

Geologist: Sea level is rising

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The shifting sands and ever-changing shape of North Carolina's coast may be most evident along the area's barrier islands, where beach towns are the front line in the conflict between human development and the natural processes that can threaten the homes and property built there.

One response to maintain beaches and fight erosion is projects that pump sand onto the shoreline.

On Topsail Island, Surf City and North Topsail Beach continue to pursue a federal beach nourishment project for the southern end of North Topsail Beach and the northern end of the Town of Surf City.

Along Bogue Banks, a decade of various post-Hurricane Floyd beach nourishment projects is complete, and the Carteret County Beach Commission and towns along the island are now working together on a comprehensive plan for beach nourishment along the island for the next 50 years.

But the beach nourishment projects that have become common topics are only one snapshot of a larger issue gaining greater attention in the state's coastal communities.

"The sea level is clearly rising," coastal geologist Robert S. Young said. "It's rising now and it has been rising."

While the data is there, the big question of how much it will rise isn't so easy to answer.

Young sat on a science panel that prepared a report on sea level rise for the N.C. Coastal Resources Commission. The report, released last March, details an expected range of relative sea level rise of 15 to 55 inches above the current sea level by the end of the century.

Taking the middle ground, the panel recommended that the state adopt a 1-meter (3.28 feet) rise of sea level by 2100 as a benchmark for planning purposes.

Sea level rise is expected to accelerate over the next century, and the 1-meter benchmark is roughly three times the current rate of sea level rise.

A centimeter or two from year-to-year is barely noticeable; but over decades and a century, the changes become evident.

And Young said it doesn't take the direst of predictions to have an impact on the low coastal plain.

"You don't need to have the nightmare scenario of sea level rise for it to matter," he said.

At 12 to 15 inches there can be major problems, and not just on the oceanfront, he said.

Groundwater tables would rise in the already hard-to-drain eastern coastal plain, possibly affecting farmland. The rise in waters and force of storms could also push the saltwater of the sea up into the estuaries, which serve as vital nursery areas for fish and marine animals.

It's not a new concept. The North Carolina Coastal Federation highlighted the topic in its 2004 annual report, which focused on the effects of global warming on coastal North Carolina.

North Carolina's coast looked very different 100 years ago and could look very different 100 years from now. The islands of the Outer Banks didn't always exist as we know them, and it's not unthinkable that parts of eastern North Carolina will be under water generations from now.

"This is not a secret. It's not a surprise. It's not science fiction," said Frank Tursi, an assistant director with the Coastal Federation.

What is new, however, are discussions by the state that are moving from studying the issue to developing a policy that acknowledges sea level rise as a natural hazard to be considered in coastal planning.

The development of a policy is building on the findings of the science panel, said Tancred Miller, a coastal policy analyst with the N.C. Division of Coastal Management.

"Now, how do we translate what the science says into our coastal program?" he asked.

The Division Coastal Management has begun meeting with counties about the draft policy.

Miller said they are very early in the process and revisions are likely as input is received. The draft will be reviewed during the Coastal Resources Commission meeting to be held Wednesday and Thursday in Beaufort.

The first draft was enough to elicit the concern of Carteret County leaders, who were the first to meet with Coastal Management about the draft. Following that meeting, Board of Commissioners Chairman Doug Harris sent a letter to all the other coastal counties in the state to make them aware of concerns they have.

Such a policy, the letter said, would be used as a “springboard” for future regulations and would have implications on both private development and public infrastructure.

“The implications of this proposal in terms of its geographic scope and potentially detrimental economic impact are enormous,” Harris states in the letter. “This is perhaps the most important and pervasive piece of policy the CRC has considered in a very long time, and I’m respectfully requesting your attention to this matter, and ultimately your support in repudiating the proposal altogether.”

In a phone interview, Harris said there are concerns about the 1-meter benchmark and some of the data being used to develop the policy.

Predicting sea level rise is uncertain, and the letter questions the validity of the 1-meter prediction for sea level rise.

“A 1-meter sea level rise is almost three times the existing rate and will cover square miles upon square miles of tax base, infrastructure and natural resources in just about every CAMA county,” the letter states. “Again, we believe codifying this prediction is cavalier with very little thought to how it will impact the livelihoods of citizens and the economic fortunes of the coast — development, tourism, tax bases, infrastructure, military operations and more.”

Economic considerations have not been discussed, and no maps have been presented showing the acreage of land that would be underwater.

Carteret County has also noted that tide gauge data being used from Duck, considered the most accurate station, are from a location that is seeing the greatest level of rise in the state. Also, data after 2002 isn’t yet available.

North Carolina would be the first state along the East Coast to adopt a sea level rise policy, and Harris said he doesn’t see a need for it.

“I’m not sure we’re at a point where we need a policy,” he said in the phone interview. “I think a better course of action would be to keep monitoring it with better data.”

Onslow County Planning Director Scott Shuford said he briefed the Board of Commissioners with information on the issue last year after the science panel’s report was released. There are tentative plans to meet with Coastal Management officials in March to discuss the draft policy, he said, but they haven’t discussed it at this point.

But sea level rise is among the issues that planners around the globe are taking into consideration on projects intended to last into the next century.

The Confederation Bridge in Canada, an 8-mile-long bridge crossing ice-covered water, was designed to accommodate a 1-meter rise in sea level over 100 years.

Shuford said the lifespan of a project is to be considered in the planning process. Sea level rise may not have much impact on a project with a 10 or 20-year lifespan. Long-term, however, the impacts may be more of a risk.

“If you are looking at a long-term investment, it’s prudent to think about the impact,” he said.

Over the long term, there are changing landscapes to consider.

“Think about the Cape Hatteras lighthouse. When it was built in 1870 everybody thought it was a safe location,” Shuford said of the North Carolina lighthouse moved more inland in 1999.

Young said any long-term planning to help minimize impacts is good. There are also reasons to keep sea level rise in mind now, he said.

“Another reason why it is relevant to think about it is something that is happening now,” he said. “Any erosion problem we have now is not going to get better; it is going to get worse.”