2025 Tropical SKYWARN Training

National Weather Service
Baltimore/Washington

Tropical Cyclones

Basics & Classifications

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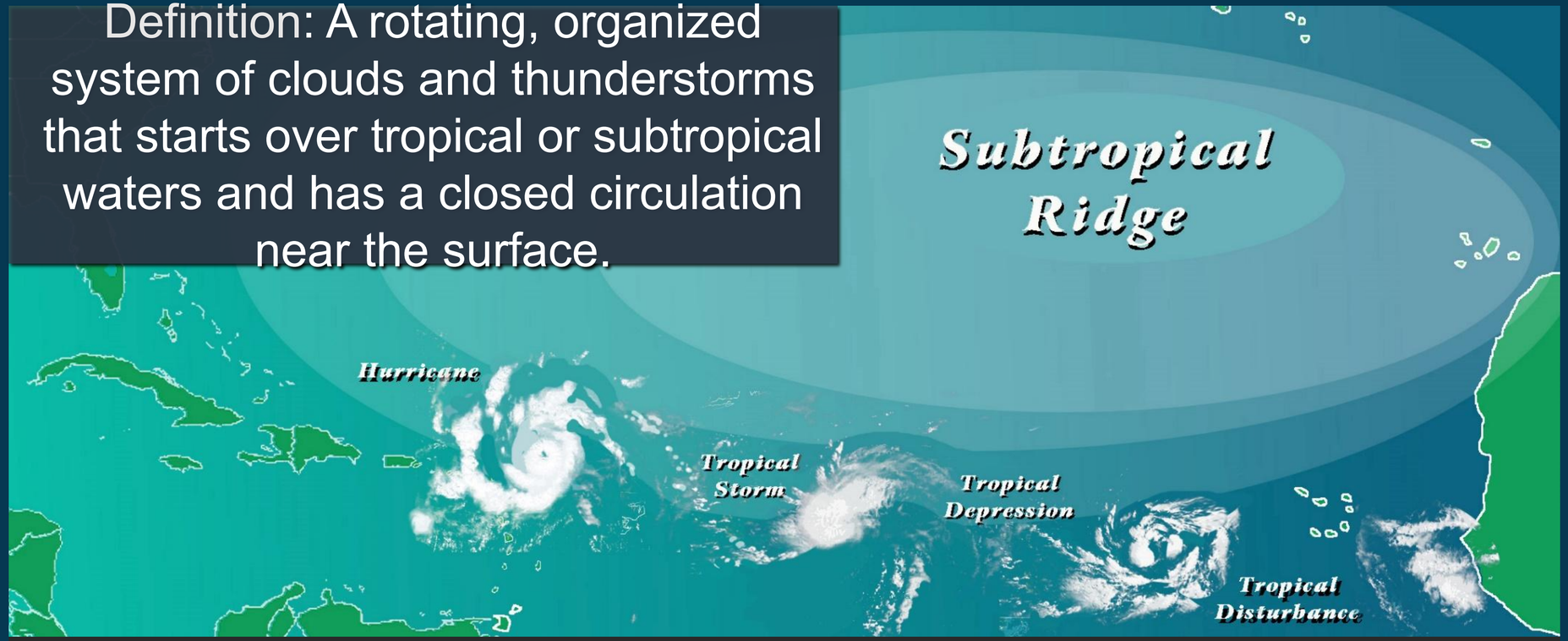
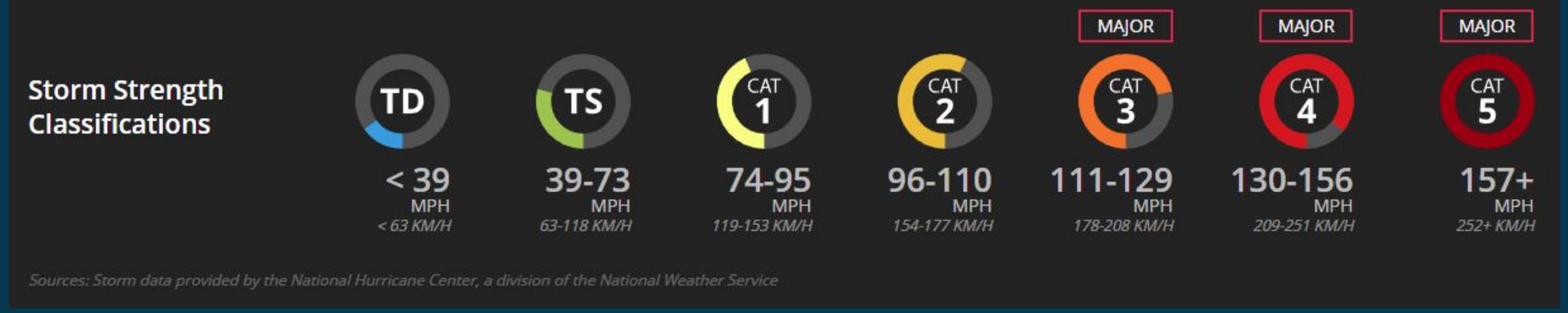
Definition: A rotating, organized system of clouds and thunderstorms that starts over tropical or subtropical waters and has a closed circulation near the surface.





Tropical Cyclones

Necessary Ingredients

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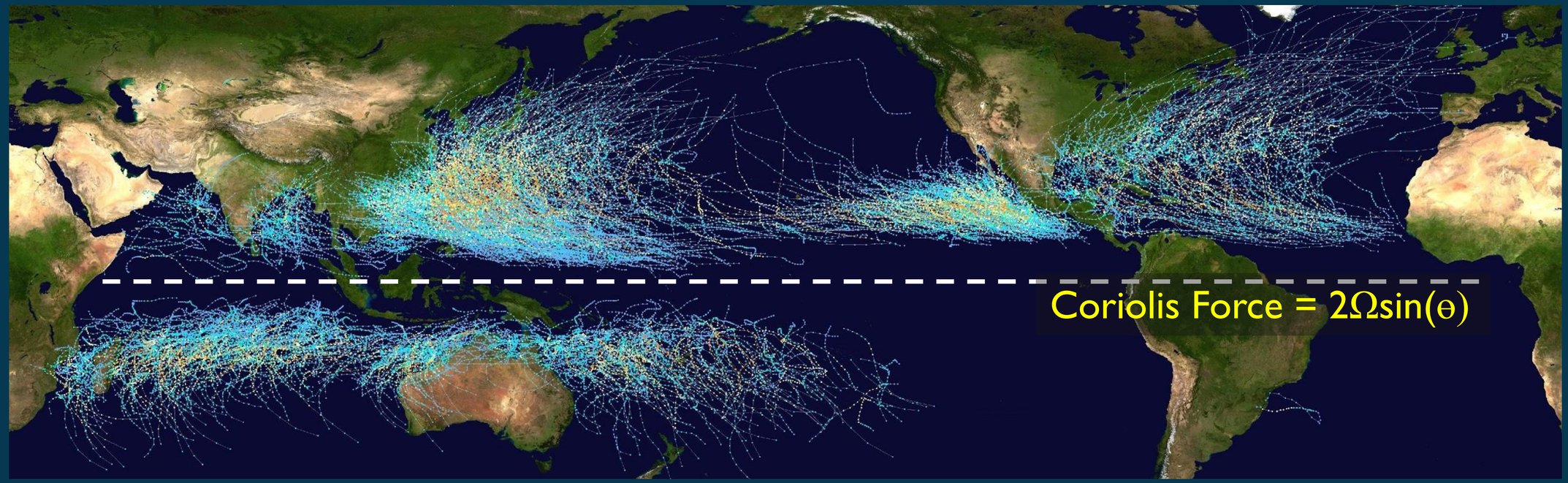
INGREDIENTS

- Warm ocean water through a deep layer
- Unstable atmosphere with sufficient moisture
- Low vertical wind shear
- Pre-existing disturbance near the surface (away from equator)



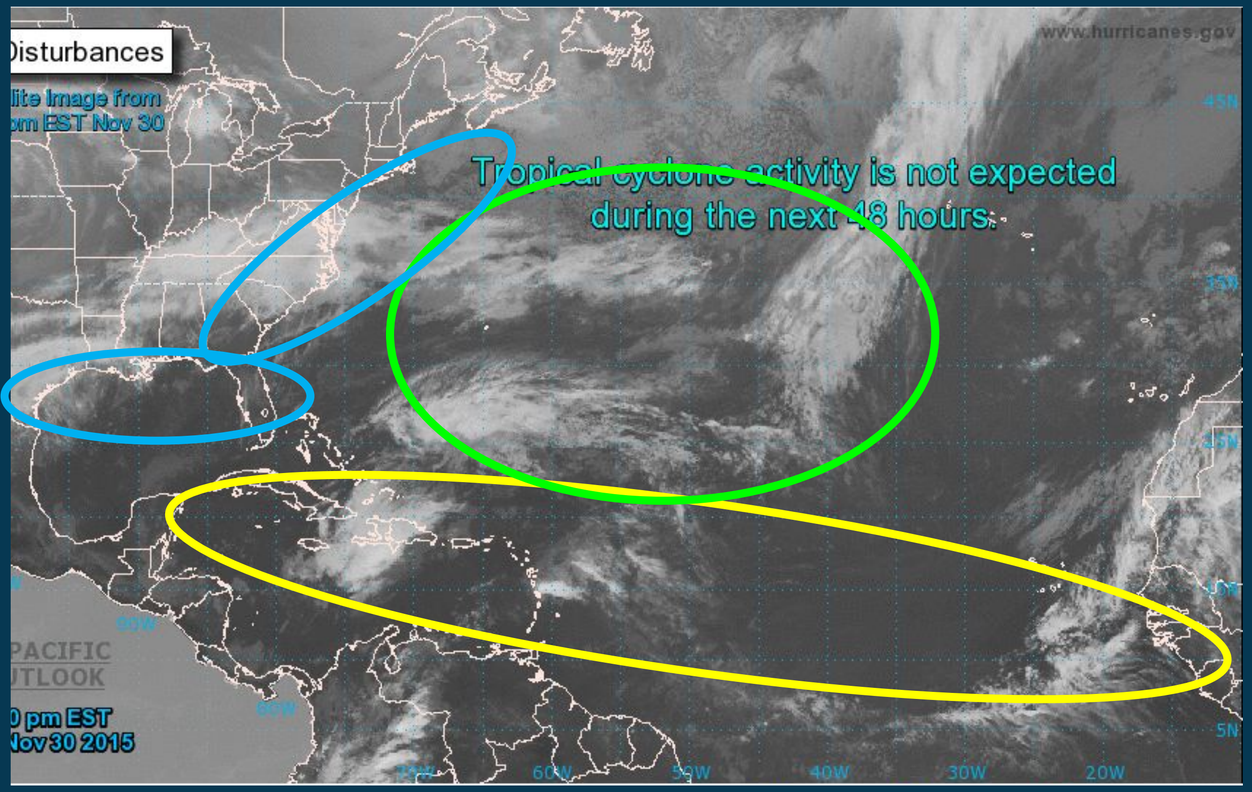
Tropical Cyclones

Development In The North Atlantic

African Easterly Waves (AEW): Also called tropical waves, this is an inverted trough of low pressure moving generally westward in the tropical easterlies. A trough is defined as a region of relative low pressure. The majority of tropical cyclones form from easterly waves.

Tropical Upper Tropospheric Trough (TUTT): Is a trough, or cold core low in the upper atmosphere, which produces convection. On occasion, one of these develops into a warm-core tropical cyclone.

Old Frontal Boundary: Remnants of a polar front can become lines of convection and occasionally generate a tropical cyclone. In the Atlantic Ocean storms, this will occur early or late in the hurricane season along the U.S. coastline.



Hurricane Season

Why June 1st to November 30th?

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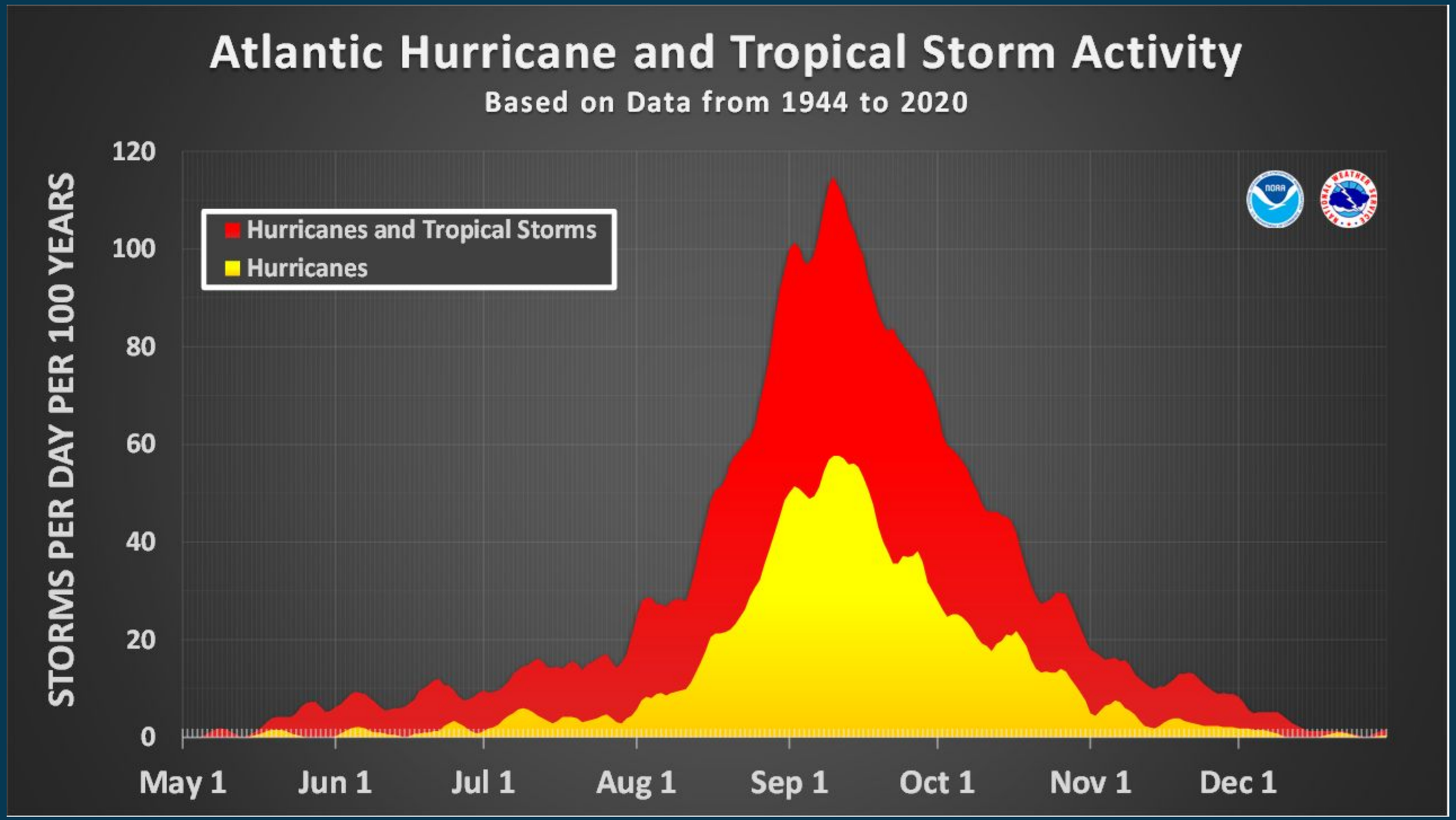

What Does an "Average" Season Look Like?

Atlantic Long-Term Climatology

Based on the last 30-years of data (1991-2020) from the North Atlantic Basin…

An "average" season is comprised of:

- **14 Tropical Storms (i.e. systems given names; sustained winds 39-73 mph)**
- **7 Hurricanes (sustained winds of 74+ mph)**
- **3 Major Hurricanes (Category 3-5; sustained winds of 111+ mph)**

Average date of first Tropical Storm: June 20
Average date of first Hurricane: August 11
Average date of first Major Hurricane: September 1

Pre-season and early season formations do NOT necessary mean the overall season will be above normal (some are, some are not – NO correlation exists).

- **Thus, early season development can NOT be used as a reliable predictor for later season activity.**

Atlantic Hurricane Climatology

June

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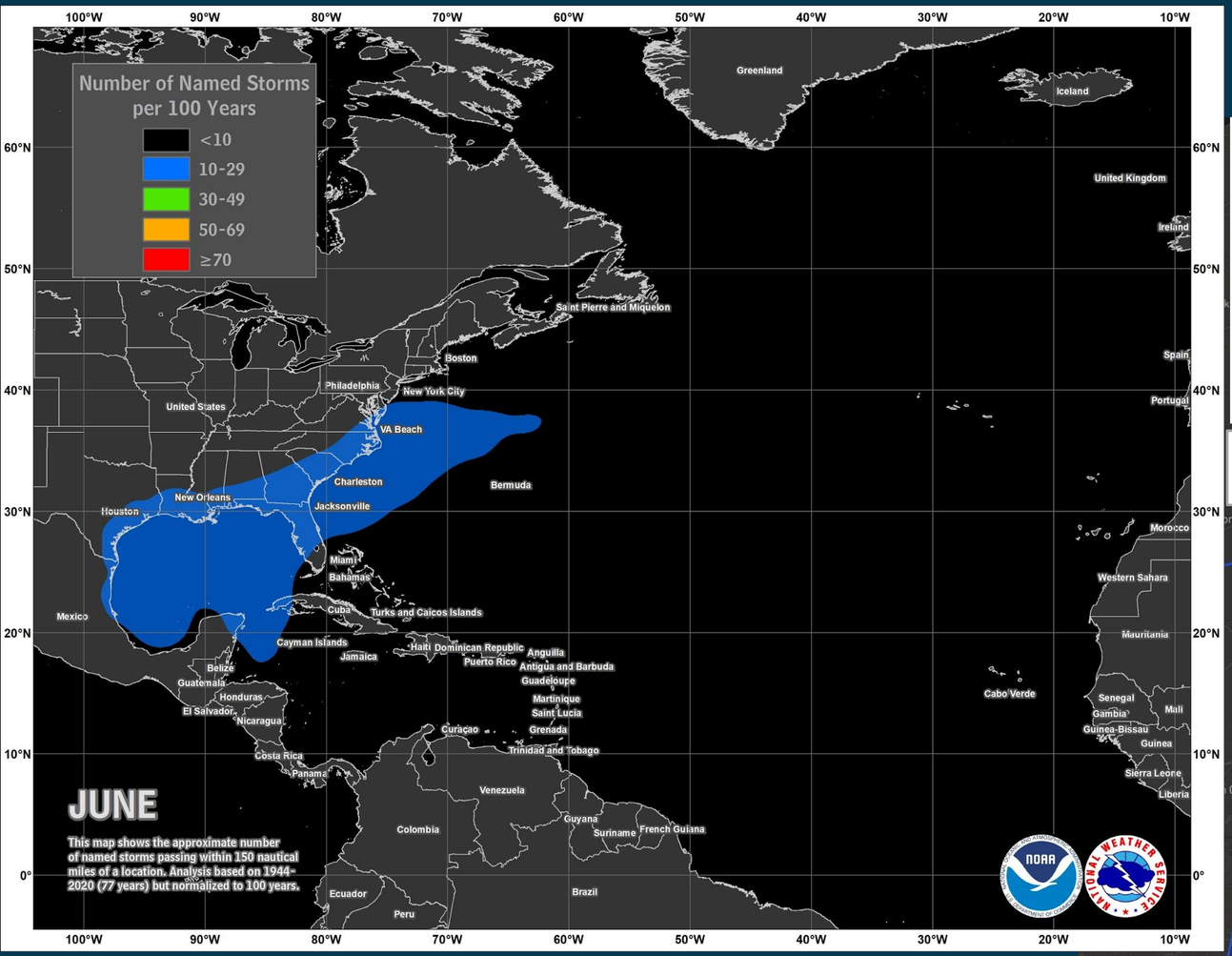
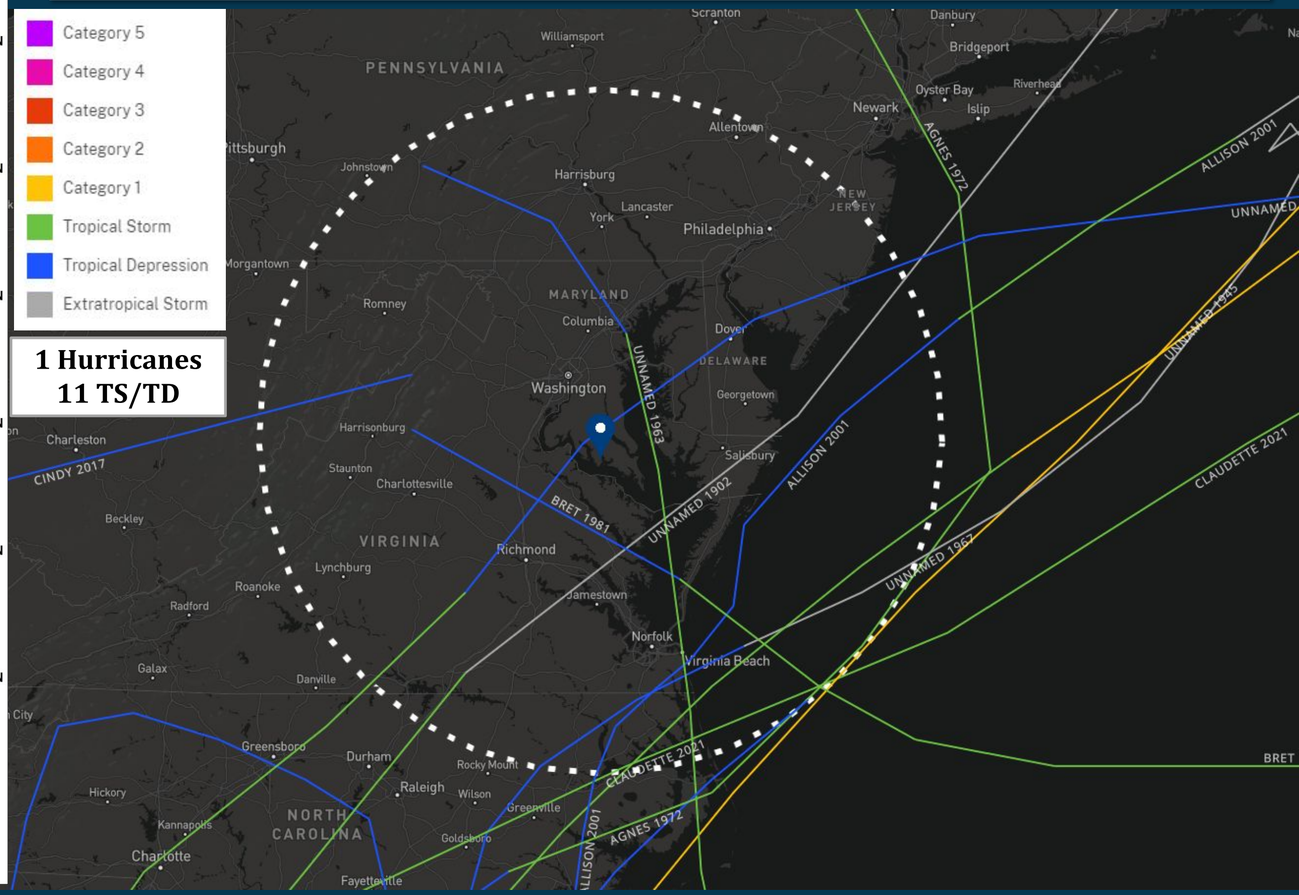


Historic June Hurricanes
Passing within 150 n. miles of Mechanicsville, MD (1851-2021)



Atlantic Hurricane Climatology

July

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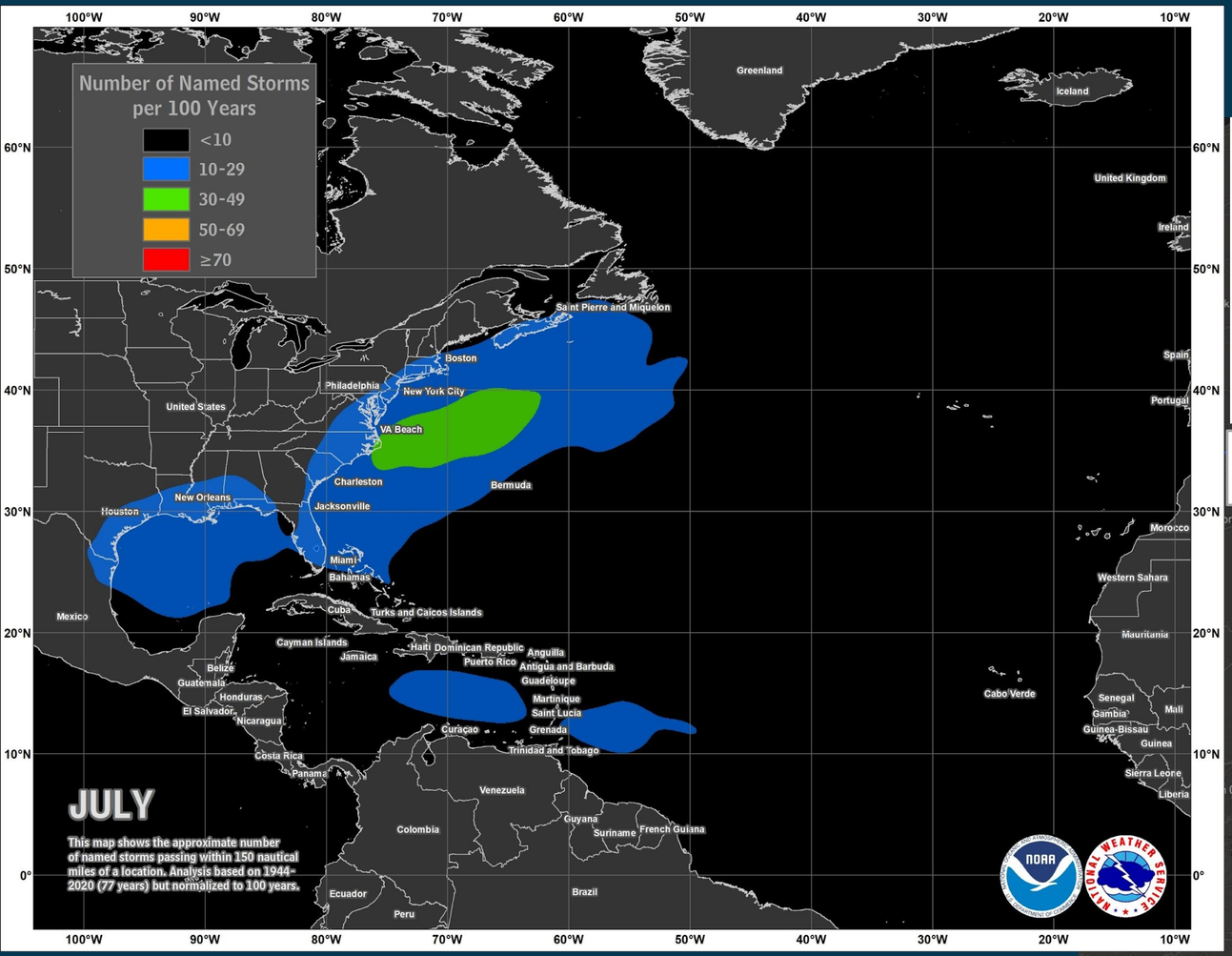
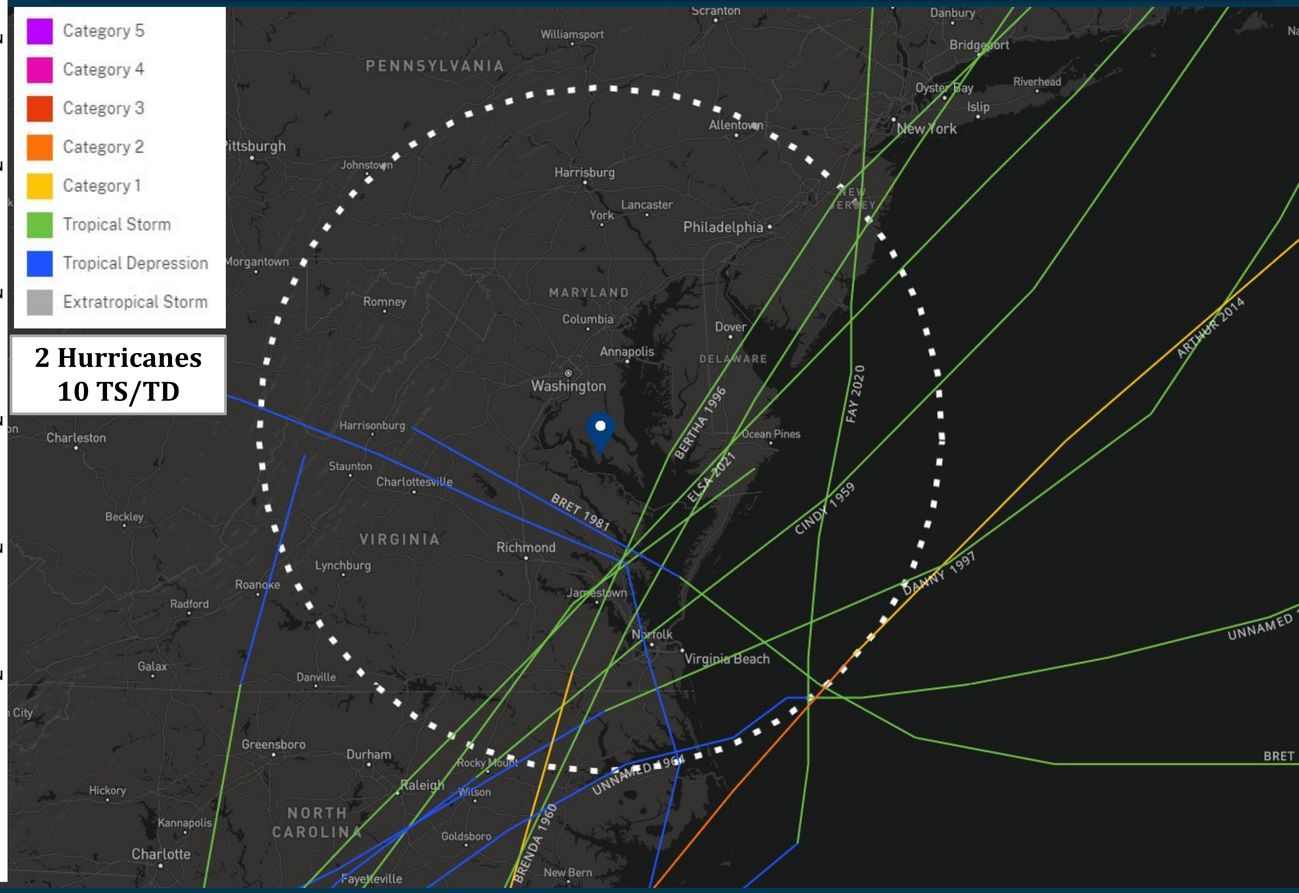
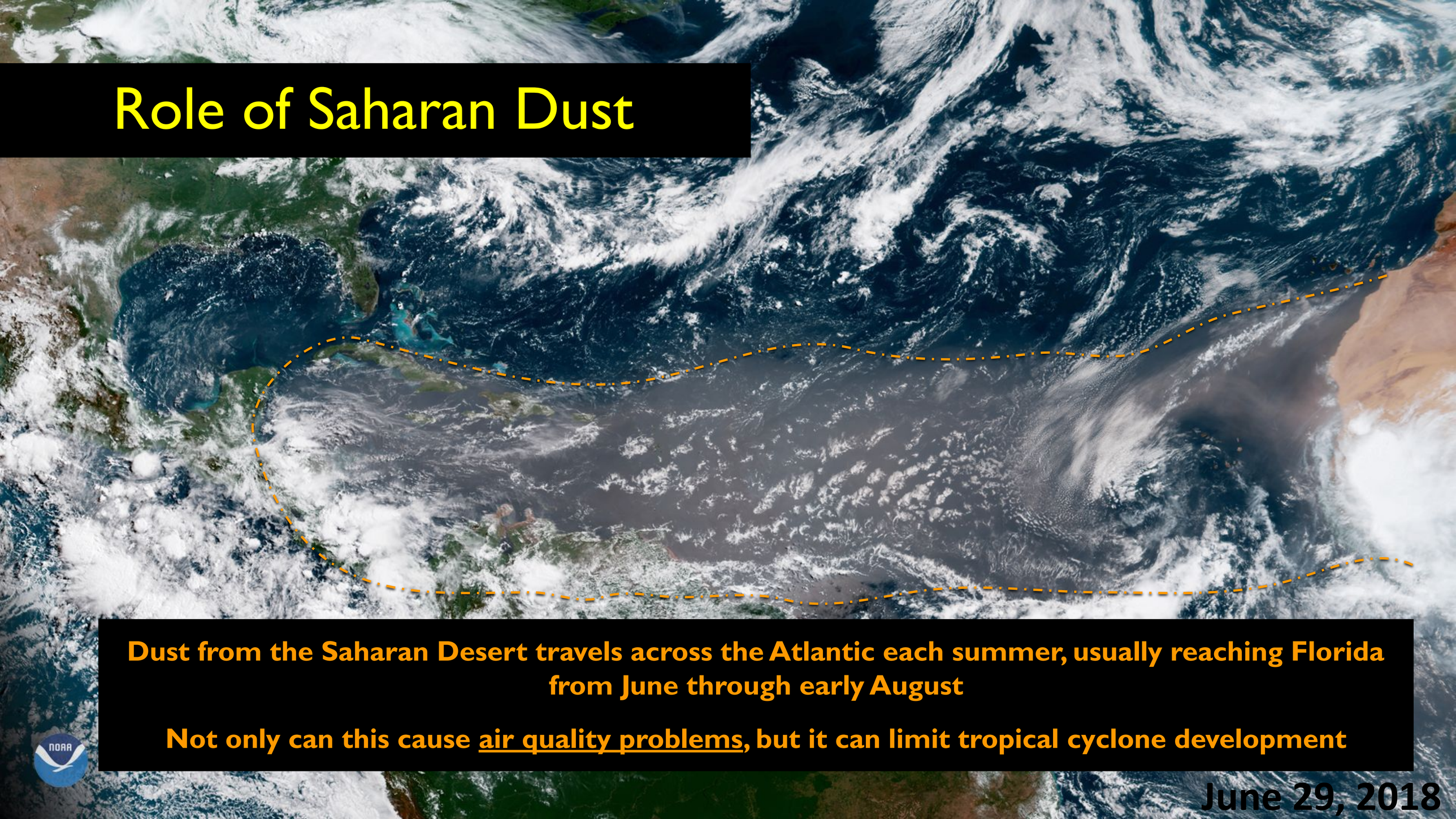


Historic July Hurricanes
Passing within 150 n. miles of Mechanicsville, MD (1851-2021)



Role of Saharan Dust



Dust from the Saharan Desert travels across the Atlantic each summer, usually reaching Florida from June through early August

Not only can this cause air quality problems, but it can limit tropical cyclone development

June 29, 2018

Atlantic Hurricane Climatology

August

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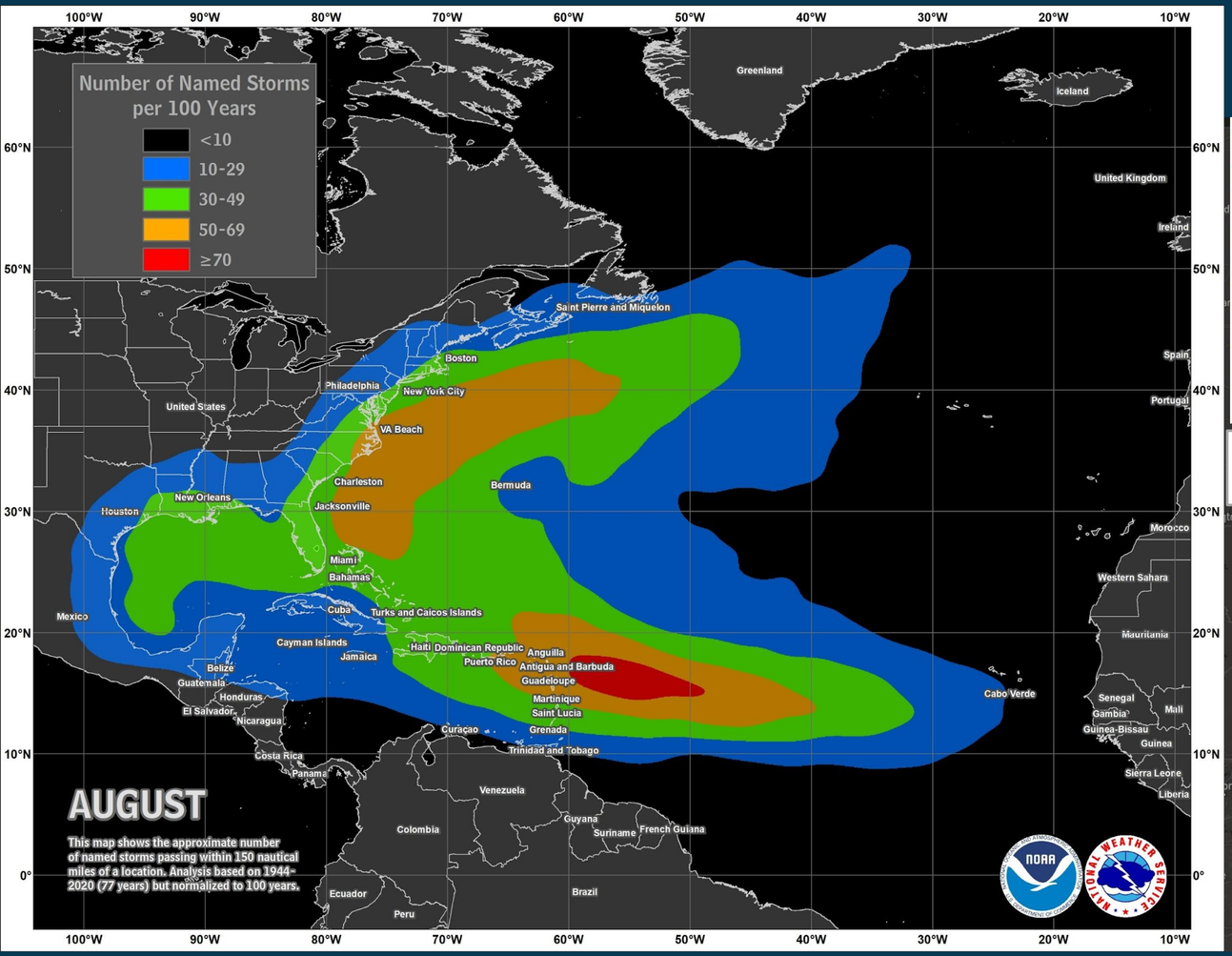
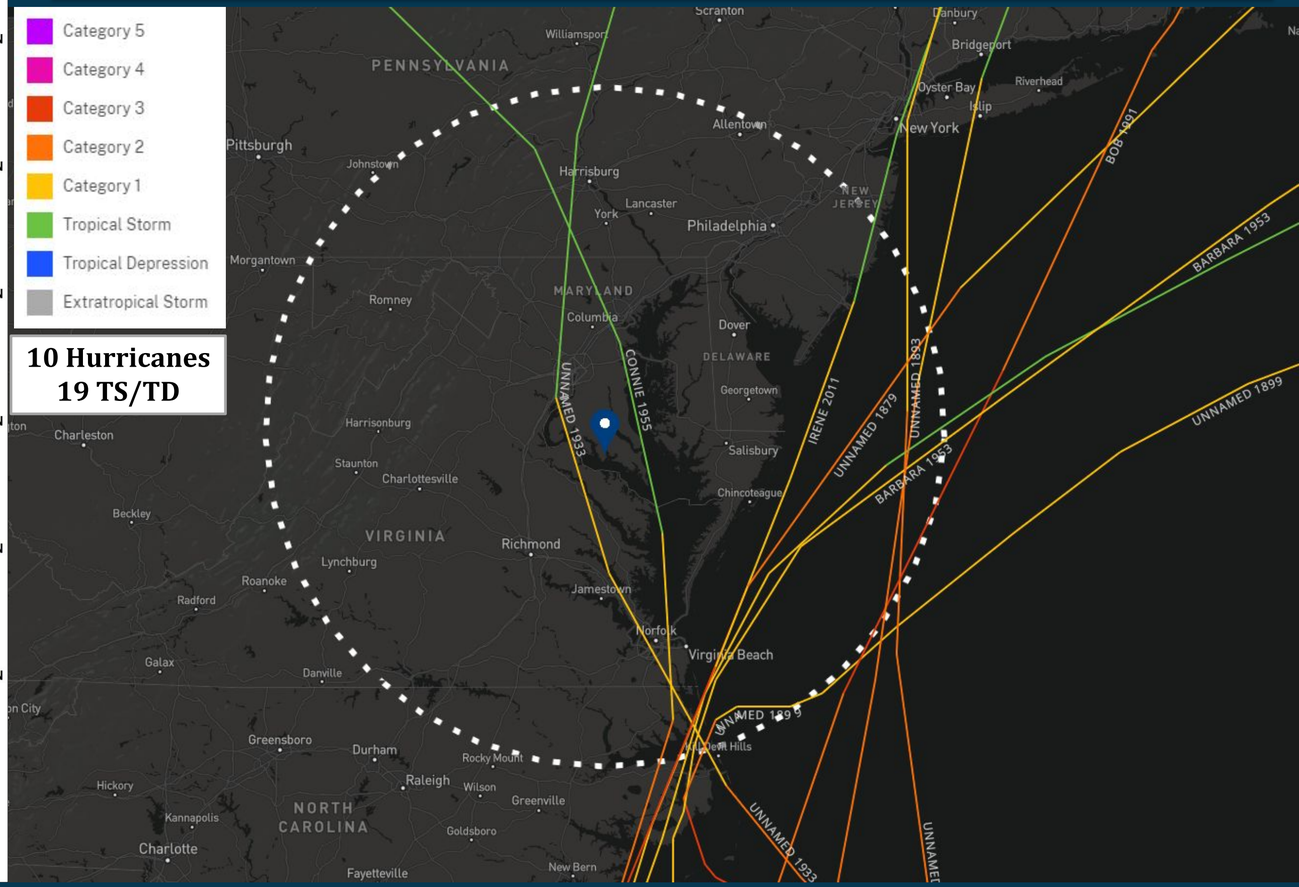


Historic August Hurricanes
Passing within 150 n. miles of Mechanicsville, MD (1851-2021)



Atlantic Hurricane Climatology

September

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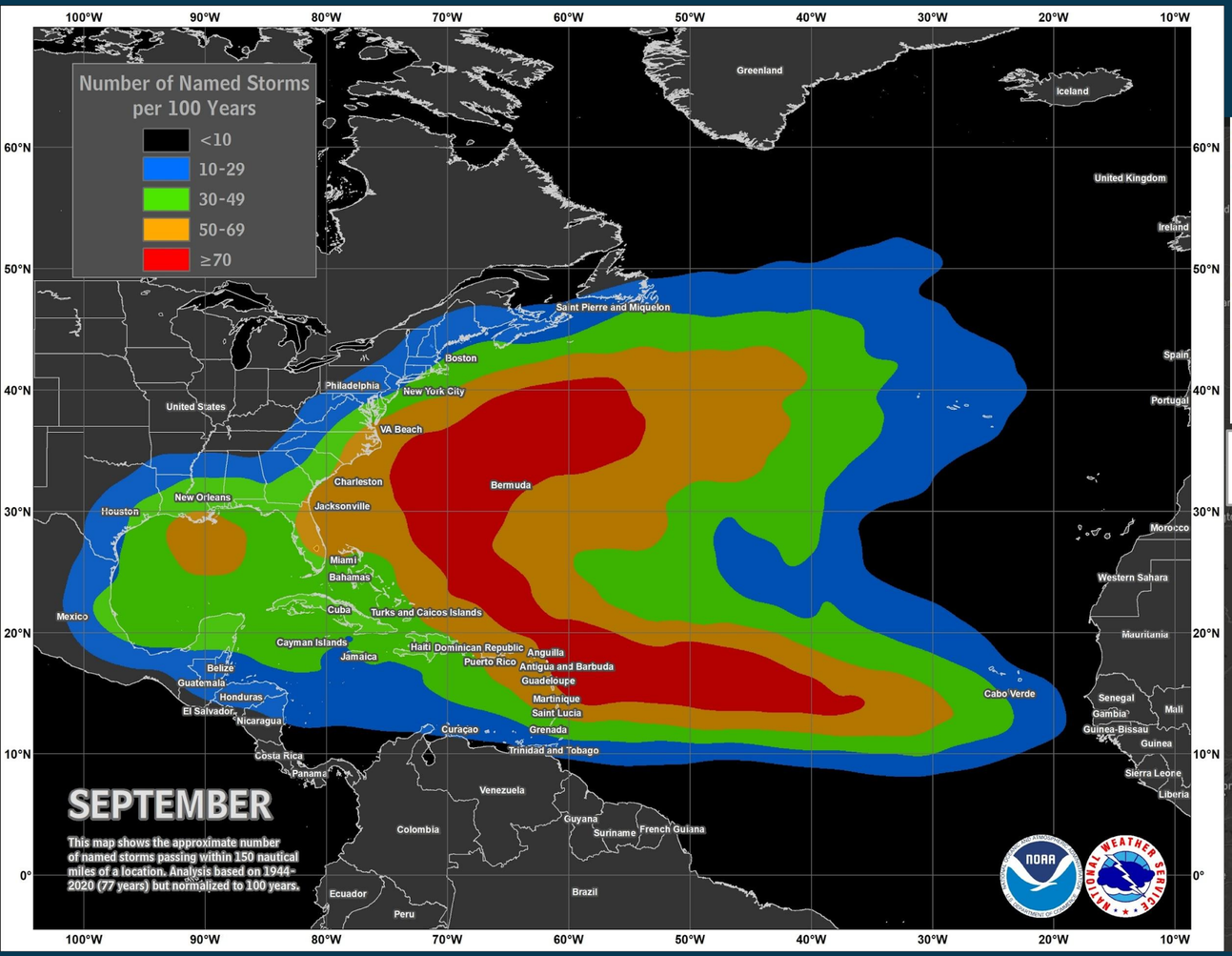
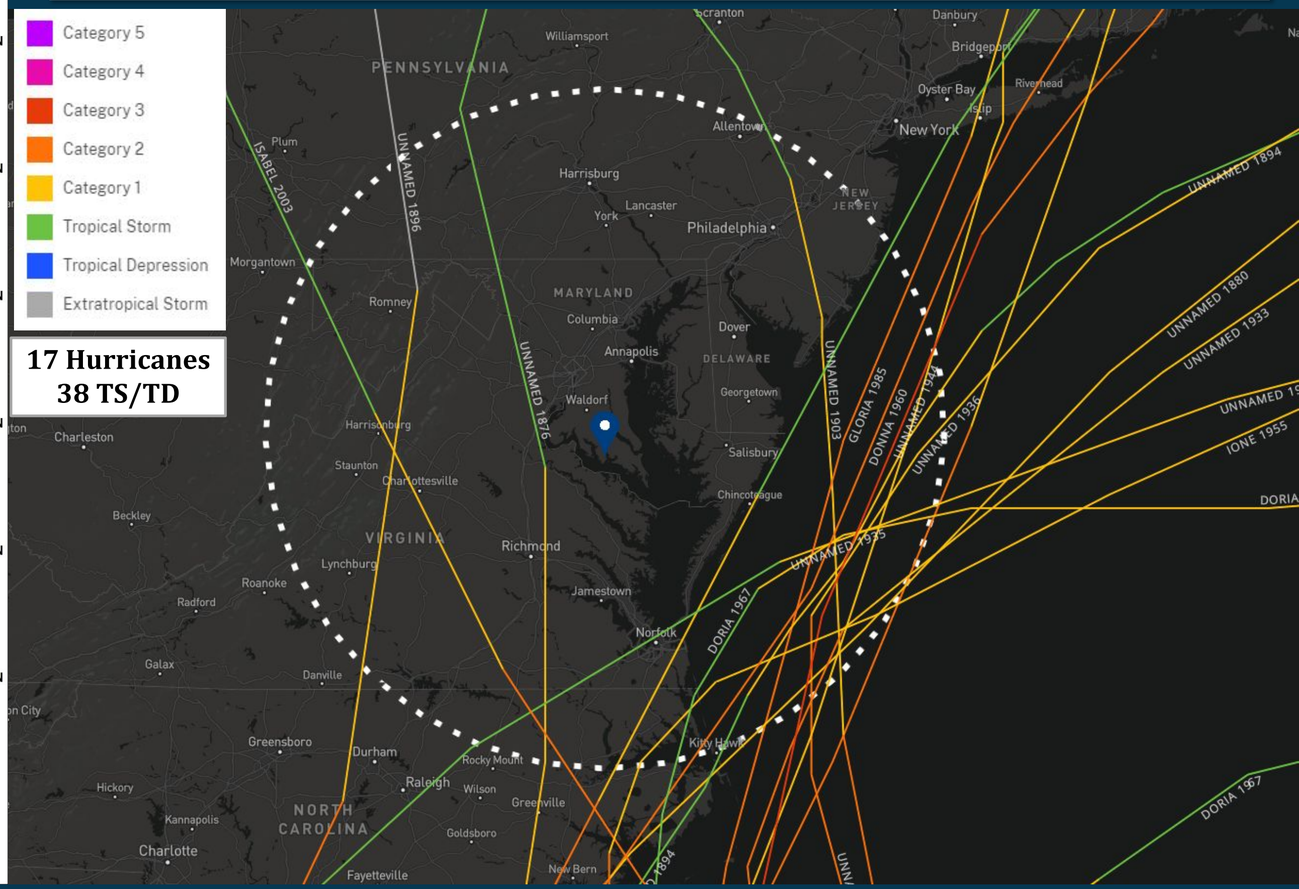


Historic September Hurricanes
Passing within 150 n. miles of Mechanicsville, MD (1851-2021)



Atlantic Hurricane Climatology

October

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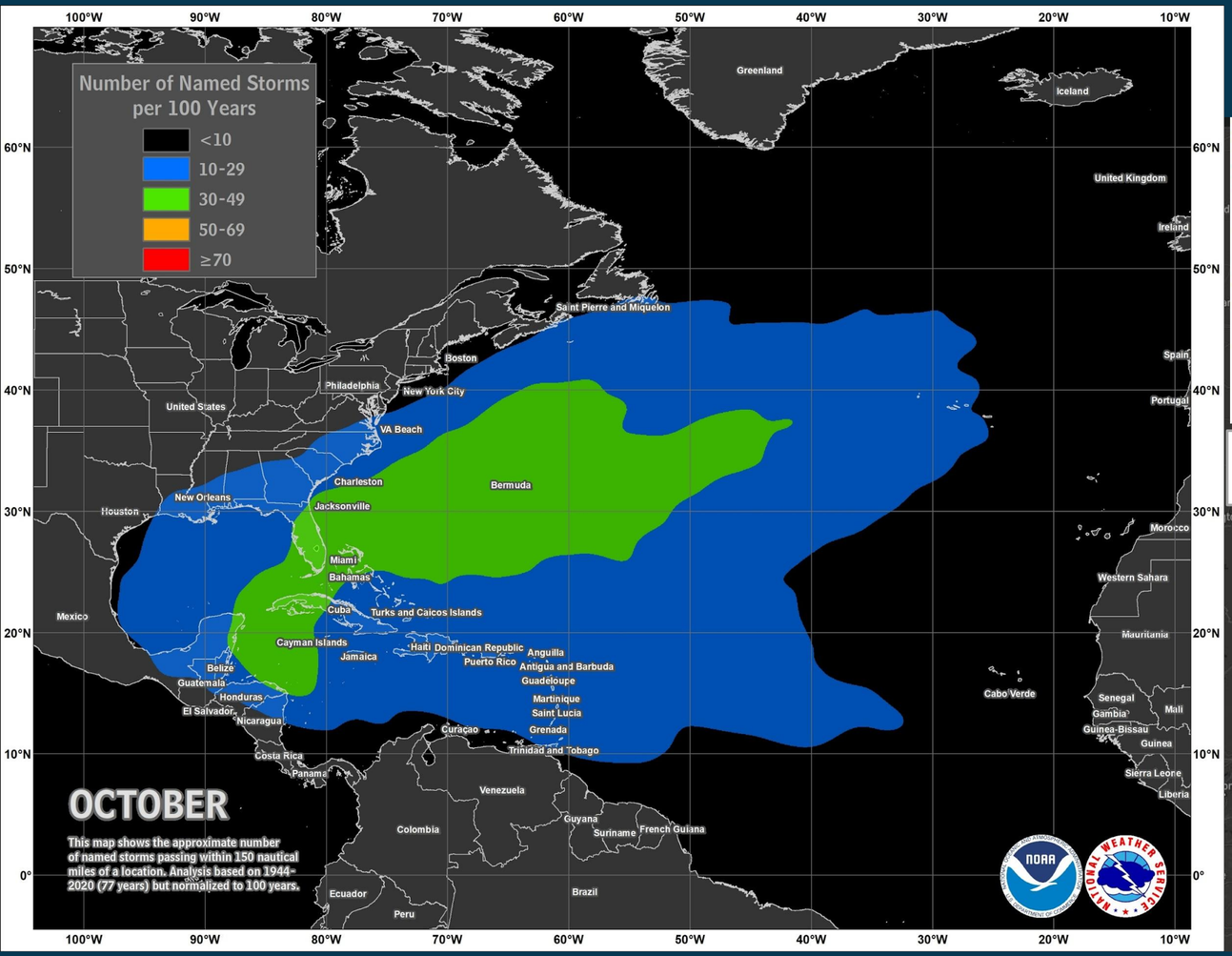
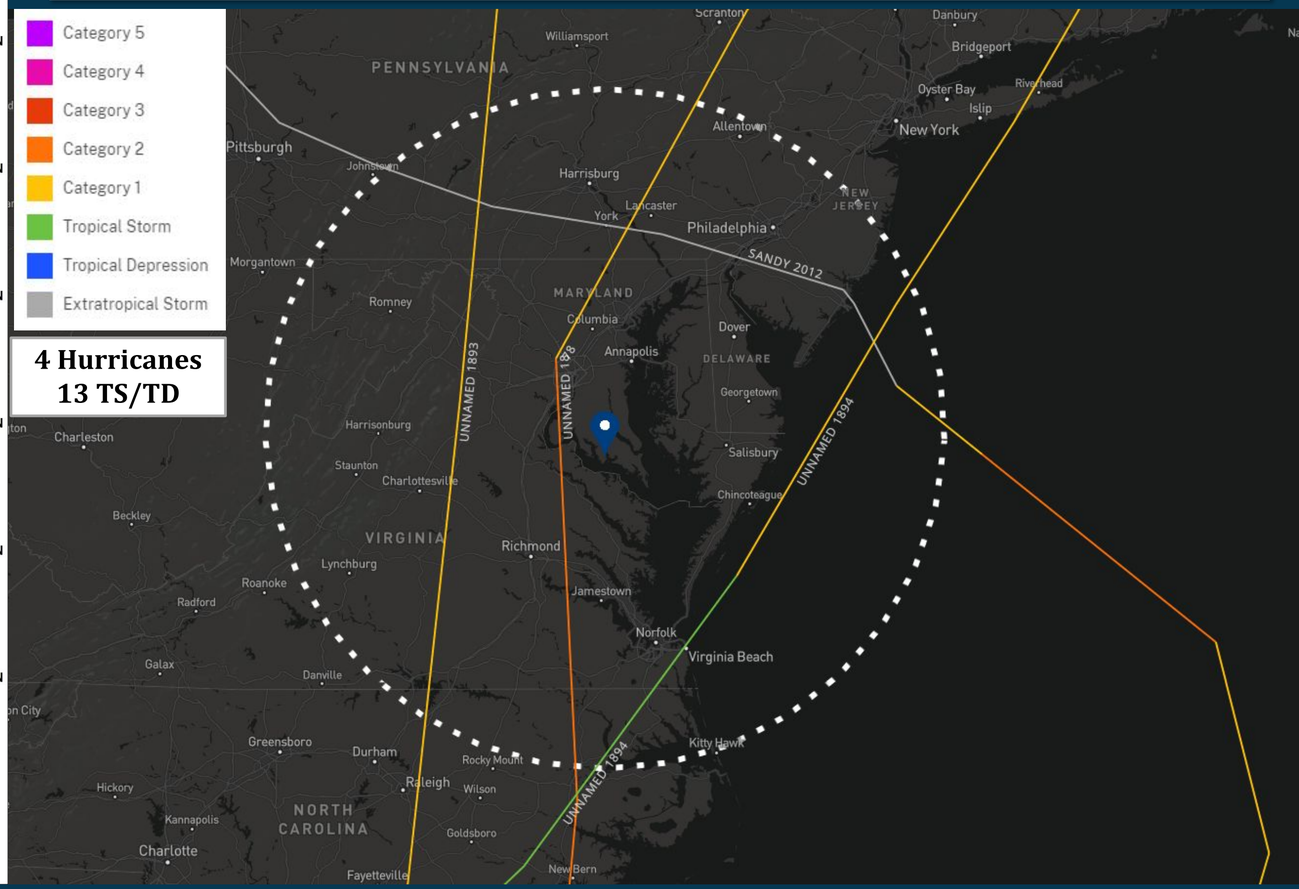


Historic October Hurricanes
Passing within 150 n. miles of Mechanicsville, MD (1851-2021)



Atlantic Hurricane Climatology

November

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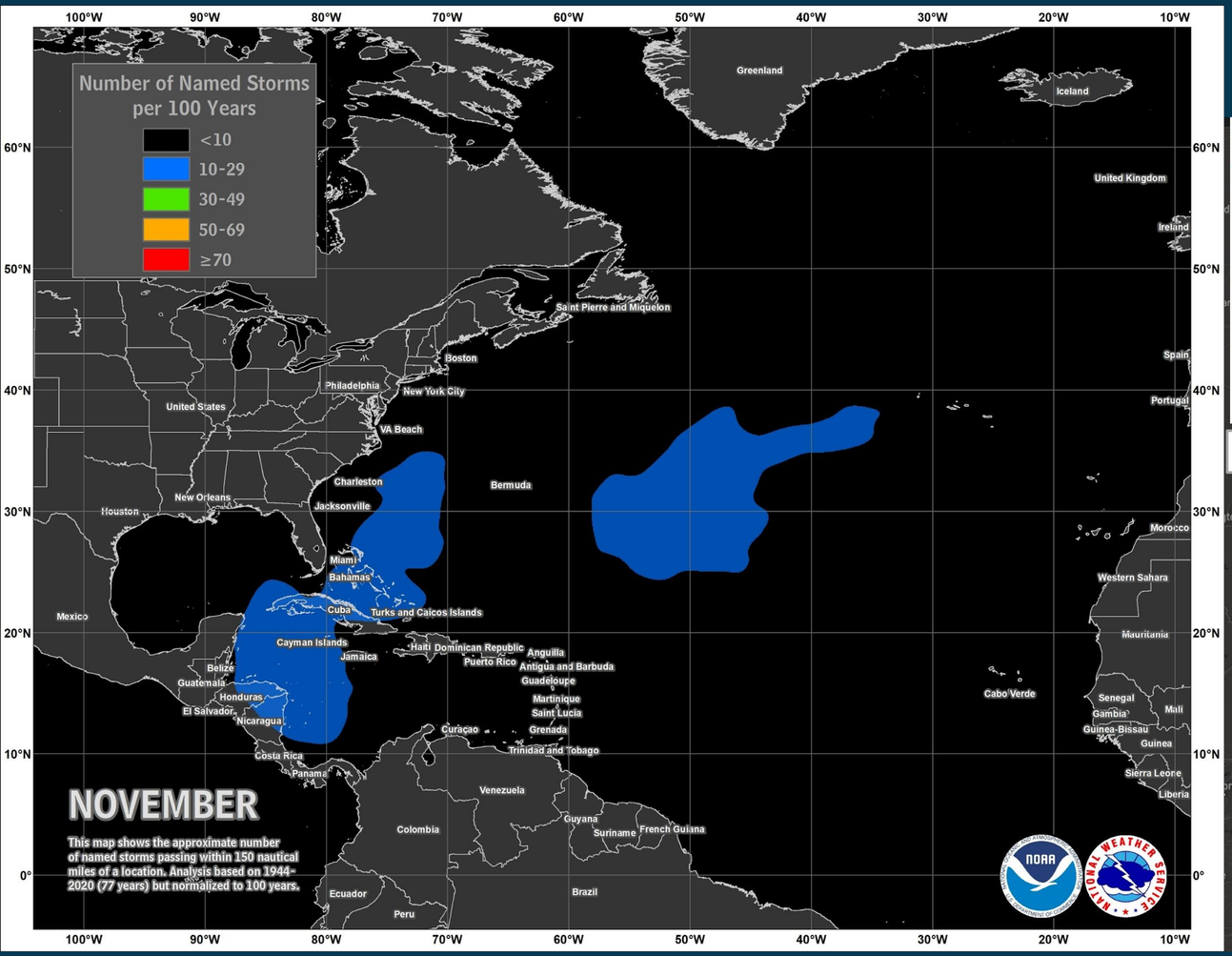
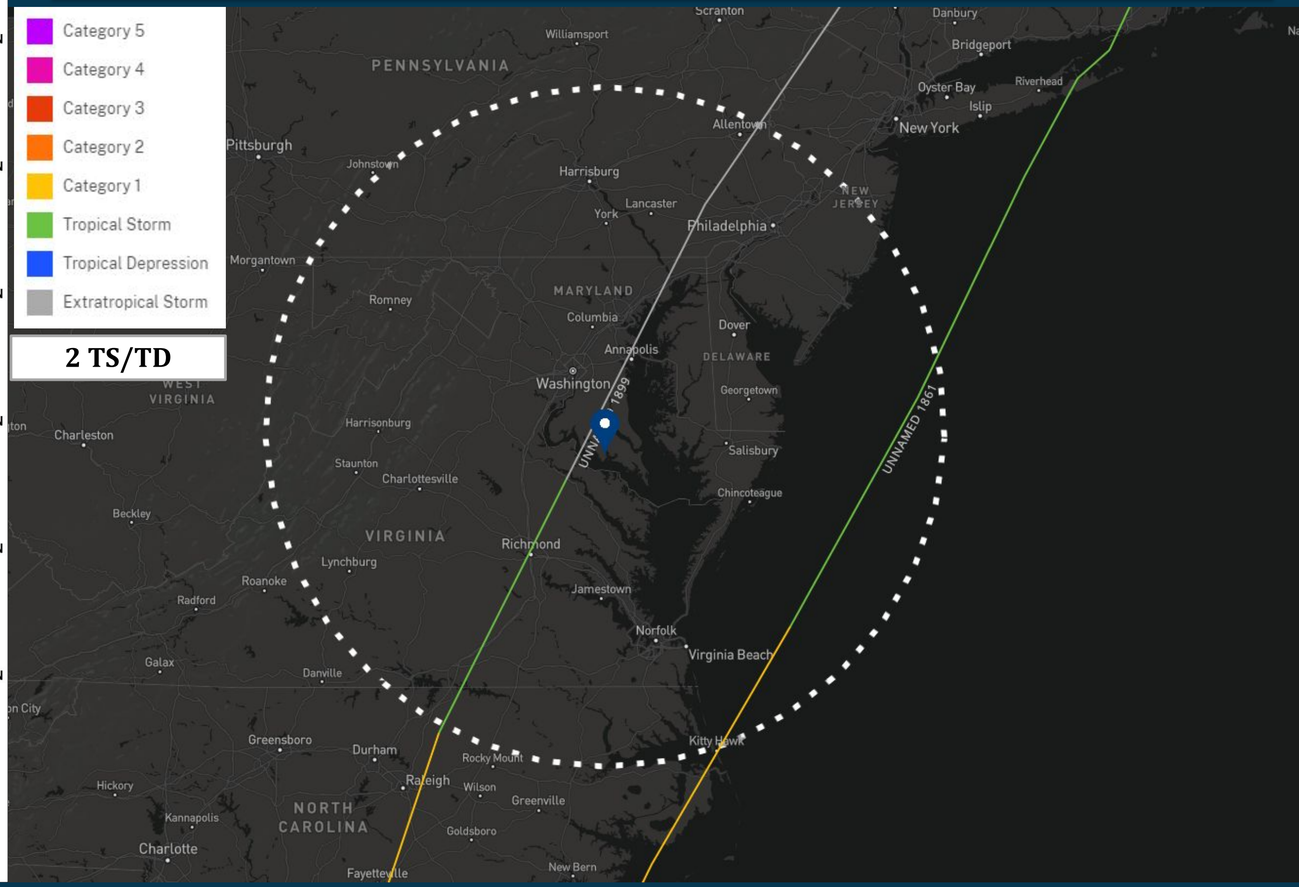


Historic November Hurricanes
Passing within 150 n. miles of Mechanicsville, MD (1851-2021)



Historical Out Of Season Tropical Systems

Passing within 150 n. miles of Mechanicsville, MD (1851-2021)

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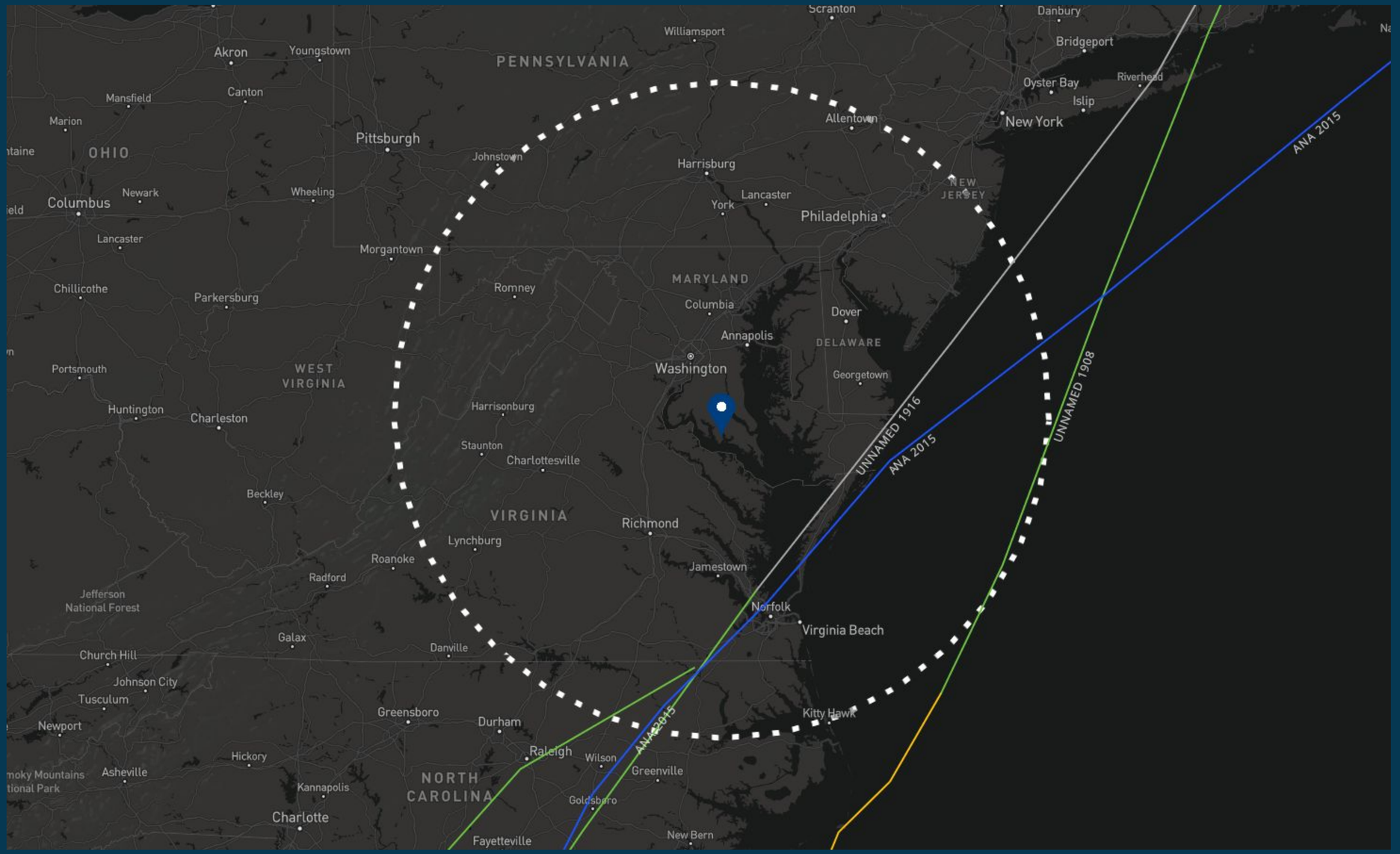

Hurricane Return Period

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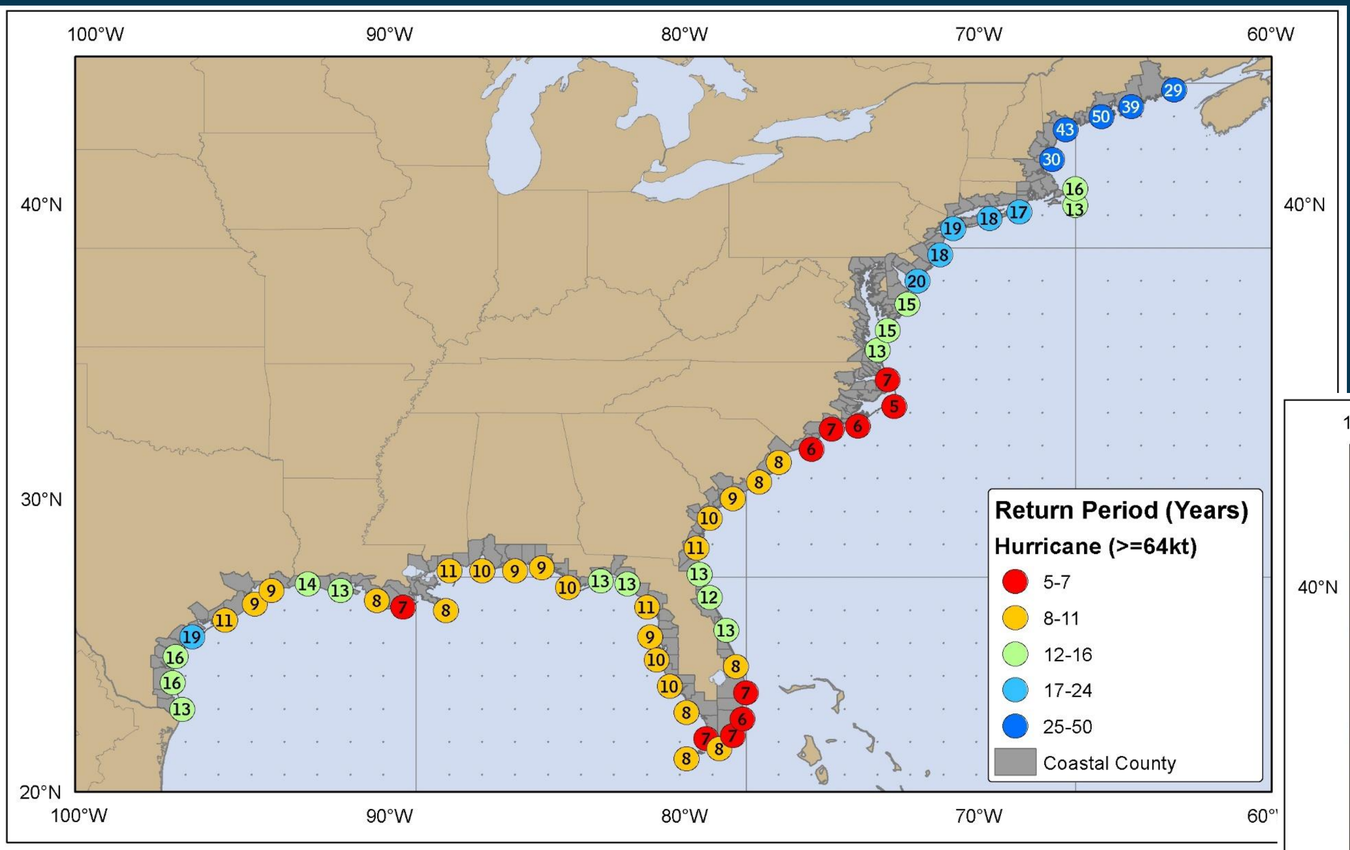

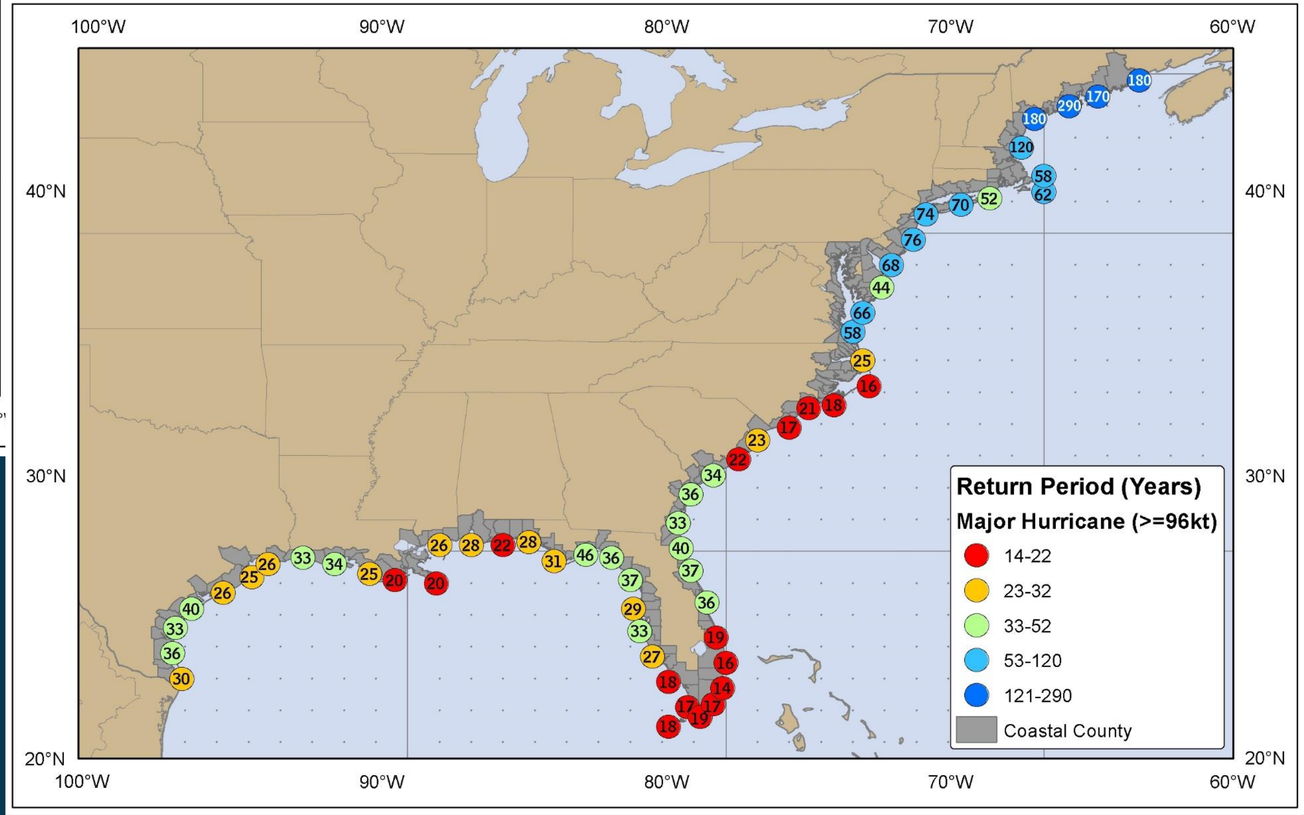

Mid-Atlantic Climatology

Passing within 100 n. miles of Washington DC (1851-2021)

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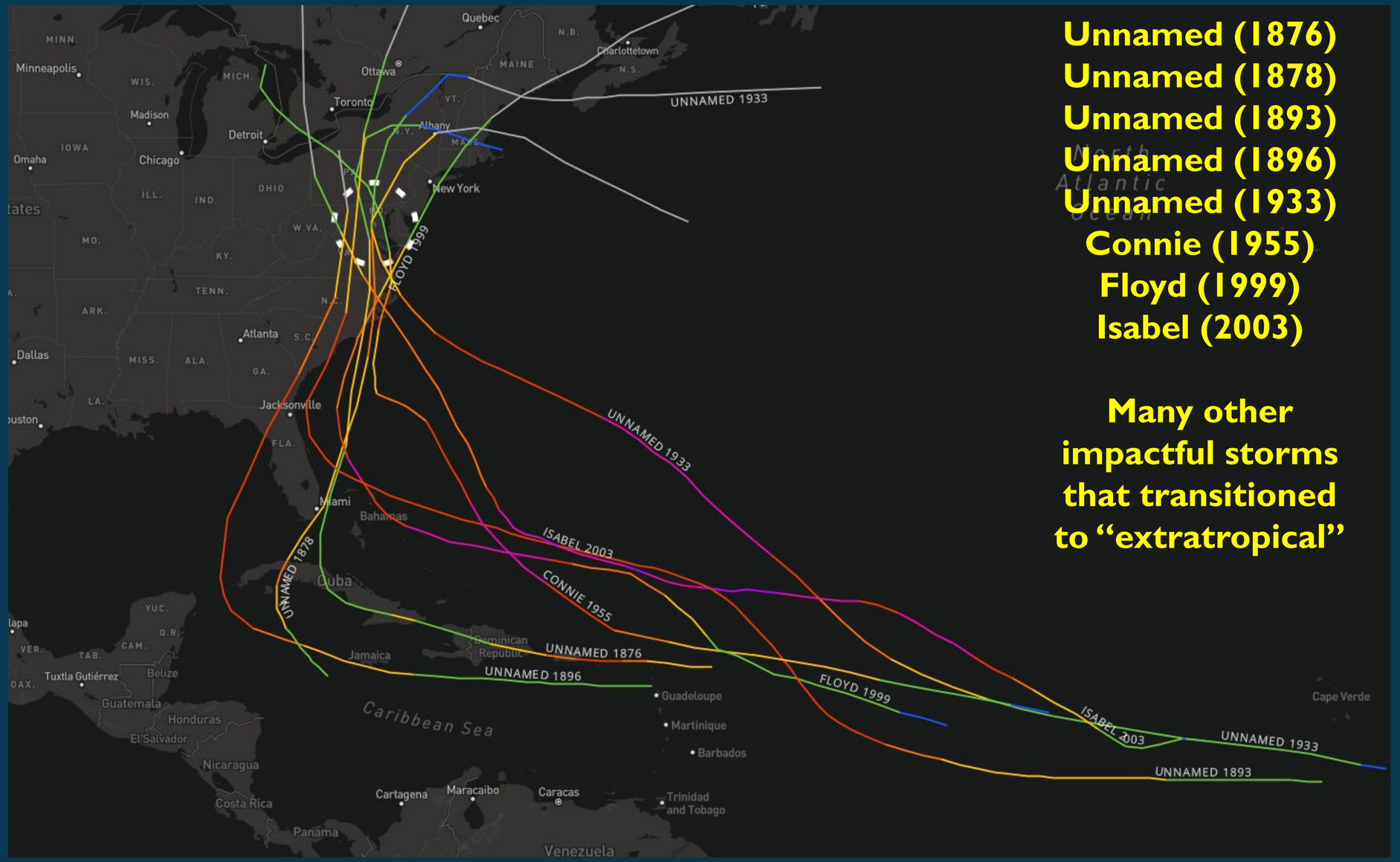
8 Hurricanes
51 TS/TD

- Category 5
- Category 4
- Category 3
- Category 2
- Category 1
- Tropical Storm
- Tropical Depression
- Extratropical Storm



Unnamed (1876)
Unnamed (1878)
Unnamed (1893)
Unnamed (1896)
Unnamed (1933)
Connie (1955)
Floyd (1999)
Isabel (2003)

Many other impactful storms that transitioned to "extratropical"

Four Types of Impacts

All tropical cyclones can produce one or combination of these

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Remember that a hurricane's category only speaks to the wind threat!

The other threats (especially flooding rain) can be especially devastating, even from a tropical storm if conditions are right.

Flooding is most frequently our biggest impact from tropical systems!

Flooding Rain Impacts

Most fatalities are caused by water hazards!

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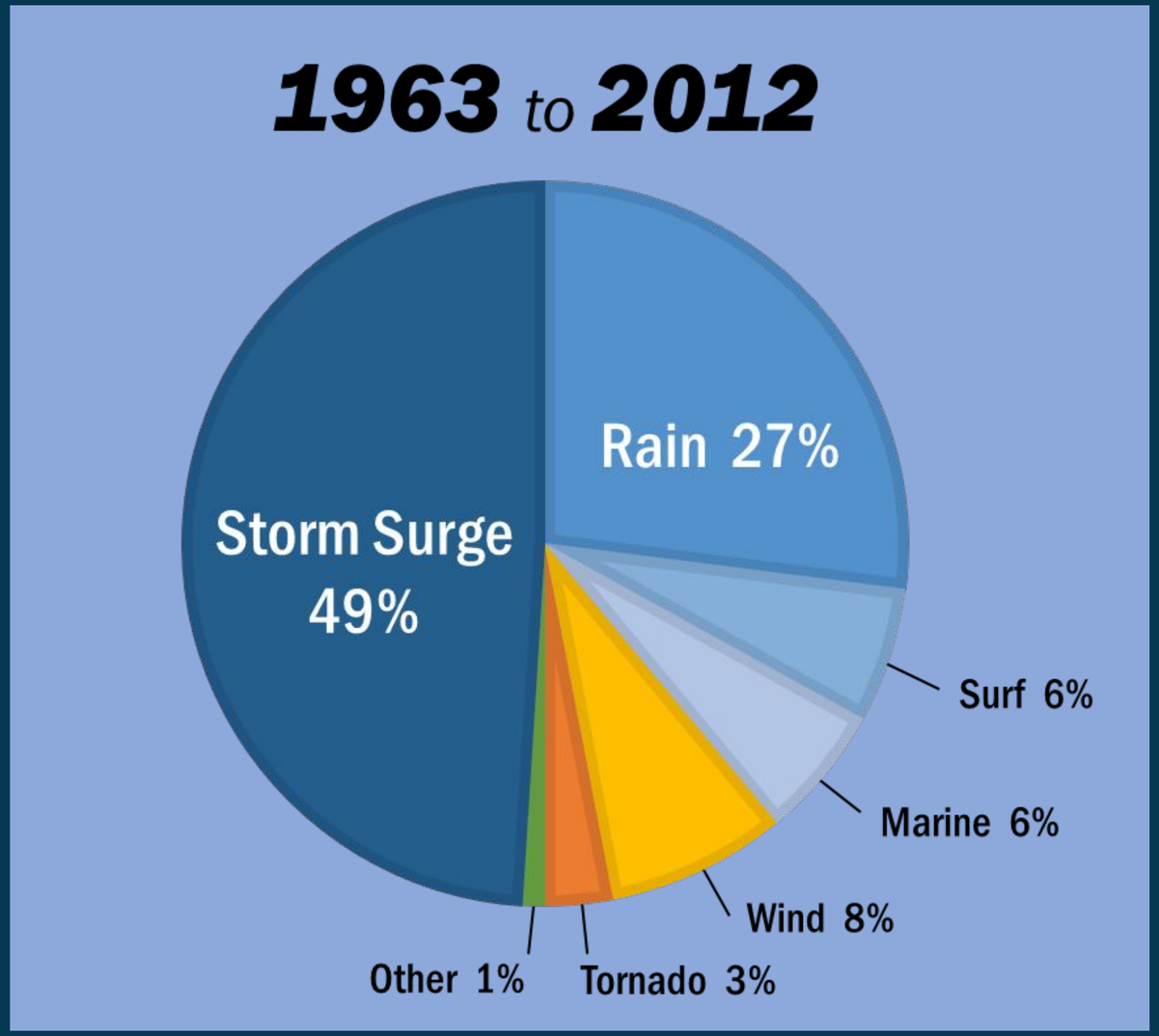

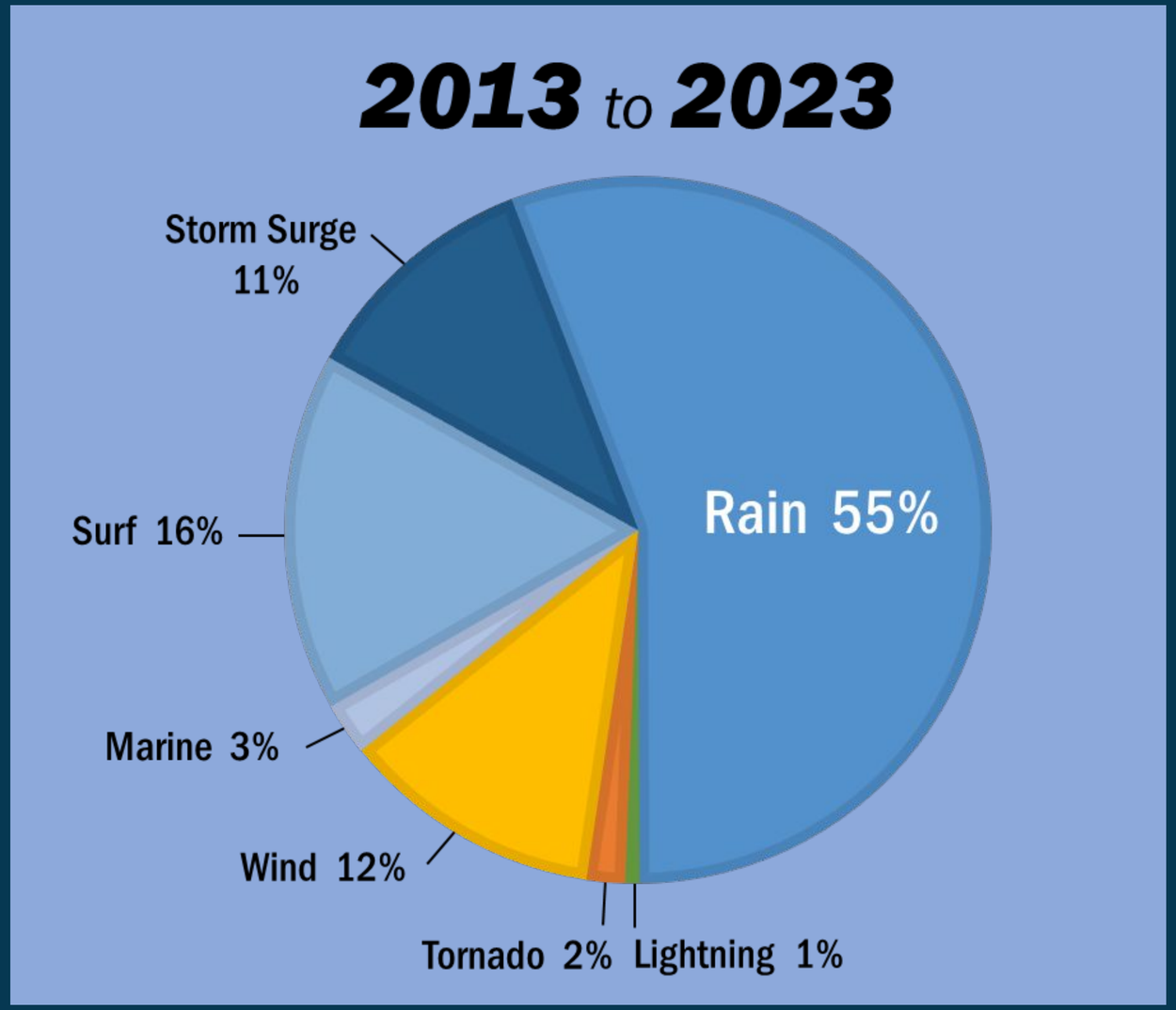

2024 Flooding Rain Impacts

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- **Water (freshwater flooding, storm surge, rip currents/surf, marine incidents) was responsible for**
  - **59% of direct deaths from tropical cyclones in the United States (127)**
  - **83% of direct deaths from tropical cyclones in other countries across the region (73)**

- **Freshwater flooding accounted for the most direct deaths**
  - **Hurricane Helene: 95**
  - **Hurricane John: 29**

- **12 of the 13 storms that caused direct deaths had at least 1 fatality attributed to freshwater flooding**


Asheville, NC (Helene)


Acapulco, MX (John)


Pinellas Co., FL (Helene)

Flooding Rain Impacts

Most fatalities are caused by water hazards!

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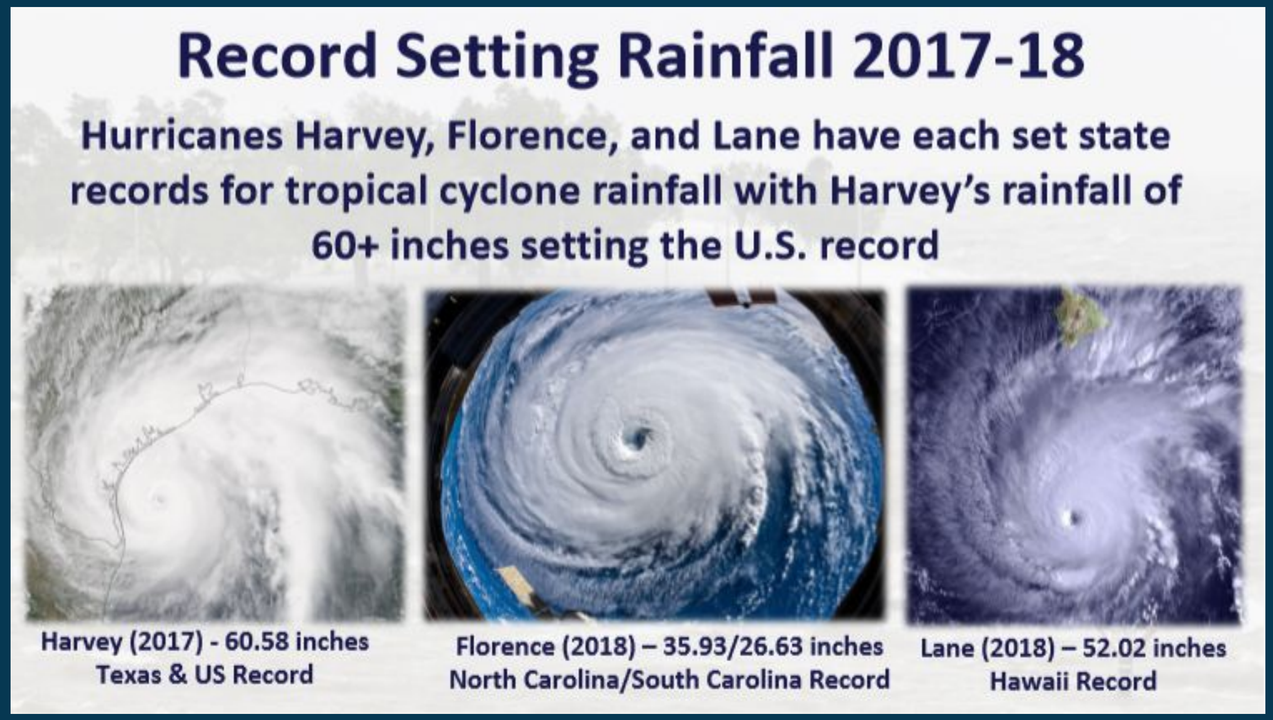
Three Types of Flooding

Flood Warning:
NWS warning for a slower rise of water in low areas and around streams that impacts roads and possibly structures.

Flash Flood Warning:
NWS warning of a very dangerous situation due to rapid change & the power of moving water. A rapid & extreme flow of high water into a normally dry area, or a rapid rise in a stream above flood level, beginning within 6 hours of rain, often within 1 hour.

River Flooding:
Runoff from heavy rain enters a river and causes it to overflow its banks. Occurs over the course of many hours to a few days.



Flooding Rain Historic Impacts

Worst Tropical-Related Flooding in NWS Baltimore/Washington History

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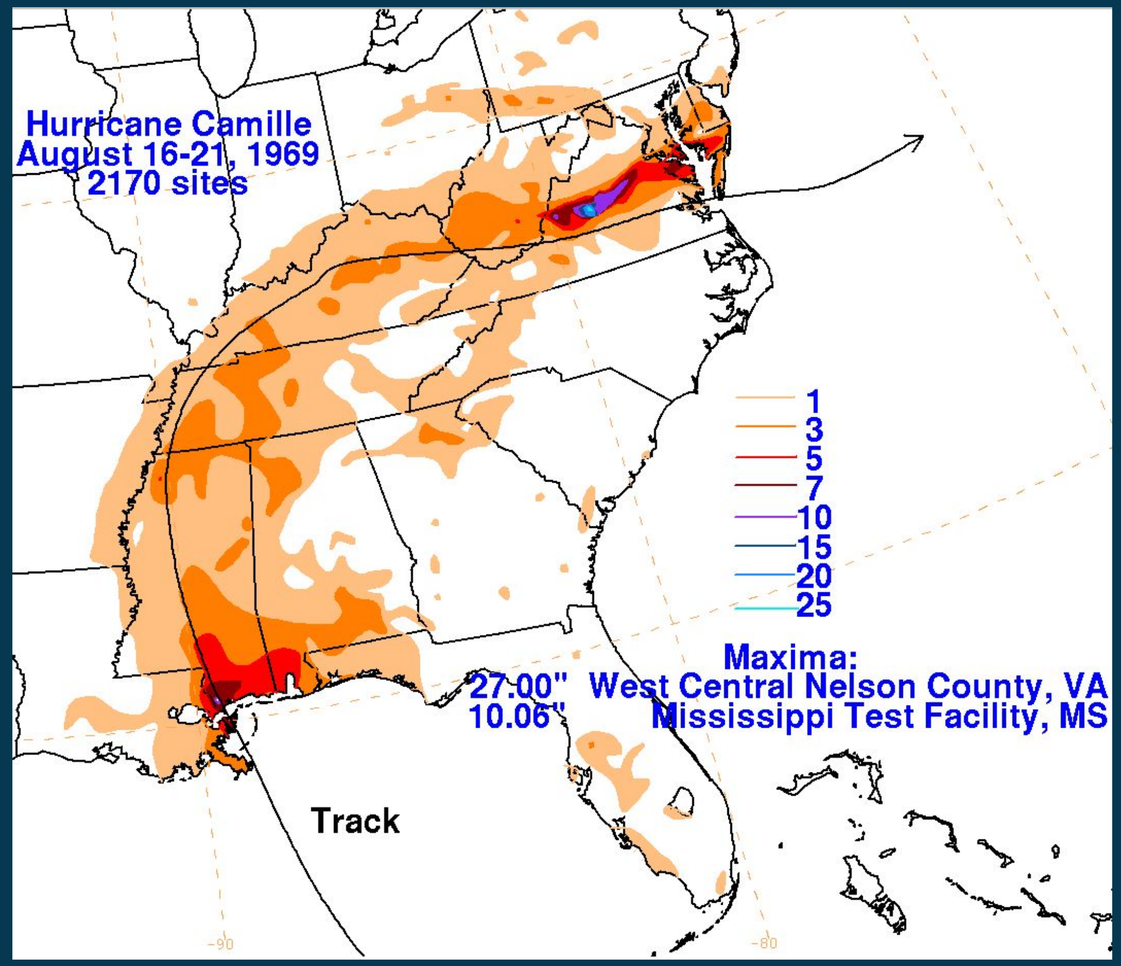
Hurricane Camille 1969 - Nelson Co., VA: 27.00”



Flooding Rain Historic Impacts

Worst Tropical-Related Flooding in NWS Baltimore/Washington History

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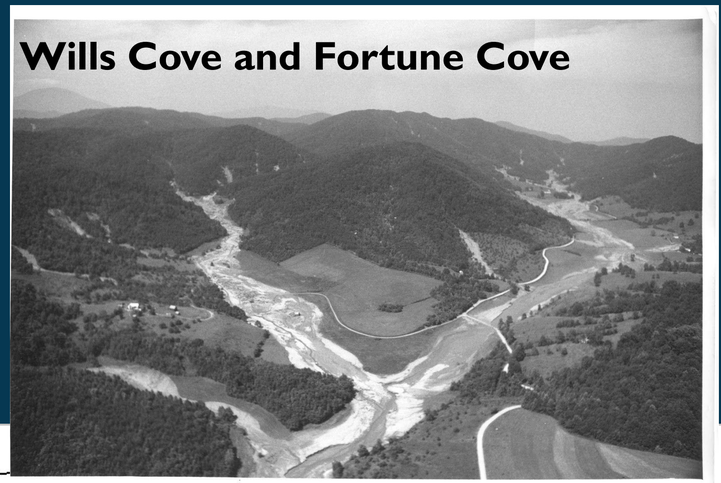
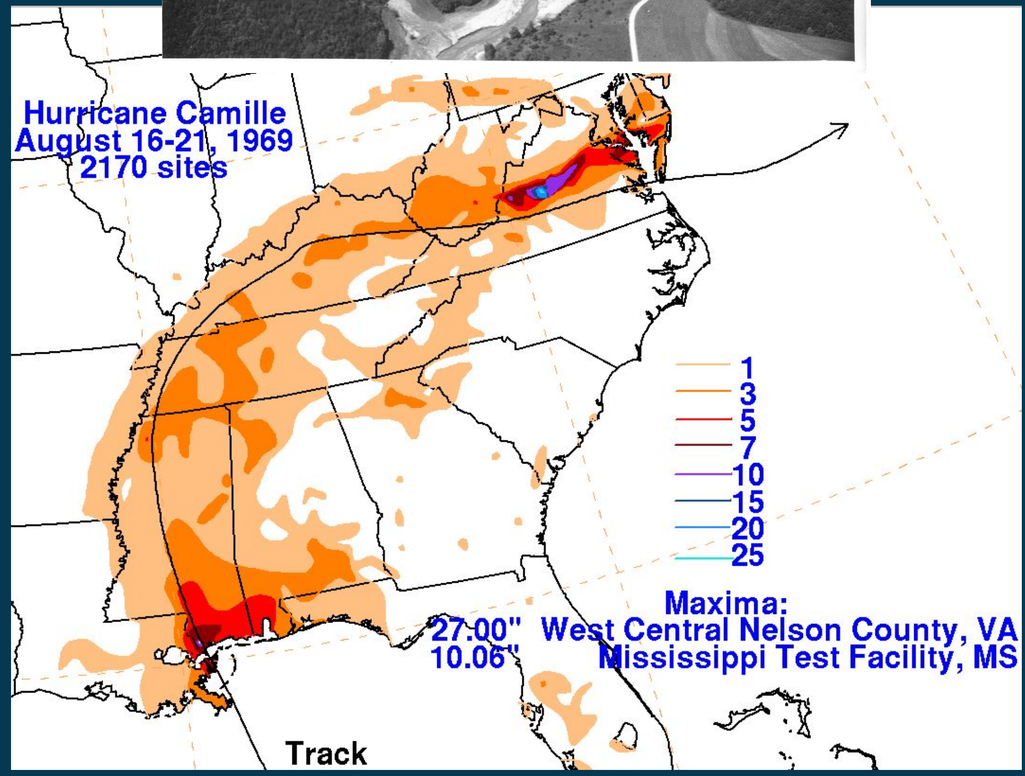
Hurricane Camille (1969)

- Deadliest natural disaster in the state of Virginia
- At least 151 people died in VA, most in Nelson County
- 27” of rain in mostly 5 hours
- After reanalysis, rainfall totals just over 30 inches were recorded in as little as eight hours.
- 6th highest crest on record on the James River
- Total of nearly 3800 landslides within Nelson County

Flooding Rainfall Tropical Cyclone Records:

- Virginia: Hurricane Camille (1969) – 27” of rain in Nelson County
- Maryland: Hurricane Eloise (1975) - 14.23” of rain in Westminster





Storm Surge Impacts

What affects storm surge height?

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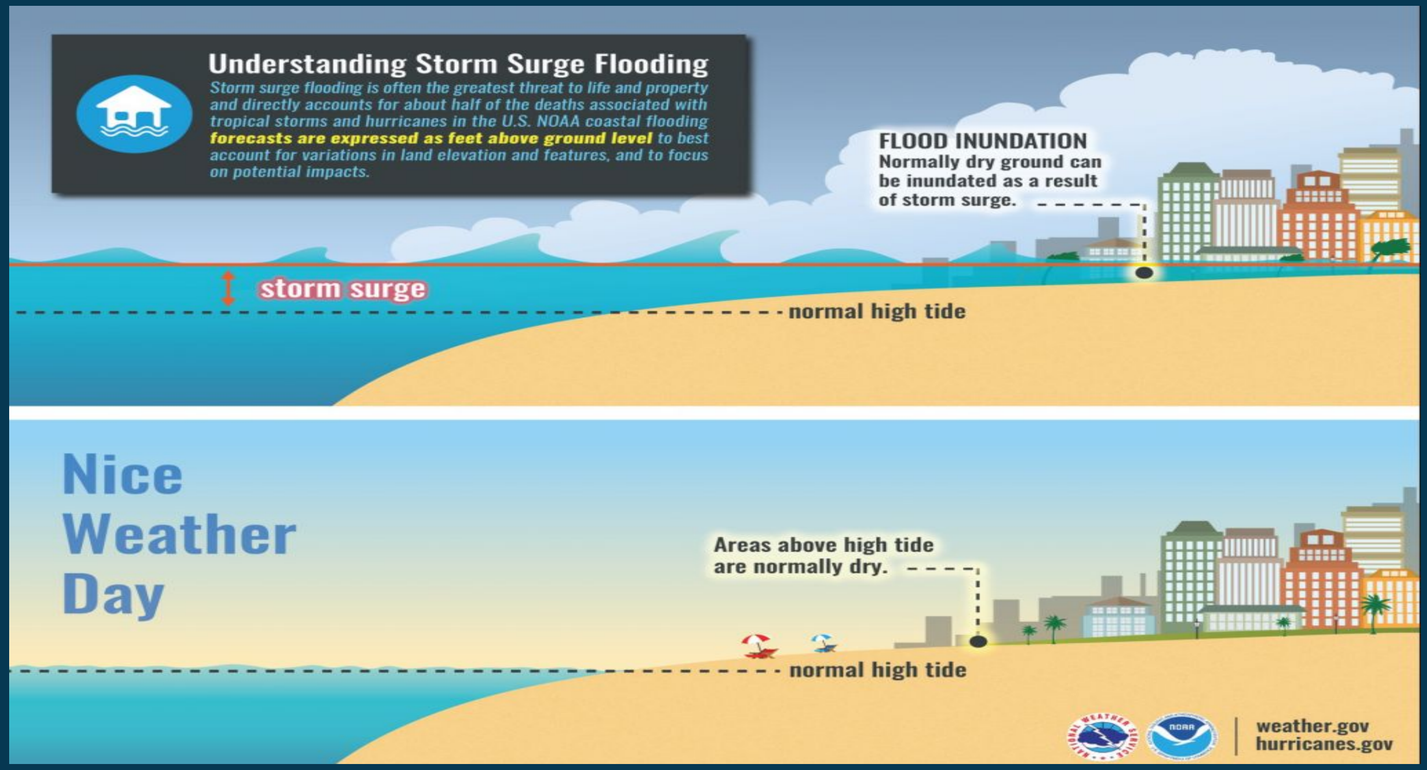
Many factors determine height of storm surge

- The larger the storm is in size, the higher the storm surge will be and the larger area of coastline that will be affected
- The stronger the winds, the higher the potential storm surge
- Fast moving storms = higher surges along the open coast
- Slow moving storms = greater flooding inside bays and estuaries

Highest surges occur usually to the right of where the center of the storm makes landfall

Direction of storm approach often impacts the extent of storm surge.

Shallow sloped shorelines, as opposed to steep ones, are prone to higher storm surges



Storm Surge Impacts in Mid-Atlantic

Role of the Chesapeake Bay

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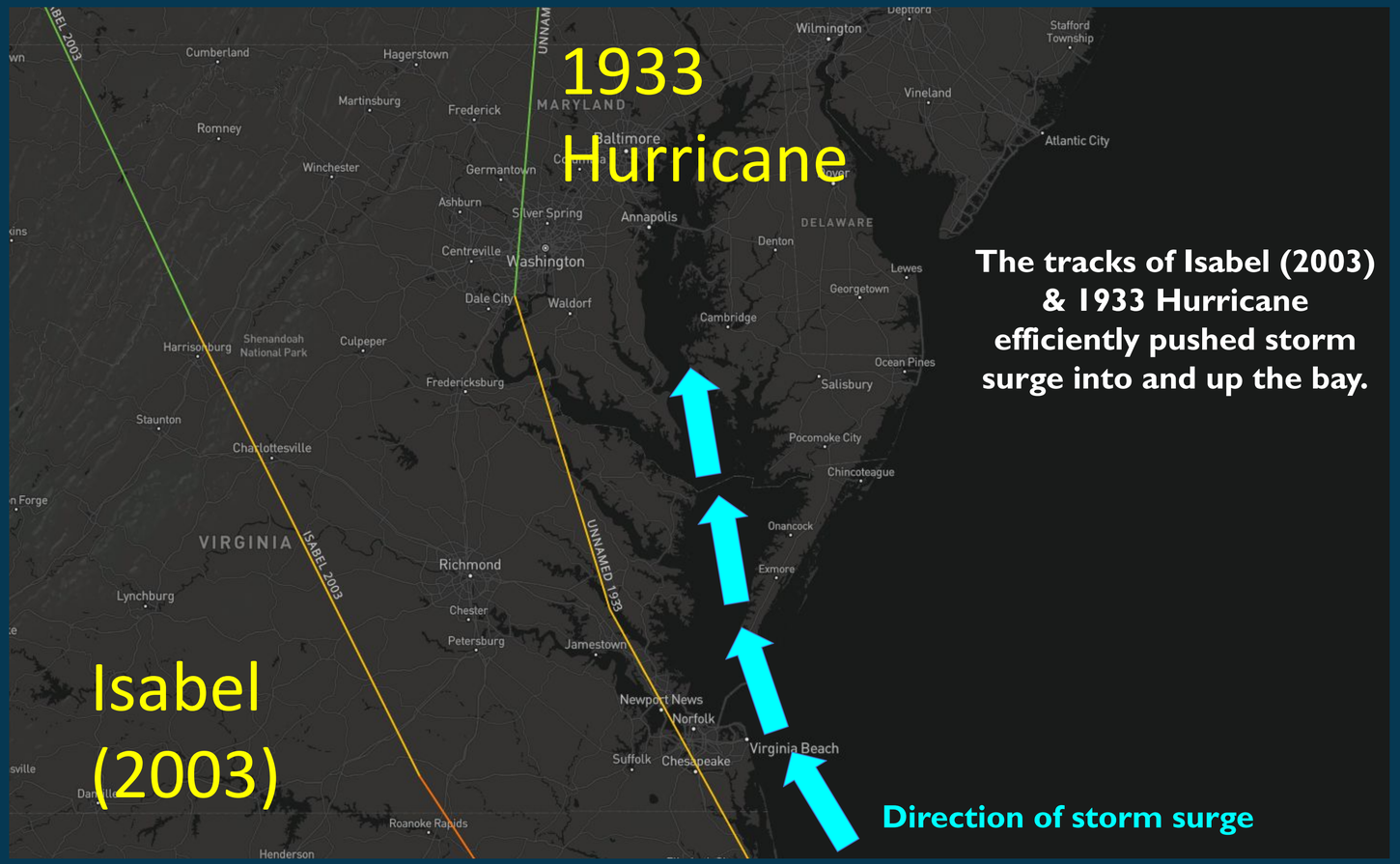
The track of a hurricane in relation to the mouth of the Chesapeake is the biggest determinant for storm surge in our area.

- A track west of the mouth = bigger surge
- A track east of the mouth or offshore = lesser surge

These hurricanes typically make landfall in the Outer Banks of North Carolina, then track northwest across Virginia.

- West of Norfolk = devastating for bay
- West of Richmond = catastrophic everywhere

Historically, the worst-case scenario occurred twice:
1933 Chesapeake Bay-Potomac Hurricane
2003 Hurricane Isabel



Storm Surge Historic Impacts

Chesapeake/Potomac Hurricane – August 1933

Hurricane Isabel – September 2003

- Unusually high storm surge (6-8 feet above normal) in the Chesapeake Bay and Potomac River Basin (highest levels since the Chesapeake/Potomac Hurricane of 1933)
- Resulted in substantial flooding of residences and businesses
- Peak Surge Heights:
  - Annapolis, 6.33 feet (extensive damage at the Naval Academy)
  - Baltimore, 7.26 feet
  - Washington, DC, 8.10 feet (Georgetown at start of Wisconsin Ave.)
  - Old Town Alexandria (Portions of King Street under 5-6 feet of water)

Flooding in St. George Island

Flooding in Annapolis

Hurricane Wind Impacts

Coastal vs. Inland Winds

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Maximum surface wind speed in a hurricane estimated by…

- Satellites
- Reconnaissance aircraft
- Land based radars

High rise buildings, particularly at the higher levels, are prone to a hurricane's winds

Inland Tropical Winds:
Once hurricanes move inland, they lose their energy source, plus friction from the land helps to slow winds

Winds usually decrease at the same rate over time, regardless of how far inland the storm is

- A fast moving storm will be able to bring much stronger winds further inland than a slower moving one
- A category four hurricane at landfall can weaken very rapidly to a category one in just six hours

Hurricane Wind Historic Impacts

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Hurricane Hazel – October 1954

Peak Wind Gusts:

- Sustained 78 MPH, Gust 98 MPH at Reagan National (DCA)
- 112 MPH gust at Patuxent River NAS (Maryland's highest hurricane wind gust)
- 90 MPH at Annapolis

US Naval Academy the day after hurricane on flooded sea wall, October 1954. (Baltimore Sun staff)

Trees knocked down near the Capitol grounds. (AP Photo)

Tornado Impacts

Hurricane Ivan (2004) Tornado Outbreak

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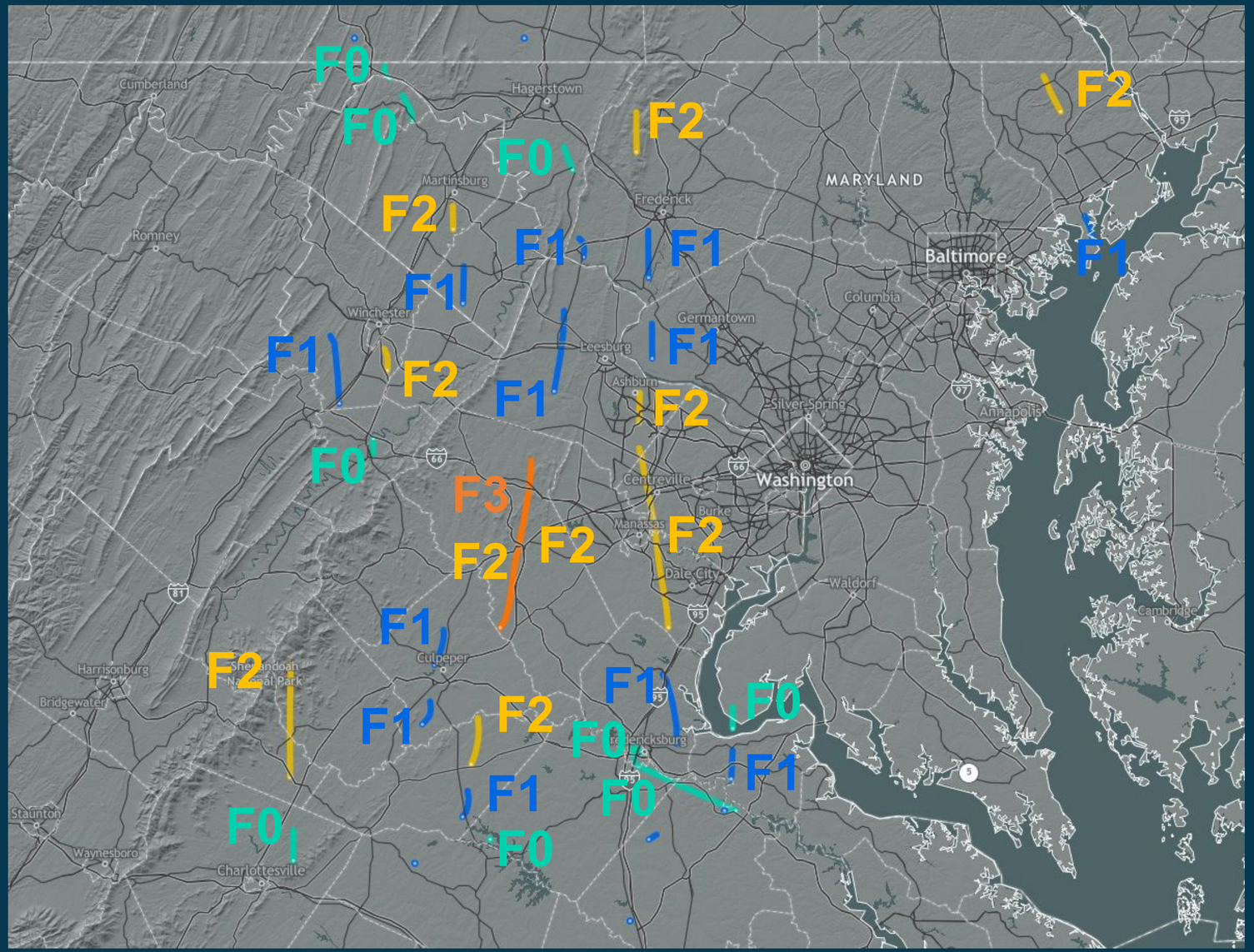

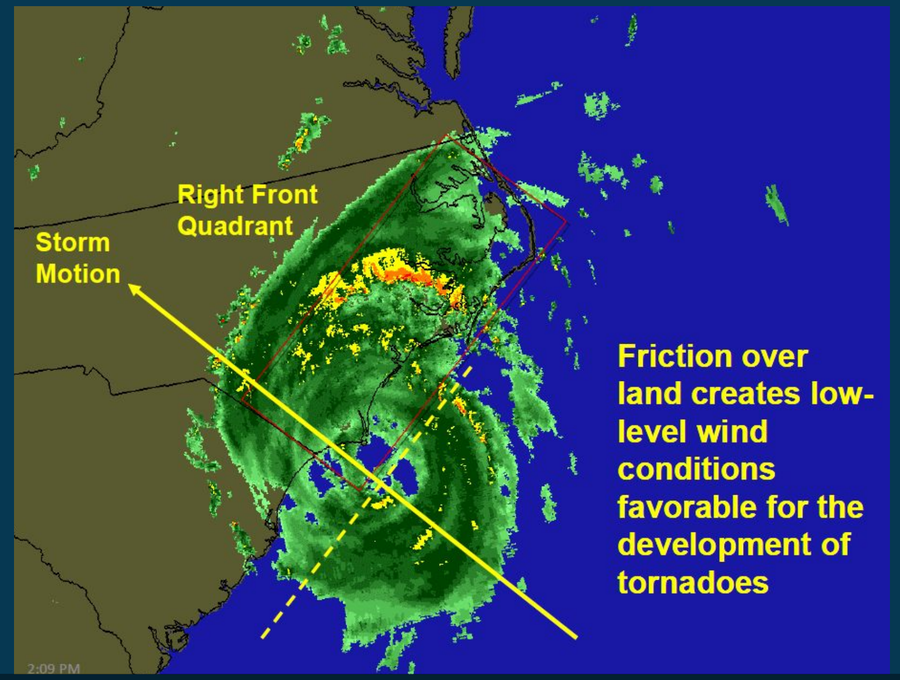

Tornado production can occur for days after landfall, regardless of time of day

Remnants of Ivan produced the worst local tornado outbreak in recent history (9/17-18/04)

35 Tornadoes: VA (23), MD (9), WV (3)

Tornado Historic Impacts

Remnants of Hurricane Ivan (2004)

- Produced record number of tornadoes in VA
  - Virginia Record ~70 (old record 32)
- Official Ivan tornado count: 113 (SPC)
- U.S. record: Beulah (1967): 148 tornadoes (Gray)
  - Hurricane Ivan (2004): 113 tornadoes (SPC)
  - Hurricane Frances (2004): 109 tornadoes (SPC)
  - Hurricane Andrew (1992): 62 tornadoes
- Two tornado concentrations (swarms) with Ivan: NW FL and VA-MD

NWS Baltimore/Washington Forecast Area

- 35 total tornadoes: VA (23), MD (9), WV (3)
- Tornadoes by rating: 9 F0, 13 F1, 12 F2, 1 F3
- 0 Fatalities and 14 Injuries

Orange Co. Tornado 9/17/04

Fauquier Co. Tornado 9/17/04

Tornado Impacts

Impacts from remnants of Hurricanes Isaias (2020) & Ida (2021)

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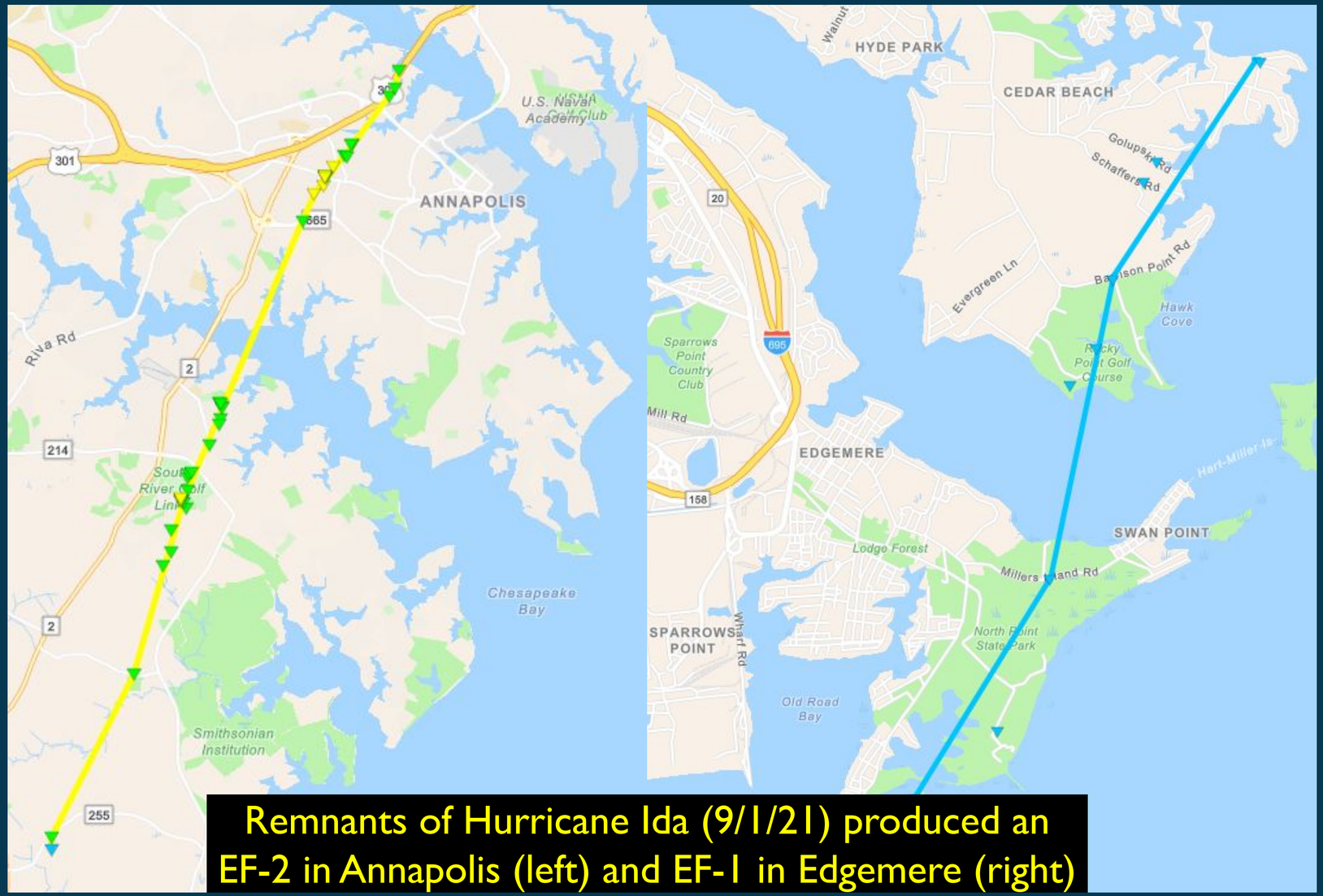
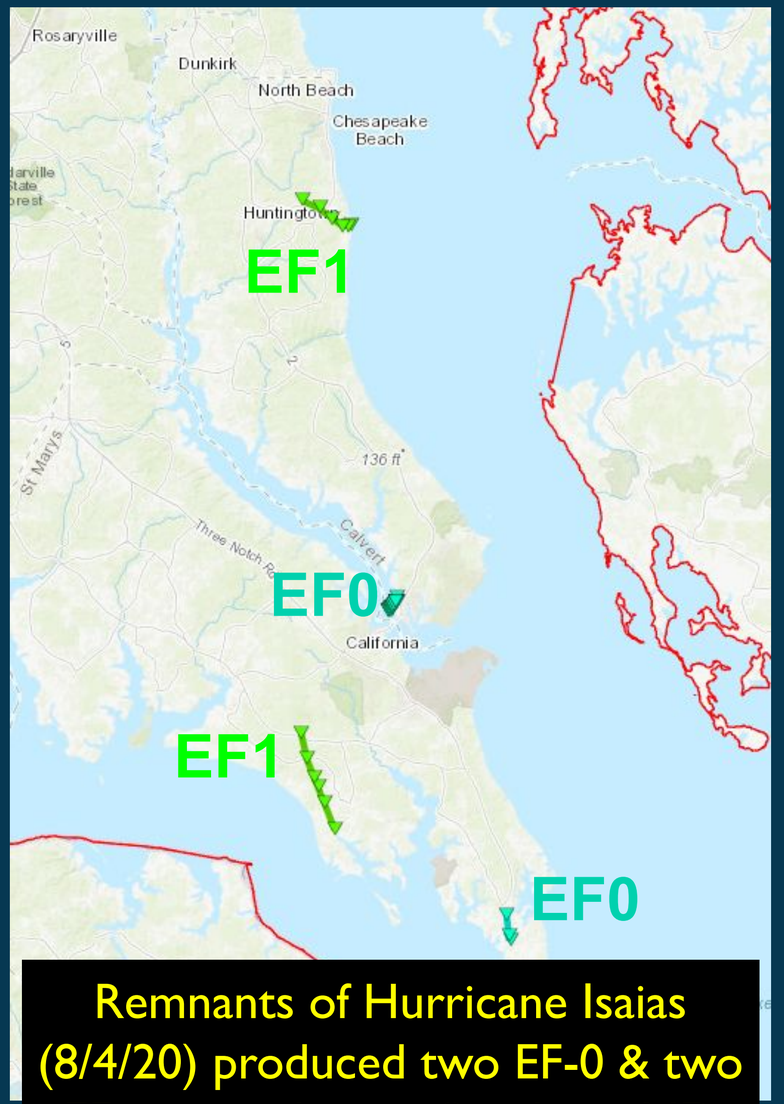


Remnants of Hurricane Ida (9/1/21) produced an EF-2 in Annapolis (left) and EF-1 in Edgemere (right)



Remnants of Hurricane Isaias (8/4/20) produced two EF-0 & two EF-1 tornadoes in Southern MD

Hurricane Milton Tornado Impacts (2024)

Historic Tropical Cyclone Tornado Outbreak in FL

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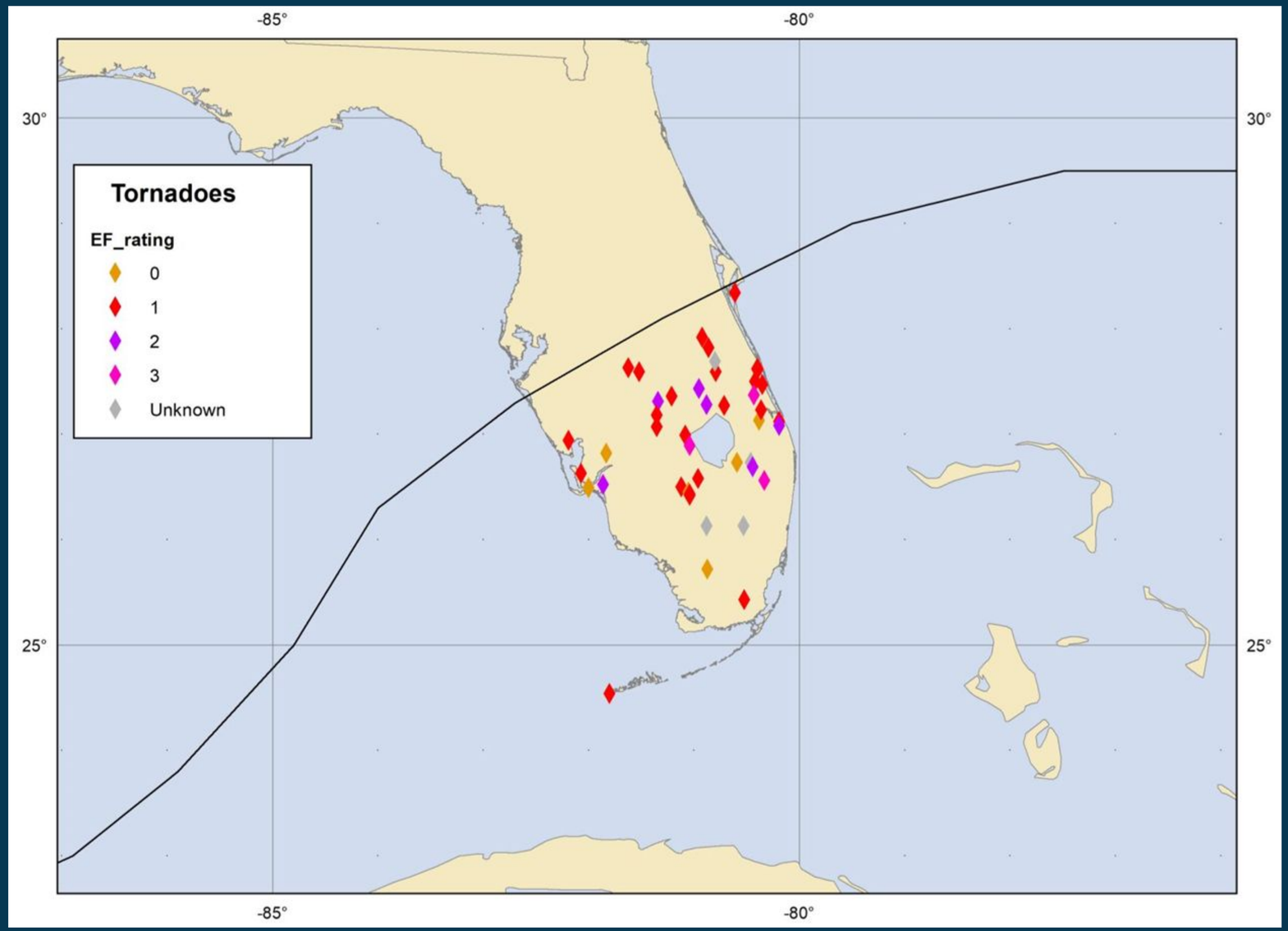
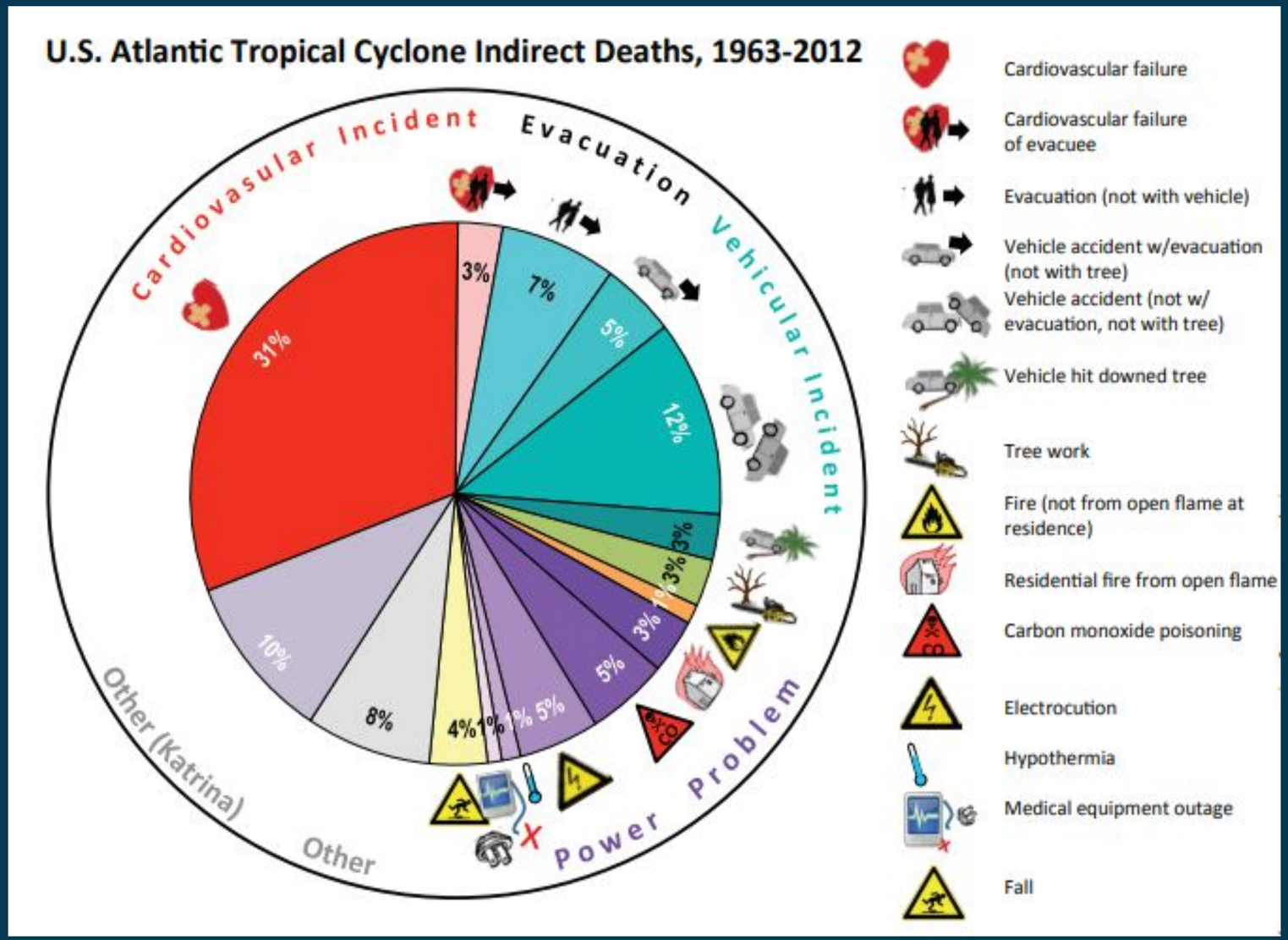


- 45 known tornadoes, 1 tornadic waterspout
- 3 EF3 tornadoes
  - First tropical cyclone in SPC's database (since 1995) to produce more than 1 EF3
- 6 fatalities due to tornadoes

Indirect Fatalities

Longer-Term Impacts

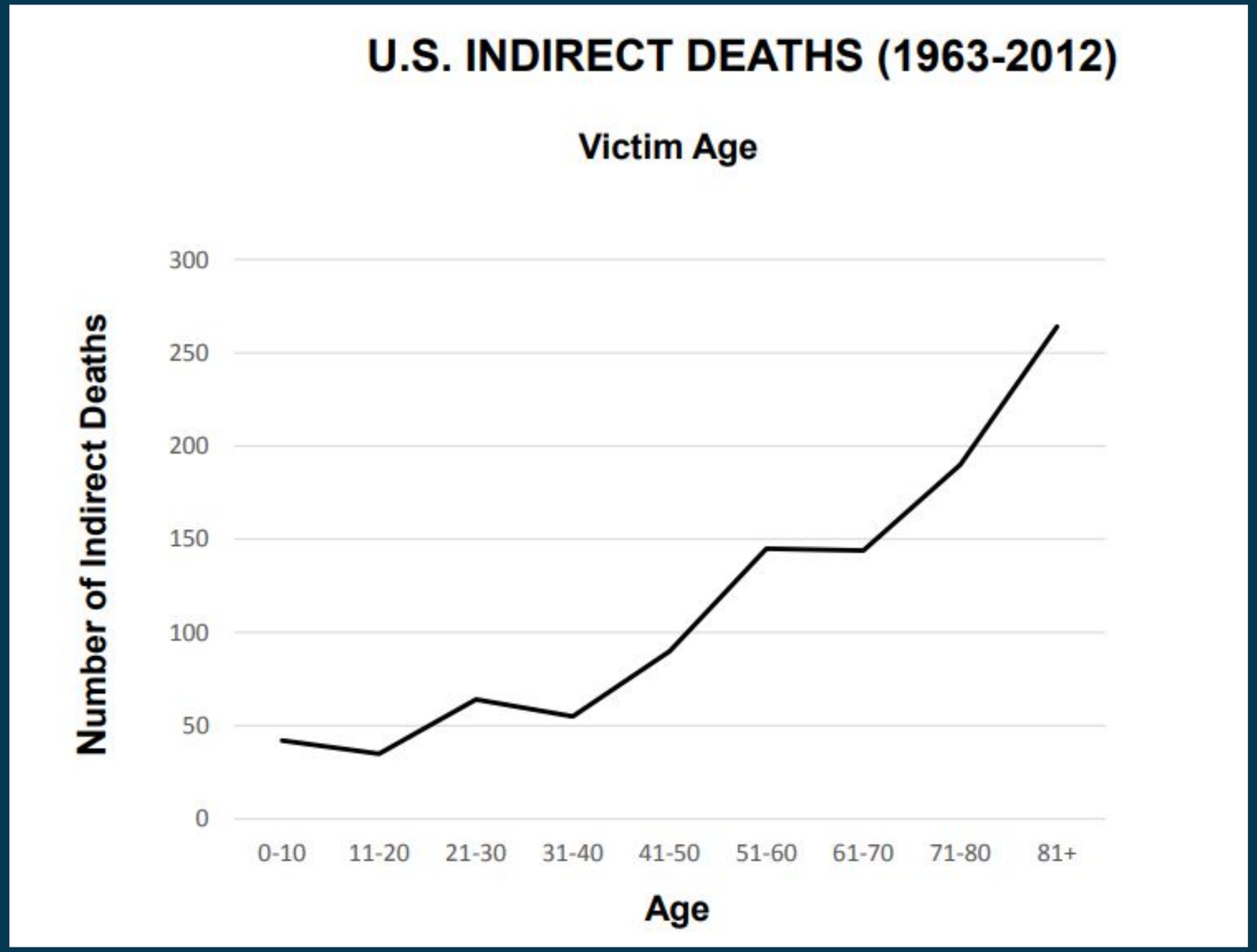


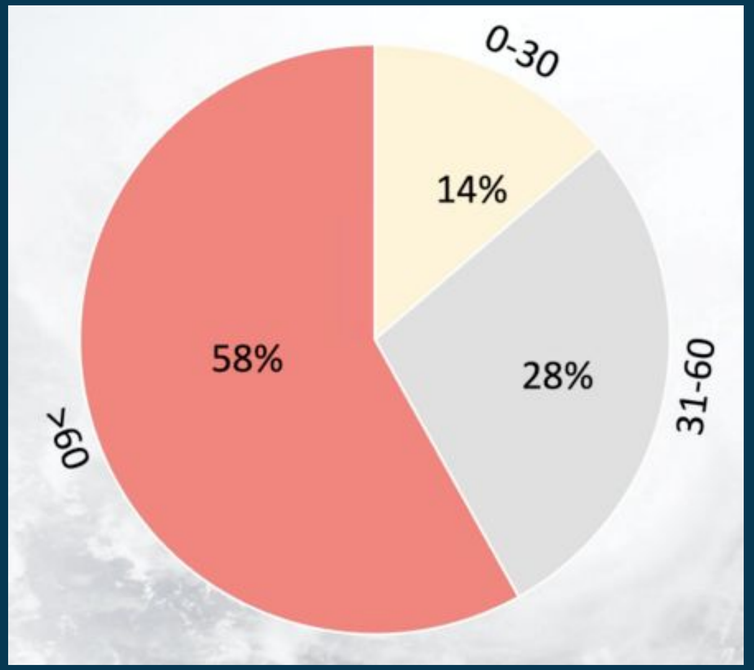
Most frequent factors

- **Cardiovascular**
- **Loss of electricity**
- **Vehicle accident**
- **Evacuation**

Indirect Fatalities

Longer-Term Impacts



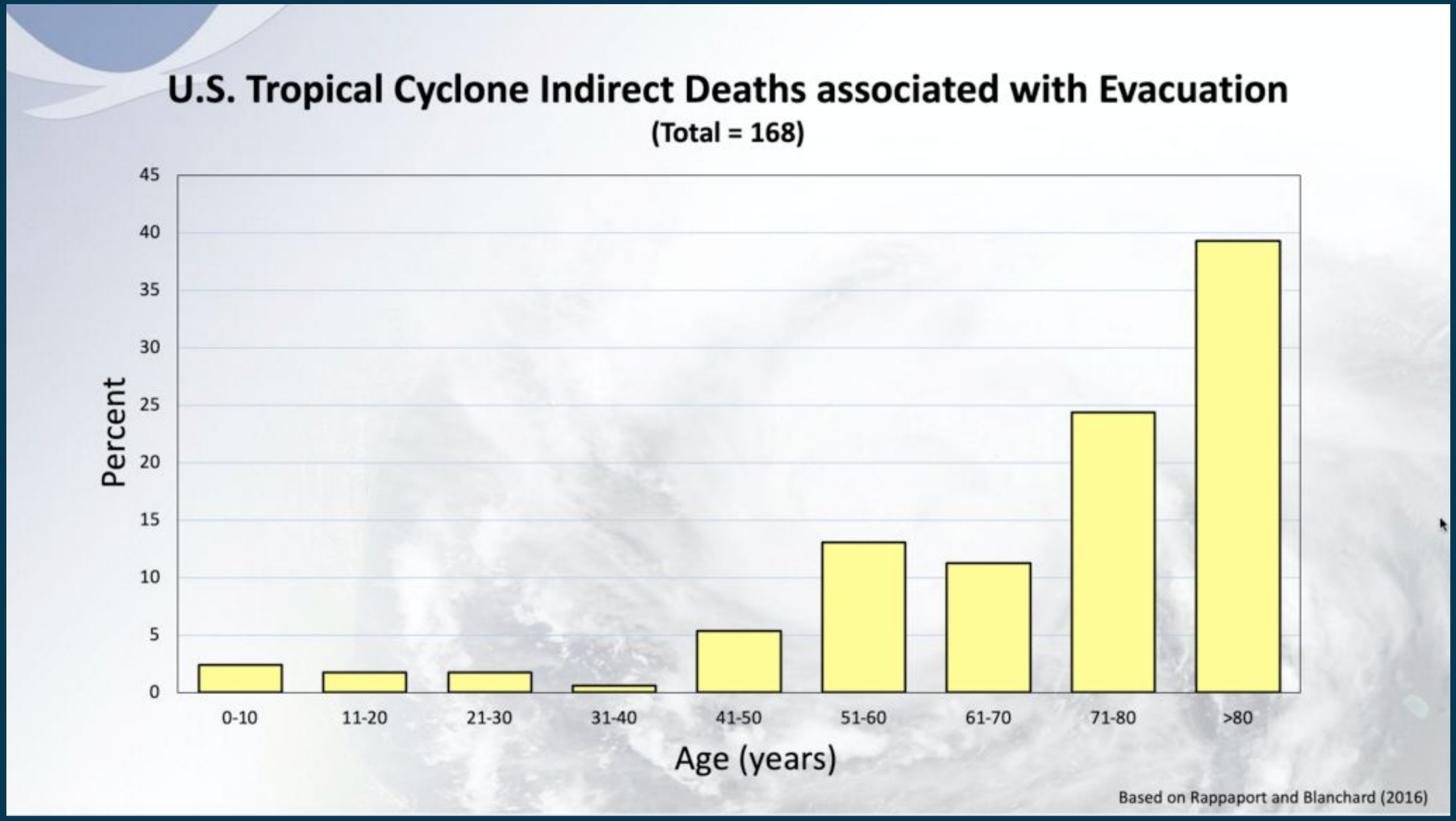


Number increases generally with age

Eight times as many victims over 70 years old as under 21 (influence of heart attacks)

Indirect Fatalities

Longer-Term Impacts



Waves and Rip Currents

Impacts can occur hundreds of miles away from a hurricane

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BEACH WARNING FLAGS

BANDERAS DE ADVERTENCIA EN LA PLAYA

Water Closed to Public
Agua Cerrada al Público

High Hazard
High Surf and/or Strong Currents
Peligro Alto, Resaca Alta y/o Corrientes Fuertes

Medium Hazard
Moderate Surf and/or Currents
Peligro Medio, Resaca Moderada y/o Corrientes Fuertes

Low Hazard
Calm Conditions, Exercise Caution
Peligro Bajo, Condiciones Calmas, Tenga Cuidado

Dangerous Marine Life
Vida Marina Peligrosa

Absence of Flags Does Not Assure Safe Waters
La Ausencia de Banderas No Asegura Aguas Seguras

RIP CURRENTS

Break the Grip of the Rip!

Rip currents are powerful currents of water moving away from shore. They can sweep even the strongest swimmer out to sea.

IF CAUGHT IN A RIP CURRENT

- Don't fight the current
- Swim out of the current, then to shore
- If you can't escape, float or tread water
- If you need help, call or wave for assistance

SAFETY

- Know how to swim
- Never swim alone
- If in doubt, don't go out

More information about rip currents can be found at the following web sites:

www.ripcurrents.noaa.gov
www.usla.org

U.S. Rip Current Viewer

New for 2025

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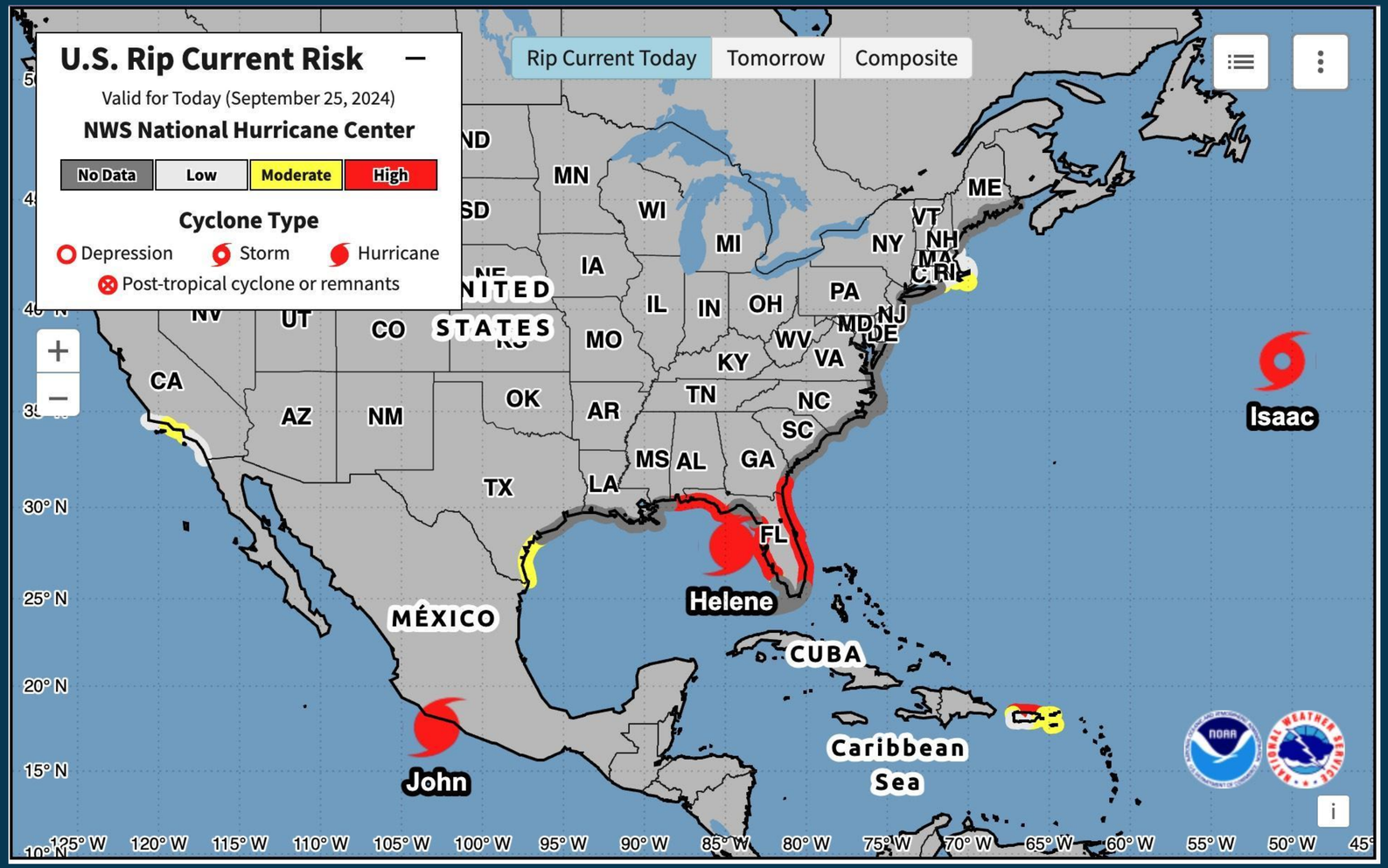
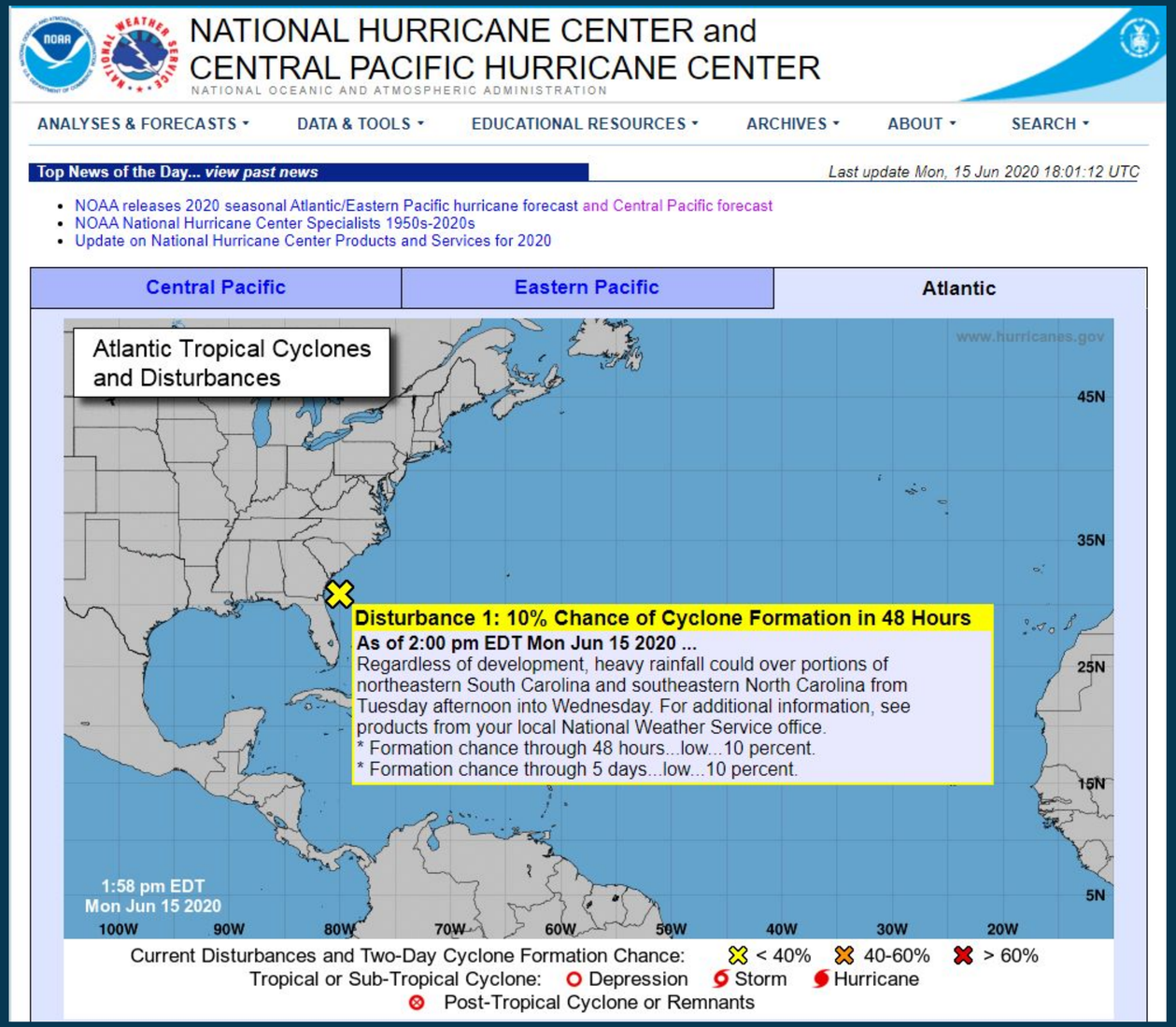


- Rip currents and heavy surf are the **3rd-highest cause (16%)** of direct U.S. fatalities from tropical cyclones (based on 2013-2023 data)
- Many rip current deaths occur from hurricanes that are well offshore
- In 2025, NHC will provide a rip current risk viewer during active tropical cyclones that will mirror the rip current information provided by local NWS offices in their Surf Zone Forecasts

National Hurricane Center (NHC)

Most Accurate Hurricane Information

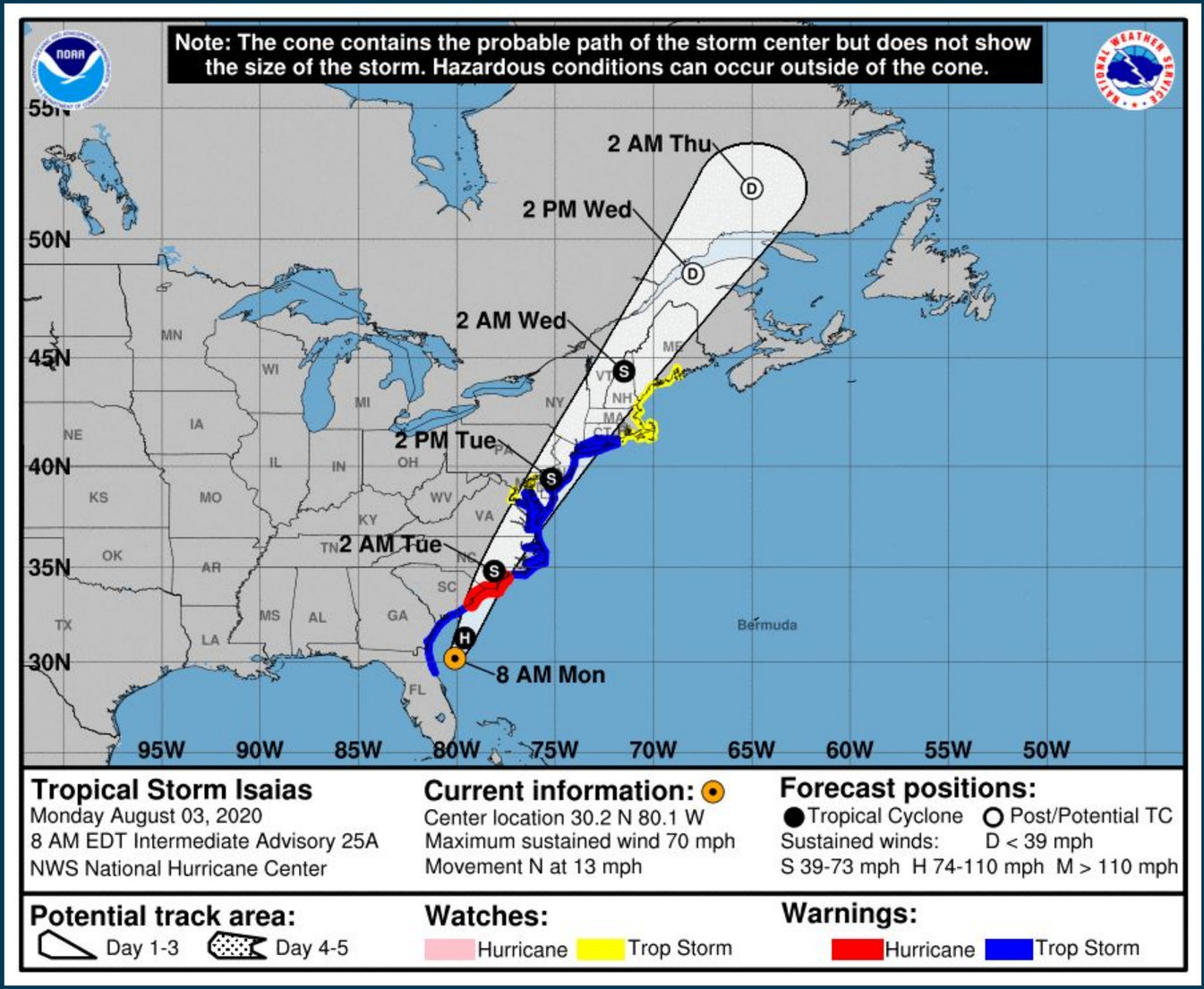


hurricanes.gov

- **5-day tropical weather outlook – every 6 hours from May 15 - Nov 30**
- **Track/intensity forecasts updated every 6 hours**
- **Watches and Warnings**
- **TS and hurricane wind speed probabilities**
- **Most likely arrival time of TS winds**
- **Rainfall and Storm Surge**

NHC Official Track & Forecast Cone

Big Takeaway: Impacts will occur outside of the cone!

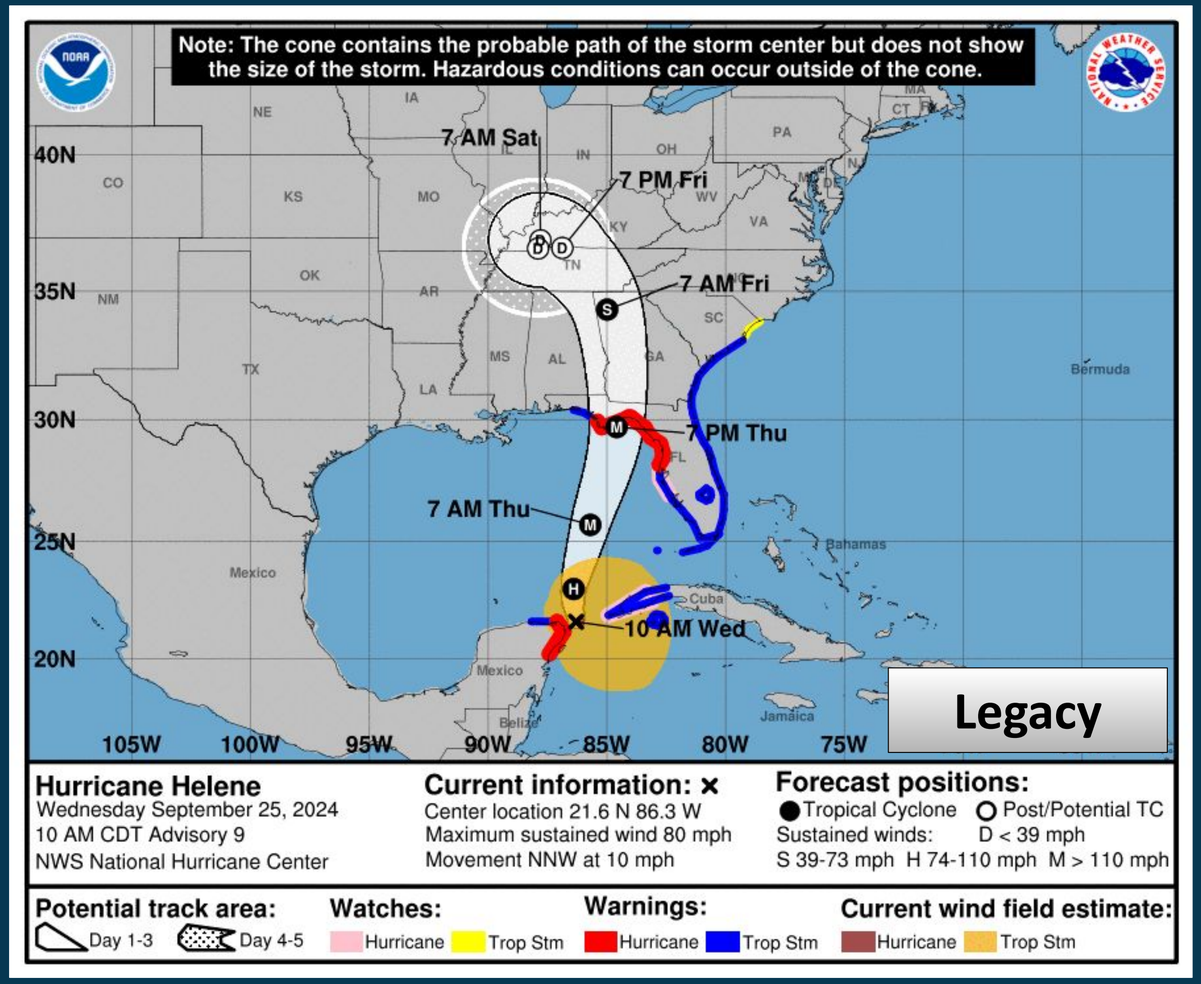


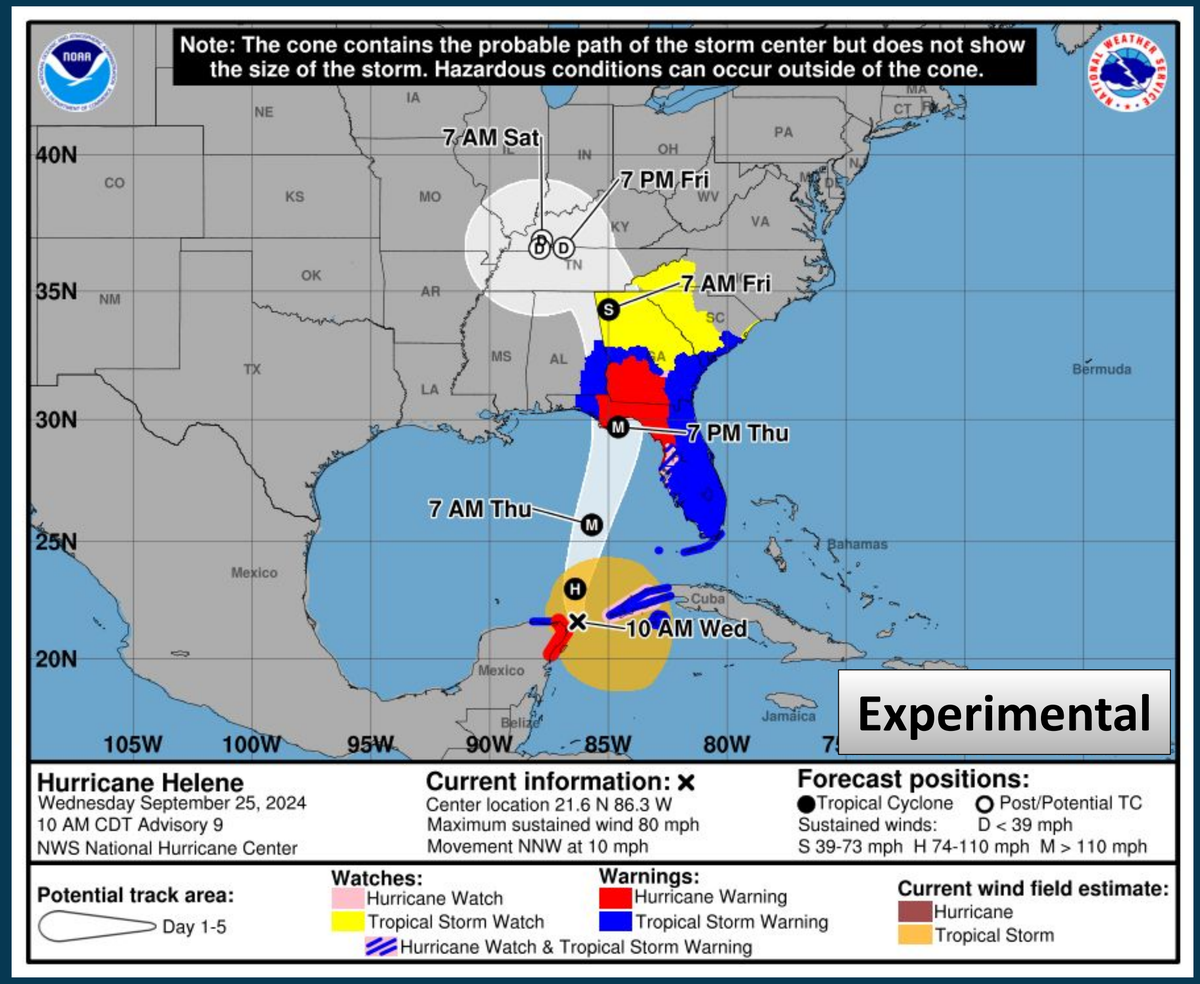
- **Don't focus on the cone. Impacts <u>will</u> occur outside of the cone!**
- The forecast cone, based on historical error, is where the center of the storm is forecast to be **67%** of the time!
- Highlights areas under watch/warning
- Scheduled issuance x4/day at 5 & 11 AM/PM (every 3 hours when watch/warning in effect)

New (Experimental) Cone Graphic

Inland U.S. Watches/Warnings Depicted

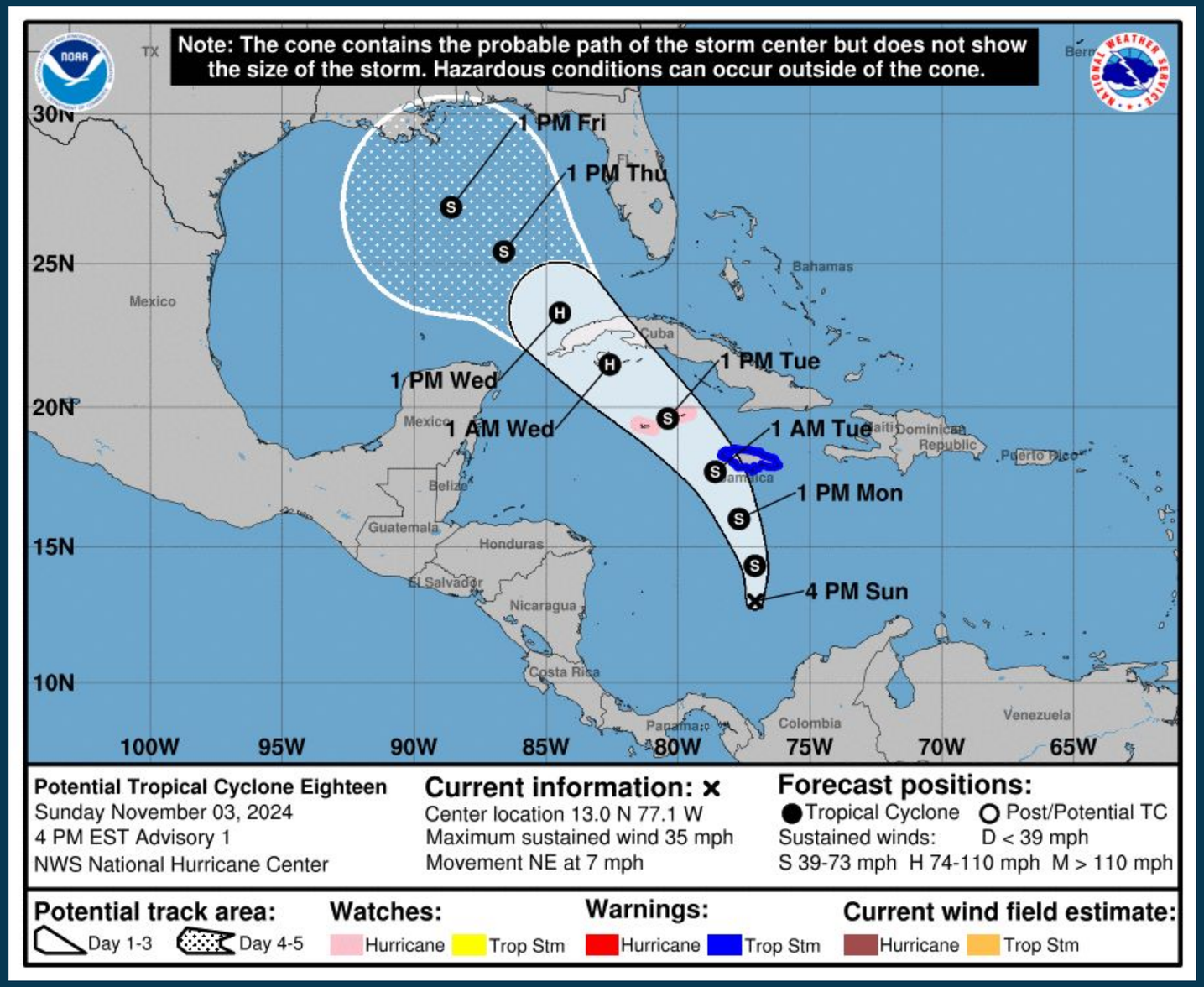
New cone provided better depiction of the inland *(Wind risk from Helene in the southeast United States)*.
Less emphasis on the cone itself while users are able to focus on watches and warnings depicting wind risk.





Potential Tropical Cyclone Advisories

Now issued up to 72 hours in advance of landfall



- Starting in 2017, Potential Tropical Cyclone advisories gave NHC the ability to issue tropical storm and/or hurricane watches for systems that are not yet a tropical cyclone but have the potential to bring tropical storm or hurricane conditions to land areas within the next 48 hours.
- 2025 Update: Issued when watches or warnings needed for land areas **within 72 hours** of impacts.
- Used numerous times, giving an average of 21 h of additional lead time on watch/warnings for those systems.
- Invoked for nine systems in 2024.

NHC Official Track Error Trend

Massive improvement on track forecast over the past 10-20 years

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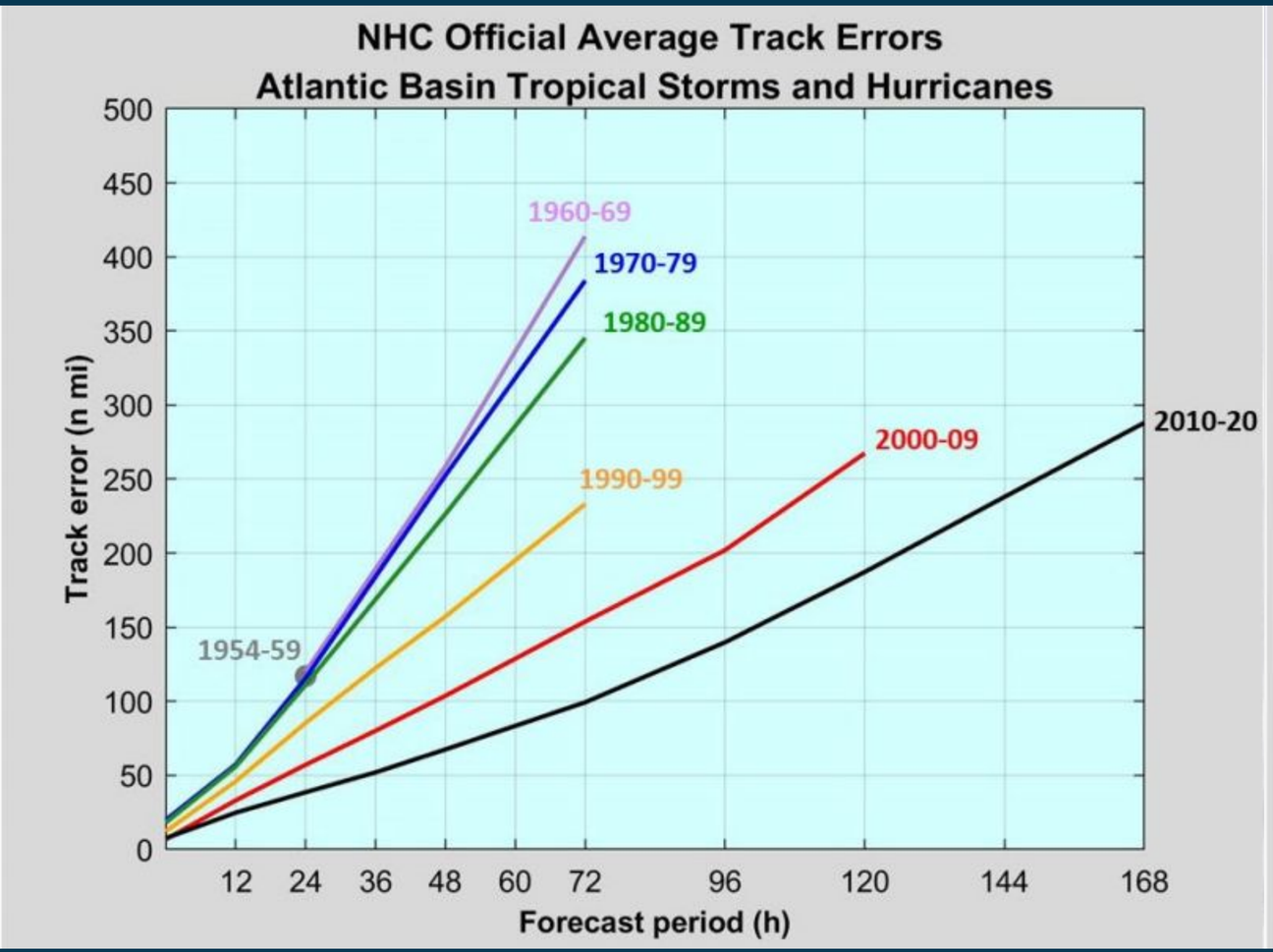

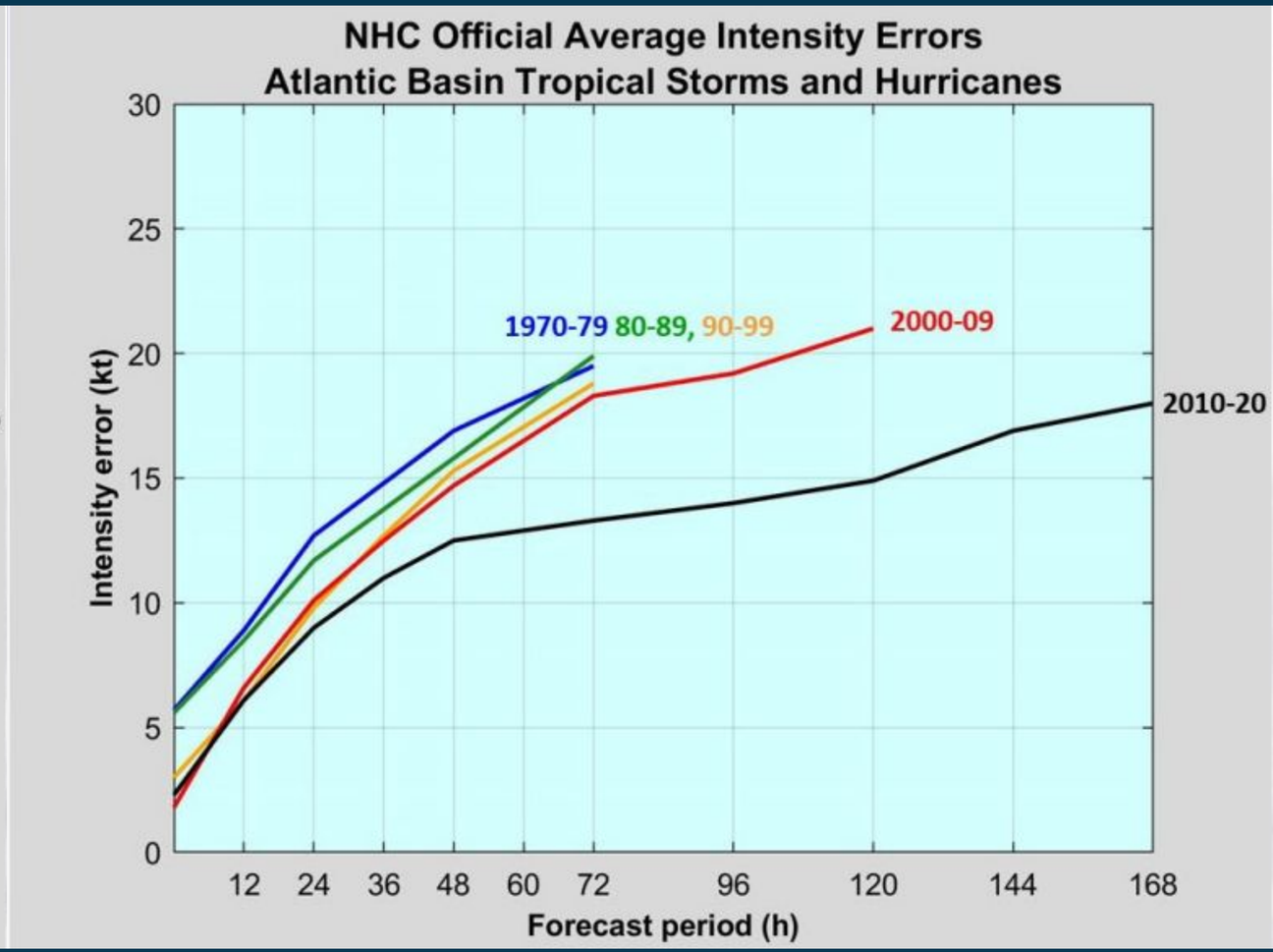

NHC Official Forecast Cone Error

Forecast Period (hours)	Circle Radius Atlantic Basin (nautical miles) 2018-2022	Circle Radius Atlantic Basin (nautical miles) 2019-2023	Circle Radius Atlantic Basin (nautical miles) 2020-2024
3	16	16	16
12	26	26	26
24	39	41	39
36	53	55	52
48	67	70	67
60	81	88	83
72	99	102	100
96	145	151	142
120	205	220	213

Rapid Intensification Near U.S. Landfall

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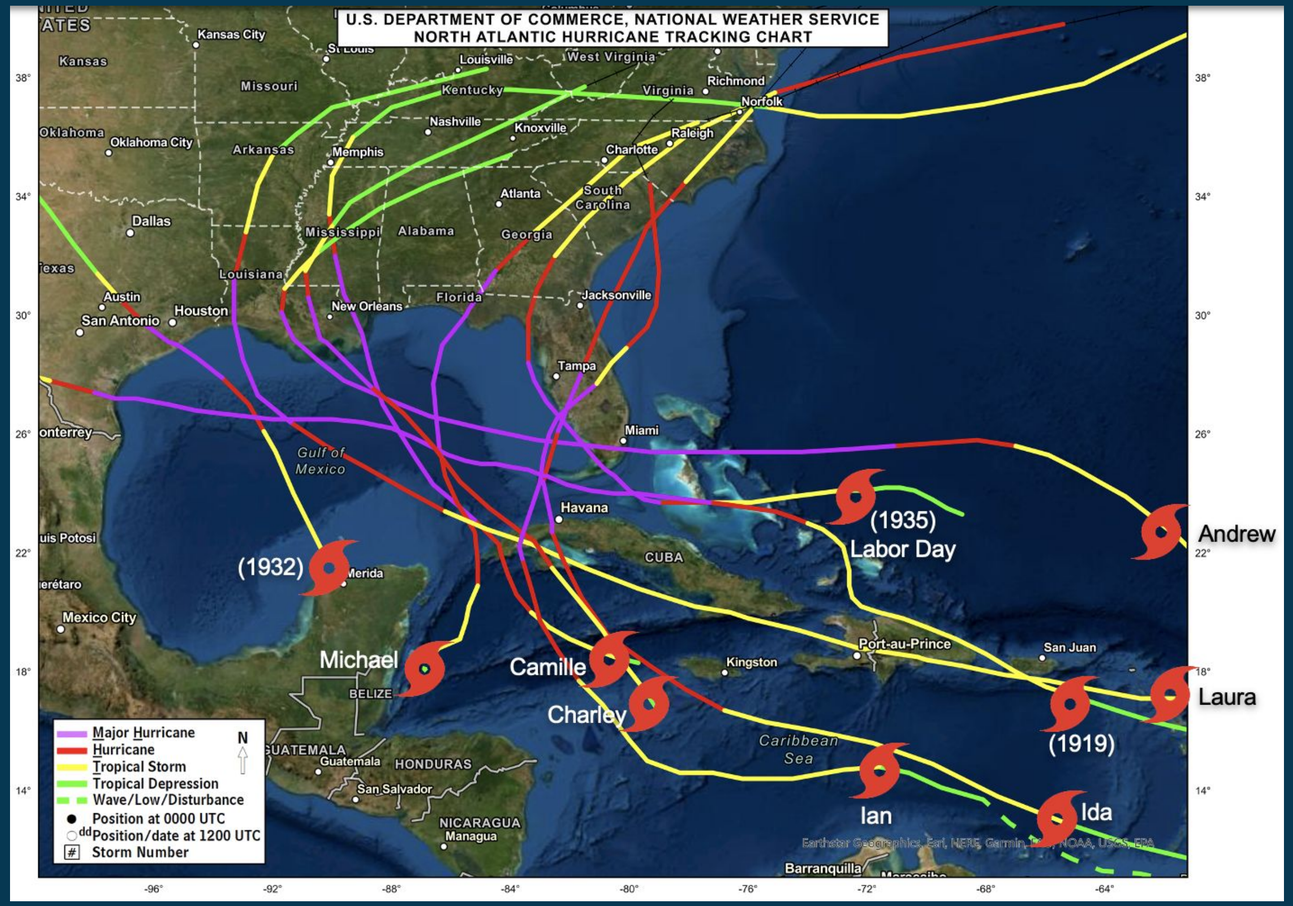
The Nation's strongest hurricanes (150+ mph) in the last 100 years were all tropical storms 3 days before landfall.

U.S. 150 mph+

1919 – Storm 2
1932 – Storm 2
1935 – Labor Day
1969 – Camille
1992 – Andrew
2004 – Charley
2018 – Michael
2020 – Laura
2021 – Ida
2022 – Ian

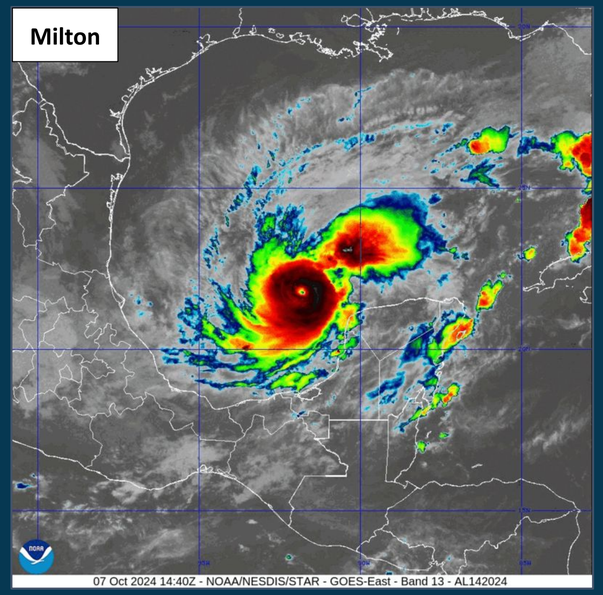


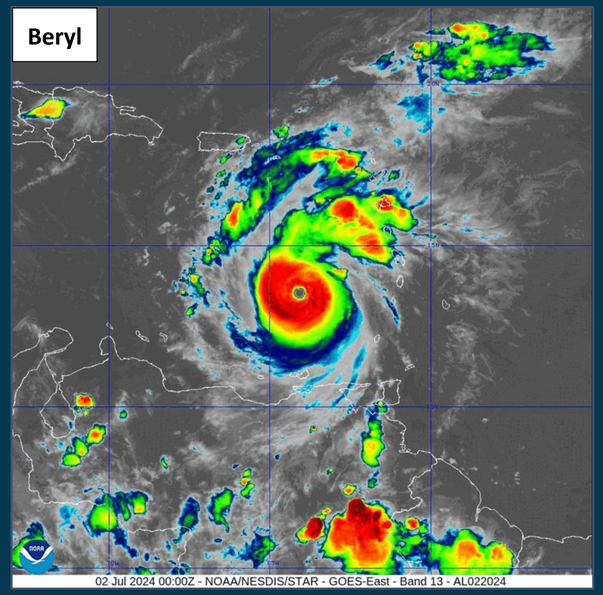
Average time to become a hurricane is **50 h before landfall**

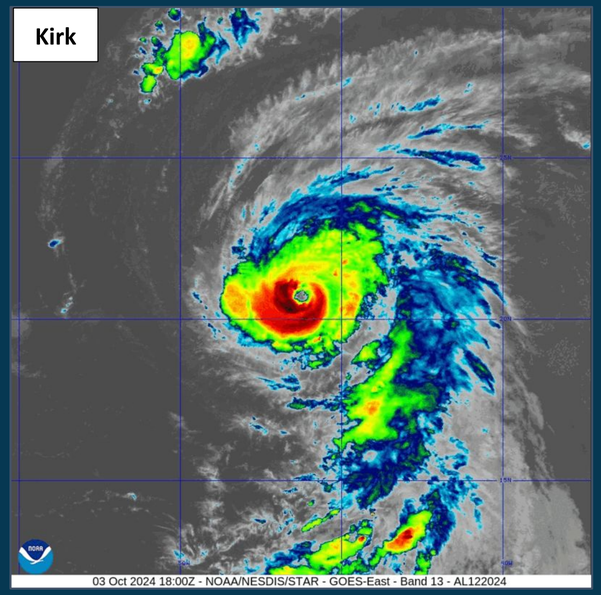
2024 Rapid Intensification

- There were 34 cases of rapid intensification (RI) in the Atlantic in 2024
  - Each case is defined as a separate 24-hour period of at least a 35 mph (30 knot) increase in winds
  - Nearly double the mean number of RI cases in a typical year [18 (2014-2023)]

- Hurricane Milton strengthened by 90 mph (80 kt) over 24 hours on from Oct. 6 to 7
  - Pressure dropped by 82 mb in about 16 ½ hours to 895 mb







Tropical Wind Speed Probabilities

Based on 1,000 realistic scenarios around the "Official NHC Forecast"

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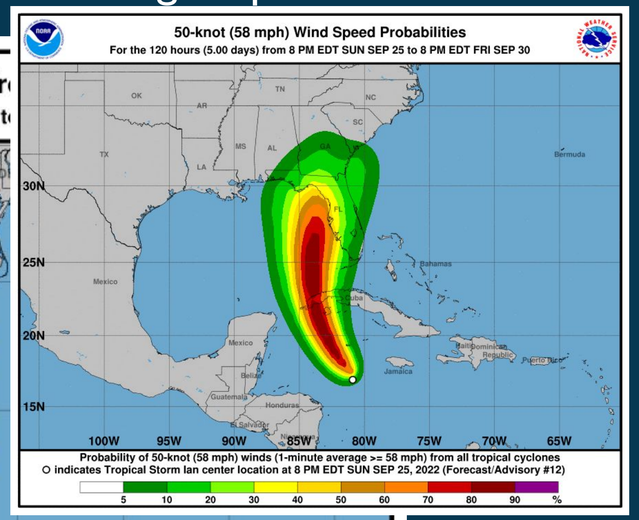
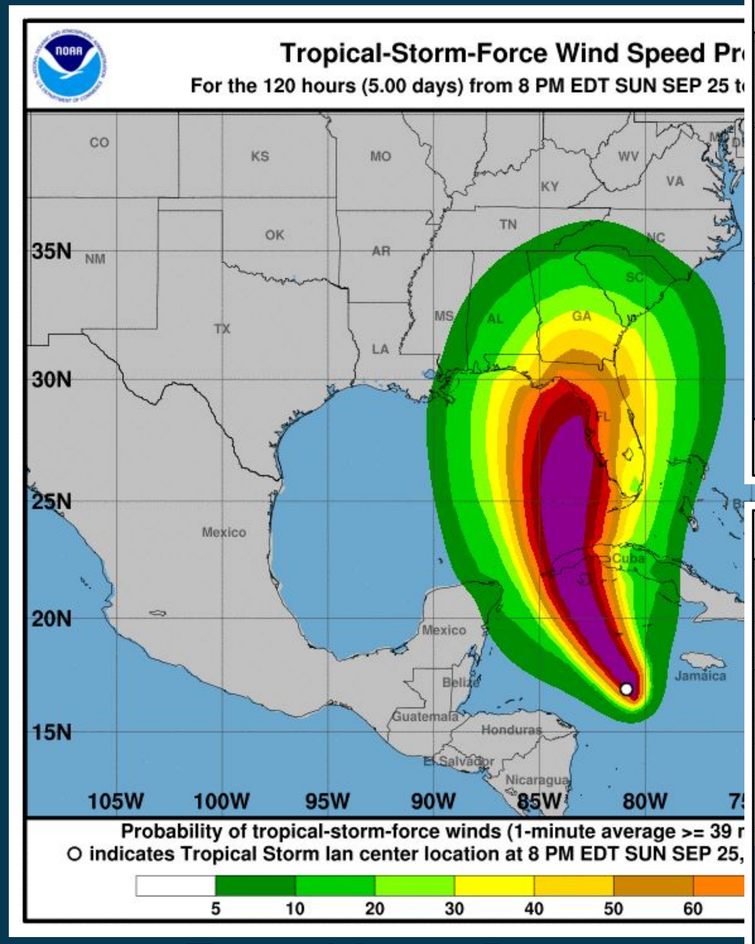
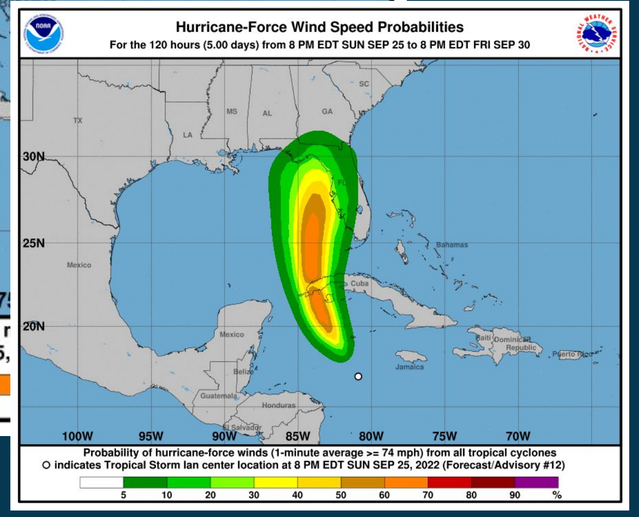
Strong Tropical Storm Force





Tropical Storm Force



Hurricane Force

Depicts cumulative probability of tropical storm force (39 mph), strong tropical storm force (58 mph), or hurricane force winds (74+ mph) for a specific location over the next 5 days

Takes into account more than just the center of the storm:

- Various tracks
- Various intensities
- Various forward speeds
- Various storm sizes

Tropical Wind Speed Probabilities

How are probabilistic winds created?

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Based on 1,000 realistic alternative scenarios created using:

- Official NHC track and intensity forecast
- Historical NHC track and intensity forecast errors
- Climatology and persistence wind radii model

Uses model spread to account for track uncertainty

Earliest Reasonable Time of Arrival Graphic

Based on 10% probability of tropical storm wind onset

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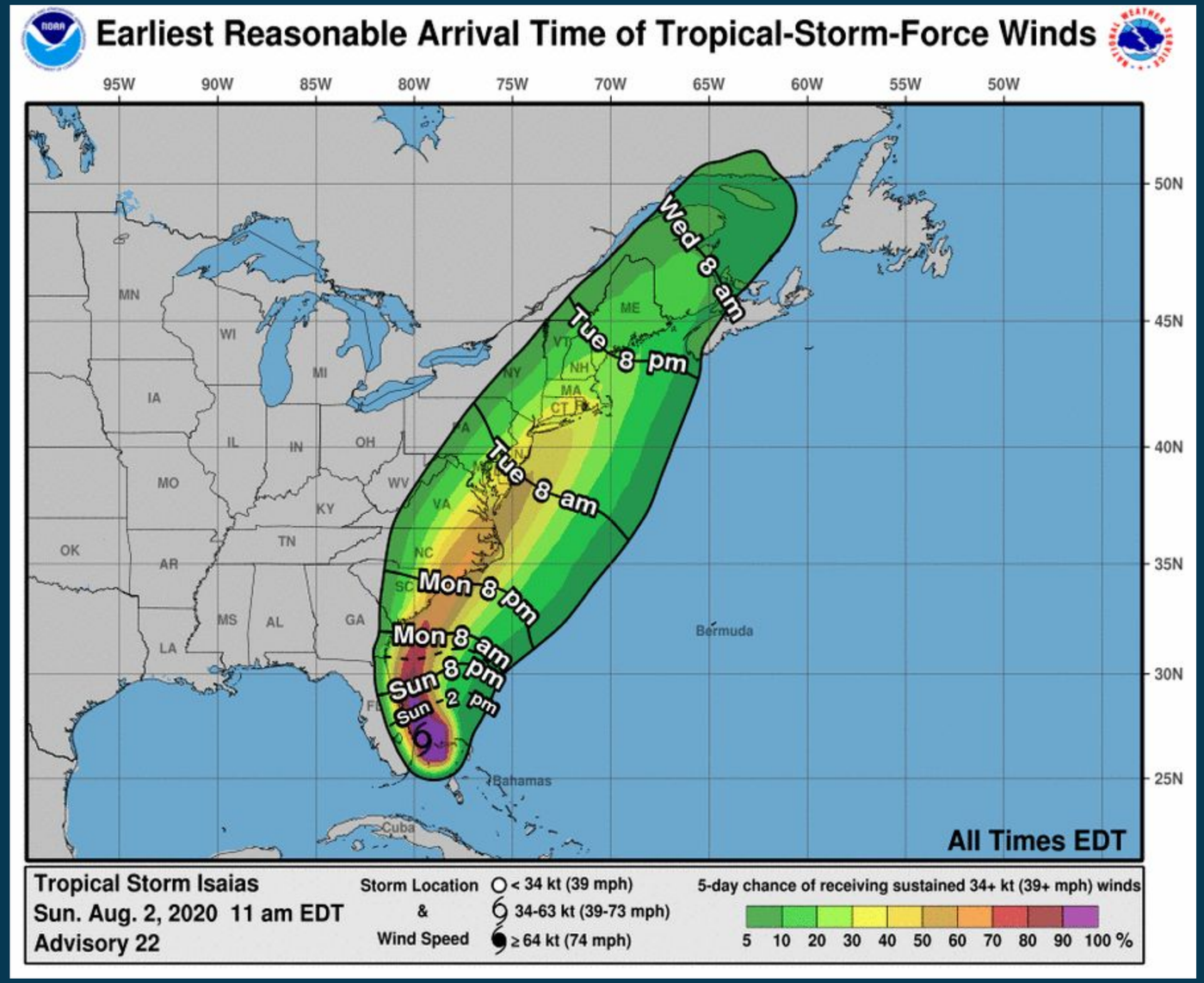
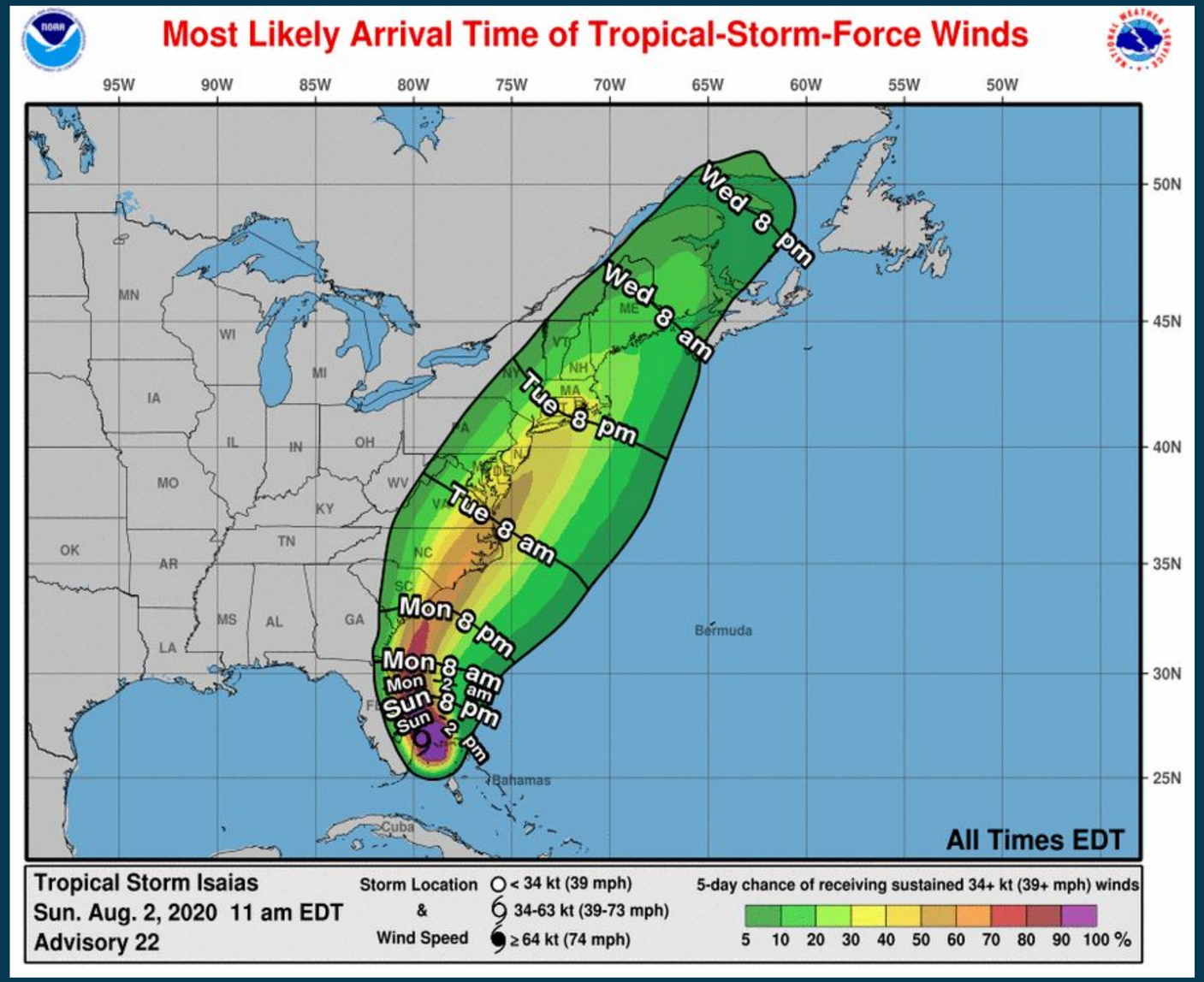
- **Earliest Reasonable Arrival Time (preparations should be completed by this time)**
- **Incorporates uncertainty; only 1-in-10 (10%) chance of earlier onset; 90% chance of later onset**
- **Best for users with low tolerance risk (takes into account different storm motion)**
- **Used for planning**



Most Likely Time of Arrival Graphic

Based on 50% probability of tropical storm wind onset

- **Assumes "perfect forecast!"**
- **Does not take into account increase of forward speed or wind field expansion**



Storm Surge Products

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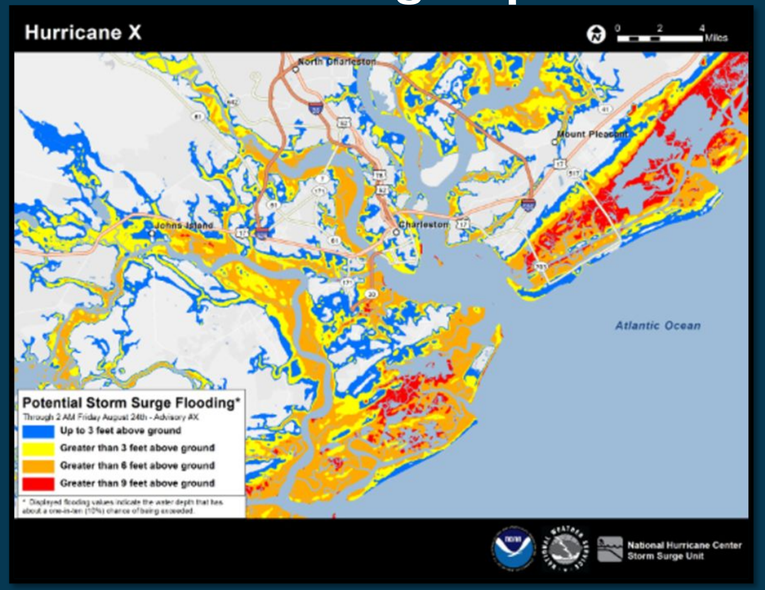
Potential Storm Surge Flooding Map

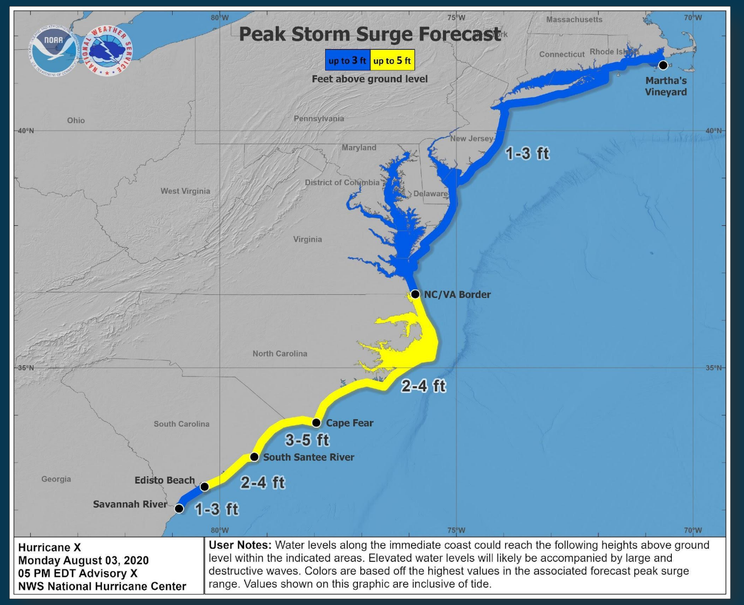


Reasonable worst case scenario

Only a 1 in 10 chance storm surge will be greater than shown

Doesn't represent a flooding footprint

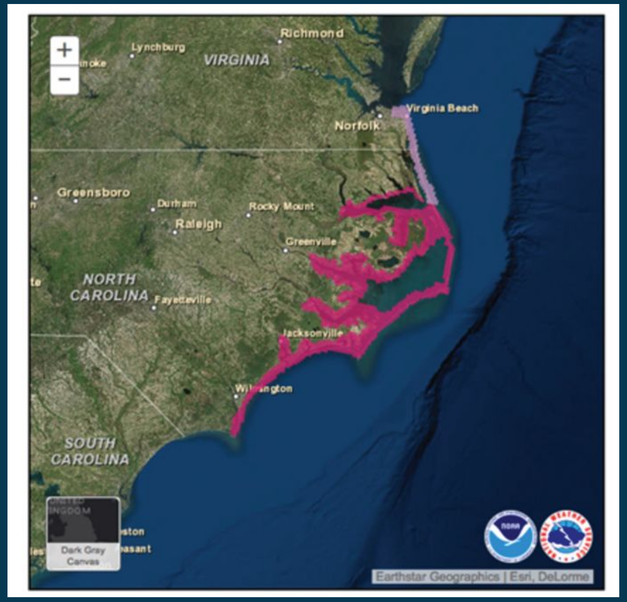
Peak Storm Surge Forecast



Peak values water could reach above normally dry ground

Only valid along the immediate coast - does not depict inland extent

Storm Surge Watch/Warning



Storm Surge Watch - Possibility of life-threatening inundation generally within 48 hours

Storm Surge Warning - danger of life-threatening inundation generally within 36 hours

NWS Tropical Webpages – For LOCAL Info

weather.gov/washington

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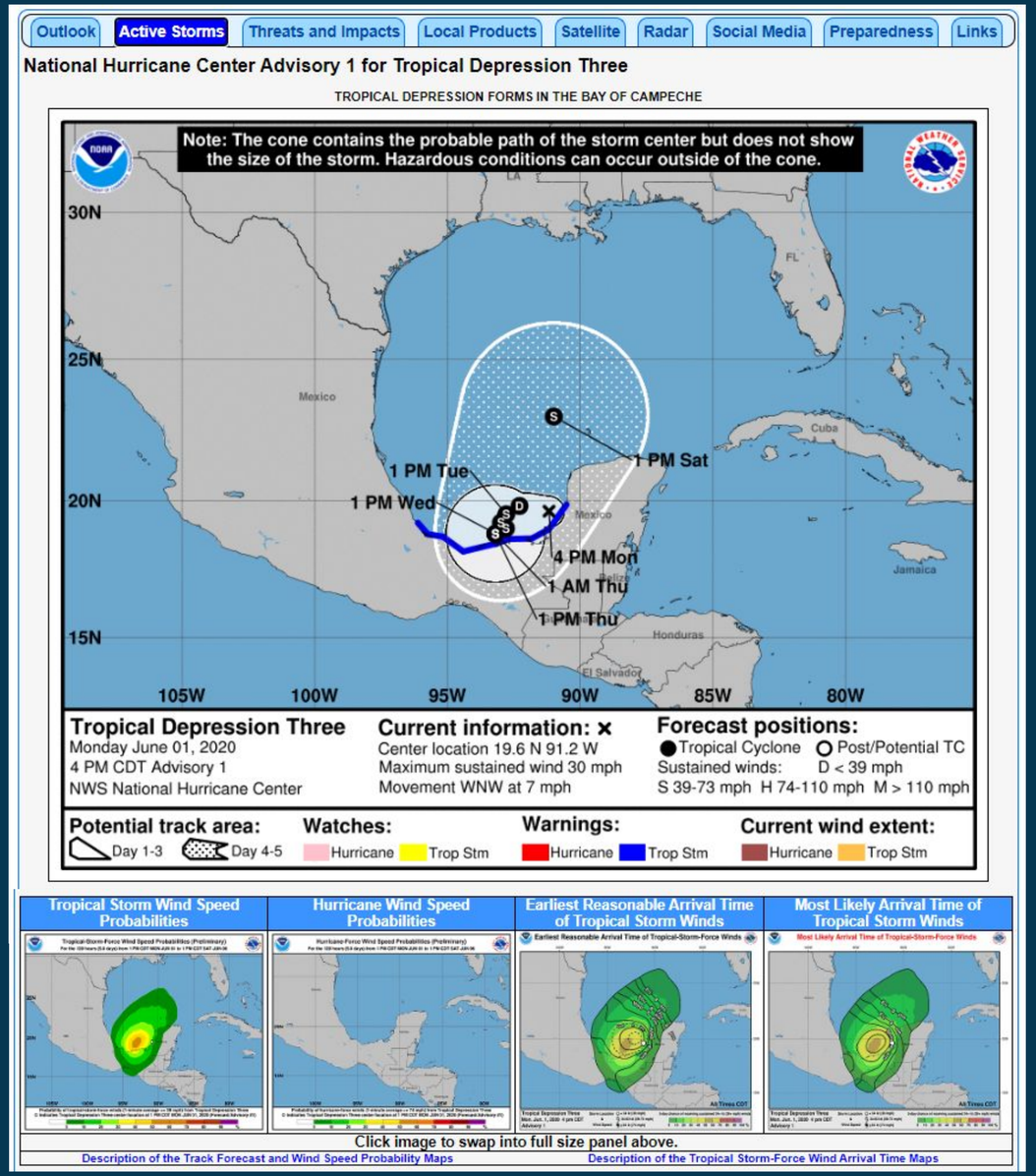

- One-stop shop for all tropical-related local forecast information
- Active Storms tab appears when NHC initiates tropical cyclone advisories
- NHC information "downscaled" by NWS Office to sub-county scale forecasts. Best source of info during Watch/Warning periods
- The Hurricane Local Statement (HLS) and local Tropical Cyclone Watch/Warning Statement (TCV) breakdown impacts on a county-by-county level for all four hurricane hazards

Hurricane Threats & Impacts Graphics (HTI)

weather.gov/washington

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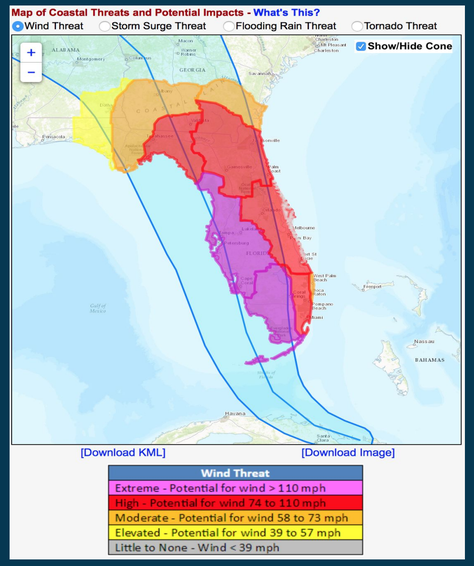

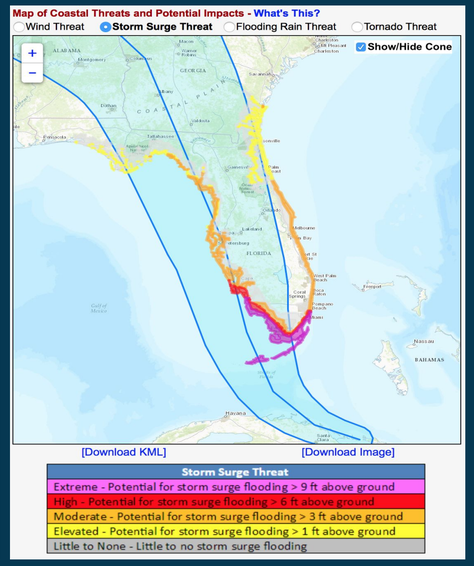

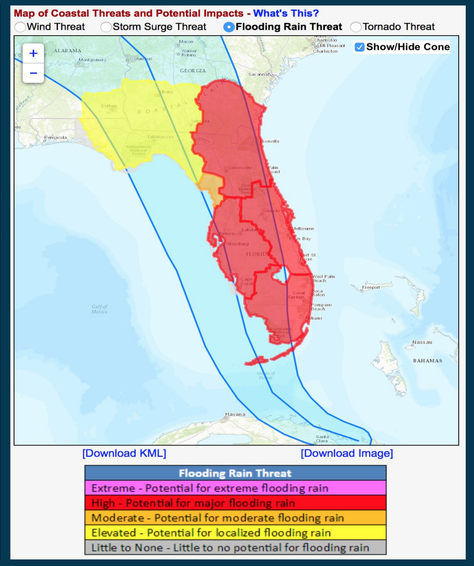

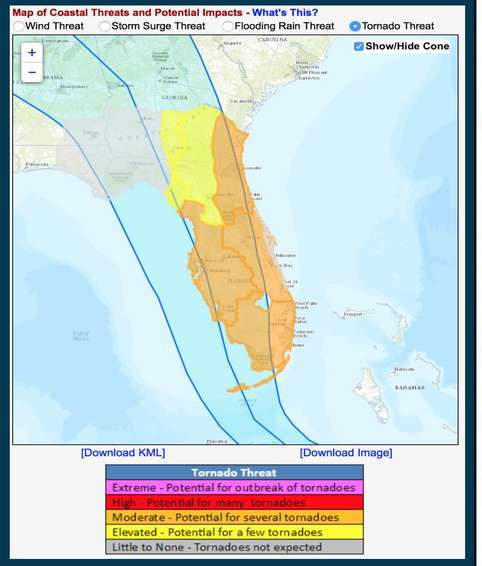

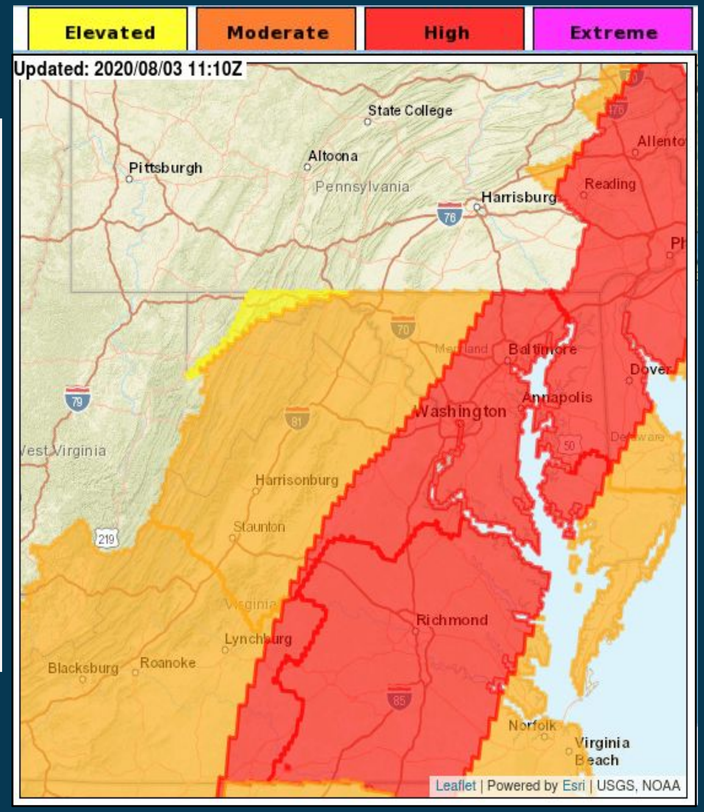

- Potential impacts from Wind, Storm Surge, Flooding and Tornado threats – updated every 6 hours.
- Displays potential impacts (i.e. reasonable worst case scenario) for planning/safety purposes.
- Used as the "safety margin" forecast for responsible decision making and resource management during hurricane emergencies
- As the time-to-impact lessens, the potential impacts trend toward the most likely impacts.

Hurricane Impact Timeline

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How Will I Know When Things are "Getting Bad"?

The National Weather Service issues watches and warnings to highlight areas and times in which conditions may be or are life-threatening

5 Days Before Landfall

Tropical Weather Outlook

48 Hours Before Landfall

Hurricane, Tropical Storm, and/or Storm Surge Watch

36 Hours Before Landfall

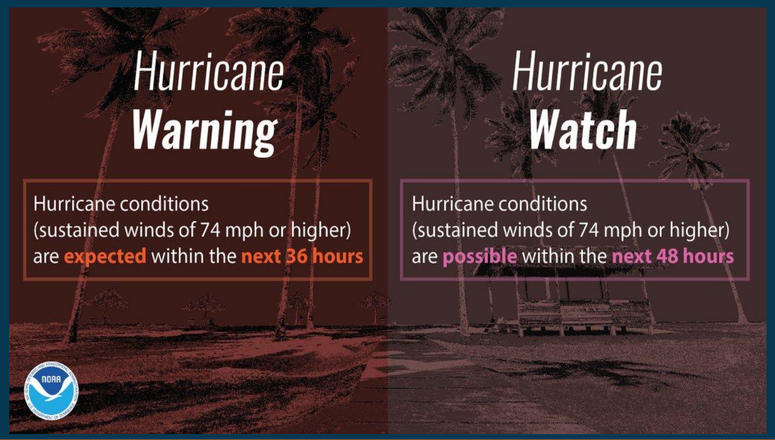
Hurricane, Tropical Storm, and/or Storm Surge Warning

Within a Few Hours of Landfall

Extreme Wind, Tornado, Flash Flood Warning

After Landfall

Tornado, Flash Flood Warnings



Local Tropical Impacts – Historic Events

weather.gov/lwx/tropical – "historic data" tab

Flooding Rainfall

- **Remnants of Hurricane Camille (1969) - 27" of rain in Nelson County, VA**

Storm Surge

- **Hurricane Isabel (2003) – 6-8 feet of storm surge in Chesapeake Bay and Potomac River**

Hurricane Winds

- **Hurricane Hazel (1954) – 112mph gust at Patuxent River NAS (MD)**

Tornadoes

- **Remnants of Hurricane Ivan (2004) – 35 tornadoes in NWS Sterling forecast area**

Hurricane Isabel (2003) Mid-Atlantic Impacts

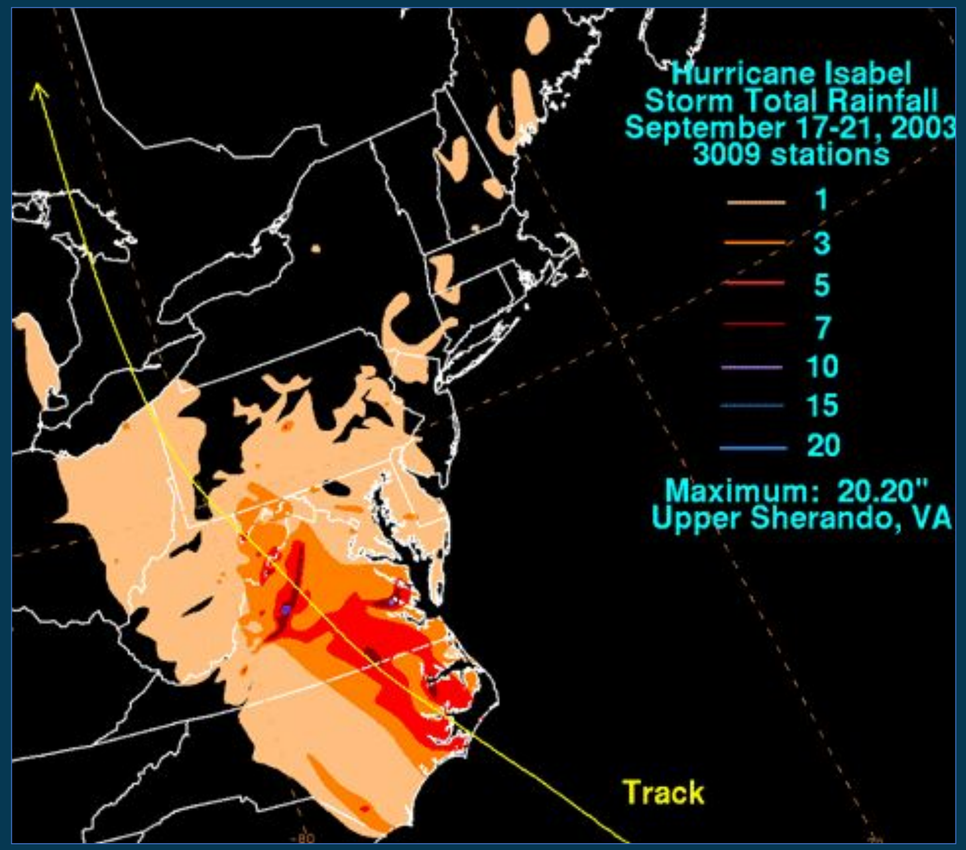
Moderate to Major River flooding occurred in the Potomac, Shenandoah, Rapidan, and Rappahannock rivers

In the city of Waynesboro, 300 people were evacuated and about $250,000 damage was caused to public property

- Flood caused 2-3 feet of water in downtown Waynesboro
- Four people lost their lives mainly due to drowning

Hurricane Isabel Rainfall:

- 6–12” in the Shenandoah Valley
- 2–6” across western Maryland and eastern West Virginia
- 1–3” across Baltimore and Washington metro areas



Hurricane Isabel (2003) Mid-Atlantic Impacts

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All area airports closed

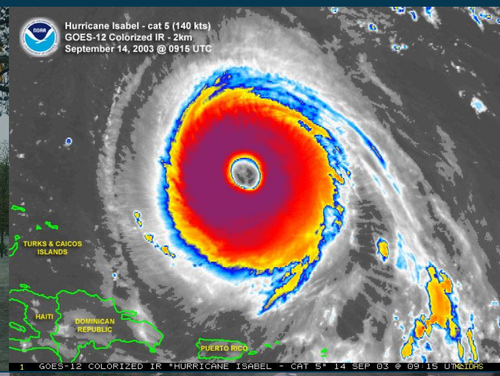
WMATA and Amtrak suspend service

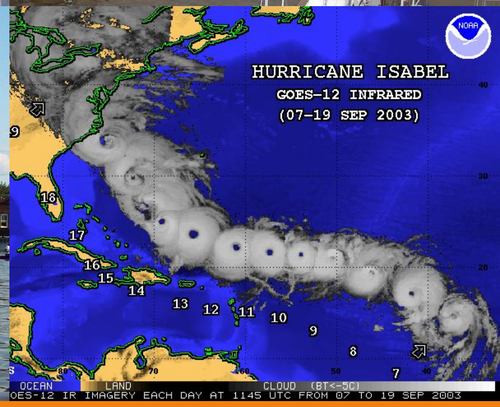
Federal Government shut down

Responsible for 40 deaths (direct and indirect) in Virginia, Maryland, and the District

Nearly $3 billion in total estimated damages

More than 4 million customers without power





2025 Atlantic Hurricane Season Outlook

For the Atlantic Basin (June-November)

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- The 2025 Hurricane Season is forecast to be above normal due to:
    - Continued ENSO-neutral conditions.
    - Warmer-than-normal sea surface temperatures in the tropical Atlantic, which creates more energy to fuel storm development.
    - Forecast weak wind shear
    - Potential for higher activity in the West African Monsoon
- An active Atlantic hurricane season does not *necessarily* mean it will be active for the Mid-Atlantic (and vice versa) – the outlook is NOT a landfall forecast (individual track forecasts only possible within ~ 7-days)
- Preparation is key every year, regardless of seasonal forecast. Begin to plan now.

2025 Atlantic Hurricane Season Outlook

For the Atlantic Basin (June-November)

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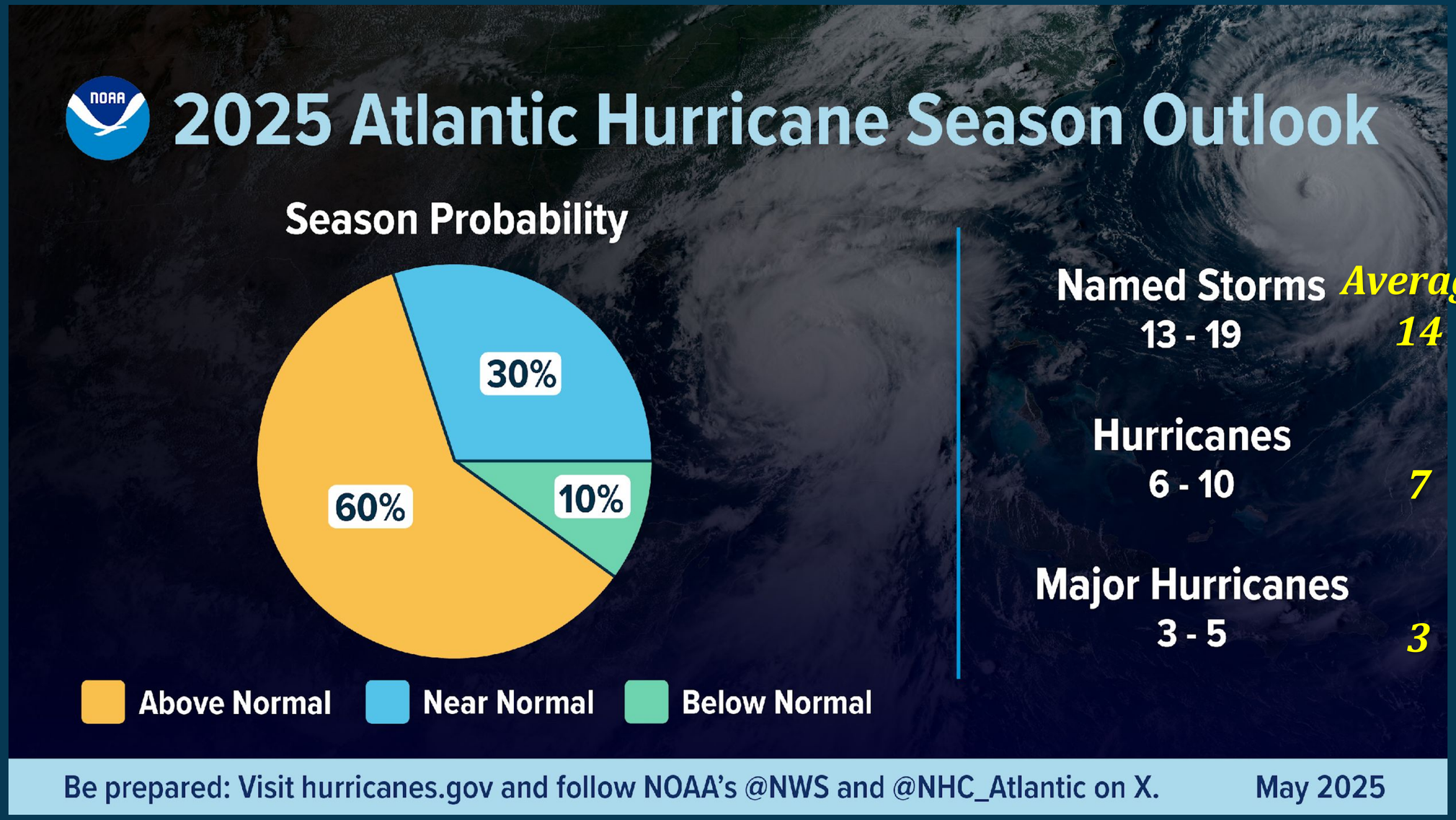

2025 Atlantic Hurricane Season Names

For the Atlantic Basin (June-November)

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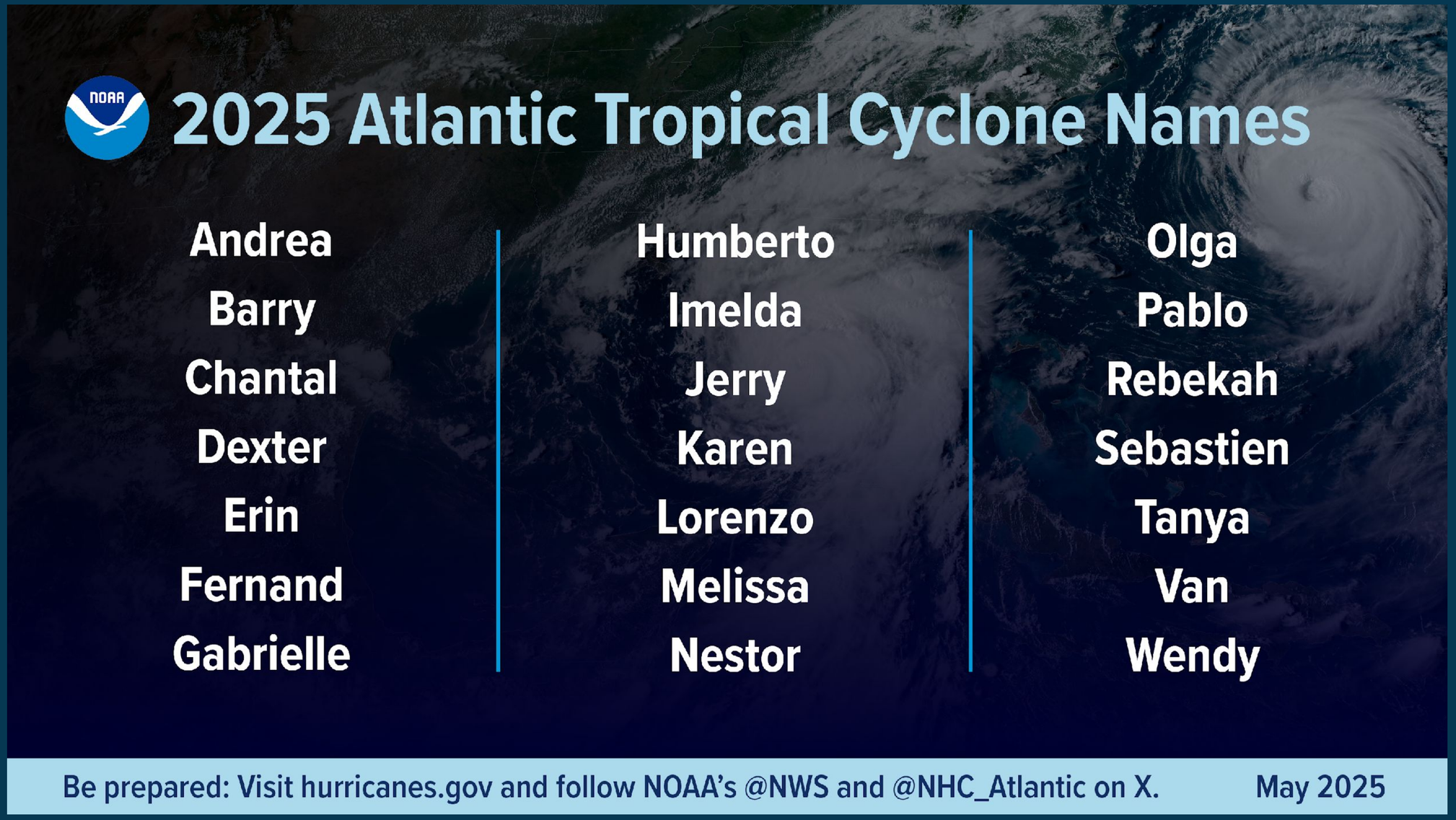


Hurricane Preparedness

weather.gov/hurricane

Know Your Risk: Water & Wind

- Consider your threats: storm surge, flooding from heavy rain, strong winds, tornadoes, rip currents
- Determine if you live in a flood-prone area
- Find out if you live in an evacuation zone
- Identify your home's structural risks (mobile homes & basements can be especially vulnerable)

NOAA

Hurricane Preparedness

weather.gov/hurricane

Prepare Before Hurricane Season

- Develop an evacuation plan
- Assemble disaster supplies: food, water, batteries, charger, radio, cash
- Get an insurance checkup and document your possessions
- Create a communication plan with a hand-written list of contacts
- Strengthen your home

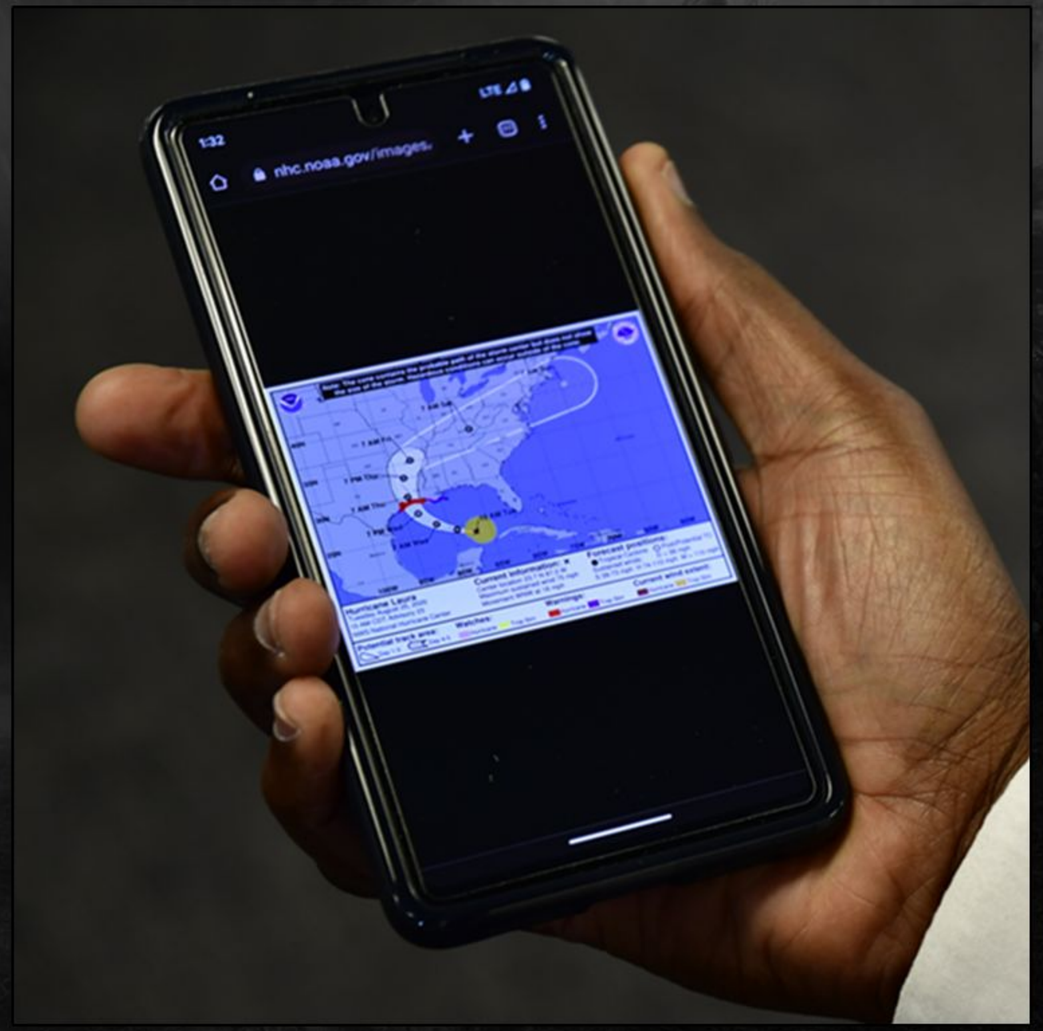
NOAA

Hurricane Preparedness

weather.gov/hurricane

Understand Forecast Information

- Rely on forecasts from the National Hurricane Center & your local NWS office
- Know your alerts & the difference between a Watch and Warning
- Focus on potential impacts, regardless of storm size or category
- Know that deadly hazards occur well outside of the Forecast Cone



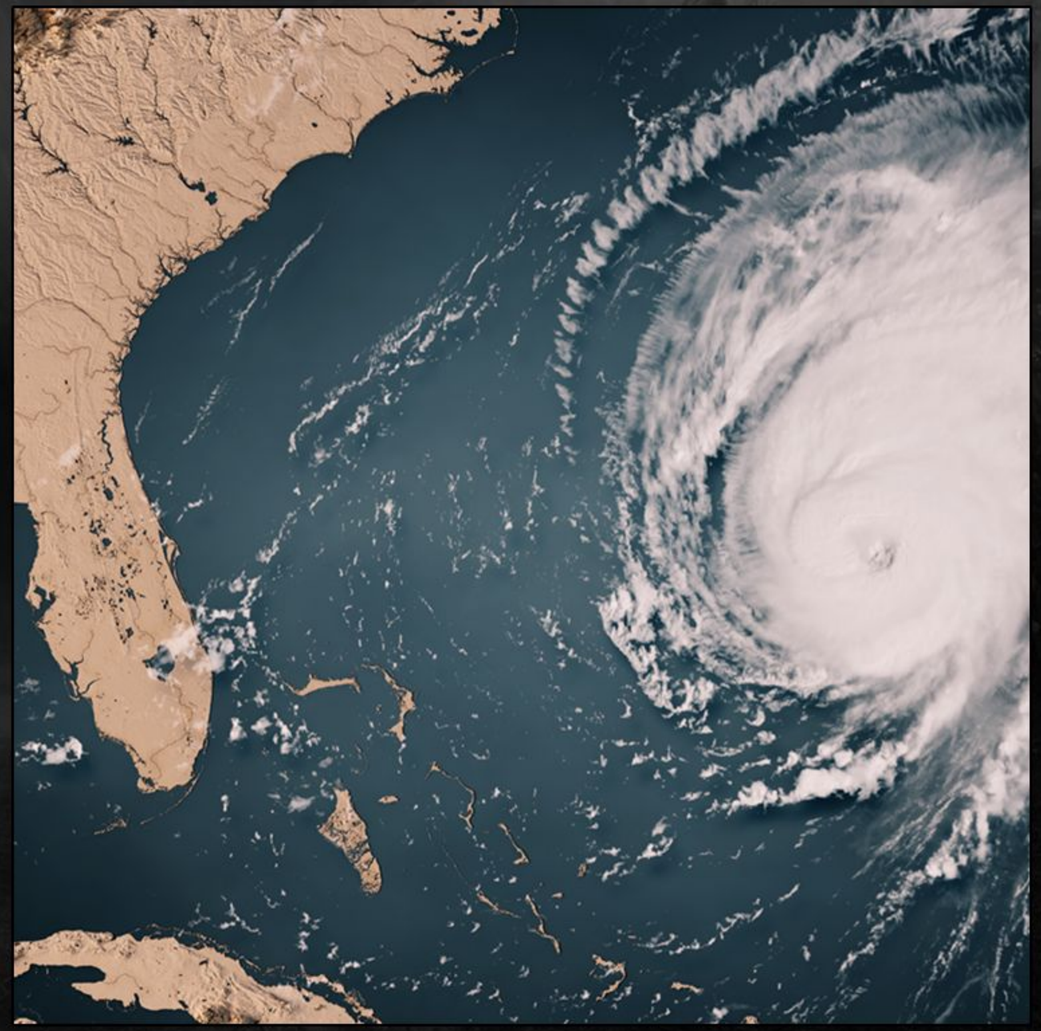
NOAA

Hurricane Preparedness

weather.gov/hurricane

Get Moving When a Storm Threatens

- Protect your home: cover windows, secure doors & loose items
- Determine sheltering options and consider your pets
- Ready your go-bag, meds & supplies, charge phone, fill up/charge vehicle
- Help your neighbors, especially the elderly & other vulnerable people
- Follow evacuation orders if given



NOAA

Hurricane Preparedness

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Stay Protected During Storms

- Stay in your safe places from water & wind
- Have a way to get weather alerts and forecast updates
- Keep in mind that impacts can be felt far from the coast
- Listen to local officials & avoid travel unless ordered to evacuate

NOAA

Hurricane Preparedness

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Use Caution After Storms

- If you evacuated, only return home when directed it's safe to do so
- Remain vigilant, as hazards remain: heat, downed powerlines, floodwaters, & more
- Clean up safely: don't push yourself, and check on neighbors
- Only use generators outdoors, 20+ feet from your home
- Prepare for the likelihood that help and communications may not be available

NOAA

Hurricane Preparedness

Take Action Today

weather.gov/hurricane

- Determine your risk from water & wind
- Begin preparing now, before a storm
- Learn how to understand hurricane forecasts and alerts
- Learn what to do before, during, and after a storm

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