

## New hurricane scale puts more focus on storm surge

By Mary Wozniak, The (Fort Myers, Fla.) News-Press

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FORT MYERS, Fla. - A newly patented hurricane scale better predicts the potential destruction from both wind and storm surge, but the [National Hurricane Center](#) won't say whether it will be endorsed or used.



File photo by Rob O'Neal, Key West Citizen via AP  
Waves crash into the seawall in Key West, Fla., on Sept. 9, 2008, as the outer bands of Hurricane Ike pass the lower Florida Keys.

The scale, called Integrated Kinetic Energy, or IKE, is the legacy of [Hurricane Charley](#), which pummeled southwest Florida seven years ago Saturday; Hurricane Katrina, which devastated New Orleans in 2005; and [Hurricane Ike](#), which inundated Galveston, Texas, in 2008.

The three hurricanes made clear the inability of the Saffir-Simpson Hurricane Wind Scale, used by scientists for 36 years, to accurately predict potential wind damage and storm surge by categorizing hurricanes on a scale from 1-5.

The reason is Saffir-Simpson only takes estimated maximum wind speed into account in categorizing a hurricane, said [Mark Powell](#), a scientist with the hurricane research division of the National Oceanic and Atmospheric Administration and IKE co-creator.

But surge is the most devastating element of a hurricane, killing more people than all other hurricane-related threats (freshwater flooding, winds and tornadoes) combined since 1900, according to the National Hurricane Center website.

The surge potential can be different from the wind potential, said Timothy Reinhold, the other co-creator of IKE. Reinhold is senior vice president of research and chief engineer at the nonprofit Insurance Institute for Business and Home Safety in Tampa.

For example, while Hurricane Ike had Category 2 winds when it hit Galveston, the surge was equal to a Category 4, he said. Katrina's winds weakened to a Category 3 at landfall, but the surge came in at Category 5 or greater.



Gannett file photo

Mark Powell, a scientist with the hurricane research division of the National Oceanic and Atmospheric Administration, is co-creator of IKE.

At stake is the ability to more accurately predict how big a hurricane is, how strong it is and what the storm surge may be so emergency management officials can make an informed decision on whether to evacuate people before the hurricane gets too close to landfall, Reinhold said. "It is an early warning system."

The system has been in development for years, said Wayne Sallade, [Charlotte County](#) emergency management director.

"Look, we've got to come up with a better way of discerning what are the actual consequences from a particular storm more than just wind," he said. "It's got to be size, surge, all the factors taken together."

That is the study that resulted in IKE, Sallade said.

Dan Trescott, principal long-range planner for the Southwest Florida Regional Planning council, said he is bothered by the fact the Saffir-Simpson scale did not take storm surge

into account.

"This is something that, in my opinion, is a good thing," he said of IKE.

It's particularly welcome because new storm surge maps completed in December for southwest Florida show storm surge covers all urbanized areas of [Lee County](#), he said. In Collier County, surge reaches as far as Immokalee, Trescott said.

"When people started looking at it, they didn't want to believe it and didn't want to use it." IKE is different because it takes into account the size of the storm and its wind field, which means the distance that winds of tropical storm force (39 mph) and above extend out from the hurricane eye.

It also takes into account the stress that the winds exert on the ocean surface, which causes the waves that create the surge, Powell said.

The IKE scale measures in a continuous scale from 0 to 5.99 instead of 1-5.

So a hurricane's potential for wind damage can be a 3.4 but its surge potential can rate a 4.5.

The IKE patent, which belongs to the U.S. government, is based on a 2007 study published by its co-creators in the *Bulletin of the American Meteorological Society*.

The National Hurricane Center won't discuss IKE because it's not using it, said Dennis Feltgen, center spokesman.

"It is fantastic information," said Erica Rule, spokeswoman for NOAA's Atlantic Oceanographic Meteorological Laboratory, where Powell works. But it is only a research product, she said.

Powell said he is perplexed.

"We were really thinking this was a no brainer after Hurricane Ike," he said. "It was amazing that it wasn't really picked up on. I continue to be amazed."

Powell is applying IKE in the lab to this season's storms, most recently Emily.

Rule said one of the questions is whether the additional information can be absorbed and understood by the public, and whether it will make any difference in deciding whether to evacuate.

A recent study by the National Center for [Atmospheric Research](#) showed a significant portion of people don't know what storm surge is or realize how vulnerable they are.

The study surveyed people from 155 counties from Texas to [North Carolina](#).

Among the findings: 35 percent of those who live in areas that would be flooded by a Category 1 storm did not believe they even would be affected by storm surge from a Category 3 to 5 storm.

The National Hurricane Center acknowledges Saffir-Simpson is limited in its ability to provide a full picture of a hurricane's destructive potential.

So the center has taken any storm surge factor out of the Saffir-Simpson scale. Instead, it uses a computerized model called SLOSH, or Sea, Lake and Overland Surges from Hurricanes, to predict storm surge.

"It sounds like this IKE scale is a way to do the same kinds of things we are trying to do as well," said Gerald Campbell, chief of planning for Lee County Emergency Management. "It is probably a more academic approach vs. what we're trying to implement in the real world. There is room for both."

