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South Florida Faces Ominous Prospects From Rising Waters

By NICK MADIGAN

MIAMI BEACH — In the most dire predictions, South Florida's delicate barrier islands, coastal communities and captivating subtropical beaches will be lost to the rising waters in as few as 100 years.

Further inland, the Everglades, the river of grass that gives the region its fresh water, could one day be useless, some scientists fear, contaminated by the inexorable advance of the saltfilled ocean. The Florida Keys, the pearl-like strand of islands that stretches into the Gulf of Mexico, would be mostly submerged alongside their exotic crown jewel, Key West.

"I don't think people realize how vulnerable Florida is," Harold R. Wanless, the chairman of the geological sciences department at the University of Miami, said in an interview last week. "We're going to get four or five or six feet of water, or more, by the end of the century. You have to wake up to the reality of what's coming. "

Concern about rising seas is stirring not only in the halls of academia but also in local governments along the state's southeastern coast.

The four counties there — Broward, Miami-Dade, Monroe and Palm Beach, with a combined population of 5.6 million — have formed an alliance to figure out solutions.

Long battered by hurricanes and prone to flooding from intense thunderstorms, Florida is the most vmlnerable state in the country to the rise in sea levels.

Even predictions more modest than Professor Wanless's foresee most of low-lying coastal Florida subject to increasingly frequent floods as the polar ice caps melt more quickly and the oceans surge and gain ground.

Much of Florida's 1,197-mile coastline is only a few feet above the current sea level, and billions of dollars' worth of buildings, roads and other infrastructure lies on highly porous limestone that leaches water like a sponge.

But while officials here and in other coastal cities, many of whom attended a two-day conference on climate change last week in Fort Lauderdale, have begun to address the problem, the issue has gotten little traction among state legislators in Tallahassee.

The issue appears to be similarly opaque to segments of the community — business, real estate, tourism — that have a vested interest in protecting South Florida's bustling economy.

"The business community for the most part is not engaged," said **Wayne Pathman**, a Miami land-use lawyer and Chamber of Commerce board member who attended the Fort Lauderdale conference. "They're not affected yet. They really haven't grasped the possibilities."

It will take a truly magnificent effort, Mr. Pathman said, to find answers to the critical issues confronting the area. Ultimately, he said, the most salient indicator of the crisis will be the insurance industry's refusal to handle risk in coastal areas here and around the country that are deemed too exposed to rising seas.

"People tend to underestimate the gravity here, I think, because it sounds far off," said Ben Strauss, the director of the Program on Sea Level Rise at Climate Central, an independent organization of scientists. "People are starting to tune in, but it's not front and center. Miami is a boom town now, but in the future that I'm very confident will come, it will be obvious to everyone that the sea is marching inland and it's not going to stop. ',

The effects on real estate value alone could be devastating, Mr. Strauss said. His research shows that there is about $156 billion worth of property, and 300,000 homes, on 2,120 square miles of land that is less than three feet above the high tide line in Florida.

At that same level, Mr. Strauss said, Florida has 2,555 miles of road, 35 public schools, one power plant and 966 sites listed by the Environmental Protection Agency, such as hazardous waste dumps and sewage plants.

The amount of real estate value, and the number of properties potentially affected, rises incrementally with each inch of sea-level rise, he said.

Professor Wanless insists that no amount of engineering proposals will stop the onslaught of the seas. "At two to three feet, we start to lose everything, " he said.

The only answer, he said, is to consider drastic measures like establishing a moratorium on development along coastal areas and to compel residents whose homes are threatened to move inland.

Local officials say they are doing what they can. Jason King, a consultant for the Seven50 Southeast Florida Prosperity Plan, an economic blueprint for seven southeastern counties over the next half-century, said it proposed further replenishing ofbeaches and mangrove forests, raising roads, and building flood-control gates, backflow preventers and higher sea walls.

Here on Miami Beach, a densely populated 7-5-square-mile barrier island that already becomes flooded in some areas each time there is a new moon or a heavy rain, city officials have approved a $200 million project to retrofit its overwhelmed storm-water system, which now pumps floodwaters onto the island when it should be draining them off, and make other adjustments.

"The sky is not falling, but the water is rising," said Charles Tear, the Miami Beach emergency management coordinator, who stood at an intersection at the edge of Maurice Gibb Park, just two

feet above sea level, that floods regularly.

Mr. Tear said he and other city officials were focused on the more conservative prediction that the seas VNill rise by five to 15 inches over the next 50 years.

"We can't look at 100 years," he said. "We have to look at the realistic side."

James F. Murley, the executive director of the South Florida Regional Planning Council, was similarly unmoved by the more calamitous predictions.

"We're not comfortable looking at 2100," he said, noting that for planning purposes he adhered to a projection that foresaw two feet of sea-level rise by 2060.

Whatever the specifics of the predictions, the Miami Beach city manager, Jimmy L. Morales, said he and his staff had to consider whether "we should adopt more aggressive assumptions" about the effects of climate change.

Officials here are seeking advice from the Netherlands, famous for its highly effective levees and dikes, but the very different topography of Miami Beach and its sister coastal cities does not lend itself to the fixes engineered by the Dutch.

"Ultimately, you can't beat nature, but you can learn to live with it," Mr. Morales said. "Human ingenuity is incredible, but do we have the political will? Holland sets aside $1 billion a year for flood mitigation, and we have a lot more coastline than they do."