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SUMMER SAFETY CAMPAIGN

Building a Weather-Ready Nation



The summer safety campaign runs annually from June 1st to September 1st.

See below for outreach resources.

- Social Media Plans: <u>https://www.weather.gov/wrn/summer2020-campaign-sm-plan</u>
- Infographics: <u>https://www.weather.gov/wrn/summer-infographics</u>
- Videos: <u>https://www.weather.gov/wrn/Videos</u>
- Spanish-Language Content:
 <u>https://www.weather.gov/wrn/summer-espanol-sm</u>

3 TORNADOES ON May 27, 2022

by Meteorologists Rachel Gutierrez and Mike Colbert

On Friday May 27th, 2022 convection quickly moved through our County Warning Area (CWA) in the morning and early afternoon hours. something that is quite atypical. This time of year, it is more common for severe thunderstorms to occur in the mid to late afternoon hours and continue into the evening hours. By the evening hours on May 27th, the severe weather threat would be over and many communities would be faced with the difficult task of cleaning up storm damage on their property.

The NWS in State College confirmed that 3 different tornadoes occurred on May 27th, 2022. The NWS confirms tornadoes by conducting a storm survey to assess the degree of damage and type of damage. In doing this, the NWS is able to determine if a tornado did occur and assign a rating (ex. EF-0) to the tornado based on the amount of damage.

In Cumberland County, a brief EF-0 tornado touched down in the vicinity of Enola Road just west of Longs Gap Rd in Carlisle, Cumberland County. The tornado touched down at approximately 12:42 PM EDT and lasted less than 1 minute. The tornado tipped over a trailer and snapped several hardwood tree limbs before dissipating.



Trailer tipped over due to brief EF-0 tornado in Cumberland County. Photo courtesy of Deb Rohrbach.

In Franklin County, an additional EF-0 tornado occurred. The tornado touched down as an EF-0 near Hartzok Road where it snapped several hardwood trees. The tornado then destroyed a pole barn and picked up a large and very heavy farming auger. The auger was found approximately 100 yards from its original location. The tornado removed part of the metal roof from another outbuilding on the property. Convergent wind patterns were evident in the grass between the destroyed pole barn and the next area of damage.



Farming auger lifted and launched about 100 yards from its original location.

The tornado then pushed a pickup truck a few feet from its original location and moved an outdoor shed off of its foundation. A projectile from the destroyed pole barn was found in a field sticking out of the ground, about 375 yards or 0.2 miles from its original location.



Projectile from the destroyed pole barn was found about 375 yards away from its original location, sticking out of the ground in a farm field.

The tornado crossed Hartzok Road and caused damage to the roof of a house and snapped more hardwood trees before dissipating about about 11:46 AM EDT.

We thank Franklin County Department of Emergency Services and one our storm Spotters for their assistance with the survey. We also thank the community members who spoke with us and allowed us to conduct the survey. A stronger and longer duration EF-1 tornado occurred in Lancaster County. The tornado touched down as an EF-0 tornado on the 400 block of Maple Shade Rd, where it uprooted 2 large hardwood trees and 1 large softwood tree at a private residence. The tornado moved ENE and downed several large tree limbs and did minor siding damage to a building at the corner of Maple Shade Rd and Kirkwood Pike. A crop field behind the post office on the north side of Kirkwood Pike showed a clear pattern of convergence within the crops blown down by the tornado as it continued moving towards the NE.

The tornado then destroyed a small shed constructed with cinder block walls, carrying contents from inside the shed toward the NNE. Large limbs from trees to the southeast of the shed were knocked down and facing the NW, towards the centerline of the tornado track. A second small shed behind property on the 300 block of Maple Shade Rd was destroyed, with debris carried over 200 yards toward the N and NE.

The tornado intensified to EF-1 strength as it moved northeast and caused near complete destruction of a large barn on a property on Farmdale Rd. Three of the 4 barn walls were removed, as well as all of the roof, with debris carried more than 200 yards toward the NE. A second large barn was partially destroyed, with one wall completely removed, two walls partially removed, and half of the roof removed. There was one minor injury of scratches due to flying debris. Two large hardwood trees were downed on the property, pointing North toward the centerline of the tornado track.



Damage to barn and outbuildings from the EF-1 tornado.

The tornado continued moving northeast, putting a dent into the southeast side of one large silo before causing crop damage in a large field. The pattern of crop damage was strongly convergent with crops on the right periphery of the tornado track laying towards the WNW and crops on the left periphery of the tornado track laying towards the ESE. The tornado crossed over E Salem Rd near Ridge Rd, where it downed several large trees and snapped several others. Several more trees were uprooted farther north along Ridge Rd.



Crop damage due to EF-1 tornado. Convergence and rotation can easily be seen in this photo, helping to confirm the tornado.

The tornado then approached Rosedale Rd, uprooting and snapping a couple dozen trees on a private residence near Coopers Run. After crossing Rosedale Rd, the tornado then destroyed two barns and a shed. Wooden beams from one of the barns were carried by the tornado as projectiles that penetrated through the NW facing wall of another barn on the property. A house on the property was also damaged, with some siding dented, broken, or removed, and the partial collapse of a basement wall on the NW facing side of the house. The collapse of the basement wall caused minor cuts and scratches to at least two people taking shelter in the basement. The top of a farm silo was also removed.

The tornado continued to produce significant damage as it hit another farm on Highland Rd. Two barns had their roofs completely removed. A third barn lost about half of its roof. A fourth structure, which appeared to be a shed without walls, collapsed. Two silos were also damaged, including the removal of the top of one of the silos. The intensity of the tornado decreased to EF-O as it approached one more farm on Rynear Rd near Bells Run. The tornado partially removed the roof from one barn on the property. The tornado then moved northeast across Rynear Rd and downed a few tree limbs along Bells Run.

We thank Lancaster County EMA, Quarryville FD, and Bart Township FD for their assistance with the storm survey. We also would like to thank the community members who spoke with us and allowed us to conduct our survey.

SUMMER SAFETY

by Warning Coordination Meteorologist Jonathan Guseman

While most of us love getting outdoors in the warm summer months, the weather can at times have other plans that should force us to stay inside out of harm's way. That doesn't mean we can't make outdoor plans, but rather that we need to know what weather threats to be aware of and what to do if they occur near you.

Let's take a look at some of the most common summertime weather hazards in central PA:

<u>Lightning</u>

Lightning strikes can result in death or serious injury. If you hear thunder or see lightning, take shelter in an enclosed building or a hard-topped vehicle with the windows up.



Each year in the United States, thunderstorms produce 20-25 million lightning flashes that strike the ground, killing an average of 20+ people and injuring hundreds more - often in devastating and permanent ways.



<u>Heat</u>

During hot and humid weather, your body's ability to cool itself is challenged in ways you may not expect. When your body heats too rapidly, or when too much fluid or salt is lost through dehydration or sweating, you may experience a heat-related illness. Stay Weather-Ready by learning the symptoms of excessive heat exposure and the appropriate responses.



<u>Air Quality</u>

Outdoor exercise from gardening to team sports can help keep you heart-healthy and less at risk to poor air quality. But before you go out, check the air quality forecast to ensure you aren't doing yourself more harm than good.



Flooding

During a flood, water levels and the rate at which the water is flowing can quickly change. Get to higher ground. Do not drive or walk into floodwaters. It only takes 6 inches of water to knock you off your feet. Stay informed by monitoring local radio and television for updates.



Play in the pool, not in floodwaters! Floodwaters can contain harmful chemicals and objects that could harm you or make you sick.



Tornadoes & Severe Winds

You know to take shelter immediately if your area receives a Tornado Warning or Severe Thunderstorm Warning. But what makes a good shelter? Take the time now to figure out your options and make sure you're Weather-Ready.



Severe thunderstorms (including tornadoes) can form quickly, day or night. Stay Weather-Ready by having a way to receive weather alerts any time of day. If you receive a Tornado Warning, get to shelter immediately.



<u>Rip Currents</u>

Rip currents are powerful, narrow channels of water in the surf zone that move quickly away from shore. Moving at speeds of up to eight feet per second (or 5 mph!), rip currents can move faster than an Olympic swimmer.



The United States Lifesaving Association (USLA) estimates that over 100 people die each year due to rip currents in the US.



More weather safety information can be found at <u>https://www.weather.gov/safety/</u>.

We hope everyone has a safe and enjoyable summer!

50TH ANNIVERSARY Of Hurricane Agnes

by Service Hydrologist Charles Ross

This June will mark the 50th Anniversary of Hurricane Agnes. From June 14th to 23rd, 1972, Agnes spun up the US East Coast causing widespread record rainfall and catastrophic flooding. This storm altered countless lives throughout the Mid-Atlantic as homes and businesses were destroyed. 128 people died and \$3.1 billion in damage resulted from the floods. A total of 12 states were impacted, with Pennsylvania, Virginia, Maryland, and New York receiving the brunt of the flood damages.

On June 14th, 1972, Agnes began as a tropical disturbance over the Yucatan Peninsula then slowly moved north and east over the warm waters of the Gulf of Mexico. The moisture and warmth fueled the hurricane to be the one of the largest circulations in June at the time. By June 19th, Agnes grew to a category one hurricane over the Gulf before making landfall over the Florida panhandle. Agnes continued to travel inland over the next few days through the southeast states, becoming a tropical depression. Instead of weakening, Agnes intensified and was reupgraded to a tropical storm as it moved over North Carolina. Tropical Storm Agnes continued to travel northwards through the 22nd of June, transporting heavy rain across the Mid-Atlantic and Northeastern United States. A wind-driven, torrential rain continued to batter down across Pennsylvania and New York. By the afternoon, Agnes was downgraded to an extratropical storm, but still maintained to unleash widespread rain across the East Coast. Agnes caused extensive and deadly flood damage in the Mid-Atlantic states from June 20-24th, 1972.

In commemoration of this truly historic event, a series of government agencies have teamed up to create an all-in-one place to learn about the storm, as well as learn about how things have changed and how to prepare for the next flood. Topics include a meteorological summary of the event, a look back at the hydrology, including AHPS hydrographs for several key locations, a discussion of mitigation efforts for flooding in our region, a section of flood preparedness, and a discussion on service improvements. There is also a section where we'd like to hear from you. We are collecting folks' remembrances from Agnes. Whether a sentence, or several paragraphs, we'd love to hear from you. Photos (and video) are also welcome. We were very excited to receive a video of Agnes from Poplar Island near Middletown.

The website can be viewed here: <u>https://agnes50-noaa.hub.arcgis.com/</u>



Share your Agnes Stories!

The National Weather Service in collaboration with the Silver Jackets is producing a commemorative website for the 50th anniversary of this once in a lifetime flood.

If you are interested in having your story told on this webpage, please email <u>ctp.stormreports@noaa.gov</u> Pictures welcome as well.

Note: We will use first name and town to place your story on a map. No othe personal information will be shared. Emailing your story gives us consent

NWS STATE COLLEGE Designated as an Inland tropical Office

by Meteorologist John Banghoff

The Atlantic Hurricane Season began on June 1st and runs through November 30th each year. As many of you are aware, tropical cyclones can bring a variety of hazards to the United States including heavy rain, strong winds, tornadoes, and storm surge. Here in Pennsylvania, we frequently experience heavy rain and inland flooding from tropical systems, such as Agnes in 1972 (50 years ago) and Lee in 2011. Since 1950, there have been 10 tropical storms, 6 tropical depressions, and 12 extratropical storms that have crossed over part of Pennsylvania and several additional tropical systems that have brought impacts to the Keystone State. For more information on tropical cyclone tracks near your location, visit

https://coast.noaa.gov/hurricanes/.

The Hurricane Forecast Cone - a review!

We can't talk about tropical cyclones without discussing one of the most recognizable products in all of the NWS! The National Hurricane Center (NHC) issues forecasts every 6 hours when a tropical storm or hurricane is active. The cone depicts NHC's forecast for the center of a tropical cyclone. About two-thirds of the historical track forecast errors are accounted for in the width of the cone, so the center of the storm is expected to stay inside that cone about 67% of the time. It is imperative to note that the cone does not represent where impacts will be felt and heavy rainfall, winds, and tornadoes can all occur well outside of the cone.



This year, NWS State College will have an expanded capability to issue several new products related to tropical weather, joining many other offices across the east coast and southern United States (dark green counties, left). NWS CTP, along with NWS Binghamton, NY, part of NWS Albany, NY, and NWS Burlington, VT have all been brought on as Inland Tropical Offices for the 2022 hurricane season (light green shading, left).



So why are we making these changes? Well, it comes down to consistency. Our neighbors at NWS Mount Holly and NWS Baltimore/Washington have been able to issue Tropical Storm Watches and Warnings for awhile now, and, on the rare occasion that tropical storm force winds affect the Lower Susquehanna Valley, it looks goofy when we issue Wind Advisories next to them. So, now we'll be able to be in better collaboration!

What will be changing? NWS State College will have the ability to issue 3 new products for tropical cyclones:

- Hurricane Threats and Impacts (HTI) graphics
- Tropical Storm Watches and Warnings via the Tropical Cyclone VTEC (TCV)
- Hurricane Local Statements (HLS)

Now let's take a look at each product individually. Hurricane Threats & Impacts (HTI): These graphics are issued by local Weather Forecast Offices (WFOs) when tropical systems are expected to bring a threat of wind, rain, and/or tornadoes to the area. They account for the latest forecast at specific locations while also including a reasonable safety margin to account for any forecast errors. They provide a quick-look at the expected severity of wind, flooding rain, and tornadoes across the area. To access these graphics, visit <u>www.weather.gov/ctp/tropical</u> and click on the Threats and Impacts tab (only updates when a storm is expected to affect Pennsylvania). You can see a few examples below:



On the live page, you can click on the map to get a description of the threat for the area.

Tropical Storm Watch/Warning: In the past, winds from tropical systems would be handled by Wind Advisories or High Wind Warnings. From now on:

- A Tropical Storm Watch will be issued when a tropical cyclone containing winds of 39 to 73 mph or higher poses a possible threat, generally within 48 hours. These winds may be accompanied by river flooding as well.
- A Tropical Storm Warning will be issued when a tropical cyclone containing winds of 39 to 73 mph or higher poses a possible threat, generally within 36 hours. These winds may be accompanied by river flooding as well.

Tropical Cyclone VTEC (TCV):

- Will be issued when the potential exists for tropical storm force winds across parts of the NWS State College area (when a Tropical Storm Watch/Warning are in effect).
- Text product includes information about all hazards (winds, flooding, tornadoes) using information included in the Hurricane Threats & Impacts graphics.
- Information will be listed for each county that is under a Tropical Storm Watch/Warning.
- Plan, Prepare, Act statements are Tweetable!

Hurricane Local Statement (HLS): Text product that keeps the media, local decision makers, and the public current on present and anticipated storm effects. Contains essential hurricane or tropical storm information in a condensed form, but expands on the storm's potential effects on the local area and on any actions declared by local emergency managers.

- Broad overview of threats and impacts for Central Pennsylvania.
- Precautionary/preparedness actions section provides valuable information that the media can amplify before and during tropical events.

We've probably got a little bit of time until we need to be concerned about tropical systems based on climatology (right). In the Atlantic basin, tropical systems are most common between mid-August and October. That being said, systems like Agnes (June 1972) can fall outside of the "most-common" window, so you should always maintain situational awareness for what's happening in the tropics. We'll keep you updated when you need to know anything about incoming tropical systems!



Throughout the upcoming hurricane season, please check <u>www.weather.gov/ctp/tropical</u> for all the latest information on potential impacts in Central Pennsylvania. This site includes:

- Two- and five-day outlooks from the National Hurricane Center
- Hurricane Threats & Impacts graphics (if there is an active storm)
- Links to our current partner briefing
- Preparedness info & social media content



If you want to know what the names of this year's tropical storms/hurricanes will be, check out the Links tab on that tropical webpage. If you're interested in learning more about tropical meteorology, you can check out the online training modules offered through <u>COMET</u> or <u>NWS JetStream</u>.

HOW DO Meteorologists Switch gears for Different seasons?

by Meteorologists Steve Travis and Mike Colbert

At NWS State College, training for the severe weather season begins long before Spring so we can stay ahead of the weather. We approach training in many different ways to hone our skills and keep up to date with the latest and greatest science, tools and techniques for severe weather prediction and warning operations.

Each year, our Science and Operations Officer, with help from our office Severe Weather Focal Point and Service Hydrologist, sets up a training plan for all of our meteorologists to go through. The plan includes training modules developed by the NWS Training Center, explaining new tools and concepts developed by universities and other research organizations to help us improve our operations. In addition to the new, we also review the tried and true methods that have been used successfully for years. Several of our modules provide a refresher of basic severe weather and hydrologic concepts that improve our Springtime readiness.

One of the key components of Spring readiness training is the Spring Weather Workshop. Each year in late March or early April, our entire staff comes together for a full day of presentations by our staff and invited speakers on updates for the upcoming warm season. Presentations may discuss our internal operations, review past weather events, demonstrate how to use new tools, or summarize some of the latest research being conducted by experts in the field of meteorology. This is a great opportunity to get everyone in our office together and switch gears from the long winter season into thinking about severe weather and flooding. This year, we had the opportunity to listen to Dr. Paul Markowski from Penn State discuss his latest work on tornado predictability. Dr. Markowski has been looking into the topic of intrinsic predictability of tornadoes. Different from practical predictability, which describes limitations in prediction due to uncertainty in the initial state of the atmosphere and model limitations due to spatial and temporal resolution. intrinsic predictability describes limitations in predictions that would still exist if initial conditions and models were nearly perfect. Dr. Markowksi showed that in an ensemble of model simulations with identical environments but just slight differences in boundary layer turbulence, there were notable differences in whether a supercell would produce a tornado, and how intense the tornado would be. This presentation certainly supported the notion that predicting whether or not a storm will produce a tornado can be challenging. Tornado warnings will likely never be perfect, but our predictions do continue to improve with advances in technology. When a tornado warning is issued, a tornado is either confirmed by a spotter or by radar, or conditions are favorable for imminent tornado development. However, in those cases where a tornado is not confirmed, tiny differences in the atmosphere can make the difference between no tornado at all and a destructive tornado. This is why we must treat each and every tornado warning seriously, and always take shelter if a warning is issued.

In addition to training modules and our workshop, we also do warning simulations based on past severe weather events in central Pennsylvania. Looking back at past events and learning from them is an excellent way to hone our warning skills. By using real cases and real data, we can run through a severe event and practice issuing warnings as if it were in real time. As is true with any learned skill, the more you practice warning decision making and the process of sending out warnings, the more efficient and effective you become at sending those warnings out when real severe weather occurs.

We go through all of this training and preparedness activities each year to make the best warning decisions we can based on science and experience. All of this is done to fulfill our mission to provide forecasts and warnings for the protection of life and property!

A REVIEW OF WINTER 2021-2022

by Meteorologist Dave Martin

Winter got off to a slow start as of late December, but got more active after the start of the New Year.

While January was a little drier than normal, several snowstorms resulted in snowfall being higher than last January. Snowfall for January ended up being above normal across portions of central Pennsylvania.

On the flip side, February turned out to be a wet month. This February featured a lot of mixed precipitation, but not much in the way of snowfall. Sleet and freezing rain occurred on more than one occasion.

What is interesting however is how wet the western sections of Pennsylvania been the last few years in February. Western sections of central Pennsylvania like Altoona and Johnstown have often been on the eastern edge of the wetter area in recent years during the month of February. For State College and Pittsburgh, this February was one of the wettest on record.

The Tennessee, Ohio Valley region this winter season had the greatest departure (wetter than normal) compared to areas to the east. This was based on an active storm track west of the mountains. The climate prediction center jumped onto this, based partly on having a La-Nina this season. Often La-Nina and El-Nino events weaken by April.

Overall central Pennsylvania has seen a lot of wet weather since 2018. Often the above normal precipitation is over the Susquehanna Valley, as was the case with winter precipitation in 2021. This winter season things were reversed, with the wetter conditions across the west. We will see what Spring and the Summer seasons bring to central Pennsylvania.



Total precipitation for 2021-2022 winter.



NEW IN NATURE: Bugs and spiders

by Meteorologist Dave Martin

Update on the Aedes Mosquito

Now that winter is over and summer is not far off, it is a good time to get an update on mosquitoes. Aside from the heat and humidity, bugs can be a pest. Some insects can be a threat to humans and their pets. One of the bigger issues in past years has been ticks. However the mosquito can cause problems as well. While the mosquito is a small creature, some species can carry disease and even some virus. The Aedes Aegypti mosquito is common to southern part of Florida. This species of mosquito accounts for less than 5 percent of all mosquito's, but can carry the Zika virus and the Chikungunya virus. Research is being done on how to control the population of this species of mosquito.

On more of a local level, we have to be alert for problems like the West Nile Virus. This problem started to appear back in the fall of 1999 around the northeast states. Counties across Pennsylvania routinely test for this, including keeping track of dead birds.

Measures we can take to control the population of mosquitoes include the following. Monitor areas for standing water and problems with a large number of mosquitoes. Maintain swimming pools, empty water in wading pools and bird baths once a week, clean gutters and storm drains, trim grass and brush near buildings, and report to the county sightings of dead birds.

Pennsylvania is home to 50 species of mosquitoes and 12 of these are capable of infecting humans with the West Nile Virus.

Southeastern Spiders

There has been some talk on the news this Spring about the large spiders advancing northward from the southeastern states. The following is some information on these spiders.

There are some large spiders across the southeast states, which are about as big as the palm of your hand. These spiders are native to southeastern Asia. They spread to the southeastern part of the United States about a decade ago. They are called Joro spiders and can grow up to 4 inches in length. They can travel with the wind using ballooning or hitch a ride on a car or truck.

They are colorful with stripes of black, yellow, and some grey. They can poison some creatures like insects, but are unlikely to break the skin on a human. They could bite a household pet, if constrained. While the spiders have been spreading northward, they can only handle brief spells of freezing conditions. They are not likely to advance much further north and west than North Carolina. Far southeastern Pennsylvania climate is close to the North Carolina climate, but central Pennsylvania features a lot of harsh winter weather conditions.



Joro Spider



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