

The Wilmington Wave

National Weather Service, Wilmington, NC

VOLUME VI, ISSUE II

SPRING/SUMMER 2017

Hurricane Season: Past & Present

- Steve Pfaff

The 2016 hurricane season was defined by 15 named storms with Hurricane Matthew causing destruction from the Caribbean to Florida, Georgia, and the Carolinas. Last year was the costliest season since 2012 and losses exceeded \$16 billion. The 2016 hurricane season was also the deadliest since 2008 with more than 700 fatalities (most associated with Hurricane Matthew in the Caribbean). There were many lessons learned with Hurricane Matthew some new and some old – including people taking risks driving through flooded roadways. In fact, 18 of the 26 deaths (69%) caused by Matthew in the U.S. were vehicular related. In the NWS Wilmington NC area of responsibility there were 6 fatalities as a result of the inland flooding and 5 of those were in vehicles swept off the roadway. Matthew once again proved that hurricanes are just not coastal storms and the impacts they pose can be far reaching and well inland. As a result, the level of hurricane education, outreach, mitigation, and planning for inland areas must match the efforts typified by coastal locations.

For the 2017 hurricane season there are some changes to the NWS's tropical program including operational Storm Surge Warnings and Watches and the ability for forecasters to raise Tropical Storm and Hurricane Watches/Warnings before the formation of a named storm that develops near the coast. In addition, Extreme Wind Warnings and Storm Surge Warnings will be included in Wireless Emergency Alerts (weather text messages sent to smart phones) system, and a new graphic for the arrival of tropical storm force winds graphics will be generated. These new procedures and tools will provide more flexibility for National Hurricane Center Specialists, give Emergency Managers the ability to determine the arrival of strong winds, and inform the public of extreme wind and storm surge warning impacts.

Lastly, NOAA's 2017 Hurricane calls for an 80% chance of a near or above normal year regarding the number of storms that may form in the Atlantic Hurricane Basin. In fact this year's outlook includes 11 to 17 named storms, 5 to 9 hurricanes, and 2 to 4 major hurricanes (categories 3, 4, and 5 on the Saffir-Simpson Scale). While these forecasts do a great job in garnering attention and begin hurricane preparation dialogue they can have unintended consequences which can negatively affect the public's level of preparedness. For instance, if a future hurricane outlook is for a below normal year it does not mean that we don't need to prepare, or lower our awareness. After all, these outlooks are not impact forecasts – they are purely a forecast regarding the number of storms. All it takes is one! We need to prepare each year as if it is going to be the year we are impacted by a devastating hurricane. If not, then we are not doing our part to build resilient communities across the Carolinas.

2017 Atlantic Hurricane Season Tropical Cyclone Names

✓ Arlene	Irma	Ophelia
✓ Bret	Jose	Philippe
✓ Cindy	Katia	Rina
Don	Lee	Sean
Emily	Maria	Tammy
Gert	Nate	Vince
Harvey		Whitney

Are you prepared for Hurricane season?

For safety information & more, visit:
nhc.noaa.gov/prepare



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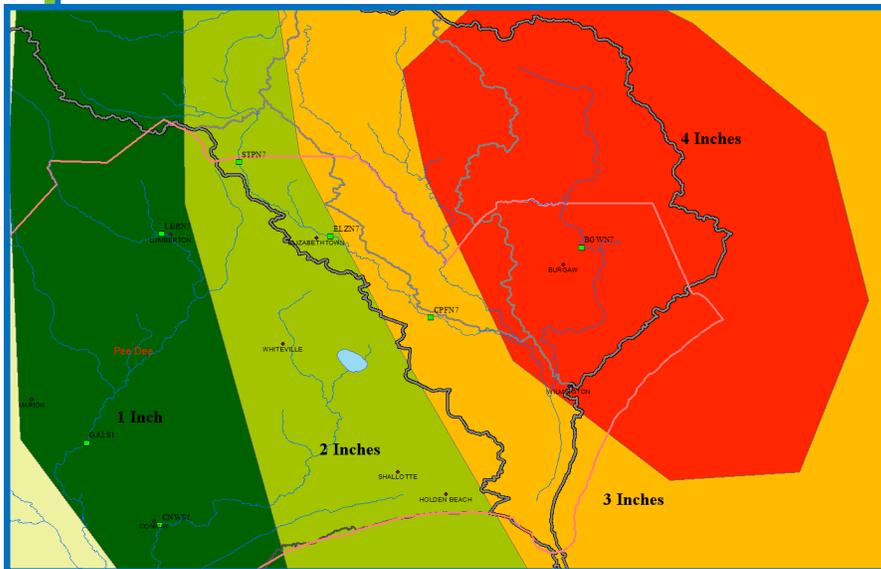
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River Forecasting: It's Complex!

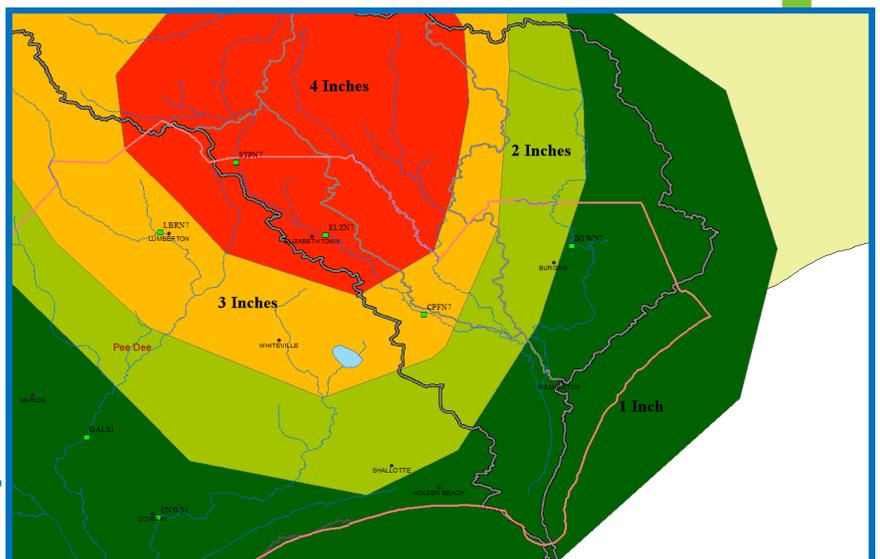
- Rick Neuheurz

Have you ever taken a look at the [Advanced Hydrologic Prediction Service](#) to check on the forecast for your local river only to see it change a lot over a couple of days? While there are many complexities involved in forecasting river levels, these daily changes often reflect the changing rainfall forecast that goes into the river level forecast. We'll look at the Cape Fear River Basin for an example. The image on the right shows the Cape Fear Basin in southeast North Carolina. The entire Cape Fear Basin is outlined with bolder, darker gray lines while the basins within it, including the Northeast Cape Fear River, Black River, and Cape Fear River, are outlined in lighter gray lines.

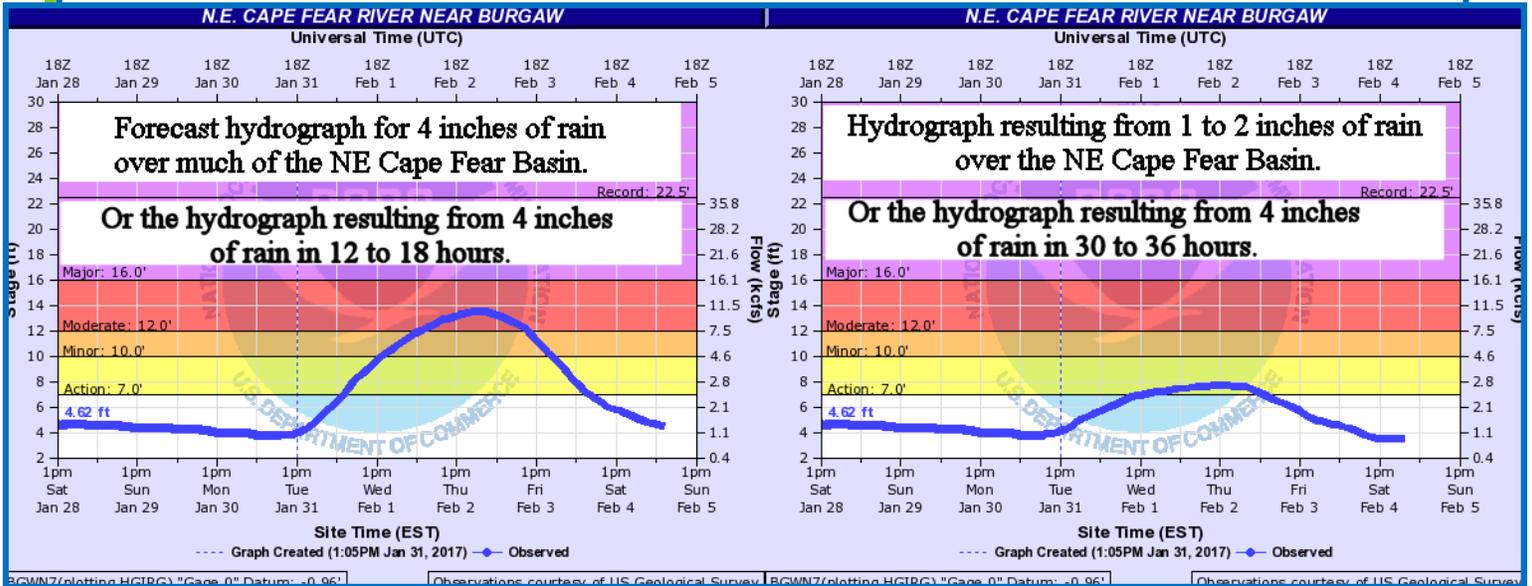


Now, let's consider a rain event with a rainfall forecast of 4 inches that is centered over the Northeast Cape Fear River Basin. This forecast is pictured to the left.

Then suppose the rain actually falls with the 4 inch maximum located farther west than was forecast such that the maximum is over the Black and Cape Fear Rivers instead of the Northeast Cape Fear River as shown to the right.



The images below show the river forecast resulting from the 4 inch rainfall forecast next to the actual river response due to the 1 to 2 inch rainfall. As you can see from the images, the difference can be very large depending on exactly where the rain falls.



A similar thing could happen for the same amount of rain falling over a river basin but in a different amount of time than forecast. If the rain was forecast to fall in 12 to 18 hours, the forecast might look like the left side of the image above. Suppose the rain amount forecast was correct but the rain fell in 30 to 36 hours instead 12 to 18 hours. That might result in the hydrograph on the right. Keep in mind that the scenarios above are simplifications to demonstrate the difficulties in river forecasting resulting from forecasting rainfall amount, timing, and location. They do not represent a real river forecast. Due to the complexities involved in river response, no two river floods on the same river are exactly the same in terms of how the river gets a certain level at the same location.

Know Where to Go

When Sheltering from a Tornado

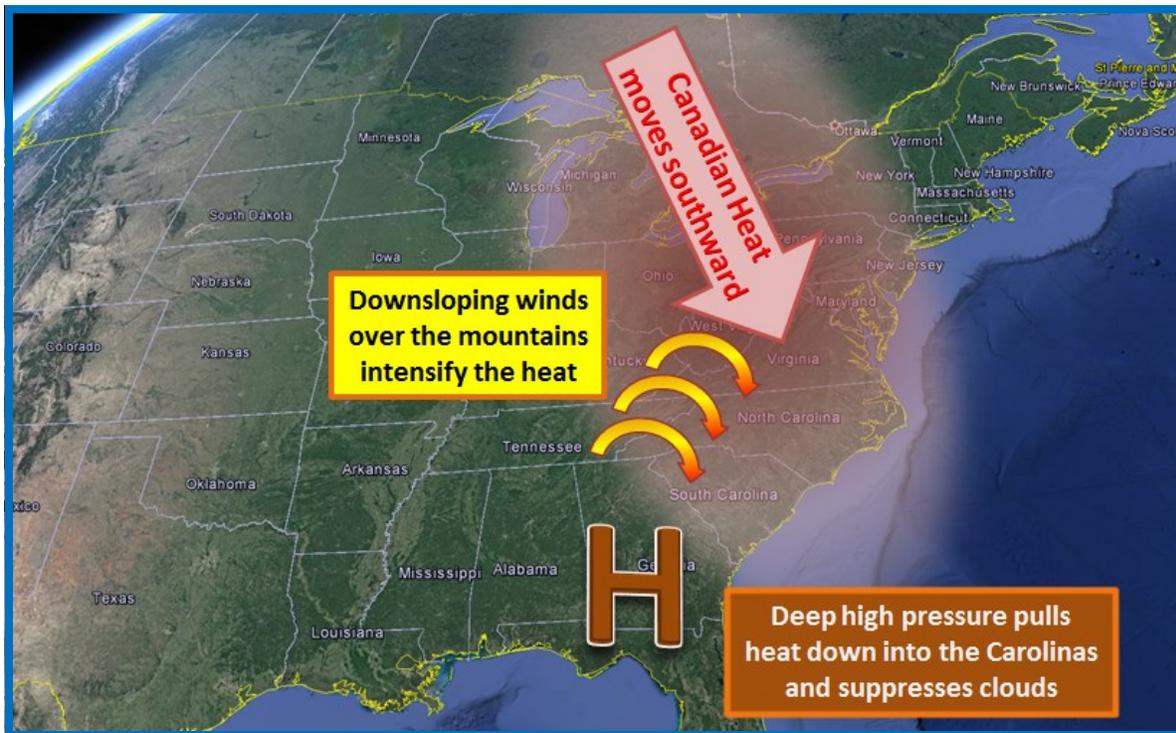
- Top floor rooms DO NOT protect you.
- Exterior rooms and rooms with windows DO NOT protect you.
- NO PLACE OUTSIDE is safe from a tornado.
- If you have no basement, move to an interior room with no windows.
- Quickly move to your basement and bring your emergency supply kit.

weather.gov/tornado

North and South Carolina Heat Waves

- Tim Armstrong

Every summer brings hot weather to the Carolinas, but occasionally a period of exceptional heat develops and lingers for days or weeks. These **heat waves** can injure and even kill people, animals, and plants exposed for long periods to the sun and high temperatures. Large electrical demand for air conditioning can, in exceptional cases, lead to local or regional power disruptions. Crops and livestock can also be affected by drought which has accompanied some of our worst heat waves. Destructive wildfires can spread in the dry conditions during these drought-heatwave combinations.



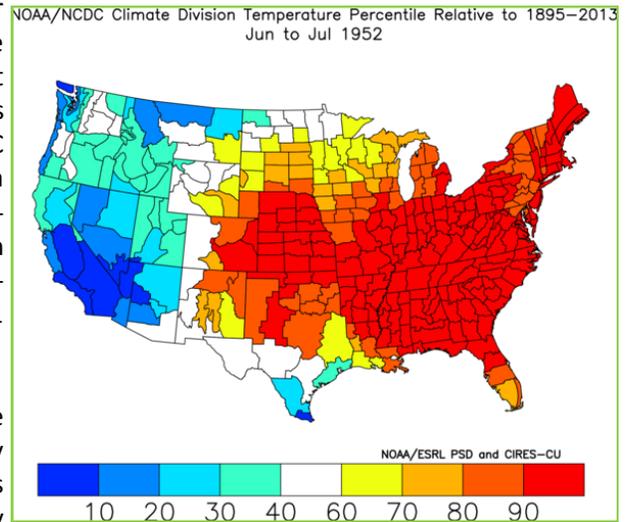
The official NWS definition of a heat wave is **"a period of abnormally and uncomfortably hot and unusually humid weather, typically lasting two or more days."**

Interestingly, most Carolina heat waves originate as a region of well-above normal temperatures in Ontario, Canada three or four days before reaching the Carolinas. This Canadian heat is the result of strong high pressure across the Great Lakes. If this high pressure region is forced to move south, the heat will follow it down into the Mid-Atlantic region. The heatwave then begins across the Carolinas as the high moves into Georgia, often merging with the Bermuda High offshore. Westerly wind experiences compressional warming as it descends the eastern slopes of the Appalachians, adding a few more degrees to an already hot airmass. Sinking atmospheric motion associated with the high pressure area further heats and dries the air aloft, creating an environment where clouds and afternoon thunderstorms cannot easily develop.

Very few Carolina heat waves extend south to the Gulf Coast or Florida as this typically requires the high pressure region to be located farther west. Since our heat waves often originate to the north, many of the dates associated with the worst Carolina heat waves also show up in heat wave studies for Virginia through New Jersey and Pennsylvania. Here are three of the worst heatwaves ever to affect the Carolinas.

June 22 to July 31, 1952

The summer of 1952 was, at the time, the hottest summer ever recorded across the eastern half of the United States. Well above -normal temperatures for most of June became exceptionally hot during the last week of the month. All-time high temperatures were recorded in a number of locations including Wilmington, NC where the temperature hit 104 degrees on June 27th, 1952, a record that still stands today. New Bern, NC reached 106 degrees on July 22, 1952, setting not just their all-time record high temperature but also the all-time highest daily average temperature of 93.5 degrees. (The morning low was an oppressive 81 degrees)



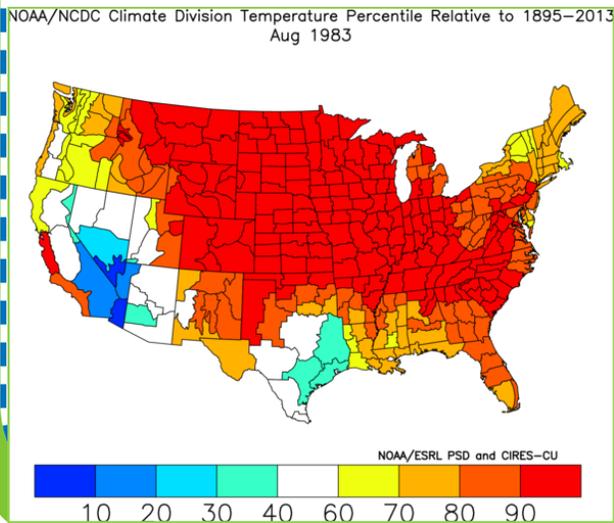
High temperatures were only in the 80s and lower 90s for the first half of July, but the heat wave came roaring back on July 18th. In Florence and Columbia, SC 100+ degree temperatures occurred on 8 out of 11 days from July 20th through July 30th. Hickory, NC set its all-time record high of 105 on July 29th. At least six deaths were blamed on the heat, and agricultural losses to the tobacco crop in North Carolina alone may have approached \$10 million. Other all-time record highs established during this event include 104 in Winston-Salem, NC; 106 in Marion, NC; 108 in Cheraw, SC; and 109 in Bamberg, SC. This heat wave is even more amazing when considering that very few homes had air conditioning in 1952.

Highest temperatures observed during the summer 1952 heat wave

Asheville, NC	98	Fayetteville, NC	105	Columbia, SC	107
Hickory, NC	105*	Wilmington, NC	104*	Florence, SC	104
Charlotte, NC	103	New Bern, NC	106*	Myrtle Beach, SC	104*
Greensboro, NC	101	Hatteras, NC	97*	Georgetown, SC	104
Raleigh, NC	105*	Greenville-Spartanburg, SC	104	Charleston, SC	101

* red highlight indicates all-time record high temperature for this location

August 17 to August 25, 1983



The spring and summer of 1983 experienced low rainfall totals and worsening drought conditions. Then in July rainfall across North Carolina was some of the lowest on record. Temperatures soared well into the 90s beginning August 17th and 18th, starting a severe heat wave that would last for a solid week. The worst of the heat wave occurred from August 20-23 when most Piedmont locations had high temperatures above 100 degrees for four consecutive days.

The Fayetteville, NC airport recorded a high temperature of 110 degrees on August 21, 1983, establishing a new record for the highest temperature ever recorded in the state of North Carolina.

Pageland, SC set its all-time record high of 106, and Newberry, SC set its all-time record high of 108 on August 21, 1983. Extreme heat wasn't limited to just the Piedmont and Coastal Plain; Asheville, NC reached 100 degrees, the hottest ever recorded in that mountain city. Caesar's Head, SC, at nearly 3,000 feet elevation in northern Greenville County, SC, reached 99 degrees on August 21st to set their all-time record high. Impacts from the heat included at least 15 fatalities across the nation, the loss of 600,000 domestic turkeys in North Carolina and 900,000 chickens in Georgia, and all-time high electricity usage on both the Duke Power and Carolina Power & Light systems.

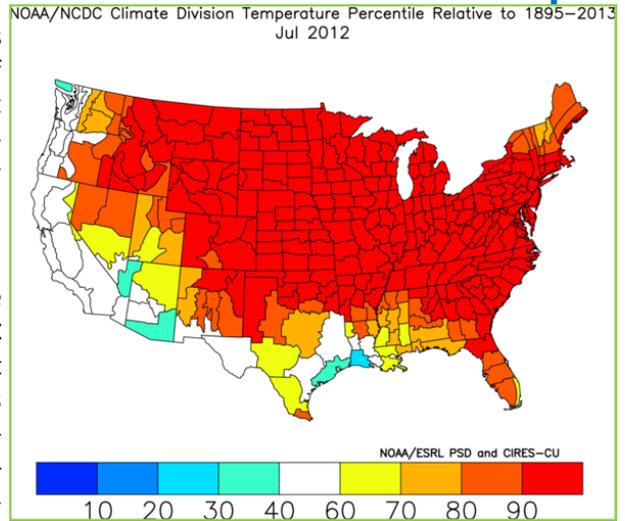
Asheville, NC	100*	Fayetteville, NC	110*	Columbia, SC	107
Hickory, NC	102	Wilmington, NC	100	Florence, SC	103
Charlotte, NC	103	New Bern, NC	100	Myrtle Beach, SC	100
Greensboro, NC	100	Hatteras, NC	90	Georgetown, SC	103
Raleigh, NC	101	Greenville-Spartanburg, SC	103	Charleston, SC	100

** red highlight indicates all-time record high temperature for this location*

June 23 to July 29, 2012

One of the most widespread heat waves in recorded history affected most of the United States during June and July 2012. This heat wave was responsible for at least 82 reported deaths while breaking thousands of high temperature records from Colorado all the way to the East Coast. The worst portion of this heat wave developed across the Carolinas June 29th through July 9th, with another surge of extreme heat July 22nd through the 29th.

The campus of the University of South Carolina at Columbia registered a temperature of 113 degrees on June 29th, establishing a new all-time high temperature record for the state of South Carolina. Columbia, SC had back-to-back 109 degree days on June 29 and 30, 2012 -- the hottest two day stretch in that city's history. Columbia also recorded 11 days with temperatures of 100 degrees or higher during this heat wave. Laurinburg, NC set a new all-time record high of 107 on July 1st. Grandfather Mountain, in the North Carolina mountains at over 5,500 feet elevation, recorded its all-time record high of 82 degrees on July 2nd.



July 2012 was the hottest month ever recorded in history in Wilmington with an average temperature of 84.7 degrees, 3.6 degrees above normal. Five July days reached or exceeded 100 degrees in Wilmington. Overnight low temperatures remained at or above 80 degrees on four dates, establishing a new record for nighttime heat as well.

At the time, 2012 was the warmest year on record for the continental United States, running 3.2 degrees above the long-term average and breaking the prior warmest year's record set in 1998 by a full degree. (This record has since been broken again in 2016) March, June, and July of 2012 were exceptionally warm and more than offset largely normal temperatures during the fall and early winter to clinch the record.

Asheville, NC	98	Fayetteville, NC	106	Columbia, SC	109*
Hickory, NC	102	Wilmington, NC	103	Florence, SC	105
Charlotte, NC	104*	New Bern, NC	99	N. Myrtle Beach, SC	98
Greensboro, NC	102	Hatteras, NC	91	Georgetown, SC	102
Raleigh, NC	105*	Greenville-Spartanburg, SC	107*	Charleston, SC	98

** red highlight indicates all-time record high temperature for this location*

The U.S. Geological Survey Streamgaging Network

- Rick Neuheurz

During and after the flooding of October 2015 and again during and after the flooding from Hurricane Matthew in October 2016, there were several inquiries to our office regarding river gages. The main thing people wanted to know was why there wasn't a river gage in a particular location or if they could partner with us to put a gage in a certain location. For the most part, the National Weather Service is a user of gage data but does not install and maintain gages. This means that we use gages placed by others in our forecast and warning operations rather than installing and maintaining them ourselves. Who are these others who install gages? Sometimes they are local government agencies or private companies as well as other federal agencies. By far, the main provider of most of the gages we use in our river forecast operations here are installed and maintained by the U.S. Geological Survey (USGS).

The USGS partners with agencies like state and local governments or private entities to install, maintain, and operate streamgages in areas that are not part of the USGS Federal Priority Streamgages (FPS) program. These partner agencies share in the funding of gages with the USGS to provide water monitoring that meets the needs of both the USGS and the partner agencies. In our area, partner agencies include agencies of the state government like the NC Department of Environmental Quality, NC Division of Water Resources, SC Department of Natural Resources, and SC Department of Transportation. At a more local level, these partner agencies include city and county governments, or agencies within them, as well as power utilities, paper mills, and water utilities. In some cases, multiple agencies or companies split the cost of the funding among them to reduce the amount of money each group contributes to the program.



*Flooding from NWS Wilmington forecast area
October 2015*

If you are interested in getting a streamgage on a river or creek in your area, or want to learn more about the USGS Streamgaging Program, contact the USGS. In North Carolina, contact Jeanne Robbins at 919-571-4017 or via email at jrobbins@usgs.gov. In South Carolina, contact John Shelton at 803-750-6112 or via email at jmshelto@usgs.gov

Additional information about how USGS Streamgages work is available online in a fact sheet entitled "How Does a U.S. Geological Survey Streamgage Work?" This document, prepared by USGS colleagues in the Texas Water Science Center, describes how USGS streamgages across the county work and how the critical component of streamflow or discharge is measured at USGS streamgages. It is the streamflow or volume of water passing the streamgage at any given time that is needed to develop forecasts and flood warnings.

More information is available at: <https://pubs.usgs.gov/fs/2011/3001/pdf/fs2011-3001.pdf>



Summer Hazards: Weather-Ready Nation

From rip currents and hurricanes to wildfires and flooding—are you prepared for summer hazards?



Weather-Ready Nation

www.weather.gov/safetycampaigns/

Know your Risk, Take Action, Be a Force of Nature!

Summer means vacation, outdoor activities, and fun in the sun! It’s a time when families hit the road to visit national parks or distant relatives. The warm months and long days mean that there is plenty of time for baseball games and barbecues. The sultry temperatures practically invite you to take a dip in the pool or ocean.

But don’t let the sunny days and warm nights fool you. Summer also holds significant weather hazards. Heat waves can be lengthy and deadly. Lightning deaths are at their peak during the summer. Beach hazards such as rip currents can catch the unprepared. And, it’s the start of hurricane season.



Heart

Pet Safety

Never leave your pets in a parked car!




Safety Tips For Your Pets



Watch the humidity



Limit exercise on hot days



Provide ample shade and water



Don't rely on a fan



Watch out for hot pavement

weather.gov/heart

Surf Zone Forecast

- Sandy LaCorte

The National Weather Service in Wilmington, NC issues a surf zone and rip current forecast daily for portions of the North and South Carolina beaches. This forecast provides important information to all beachgoers, including the daily rip current risk ("low", "moderate", "high"), as well as expected weather conditions, water temperatures, UVI index, and any additional hazardous information, including waterspout risk. Before heading to the beach, make sure to be go over the expected beach conditions. When at the beach, always swim near lifeguards— never swim alone!

Beach forecast for Wrightsville Beach

Today	Tonight	Friday	Friday Night	Saturday	Saturday Night	Sunday
20%		20%		30%	60%	40%
Slight Chance T-storms	Mostly Cloudy	Mostly Cloudy then Slight Chance T-storms	Partly Cloudy	Breezy, Mostly Sunny then Chance T-storms	T-storms Likely	Chance T-storms
Hi 83 °F	Lo 76 °F	Hi 85 °F	Lo 78 °F	Hi 87 °F	Lo 76 °F	Hi 84 °F

Today: A slight chance of showers and thunderstorms after 7am. Mostly cloudy, with a high near 83. South wind 5 to 10 mph, with gusts as high as 17 mph. Chance of precipitation is 20%.

Tonight: Mostly cloudy, with a low around 76. Southwest wind 9 to 11 mph.

Friday: A slight chance of showers and thunderstorms before 8am, then a slight chance of showers and thunderstorms after 2pm. Partly sunny, with a high near 85. Southwest wind 11 to 17 mph, with gusts as high as 22 mph. Chance of precipitation is 20%.

Friday Night: Partly cloudy, with a low around 78. Southwest wind around 18 mph, with gusts as high as 23 mph.

Saturday: A chance of showers and thunderstorms, mainly after 2pm. Mostly sunny, with a high near 87. Breezy, with a southwest wind 18 to 24 mph, with gusts as high as 30 mph. Chance of precipitation is 30%. New rainfall amounts of less than a tenth of an inch, except higher amounts possible in thunderstorms.

Saturday Night: Showers and thunderstorms likely, mainly between 1am and 2am. Mostly cloudy, with a low around 76. Chance of precipitation is 60%. New rainfall amounts between a quarter and half of an inch possible.

Sunday: A chance of showers and thunderstorms. Mostly cloudy, with a high near 84. Chance of precipitation is 40%.

Rip Risk / Low

Life threatening rip currents often occur in the vicinity of inlets, groins, jetties, and piers. Always supervise those who cannot swim and remember to heed the advice of the local beach patrol and flag warning systems.

UV Index / High

High risk of harm from unprotected sun exposure. Protection against sunburn is needed. Reduce time in the sun between 10 a.m. and 4 p.m. Cover up, wear a hat and sunglasses, and use sunscreen.

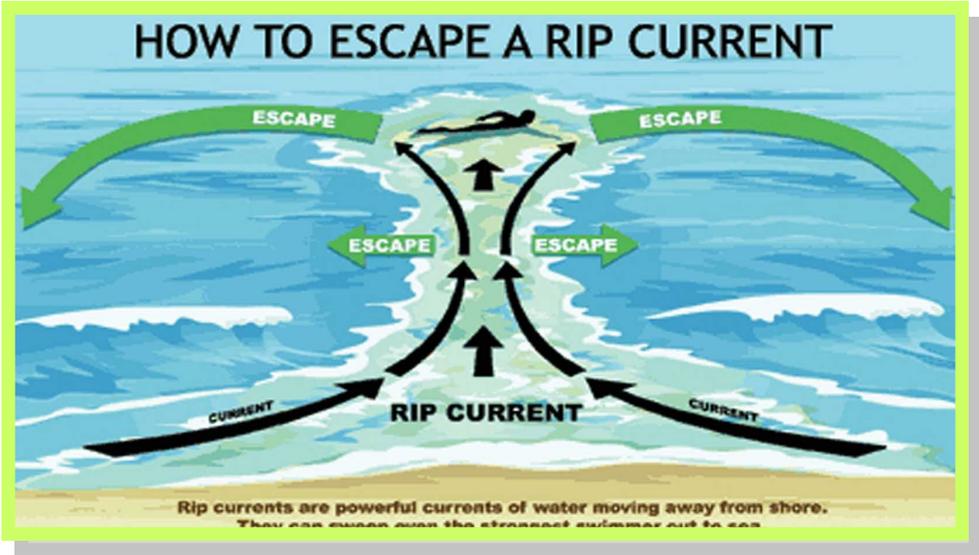
Water Temperature

Upper 70s

National Weather Service
Wilmington NC
RIP CURRENT RISK for 6/22/2017
Valid as of 503 AM EDT

EXPERIMENTAL

Surf Zone Forecast Example



Rip Current/Beach Hazards Forecast Page: www.weather.gov/beach
Additional Rip Current Information: <http://www.ripcurrents.noaa.gov/>

Want to Become a Weather-Ready Nation Ambassador?

- Steve Pfaff

It's no surprise for many that live in southeast NC and northeast SC that we are susceptible to a wide variety of weather impacts. In fact, our part of the country is like no other when it comes to the different hazards we have to prepare for including wind driven wildfires, hurricanes, ice storms, flooding, tornado outbreaks, severe thunderstorms, drought, etc. Although many of these events do not occur routinely, if we fail to plan for them then many will become caught off guard by their impacts. The National Weather Service (NWS) is responsible for doing storm survey assessments of areas hit hard by severe weather, and a common theme we hear from those who were hit hardest is – "I can't believe this happened to me". While most people agree that we have an exposure to hazardous weather, only a small segment of the population is ideally prepared to deal with extreme weather events.

During a typical year the United States has 100,000 severe thunderstorms, 5,000 floods and flash floods, 1,000 tornadoes, and 2 land-falling hurricanes. It's no wonder why our Nation needs to be Weather-Ready. While there have been advancements in weather related technology and research that have led to the increased accuracy and warning lead time over the last decade, people are still being killed in great numbers. For instance, during 2011 there were 549 fatalities from tornadoes – almost 300 people during the Alabama outbreak on a single day! As a result, the NWS has started a new program called Weather-Ready Nation to enhance community resilience in the face of extreme weather events across the Nation.

The Weather-Ready Nation Ambassador program is the initiative that recognizes a wide variety of partners in their efforts to advocate weather safety and planning. The Ambassadors help to unify weather safety efforts, are action-oriented, inclusive, and help lead to new partnership opportunities with the NWS. The Ambassador program is open to any club, organization, company, civic group, or government agency (Local/State/Federal) and is free to join. There are no formal guidelines or requirements to become an Ambassador other than to sign-up and become integrated into the pipeline of weather safety information through the Weather-Ready Nation program. Consider the following - does weather potentially impact your family, friends, club members, staff or co-workers? If you answered yes then consider joining to become a Weather-Ready Nation Ambassador. Help the NWS to better serve our local communities by signing up!

For more information visit: <http://www.weather.gov/ilm/wrn>



How the National Weather Service Leverages Social Media

From NWS Weather Ready Nation—Summer Safety Campaign

Severe weather can occur anytime of the year, day or night, across the United States, causing billions of dollars in damage and possibly numerous injuries or fatalities. The primary mission of the National Weather Service (NWS) is to protect lives and property through the timely issuance of watches and warnings when hazardous weather is impending or imminent.

“The National Weather Service in (insert city/town name here) has issued a Severe Thunderstorm Warning for the following counties until 5:00 PM.”

Whether the threat is from a severe thunderstorm, a flash flood, or a tornado, the quick dissemination and retrieval of warning information for these hazards is vital to the public. As mobile and smartphone technology has improved over the past several years, it has become another useful method to receive life-saving information from these alerts. Watch and warning information can still be heard on NOAA All Hazards Weather Radio and local radio, or seen scrolling across the bottom of the television screen from local broadcast stations. As technology continues to improve, the list of resources for instant communication will continue to grow.

Today, social networking platforms such as Facebook and Twitter have made their way towards the top of the list of widely used news resources.

NWS offices across the country utilize these popular media platforms on a daily basis for not only raising awareness of life-threatening weather, but also for weather forecasts, weather-related education and outreach. “Social media is one of our most powerful tools when it comes to talking about severe weather with the public”, said Rick Smith, the Warning Coordination Meteorologist at the National Weather Service office in Norman, Oklahoma. “Facebook, Twitter, YouTube and other platforms give us a direct link to the people that we serve, and allow us to not only share information to help people prepare for and deal with severe weather, but also to gather storm reports from the public.”

One of the most important elements of the forecasts and warnings from the NWS is the call to action for the recipients of the message. Knowing what to do and how to react swiftly, safely, and responsibly are a large part of the education and outreach of the NWS when it comes to severe weather alerts. Throughout the year on quiet, fair-weather days or before a severe weather event, NWS meteorologists educate the public on what societal impacts can be expected from severe weather and what safety precautions should be taken. If a Tornado Warning is issued for your area and you are in your vehicle, what action should you take to protect you or your family? If you are outside at a youth soccer game or any other outdoor sporting event and a severe thunderstorm warning has been issued, where should you take shelter? Knowing the answers to these questions and being able to react quickly and responsibly could make the difference between life and death.



...Continued on Page 12

The NWS utilizes social media as an additional resource to quickly disseminate information about severe weather watches or warnings. Social media outlets are also great for retrieving reports of severe weather information from the public. This information can be extremely useful to meteorologists both during and after an event to verify the existence of the hazard.

This is where ground truth information is crucial, whether it comes from emergency managers, first responders, local media or the public. "Reports come from a variety of sources during severe weather" said Smith. "Those reports are used to help us make critical warning decisions, and to let people in the path of the storm know what they can expect. And with severe storms, each minute and second of warning is precious time to allow people to get ready."

Social Media platforms like Facebook or Twitter have the ability to share and retrieve weather information via photos and videos. NWS forecasters can see storm damage and pictures of hail, which can lead to not only verification of the severe weather hazard but aide forecasters is warning people upstream of any potential ongoing severe weather threat

Leveraging social media during severe weather can have its drawbacks. False or purposely inaccurate severe weather reports inevitably make it into the fold. On many occasions, pictures or videos are shared from events that happened months to a few years ago. Smith says, "False reports can cause delays in the flow of information, and may cause us to release inaccurate, conflicting or confusing information, all of which reduce the effectiveness of those life-saving warnings." Contributing weather information is most appreciated and useful, but only when it's truth.

While storm reports are an important piece to the success of the mission of the NWS, when severe weather is imminent or occurring, it is more important to seek shelter until storms pass, than it is to take and transmit reports to the NWS. Although the NWS is extremely appreciative of storm photos and videos, safety is the first and only priority when storm clouds threaten.

To follow your local NWS office on Facebook and Twitter, visit www.weather.gov and by searching for your local forecast, your local office will be displayed and from there you can visit their webpage and follow the links to their social media.

Air Quality: It Matters!

Particulate Matter

Airborne particles such as **smoke, dust, dirt, soot, and salt**. The sources of these particles are numerous- including vehicles, factories, fires, and any other natural or human activity resulting in the addition of particulates into the air.

Ground Level Ozone

Ground level ozone is not directly emitted into the air, but forms when **nitrogen oxides (NOx)** emissions react with other **volatile organic compounds (VOCs)** in the presence of heat and sunlight.

Emissions from industrial facilities and electric utilities, motor vehicle exhaust, and chemical solvents are some of the major sources of NOx and VOCs.



weather.gov/airquality

Weather.gov on Your Mobile Phone

From: Weather-Ready Nation

Take the weather with you on your mobile phone! Wherever you are, you can get the local weather forecast from the National Weather Service with one click on your home screen. Bookmark **mobile.weather.gov** to make sure that you have the latest weather news and information on the go.

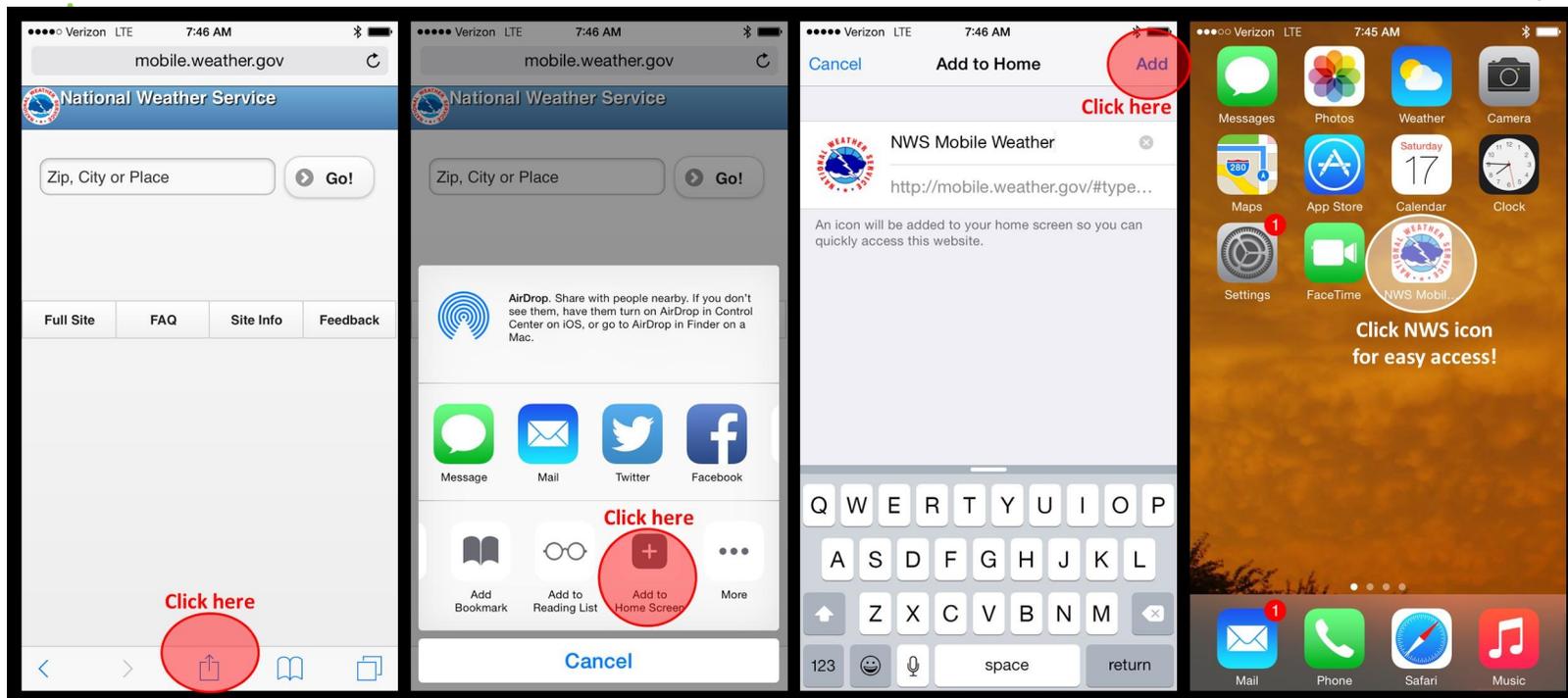
How can you add mobile.weather.gov to your mobile phone's Home Screen? t's easy! Learn how to add the mobile version of weather.gov to your iPhone or Android phone.

Follow these three steps for one-click access to your local forecast.

If you have an iPhone...

Visit **mobile.weather.gov** using Safari on your iPhone.

1. Click the Send button at the bottom of the screen.
2. Choose "Add to Home Screen" and tap "Add."



Weather.gov on Your Mobile Phone

From: Weather-Ready Nation

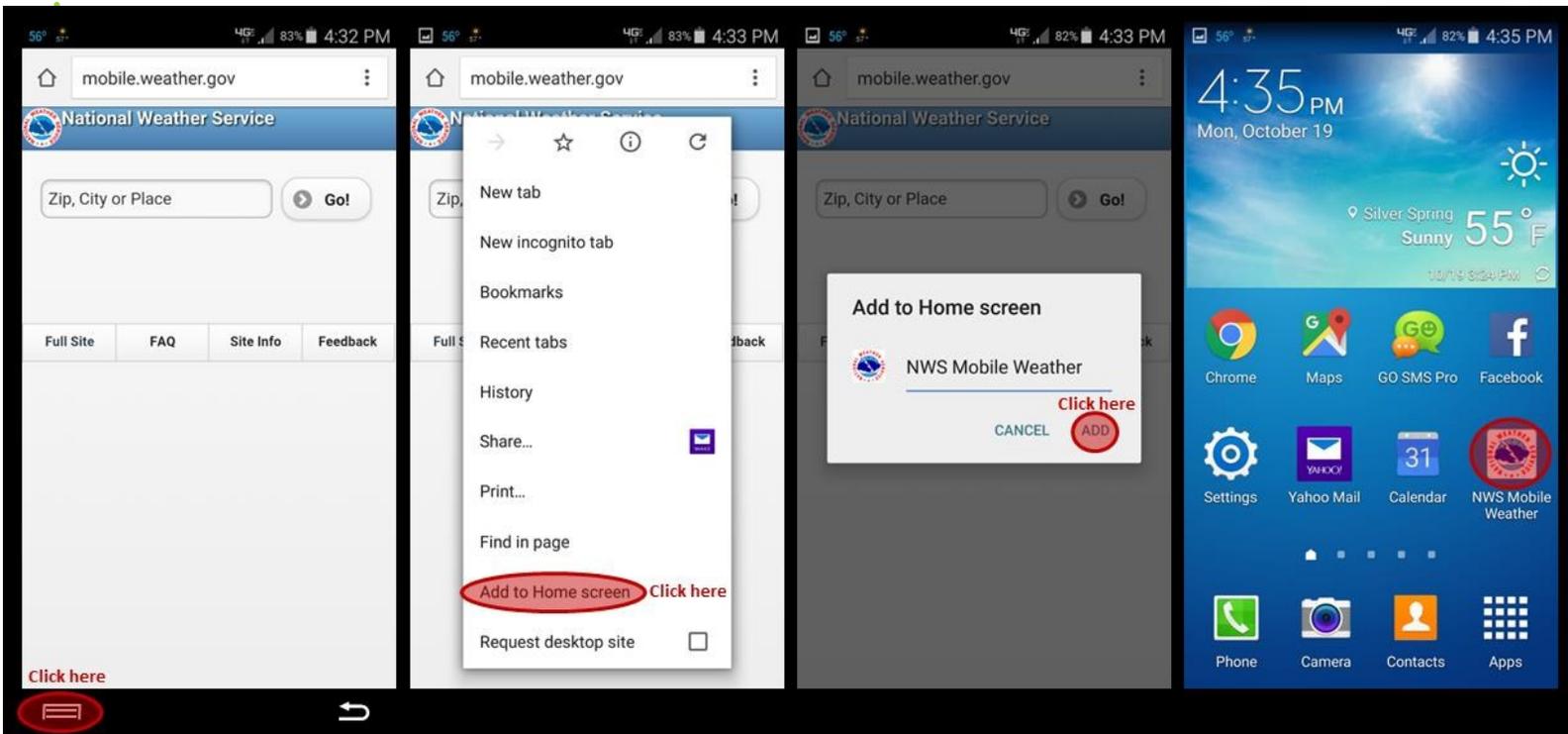
If you have an Android mobile device...

There are a number of browsers that will allow you to add mobile.weather.gov to your home screen. For example, on Chrome for Android:

Visit **mobile.weather.gov** using Chrome on your Android phone

1. Click the menu button

Choose "Add to Home Screen."



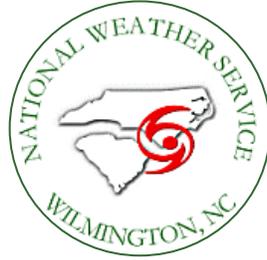
That's it! That's all it takes to get local weather information from the National Weather Service on your iPhone or other device.

For other mobile platforms, if you do not know how to bookmark a page on your phone, open your browser and search "how to bookmark a page on _____" with the blank being filled in with your model of phone.

Interested in other sources for weather alerts? Go **www.weather.gov/subscribe** for alternative options for weather alerting services or visit your mobile phone's app store for commercial app options.

National Weather Service
Weather Forecast Office
Wilmington, North Carolina

2015 Gardner Drive
Wilmington, NC 28405
Phone: (910) 762-4289
www.weather.gov/ilm



Webmaster's Email: ILM.webmaster@noaa.gov



We need your Storm Reports!!

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The Wilmington Wave
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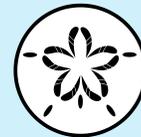
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and you share storm reports and any weather questions you might have!*