

The exhilaration of the sleighride seems somehow worth the risks

Squalling in the Doldrums

by Richard H. Chesher Ph.D.



A weak squall glides toward Moira from the starboard side. The cumulonimbus cloud rides high off the water and the rain is a mere gray wisp below it. We found only a few minutes of 10 to 15-knot winds immediately in advance of the cloud



An ideal squalling squall in glorious splendor advanced on a collision course with Moira. Heavy rain deepened the area beneath the cloud to a gray color. The cloud itself was well consolidated and of immense height. We correctly predicted a 20-knot wind from this storm and were able to ride on its advance for almost two hours before sunset



A menacing super-dreadnaught approached with black furious rains beneath its oily-looking advance edges, and thunder rumbled deep within its mass while light flowed through its towering upper portions. Winds were from 25 to 50 knots

As the squall bore down on us, we waited with all sails standing. We could see the consolidated roll cloud along its lower edge indicating a tight, high velocity recirculation of wind within the storm



Dr. Richard H. Chesher, a marine scientist, is presently engaged in aquatic environmental research in the Pacific. The expedition is expected to last about three years, incorporating extensive cruising aboard his Peterson 44 cutter, Moira. He took delivery of Moira in Taiwan, and then sailed south through the Philippines to New Guinea, the Western Caroline Islands, the Bismarck Archipelago and down to the Pacific home base of the expedition in the Solomon Islands. Dr. Chesher is an active underwater photographer whose work has appeared in many publications including The National Geographic.

Nervously, I glanced at the limp and flaccid sails, then at the calm confidence' in the faces of my crew, Doug and Freddy, then back for the hundredth time to the towering black mountain about to pulverize us. I had a fleeting vision: an aerial view of my 44' frail bubble of plastic, a mere white speck before the gigantic, 20,000' high, eight-mile wide thunderhead that bore down on us, slowly eclipsing the cheerful blue sky with its dark, unstoppable mass.

I've lost my mind, I thought, not wanting to dispel the illusion that I knew what I was doing. Here we are with all sails up calmly waiting for a monstrous tropical squall to hit us - like a surfer waiting lazily for the "big one" to carry him crashing onto a rocky shore.

When I decided to try sailing on the advance winds from a squall ("squalling," the windy equivalent of surfing) it seemed like a good idea. Now that it was too late to change my mind I found repentance.

The doldrums made me do it. The western Pacific doldrums - a vast area of weak, undecided winds - east, south, northeast, southwest, back and forth, or none at all. The area is characterized by mammoth, beautiful, cumulonimbus clouds towering majestically towards the stratosphere, or tiny, puffy white clouds floating silently above glorious sunsets, sunrises, moonsets and moonrises. All in all, a great place to visit but a terrible place to sail.

Roll- in the headsail, roll it out, roll it in, roll it out. Let out the main and haul it in. Tack to port then to starboard. Gybe and come about then gybe again. Drop the sails and start the engine, shut it

down and hoist the sails. Unbelievably glassy calm one minute and screaming torrents of wind and rain the next. Searing hot days and chilly nights. A place of natural contradictions, at once monotonous and exciting.

Moira, my 44' Peterson cutter, was on her second day out of Palau, bound for Papua New Guinea when she entered the fabled doldrums. Although Freddy, Doug and I had read about them and flown over them, this was our first sail through the doldrums and over the equator. Perhaps this is why we lost sight of reality and decided to try squalling on the giant thunderstorms that frequent the doldrums.

A gust of wind and Moira came alive, dancing forward over the glassy sea. I slid the bow into the wind and ran close-hauled at the advancing wall of rain.

Long ago, I learned about thunderstorms at sea. I learned to keep away from them, altering course to pass behind them when possible. You can never tell if a particular squall will bring 10-knot or 50-knot winds and a wrong guess can be disastrous. But boredom and heat can distort your thinking. Out there in the October doldrums, with the searing tropic sun, calm seas, constant chatter of the hot diesel and the endless two hour watches, I found myself entertained by a magnetic attraction to the giant, threatening thunderheads that skulked here and there on the horizon. After all, the dark gray-black, sinister area under the towering clouds represented cool, refreshing rain. And, although you'd never know it three or four miles away, there was wind there, too. Lots of it, and we needed some wind.

Twice we were unable to avoid squalls. They engulfed us with avalanches of rain and great shuddering gusts of wind. Both times we met the advancing devastation bow-on, with sails furled and soap ready. After a brief moment of awe at the winds rushing ahead of the gray escarpment of water, we threw off our modest attire to suds up and shiver in the cold, driving rain.

The sixth day of utter calm found us mentally depraved. A squall cloud towered like a thermonuclear explosion just abeam of Moira. I made a cavalier decision to ride the squall, visualizing Moira slicing through the placid waters, cavorting mile after mile on the bow wave of the storm.

Now, a stronger gust, cool and wet with the freshness of rain, kicked Moira over and we shot ahead. The squall towered above us, incredibly huge, cascading down toward us, billowing and churning.

"Okay, here we go!" I shouted. "Let out the sails." I swung the wheel over and headed off ahead of the storm. With the wind abaft the beam, we were squalling on the leading edge of the storm, the rail buried in foam and the deep blue Pacific collecting itself in swirls behind our swiftly moving stern. Seven knots, 7.5 knots ... "Hey, all right! We are sailing! Come on Moira! Eight knots!" We shouted and laughed as the flat sea streamed by and the black threatening sheets of rain edged closer and closer. Thirty minutes later a solid wall of water trashed loudly into the sea only a few yards to port.

We drove, shuddering and leaping into the blinding sheets of wind-lashed rain. Inside the storm everything was a dark fury of wind and water. We shifted course erratically, letting the sails dump the howling wind and still we smoked along at eight knots.

I gripped the wheel, teeth clenched, shivering like Moira in the cold rain, drenched to the skin, frozen to the wheel, thinking I must be crazy to be here with all sails up, reveling in the beauty and power of my boat and the wet majesty of the storm.

Midnight, three days and many storms later, I was alone at the wheel. Astern was another squall. Magnificent, terrifyingly beautiful, it swept from horizon to horizon, to the zenith of the sky. A riot of grays and blacks shot through with silver and white. Occasionally a deep inner glow erupted as lightning flashed within its mass. Below the titanous cloud was a black line just above the water - a torrent of rain and savage winds. We sailed through. The full moon appeared over the edge of the gray-black edifice. The seas now flat, a six-knot breeze filled her sails, and Moira swam lazily along at three knots. So calm and beautiful, so restful. It hardly seemed possible that 30 minutes before Moira was twisting and shaking in the furious grip of that mighty storm. She escaped; shot out from under

that black cloud with her rail buried and her sails glistening with rain, into the moonlit calm of the equatorial waters.

How many storms had we mounted? Six? Seven? I had lost count. All were an experience but some were more dangerous than others. Ahead, in the brilliant moonlight, I could see another squall. It looked dangerous. After a moment's thought, I fell off to pass astern of the squall. Too late at night for squalling.

It suddenly occurred to me that I was becoming good at guessing roughly how much wind was in a particular storm. How did I know? Here's what I worked out that night; perhaps it will help you when you encounter squalls.

Two or three miles from a large thundersquall there might be no wind at all, a faint breeze from the direction of the storm, or even a gentle zephyr towards the storm. Just before the rain hits, however, there is a massive, often gale-force wind. Sitting only a few miles away, it is obvious the strong winds have to go somewhere. Because they don't go very far from the squall, they can only go straight up.

The wind is apparently created by the displacement of air from the falling rain. After the air is pushed rapidly out from under the cloud, it circulates upward to replace the cold air and water lost from above by the departure of the rain from the cloud. Thus, as long as it rains, there is a steady wind from under the cloud outward, and then up and back into the cloud. The more rain, the more wind. You can see the effects of the recirculating wind as the cloud advances with its edges rolling up and inward. By noting the amount of rain under a thundercloud, the amount of rolling activity along the cloud margins, and the advance winds ahead of the system, you can make a fairly good guess how much wind to expect when it hits.

In a weak thunderstorm, the recirculation is not distinct and the wind displaced by the rain merely hugs the ocean and results in a gentle wind coming from the direction of the storm. These storms are high off the water and the area of rain under them is a light gray color. You can expect 10 to 20 knots of wind in a narrow area just ahead of the rain and little or no wind after the rain starts.

In a stronger squall, the wind circulation is well formed and you can see the edges of the cloud rolling in on itself. Since most of the wind from the rain goes up and back into the system, there is almost no wind coming from the direction of the storm. The cloud is close to the water, and the area under it dark with rain. Just in advance of the rain you can see a profusion of whitecaps. These storms can hit you with 25 to 35 knot winds just before the rain hits, and once inside the rain, confused seas and 15 to 20-knot winds abound.

In dangerous squalls, the thunderhead is actively boiling away and is almost on the ocean with the rain a well defined, deep black line underneath. There is no wind or even a slight wind toward the storm as it sucks up power into itself. There might be one or more sharply defined "roll" clouds in the lower parts of the thunderhead. These storms kick up 30 to 50-knot gusts minutes before the rain, and once inside, the winds are erratic, gusting to 35 knots with blinding sheets of rain and confused 2' to 3' waves.

An old sailor's jingle boils this down into a helpful mnemonic. When the rain's before the wind, Topsail halyards you must mind, When the wind's before the rain, hoist your topsails up again.

Generally, squalls move in a definite direction, carried along by the higher altitude winds. The worst gusts of wind are along the advancing edge of the storm and the least wind on its trailing edge. But not always.

Perhaps that is what really makes the squalls dangerous - the "but not always" phenomenon associated with anything meteorological. Then, too, lightning and waterspouts are often associated with squalls in the calm tropics. But waterspouts are rare enough to worry about later and lightning seems to leave you alone, especially if your boat is properly equipped with lightning grounds. Squalling for fun and diversion is probably no more dangerous than other things people do for fun and diversion (like sky diving and ski jumping) and a good deal safer than other modes of transportation (like taxi-riding), but it is a miserable way to get somewhere. The next time I cross the doldrums, or a

summer calm, and I see a thunderstorm, I will resume my old tactics of altering course to pass astern of it, unless, of course, it's hot or we need water or I become tempted by the thrill of wind and foam and the feeling of my boat alive with power.