

*Earth quake - 10 yrs later*

# Scientists have learned from Santa Cruz County's misfortune

**By PETER BRAND**

SENTINEL STAFF WRITER

The Loma Prieta earthquake, which ripped through the county 11 years ago today, lasted just 15 seconds. Its reverberations, however, are still being felt today.

The quake's impact locally was enormous: six county residents died and close to 1,500 were treated at county hospitals. Both Santa Cruz and Watsonville were forced to rebuild large sections of their downtowns.

*1017-05*

It had other effects, too. Both Tom Holzer of the U.S. Geological Survey in Menlo Park and Susan Schwartz, an associate professor of earth sciences at UC Santa Cruz, said the quake, measuring a 6.9 in magnitude, in some ways made their jobs easier. People are much more knowledgeable today about the complexities of earthquakes than they were 11 years ago, they said.

Santa Cruz resident Tom Maderos agrees.

Please see **QUAKE** on **Page A12**

# Quake

Continued from Page A1

"I was prepared for the last one, and I'll be prepared for the next one, but I'm more aware of some of the geological problems downtown," he said Monday.

The problems, quake experts say, is an underground base of softer soil, which makes the area prone to building damage in an earthquake. Some communities that were closer to the 1989 quake's epicenter, but on a more solid geological footing, suffered less damage.

According to Holzer, this awareness will make the public response "substantially better" when the next major quake hits the Bay Area.

The 1989 temblor also changed the way seismologists and geologists study the shakers. Since 1989, much of the new technology has focused on providing a more extensive map of how the earth's crust is moving.

Scientists figure if they can uncov-

er how the earth is moving, they will have more of a direct measure of the process that produces quakes. That, in turn, might give them warning of when a quake will happen.

Seismologists discovered after the 1989 quake that temblors along the San Andreas fault have something in common: "uplift," or a vertical motion.

That, Holzer said, significantly enhances ground-shaking.

Seismologists now speculate the Santa Cruz Mountains developed from this type of vertical pressure.

A surprising finding after the quake was that it had occurred on a secondary fault, and not on the San Andreas fault. That shined some light on the deadly potential of some of the previously considered minor faults.

"The San Gregorio fault (located under the Monterey Bay), for example, is now factored into research and forecasts," Holzer said. "People are undertaking research that otherwise wouldn't have been done."

While the 1989 quake relieved some of the stress on the San Andreas, research has shown there is still poten-

tial for the San Andreas to fail again.

But with all the advances, forecasting earthquakes is still a generally losing proposition, according to experts.

"Forecasting is based on probability, not prediction," Schwartz said, adding that it is very unlikely a scientist could forecast a major earthquake.

Instead, she said, researchers take advantage of more sophisticated methodology, including geological positioning systems, that allow them to measure changes in the earth's crust over time.

They use the Web to track earth movement worldwide.

New seismographic stations have been built and old ones updated with new digital seismometers.

And what does that give researchers the confidence to say? A 1999 report said there is a 70 percent likelihood the Bay Area will experience a quake of about 6.7 sometime in the next 30 years.

Contact Peter Brand at  
[pbrand@santa-cruz.com](mailto:pbrand@santa-cruz.com).