

# Rising Seas, Storm Surge Take Aim at Coastal Rhode Island

[ecori.org/climate-change/2019/8/14/rising-seas-storm-surge-take-aim-at-coastal-rhode-island](https://ecori.org/climate-change/2019/8/14/rising-seas-storm-surge-take-aim-at-coastal-rhode-island)

Jo Detz

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The STORMTOOLS projection for 2 feet of sea-level rise shows that the Watch Hill, R.I., hall where the recent lecture was held would be surrounded by water and the cars in the parking lot underwater. At 3 feet of rise, all of Bay Street would be underwater.

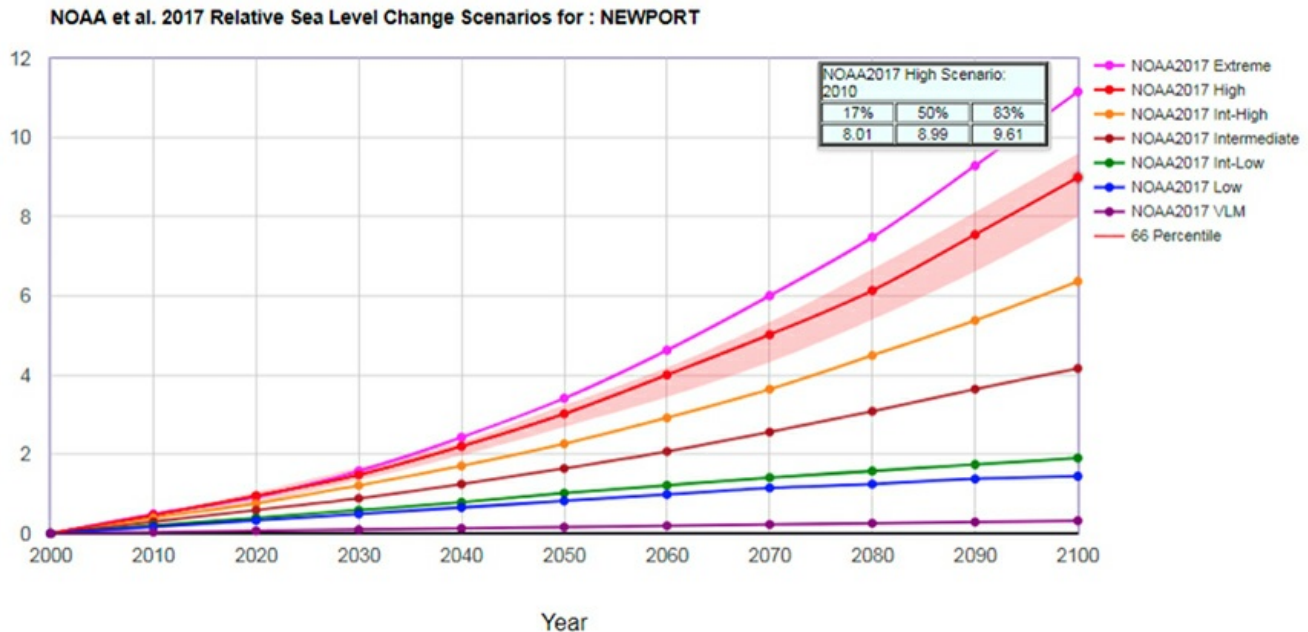
By ROGER WARBURTON/ecoRI News contributor

WATCH HILL, R.I. — More than 100 people recently crowded into the Chaplin B. Barnes Reading Room at One Bay Street Center to hear Bryan Oakley and Teresa Crean speak about the impact of sea-level rise and storm surge.

Oakley, an associate professor of environmental geoscience at Eastern Connecticut State University, is a science advisor to [The Watch Hill Conservancy](#) and an expert in the dynamic changes occurring along the Rhode Island coastline. He began the Aug. 12 presentation by

explaining why scientists have a strong understanding about sea levels going back more than 25,000 years.

This historical information compares with modern measurements, such as Newport tidal data and satellite-measured altimetry.



Sea-level change measured in Newport, R.I.

In the graph above, the shaded red bar is used by Rhode Island's Coastal Resources Management Council (CRMC) and the Army Corps of Engineers for planning purposes. It projects a sea-level rise of almost 2 feet by 2030 and 8-10 feet by 2100.

The biggest variable in sea-level rise is ice sheets. Oakley quoted The Washington Post, which recently reported that, in July alone, the Greenland ice sheet poured 197 billion tons of water into the North Atlantic. That one month, by itself, was enough to raise global sea levels by half a millimeter, or 0.02 inches.

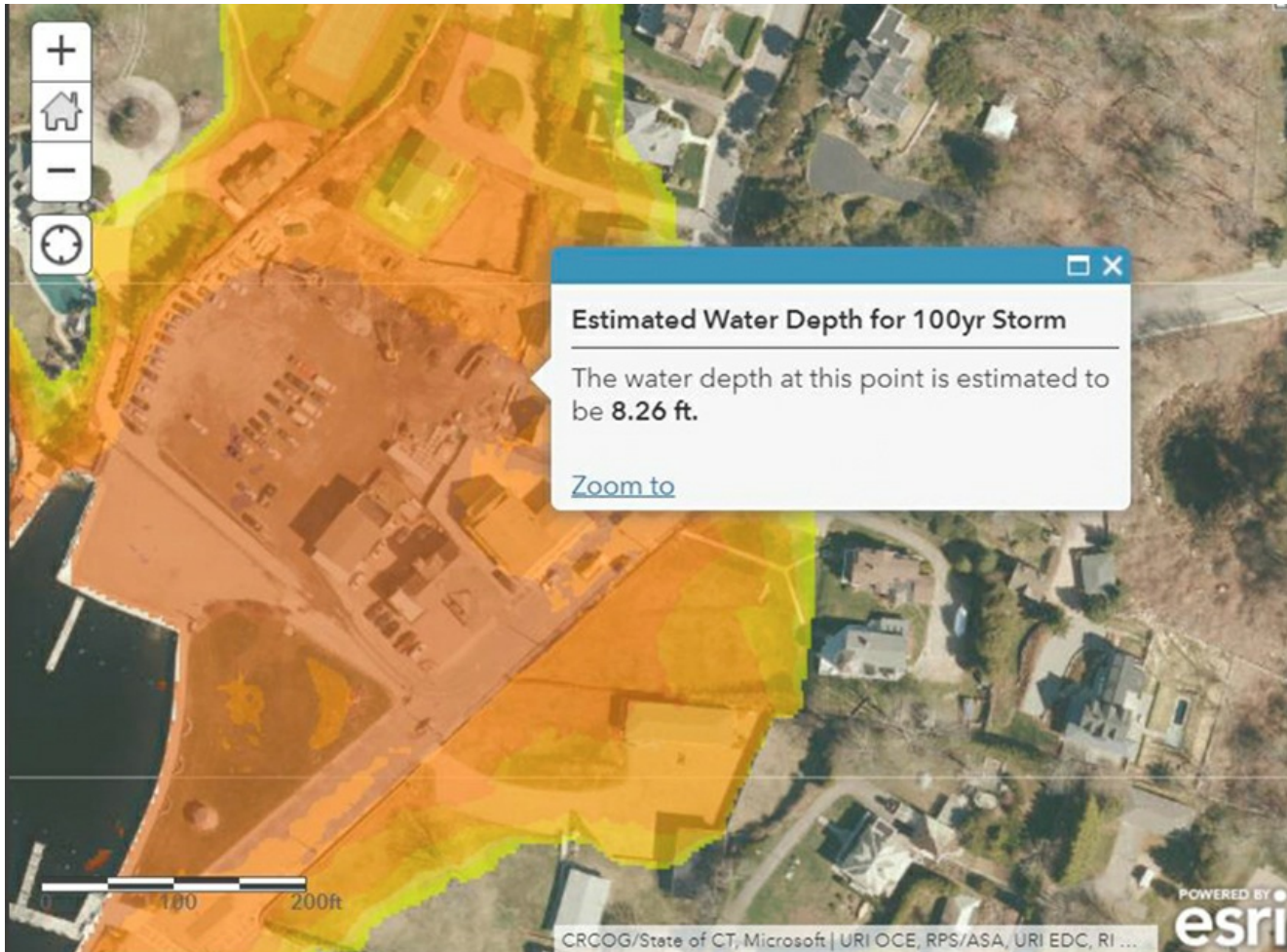
Currently, the global projection of the rate of sea-level rise is 1-2 inches per decade, which is the fastest in 3,300 years. Such a rate would result in a sea-level rise of between 5 and 9 feet by 2100. While 2100 sounds like a long way off, sea levels could be 2 feet higher by 2030.

Oakley showed a short film of a king tide at Watch Hill, a coastal village in Westerly, which flooded the street in front of the lecture hall and the lot where our cars were parked.

King tides naturally occur a few times a year when the alignment of the moon, sun, and Earth cause tides that significantly swell. King tides provide a sneak peek into the future of coastal flooding because they accurately mimic what a normal high tide will look like after a foot of sea-level rise.

Oakley also spoke about surge from storms and hurricanes, which come at irregular intervals and each is different in intensity, duration, tidal surge, and storm track. He reminded those in attendance that past experience is a guide for the future. The 1938 hurricane surged 9.5 feet above high-tide levels and Hurricane Carol, in 1954, surged 7 feet.

While 2012's Sandy was "only" a Category 1 hurricane, it surged 8 feet above high tide, lingered several days over New Jersey, and damaged some 300,000 properties.



STORMTOOLS will soon add a coastal environmental risk index that will show the level of risk in damage to property from sea-level rise and storm surge.

Crean, a coastal management specialist at the University of Rhode Island's Coastal Resources Center, noted that resources newly made available to the general public, such as STORMTOOLS, are web applications that homeowners can use to assess risks from any combination of sea-level rise and storm surge. The innovative tool is also helping to educate municipal planners about coastal issues associated with a changing climate.

Crean provided the audience with examples of the application of STORMTOOLS by predicting, for instance, the level of inundation due to 2 feet of sea-level rise around the building we were sitting in.

That scenario could occur by 2050. If that sounds a long way off, Crean reminded us that 2050 would be the period of a typical a 30-year mortgage taken out now.

With 3 feet of sea-level rise, Bay Street is entirely under water. You might not be concerned about 3 feet of sea rise because it won't occur for another three decades, but you would be forgetting about storm surge.

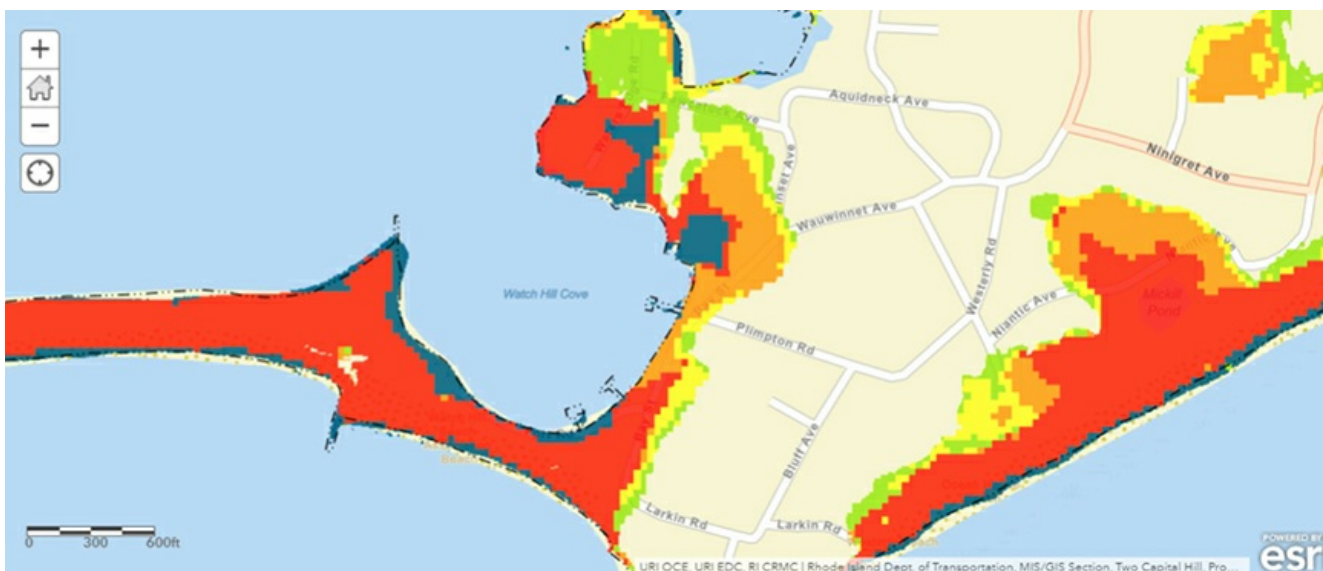
STORMTOOLS is designed to educate property owners about the risks to their homes and businesses from sea-level rise and storm surge. It helps to answer questions such as: "How high should the first floor be to minimize the risk from 1, 3, 5, or 7 feet of sea-level rise?"

The online CRMC tool will soon add a coastal environmental risk index that will shows the level of risk in damage to property.

Also, last year, CRMC adopted the [Shoreline Change Special Area Management Plan](#) (Beach SAMP) to: help coastal communities use it in their planning, policies, and practices; protect people and property from harm; allow communities to adapt to coastal changes over time.

The Beach SAMP provides a synthesis of the current scientific understanding of sea-level rise, storm surge, tidal flooding, and coastal erosion, as well as the impacts these hazards pose to infrastructure and property.

Earlier this summer CRMC launched a [coastal hazard application worksheet and online viewer](#), which provides guidance for property owners to address coastal hazards in the design and permitting process.



Risks of property damage in Westerly, R.I., including Watch Hill. Blue means inundated by 2100; green is moderate risk; yellow is high risk; orange is severe risk; and red is extreme risk.

*Roger Warburton, Ph.D., is a Newport, R.I., resident.*

*Editor's note: Graphics were created by the various online tools mentioned in this story.*