

## 07/26/06 Wed – A Wave

I picked up a news story online and saved it. I like the unusual. Not just bizarre, I have a subscription that sends me “news of the weird” a couple times a week. This one is a “science” weird story. I’m not going to give you the whole news story. You can look it up if you’re really interested. The title and reference is:

### **Rogue Giants at Sea Scientists Find Swells 'More Frequent Than We Expected'**

**The New York Times**

By WILLIAM J. BROAD, The New York Times  
(July 11[,2006])

When we were on a cruise with some friends a few years ago, leaving Key West, Florida we ran into some “heavy seas.” From our cabin, which was 3 decks above the calm water line, outside our window, the waves were rolling from the troughs well below our deck, where the water should be, to above our window. The crew said they were 15 to 20 foot swells. They were more than that. The ship, and a cruise ship is pretty good size, was rolling so that one of the shows that night, which was a balancing act, couldn’t do the show. At dinner, only about half the dining room had people. Only 6 of the 14 in our party made it to dinner, the rest were sea-sick in their cabins. – Get the picture?

Then there was this article.

“The storm was nothing special. Its waves rocked the Norwegian Dawn just enough so that bartenders on the cruise ship turned to the usual palliative — free drinks.

Then, off the coast of Georgia, early on Saturday, April 16, 2005, a giant, seven-story wave appeared out of nowhere. It crashed into the bow, sent deck chairs flying, smashed windows, raced as high as the 10th deck, flooded 62 cabins, injured 4 passengers and sowed widespread fear and panic.

“The ship was like a cork in a bathtub,” recalled Celestine McElhatton, a passenger who, along with 2,000 others, eventually made it back to Pier 88 on the Hudson River in Manhattan. Some vowed never to sail again.”

WOW! Makes me think of a WWII movie or battleships at sea hitting waves that crash over the bow. Can you imagine? A nice, pretty cruise ship, supposed to be fun, good food, etc. Okay, it gets a little rolling. Then... WOW! A 70 foot high wave crashes into the ship!!

Life can be like that. – We’re just cruising along, enjoying the party, everything is pretty cool. Then BAM! Maybe there was a little storm before the BAM, maybe not. But we certainly didn’t expect THIS to happen!

Mark, chapter 4, verses 35 to 40 – Jesus and the disciples are crossing the lake. A storm blows up suddenly. Jesus is napping. They are afraid the boat was sinking and they would drown! They wake him up. “Hey! Aren’t you concerned? We are about to die here!” Jesus wakes up and “he told the wind to pipe down and said to the sea, “Quiet! Settle down!” The wind ran out of breath; the sea became smooth as glass.” (The Message) v.40-41 NIV: “He said to his disciples, “Why are you so afraid? Do you still have no faith?” They were terrified and asked each other, “Who is this? Even the wind and the waves obey him!”

Got a storm to contend with?

In Job, God asks Job, ‘Who told the sea it could only come so far?’ A rhetorical question. God did (Job 38:8-11). God talked to the sea and told it that? Jesus can tell the wind and waves to ‘cool it’?

Okay, I think a little strange some times... but think about it... this is what the Bible says. God talks to the oceans and the wind and the waves on the lake. Are these things that can be spoken to by God, not nearly controlled? Are they like an animal that can be commanded, thinks at some level?

Whatever the answer to that question, God can speak to the sea and He IS in control of EVERYTHING.

Rich

I like The Message wording of this part of Job. This is God speaking to Job:

<sup>8</sup>And who took charge of the ocean when it gushed forth like a baby from the womb?

<sup>9</sup>That was me! I wrapped it in soft clouds, and tucked it in safely at night.

<sup>10</sup>Then I made a playpen for it, a strong playpen so it couldn’t run loose,

<sup>11</sup>And said, ‘Stay here, this is your place.

Your wild tantrums are confined to this place.’

Taste and see that God is, as Andy Griffith would say, goooOOood. (Psalm 34:8)

# Rogue Giants at Sea

## Scientists Find Swells 'More Frequent Than We Expected'

The New York Times

By WILLIAM J. BROAD, The New York Times

(July 11[,2006]) - The storm was nothing special. Its waves rocked the Norwegian Dawn just enough so that bartenders on the cruise ship turned to the usual palliative — free drinks.



NOAA

In an undated photo, a rogue wave estimated at 60 feet high retreats after hitting a ship in the Gulf Stream off of Charleston, S.C. The waves differ from tsunamis.



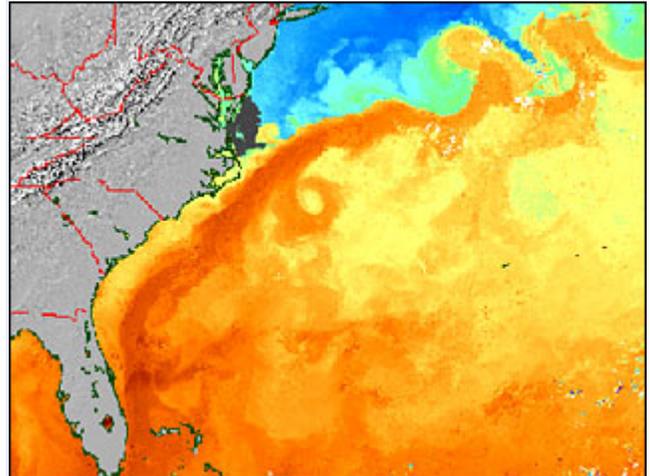
P.O.Mike Lutz. epa / Corbis

The cruise ship Norwegian Dawn arrives in New York April 18, 2005, after a seven-story wave battered the ship, flooded cabins and panicked passengers.



Corbis

Scientists estimate that rogue waves could reach 198 feet high -- taller than the Statue of Liberty or Capitol rotunda -- but none that size has been documented.



Gulf Stream Tutorial

Rogue waves tend to form in areas such as the Agulhas off South Africa, the Kuroshio off Japan, and the Gulf Stream off the U.S., above. Sources: NOAA, nytimes.com

Then, off the coast of Georgia, early on Saturday, April 16, 2005, a giant, seven-story wave appeared out of nowhere. It crashed into the bow, sent deck chairs flying, smashed windows, raced as high as the 10th deck, flooded 62 cabins, injured 4 passengers and sowed widespread fear and panic.

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River in Manhattan. Some vowed never to sail again.

Enormous waves that sweep the ocean are traditionally called rogue waves, implying that they have a kind of freakish rarity. Over the decades, skeptical oceanographers have doubted their existence and tended to lump them together with sightings of mermaids and sea monsters.

But scientists are now finding that these giants of the sea are far more common and destructive than once imagined, prompting a rush of new studies and research projects. The goals are to better tally them, understand why they form, explore the possibility of forecasts, and learn how to better protect ships, oil platforms and people.

The stakes are high. In the past two decades, freak waves are suspected of sinking dozens of big ships and taking hundreds of lives. The upshot is that the scientists feel a sense of urgency about the work and growing awe at their subjects.

"I never met, and hope I never will meet, such a monster," said Wolfgang Rosenthal, a German scientist who helped the European Space Agency pioneer the study of rogue waves by radar satellite. "They are more frequent than we expected."

Drawing on recent tallies and making tentative extrapolations, Dr. Rosenthal estimated that at any given moment 10 of the giants are churning through the world's oceans.

In size and reach these waves are quite different from earthquake-induced tsunamis, which form low, almost invisible mounds at sea before gaining height while crashing ashore. Rogue waves seldom, if ever, prowl close to land.

"We know these big waves cannot get into shallow water," said David W. Wang of the Naval Research Laboratory, the science arm of the Navy and Marine Corps. "That's a physical limitation."

By one definition, the titans of the sea rise to heights of at least 25 meters, or 82 feet, about the size of an eight-story building. Scientists have calculated their theoretical maximum at 198 feet — higher than the Statue of Liberty or the Capitol rotunda in Washington. So far, however, they have documented nothing that big. Large rogues seem to average around 100 feet.

Most waves, big and small alike, form when the wind blows across open water. The wind's force, duration and sweep determine the size of the swells, with big storms building their height. Waves of about 6 feet are common, though ones up to 30 or even 50 feet are considered unexceptional (though terrifying to people in even fairly large boats). As waves gain energy from the wind, they become steeper and the crests can break into whitecaps.

The trough preceding a rogue wave can be quite deep, what nautical lore calls a "hole in the sea." For anyone on a ship, it is a roller coaster plunge that can be disastrous.

Over the centuries, many accounts have told of monster waves that battered and sank ships. In 1933 in the North Pacific, the Navy oiler Ramapo encountered a huge wave. The crew, calm enough to triangulate from the ship's superstructure, estimated its height at 112 feet.

In 1966, the Italian cruise ship Michelangelo was steaming toward New York when a giant wave tore a hole in its superstructure, smashed heavy glass 80 feet above the waterline, and killed a crewman and two passengers. In 1978, the München, a German barge carrier, sank in the Atlantic. Surviving bits of

twisted wreckage suggested that it surrendered to a wave of great force.

Despite such accounts, many oceanographers were skeptical. The human imagination tended to embellish, they said.

## CONTINUED

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(Page 2 of 2)

Moreover, bobbing ships were terrible reference points for trying to determine the size of onrushing objects with any kind of accuracy. Their mathematical models predicted that giant waves were statistical improbabilities that should arise once every 10,000 years or so.

That began to change on New Year's Day in 1995, when a rock-steady oil platform in the North Sea produced what was considered the first hard evidence of a rogue wave. The platform bore a laser designed to measure wave height.

During a furious storm, it registered an 84-foot giant.

Then, in February 2000, a British oceanographic research vessel fighting its way through a gale west of Scotland measured titans of up to 95 feet, "the largest waves ever recorded by scientific instruments," seven researchers wrote in the journal *Geophysical Research Letters*.

Once-skeptical scientists were soon holding conferences to discuss the findings and to design research strategies. A large meeting in Brest, France, in November 2000 attracted researchers from around the world.

It quickly became apparent that the big waves formed with some regularity in regions swept by powerful currents: the Agulhas off South Africa, the Kuroshio off

Japan, and the Gulf Stream off the eastern United States, where the Norwegian Dawn got into trouble off Georgia. The Gulf Stream also flows through the Bermuda Triangle, famous for allegedly devouring large numbers of ships.

Dr. Bengt Fornberg, a mathematician at the University of Colorado who studies the giants, said the strong ocean currents appeared to focus waves "like a magnifying glass concentrates sunlight."

"It's the same idea," he said. "There are a few places in the world where there is a regular current, like a steady magnifying glass. In other places, the eddies come and go, and that makes the waves less predictable."

One way that rogue waves apparently form is when the strong currents meet winds and waves moving in the opposite direction, he said. The currents focus and concentrate sets of waves, shortening the distance between them and sending individual peaks higher. "That," Dr. Fornberg said in an interview, "makes for hot spots in a fairly predictable area."

A particularly threatening spot, he said, turned out to be where big oil tankers coming from the Middle East ride the Agulhas current around South Africa. There, the westward-flowing current meets prevailing easterly winds, at times disastrously.

"Three or four tankers a year there get badly damaged," Dr. Fornberg said. "That's one of the few places in the world where the phenomena is regular."

"With a big storm, you get lots of big waves," he added. "You have regular waves and then one or two giants. Then it's back to regular again."

The scientists who met at Brest in 2000, eager to track the phenomenon globally,

laid plans to use radar satellites to conduct a census, calling it MaxWave.

They worked with the European Space Agency, which had lofted radar satellites in 1991 and 1995, as well as the German Aerospace Center and several other European research bodies. The radar beams were seen as potentially ideal for measuring the height of individual waves, based on the time it took the beams to bounce from orbit to the sea and back to space.

The MaxWave team, led by Dr. Rosenthal, examined three weeks of radar data and to its amazement discovered 10 giants, each at least 82 feet high. "We were quite successful," he said.

The team even tracked monster waves in a region of the South Atlantic where two cruise ships, the Bremen and the Caledonian Star, had come under assault.

Further confirmation with a different set of instruments came in September 2004 when Hurricane Ivan swept through the Gulf of Mexico.

It passed directly over six wave-tide gauges that the Naval Research Laboratory had deployed about 50 miles east of the Mississippi Delta. Dr. Wang and his colleagues analyzed the data and found to their surprise waves measuring more than 90 feet from trough to crest.

"We had no idea," Dr. Wang recalled. "It was the right time and the right place."

Already, the scientists said, naval architects and shipbuilders are discussing precautions. Some of the easiest are seen as increasing the strength of windows and hatch covers. But even the best physical protections may fail under assault by tons of roiling water, so the best precaution of all will be learning how to avoid the monsters in the first place.

Increasingly, scientists are focusing on better understanding how the big waves form and whether that knowledge can lead to accurate forecasts — a feat that, if achieved, may save hundreds of lives and many billions of dollars in lost commerce.

A suspected culprit, in addition to wind-current interactions, is the amplification that occurs when disparate trains of waves (perhaps emanating from different storms) come together. Such intersections are seen as sometimes canceling out waves, and other times making them higher and steeper.

Another birth ground is seen as choppy seas where several waves moving independently merge by chance. But scientists say a giant of that sort would live for no more than a few seconds or minutes, whereas some are suspected of lasting for hours and traveling long distances.

As for forecasts, oceanographers are focusing on the interplay of exceptionally strong winds and currents, especially in the Agulhas off South Africa.

Dr. Fornberg said that several years ago South African authorities began issuing predictions. "That's the only place the theory has succeeded," he said.

Dr. Rosenthal said that in the future the continued proliferation of radar satellites should create an opportunity to better understand not only the habitats of the giants but in theory also individual threats, bringing about a safer relationship between people and the sea.

"There will be warnings, maybe in 10 years," he said. "It should be possible."

July 11, 2006

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