



National Weather Service

Newport/Morehead City



Flood SKYWARN

Online Training

2020



By: Erik Heden
erik.heden@noaa.gov



Welcome To Our Third Year Of Online Classes

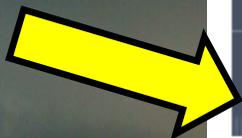


- You can download our presentation via our website if you have trouble. Visit:
<https://www.weather.gov/mhx/MHXSkywarn>
- Both your audio and video will come through your PC/mobile device.
- We will send you a certificate of completion in the next week, to the email you registered with. If you don't get one, make sure you entered your email correctly.



Asking Questions

- At the end we will answer questions you have. If you raise your hand I will call on you and you can use your mic to ask a question. I will unmute your line.
- If you don't have a mic or don't want to ask in front of everyone, just send me a chat



File View Help

Audio

Sound Check

Computer audio (selected)
Phone call

MUTED

Microphone (HD Webcam C510)

Speakers (High Definition Aud...)

Questions

[Enter a question for staff]

Send

Multi sessions different registrants
Webinar ID: 980-960-603

GoToWebinar



Topics

- **National Weather Service Overview**
- **SKYWARN Facts**
- **Flood History**
- **Tropical systems, localized flooding and coastal flooding.**
- **Flash Floods**
- **Review of spotter procedures**



Future Classes



- We hold 4 SKYWARN classes throughout the year. **Basic Spring, Basic Winter, Flood and Tropical SKYWARN, Advanced SKYWARN.**
- We will **always** post future class information on our website **weather.gov/newport** at the top of the page. Also, we will post it on Facebook.
- Our goal is that you report to us year round (snow, hail, high winds, etc).



Keep Current

- **Bookmark** [weather.gov/mhx/MHXSkywarn](https://www.weather.gov/mhx/MHXSkywarn)
- You can find YouTube training for both winter and spring skywarn
- You can also refresh yourself on when and how to report along with the current schedule

Current Schedule | When To Report | How To Report | **YouTube Training**

YouTube Training

Basic SKYWARN (Parts 1 through 7)

Watch all 7 videos and instructions on how to receive your certificate.

- Basic SKYWARN** (The National Weather Service logo is overlaid on the video)
- Severe Weather Risk Categories** (Outlines Where Severe Weather is Watch later Share Planning for Next 1 to 8 Days)
- What causes Thunderstorms** (Soda Bottles is the moisture The bubbles are the instability. Nothing happens at this point, because you are lacking the last ingredient.)
- Basic SKYWARN Instability** (Storms are generally disorganized in nature. Basic SKYWARN Instability of severe events. (Pulse storms) potential is low. Possible interaction of boundaries or cell mergers.)
- How CAN Basic SKYWARN NETWORK?** (Five easy steps: 1. Simply sign up on the website (www.weather.gov). 2. Obtain a 4" plastic rain gauge. 3. Place it on a flat "rainy side" surface and a training assistant. 4. Set up the gauge in a "good" location in your yard. 5. Start observing precipitation and report on line daily.)
- Basic SKYWARN of Thunderstorms** (Single Cell, Multicell Cluster, Multicell Line, Supercell. Weak updraft (non-severe or severe), Moderate updraft (non-severe or severe), Intense updraft (Always severe), Intense updraft (Always severe), Mesocyclone, Rotating updraft. Slight threat, Moderate threat, Moderate threat, High threat.)



National Weather Service - Nationwide

Note: If you are not from Eastern North Carolina, we will forward your information to YOUR local office!





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)





Open 24/7/365



Hurricane Florence

Staff here for 3 to 7 days



Our building is designed to withstand storms

We stay when the weather is bad



SKYWARN



- **SKYWARN** is a National volunteer program run by the National Weather Service
- **SKYWARN's** goal is to provide NWS with “Ground Truth Reports” of significant weather



Coastal Flooding
Avon, NC 3/5/18



How do Weather Spotters help the NWS?

- Real time reports **assist** the National Weather Service in our warning decisions.
- Helps forecasters **gauge** how severe a storm is.
- Your information may be the reason a warning is issued, and/or provides **credibility** to a warning.
- You could help provide the citizens of your community with potentially **life-saving** information.
- SKYWARN provides a backbone of emergency communications.
- **The trained eye of the storm spotter is still our greatest asset!**



Fundamental Definitions

Watch

Conditions are favorable for the weather event in/near the watch area.

Warning

The weather event is imminent or occurring in the warned area.
Issued by NWS Newport.

Flash Flood

Flooding that begins within 6 hours (often within 3 hour). Most often caused by heavy rain (dam breaks other possible reasons).



Our Website

weather.gov/newport



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

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HOME FORECAST PAST WEATHER SAFETY INFORMATION EDUCATION NEWS SEARCH ABOUT

Local forecast by "City, St" or ZIP code
Enter location ...
[Location Help](#)

News Headlines

- The Fall 2019 Edition Of Our Newsletter, *Carolina Skywatcher*, Is Now Online!

MY FORECAST
Morehead City NC

Overcast
49°F
9°C [Get Detailed info](#)

Today

Partly Sunny
High: 55°F

Tonight

Mostly Cloudy
Low: 43°F
[change location](#)

NWS Forecast Office Newport/Morehead City, Newport/Morehead City, NC
Weather Forecast Office

[Weather.gov](#) > Newport/Morehead City, NC

Current Hazards Current Conditions Radar Forecasts Rivers and Lakes Climate and Past Weather Local Programs

Click a location below for detailed forecast.

Watches, Warnings & Advisories

- Coastal Flood Advisory
- High Surf Advisory
- Small Craft Advisory
- Hazardous Weather Outlook

Last Map Update: Tue, Nov. 19, 2019 at 11:58:19 am EST

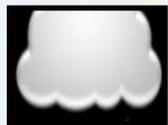
Tropical **Local Radar** **Satellite**

11/19/19 16:46Z GOES-East

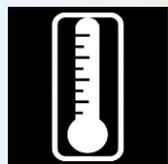


7- Day Forecast

weather.gov/newport



Sky cover



High/low temperatures



Winds



Chance of precipitation

Detailed Forecast

Today	Mostly cloudy, with a high near 54. Light northwest wind.
Tonight	Mostly cloudy, with a low around 38. West wind 5 to 7 mph.
Wednesday	Sunny, with a high near 60. Northwest wind 7 to 9 mph.
Wednesday Night	Mostly clear, with a low around 38. Light north wind.
Thursday	Sunny, with a high near 60. Light and variable wind becoming northwest around 5 mph.
Thursday Night	Partly cloudy, with a low around 44.
Friday	Mostly sunny, with a high near 67.
Friday Night	Mostly cloudy, with a low around 48.
Saturday	A chance of showers. Mostly cloudy, with a high near 64. Chance of precipitation is 50%.
Saturday Night	A chance of showers. Mostly cloudy, with a low around 44. Chance of precipitation is 50%.
Sunday	Partly sunny, with a high near 58.
Sunday Night	Mostly clear, with a low around 39.
Monday	Sunny, with a high near 60.

Extended Forecast for New Bern NC

Today



Mostly Cloudy

High: 54 °F

Tonight



Mostly Cloudy

Low: 38 °F

Wednesday



Sunny

High: 60 °F

Wednesday Night



Mostly Clear

Low: 38 °F

Thursday



Sunny

High: 60 °F

Thursday Night



Partly Cloudy

Low: 44 °F

Friday



Mostly Sunny

High: 67 °F

Friday Night



Mostly Cloudy

Low: 48 °F

Saturday



Chance Showers

High: 64 °F



Hourly Forecast

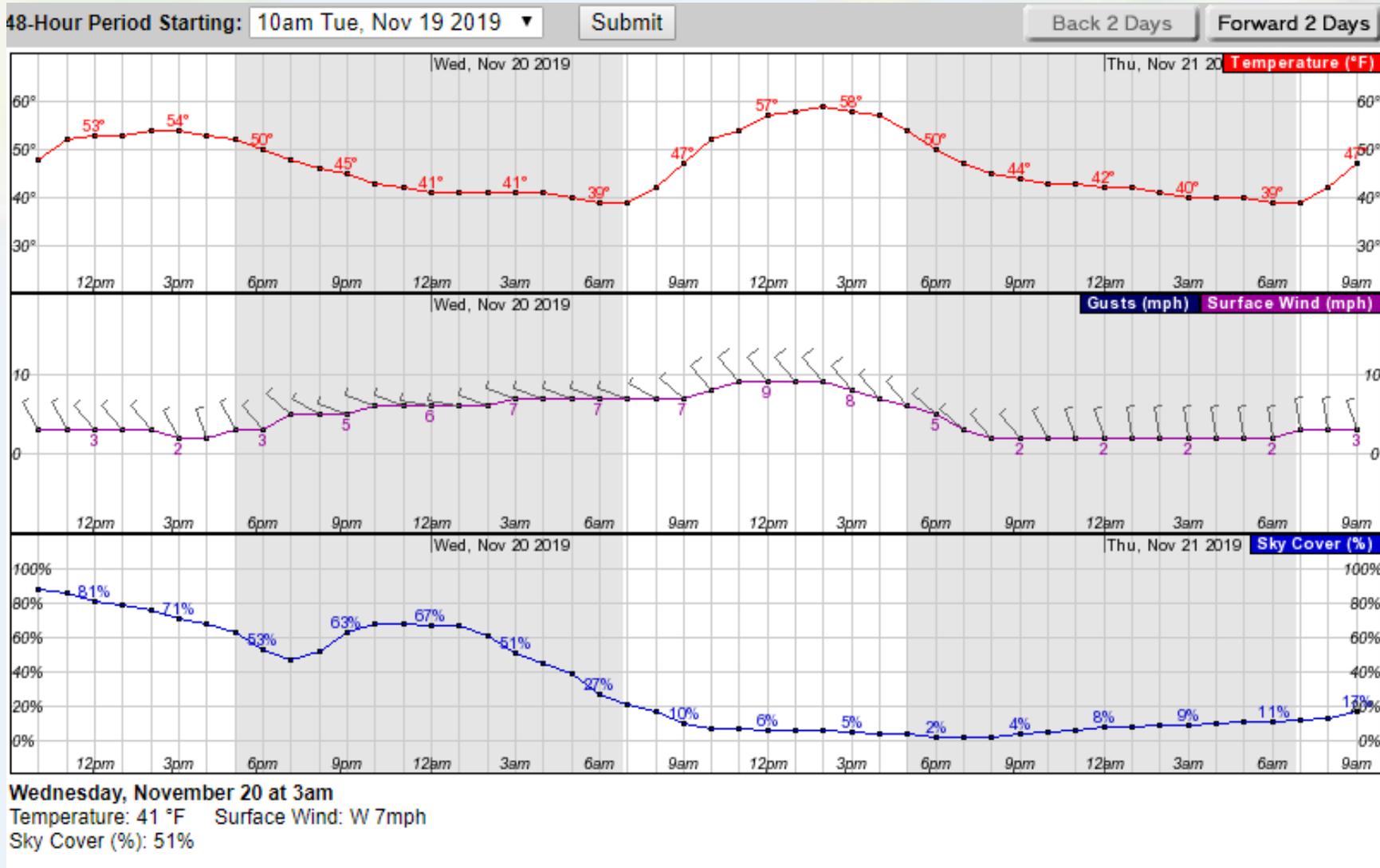
weather.gov/newport



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



HOME FORECAST PAST WEATHER SAFETY INFORMATION EDUCATION NEWS SEARCH ABOUT

Local forecast by "City, St" or ZIP code

Enter location ...

[Location Help](#)

News Headlines

- [Here's the Updated Skywarn Training Schedule!](#)
- [Here's a Summary on the March 2-5, 2018 Wind/Coastal Flood/Low Water Event.](#)
- [Summary on the Minor Winter Weather Event, March 12-13, 2018](#)

NWS Forecast Office Newport/Morehead City, Newport/Morehead City, NC

Weather Forecast Office

[Weather.gov](#) > Newport/Morehead City, NC

[Current Hazards](#) [Current Conditions](#) [Radar](#) [Forecasts](#) [Rivers and Lakes](#) [Climate and Past Weather](#) [Local Programs](#)

Click a location below for detailed forecast.



Last Map Update: Thu, Mar. 22, 2018 at 11:05:21 am EDT

[Watches, Warnings & Advisories](#)



[Radar](#)



[Current Weather](#)



[Rivers & Lakes](#)



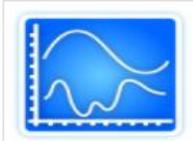
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[Weather Inform
Disp](#)



[Forecast Maps](#)



[Hour by Hour Forecast](#)



[Winter Weather](#)



[Map View](#)



[Surf Forecast/Rip Currents](#)



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\(when applicable\)](#)



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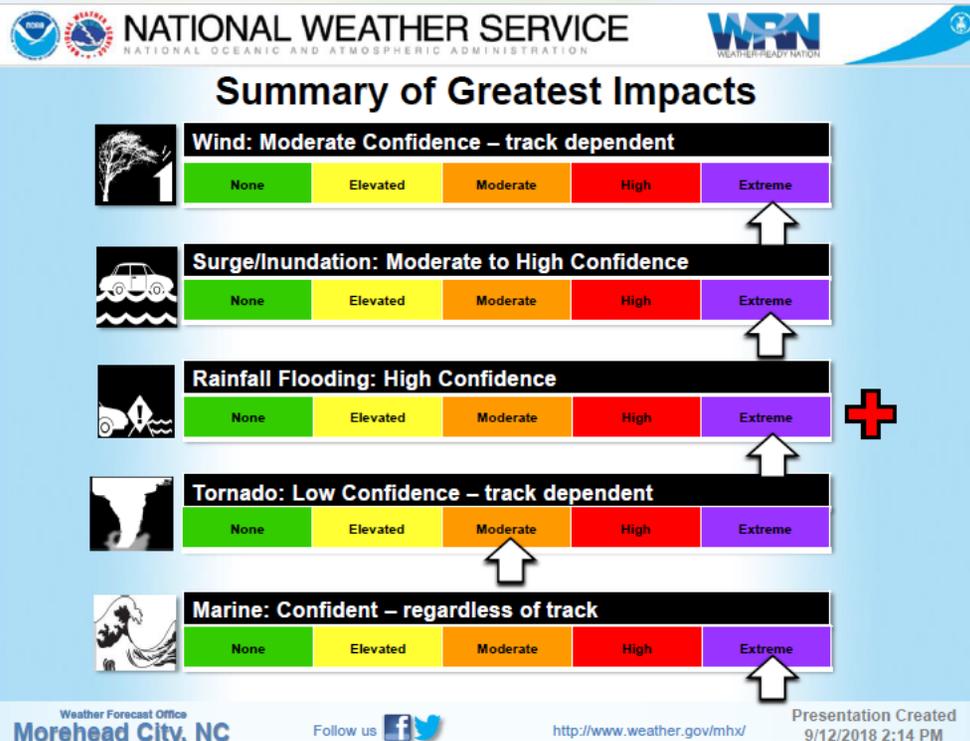
Created prior to bigger events of severe weather





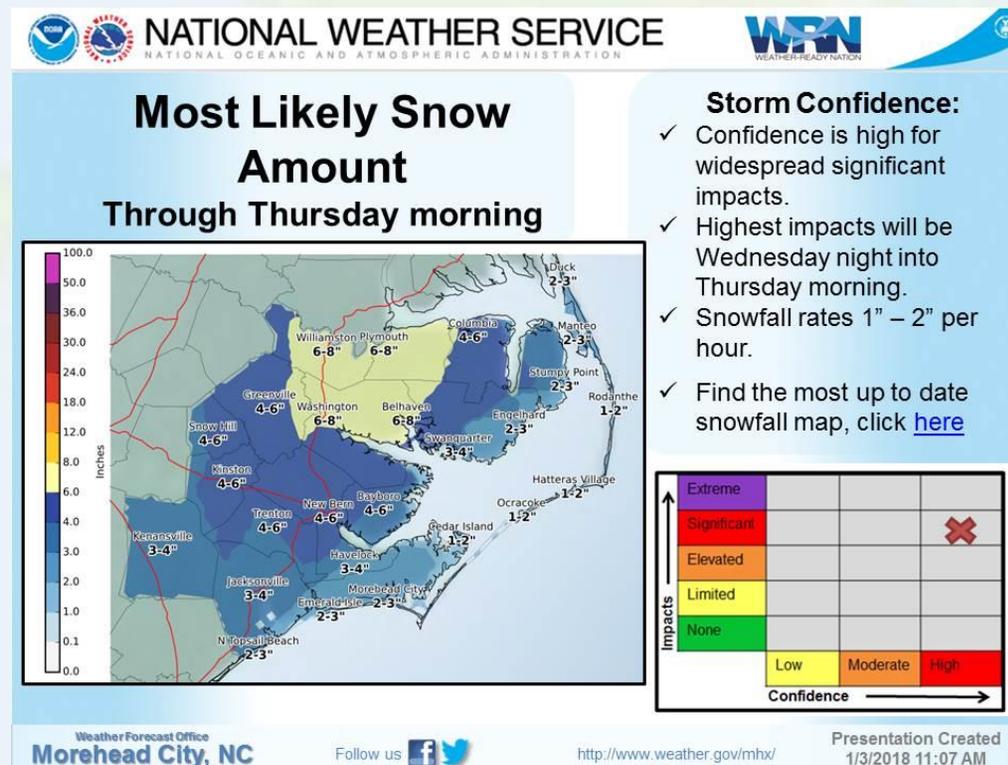
Weather Briefings

weather.gov/newport



Hurricane Florence Impacts

January 2018 Winter Storm





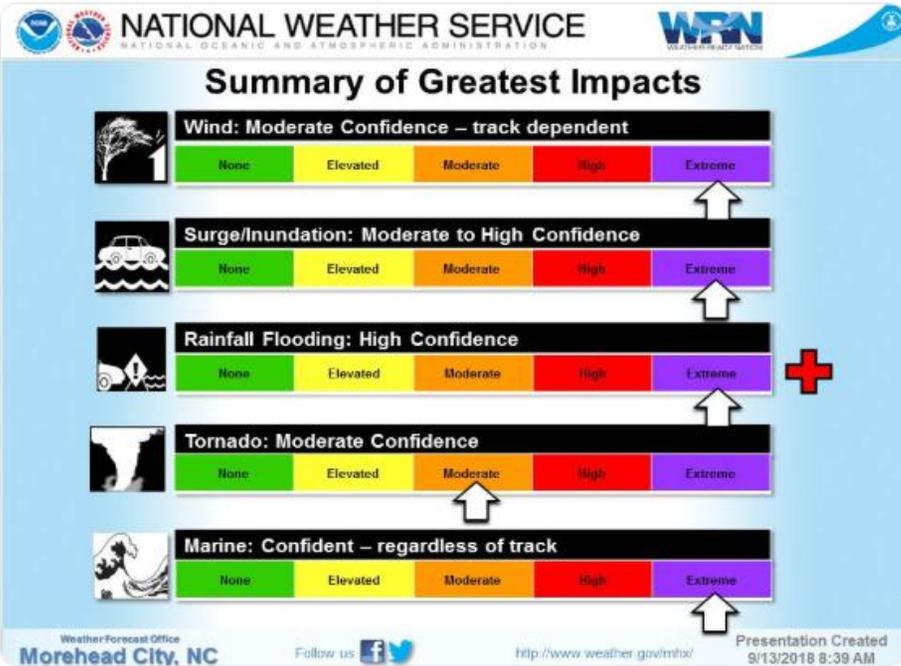
Social Media

Search NWS Morehead City



NWS Newport/Morehead @NWSMoreheadCity

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...



8:44 AM - 13 Sep 2018

765 Retweets 1,078 Likes



40 765 1.1K



YouTube

Search



Hurricane Florence Briefing #15
As of: 630 AM
Wednesday, September 12th, 2018

What has Changed?

- Track has shifted a bit further south and west, and has slowed significantly near the coast
- Extreme rainfall amounts now are expected across southern coastal counties
- Major River Flooding Likely

Disclaimer: Do not use after 5 PM Wednesday 9/12/18
Next Briefing: By 600 PM Wednesday (9/12/18)

Hurricane Florence NWS Morehead City Wednesday 900 AM Briefing

2,895 views

13 0 SHARE SAVE



NWSMoreheadCity
Published on Sep 12, 2018

SUBSCRIBE 199

Hurricane Florence Lead Up



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

National Weather Service

Morehead City NC

Current Conditions

Beaufort Smith Field
Updated: 19 Nov 09:58 am EST

48 °F
Wind NE 3 MPH
Dew Point 46 °F (93% RH)

Overcast

Forecast
19 Nov 09:58 am EST

Today Partly Sunny Hi 55°F	Tonight Mostly Cloudy Lo 45°F	Wednesday Sunny Hi 58°F
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Verizon 3:42 PM 50%

mobile.weather.gov

Hourly Forecast

Topeka KS

Tonight **Sunday Night**

SUN, FEB 26

6 am 30% Chance Snow Temp: 34°F Wind: SSW @ 6 mph
7 am 30% Chance Rain And Snow Temp: 35°F Wind: SSW @ 5 mph
8 am 30% Chance Rain And Snow Temp: 36°F Wind: S @ 5 mph
9 am 30% Chance Rain Temp: 37°F Wind: S @ 5 mph

How do I make my report?

Call the Spotter Hotline:

**REPORTS
ONLY!**

1-800-889-6889

**REPORTS
ONLY!**

Note: This is specific to Eastern NC. Outside the area follow future info sent to you!

This is a special number only for spotters and rings directly to us!

- 1. Who you are: Trained Skywarn Spotter**
- 2. What you saw (funnel cloud etc.)**
- 3. Where you saw it (Newport).**
- 4. When you saw it (6:45 P.M.) or 5 minutes ago, etc.**

REMEMBER... Spotters can help save lives by... Making their reports!

**REPORTS
ONLY!**

Email US!!!

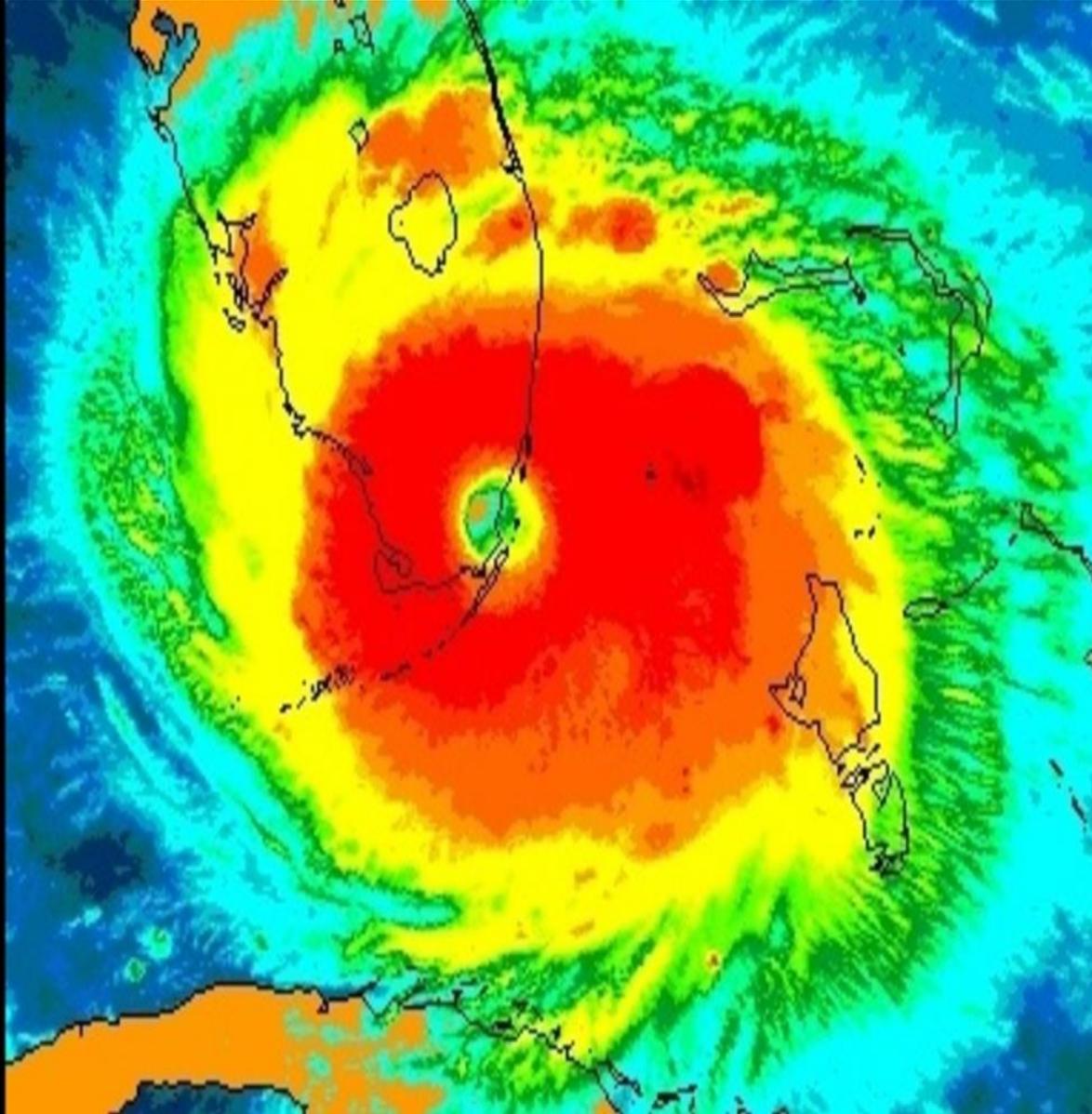
**REPORTS
ONLY!**

Wxobs.mhx@noaa.gov

Note: This is specific to Eastern NC. Outside the area follow future info sent to you!

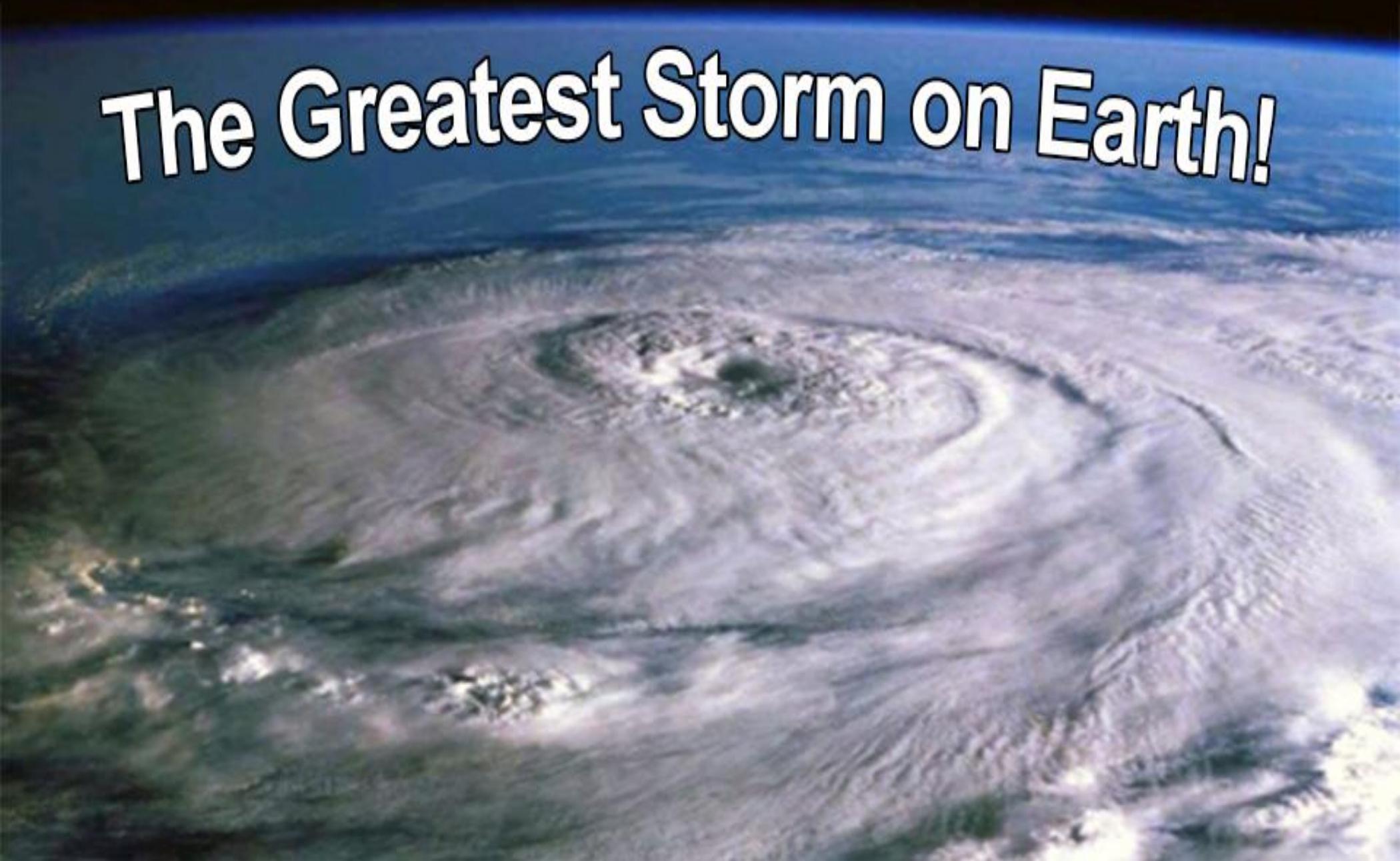
- 1. Who you are: Trained Skywarn Spotter.**
- 2. What you saw (large trees down. More than a few. 70 mph winds estimated)**
- 3. Where you saw it (1 mile east of Beaufort)**
- 4. When you Saw it (2:35 PM)**

Hurricanes



Hurricane...

The Greatest Storm on Earth!



Hurricane Names Around The World



Central &
Eastern Pacific
Oceans

“Hurricane”

Atlantic
Ocean

“Hurricane”

“Cyclone”

Indian
Ocean

“Willy-Willy”

Coast of
Australia

“Typhoon”

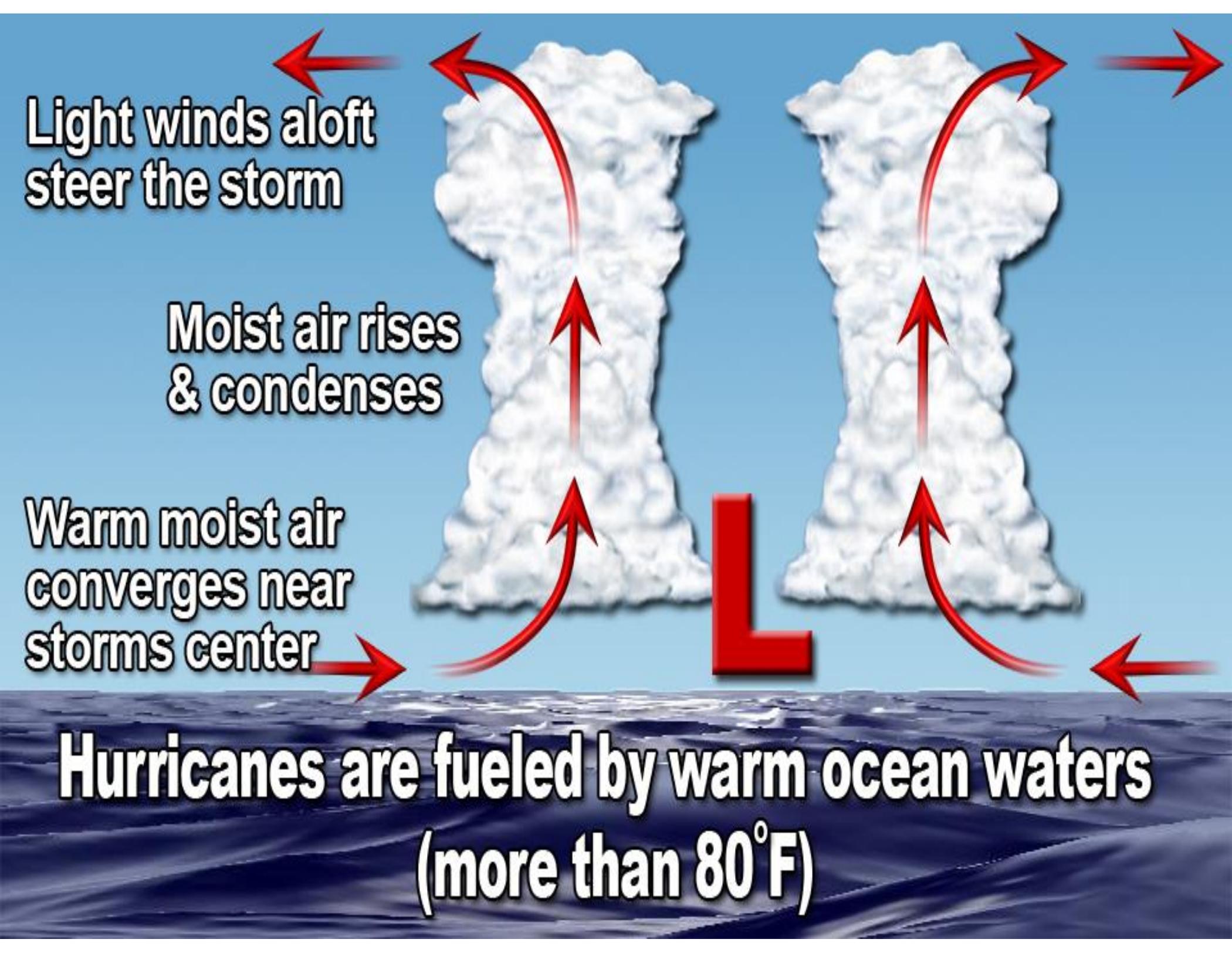
Western
Pacific

**Light winds aloft
steer the storm**

**Moist air rises
& condenses**

**Warm moist air
converges near
storms center**

**Hurricanes are fueled by warm ocean waters
(more than 80°F)**

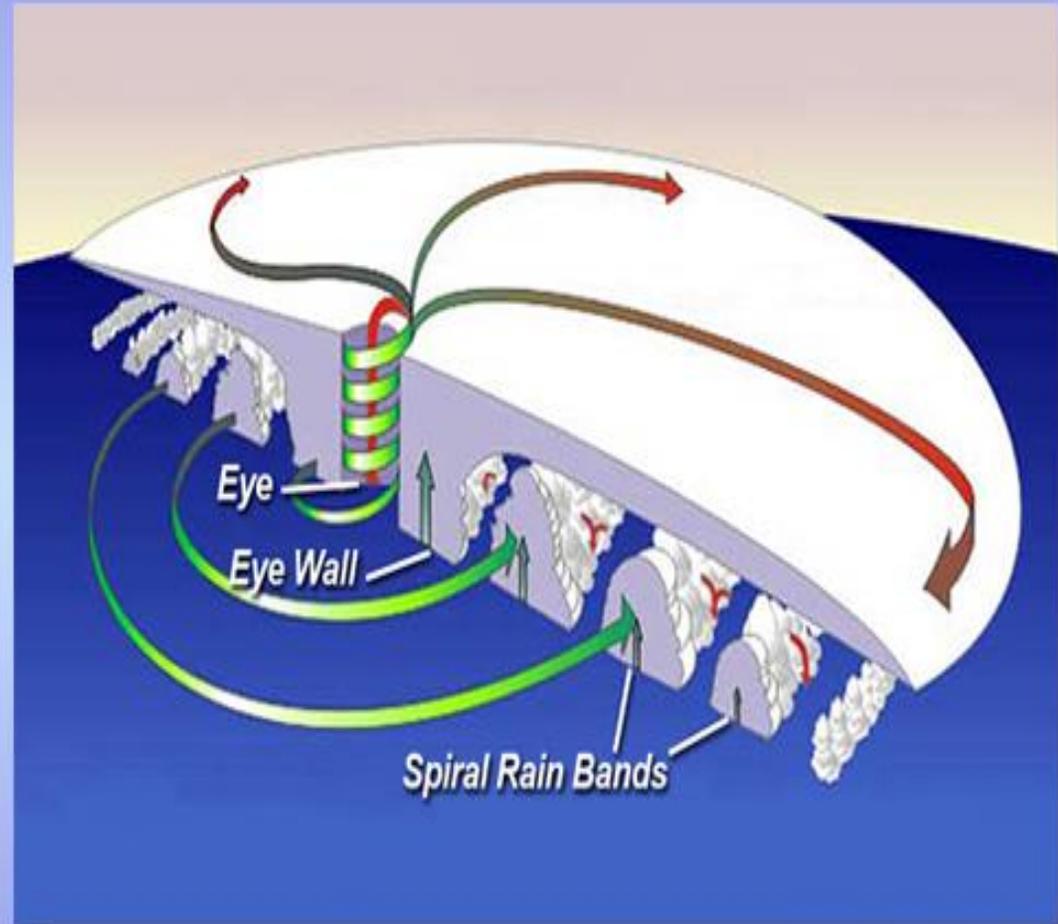


Anatomy of a Hurricane

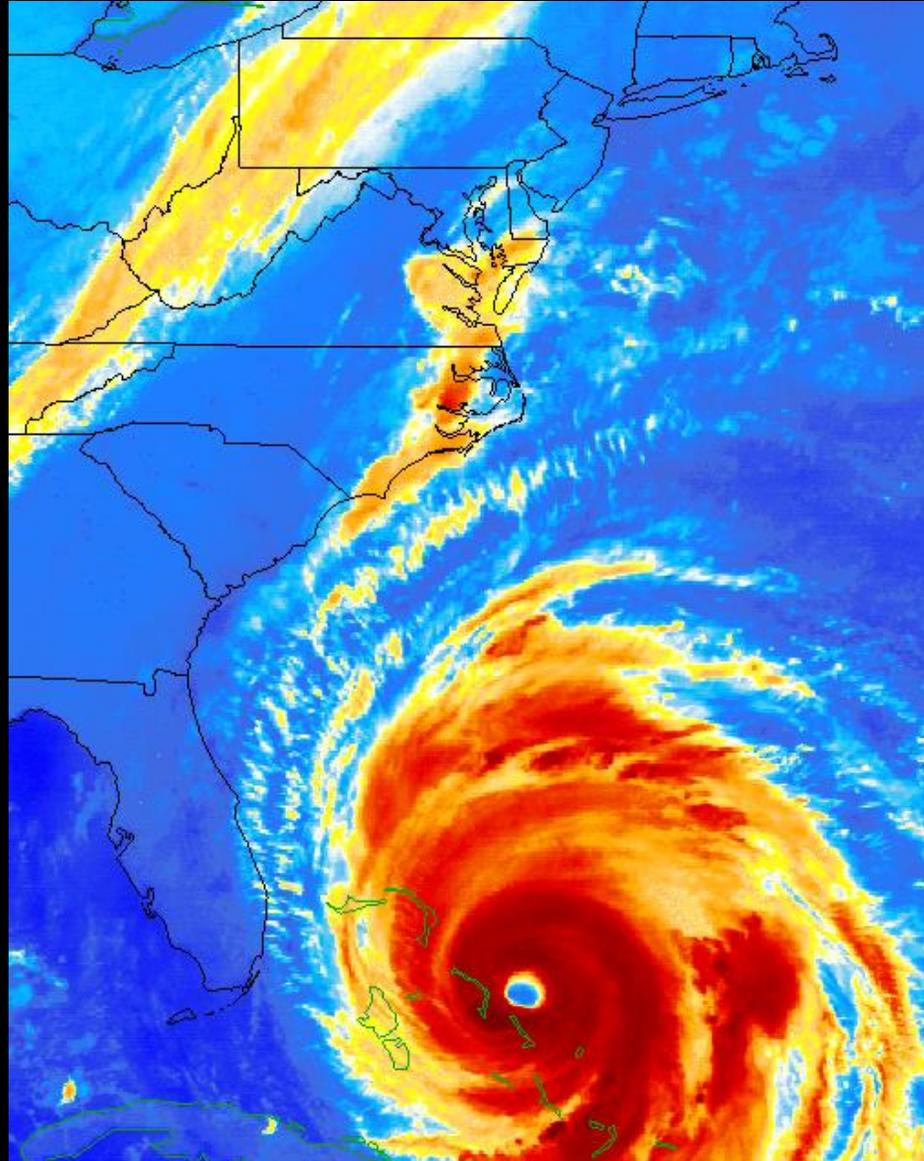
Eye: Light winds, mostly sunny, very low surface pressure

Eye Wall: Strongest winds, heaviest rain

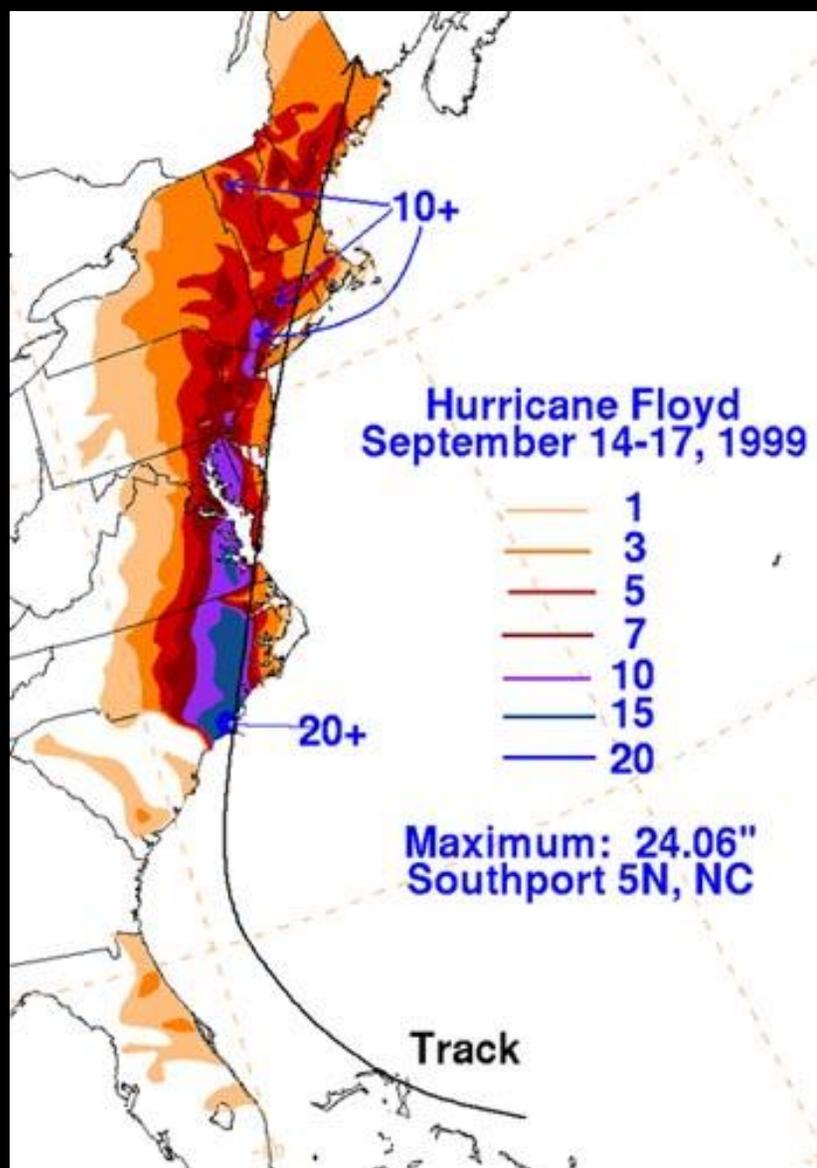
Spiral Rain Bands: Rotate around the storm, moderate to heavy rain, strong winds, possible weak tornadoes



Hurricane Floyd 1999



Hurricane Floyd 1999





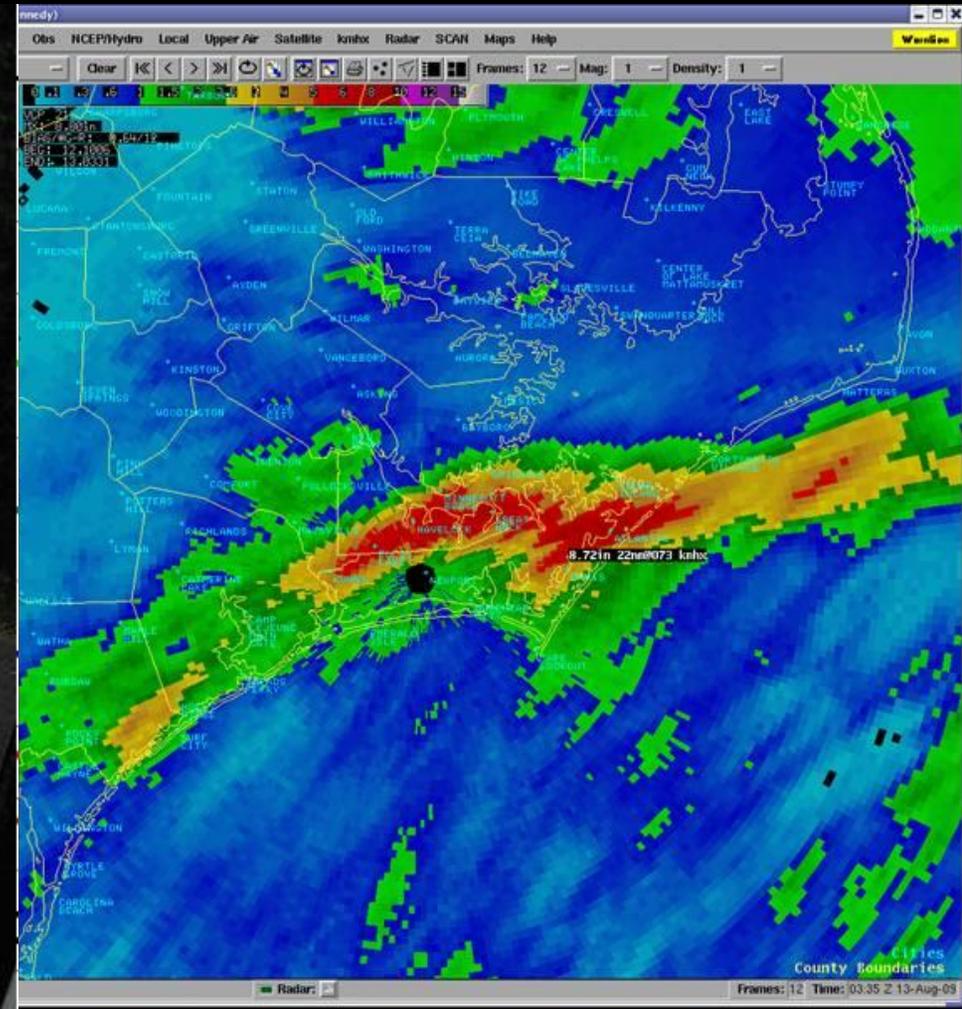
FLASH FLOODING

- Multi-cells can “train” over an area producing flash flooding



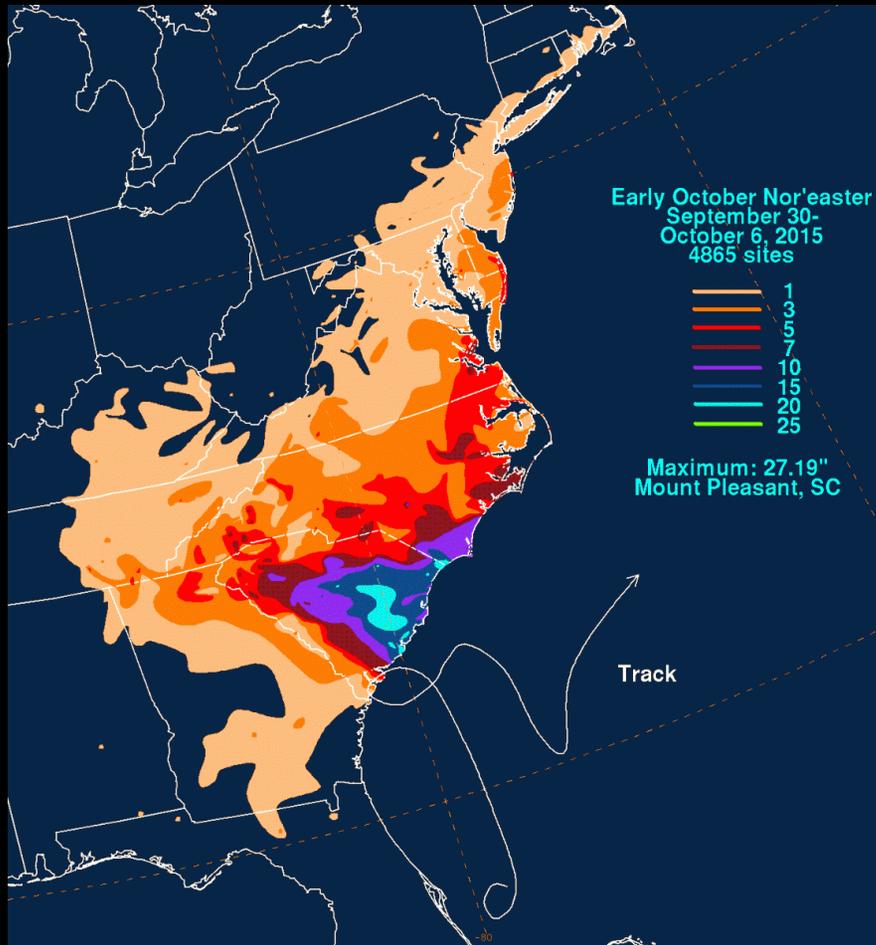
Havelock 2009

10" in 4 hours. Rainfall Rates of 6" per hour. Stalled thunderstorms along a sea breeze



Nor Easter 2015

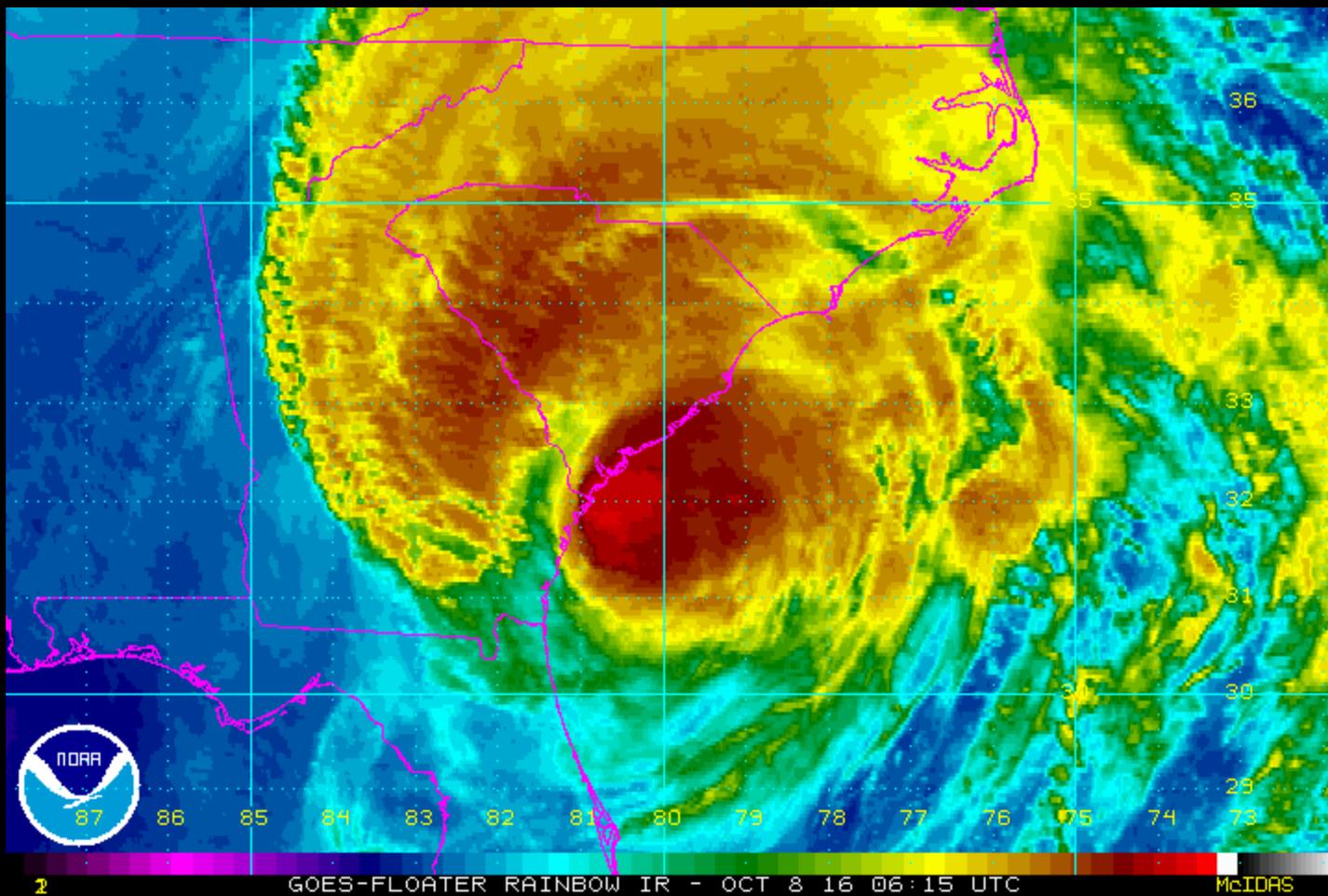
Heavy rainfall but also coastal flooding in our area

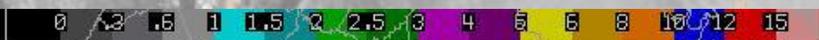


Hurricane Matthew

2016

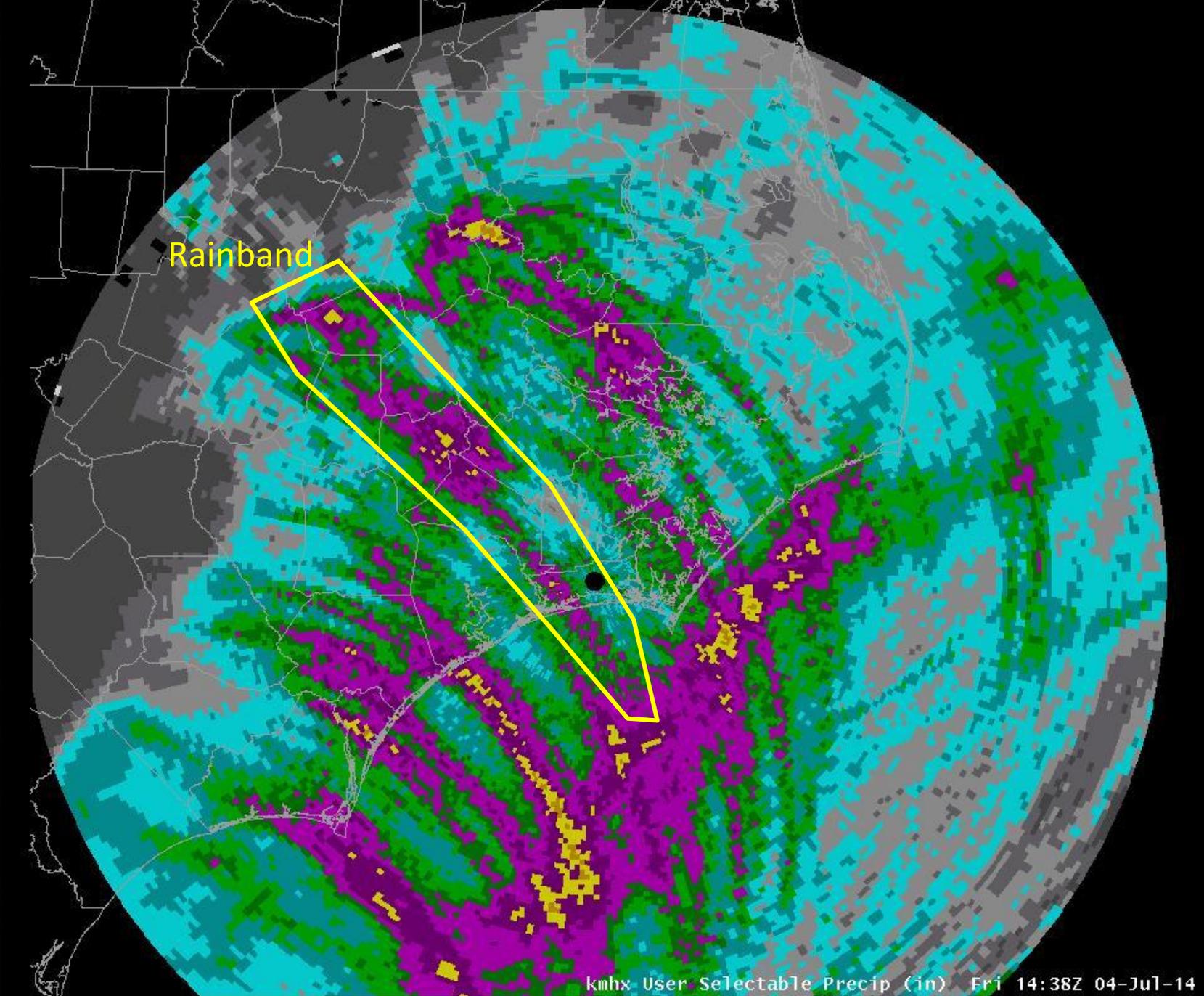
Historic flooding





VCP: 21
MX: 19.1in
BEG: 03,1400
END: 04,1400
DUR: 24hr

Storm Total Rainfall

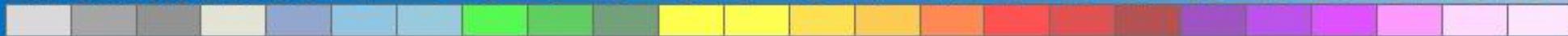




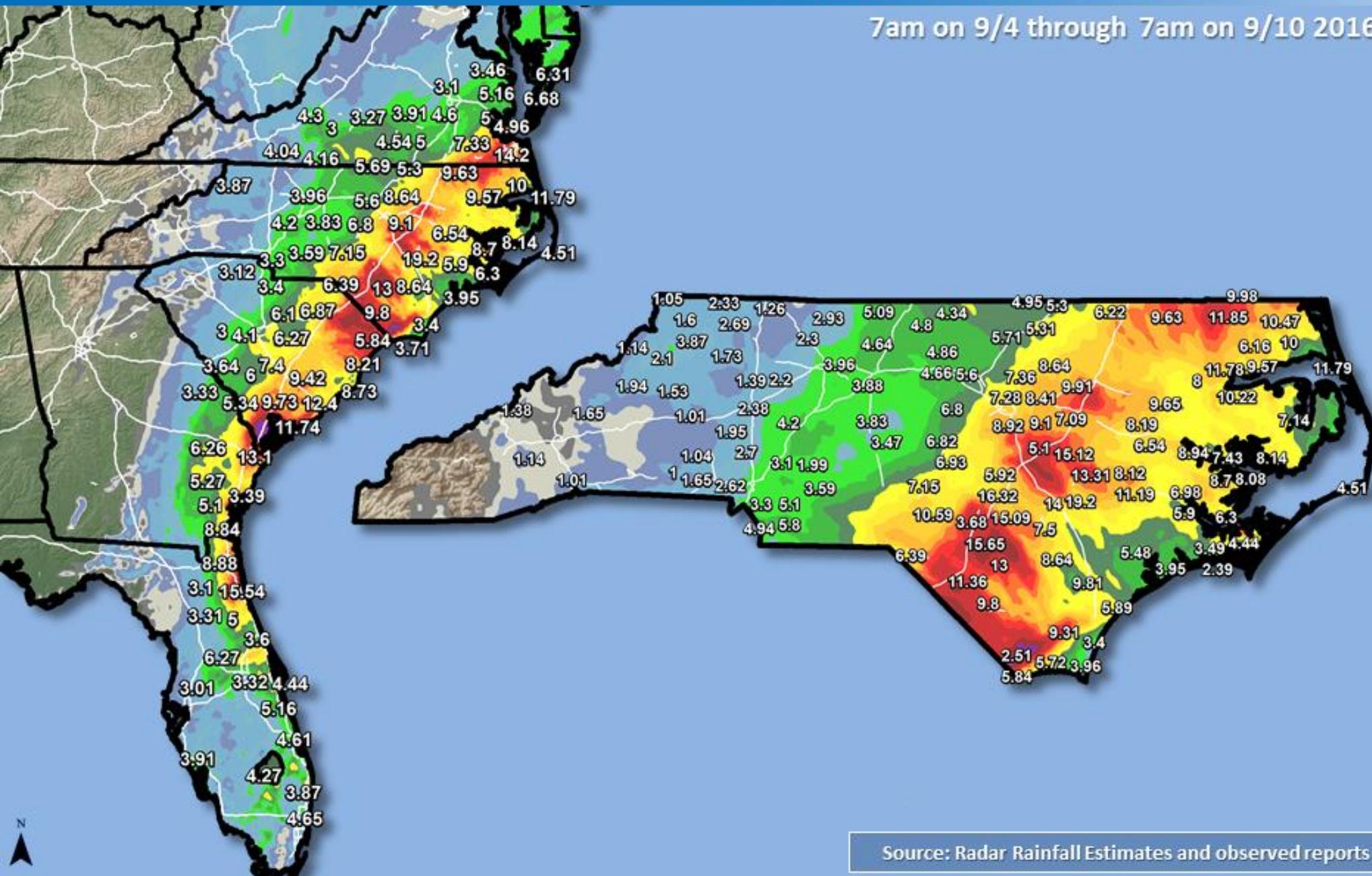
National Weather Service Hurricane Matthew

North Carolina Rain Totals

Tr. 0.01 0.1 0.25 0.5 1 2 3 4 5 6 7 8 9 10 11 12 14 16 18 20 24 28 32+



7am on 9/4 through 7am on 9/10 2016



Source: Radar Rainfall Estimates and observed reports

Near Vanceboro (Matthew)



Flowing Water Near Grifton (Matthew)



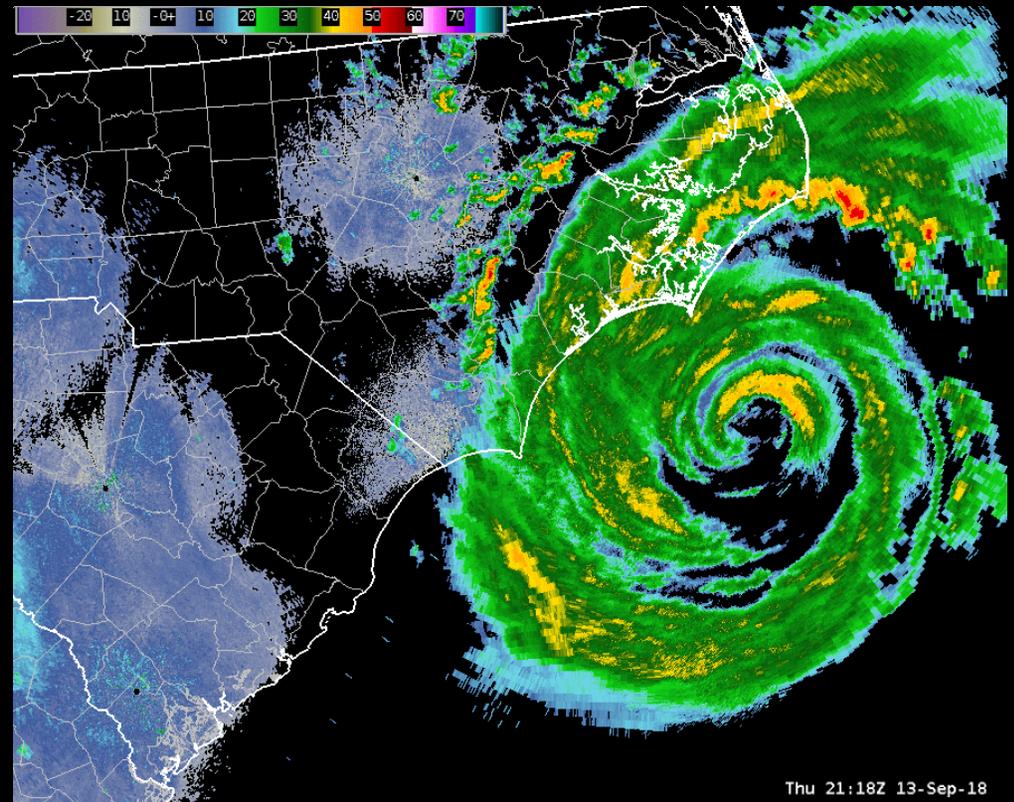
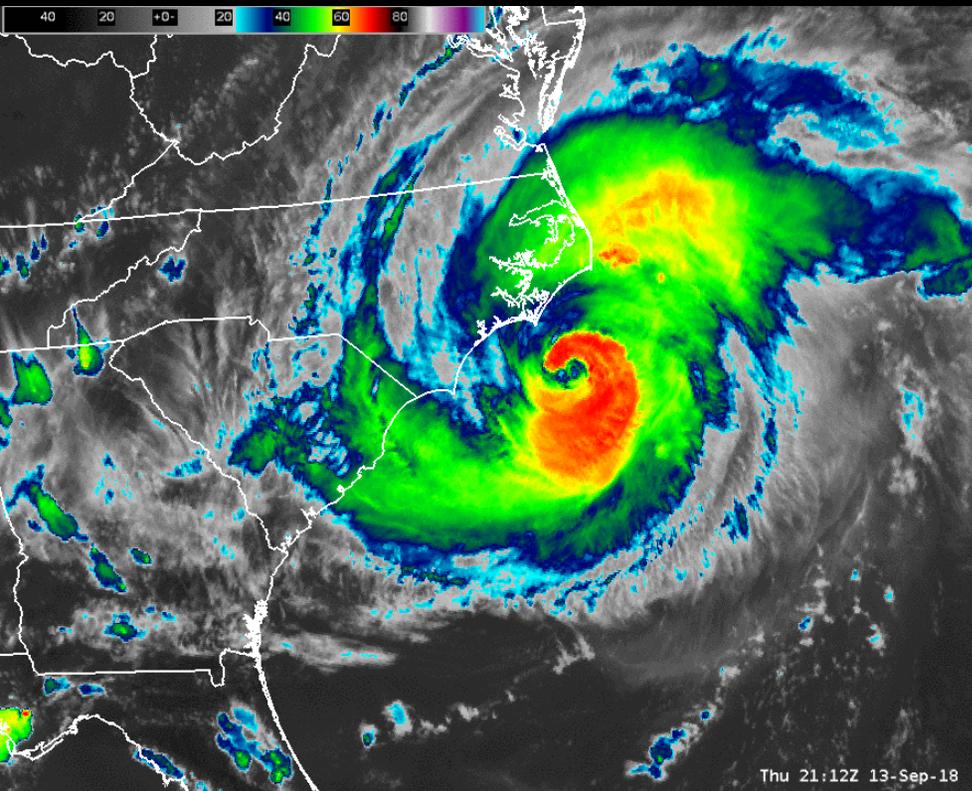
Near Hookerton (Matthew)



Hurricane Florence

2018

Historic flooding





Florence Preliminary Storm Total Rainfall Reports

Created: 9/19/2018 3:44 PM

Totals From 8 AM Thursday – 8 AM Tuesday

Swansboro, NC	34.14"
Jacksonville, NC	30.65"
Albertson, NC	26.26"
Newport NWS, NC	25.62"
Emerald Isle, NC	23.49"
Trenton, NC	19.42"
MCAS New River, NC	19.35"
Kinston, NC	18.92"
New Bern, NC	15.17"
Winterville, NC	13.24"



National Weather Service – Newport/Morehead City

weather.gov/mhx



US National Weather Service Newport/Morehead City

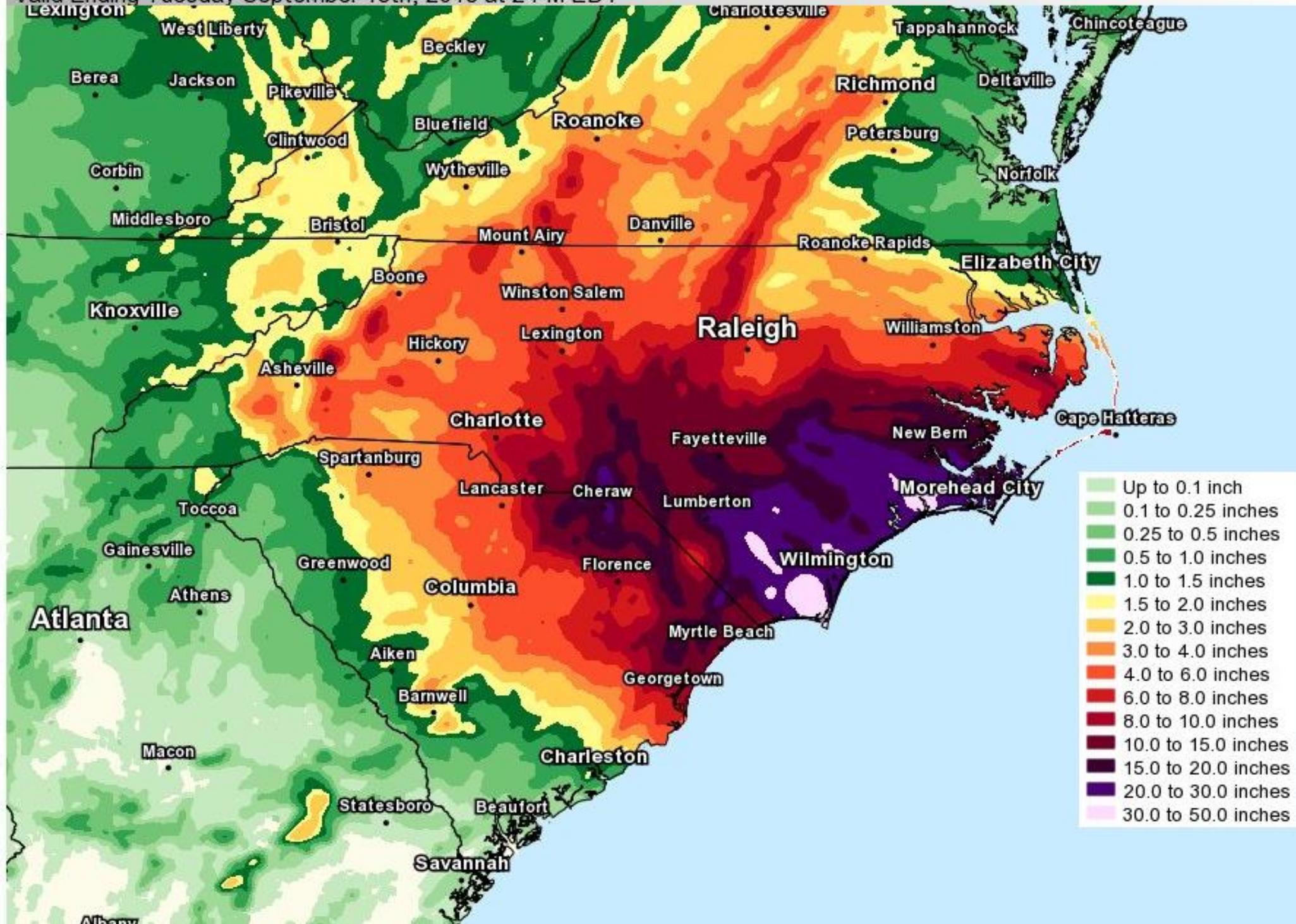


@NWSMoreheadCity



Observed Precipitation

Valid Ending Tuesday September 18th, 2018 at 2 PM EDT



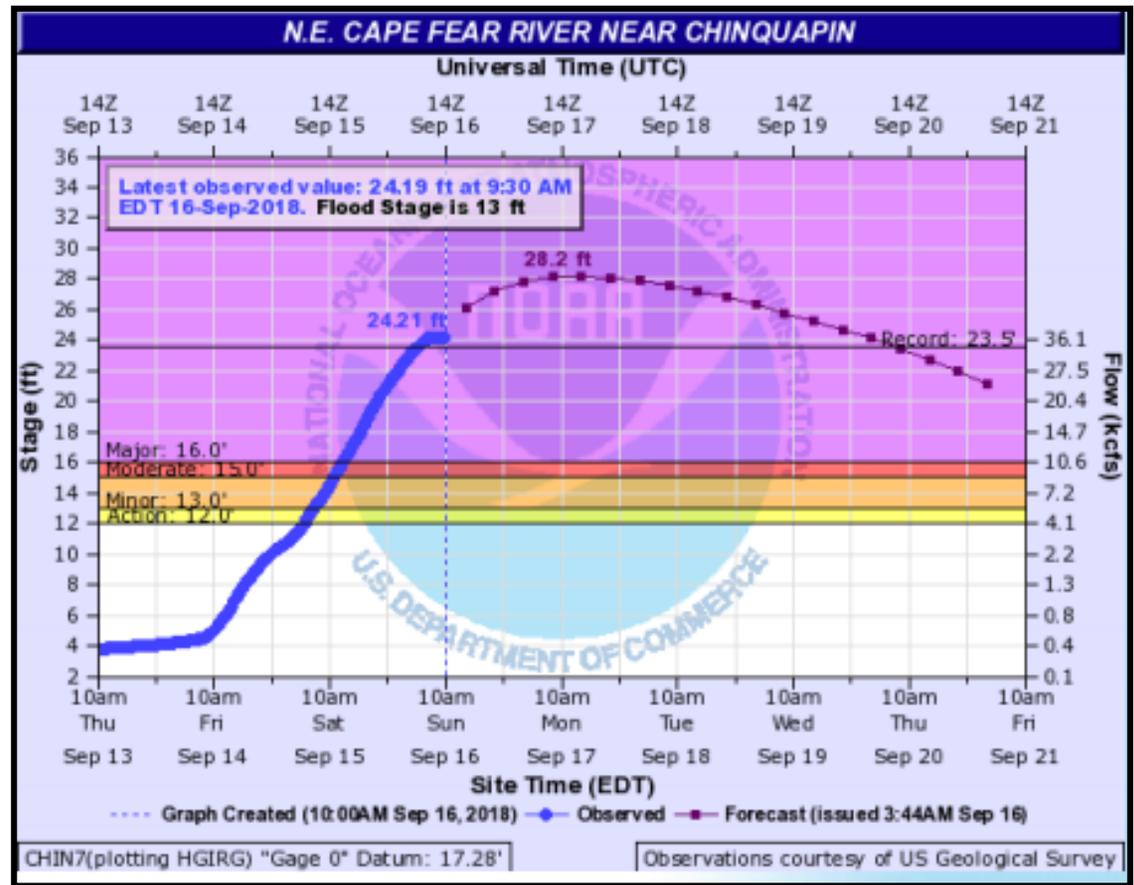
Near Hookerton (Matthew)



River Flooding

N.E Cape Fear River
Near Chinquapin
gauge and New River
near Gum Branch
(northwest of Jacksonville)

Exceeded
Hurricane Floyd
(flood of record)
levels



Extensive flash flooding
caused numerous road
washouts

TRENT RIVER AT POLLOCKSVILLE

River Flooding



**Exceeded
Hurricane Floyd
(flood of record)
levels**



**Extensive flash flooding
caused numerous road
washouts**

Florence Crest: 20.48 ft.



Flooding...

- Significant = something never or rarely seen
- Ideally, we want to know “before” it gets really bad.
- Example, roads are becoming covered with water, my stream is rising fast and approaching bankfull.
- We want to know, how deep is the water? Compare it to a car, up to the tires, up to the doors, the roof, etc.
- Are roads washed out, impassable ?
- If you live along the coast, how far above normal is the water? Do you have a gauge (water level)?



Have A Rain Gauge?

Rainfall Reports extremely useful

- Rainfall reports help us confirm how the radar is doing with estimation.
- Knowing how much rain has fallen, gives us a good idea of the potential for flooding.
- Rainfall amounts of **1" or greater in 24 hours** or rainfall amounts of **1" in an hour or less** are MOST important.
- Think about CoCoRaHS.



HOW CAN I JOIN THE NETWORK?



Five easy steps

*Simply sign-up on the
CoCoRaHS web page:
www.cocorahs.org*

Obtain a 4” plastic rain gauge

*View the on-line “training slide show”
or attend a training session*

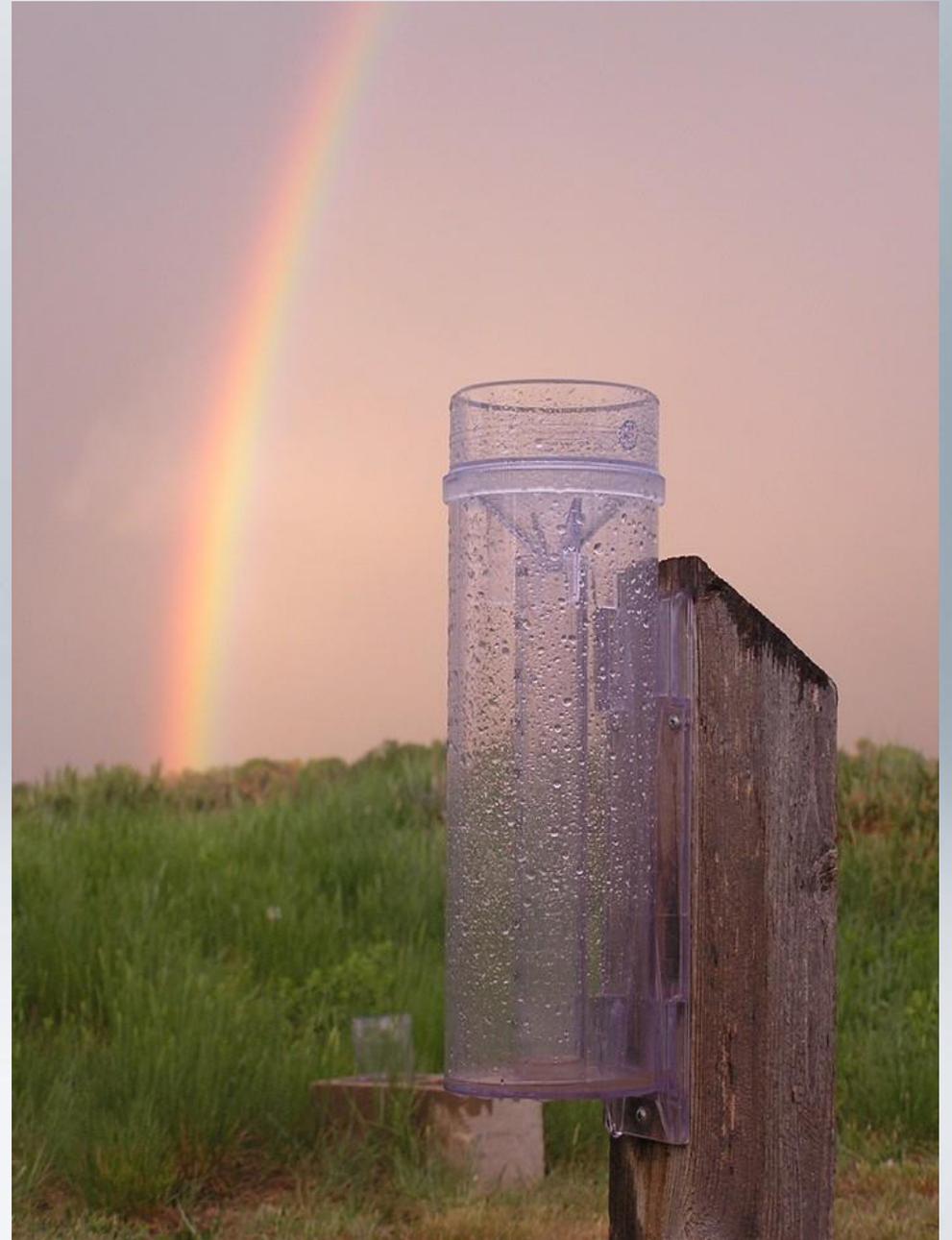
*Set-up the gauge in a “good”
location in your yard*

*Start observing precipitation
and report on-line daily*



Section I

Setting up your rain gauge and measuring precipitation



Placement of your gauge

*“Location is the
key to good data”*



Places **not** to place your gauge



The #1, all time worst place to put your rain gauge is to leave it in the box!

Using your gauge to hold up your gutter downspout is not a wise choice either!

Although convenient, the deck is still too close to the house



Avoid placing it under trees or any structure

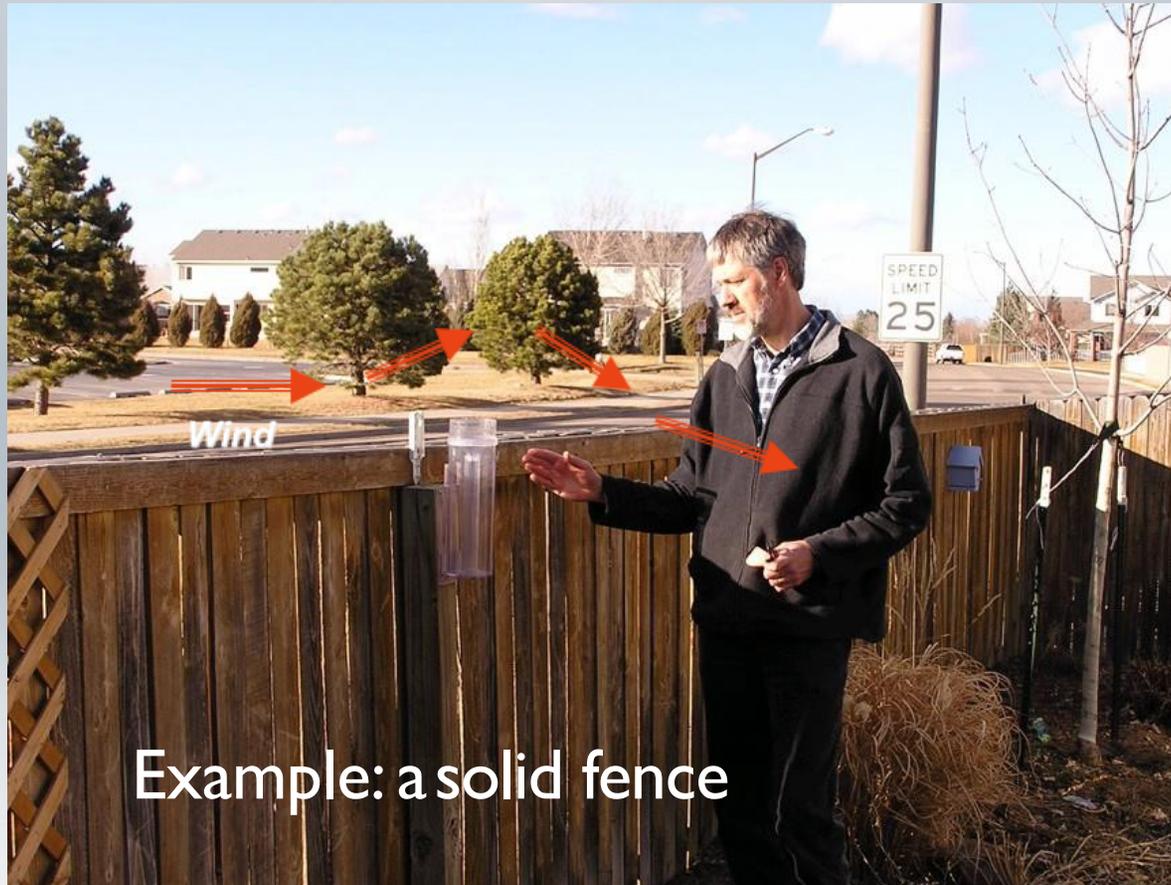


Animals (dogs, birds . . .)



Sprinklers both big and small

Avoid anything that would artificially increase or decrease your catch gauge



Example: a solid fence

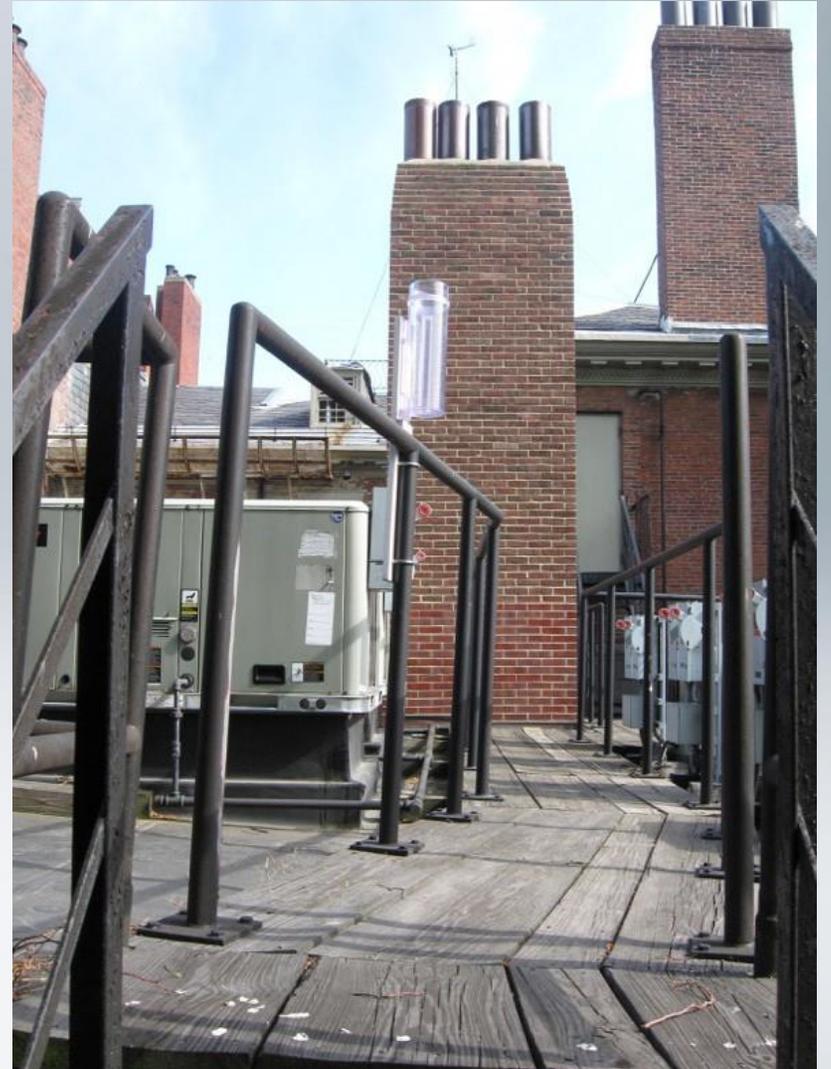
This can cause updrafting during strong winds, which may reduce your gauge catch.

Ideal placements for your gauge

residential



rural



urban

Distance from Obstacles

In open areas strive to be **twice as far** from obstacles as they are high.

In developed areas strive to be **as far** from obstacles as they are high.

Distance between Trees

Ideally, place your gauge equidistant from the nearest trees



Height above the ground

In open areas place the gauge top approx. 2 feet off the ground

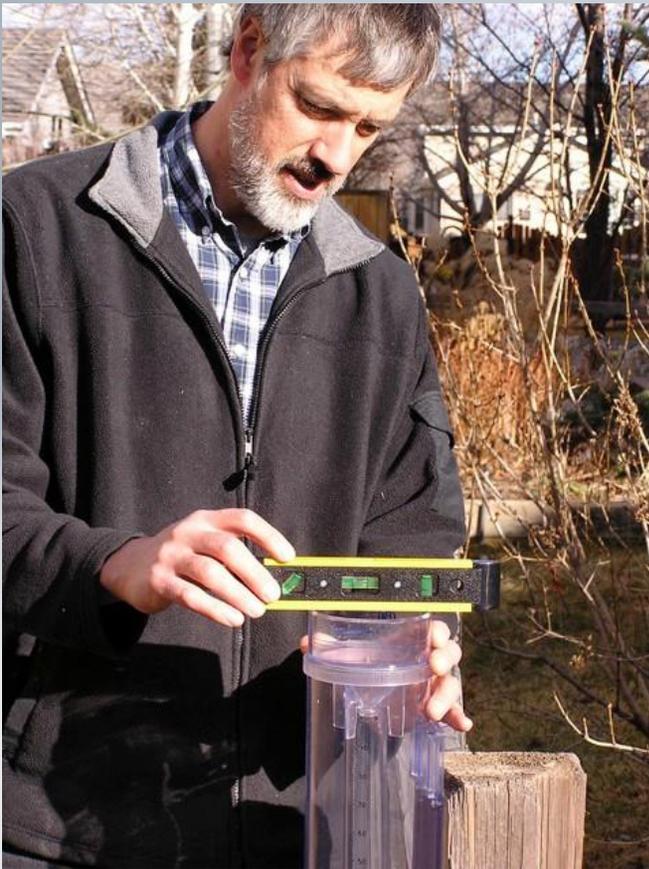


In developed areas place the gauge top approx. 5 feet off the ground



Level and Bevel

Make sure that your gauge is level



Bevel the top of the post to reduce rain splashing into the gauge

Measuring Rainfall with your Gauge

*“Accuracy and consistency
are very important”*



Photo: Steve Camp

A Word about Decimals

Please be careful when recording your measurement. Getting the decimal point correct is essential!

0.40"

There is a large water difference between 0.40 inches and 4.00 inches

Photo: Denny Barnes

The Meniscus

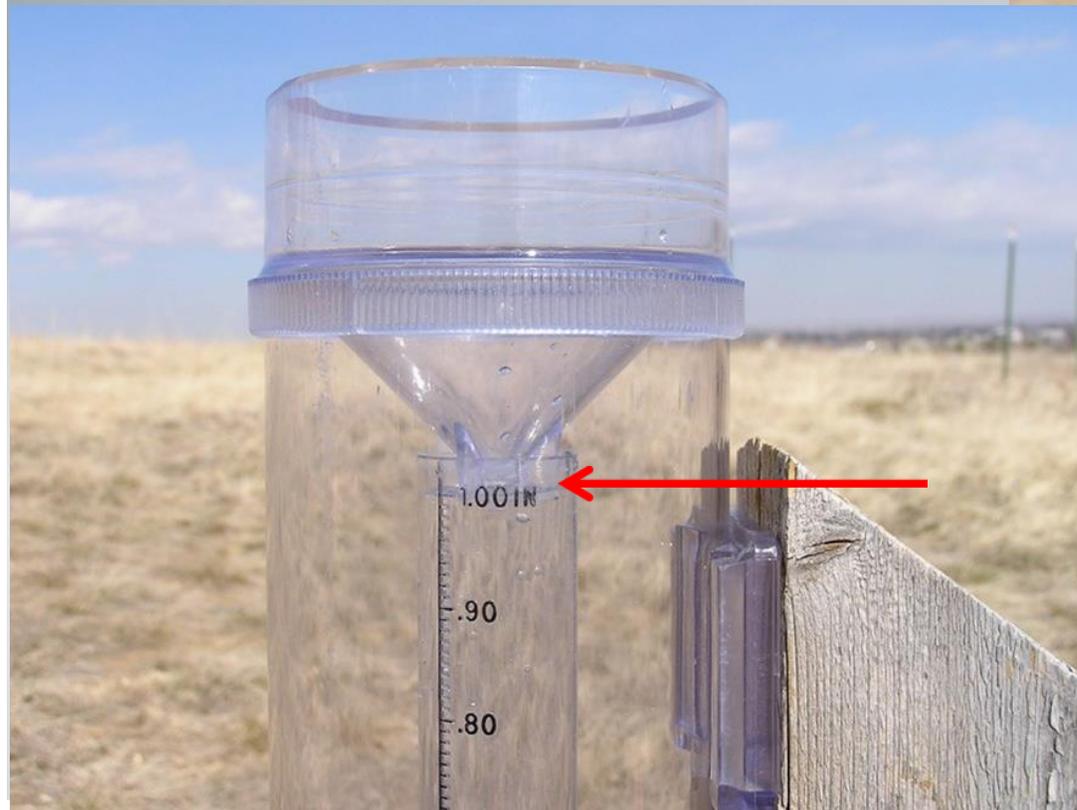
*The surface of the water in the gauge looks curved.
How do I know where to read?*

As water fills up the measuring tube, a curved surface is formed called a meniscus. It is formed by the surface tension of a liquid in contact with the sides of the tube.

Always read the bottom of the **meniscus**, when the making your daily rain measurements.



“This is “one half” inch and is recorded as 0.50”



“This is “one inch”
and is recorded as
1.00”

Lots of rain !!

When more than an inch of rain falls the precipitation will overflow into the outer cylinder.

The whole gauge has a capacity to hold eleven inches.



To measure greater than one inch . . .



Pour out the first inch from the inner tube and write it down.



Pour the remaining water into the funnel and measure the inner tube.



Continue until all of the water has been measured. Make sure you keep track of your measurements along the way.

Finally add up all of your measurements

1.00 inch

0.97 inches

0.88 inches

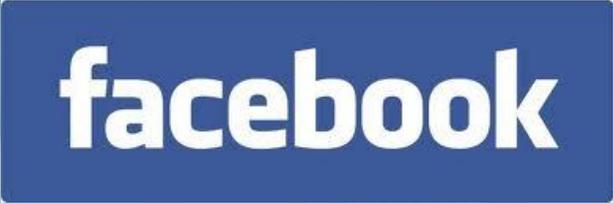
+ 0.92 inches

Total = 3.77"



How do I make my report?

<http://www.facebook.com/NWSMoreheadCity>

The Facebook logo, consisting of the word "facebook" in white lowercase letters on a blue rectangular background.

Be sure to identify yourself as a
trained spotter!

Post a picture to our wall!

1. Who you are: Trained Skywarn Spotter
2. What you saw (quarter size hail. Hail lasted 5 minutes)
3. Where you saw it (North Towanda)
4. When you saw it (12:45 PM.)



When Should You Contact Us?

Review

- Tornado or Funnel cloud (confirm rotation)
- Hail (any size)
- Wind damage- trees down, structural
- Flooding (closed roads, streams close to bankfull)
- Heavy rainfall (amounts of 2 inch or more in 24 hours or 2 inches in less than an hour).



What Else To Report?

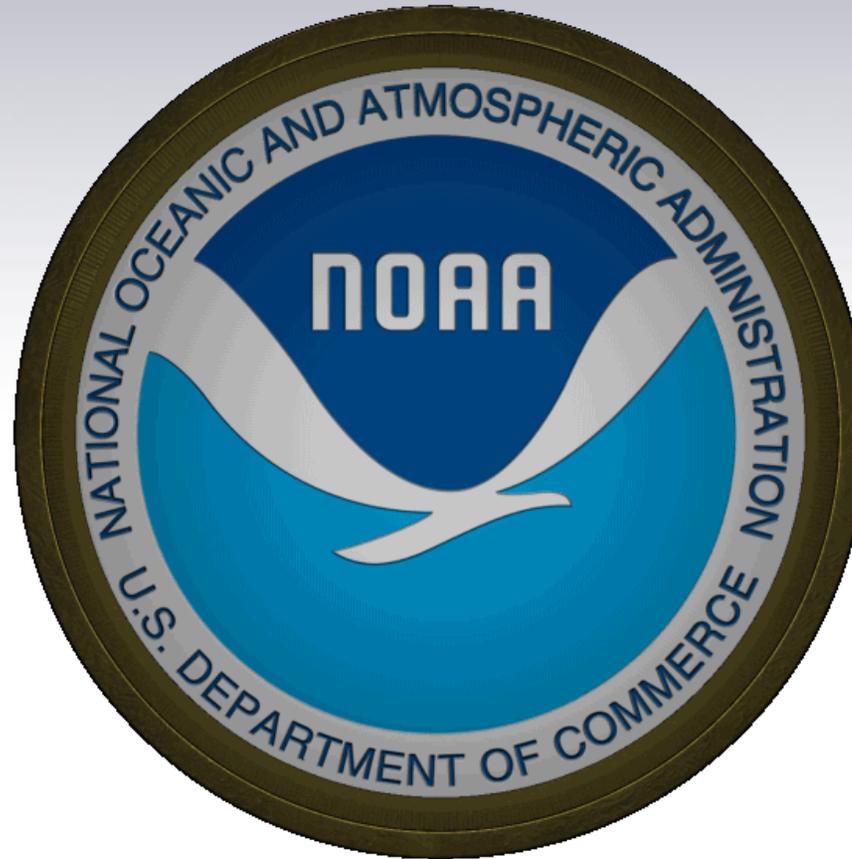
Year Round Spotter

- Snowfall – take a few measurements in an area away from tall objects and does not drift to get an average. **Report snowfall to us in the nearest tenth of an inch.**

7.1”, 2.2”, etc

- Any accumulation of ice. What is it sticking to? Only the cars, only the sidewalks, etc. You can measure the thickness of the ice on branches (if you want). Just knowing the conditions though is the most important.

Thanks for Your Interest!



erik.heden@noaa.gov

www.weather.gov/newport