National Weather Service Overview

And

Severe Weather/Tornado Safety

Erik Heden
NWS/Newport/Morehead City
Our Mission

The National Weather Service (NWS)

About

Serving you in every community in the U.S. Check out who we are and what we do!

NWS Mission

Provide weather, water, and climate data, forecasts and warnings for the protection of life and property and enhancement of the national economy.

NWS Vision

A Weather-Ready Nation: Society is prepared for and responds to weather, water, and climate-dependent events.

Weather-Ready Nation Story

Accurate weather forecasts do not always result in a good outcome. The National Weather Service (NWS) learned this difficult... Read more
Office Locations

National Weather Service Office Locations

Background topography courtesy Ray Stemer, Johns Hopkins University
Our Local Office

Eastern part of North Carolina

Includes: Land areas, inland rivers, sounds, and adjacent ocean

Other parts of the state covered by other local offices (Raleigh, Wilmington, etc)
24 hours a day, 7 days a week, plus any overtime for severe weather…we never close!

Two to three forecasters per shift.

Shifts per day: midnight, day and evening.

Management team: 8 am to 5 pm Mon.-Fri. (they work shifts sometimes too!)

In total 22 to 25 people
Weather information from past events, current weather, and forecast

Explore the website and bookmark or save what you like

Go in depth as much as you need
## 7-Day Day Forecast

### Sky cover
- Mostly cloudy
- Mostly clear
- Partly sunny
- A chance of showers

### High/low temperatures
- Today: High 56°F, Low 38°F
- Tonight: High 53°F, Low 38°F
- Wednesday: High 60°F, Low 38°F
- Wednesday Night: High 55°F, Low 38°F
- Thursday: High 60°F, Low 44°F
- Thursday Night: High 55°F, Low 44°F
- Friday: High 67°F, Low 48°F
- Friday Night: High 60°F, Low 48°F
- Saturday: High 64°F, Low 50°F
- Saturday Night: High 60°F, Low 48°F
- Sunday: High 60°F, Low 48°F
- Sunday Night: High 55°F, Low 38°F
- Monday: High 60°F, Low 38°F

### Winds
- Today: Light northwest wind
- Tonight: West wind
- Wednesday: Northwest wind
- Wednesday Night: Light north wind
- Thursday: Light and variable wind
- Thursday Night: Partly cloudy
- Friday: Mostly sunny
- Friday Night: Mostly cloudy
- Saturday: Mostly cloudy
- Saturday Night: Mostly cloudy
- Sunday: Partly sunny
- Sunday Night: Mostly clear
- Monday: Sunny

### Chance of precipitation
- None
- 50%
Check on and off any weather parameter you want

See trends in hourly increments out through 7 day

Digital readout available
Weather Briefings
weather.gov/newport

Created prior to bigger events of severe weather
January 2018 Winter Storm

Summary of Greatest Impacts

- **Wind:** Moderate Confidence – track dependent
- **Surge/Inundation:** Moderate to High Confidence
- **Rainfall Flooding:** High Confidence
- **Tornado:** Low Confidence – track dependent
- **Marine:** Confident – regardless of track

Hurricane Florence Impacts

Most Likely Snow Amount Through Thursday morning

- Storm Confidence:
  - Confidence is high for widespread significant impacts.
  - Highest impacts will be Wednesday night into Thursday morning.
  - Snowfall rates 1” – 2” per hour.
  - Find the most up to date snowfall map, click here
Category of the storm is only related to wind, it does not tell you about all of the impacts with a #hurricane like #florence. Our impacts have not changed with storm surge and catastrophic flooding. Do not let your guard down. weather.gov/media/mhx/Late...
Mobile Forecasts
mobile.weather.gov

Quickly access hourly forecasts, radar, and more from your local office, ANYWHERE in the country.

Can work like a weather “APP” by adding it to home screen.

Also works on PCs.
Severe Weather Talk
Thunderstorm Formation

• All thunderstorms result from the same necessary conditions.

• What are the necessary conditions?
BASIC THUNDERSTORM INGREDIENTS

1) **Moisture** – most notably in the lower levels of the atmosphere

1) **Lifting Mechanism** – the “Push” that triggers the lifting process

1) **Instability** – ability of air to accelerate up when given a push
Lightning

Forsyth County, NC March 2016
Lightning Facts *(U.S. Statistics)*

- All thunderstorms produce lightning and are potentially deadly.
- More than 400 people are struck annually.
- On average kills almost 50 people each year.
- There is no safe place outdoors. Lightning can strike 15 miles or more from the storm ("bolt from the blue").
- Lightning can strike after a storm has passed.
- Lightning can travel through wires and pipes.

*When thunder roars, go indoors!*
What Happens When Lightning Hits the Ground?
Lightning Safety Tips

Outdoors

- Avoid water, high ground, open spaces, tall objects, and metal objects.
- DO NOT shelter under small canopies or trees.
- Find indoor shelter or enclosed metal vehicle.
- Groups should spread out.

Indoors

- Avoid water, cords, plumbing.
- Stay away from doors and windows.
- Unplug and stay away from appliances.
- Refrain from using plugged in phones or laptops.
- Lightning can travel indoors (lines/pipes).
Have you heard thunder while playing outside? What did you do?

Thunderstorms can produce deadly lightning capable of striking up to 10 miles away — so, even if you don't see rain you could be in harm’s way!
Tornadoes

Belhaven, NC April 2014
## Enhanced-Fujita Scale Winds

<table>
<thead>
<tr>
<th>EF Rating</th>
<th>Wind Speeds</th>
<th>Expected Damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF-0</td>
<td>65-85 mph</td>
<td>'Minor' damage: shingles blown off or parts of a roof peeled off, damage to gutters/siding, branches broken off trees, shallow rooted trees tumbled.</td>
</tr>
<tr>
<td>EF-1</td>
<td>86-110 mph</td>
<td>'Moderate' damage: more significant roof damage, windows broken, exterior doors damaged or lost, mobile homes overturned or badly damaged.</td>
</tr>
<tr>
<td>EF-2</td>
<td>111-135 mph</td>
<td>'Considerable' damage: roofs torn off well constructed homes, homes shifted off their foundation, mobile homes completely destroyed, large trees snapped or uprooted, cars can be tossed.</td>
</tr>
<tr>
<td>EF-3</td>
<td>136-165 mph</td>
<td>'Severe' damage: entire stories of well constructed homes destroyed, significant damage done to large buildings, homes with weak foundations can be blown away, trees begin to lose their bark.</td>
</tr>
<tr>
<td>EF-4</td>
<td>166-200 mph</td>
<td>'Extreme' damage: Well constructed homes are leveled, cars are thrown significant distances, top story exterior walls of masonry buildings would likely collapse.</td>
</tr>
<tr>
<td>EF-5</td>
<td>&gt; 200 mph</td>
<td>'Massive/incredible' damage: Well constructed homes are swept away, steel-reinforced concrete structures are critically damaged, high-rise buildings sustain severe structural damage, trees are usually completely debarked, stripped of branches and snapped.</td>
</tr>
</tbody>
</table>
Tornado Safety - Outside

- People in open rural areas may be able to drive away from a distant approaching tornado.
- If tornado is unavoidable, seek shelter in strong building or ditch.
- Do not ride out tornado in auto!

Greensboro, NC April 2018
Tornado Safety – Inside *(best by far!)*

- Seek shelter in a strong building
- *Underground shelter & “safe room” by far the best if “up to code”.*
- Otherwise small interior room on lowest floor for most twisters (bathroom or closet, cover yourself)
- Stay away from windows!!!
- Abandon mobile homes!

Wilson, NC April 2011
Severe Weather Safety

Tornado/High Wind Safety At Home

Where is your safe place at home?

The safest place to be is an underground shelter, basement or safe room.

Mobile homes are NOT safe during high winds!

If no underground shelter or safe room is available, a small, windowless interior room or hallway on the lowest level of a sturdy building is the safest alternative.
Flash Floods

Flash Flood Facts

- Cars can float in water < 2 feet deep
- Moving water can sweep a car away
- As little as 6 inches of rapidly moving water can sweep a person off their feet.
- Most flash flood deaths occur in vehicles.
- Most flash flood deaths occur at night.
- Flash flooding can occur from distant storms.

Raleigh, NC April 2017
Flash Flood Safety Tips

- Do not cross a flooded roadway!!!
- Do not walk/hike/stand near flood waters!
- Be patient, wait for water to recede, or find an alternate route.
- Are you in a low-lying area that is flood prone? **Seek higher ground.**

Newton, NC July 2013
Never Walk Into Flood Waters

It only takes 6 inches of swiftly moving water to knock an adult off his or her feet.

Weather-Ready Nation
National Oceanic and Atmospheric Administration

National Weather Service
weather.gov/floodsafety
Thanks for Your Interest!

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www.weather.gov/mhx