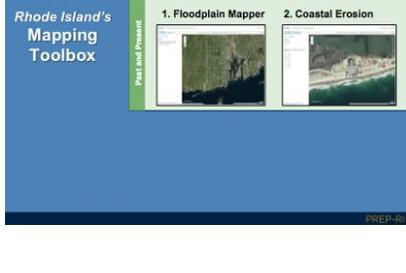
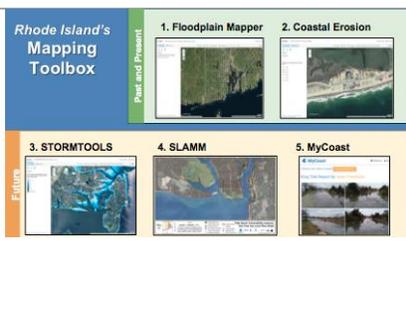
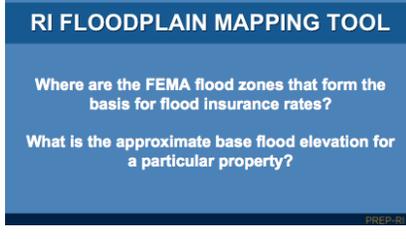


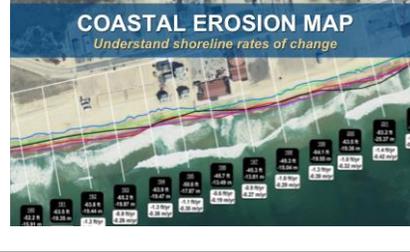
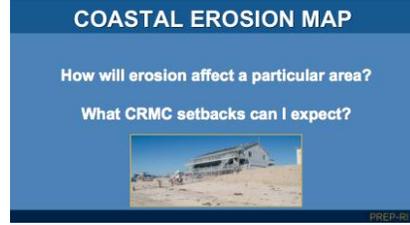
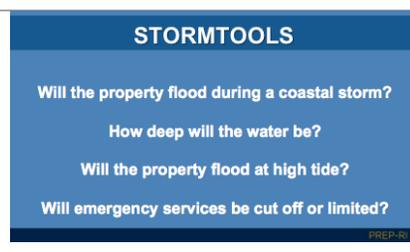


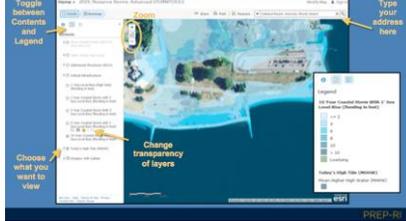
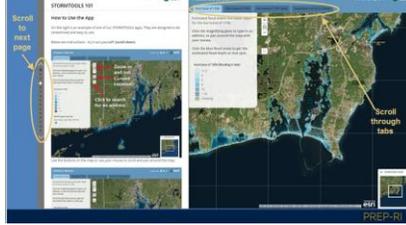
## PRESENTATION NOTES

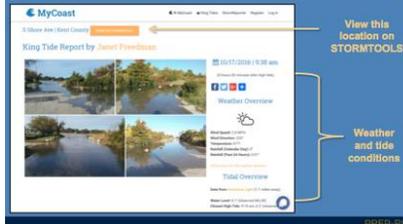
<p><b>Know Your Risk</b> Using Mapping Tools to Make Informed Decisions</p>	<p>1. Welcome to Know Your Risk. This module is focused on using mapping tools to make informed decisions that reduce impacts from hazards in our coastal cities and towns. This is part of the online series called, Providing Resilience Education for Planning in Rhode Island (or PREP- RI).</p>
<p><b>Presenters</b></p> <p>Teresa Crean, AICP, Coastal Planner University of Rhode Island Coastal Resources Center / RI Sea Grant Graduate School of Oceanography</p> <p>Grover Fugate, Executive Director Rhode Island Coastal Resources Management Council</p> <p>PREP-RI</p>	<p>2. My name is Teresa Crean. I am a coastal community planner at the University of Rhode Island. I am pleased to be joined by Grover Fugate, the Executive Director of Rhode Island’s Coastal Resources Management Council, or CRMC.</p>
<p><b>By the end of this module, you will be able to:</b></p> <ul style="list-style-type: none"> <li>Recognize the mapping tools available for planning and making informed decisions</li> <li>Know how to access the mapping tools online</li> </ul> <p>PREP-RI</p>	<p>3. By the end of this module, you will be able to: Recognize the mapping tools available for planning decision making; know when to use each tool; and explain how to incorporate sea level rise projections in future decisions.</p> <p>Grover will lead off our discussion.</p>
<p><b>Why Does It Matter?</b></p> <p>PREP-RI</p>	<p>4. As noted in other PREP-RI modules, Rhode Island has been experiencing changes in recent years. We know that storms are more intense, the rate of sea level rise is accelerating, high tide events are flooding dry land more frequently, and coastal erosion has been altering many segments of our shorelines. In order to understand risks, plan wisely, and prepare for the future, <b>GOOD MAPPING TOOLS ARE CRUCIAL.</b> Using the latest modeling techniques we can show what a 1954 hurricane would do to Rhode Island if it occurred today and let us see what our current risk is. We can also estimate <b>FUTURE RISK</b> with these same tools to show how our shoreline might change in the future and what effect future storms might have.</p>

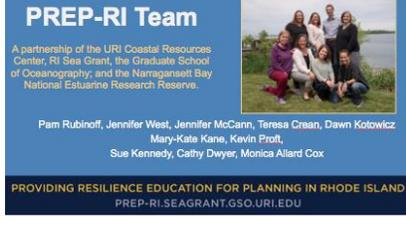
<p><b>Erosion is occurring in areas along Rhode Island's coastline</b></p> 	<p>5. Erosion along the Rhode Island coastline has been occurring for a very long time. Monitoring coastal erosion has been important for coastal planning and development. We are working now to project what future erosion might look like with sea level rise and storms.</p> <p>***</p> <p><b>Image Sources: (left to right)</b> House on eroded edge, <a href="http://MyCoast.org">MyCoast.org</a>, L. Butler, 2012; Elevated house, M. Kane, 2017</p>
<p><b>Sea Level Rise is Accelerating</b></p> 	<p>6. The Newport tide gauge shows that there has been about 10 inches of sea level rise since 1930. The curves you see here reflect new data released in 2017 by the National Oceanic and Atmospheric Administration (or NOAA) for projected future trends. The CRMC has adopted NOAA's "high curve" into Rhode Island's coastal policy. With the new estimates Rhode Island is now planning for 1 foot of sea level rise by 2025, 3 feet by 2050, and over 9 feet of sea level rise by 2100. Using mapping tools that reflect these higher sea levels, property owners can look at their 30-year mortgage as a gauge to start to take action and prepare for impacts of coastal flooding.</p> <p>***</p> <p><b>Image Source:</b> <a href="#">Web-based SLR calculator</a></p>
<p><b>Know Your Risk</b></p> 	<p>7. To understand what risk actually looks like, mapping tools can be used to visualize the CURRENT RISK from storm events, and assess FUTURE RISK from coastal erosion and sea level rise, coupled with future storm events. The tools illustrate both the extent of potential flooding across the landscape, and also the depth of flooding from different scenarios. As an example, while upgrading the sewage treatment facility in Narragansett, maps illustrating storm scenarios allowed the Town to assess the long-term risk from both sea level rise and storm surge, and consider how to upgrade their facility over time to meet future conditions. In collaboration with the CRMC, the maps helped inform how their Facility could be "built to last", and ensure that the Town gets a bigger "bang for its buck" when they invest public dollars over the long term.</p>

	<p>8. Using the variety of mapping tools will help you better understand your community’s risk and provide you with tools to be proactive in applying this information to site-based decisions. They can also be used for overarching municipal plans such as your comprehensive plan. Teresa will walk you through the tools we have available.</p>
	<p>9. The mapping toolbox available to Rhode Island coastal communities consists of tools that represent past and present data. The Rhode Island Emergency Management Agency’s Floodplain Mapping Tool shows floodplains as defined by the National Flood Insurance Program; and the Coastal Erosion Mapping Tool includes the locations of shorelines since 1939.</p>
	<p>10. To assess future risk, STORMTOOLS allows us to visualize how sea level rise and storm events are likely to cause flooding along Rhode Island’s coastline. The SLAMM, or Sea Level Affecting Marshes Model, shows how salt marshes are likely to migrate or drown in place with sea level rise. Lastly, MyCoast is an online photo bank where anyone with a camera or smartphone can upload photos showing actual flooding events in their community.</p>
	<p>11. The RI Floodplain Mapping Tool helps visualize regulatory FEMA flood insurance rate maps or FIRMs. The tool allows you to zoom into any Rhode Island location to determine the designated FEMA floodplain. These maps illustrate today’s flood zones calculated using past storm events. <b>THEY DO NOT project future conditions.</b> *** <a href="http://www.riema.ri.gov/resources/citizens/mitigation/mapping.php">http://www.riema.ri.gov/resources/citizens/mitigation/mapping.php</a></p>
	<p>12. These maps inform property owners about the level of flood risk which determines the flood insurance rate for a given property. The floodplain designation also carries with it development requirements outlined in the Rhode Island Building Code.</p>

	<p>13. Both the Rhode Island Floodplain Mapping Tool and the national FEMA Map Service Center offer interactive online flood insurance rate maps for easy viewing. Enter an address in the upper right hand corner of the map viewer. Then you can zoom in and out to activate different layers of information.</p>
	<p>14. The Coastal Erosion maps used in coastal development permitting are available through the CRMC website. These maps help us understand shoreline rates of change over time and how erosion is affecting our coastal properties *** <a href="http://www.crmc.ri.gov/maps/maps_shorechange.html">http://www.crmc.ri.gov/maps/maps_shorechange.html</a></p>
	<p>15. Shorelines may be viewed as stable but the rate of erosion can change dramatically with every storm event that hits Rhode Island. The erosion rates are used by CRMC to determine setbacks for coastal developments: residential structures are evaluated with a 30-year annualized erosion rate, and commercial structures require a 60-year annualized erosion rate.</p>
	<p>16. These maps are all in a downloadable PDF format for your area of interest. Transsects have been drawn across all RI's coastline. Each shows the actual shoreline change distance and the long term rate of change between 1939 and 2014. The colored lines on the map correspond with the year that the shoreline was mapped.</p>
	<p>17. STORMTOOLS is an online mapper that covers Rhode Island's 400 miles of coastline, illustrating coastal flooding from sea level rise scenarios as well as sea level rise combined with different types of coastal storm events. *** <a href="http://www.beachsamp.org/stormtools/">http://www.beachsamp.org/stormtools/</a></p>
	<p>18. These maps help us understand risk to sea level rise and storm surge and show if a property will flood and how deep the water may be at that location during a coastal storm.</p>

	<p>19. This STORMTOOLS interactive map illustrates a coastal storm with moderate frequency (10-year return period), together with one foot of sea level rise, in the Oakland Beach area of Warwick. Enter any address in Rhode Island to zoom into your area of interest and view different storm and sea level scenarios. You can click on map itself to find out the water depth at your desired location. Note the arrows on this slide that show where you can enter information, turn layers on and off, and view a legend for your map.</p>
	<p>20. The “STORMTOOLS 101” Map Journal is a great place to start if you are just getting familiar with these online mapping tools. It offers a “how-to” guide on using the maps, and some of the terminology and science behind STORMTOOLS.</p>
	<p>21. STORMTOOLS Map Journals combine written descriptions and photographs to accompany the maps while still allowing the user to interact with the map itself. Here we are showing the Misquamicut area of Westerly after 1954’s Hurricane Carol. Notice that you can click on the flooded area to see a pop-up box indicating water depth at that location.</p>
	<p>22. The Sea Level Affecting Marshes Model maps show how sea level rise may change the footprint of coastal wetlands in all 21 RI coastal communities. *** <a href="http://www.crmc.ri.gov/maps/maps_slamm.html">http://www.crmc.ri.gov/maps/maps_slamm.html</a></p>
	<p>23. The purpose of these maps is to show how coastal wetlands will likely transition and migrate onto adjacent upland areas under projected sea level scenarios of one, three, and five feet in the coming decades. *** <b>Image Source:</b> Narrow River, Rhode Island Sea Grant Flickr, 2014</p>

 <p>The map displays the Oakland Beach area in Warwick, Rhode Island. It highlights 'Protected Open Space' in green, 'Potential Future Marsh' in yellow, and 'Potential Marsh Loss' in purple. A legend at the bottom identifies the 'Tidal Marsh Vulnerability Analysis: Five Foot Sea Level Rise Model'.</p>	<p>24. This map shows five feet of sea level rise and what the impacts of future wetland migration might look like in the Oakland Beach area of Warwick. The brown areas show where new marshes are likely to appear from daily tides at the higher sea level. The purple areas show potential marsh loss, or where the marshes will be permanently covered by sea water.</p>
 <p>The image shows a collage of four photographs under the 'MyCoast' logo. The top-left photo shows a flooded area with a road. The top-right photo shows a flooded field. The bottom-left photo shows a flooded residential area. The bottom-right photo shows a flooded area with trees.</p>	<p>25. MyCoast is a crowdsourcing tool that feeds into an online photo collection, offering a one-stop shop for past, present, and future flooding photographs taken by Rhode Islanders. *** <a href="https://mycoast.org/ri">https://mycoast.org/ri</a></p>
 <p>The image shows the MyCoast interface with the following text: 'MyCoast', 'What locations in Rhode Island experience flooding during high tides and King Tides?', and 'What will future sea level rise look like on a particular property?'.</p>	<p>26. MyCoast helps us understand which locations in RI experience flooding during periodic extreme high tides, also called “King Tides,” “astronomical high tides,” or “moon tides.” Photos can be used to illustrate what future daily tides with sea level rise might look like on the property in the future. *** <b>Image Source:</b> King Tide report in Warwick, <a href="https://mycoast.org">MyCoast.org</a>, J. Freedman</p>
 <p>The image shows a MyCoast 'King Tide Report' for a specific location. It includes a photo of a flooded area, a 'View this location on STORMTOOLS' button, and a 'Weather and tide conditions' section.</p>	<p>27. For each photo uploaded, the MyCoast page shows a tidal overview, water level, and high tide observed that day at the closest tide gauge.</p>
 <p>The image shows a map titled 'King Tide Reports' with several blue circular markers indicating locations where high tide photos have been taken. The map includes a search bar and a 'King Tide Reported' label.</p>	<p>28. The base map for King Tide Reports allows you to zoom into your community and view other high tide photos taken by other MyCoast app users.</p>

	<p>29. We hope you will try out each of these tools to consider the level of coastal risk in your community, and how coastal hazards can be analyzed to inform future decision making. The links to each of these tools are provided on the PREP-RI resources document.</p>
	<p>30. Thank you for viewing this module. So what's next? We would like to invite you to check out the key resources companion to this presentation, get your certificate for taking the time to view this presentation, and give us some feedback so we that can better meet your needs for future modules and supply additional information for learning more about the tools.</p>
	<p>31. The PREP-RI team acknowledges the support of statewide leaders, experts and practitioners who helped to make this module a reality.</p>
	<p>32. And thanks to the PREP-RI Team for pulling this module together!</p> <p>A partnership of the URI Coastal Resources Center, RI Sea Grant, the Graduate School of Oceanography; and the Narragansett Bay National Estuarine Research Reserve.</p>
	