

Gulf Coast Faces Sea Level-Sinkage Double Whammy

Larry O'Hanlon and Michael Reilly, Discovery News

Sept. 3, 2008 -- [Hurricane Gustav](#) has been a harsh reminder that it's only the whim of a hurricane track, a few miles this way or that, which can make the difference between a close call and another [Katrina-like catastrophe](#) for New Orleans and other Gulf Coast communities.

With the one-two punch being delivered by [sinking land](#) and [rising sea levels](#), and with every hurricane threatening a knock-out blow, it's getting harder to avoid that very unpopular question: How much longer can these coastal communities survive?

To get the answer Discovery News caught up with four Gulf Coast researchers and posed the question to them. Their answers differ, but they agree on one thing: The long-term prospects are not good.

Body Blows

"This is a discussion that should have occurred after Katrina," said Roy Dokka of Louisiana State University. Dokka has been outspoken about the measurable rates of subsidence -- the process by which land slips below sea level -- in New Orleans and other coastal areas. His work indicates that larger geological forces, far beyond the control of humans, are causing parts of New Orleans to sink.

"New Orleans is going to last as long as people decide that they want to do this and as long as the U.S. taxpayers want to spend money propping it up," said Dokka. Other, smaller communities will not fare so well, he said, because there is little or no money to save them. "New Orleans will last as long as people are willing to put up a struggle. But nature will keep punching until people give up."

Ideally, Dokka said, New Orleans is safe for no more than 100,000 people, concentrated along the river. It's a geological reality, he explained.

Rising Waters

Subsidence is critical, but it's just part of the problem, argues geologist Torbjorn Tornqvist of Tulane University.

"I think we've got our priorities wrong on this," said Tornqvist. "No matter what we do as far as building levees and restoring wetlands, if we don't address global warming, it's pointless."

Since Katrina, Tornqvist and Dokka have often been at odds about how to measure subsidence rates, and its causes, in southern Louisiana. But neither denies that global warming is [melting glaciers](#) and raising sea level globally an average of 1/8-inch per year. Add in sinking land -- whatever the cause -- and you get a double whammy.

No one knows how long New Orleans can stand as a viable city, stressed Tornqvist, but sea levels alone could rise by three to four feet by the end of the century. If that happens, New Orleans is doomed.

Wetlands Quagmire

"Talking about the town of New Orleans itself is kind of tricky," says shorelines researcher Rob Young of Western Carolina University. "If we wanted to spend a lot of money, we could defend the city for some time. It's one of America's cultural draws."

On the other hand, he gives smaller communities in the area a life expectancy of about 10 years. Nor will tearing down levees to restore wetlands help, Young said, adding that the popular belief that wetlands protect communities against storm surges is all wet.

"So many environmental groups -- even those I am a member of -- bought into this idea that wetlands restoration will solve this," said Young. "In my opinion there's simply no evidence that the level of wetland protection would make any difference for storm protection."

The problem is that the storm surge models used for that argument suffer from gaping unknowns, the biggest being that actual storm surges are notoriously hard to measure, says Young.

The most accurate method is to go into an area after a storm and measure high-water lines and debris left in high places. But there are no high places in wetlands to get that data, so it's a guessing game at best.

"No one has ever measured a storm surge over a wetland," said Young. "I'm all for wetland restoration. I think there is a lot of value in wetlands. But it's not going to save these communities in the Bayou."

"The only thing that will stop a storm surge is a coastal forest, and there are no coastal forests here," added Dokka.

Planning for the Inevitable

People communicating these hazards to coastal residents can't always take such a hard line, however.

"We wouldn't go into New Orleans, which is still trying to recover from the effects of Katrina, and say 'get out,'" said Sandra Eslinger of the National Oceanic and Atmospheric Administration. "That's not an option."

Instead, she says she tries to encourage rebuilding infrastructure with an eye toward what the area is going to look like in the next 50 or 100 years.

In the short term, that means rebuilding the levees so they hold back water successfully. It also means raising houses as an added level of protection, should the levees fail.

As New Orleans continues to sink and sea level continues to rise, residents have to weigh the resilience of the levees and floodgates against their ability to retain ties to friends and family, church, and everything that defines their identity.

"Just because the physical infrastructure is at risk, you can't just tell people to move to another location and it's that simple, because it's not," Eslinger says. "Sense of place is truly important."

Eslinger is trying to incorporate long-term forecasts in sea level rise into local community planning, but says it's very difficult.

"The longest term people think about is buying a home, maybe a 30-year time horizon. A 50 to 100-year time horizon is a different way of thinking," she said, though during that time global sea levels could rise half a meter, imperiling millions living in coastal communities.

"In the long term the answer is that some of the communities are going to be abandoned," concludes Young.

And New Orleans?

"That's a political question, not a scientific one," he says. "At the end of the day, those of us who are scientists just have to look at the science."