

Lightning and Your Boat



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MARCO ISLAND, FL – Weather is always an important factor in how enjoyable your day will be on the water. Being aware of the weather forecast, in the area you will travel, is critical to the success of your boating activity.

Here in southwest Florida, we know a storm can form quickly and change a beautiful sunny afternoon into a boater’s worst nightmare. A sudden thunderstorm can even become a life and death situation. This article will provide some historical data on lightning strikes on boats and what you can do to stay safe and how you can protect your boat.

Most folks are aware of the old adage that you have a “one in a million chance of being hit by lightning.” Your boat, on the other hand, has on average, a one-in-one thousand chance of a lightning strike. However, where you boat also factors into the equation, and boating around Marco will increase the odds. BoatUS ran an analysis of a decade of lightning strikes claims and Florida accounted for 33 percent of those claims. This stands to reason with the frequency of thunderstorms here during the rainy season. In addition, the size and type of boat will also

change the odds. BoatUS reported the probability associated with the boat type as shown in this table.

Type	Chances per 1,000
Multi-hull Sail	9.1
Aux Sail	4.5
Cruiser	0.86
Sail Only	0.73
Trawler	0.18
Bass Boat	0.18
Runabout	0.12
Houseboat	0.11
Pontoon	0.03
Personal Watercraft (PWC)	0.003

The size of the boat would obviously increase the probability as a larger boat would sit higher on the water. And sailboats, with their tall masts, make an even better target. In fact, increasing the height of the mast by ten feet, say, from 35 foot to 45 foot, will almost triple the odds of the boat being hit. The reason multi-hull sailboats are at the top of the list is uncertain. It may be due the larger wetting area or the fact they do not have a leaded keel. Some believe it is due to the practice of docking those vessels at the end of a marina's dock.

Take a second to think about how most boaters on Marco store their boats after a day on the water. That is correct; most are sitting on a lift, high out of the water. And, if you leave your antenna(s) up you are increasing the odds of a lightning strike. To illustrate this point, let me pass on a message we received at the Auxiliary station not so long ago.

"To My Marco Boating Friends,

Just a quick note to tell you about a boating issue on Marco Island that I did not realize. On July 14th our new boat was struck by lightning and it suffered severe damage to

everything that is at all electrical related. Lightning struck the VHF radio antenna, traveled throughout the entire electrical system and exited out through the shore power cord.

I was not advised, nor did it ever occur to me, to put my antennas down while away for the summer.”

Why is lightning attracted to boats in the first place? A simple explanation can be understood by thinking of the thunderstorm as a generator of charged particles. Those particles attract the opposite charge on the ground or water surface and, if close enough, the charges create an arc of energy. Like what would happen if you dropped a screw driver across the terminals of your battery. Air is not a good conductor, but your boat is. And the higher your vessel, the closer it comes to that arcing point. Lightning generally will travel to the highest point in the surrounding area, and on the water that will be your boat.

Can you do anything to protect your boat? Just like on a building you can install a lightning-protection system on your boat. While the principles are simple to understand, the process of providing a safe way for the lightning to pass through and exit your boat, it is rather complex and best left to a professional. There are several options. You can attract the lightning away from your boat's electrical system and get it to the water quickly or you can try to dissipate the charges from your boat to prevent the lightning from striking in the first place. For the latter, many sailboats incorporate a “fuzzy dissipater” to the top of the mast. These devices look like metal bottle brushes and the theory is they will dissipate accumulated charges from the vessel thus prevent lightning from hitting the VHF antenna. A Cruiser or Sportfishing boat could install these as well at the highest point of the boat.

Where a “lightning rod” option is used, a metal rod is installed at the highest point on the boat, higher than the VHF antenna. It is connected to a heavy wire or other conducting material (like the mast of your sailboat) that leads to an exit point below the waterline of your boat. It is critical to keep the path of the lightning away from all the other wiring on your boat. The exit location is usually a piece of metal with at least one square foot of surface area mounted on the outside of your hull. Benjamin Franklin is credited with coming up with the concept of a “cone of protection” provided by the use of this type of air terminal and, theoretically, it should protect your entire vessel. As with any theoretical concepts this one has some detractors, the National Lightning Safety Institute believes you still can be hit within the cone for other reasons like ground dissipation or side flash. As mentioned previously, either system needs to be installed by a licensed maritime electrician.

With all the electronics on a boat these days including mission critical devices, like the Engine Control Unit (ECU) or Engine Control Module (ECM) which control the operation of your

engines, you should install surge-protective devices (SPD) or transient voltage surge suppressors (TVSS). They will help isolate those devices from the strike.

But what can you do if you are out on the water and caught in a thunderstorm? Boating Magazine provided a rather comprehensive list. The first point is obvious:

- Listen to the National Oceanic and Atmospheric Administration (NOAA) weather broadcasts on your VHF radio and get off the water if notified about threatening weather.
- Watch the clouds and as they change from fluffy white to dark gray head for safety.
- Remember the Weather Service advice and “when thunder roars, go indoors”.
- If you hear thunder, count the seconds between a lightning flash and the thunder. Divide the seconds by five and that will give you an idea of the storm's location. If the storm is moving toward you, the distance will steadily decrease.
- If you use a smartphone, you should have both a weather radar app and a lightning tracking app. NOAA has a real-time lightning tracking app which could help you avoid a storm.
- If so equipped keep an eye on the ship's radar to spot approaching storms.
- Lightning strikes generally occur between noon and 6:00 PM, in the summer months plan your trips accordingly. Go out early and plan to return early. You will also beat the heat of the afternoon.
- If a storm is imminent, do not touch any metal on your boat. If you must use the helm use only one hand and keep the other hand in your pocket. Some people keep a wooden dowel or wooden spoon on board to use with the helm.
- Remove all fishing rods from rod holders, especially if they are overhead and place them on deck or stowed below.
- Do not use the VHF radio at all during a storm and drop the antenna before the storm arrives. Some recommend disconnecting both the power line and antennae connector. Be advised that most VHF radios are also connected to a GPS, which may or may not have an antenna and that connection should be isolated.
- If your boat has a cabin, have everyone get inside and stay close to the center of the boat and away from any metal objects. If you do not have a cabin, stay as low as you can on the deck.
- If possible look for a protected area out of the wind and drop anchor to wait out the storm.
- After the storm passes wait at least 30 minutes before getting underway. Lightning can occur both miles ahead and astern of a storm.

- You can protect handheld devices like VHF radios and cell phones by placing them in a metal container or if your boat is so equipped place the items inside a microwave. You can even improvise a metal box with aluminum foil.

If you do experience a hit first check the people on your boat for any injuries. Administer first aid and CPR if needed. Also check your bilge for water as lightning can exit the boat via through-hull fittings or transducers. Plug the leaks as best you can and try to get your bilges working or begin to use buckets. Contact the Coast Guard with your VHF radio, if it works, or activate your Personal Locator Beacon (PLB) or Emergency Position Indicating Radio Beacon (EPRIB) to report your emergency situation. If you are within cell phone service, and your phone is operational, call 911.

The best advice I have is play it safe and get off the water as soon as a storm approaches. Better yet stay off the water if thunderstorms are in the forecast.

For more information about safe boating courses Joe Riccio, (239)-384-7416 or CGAUXCOURSES@GMAIL.COM.

To schedule your **FREE** Vessel Safety Check, please call: John Moyer, (239)-248-7078 or Coast Guard Auxiliary Station – Flotilla 95, (239) 394-5911 or email John at jmoyer1528@aol.com.

For those interested in joining Flotilla 95, USCG Auxiliary, please call Bob Shmihluk at (215) – 694-3305