



MIAMI-SOUTH FLORIDA
National Weather Service
Forecast Office
<http://www.weather.gov/miami>



Tornado in Everglades of Collier County on June 24th, 2012 (courtesy Dan Floyd)

2023 Severe Weather Awareness Week

Wednesday, February 8th is Tornado and Thunderstorm Awareness Day

Tornado Drill at 10:00 AM EST

No other country in the world has more tornadoes than the United States. On average, over 1,000 tornadoes are *reported* in the United States every year, resulting in 68 deaths and over 1,500 injuries. South Florida is certainly no stranger to tornadoes and severe thunderstorms, and they occur more frequently here than some people realize. Since 1992, South Florida has averaged eleven (11) reported tornadoes per year, and since 1950 a total of 159 tornadoes of EF-1 or EF-2 intensity on the Enhanced Fujita Scale

(winds greater than 85 mph) have occurred. South Florida tornadoes occur with a variety of weather systems including: strong winter/spring cold fronts, waterspouts moving onshore, tornadoes embedded in the outer rain bands of tropical storms and hurricanes, and even from ordinary afternoon thunderstorms if the conditions are just right.

Over 90% of South Florida tornadoes fall in the EF-0 and EF-1 category, which translates to winds less than 110 mph. Impacts from these tornadoes typically include: significant damage to mobile homes, uprooted trees/broken tree branches, downed power lines, minor structural/roof damage to buildings, and patio/pool screen enclosures.

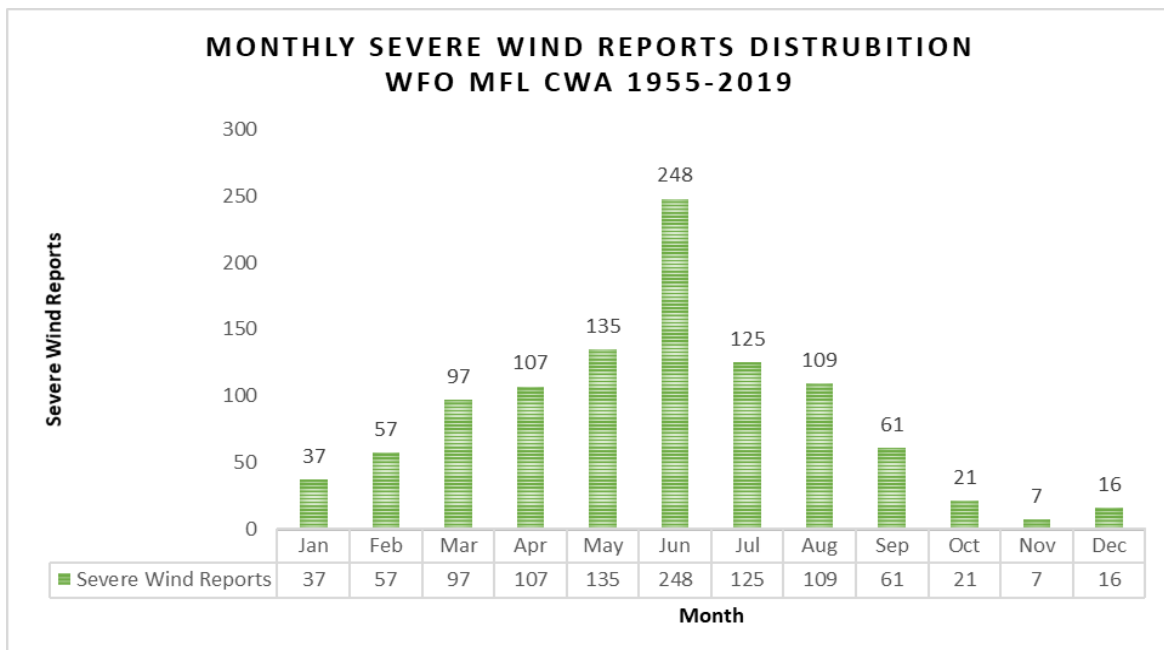
After three relatively inactive years, 2022 had a total of 16 reported tornadoes in South Florida, more than the previous three years combined. This reflects the year-to-year variability in tornadoes, and not necessarily a trend in tornado activity. The outer bands of Hurricane Ian spawned 13 tornadoes which occurred in a roughly 18-hour period between 1 PM on September 27th and 6 AM on September 28th. This was the highest number of tornadoes from a tropical system in recent memory. One of these tornadoes was rated an EF-2 with estimated maximum winds of 125 mph which tore through the Kings Point neighborhood west of Delray Beach. Several condominium buildings were significantly damaged, and 2 people were injured. Three other tornadoes during Hurricane Ian were rated EF-1 (winds in the 90-95 mph range), causing significant tree damage and notable structural damage.

Waterspouts (tornadic circulation on water) can be dangerous to boaters as well as to those at the beach. On May 25th, 2015, a waterspout moved onshore Fort Lauderdale Beach and flipped a bounce house in the air about 30 feet, injuring four children who were in the bounce house at the time. More recently, on August 19th, 2020 a waterspout moved along the beach at Golden Beach, damaging fences and trees along a narrow path near the shoreline.



NWS Storm Survey picture from Miami Springs on January 23rd, 2017

South Florida tornadoes occur mostly from May to August when thunderstorms are most frequent (Figure 1), however they have occurred in every month. Most South Florida tornadoes are relatively small and short-lived. This means that it is often very difficult to give plenty of advance warning. In many cases, only a few minutes of warning are given between the time a warning is issued by the National Weather Service and the tornado touchdown. Nevertheless, even a few minutes of warning can make the difference between life and death.



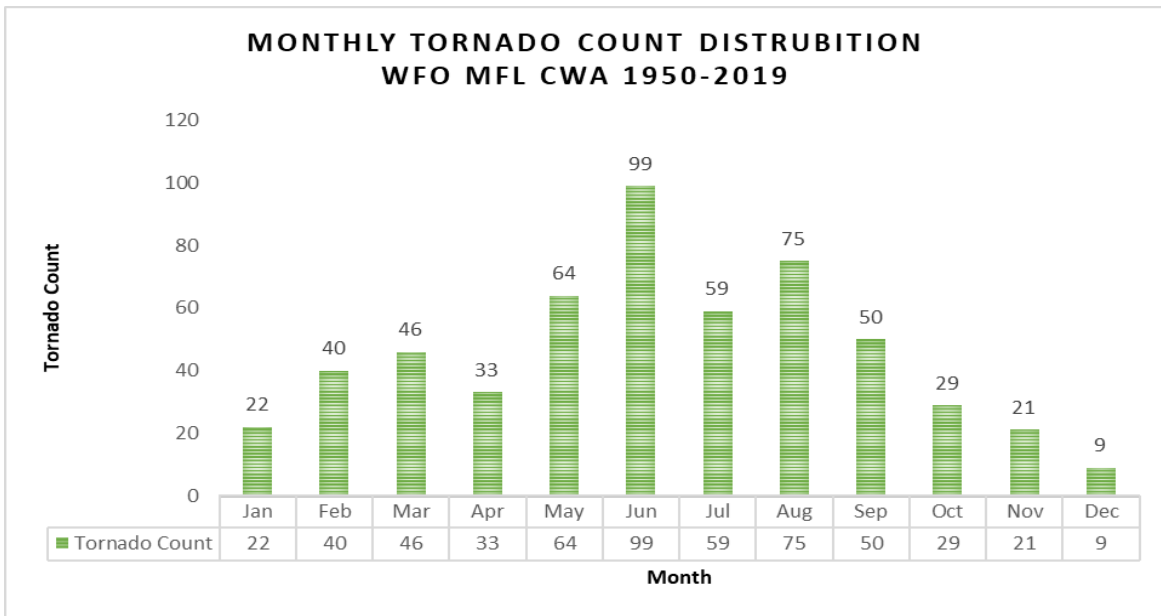


Figure 1: Graphs showing historical monthly distribution of severe thunderstorm wind reports (typically 58 mph or greater) and tornadoes in southern Florida from 1955-2019 and 1950-2019, respectively

Knowing how to receive weather warnings is critical to your safety. Fortunately, there are many ways to get these warnings. One option is owning a NOAA Weather Radio (Figure 2). Having a NOAA Weather Radio is a critical component of the warning system. In fact, **having a weather radio available to alert of an approaching tornado has proven to save lives**, especially for nighttime tornadoes when people are normally asleep and otherwise wouldn't receive alerts. Local media will also relay tornado warnings via the Emergency Alert System (EAS).



Figure 2: NOAA Weather Radio – important for protecting lives and property.

In South Florida, there are six (6) different transmitters relaying weather information 24/7 (Figures 3 and 4). Weather messages are repeated every four (4) to six (6) minutes and are routinely updated every one (1) to three (3) hours, or more frequently when severe weather strikes. During severe weather such as tornadoes, NWS forecasters can

interrupt the routine weather broadcasts and insert special warning messages concerning imminent threats to life and property. The forecaster can also add special codes to warnings that trigger "alerting" features of specially equipped receivers. In the simplest case, this signal activates audible or visual alarms, indicating that an emergency condition exists within the radio listening area and alerts the listener to press a button or turn up the volume and stay tuned for more information.

| Transmitter | Station I.D. | Frequency |
|-----------------|--------------|-----------|
| Miami | KHB34 | 162.55 |
| Spanish | WZ2531 | 162.500 |
| Princeton | WNG663 | 162.425 |
| West Palm Beach | KEC50 | 162.475 |
| Naples | WWG92 | 162.525 |
| Belle Glade | WXM58 | 162.400 |

Figure 3: South Florida NOAA Weather Radio transmitters and frequencies

| County | SAME ID | NOAA Weather Radio Stations |
|------------|---------|--|
| Broward | 012011 | Miami, Palm Beach, and Spanish Station |
| Collier | 012021 | Naples and Ft Myers |
| Glades | 012043 | Ft Myers and Belle Glade |
| Hendry | 012051 | Naples, Ft Myers, and Belle Glade |
| Miami-Dade | 012086 | Miami, Princeton, and Spanish Station |
| Monroe | 012087 | Naples, Tea Table Key, Princeton, and Key West |
| Palm Beach | 012099 | Palm Beach and Belle Glade |

Figure 4: South Florida counties and associated NOAA Weather Radio Stations

There are also many mobile services available to alert of tornadoes, including [Wireless Emergency Alerts](#) (WEA) which allows people who own wireless smartphones and other enabled mobile devices to receive geographically-targeted, text-like messages alerting them of imminent threats to safety in their immediate area. Apps such as the one from FEMA provide free weather alert notification to mobile devices.

It is important to understand the meaning of the terminology meteorologists use to assess the threat of tornadoes in your community. A **Tornado Watch** means that atmospheric conditions are conducive for tornadoes. Remain alert for approaching storms. A **Tornado Warning** means that a tornado has been sighted by a weather spotter or member of the public, or indicated by weather radar.

SEVERE WEATHER AWARENESS WEEK 2023

THUNDERSTORMS & TORNADOES



Make sure your home or business is prepared if a tornado impacts your area



Stay inside an enclosed, structured building away from windows



Have a way to receive weather alerts to receive up-to-date on tornado watches & warnings



[FLORIDADISASTER.ORG/HAZARDS/THUNDERSTORMS](https://www.floridadisaster.org/HAZARDS/THUNDERSTORMS)

IMPORTANT TORNADO SAFETY TIP

When a tornado warning is issued for your area, **move immediately to your pre-designated place of safety** which should be an interior room or hallway on the lowest floor away from windows, or underneath a desk or table if a windowless room is not available. In a multi-story building, go to the lowest floor.

TORNADO DRILL INFORMATION

The day of the drill:

After 8:00 am: Consider a Tornado Watch to be in effect

- Announce watch to staff, students
- Designate authority (coordinator)
- Evacuate tornado vulnerable areas

10:00 am: Tornado Warning Issued

- Receive message

The warning will be broadcast on NOAA Alert Radios as a **routine weekly test (RWT) message, NOT** a live warning). This will not trigger the Emergency Alert System (EAS), nor will it sound an alert on most NOAA Weather Radio receivers (unless they are configured to alarm during a RWT

- Coordinator determines threat

By 10:05 am: Tornado Warning remains in effect

- Upon determination of immediate threat, give “take shelter” or “duck and cover” command (depending on space available at location)

10:30 am: Termination of Watch and Warning

- Give instructions to return to normal activities. (you will not receive notification.)

Terminate the drill as you see fit.)

After the Drill Wrap-up

- Following the drill, assess and revise plan as needed

Severe thunderstorms are also fairly common in South Florida. These are defined as thunderstorms containing wind speeds of at least 58 mph and/or large hail of at least one inch in diameter. Severe thunderstorms can occur year-round but are most common from March to August. Winds in excess of 58 mph can cause damage to trees, cause signs to fly through the air, knock down power lines, and even cause structural damage to buildings. Large hail, although usually not damaging in South Florida, can still pose a threat, especially in urban areas where vehicles can suffer damage. Large hail can also damage crops.

Tornado and severe thunderstorm warnings are normally issued within 30 minutes of an expected impact, and people are urged to take immediate protective action due to the imminent nature of the threat.

For more information on tornadoes and thunderstorms, including safety information, visit the [National Weather Service Tornado website](#) and the [National Weather Service Severe Thunderstorm website](#).

Make sure to visit our website at weather.gov/miami for the latest weather information, [including information on potential tornado and thunderstorm threats](#), watches and warnings. Also monitor NOAA Weather Radio and local media, particularly during potentially threatening weather days.