

NEES tsunami expert says improved research tools helped predict impact of this week's Japan earthquake

December 11 2012, by Phillip Fiorini

(Phys.org)—A leading tsunami researcher affiliated with the George E. Brown Jr. Network for Earthquake Engineering Simulation (NEES) says improved computational models helped in more accurately predicting the impact of a strong earthquake near Japan on Friday.

Solomon Yim, the Glenn Willis Holcomb Professor in Structural Engineering at Oregon State University, said authorities at the [Pacific Tsunami Warning Center](#), the [National Oceanic and Atmospheric Administration](#) (NOAA) and the [National Weather Service](#) (NWS) sent out a [tsunami](#) information bulletin 8 minutes after the earthquake, stating "no destructive widespread tsunami threat exists" to the areas with and bordering the Pacific Ocean and adjacent seas.

That bulletin came after data compiled by researchers indicated there was no risk of a widespread tsunami from the magnitude 7.3 earthquake, said Yim, the principal investigator of the Tsunami Research Facility Site Operation Project for NEES, funded by the National Science Foundation.

"The system worked. This is real success story in terms of more accurately predicting in real time what the impact might be," Yim said. "The tsunami information to the distance areas of the United States and elsewhere was provided quickly, saving a lot of unnecessary anxiety and potential economic loss."

The Japan Meteorological Agency said Friday's quake struck in the Pacific Ocean off the coast of Miyagi prefecture. The epicenter was 6.2 miles beneath the seabed.

After the quake, which caused buildings in Tokyo to sway for several minutes, authorities issued a warning that a tsunami potentially as high as 2.19 yards could hit. Ishinomaki, a city in Miyagi, reported that a tsunami of 1 yard hit.

It was a different story a year ago.

On March 11, 2011, a magnitude-9.0 earthquake and ensuing tsunami that slammed into northeastern Japan killed or left missing some 19,000 people, devastating much of the coast. All but two of Japan's nuclear plants were shut down for checks after the earthquake and tsunami caused meltdowns at the Fukushima Dai-Ichi nuclear plant in the worst nuclear disaster since the 1986 Chernobyl disaster.

Purdue University entered into a five-year cooperative agreement with the National Science Foundation in October 2009 to lead NEES and its experimental facilities at universities across the country.

Through NEES, researchers are developing tools to learn how earthquakes impact the buildings, bridges, utility systems and other critical components of today's society. From that knowledge will come new design guidelines that will make structures better able to withstand earthquake demands.

Yim's research topics include hydroelasticity, free-surface flow and fluid contact/impact on deformable marine structures; waves, tsunami, storm surge and [earthquake](#) loads modeling and simulation in field and laboratory environments; and mechanics of wave-energy conversion systems.

Provided by Purdue University

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