



Transcripts of Coastal Stories

Lesson 1 > Changing Louisiana



Sinking Louisiana: Studying Subsidence

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By Travis Lux

We hear a lot about how the Louisiana coast is disappearing. The state has lost about 2,000 square miles of coastal marsh since the 1930s. One of the biggest reasons: subsidence. What is subsidence? Why does it happen and what can we do to stop it?

All month long, WWNO is teaming up with Louisiana Public Broadcasting (LPB) to bring you a special series called Sinking Louisiana. This week, WWNO's Travis Lux gets an explainer on subsidence from Torbjorn Tornqvist, professor of earth and environmental science at Tulane University, from the Bayou Bienvenue Wetland Triangle in the Lower Ninth Ward of New Orleans.

Q: Subsidence is the natural sinking of the land. Why does it happen and why do we consider it to be a natural process?

It is indeed, in this region, in coastal Louisiana, to a large extent a natural process. But it's not only natural -- and certainly not here in New Orleans. If we look behind us, Bayou Bienvenue is a really good example of an area that used to be swamp and is now open water.

We see that, of course, on a very large scale along all of coastal Louisiana. Wetlands have disappeared and subsidence has been a big part of that. Most of that occurs because of fresh sediments [originally deposited by the Mississippi River] that accumulate and are very water rich. They compress very, very quickly. And as a result, the land surface is constantly sinking.

Q: It's mostly a natural process, but you mentioned there are ways that human activity can impact that. What about oil and gas extraction? Some people say that can impact the rate at which the land sinks.

It certainly does. We see that worldwide -- anytime you extract fluids from the sub-surface it's going to lead to sinking at the surface. It's probably not the dominant factor, although more research is needed to figure that out in more detail.

The other human factor, and that's what I was mentioning briefly earlier, is what we see in the city of New Orleans and in many urban areas. New Orleans expanded tremendously over the past century or so because we started to drain swamps. When you start doing that the land is going to start sinking very, very rapidly. And that is exactly what happened here.

Q: I want to talk about numbers, quickly. About how much are we sinking, on average, per year.

Something we ultimately want to aim for is to figure out what we call the rate of relative sea level rise. That is basically the sum of subsidence -- all these different processes that we talked about -- plus the rate of sea level rise that happens no matter what because of climate change. It turns out that in coastal Louisiana that average rate is about half an inch per year right now. That rate is about four times higher than the global average.



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Q: To finish up, if we're trying to figure out what can be done, how can we reverse this? Can it be reversed? What sorts of projects or processes could we implement to address this issue of sinking?

The sinking, because so much of it is a natural process, we're not going to be able to stop that. But what we can do is allow river sediments to replenish these wetlands again. So that's why these river diversions that are planned are going to be absolutely crucial. Without that, it's just not going to happen.

Even with [diversions], it's only going to happen in certain areas. We're not going to rebuild large parts of the coast -- that's just not going to happen. But the most important thing is that we have to address climate change. If we don't do that then even the best river diversions on the plant are not going to bail us out.