

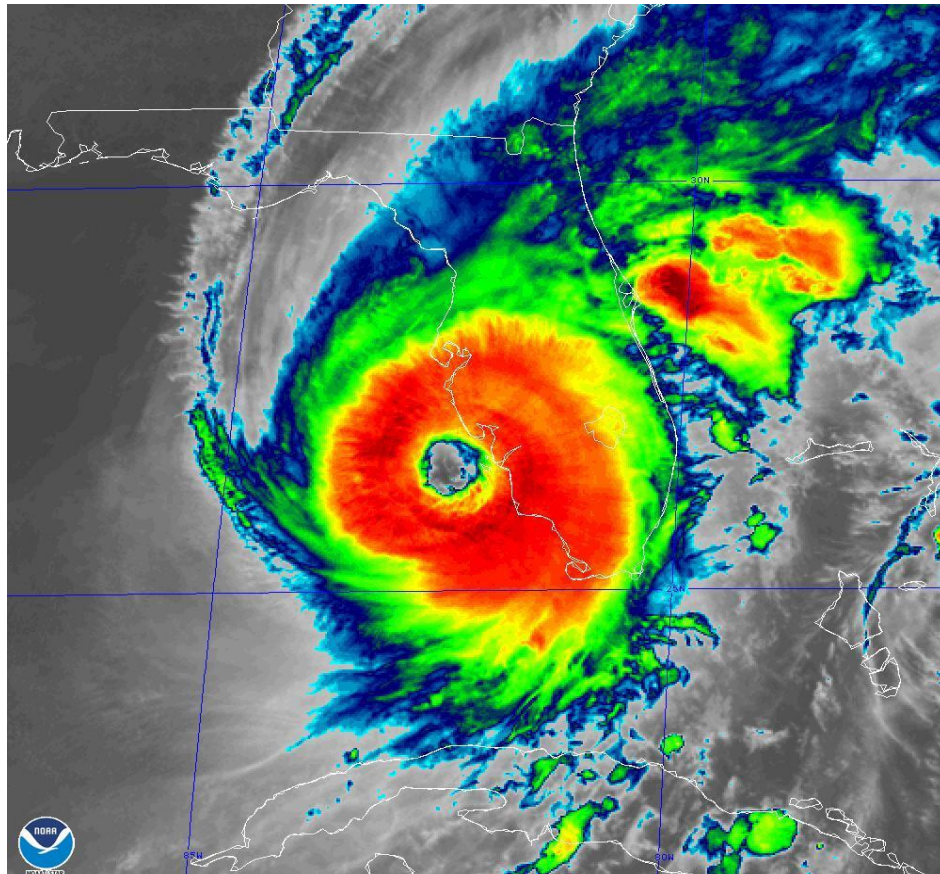


MIAMI-SOUTH FLORIDA

National Weather Service

Forecast Office

<http://www.weather.gov/miami>



28 Sep 2022 15:57Z - NOAA/NESDIS/STAR - GOES-East - Band 13 BAND 13

GOES IR satellite image of Major Hurricane Ian right before landfall along the SW Florida coast

2023 Florida Severe Weather Awareness Week

Thursday, February 9th is Hurricane and Flooding Awareness Day

Without a doubt, Floridians will remember 2022 as the year of hurricane impacts from Category 4 Ian in September and Category 1 Nicole in November. In addition, a tropical disturbance in early June produced significant flooding over parts of South Florida.

A total of 14 named storms, including 8 hurricanes and 2 major hurricanes, moved across the Atlantic basin (Figure 1) in 2022. These numbers are very close to the 30-year normal for the Atlantic.

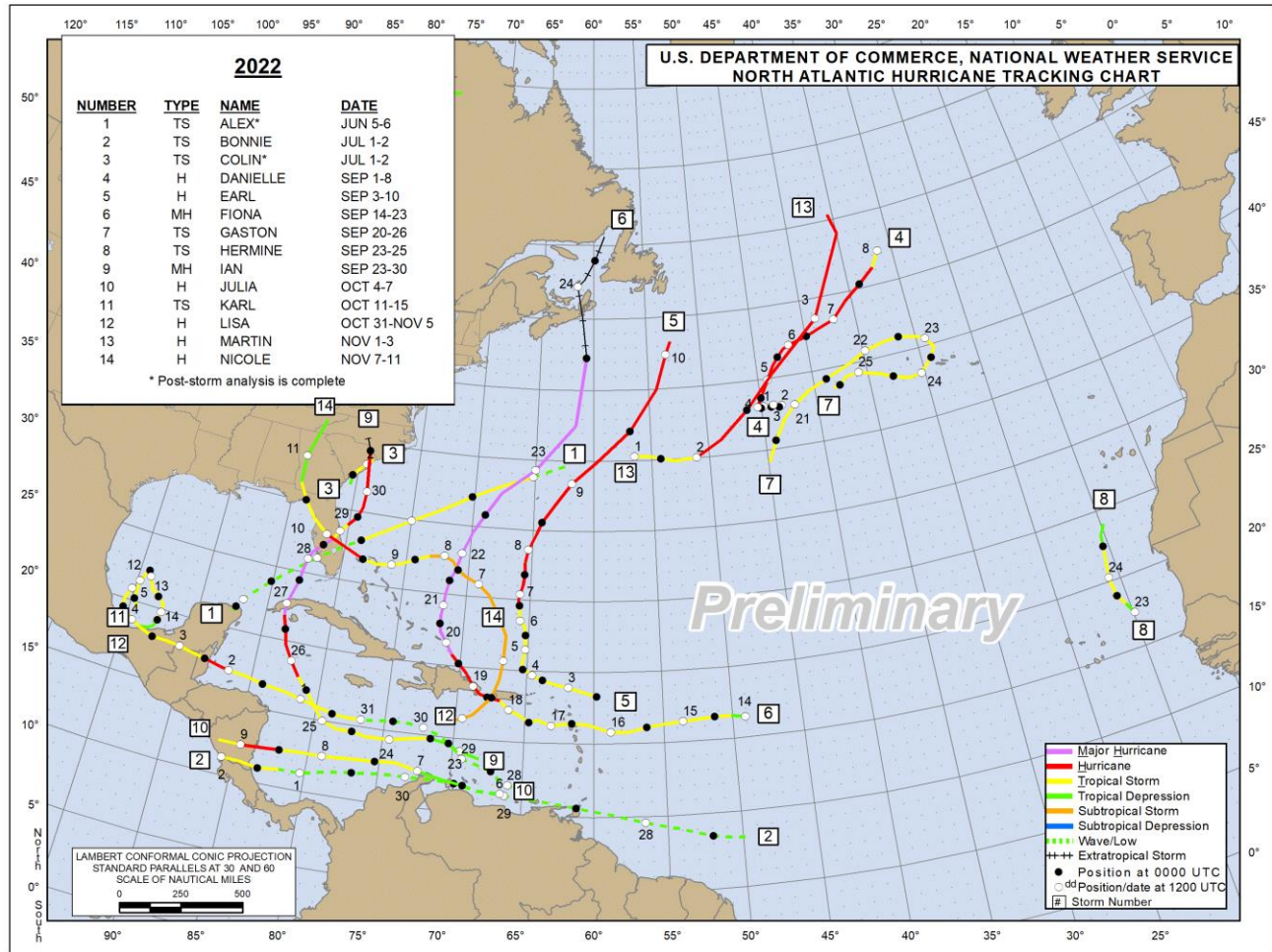


Figure 1: Preliminary Tracks of 2022 Atlantic Tropical Cyclones

Hurricanes Ian and Nicole point out that an “average” hurricane season can still cause major impacts. As of January 2023, Ian alone caused 146 deaths and an estimated \$113 billion in damage, the costliest hurricane in Florida history. Ian and Nicole were multi-hazard tropical systems, producing deadly storm surge and rainfall flooding, and tornadoes in addition to damaging wind.

IT'S NOT JUST ABOUT THE WIND

As 2022 and recent years have made clear, tropical cyclones are multi-hazard weather systems. While the wind speed is what determines the classification of a tropical cyclone, other hazards such as storm surge, flooding and tornadoes can cause significant impacts including loss of life, regardless of the storm’s category. The majority of the

deaths from Hurricane Ian were from a catastrophic 10 to 15-foot storm surge which devastated coastal locations from Naples to the Fort Myers area. Major rainfall flooding from Ian in Central Florida also resulted in several deaths. Storm surge from Hurricane Nicole caused severe damage to coastal areas in east-central and northeast Florida, with major beach erosion and damage as far south as Fort Lauderdale on the SE Florida coast. Hurricane Ian spawned 13 tornadoes in South Florida from 1 PM on September 27th to 6 AM on September 28th, with several causing significant damage in SE Florida.

The infographic features a dark blue background with a white house and trees partially submerged in water, with rain falling. Three dark blue boxes with yellow text provide key information. The Florida Department of Emergency Management (FDEM) logo is in the bottom left, and the website URL is at the bottom.

SEVERE WEATHER AWARENESS WEEK 2023

HURRICANES & FLOODING

- Hurricanes can cause *tornadoes, flooding & storm surge*
- Have a way to receive *weather alerts* such as a TV or weather radio
- Consider purchasing *flood insurance* - just 1 inch of flood water can cause more than \$25,000 in damages

FLORIDADISASTER.ORG/PLANPREPARE

Remember: It doesn't take a major hurricane to produce significant impacts. Tropical storms directly impacting South Florida have been known to produce severe flooding, damaging winds and tornadoes. Take every tropical cyclone seriously, whether it's a tropical storm or a major hurricane. Also, pay close attention to the Tropical Weather Outlook issued 4 times a day during hurricane season to stay abreast of weather systems which have the potential of forming into tropical storms, especially those close to Florida such as Tropical Storm Gordon in 2018 and Tropical Storm Sally in 2020.

Important: Historically, it is the water that has caused most of the deaths in hurricanes. Hurricane Ian is a prime example of this. About 90 percent of all hurricane-related deaths nationwide occur from drowning from either the storm surge or freshwater flooding.

Residents of coastal and surge-prone areas are urged to heed advice from local officials **and evacuate whenever storm surge flooding is expected**. Become familiar with your county's storm surge evacuation zones and know whether you live in one or not. **Visit your county's emergency management web site for more information on evacuation zones.**



Damage to restaurant in Vanderbilt Beach caused by storm surge from Hurricane Ian (NWS Storm Survey picture)




Marooned boat on top of bridge in North Naples after Hurricane Ian (NWS Storm Survey picture)


2022 served as a reminder that we live in one of the most vulnerable and hurricane-prone places in the country. On average, the center of a hurricane will pass within 50 miles of any point in South Florida every 6 to 8 years. This means that while hurricane strikes are typically not a yearly occurrence, statistics indicate that South Florida will at least be significantly threatened a few times a decade, and impacted directly by a hurricane at least once a decade. Indirect hurricane impacts, as well as tropical storms passing over South Florida, occur with a much higher frequency; at least every 2 or 3 years on average.


Therefore, we can't afford to become complacent. Be prepared **every year** for the possibility of a tropical storm or hurricane impacting our region.

SEVERE WEATHER AWARENESS WEEK 2023

HURRICANES & FLOODING

 *Develop individualized disaster preparedness plans for families, businesses & individuals with special needs*

 *Know evacuation routes & stock a disaster supply kit for at least 7 days*

 *Review insurance policies and ensure coverage is up-to-date*



FLORIDADISASTER.ORG/PLANPREPARE

HURRICANE SAFETY TIPS: Regardless of the short- or long-term hurricane outlook, South Floridians need to be prepared every year. It only takes one big storm to affect our area long-lasting impacts to be felt. Now is the time to begin preparing for the 2023 hurricane season. Develop a plan and have it in place before a storm threatens. Know if you live in a hurricane evacuation zone. Gather supplies such as bottled water, canned foods and batteries. Remember to buy enough provisions to last a minimum of three to five days in the event of a tropical system affecting our area. Buy and install hurricane shutters. Make sure your property insurance is up to date. A minimum of preparation can save lives and property.

People are also urged to be extremely cautious during the storm's aftermath. Typically, more people die after the passage of a storm than during the storm itself, from a combination of factors including: carbon monoxide poisoning, injuries while removing debris and storm shutters, heat-related illnesses exacerbated by lack of proper air conditioning, and vehicle accidents. Extreme care must be used when using generators, and make sure to run them in an outdoor location, not inside the house.

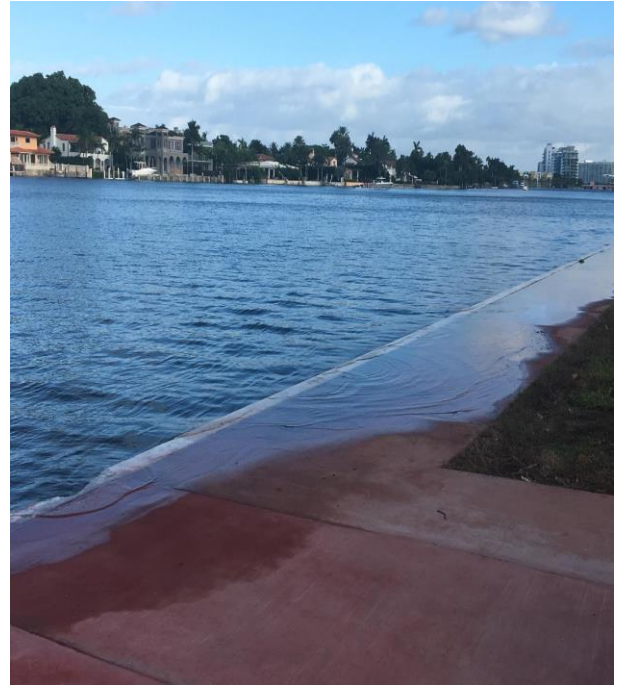
For a comprehensive list of hurricane preparedness information, visit [ready.gov](https://www.ready.gov) and [Ready South Florida](https://www.ready.gov/ready-south-florida).

Flooding

South Florida's occasional torrential rains and flat terrain can lead to major flooding. A tropical disturbance in early June 2022 caused bands of torrential rainfall across South Florida. Areas of the east coast metro from Homestead north to southern Palm Beach County received between 8 and 14 inches of rain, with the higher values observed from Miami to Hollywood. Central and northern metro Palm Beach County received amounts in the 5-7" range. Collier County averaged between 5-8 inches, with peak values of 9-10". Additional rainfall after the passage of the disturbance caused as much as 18-20 inches of total rainfall in the Cutler Bay area of southern Miami-Dade County. This resulted in severe flooding in many of these areas.

A tropical system doesn't even have to be right over us to get major flooding, nor does it have to be a major storm. Outer bands from distant tropical cyclones can produce localized flooding. While tropical weather systems produce most of the significant and widespread rain events, flooding also occurs from non-tropical weather systems. Stalled frontal systems in the fall, winter, and spring sometimes cause very heavy rainfall leading to flooding, as well as on a typical summer day when local thunderstorms frequently produce enough rainfall to flood streets and cause hazardous driving conditions. Major flooding events occur on average about three times a year across the South Florida region, although highly flood-prone areas such as Downtown Miami, Miami Beach, and other parts of metro SE Florida may experience more events on a yearly basis.

Another type of flooding, tidal flooding due to astronomical high tide (a.k.a. King Tides), typically affects vulnerable areas along the Intracoastal Waterway during high tide cycles in September, October, and November, leading to flooding of streets, parks, and marinas.



Typical South Florida King Tide Flooding (courtesy of Liam Lynam)

PREPARE FOR FLOODING: The flat South Florida terrain lends itself to ponding of water in poorly drained or low-lying areas during heavy rain events, rather than the flash flooding that occurs in other parts of the country. While this type of flooding is normally not as deadly or destructive, it can still lead to significant impacts as water can enter homes and other structures, as well as make driving extremely hazardous due to flooded roadways which can sometimes obscure canals. If water is covering a roadway, do not assume that you can drive through it. **Turn around, don't drown.**

WHEN FLOODED
TURN AROUND
DON'T DROWN

“Turn Around, Don't Drown”

WHEN FLOODED
TURN AROUND
DON'T DROWN

“Heavy” vehicles such as SUV's and pickups are not immune to danger while driving through flood waters.

Most vehicles can be swept away by 18-24" of moving water.

Tips for Driving

- Avoid driving around barricades. The road is closed for a reason. You put first responders at risk when they have to rescue you.
- Even if the road is not closed, avoid driving into flooded areas. Water may be deeper than it appears, and the road bed may not be intact.
- Most flash floods occur at night, when it is harder to see the flooding.

There is no friction force since the vehicle is lifted off the road.
Nearly half of all flood fatalities are vehicle related.

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National Weather Service – Miami, FL

All South Floridians need to be aware of their particular neighborhood's vulnerability to flooding. Fortunately, people can also plan well in advance for floods. The best advice is to have flood insurance, a separate policy from your homeowner's insurance. Know if you live in an area which floods frequently from heavy rains.

Good flood safety information can be found at the [NWS Flood Safety web site](#).

Monitor NOAA Weather Radio before, during and after a tropical cyclone or flood event to stay abreast of the latest information. You can also visit the National Weather Service Miami Forecast Office web site at weather.gov/southflorida where a description of potential storm impacts and latest hurricane and flood watches and warnings will be available, as well as the National Hurricane Center's five-day tropical cyclone track and intensity forecast.