, to get them fully trained on all forecast desk duties faster than in the past. Commonly, the practice in most offices was to spend the first 2-3 years primarily handling data acquisition and quality control tasks, while slowly developing warning and forecast skills. Now, offices are shifting more to the "whole office" concept, where every person in operations is trained to perform all tasks, from launching the weather balloons, quality control of rain/stream gauges and other observations, managing the NOAA Weather Radio program, to working on forecast updates, issuing warnings, and providing decision support services in various formats. It promotes more of a full team approach, and is great motivation for the newer meteorologists, as well as the seasoned ones as well! This January we will be more actively integrating all of our newer meteorologists into the same rotation as the other GS-12 forecasters in their rotation, and the Lead Forecasters (who serve as the operational shift chief) will remain in a separate rotation.

NWS testing utility of drones

Mike Sporer, General Forecaster

When it comes to damage assessment following severe storms and tornadoes, The National Weather Service has long recognized the advantages of an aerial view to observe patterns in debris. Traditionally that meant having personnel get a lift in a plane or helicopter from the Civil Air Patrol or local law enforcement. However the rapid development of high quality, affordable Unmanned Aerial Systems – otherwise known as drones – has made it possible to obtain aerial imagery exactly where and when it is needed. NWS Blacksburg has been leading development of a program to test the utility of drones in the field and in September, 3 staff members attended the first ever NWS sponsored training session to become certified remote pilots. NWS Blacksburg will now begin experimental use of drones for post storm damage surveys, facilities inspections, and other targets of opportunity as they become available. It is hoped that this proof-of-concept test project will help develop standardized training procedures and pave the way for drone usage by other local NWS offices throughout the country.

Blacksburg WCM Phil Hysell works at drone testing

Recent WFO Staff Changes

There have been two changes in personnel at NWS Blacksburg over roughly the past 6 months.
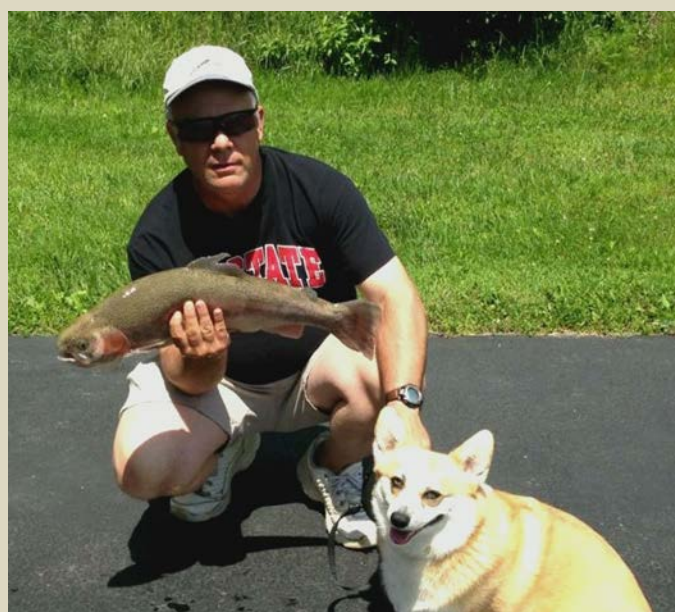
James (Jim) Hudgins

In October 2019, one of the long-time Senior Forecasters at NWS Blacksburg, Jim Hudgins retired after 30 years of Federal Service.

Jim grew up in Southside Virginia in Crewe, VA, and graduated from Nottoway Senior High School in 1981. He graduated from Southside Community College with an Associate of Science degree in 1983, and then attended North Carolina State University where he completed his Bachelors of Science degree in Meteorology in May of 1987.

Prior to joining the NWS in 1989, Jim worked for his locally family owned newspaper in Crewe, where he provided weather data including weekly write-ups, as well as stories involving high impact weather events including tropical systems and winter storms. He also served as a trained weather spotter for WSO Richmond, VA, which helped him monitor the multitudes of weather events that impacted the local area.

In October 1989, Jim began his career with the NWS at WSO Wilmington, NC. He started his career shortly after Hurricane Hugo impacted the Carolinas in September 1989, and just before the record Christmas snowfall in 1989. He worked during the 1993 Storm of the Century that brought hurricane force winds and storm surge to the coast despite little rain.

In June 1994, Jim was promoted to one of the five original Journeyman Forecasters at WFO Morehead City/Newport NC. There he experienced working a couple hurricanes, Bertha and Fran, in a two month period between July and September 1996. He was promoted to a Lead Forecaster position at WFO Blacksburg, VA in July 1998, where he has since resided. During his NWS career, Jim was heavily involved with tropical weather, especially at WFO Blacksburg, where he has helped spin up its new Inland Tropical program. He was also a part of the Roanoke Hurricane Awareness Tour in May 2019 that involved tours of the Hurricane Hunter aircraft. Memorable events he worked during his tenure at Blacksburg include the late June Derecho in 2012, and the WV flood in June of 2016. He has also involved himself in the Office Newsletter, Aviation, and Event Review teams.

Jim Hudgins with his new workmates

Jim has been a member of the American Meteorological Society and National Weather Association for many years. With these organizations, he presented results of local coastal flooding projects while at the coast, and several tropical and snow band related posters at both the AMS and NWA meetings while at Blacksburg. Jim will be retiring in Christiansburg, VA, and at least in the short-term, plans to "catch" up on all the trout that have gotten away over the years.

Andrew Loconto

General forecaster Andre Loconto who arrived in Blacksburg in the fall of 2016 (see Blue Ridge Thunder, Fall 2016) has returned home to New England. Andrew took a position as a General Forecaster at WFO Norton, MA in late August of this year. Andrew was a key part of the forecast team at WFO Blacksburg and will be missed greatly despite his avid support of the Patriots, Red Sox, Bruins and Celtics!

Andrew Loconto

Blue Ridge Thunder

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