

**Op Ed: With waters rising, it's time to know what's going to happen to RI coastline****Written by VINHATEIRO, NATHAN****Thu, Sep 11 08**

By NATHAN VINHATEIRO

Global climate change and its impacts have begun to take on a high profile in Rhode Island. The University of Rhode Island's prestigious Honors Colloquium is kicking off a three-month series of public programs titled "People and Planet: Global Environmental Change," and just last month Senator Sheldon Whitehouse chaired a field briefing of the United States Senate Committee on Environment and Public Works at URI's Graduate School of Oceanography to examine the implications of climate change to Narragansett Bay.

At the hearing, Senator Whitehouse heard a consistent and unanimous message from several expert witnesses: the evidence for human-induced global warming is unequivocal. Warmer surface temperatures are leading to wide-scale systematic changes to the planet, with tremendous consequences for human health and wellbeing. Coastal communities, including those that share the state's 420 miles of shoreline, are on the front line of this battle as they confront the most clear and present danger: a warmer atmosphere is causing the world's ice to melt and sea level to rise.

Rising sea level has the potential to erode beaches, drown wetlands and barrier islands, intensify flooding from hurricanes and nor'easters, threaten coastal infrastructure and drinking water, and ultimately displace populations. What's particularly alarming is that observations of sea level rise have been consistently higher than recent projections—the data seem to be lining up with worst-case scenarios for future inundation.

The time for debate about human-induced warming is over. Sea level is rising and it is now time for the dialogue to shift to adaptation.

If the state is to meet this challenge successfully, scientists agree, accurate and high-resolution elevation measurements are needed to understand the consequences of sea level rise and storm surge. Accurate elevations can be easily acquired using a state of the art mapping technology known as LIDAR (Light Detection and Ranging).

LIDAR is a technology that uses properties of scattered light from a laser beam to determine the distance to an object or surface. Much in the way that SONAR uses acoustic waves to measure distance to objects underwater, LIDAR instruments, when mounted on aircraft, can produce very accurate measurements of the distance to the earth's surface over large areas. LIDAR elevation points are typically accurate to six inches, a vast improvement over existing data. This information is fairly simple to obtain during the winter and early spring when deciduous trees have dropped their leaves.

To understand and communicate true risk and vulnerability from future hazards LIDAR elevation data is needed on a statewide level, not only for scientists, but for planners and emergency management officials as well.

At the Senate hearing, Rhode Island's coastal experts repeatedly stressed that the current lack of accurate elevation information makes it impossible to understand and mitigate the impacts of sea level rise. Presently, the best statewide elevation data are built from the same contour maps that have been around for decades. In fact, the difference between elevations represented on these maps and actual heights "on the ground" can vary by eight feet or more. This presents problems when trying to map areas that will be inundated by a five-foot rise in sea level, or a 15-foot storm surge from a hurricane that makes landfall.

For medical professionals, diagnosis of disease has moved ahead light years as CAT scans and MRI instruments have replaced or augmented X-rays to allow more precise visualization of the human body. In the same way, new mapping technologies offer far more realistic and timely information for coastal managers. The cost and time required to acquire LIDAR elevations depends on the ultimate accuracy desired, but when compared to the economic and environmental value of our state's coastal resources, the price tag is nominal.

Moreover, the investment in LIDAR could save millions of dollars in future siting of coastal infrastructure.

Of course there are factors other than elevation that determine how susceptible coastal areas in Rhode Island will be to inundation. The shape of the coastline, the amount of sand being delivered by rivers and streams, tidal range, wave height, and coastal protection structures like breakwaters all play a role in the actual impacts of accelerated sea level rise. However, the detailed analyses required to consider these dimensions would be futile without reliable elevations. All of the speakers at the Senate briefing were clear—now is the time to get to work on replacing our inaccurate elevation information and identifying areas

at risk. We simply cannot afford to waste time debating that which is unequivocal: climate change is our present and future.

To open the hearing, Senator Whitehouse called global warming “the most serious threat our environment faces,” and stressed the need for action now. The panel’s response was of one voice—climate change mitigation starts with reliable information, and statewide LIDAR is the first step. Given the scope of human, environmental, and economic impacts to our state, the cost of addressing this problem pales in comparison to the cost of ignoring it.

*Nathan Vinhateiro is a fellow of the University of Rhode Island's Coastal Institute.*

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