

The Wilmington Wave

National Weather Service, Wilmington, NC

VOLUME V, ISSUE II

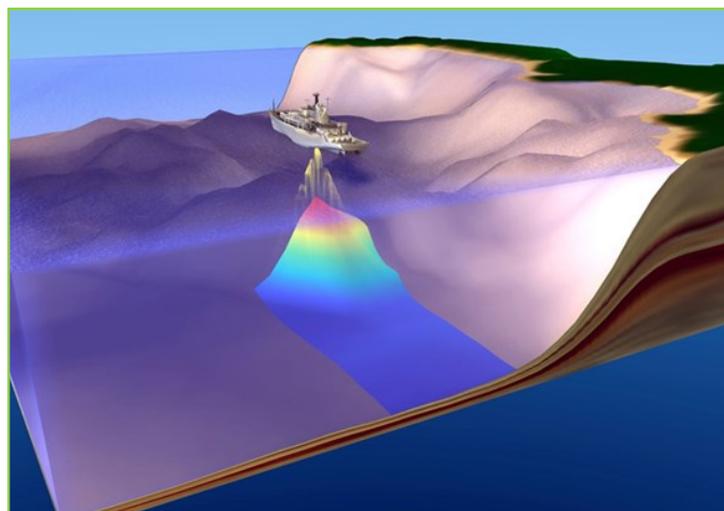
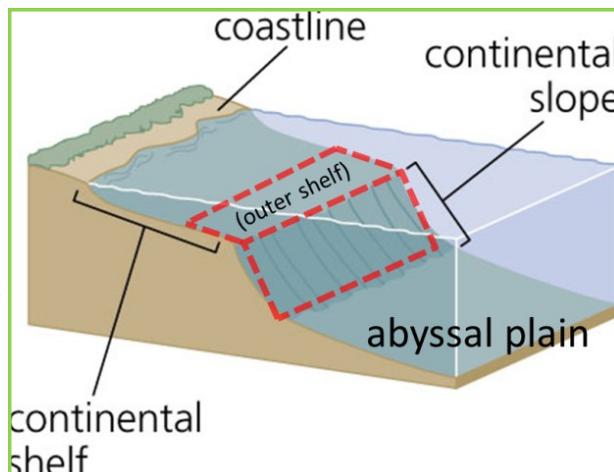
SPRING 2016



East Coast Threat: The Submarine Landslide Tsunami

- Steve Pfaff

Most people think of tsunamis as a Pacific or Indian Ocean hazard based on the devastating tsunamis that occurred from the large Dec 26, 2004 Indonesia quake and the March 11, 2009 Japan earthquake. Although more tsunamis have occurred in the Pacific Ocean versus the Atlantic Ocean people along the immediate U.S. East Coast are at risk too. There are multiple ways in which a tsunami can form in the Atlantic Ocean, but one type, called a submarine landslide tsunami, can develop just off the coast in an area called the Continental Slope (image right). The continental shelf immediately off the shoreline of the U.S. East Coast is characterized by a broad and gradual slope. The location at the edge of the continental shelf that descends toward the abyssal plain is called the continental slope. The continental slope is characterized by a sharp drop-off, and submarine landslides occur in this zone.



During recorded history there have been tsunamis generated by submarine landslides off the Eastern North American Coast and the most recent one to occur was in Newfoundland in 1929. During this tsunami event over 40 villages were destroyed and 28 people died. It should be noted that the earthquake region that

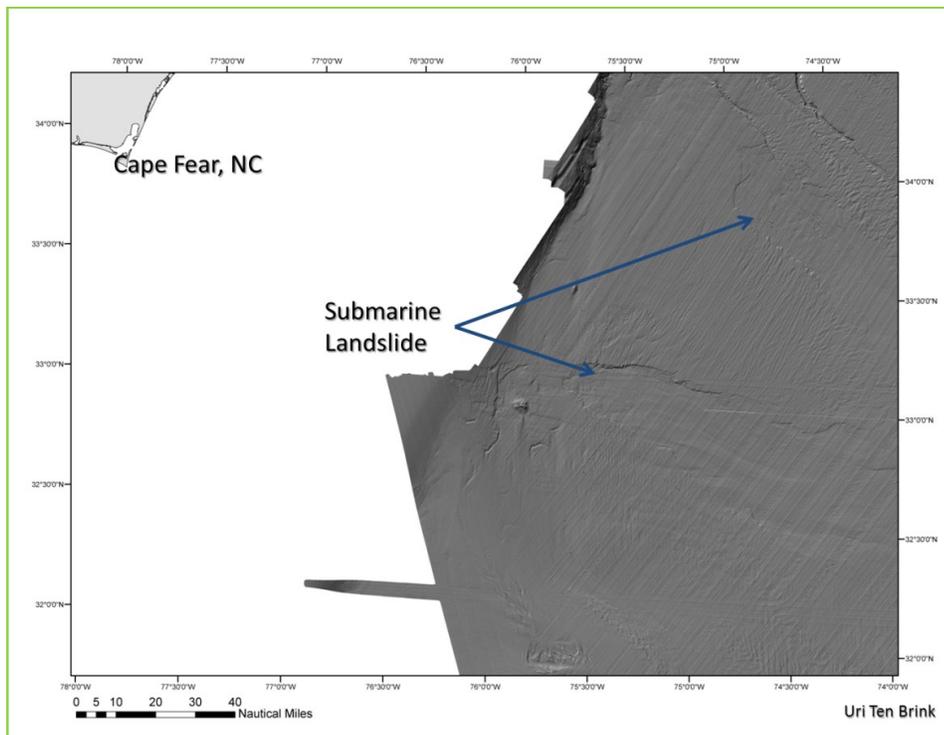
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would trigger a submarine landslide is limited to the outer shelf and continental slope region as indicated by the red dashed area. The United States Geological Survey at Woods Hole has determined that an earthquake less than magnitude 4.5 would not cause enough disruption to generate a submarine landslide. Depending on the proximity of the slide to the coast, the tsunami could directly reach the coastline within 1 to 4 hours. High resolution multi-beam bathymetric survey data from the USGS (image on bottom of page 1) has provided researchers with incredible data to better understand the stability of the continental slope, potential impacts, and processes of submarine landslide events.

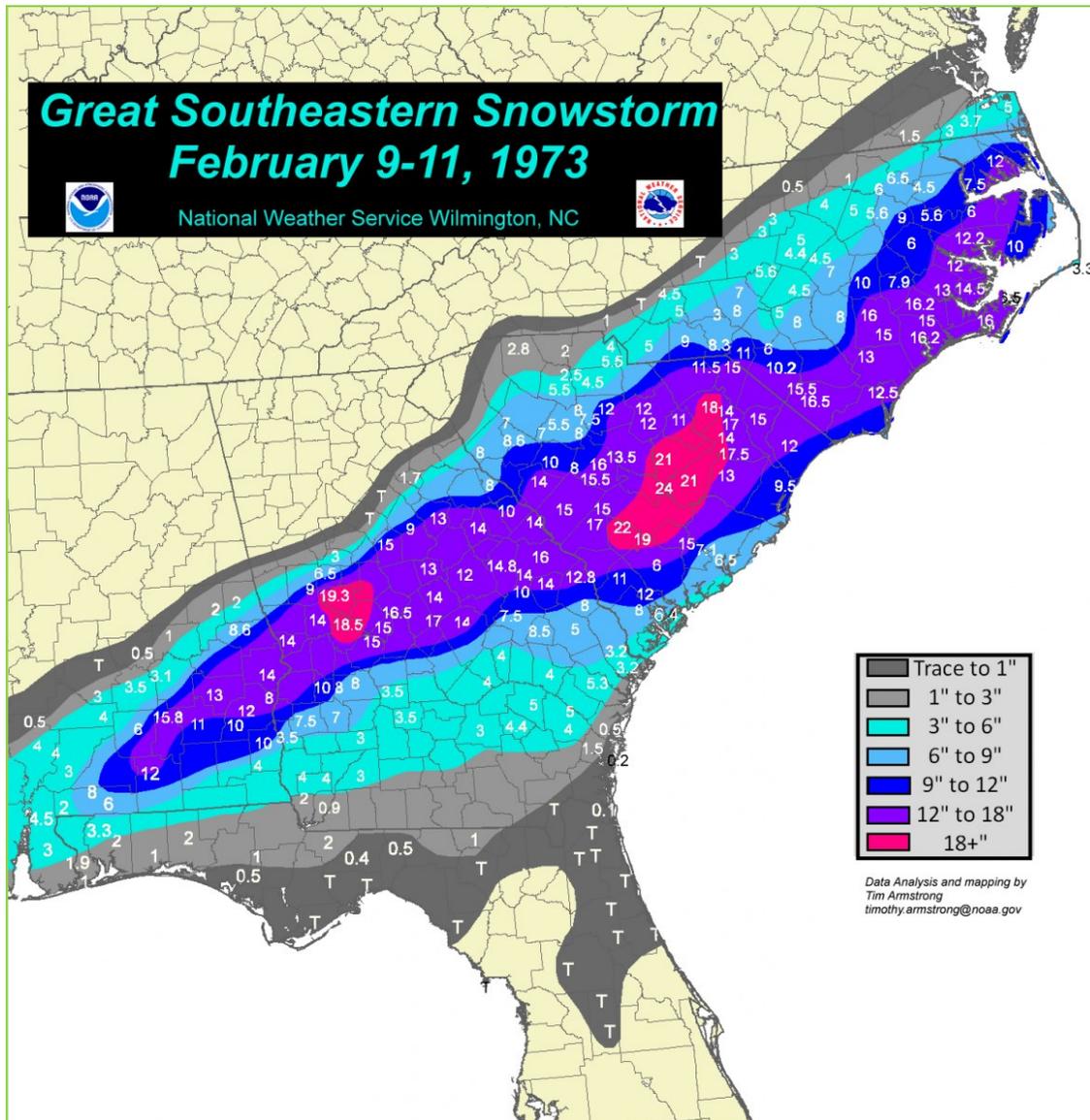
The USGS Woods Hole Research Center high resolution bathymetry data shows evidence of submarine landslides southeast and east of Cape Fear, NC (image below). The slide southeast of Cape Fear occurred between 8 and 14 thousand years ago and likely generated a tsunami. Another submarine landslide off Currituck NC was modeled by the USGS to determine the magnitude of the tsunami it generated. Their models found that waves from a Currituck slump would break approximately 28 miles offshore and form a tsunami bore wave that continues to propagate toward land. The waves could have been large enough to overtop some of the dunes along the Outer Banks!



The National Tsunami Warning Center (NTWC) in Palmer Alaska is responsible for monitoring for tsunami activity that could impact the U.S. East Coast. If an earthquake occurs potentially generating a tsunami, then the NTWC would issue a Tsunami Watch, Warning, or Advisory to inform the public. The local NWS offices along the coast would further disseminate the messages to a variety of partners from Emergency Managers and Responders to the United States Coast Guard. Although the probability of a submarine tsunami along the U.S. East Coast is extremely low the impacts they would cause if one occurs would be very high. As a result, coastal counties and several coastal communities across southeast NC and northeast SC are designated as TsunamiReady. These counties/communities have tsunami hazards incorporated into their Emergency Action Plans and participate in yearly tsunami exercises to stay better prepared.

1973: The Great Southeastern Snowstorm

- Tim Armstrong

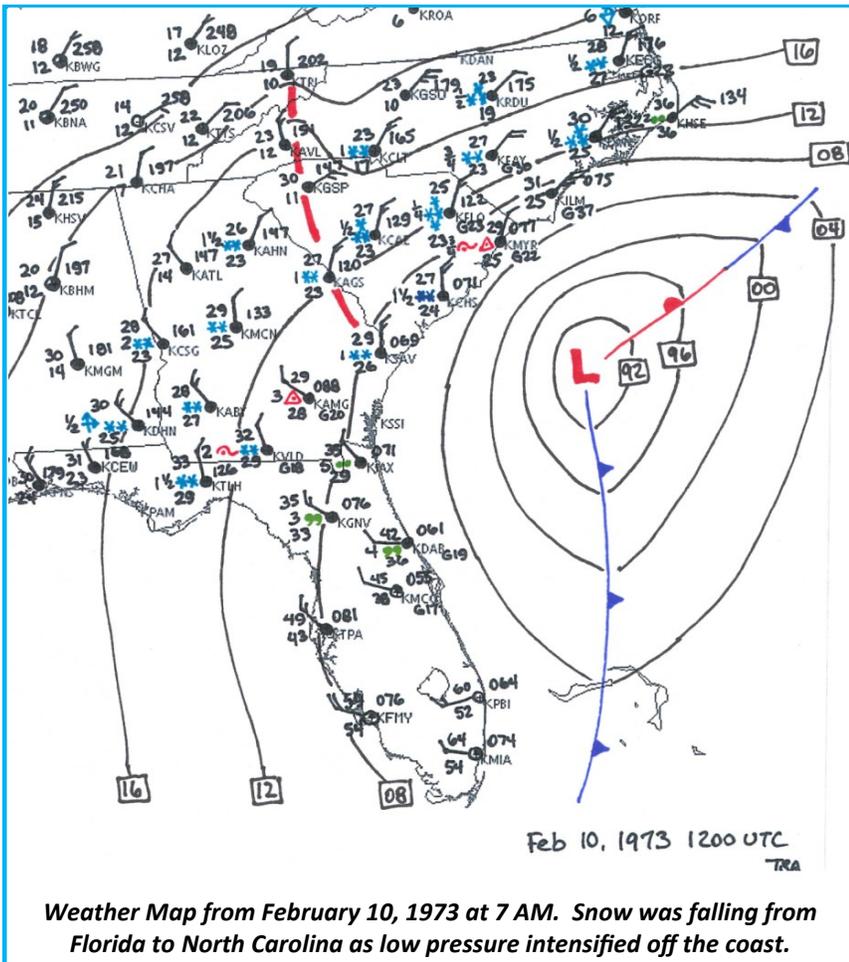


If you are a South Carolina native and over the age of 50, chances are you remember the great snowstorm of February 9-11, 1973. This was the single largest snowstorm in history for most locations across the eastern half of South Carolina with all-time snowfall records broken in Florence, Darlington, and Columbia.

The storm system that brought the record snow to South Carolina began its life as a low pressure center in the central Gulf of Mexico on February 9, 1973. The low intensified as it crossed Florida during the evening of February 9th and emerged into the Atlantic Ocean on February 10th. Heavy snow began across southern Alabama on the 9th with over a foot reported in the towns of Clayton and Pittsview near the Georgia border. Heavy snow continued across central Georgia on February 10th including 19 inches measured in Thomaston, 16.5 inches in Macon, and 14 inches in Columbus.

In South Carolina heavy snow occurred across all but the northwestern portion of the state. The highest totals occurred in a region from Bamberg (19 inches) to Manning and Wedgefield (21 inches each) to Florence (17 inches) and Darlington (18 inches). The largest snowfall total came from the Clarendon County town of Rimini where an amazing 24 inches of snow fell! Large snowfall amounts continued into eastern North Carolina including 16.5 inches in Whiteville, 12.5 inches in Wilmington, and 16 inches from Jacksonville to Morehead City.

Thunder actually accompanied the snow in locations from Augusta, GA to Florence and into Wilmington. Thundersnow is a very rare occurrence as the air must be cold enough at the surface to allow snow to fall, yet much colder still aloft to produce the instability thunderstorms need.

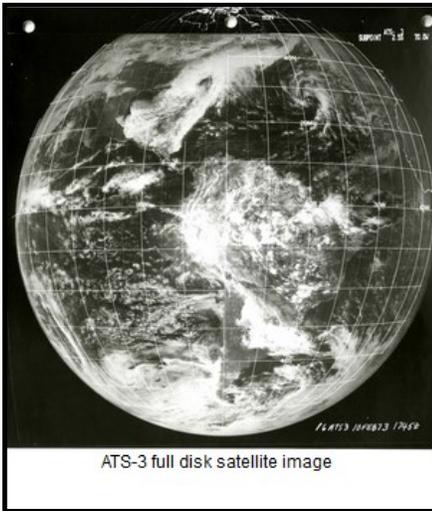


About 30,000 tourists traveling to or from Florida and more northern states were stranded on the State's highways. Many were rescued by helicopter and some by other vehicles. When the hotels and motels were filled, they were housed in armories, schools, and churches. Farmers gave aid to travelers stranded near their homes. Many farm homes had 50 to 60 unexpected guests for a day or two." The snow was accompanied by strong winds and followed by severe cold. Drifts up to 7 or 8 feet could be found in some locations and all highways in the central part of the State were closed for from 2 to 4 days. Many tons of food and supplies were airlifted by helicopter to snowed-in families. At least 200 buildings collapsed, as did thousands of store awnings and carports..."

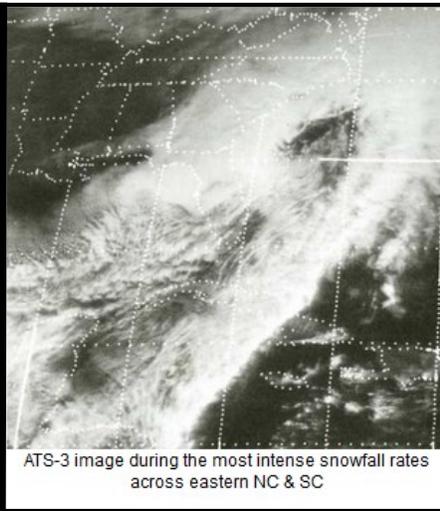
-South Carolina State Climatologist

Impacts from this storm were severe and long-lasting. Towns and cities were isolated for many days from Alabama to North Carolina as virtually all roads were completely impassable. Road crews could not keep the interstate system open either; approximately 200 miles of I-75 was closed across Georgia as was a large section of I-95 south of Fayetteville, NC. Many thousands of vehicles were stranded and abandoned as people sought shelter from the cold and snow. The Sumter Daily Item reported at least 11 exposure-related fatalities across South Carolina. Traffic accidents claimed additional lives in Louisiana and Georgia, and in North Carolina a small airplane crashed during the storm killing two and injuring three.

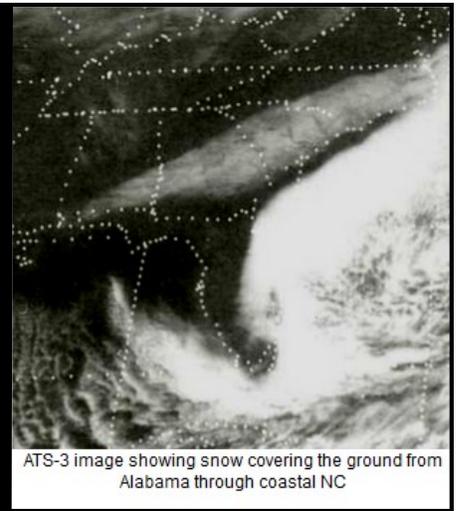
In 1973 the National Oceanic and Atmospheric Administration hadn't started the GOES weather satellite program. NASA however was orbiting a weather satellite named *Applications Technology Satellite 3*, or *ATS-3*, which observed the storm and sent back amazing photos. We contacted the Space Science and Engineering Center at the University of Wisconsin and were able to get scanned images of this satellite data sent to us. Here, are a few of the images.



ATS-3 full disk satellite image



ATS-3 image during the most intense snowfall rates across eastern NC & SC



ATS-3 image showing snow covering the ground from Alabama through coastal NC

Additional details about this historic event including satellite loops, weather maps, and first-hand accounts of the storm are available on our webpage at <http://www.weather.gov/ilm/Feb1973Snow>

Coastal Carolinas AMS/NWA Local Chapter

Calling all local weather enthusiasts!! Did you know that there's a new local chapter of the American Meteorological Society & National Weather Association chapter?! The Coastal Carolinas AMS/NWA chapter is still fairly new, as they were founded in 2013. The group is comprised of National Weather Service, media, and private sector meteorologists, as well as local area students, retirees, and weather enthusiasts. From Myrtle Beach, SC to Wilmington, NC, the chapter is gradually growing, and while a majority of their interests lie within this area, anyone across the Carolinas is welcome. Anyone with an interest in weather is encouraged to attend and participate as meetings are held throughout the year across the area.

For more information at the chapter, as well as upcoming meeting information, visit:

www.ametsoc.org/chapters/coastalcarolinas



All-time Temperature Extremes

- Tim Armstrong

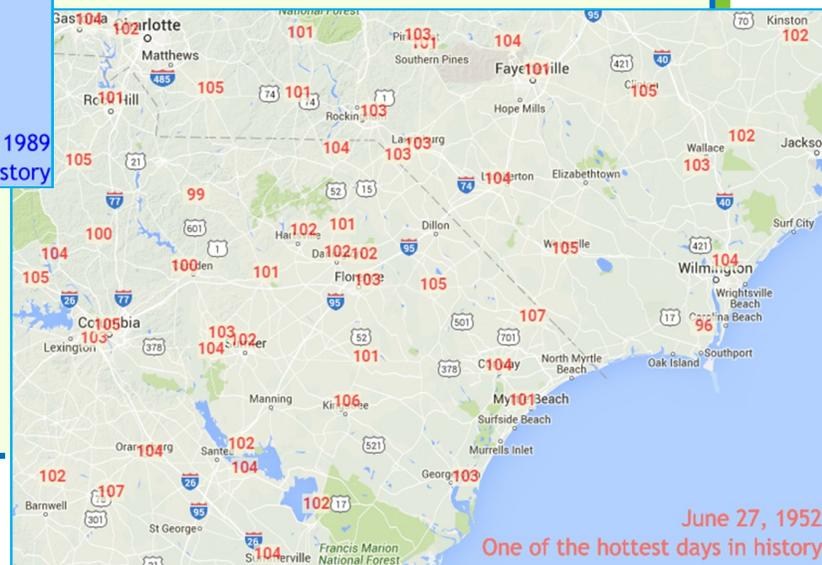
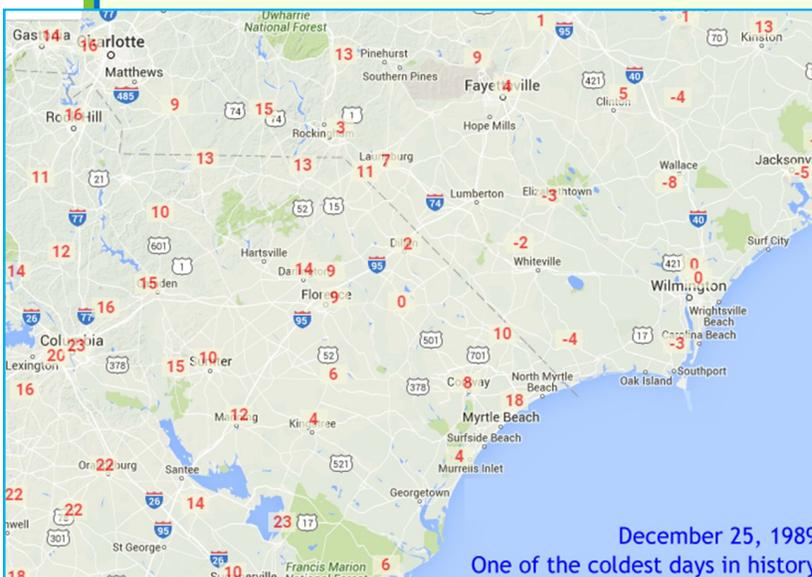
How hot and cold has it ever been here in the eastern Carolinas?
We've searched through our record books to find the all-time extremes for a number of cities in our area.

HOTTEST ON RECORD

| | | | | |
|---|--|--|---|--|
| Wilmington, NC 104° on June 27, 1952 | Whiteville, NC 105° on August 9, 2007 | Elizabethtown, NC 105° on August 11, 2007 | Lumberton, NC 108° on July 21, 1926 | Southport, NC 103° on June 26, 1952 |
| Florence, SC 108° on June 27, 1954 | Myrtle Beach, SC 104° on August 5, 1954 | Darlington, SC 109° on September 4, 1925 | Georgetown, SC 106° on June 30, 1990 | Dillon, SC 107° on June 28, 1954 |

COLDEST ON RECORD

| | | | | |
|---|--|---|---|---|
| Wilmington, NC 0° on December 25, 1989 | Whiteville, NC -2° on December 25, 1989 | Elizabethtown, NC -3° on December 25, 1989 | Lumberton, NC -2° on December 25, 1989 | Southport, NC -3° on December 25, 1989 |
| Florence, SC 0° on January 21, 1985 | Myrtle Beach, SC 7° on January 16, 1994 | Darlington, SC -4° on January 21, 1985 | Georgetown, SC 4° on February 14, 1899 | Dillon, SC -1° on January 21, 1985 |



2016 Atlantic Hurricane Season Begins June 1st

- Sandy LaCorte

In just under the two months, the 2016 Atlantic Hurricane Season will begin. Are you prepared? Now is the best time to make sure that you and your family, friends, neighbors, and co-workers are ready for when a tropical system affects your area. Do you have enough food to supply each person and pet in your household for a few days? Do you have the supply of medications one may need in an emergency situation? Also, don't forget those whom are elderly and disabled that may need extra care. While having a preparedness kit is extremely important, so is your knowledge of important hazardous event information. Do you know the difference between a 'WATCH' and a 'WARNING'? Do you know that storm surge, rip currents, tornadoes, and flooding are just a few of the hazards that can develop in lieu of a tropical system?

Visit www.nhc.noaa.gov/prepare for important safety information!

Hurricane Preparedness Week is May 15-21, 2016

2016 Atlantic Hurricane Season Tropical Cyclone Names

| | | |
|----------|---------|----------|
| Alex | Hermine | Otto |
| Bonnie | Ian | Paula |
| Colin | Julia | Richard |
| Danielle | Karl | Shary |
| Earl | Lisa | Tobias |
| Fiona | Matthew | Virginie |
| Gaston | Nicole | Walter |

Spring & Summer Hazards: Weather-Ready Nation

With the Atlantic Hurricane Season right around the corner and the transition from Spring into Summer, it's important to be aware and make a plan for the numerous hazardous conditions that are possible through every single season. Are you ready for Spring and Summer weather hazards?

From: Weather-Ready Nation

(www.nws.noaa.gov/com/weatherreadynation/)



Tornadoes, lightning, floods, rip currents and early season heat - spring is three months of danger that can imperil the unprepared. It roars in like a lion, rampaging across the United States throughout March, April and May. And there's one hazard that can strike the coasts at any time: tsunamis.

Don't let dangerous spring weather catch you unprepared! With just a few simple steps, you can be weather-ready for whatever comes this spring.

#SpringSafety

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.

#SummerSafety

SPRING & SUMMER WEATHER HAZARDS

Severe Weather/Thunderstorms, Heat, Lightning, Rip Currents and Other Beach Hazards, Wildfires, Hurricanes, Floods, Poor Air Quality, Drought

Surf Zone Forecast

- Sandy LaCorte

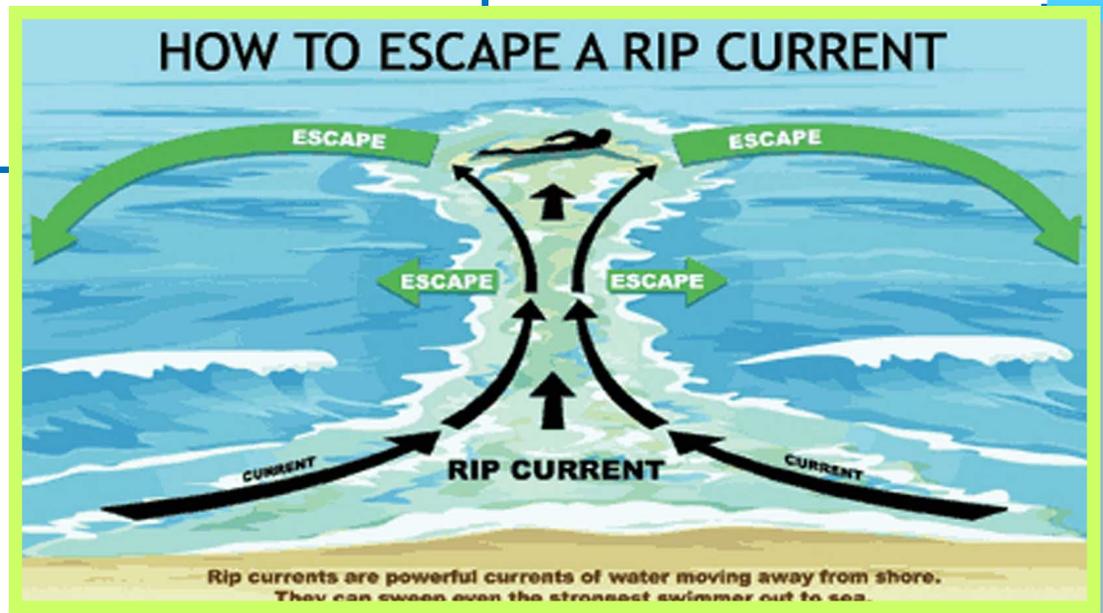
The National Weather Service in Wilmington, NC issues a surf zone and rip current forecast daily for portions of the North and South Carolina beaches. This forecast provides important information to all beachgoers, including the daily rip current risk ("low", "moderate", "high"), as well as expected 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!

SCZ054-211200-
COASTAL HORRY-
INCLUDING THE BEACHES OF...CHERRY GROVE...NORTH MYRTLE BEACH...
ATLANTIC BEACH...WINDY HILL...MYRTLE BEACH GRANDSTRAND...
SURFSIDE BEACH...GARDEN CITY
433 PM EDT WED APR 20 2016

.TOMORROW...
WEATHER.....PARTLY SUNNY.
HIGH TEMPERATURE...AROUND 70.
WINDS.....SOUTHEAST WINDS AROUND 10 MPH.
SURF HEIGHT NORTH OF MYRTLE BEACH....AROUND 2 FEET.
SURF HEIGHT FROM MYRTLE BEACH SOUTH...AROUND 2 FEET.
WATER TEMPERATURE...MID 60S.
ULTRAVIOLET INDEX...VERY HIGH (8 TO 10).
LIGHTNING THREAT...NONE.
RIP RISK NORTH OF MYRTLE BEACH...THE POTENTIAL FOR LIFE THREATENING
RIP CURRENTS IS LOW. HOWEVER RIP
CURRENTS CAN STILL OCCUR...
ESPECIALLY NEAR
INLETS...GROINS...JETTIES AND
PIERS.
RIP RISK FROM MYRTLE BEACH SOUTH...THE POTENTIAL FOR LIFE
THREATENING RIP CURRENTS IS LOW.
HOWEVER RIP CURRENTS CAN STILL
OCCUR... ESPECIALLY NEAR
INLETS...GROINS...JETTIES AND
PIERS.
WATERSPOUT THREAT...MODERATE RISK OF WATERSPOUTS.
OTHER HAZARDS.....WEAK SOUTH TO NORTH LONGSHORE CURRENT.

TIDE INFORMATION...
AT SPRINGMAID PIER...
LOW TIDE AT 1:47 AM
HIGH TIDE AT 7:45 AM
LOW TIDE AT 1:57 PM
HIGH TIDE AT 8:11 PM

Surf Zone Forecast Example



NWS Wilmington NC Rip Current Page: www.weather.gov/ilm/beachrip
Experimental US Beach 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>



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.

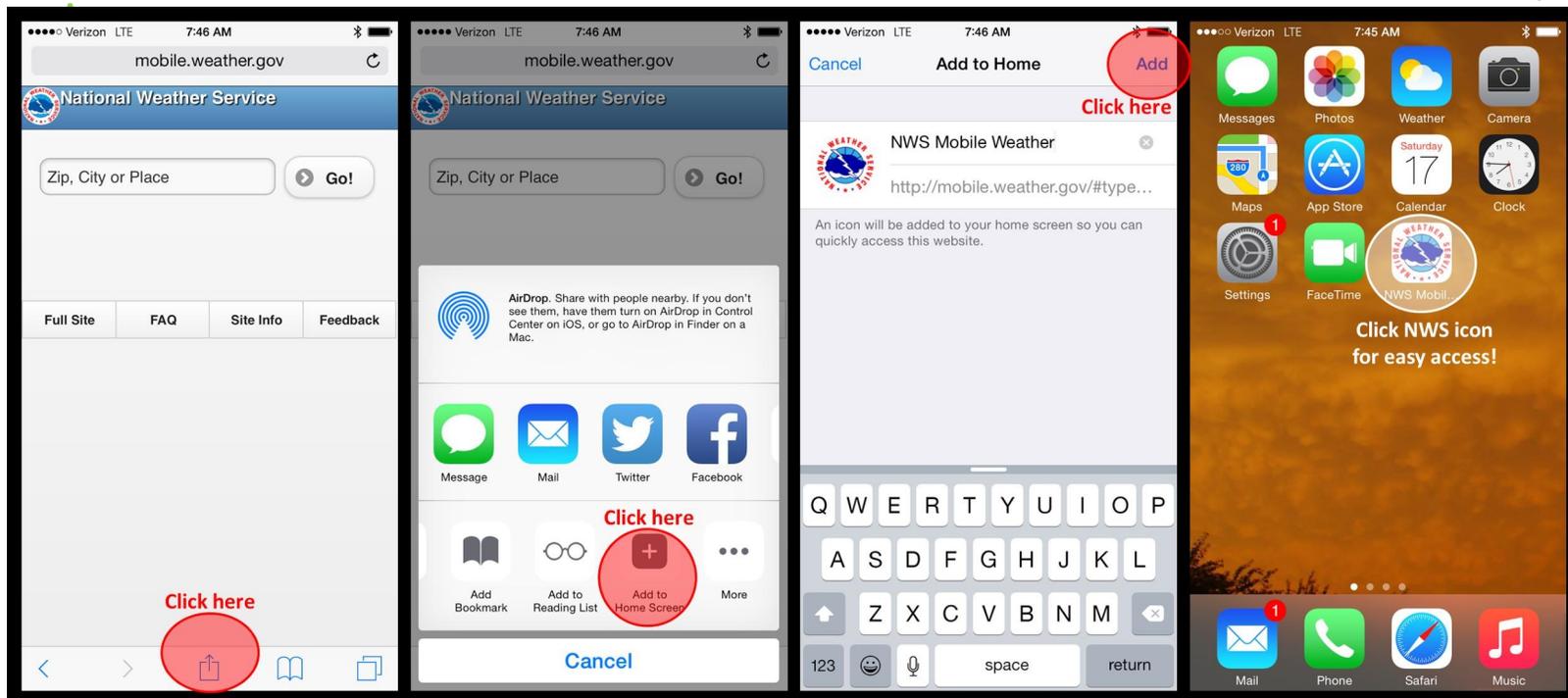
How can you add mobile.weather.gov to your mobile phone's Home Screen? t's easy! Learn how to add the mobile version of weather.gov to your iPhone or Android phone.

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

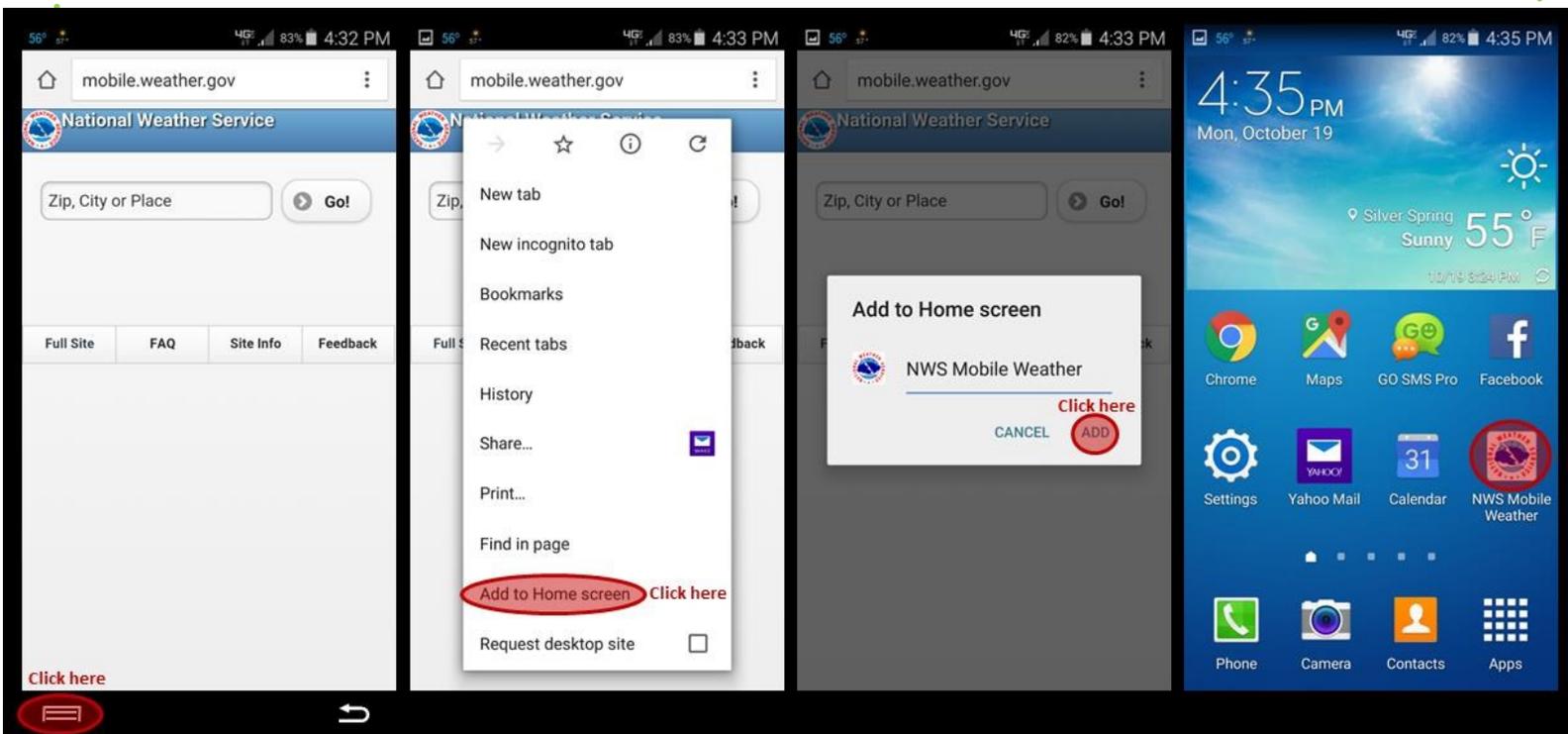
If you have an Android mobile device...

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.

NWS Wilmington Office History

They say everyone has a story, and for the National Weather Service office in Wilmington, NC, that story begins with December of 1870. It was then that the U.S. Signal Corps began taking sporadic snowfall measurements. Jump ahead a few years to 1874, when in April, the first complete and continuous set of weather observations began in a building located in downtown Wilmington, which no longer exists. From historic weather events to multiple moves for the office location, a lot has happened since 1870.



U.S. Post Office building slowly demolished beginning in 1936.

1936

Old office in U.S. Post Office building is demolished.

After being located in the U.S. Post office building for 41 years (1890-1931) the old building was demolished in 1936.

1931
Office moves to Water St.

1940
U.S. Weather Bureau established under the Dept. of Commerce



Take a ride down memory lane through our office history timeline:

<http://www.weather.gov/ilm/TimelineNWSILM>

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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!!

Events of tornadoes, hail, damaging winds,
and flooding are very important to us.

Please call: 1-800-697-3901

Storm reports **ONLY**

Email: ilm.wxreports@noaa.gov

The Wilmington Wave
Volume IV, Issue I

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*Where we share adverse weather information and historical weather events,
and you share storm reports and any weather questions you might have!*