

Baja Earthquake puts strain on Los Angeles

Rick Lovett, Nature.com, 12-17-10

The magnitude 7.2 earthquake that rocked desert communities in Baja, Mexico on 4 April 2010 appears to have transferred strain onto southern California faults, raising the risk of a "Big One" in the Los Angeles Basin, scientists said yesterday at a meeting of the American Geophysical Union in San Francisco, California.

The increased threat assessment was made possible by extremely accurate terrain aerial mapping with synthetic aperture radar conducted by a team from NASA's Jet Propulsion Laboratory just days after the earthquake. Because a baseline map of the same region had been made only months before, it was possible to compare the two and spot surface motions as small as a few millimeters, not only immediately after the earthquake, but also in following weeks.

What the scientists saw was that strain propagated north, onto the Ellsinore Fault, which leads into Los Angeles, and the San Jacinto Fault, which threatens the eastern part of the Los Angeles Basin near San Bernardino.

By mid-summer, the strain had quit advancing, but that doesn't mean the long-term threat has abated. "We know [the Baja quake] has increased the stress on the Ellsinore and San Jacinto Faults," said Eric Fielding, a geophysicist NASA's Jet Propulsion Laboratory (JPL), Pasadena, California. "We don't know if that increase is enough to cause the faults to have an earthquake in the near future, but it has definitely increased the stress."

Jay Parker, a JPL software engineer who works with the program agrees. "This is a ripe fault system in the sense that there are large sections that haven't had an earthquake in 100 years or more," he said. But hopefully, he adds, the same techniques will allow scientists to continue gathering data, increasing their knowledge of how these faults are building up strain.

If so, added John Fletcher, a geology professor at the Center for Scientific Research and Higher Education, Ensenada, Mexico, they might even make earthquake prediction a realistic possibility.