Rip currents pose greater risk to swimmers than to shoreline

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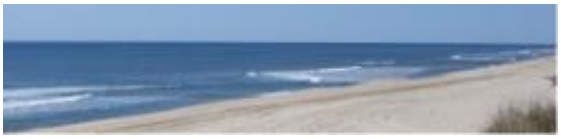

These are two rip currents along the East Hampton Village Beach about 100 yards apart. Rip currents can be recognized as a gap in the line of incoming waves. Credit: Michael Slattery

Rip currents -- powerful, channeled currents of water flowing away from the shore -- represent a danger to human life and property. Rip currents are responsible for more than one hundred deaths on our nation's beaches each year, according to the United States Lifesaving Association, and if rip currents persist long enough they can cause beach erosion.

Henry Bokuniewicz, Professor in the School of Marine and Atmospheric Sciences at Stony Brook University, and Ph.D. candidate Michael Slattery found that rip currents at East Hampton Village Beach lasted on average a little over one minute, not long enough to substantially alter the shoreline. They will present their findings October 14th at the American Shore and Beach Preservation Association's 2009 National Coastal Conference, "Integrating Coastal Science & Policy."

With funding from the East Hampton Beach Preservation Society and the Halpern Foundation, Dr. Bokuniewicz and graduate student Michael Slattery set up a video camera to record an image of a half mile stretch of the East Hampton Village Beach every 20 seconds. In the images, rip currents can be detected as a gap in the line of incoming waves. They collected over 500 hours of video images and observed hundreds of rip currents in this short stretch of coast.

The monitoring showed that the rip currents were not associated with man-made structures and they were short lived, with the most persistent rip currents lasting no more than a few minutes. "Most rip currents we observed did not last long enough to change the character of the shoreline, although they could pose a risk to swimmers unfortunate enough to encounter them," said Dr. Bokuniewicz.

Besides gathering statistics on the occurrence of rip currents, Dr. Bokuniewicz and Michael Slattery are studying the wave patterns that lead to rip currents. Rip currents are generated by a combination of waves, including, long, low, barely perceptible waves that appear along the ocean shoreline, called "infragravity waves." Infragravity waves cannot be measured directly and computer models are inadequate for predicting them. Bokuniewicz and Slattery are using a novel approach to study these waves; they deploy seismometers to measure the noise created by breaking waves.

"It appears that very slow, long-period changes in the amount of wave noise are precursors to the generation of rip currents," said Dr. Bokuniewicz. "We are hopeful that seismometers can be used to measure wave patterns that we can't easily observe in any other way. In the future, we hope to utilize this method to monitor and ultimately forecast wave conditions that cause rip currents."

Source: Stony Brook University (news : web)