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Coast in Crisis:

The coming rise in ocean levels will reshape our shores - and our lives

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If you only had one word to describe the North Carolina coast, you probably couldn't do much better than "change."

Populations are increasing, property values are soaring and the sounds of construction are as common as a seagull's shrill squawking.

Brunswick County is now the 14th fastest growing county in the country. Though it's cooling now, Carolina Beach issued more building permits in the five years since 2002 than during the previous two decades combined. The average selling price of homes in Wrightsville Beach has nearly tripled since 2001.

But another change is shaping the North Carolina coastline. Unlike more obvious changes like real estate booms, which often follow relatively short up-and-down cycles, this one is evolutionary, with consequences that will make those others seem trifling by comparison.

Seas, fueled by the Earth's warming temperature, are on the rise - although some debate remains within the scientific community as to how much of a part man is playing in speeding up the natural cycle.

And coastal North Carolina, with its relatively flat topography, is considered one of the most vulnerable areas in the world.

This isn't a problem for your children's children's children. It's already happening.

Been to the beach lately? There, you're likely to find one calling card of the change: a giant step in the sand cleaved by storm-driven waves.

While beach erosion isn't new,

it's occurring at an increasing rate because of the change in water levels. That requires more frequent and expensive nourishment projects.

Salt water also has begun pushing farther inland, washing away estuarine marshes and carving shorelines deeper into the interior.

Our vulnerability lies not only in our topography and geology. The rising waters also will dramatically affect the coast's economy, now dominated by tourism and construction. After all, less beach means fewer places for tourists to put down towels or retirees to build dream houses with million-dollar views.

Charles Peterson, a biologist with the University of North Carolina's Institute of Marine Sciences, said rising water levels mean new and potentially painful challenges for residents and policy-makers.

"It means we've got some very difficult choices to make in the not-to-distant future because we can't defend everything," he said.

An island of change

Shaped by the winds and waves, Masonboro Island is on the move.

"It's pretty much the bellwether for what's going to happen here to everything if we stop renourishing," said Anthony Snider, manager of the N.C. Division of Coastal Management's southern reserve sites.

The mid-section of the 8 1/2-mile-long nature preserve is migrating toward the mainland at a brisk 12 feet a year.

Neighboring areas of Wrightsville Beach and Carolina Beach, which are managed with periodic beach nourishments, are eroding at a quarter of that rate.

Snider said sea-level rise amplifies Masonboro's natural erosion, although to what degree has yet to be determined. The higher water levels also make high-tide events and wind-driven storm surges more powerful.

Luckily for us, on Masonboro, the waves wash away only sand and dunes.

"These barrier islands all want to go inland, which is OK here," Snider said. "The problem is when we put homes and economic infrastructure down that doesn't move as easily as the islands do."

This is certain

The ocean off North Carolina is rising at about 3 millimeters a year, or about a tenth of an inch - although that figure is expected to accelerate this century.

From most people, that fact might elicit a yawn or a shrug.

That's left scientists and others grappling with a challenge: How do you make people and policy-makers see global warming and all of its environmental consequences, including sea-level rise, as a threat?

"There's no silver bullet for solving this problem," said University of Arizona geoscientist Jonathan Overpeck.

Even if we could magically shut off all new greenhouse gas emission today, Overpeck points out, we're still committed to a certain amount of climate change. "But we need to get our country in a psychological mind set that we need to start working together to solve this problem."

So what should we do? None of the answers to that question - from restricting development or retreating in some areas to defending others from encroaching seas - are easy, cheap or popular.

"Right now I don't see the political will there yet from folks who represent that area to make those tough decisions," said Pricey Harrison, D-Guilford, who serves on the state's Legislative Commission on Global Climate Change and is a former member of the N.C. Coastal Resources Commission.

That lack of will springs, at least in part, from the nature of the political cycle, with elected officials focusing on short-term issues.

In addition, economic pressures often dominate the debate, especially with tourism and waterfront construction holding up many coastal economies.

Yet scientists say we have no choice but to change our development patterns if we don't want to saddle our children and grandchildren with an untenable situation.

"This isn't a hypothetical future," said Doug Rader, a senior scientist with Environmental Defense, an environmental watchdog group. "This is certain."

Stan Riggs, a geologist and distinguished research professor at East Carolina University, who has been tracking sea-level rise on the Outer Banks for decades, said he remains optimistic that people and policy-makers will realize that the growth of the past few decades cannot continue as it has.

It can't, he said, because we don't have a choice.

"I see it as a fundamental question of education," Riggs said. "We're not advocating abandoning the coast. But if you're going to live here and be part of the system, then you better understand the dynamics of the system."