Statement of

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Before the

Committee on Commerce, Science, and Transportation
United States Senate

Regarding

“Extreme Weather and Coastal Flooding: What is Happening Now, What is the Future Risk, and What Can We Do About It?”

Field Hearing in West Palm Beach, Florida
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I am Dr. Leonard Berry, founder and former director of the Florida Center for Environmental Studies at Florida Atlantic University (FAU), now Emeritus professor of geosciences at FAU. I am also the co-founder and Vice President of Coastal Risk Consulting, LLC, a start-up technology company providing affordable flood vulnerability and risk assessments, located in Plantation, Broward County, Florida.

As a scientist and businessman, and as a resident, I want to emphasize that sea level rise is a critical issue in South Florida – not only in Miami, which gets most of the press, – but for the whole region, including here in Palm Beach County. The issue requires our scientific, legislative and legal attention; and our current investment in the amount of several billions of dollars to be spent over the next few years alone.

As the topics of this hearing suggest, dealing with the current and future threat of sea level rise requires a combination of the best available science, based on credible and ongoing global data, and assessment of that data with respect to conditions on the ground – from communities to individual properties – to determine degrees of risk now, and in the future.

But the important part is action across all parts of society, from government on the local to national levels, in the business community, and in civil society. While we have seen responses from many parts of our community in South Florida, the action is far from universal.

My colleague Dr. Ben Kirtman will address the scientific progress in some detail, but his work and that of others depend on the continued information flow from the federal government. I have attached a letter to the President from many Florida scientists that underscores the importance of science and information.

It can't be overemphasized – continued flow of global data is vital to our understanding of the science of sea level rise and the actions we take form that science. As the 2016 Sea-Level Rise Summit (http://www.ces.fau.edu/arctic-florida/) highlighted, the fate of Florida depends on what happens in the Arctic and Greenland. And over a longer timeframe, what happens in Antarctica is important too. There are large questions and uncertainties regarding the melt rate and effects of ice on land. We must continue to learn more and reduce these uncertainties.

South Florida and the state as a whole have long experience of dealing with risk in the form of major storms or hurricanes. Extreme weather is predicted – we prepare for it, and if it strikes, we respond and rebuild.

Risk from sea level rise is different however; steady increase in the number of sunny-day flooding events is more insidious, though sometimes, like during Sandy, the level of risk does not get fully exposed until an storm like no other.

In various ways the region has begun to assess the level of risk and to respond. The obvious threat is physical damage to infrastructure, but we now recognize that the economy is also at risk unless remedial actions are taken. The Southeast Florida Regional Climate Compact, an important partnership now supported scientifically by the statewide Florida Climate Institute, has begun laying out the response to these challenges. Action has been occurring a slower pace, albeit faster than almost anywhere else in the United States.

One of the Compact's activities is the Resilient Redesign series, where sample areas are re-planned to thrive in a future sea level situation. The Resilient Redesign concepts for part of Delray Beach are appended as examples.

Adaptation to sea level rise however, has both top-down and bottom-up components. Government on all levels will have a responsibility to assist, and individual homeowners have obligations as well.

In the last five years, we have observed case studies on sea level rise adaptation. The City of Miami Beach is on the forefront--raising streets, communicating directly with residents, and having the difficult, but necessary conversations about sea level rise. Recently, the Cities of Miami and Miami Beach with Miami-Dade County were honored by being accepted as part of the Rockefeller Foundation's 100 Resilience Cities program, further elevating the conversation and creating a cross-government organization to do so. These issues will not be solved by one level of government, but will require crosscutting and boundary-breaking ideas and actions. Dr. Jennifer Jurado, the Chief Climate Resilience Officer for Broward County, can more knowledgably speak to local government adaptation actions.

Private homeowners have a responsibility as well. Individual residents are going to have to take adaption actions to protect their homes and assets. In order to take necessary actions, homeowners need accurate and trustworthy actionable intelligence. This is where innovation and technology intersect with sea level rise.

After I retired from Florida Atlantic University, I co-founded a company based in South Florida called Coastal Risk Consulting. The company's mission is to help coastal residents in the United States and around the world prepare for sea level rise and coastal flooding. It has become my mission to use the best available science and distill that down to the individual property level to create a communication tool personalized to a homeowner. Coastal Risk forecasts the numbers of fair-weather flood days an individual property owner will see for the next 30 years. This is all presented in an adaptation framework, proposing adaptation steps based on the number of fair-weather flood days.

Homeowners can use this data to make the decision to adapt now, plan on adapting in the future, or decide that adaption will not be necessary for the foreseeable future. The

important part of the decision making process is that it is a well-informed decision about personal adaptation. As cities and towns begin to plan for adaption, homeowner must as well. This is how we will create robust and resilient communities.

Sea level rise is a complex, multi-faceted issue that will require the best minds from all fields of study and industries to come together.

For example, in addition to protecting their assets through adaptation, homeowners protect their homes through insurance. As Congress begins to reauthorize the National Flood Insurance Program, we must also consider the effects of sea level rise. Big questions remain for the program – What will flood insurance look like in the future? When homes begin to flood due to fair-weather flooding associated with sea level rise, will that be an insured loss? What will happen to flood insurance in those areas that are now more susceptible to coastal inundation due to sea level rise?

Sea level rise will also raise new and complex environmental issues. How will we ensure that traditional septic tanks will not contaminate surrounding areas? What other issues will communities need to consider as salt water begins to interact with the built environment?

In addition, South Florida has its own set of complex issues. The limestone base of our community is basically a porous rock. So as sea level rises, the water table will be pushed closer to the surface. Communities close to sea level, even far inland, will see water seep through the surface creating puddles at low lying points. Properly communicating this risk is imperative, as sea level rise is currently considered solely an issue for communities that abut the coastline.

While sea level rise is acknowledged as a South Florida concern, it is becoming an issue for every coastal community in the world. Boston, Norfolk, Santa Monica, Charleston, New Orleans, and even our nation's capital, Washington, DC, are beginning to see clear signs that the seas are rising. We want all of our cities to be resilient.

Adaptation to sea level rise and resiliency go hand in hand. We cannot create resilient communities along our coastlines if we do not begin the adaptation conversation now, and in order to have a conversation, we must have the best available data. States, local governments, and companies rely on this data from the federal government and we'll need it even more going forward.

Attachments: Letter to the President, dated March 13, 2017, Resilient Redesign notes and presentation excerpt