

New quake risk revealed

EARTHQUAKES

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The Associated Press

SAN JOSE — The Loma Prieta earthquake that devastated Santa Cruz County last year was not on the main trace of the San Andreas Fault and so did not relieve enough stress that the area is safe, according to a scientific study published Friday.

The study contradicts the widespread view that the magnitude 7.1 temblor reduced pressure along the fault and suggests that the Santa Cruz Mountains are still in danger of a damaging earthquake.

New evidence indicates that the Loma Prieta quake occurred on a different part of the network of faults, known as traces, that together form the San Andreas Fault zone.

Although the quake relieved strain deep in the rock, researchers reported Friday in the journal *Science* that it may have increased stress on the shallow part of the fault, increasing the chance of a moderate quake.

In addition, another set of faults that rarely move must be helping build mountains east of the San Andreas, researchers said. Little is known about those faults and their dangers are a mystery to scientists.

"If their number came up, they could be extremely destructive," said geophysicist Wayne Thatcher of the U.S.

Geological Survey in Menlo Park.

Scientists remain divided about the new findings and they disagree about their implications for earthquake forecasting.

Few think another temblor that would register magnitude 7 on the Richter scale is likely soon along the Loma Prieta segment of the

fault, but many think a moderate quake of magnitude 6 or 6.5 is possible.

The Richter scale measures the energy released by a quake. Every increase of one number means that

Not all scientists agree with report

By MARK BERGSTROM

Sentinel staff writer

SANTA CRUZ — New studies that suggest the Loma Prieta earthquake was not on the main section of the San Andreas Fault, thus putting the county in danger of another large quake, are no cause for panic, the head of the UC Santa Cruz seismology laboratory said Friday.

Thorne Lay, director of the Institute of Tectonics, said the studies point out a difference of opinion among scientists over the significance of the Oct. 17 earthquake.

Some have said the quake was the so-called "big one" for that section of the San Andreas Fault and that it relieved enough stress to spare this area from another large quake for some time to come.

The new studies, however, suggest that the quake was actually on a different network of trace faults that make up the San Andreas and while it relieved stress deep in the fault, it may actually have transferred stress to the top of the fault area, making a quake of magnitude 6 or 6.5 likely.

"This is not an easy question," said Lay. "We are having difficulty assessing the shallow area to determine if it is more or less likely to rupture.

"This is a dilemma and reasonable researchers are contributing to that dilemma," he said. "There is significant ignorance that we cannot reach consensus in the scientific community.

"My general feeling about the appropriate public response is to respect that we continue to live in an earthquake-prone area and that earthquakes will continue to occur," Lay said.

People should continue to be prepared, he said, but should not panic as have those in communities near the New Madrid Fault, where a scientist has predicted a major earthquake for this weekend based on unusual tidal action around the world.

the ground motion is 10 times greater.

Such a quake, although smaller than last year's temblor, could cause considerable damage, and scientists generally agree that the San Francisco Bay area remains at high-risk for a quake.

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Quake

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The Loma Prieta quake killed 67 people and caused an estimated \$7 billion in damage. A portion of double-decked freeway collapsed in Oakland, killing dozens, while Watsonville, Santa Cruz and the Marina district of San Francisco suffered extensive damage.

"There are some fundamental things about how earthquakes work that we don't understand, and we'd be fooling ourselves, and other people, to say we do," said Thomas Heaton, a USGS seismologist in Pasadena.

Scientists have studied the movement of the San Andreas Fault in the 1989 quake and the San Francisco earthquake of 1906. In the typical temblor, the motion is horizontal, with land west of the fault lurching northward and land east of the fault moving south.

But some of the motion was vertical in the 1989 quake, prompting some to conclude that the quakes

were probably not on the same trace of the San Andreas Fault system.

If correct, "We should not dismiss the potential for a future earthquake on the main trace of the San Andreas," wrote geophysicists Paul Segall of Stanford University and Michael Lisowski of USGS in Science. "The present earthquake hazard in the Santa Cruz Mountains is not negligible."

Others disagree. "The details of whether this crack or that crack ... slipped could not matter less," said USGS seismologist Allan Lindh. "It's energy stored in rocks that causes earthquakes. The rock has moved, and that energy is gone."

But Segall thinks the Loma Prieta quake may have sped up the likelihood of another quake by shifting stress into the top part of the fault.

"It seems almost unavoidable," he said. "I don't see, theoretically, how that could not happen."