

Experts -- early warnings mitigated Japan disaster

Eric Talmadge, Associated Press, 5-12-11

TOKYO -- Though earthquakes can't be predicted, experts say an early warning system that detects the earth's rumblings before they can be felt saved countless lives when Japan's once-in-a-millennium disaster struck two months ago.

Millions of Japanese live in areas, including Tokyo, that are in high risk of being hit by major quakes at virtually anytime, and over the last decade or so Japan has invested heavily in its early warning system, which is the most advanced in the world.

Despite the massive destruction wrought by March's magnitude-9.0 earthquake and the tsunami it spawned, experts say it could have been worse had Japan not been so prepared.

"I think it saved many people," Kunihiro Shimazaki, a leading seismologist and head of the government's earthquake prediction advisory board, said Thursday. "Particularly with the tsunami warning, it gave people time to act."

Japan has poured some \$500 million into a sophisticated network capable of detecting the first vibrations of an earthquake, called "P waves." These initial pulses do not create a lot of shaking and travel much faster than the killer shock waves that follow.

The network of sensors, launched as the world's first in 2007, record the P waves and relay the information to computers that then calculate how big the quake will be.

Before the ground ever started rocking on March 11, warnings a huge quake was about to strike flashed across TV screens, were broadcast over radio stations and arrived on mobile phones. Alerts were also sent to halt trains and factories.

The heads-up it gave was brief - in Tokyo, about 230 miles (370 kilometers) from the epicenter, messages with alarms interrupted TV programming only about 10 seconds before the hard jolts began.

But those 10 seconds could be vital, said Roger Musson, a seismologist at the British Geological Survey.

"In terms of the safe shutdown of mechanical systems, factory outputs and bullet trains, then it seems to have worked really well," he said. "Ten seconds is time to turn the gas off if you're cooking, and that could make all the difference between your house burning down or not."

Still, Shimazaki warned that completely quake-proofing a country like Japan is impossible, and said the early warning system had its faults.

Many of its sensors were quickly knocked out by the quake or the waves, and, because of the intensity and number of shocks, the ones that worked provided an overwhelming amount of information that made interpretation difficult.

"There were some really simple problems that need to be fixed," he said, and scientists are working on improving protections for sensors and the means of interpreting data.

Surviving an earthquake, however, largely depends on preparedness, and Shimazaki said few experts had foreseen the possibility of a magnitude-9.0, the most powerful quake in Japan's history.

While Japan maintains strict building codes and has financed the construction of high sea walls in coastal areas, they were overrun by the tsunami. The quake and tsunami left 25,000 dead or missing, and more than 100,000 remain in temporary shelters.

Shimazaki said the Fukushima Dai-ichi nuclear plant - which suffered explosions and fires, spewed radiation and continues to be unstable - was a good case of underestimated risk.

He said experts had long thought Fukushima was a relatively low-danger area because over the past 400 years it had only been hit twice, in the 1930s, by jolts in the magnitude 7 range. He noted that another plant in an area considered much more volatile, has been shut down until safety improvements can be made.

"We are gradually getting to a point where we can understand things much better," he said. "We have many things to reflect on, and regrets about things that we might have done differently. But our role is to see that improvements are made."