

SQUALL STRATEGIES (Excerpted from "Sail" magazine, Sept. 2018)

WHAT IS A SQUALL?

The official definition for a squall, according to NOAA, is "a strong wind characterized by a sudden onset in which the wind speed increases at least 16 kts and is sustained 22 kts or more for at least one minute." A squall can also be defined as an area of strong, localized convection in which windspeed increases substantially for a duration lasting from a few minutes to a few hours.

Squalls, almost by definition, are too small and localized to be forecast precisely.

Visual Characteristics: There are a few key indicators to look for when trying to identify a squall: namely clouds, rain and waves.

Cumulonimbus Clouds: The first sign of squall is typically a large cumulonimbus cloud built up with a dark, flat bottom. However, not every cumulonimbus cloud will have a squall under it, which is why it's important to look for other indicators as well.

Virga: The second indicator of a squall, are gray streaks underneath said cloud. These streaks are called virga and are the result of rain evaporating before it hits the ground. As the rain evaporates it also steals heat from the surrounding air creating pockets of cold air that can descend rapidly, causing strong gusts at sea level.

Rain: A dark slab of rain under a cloud is usually a good indicator that strong wind will be present. The rain is often at a slant, as a result of the wind within the squall complex. Squalls often move sideways to this slant, so don't assume that that the cloud is dragging the rain behind it.

Waves: Another indicator is whitecaps on the surface of the water near large clouds-- a sure sign of strong, localized winds stirring things up.

HOW TO AVOID SQUALLS

Avoiding squalls follows naturally from being able to identify them. However, just because you know what a squall looks like, doesn't mean you will automatically where it is going. Squalls often do not follow the prevailing winds but rather move at an angle to them. In addition, **large gusts can occur as far as 2 miles away from the squalls cumulonimbus cloud.** So be sure not to wait for it to get too close, or you may find yourself caught unprepared.

SAILING IN A SQUALL

Taking some precautions early on and knowing what to expect will pay dividends in terms of keeping both your boat and your crew safe.

If a squall is approaching, the first step is to reef sails. Expect wind speeds at least 50% higher than the prevailing conditions and reduce canvas accordingly. The adage "reef early and often" is a goofone to

follow. Being caught over-canvassed is a challenging and unenjoyable experience to say the least, not to mention potentially dangerous for the boat and rig.

Make certain that everything on deck and in the cockpit is well secured. Put on foul-weather gear or at least have it close by, as the cool rain can cause a chill. The first strong gusts of wind associated with a squall are almost always the strongest. You'll typically feel this wind before you'll feel the spattering of rain.

Once the rain hits, the wind lessens somewhat but can still be gusty. Depending on where you are, how high and large the cloud is and the initial prevailing conditions, the wind will typically be anywhere from 25-40 kts. Often, before and after a squall, the wind will be very light, prompting us to turn on the engine to make headway after the squall has passed.

Sailing on the periphery of the squall is usually preferable to sailing through the heart of a large squall. The reason is that the wind shifts can often be unpredictable, forcing you to have to trim sails, or even tack or gybe multiple times, a tremendous amount of effort hardly worth it given that the squall will likely blow itself out within 20 minutes to one hour any way.

Something to watch for when you do find yourself caught in a squall is rounding up and out of control. Your sail plan may be fine on a run in 30 kts, but then a wave slews round your stern, or a gust hits, and the next thing you know the boat is turning up into the wind, completely out of control.

While it's good to approach a squall with respect, there is no reason to fear it. With good avoidance techniques, crew preparation, and the right sails, every squall can be managed. Consider it a little bit of excitement.