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# Saving More Lives is in Future Hurricane Seasons.

How Army Corps of Engineers storm surge maps will make a difference

JoAnne Castagna, | October 14, 2015



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Hurricane Sandy represented one of the largest-scale evacuations declared in recent history in the country. That included plucking 250 people from their flooded homes, and evacuating two major hospitals, according to Edward Schneyer, director of emergency preparedness for Suffolk County Office of Emergency Management.

Schneyer said he was able to do this effectively because his agency has storm surge maps created by the U.S. Army Corps of Engineers (USACE), New York District. Storm surge is when a significant amount of water is pushed by a hurricane from the sea onto the land.

These maps provide emergency managers in all hurricane-prone states an understanding of the potential for the extent of storm surge that could occur for worst-case Category 1 to 4 storms, identifying areas from which people should evacuate if faced with a storm surge threat.

The Army Corps is updating these maps with higher-resolution modeling and topography performed by the National Oceanic and Atmospheric Administration's National Hurricane Center's Storm Surge Unit, so agencies will have more accurate information to educate the public, thus reducing risk to themselves and their property.

"Historically, 49 percent of human casualties from hurricanes are because of storm surge," said Donald E. Cresitello, USACE Hurricane Evacuation Study program manager for the State of New York, U.S. Army Corps of Engineers, New York District.

"Other impacts like riverine flooding due to rainfall, falling trees due to high winds and indirect impacts like carbon monoxide poisoning and electrocution, can cause deaths," Cresitello said. "The development of these maps is the first step in the hazard analysis for the hurricane evacuation study process."

As the hurricane evacuation study managers for the National Hurricane Program, the Army Corps is responsible for creating these maps. The maps, which are officially named the "New York Hurricane Evacuation Study Hurricane Surge Inundation Maps," are being produced in collaboration with the Army Corps' New England and Baltimore districts.

The Army Corps provides these maps to emergency managers in New York City, Westchester County, and Nassau and Suffolk counties on Long Island, New York.

The USACE also guides emergency managers on how to use these maps by providing the maps in a hurricane decision making software called HURREVAC (Hurricane Evacuation), developed by Sea Island Software for the National Hurricane Program.

"Agency officials can use these maps to help reduce risk to the public," Cresitello said. "They can use them for evacuation planning, to redefine their hurricane evacuation zones, identify where shelters should be located and identify where assets should be staged prior to impact from a storm."

The new maps, like previous ones, are being created using GIS, a computer-based information system and tool capable of capturing, storing, analyzing and displaying location information. The tool inputs data from various sources, such as aerial photography, and combines these layers of information in various ways to perform analysis and create maps. The new maps will be a considerable improvement from the older maps because they will have higher-resolution storm surge modeling data and topography that will provide greater detail and accuracy. The new maps will not only show the extent of inland storm surge, but also the depth of the water – in ranges of feet – during different categories of storms.

In addition, the maps will illustrate areas that will experience more flooding and areas that will experience less flooding.

"Knowing what the depth of water may be in those areas helps emergency managers better perform their initial response after a storm and helps them know what kind of impacts they may expect during these types of storms," Cresitello said.

And as a result, emergency managers can better focus their limited resources. "As emergency managers dealing with the recovery effort and critical decision-making, these storm maps provide the geographical area of primary concern where efforts and resources need to be focused to make essential and accurate damage assessments to determine life and property hazards," said Schneyer. "In the initial stages of a response, our recovery resources are limited, especially for an event the size of Sandy. If resources are dispatched to areas that were not impacted, valuable time is lost mobilizing and re-assigning those resources."

These maps are not just a tool for agencies, but also the general public. "These maps provide an important level of awareness to residents that either live in a flood area or are preparing to purchase property located in a potential flood zone or hurricane storm surge zone," Schneyer said.

Schneyer's agency is bringing this awareness directly to its residents. They are taking the information from the Army Corps' maps and entering it into an interactive mapping program developed and viewable on its county's website.

The public can visit the website to locate their residence, see if their home is in a hurricane storm surge zone and if so, which designated shelter is nearby.

The Army Corps also wants the public to use these resources. "It's important for people to know their specific zone," said Cresitello. "The public should be aware of what evacuation zone they live in and should listen to their local officials [i.e., mayor, emergency manager, etc.] so they don't question or ignore an official emergency evacuation order."

"We don't want the public deciding on their own if they should evacuate or not," Cresitello added. "If a location is in danger, then they should heed the evacuation order. It doesn't matter if it's six inches or 10 feet of water."

During Sandy, people who should have evacuated but didn't were stranded without help and faced many dangers, including electrocution from downed power lines and fires from massive gas leaks.

"The more information, especially information resulting from scientific studies and available technology, the more situationally aware we, and our residents, will be," Schneyer said. "This very valuable resource is an excellent tool for public education, emergency management planning, and emergency preparedness in general."

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