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Southern California Long Overdue for Massive Quake on San Andreas Fault

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A recent study[1], conducted by researchers from UC Irvine and Arizona State University, concludes that Southern California is long overdue for a major earthquake along the San Andreas Fault.

The San Andreas Fault is situated north-south in California, running from the Salton Sea (just south of Palm Springs) all the way up to just offshore near Mendocino. The entire fault is 810 miles long and is divided into three distinct segments: North, Central and South.

The north segment runs from Hollister, through the Santa Cruz Mountains (epicenter of 1989 Loma Prieta Quake), then up the peninsula (tracking Highway 35 west of Highway 280), then offshore north of Pacifica, up to its termination point at Mendocino Triple Junction - a geologic triple junction where the San Andreas Fault meets the Mendocino Fault and the Cascadia subduction zone separating three tectonic plates: the Pacific Plate the North American Plate and the Gorda Plate.

The central segment runs from Parkfied (located between Highways 101 and 5, just south of Coalinga), up to Hollister. This segment continuously "creeps" which means the fault slips slowly without causing earthquakes but constantly releases stress on the fault.

[1] *Lin, R. 2010, 'Study shakes up scientists' view of San Andreas earthquake risk', Los Angeles Times*

The San Andreas's southern segment is 340 miles long and runs from the Salton Sea north to Parkfield. This section for many years was thought to have an earthquake recurrence interval of 140-160 years. The recent study says that the recurrence interval is actually closer to 88 years, on average. To reach this new conclusion, researchers dug trenches and used carbon dating to find signs of earth movement. Their findings showed signs of earthquakes dating back to the 15th century concluding that past evaluations of this fault segment significantly underestimated the number of major earthquakes having occurred.

The last major earthquake on this southern segment occurred in 1857 and if we apply the newly determined 88-year recurrence interval, we are about 65 years overdue for a major quake. The 1857 quake, with an estimated magnitude of 7.9, is known as the Fort Tejon quake. It actually started closer to Parkfield and barreled 200 miles south on the San Andreas, turning east and terminating in San Bernadino County near what is now the 15 freeway. This quake was so powerful that soil liquefied causing trees as far away as Stockton to sink. The shaking lasted 1 to 3 minutes.

The most disturbing conclusion from this new study is that the entire 340-mile southern segment of the San Andreas Fault could rupture resulting in an 8.1 magnitude quake, causing potential damage from Monterey County down to Imperial County (and many points in between). The message here is not one of fear and denial, but instead one of preparation and readiness. Find your flashlights, buy some new batteries and dust off that box in your garage and make sure your earthquake supplies are current. For more information on earthquake preparedness visit www.usgs.gov or click on the active links below.

Preparedness FAQs
What to do before an earthquake
Seven Steps to Earthquake Safety