The Science and Communication Needed to Help Communities Plan for Sea Level Rise

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From the shores of Bangladesh to the bayous of Louisiana, sea level rise will affect communities across the globe and will likely be exacerbated by other threats such as severe weather. Local and national decision makers face a myriad of challenges as they prepare for or adapt to changing coastal conditions while trying to manage increasing population and development along the coasts. In the United States alone, approximately 39% of the population lives in a coastal county.

During the 2013 AGU Science Policy Conference, an expert panel discussed how sea level rise will affect public safety, national security, and other concerns in the United States. During the session "Sea Level Rise: Science Needed for Local Decisions," Rear Admiral Jonathan White, oceanographer and navigator of the U.S. Navy, informed the audience that planning needs to happen at all levels, "from the White House to the state house to the boathouse."

"Sea level rise is like politics—it's all local," said Ken Miller, professor at Rutgers University. This statement accurately captures the complexities of sea level rise: Although there is a global rise in sea level, when looking at it on smaller scales the amounts of land submerged are very different and a multitude of factors need to be taken into account, such as sinking land, coastal topography and habitat, human use and infrastructure, tidal range, and sediment transport.

Detrimental effects of sea level rise can include coastal flooding, groundwater contamination and saltwater intrusion, and soil changes due to increased salt content—all of which can extend inland for many miles. For example, in Broward County, Florida, seawater is already flooding homes and streets and affecting the drinking water of local residents; more than $12 billion in infrastructure is at risk from a projected 3-foot sea level rise predicted to occur between 2075 and 2150. Jennifer Jurado, director of Broward County's Natural Resources and Management Division, explained how southeast Florida is working to adapt to these challenges it already faces.

One important message that resonated throughout the panel was not only that scientists and decision makers need to communicate the risks, future scenarios, and uncertainties of sea level rise but also that attention should be focused on the needs of local communities. Lynne Carter, program manager of the Southern Climate Impacts Planning Program at Louisiana State University, recently conducted a survey that indicated that the planning horizon for most Gulf Coast communities extends only 1–5 years. For successful mitigation of the effects of sea level rise, communities must start looking farther into the future, Carter stressed.

When communities do not look at the long term, people and property are at risk, speakers agreed. Incorporating science into planning and decision making is essential and requires that the scientific community make a concerted effort to communicate their research.

How best to do this? Panel member Margaret Davidson, acting director of the National Ocean Service Office of Coastal Resource Management at the National Oceanic and Atmospheric Administration, provided an answer: "Communicating climate change is like golf," she said. "You have to play it where it lies." She suggested that if the language of science isn't working, scientists need to use familiar phrases and ideas to speak to decision makers.

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