

Lake Tahoe fault overdue for big quake

Cheryl Jennings, KGO (San Francisco television), 3-3-11

LAKE TAHOE -- State of the art technology is giving us new insight into the potential for a major earthquake at Lake Tahoe. It could be big, and it could be followed by a giant wave of water.

We tend to think of tsunamis happening after an earthquake in the ocean. But a similar wave can actually occur on a lake -- especially one as deep as Lake Tahoe. Scientists say they don't want to scare anyone, but they want us to be ready.

On the surface, Lake Tahoe looks as tranquil as a body of water can, but at the bottom of the lake there are three active earthquake faults and at least one is overdue for a big quake.

"In a geological sense, yes. It might be a thousand years, it might be tomorrow," says Graham Kent, director of the seismology lab at University of Nevada.

The last really big quake in the area is believed to have been about 500 years ago near Incline Village.

"In that last earthquake, the ground shifted vertically about 14 feet," said Gordon Seitz, an engineering geologist with the state of California. "If that type of earthquake were to happen again, then half of the beach would drop down permanently -- 12, 14 feet."

Seitz is part of a team of top scientists who have been studying the Tahoe faults for a decade.

"We've been trying to characterize how active these faults are," he says.

Analyzing faults under water is tough, but several elaborate sonar systems are now making it possible.

"It's more rocket science than geophysics," says Kent.

The sonar is mounted on a boat. It sends out sound waves which bounce off the bottom of the lake. Then scientists use that data to make very precise maps.

One of the maps shows the bottom of Fallen Leaf Lake, just south of Tahoe. The West Tahoe fault runs north, up the side of Lake Tahoe, and it could produce the next big one.

"It's capable, we now know, of having magnitude 7.3 earthquakes," says Kent.

If you happen to be near the lake when the quake hits, the shaking could be just the beginning. Tahoe is 22 miles long with an average depth of 1,000 feet. Scientists believe a quake in the Tahoe Basin might produce a giant wave as high as 30 feet.

"Tahoe is kind of unique in terms of lakes because it's so deep, it can create a tsunami-like wave or a seiche," says Seitz. "A seiche is a wave sort of like you imagine in a bathtub that just kind of goes back and forth. That wave could be moving for hours."

So what are your chances of getting away from the wave? Remember the tsunami that hit Indonesia in 2004.

"Everybody who went down to check out the waves as they receded pretty much perished, and everybody who turned around and ran, most of them survived," says Kent. "You just don't know. You don't know how big the wave is going to be, and you just need to get off the beach when the shaking stops."

That is one reason this research is so critical. Scientists say people need to know what could happen. Even something as simple as warning signs on the beach could help.

"Informing the public makes a huge difference because then if they notice something strange is going on, or they feel shaking, they move to higher ground," says Seitz.

Researchers will be back out at Lake Tahoe this spring with a robotic submarine as they try to learn more about Tahoe's potential for earthquakes and tidal waves.