

Earthquake Information on the Web

After an earthquake, knowing more about what just happened can reduce fears and help you understand what to expect next. Online earthquake information products include:

Location and magnitude of recent earthquakes

Within 1 to 2 minutes of an earthquake, its location and magnitude are available at several Web sites, including <http://earthquake.usgs.gov/> and <http://quake.usgs.gov/recenteqs/latest.htm>.

“ShakeMap”

Within 5 to 10 minutes of most felt earthquakes (magnitude 3.5 and greater) in the Bay Area, a “Shake-Map” is posted on the Web. This map shows the range of shaking intensities across a region. Every quake has only a single magnitude, but it produces a range of shaking intensity values over the area in which it is felt.

ShakeMaps use data from seismic instruments to provide a rapid picture of where the strongest shaking occurred. These maps help to identify areas where a quake’s impact is greatest and are used by emergency managers to speed disaster response. ShakeMaps are available at <http://www.cisn.org/shakemap.html> or <http://earthquake.usgs.gov/shakemap/>.

“Did You Feel It?”—Tell us what you felt!

Personal experiences of the effects of an earthquake are very valuable to scientists. When you have felt a quake, please report your observations by using a quick survey found on the U.S. Geological Survey “Did You Feel It?” Web site at <http://pasadena.wr.usgs.gov/shake/ca/>.

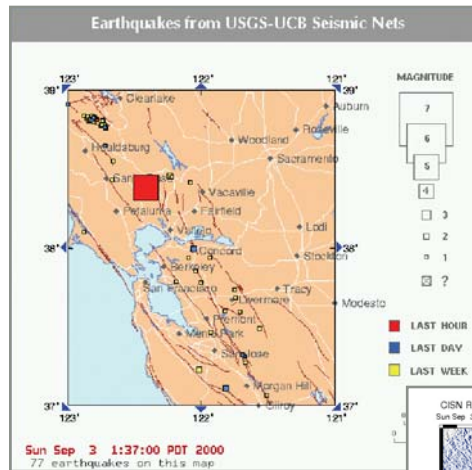
When you fill out this online survey, your observations of actual damage and shaking are combined with those of thousands of other people. The quake’s shaking intensities, derived from these observations, are displayed by ZIP code on a “Community Internet Intensity Map.”

Community Internet Intensity Map (“Did You Feel It?”) for the 2000 magnitude 5.2 Yountville (Napa) earthquake. More than 7,700 people reported their observations on this quake online.▶

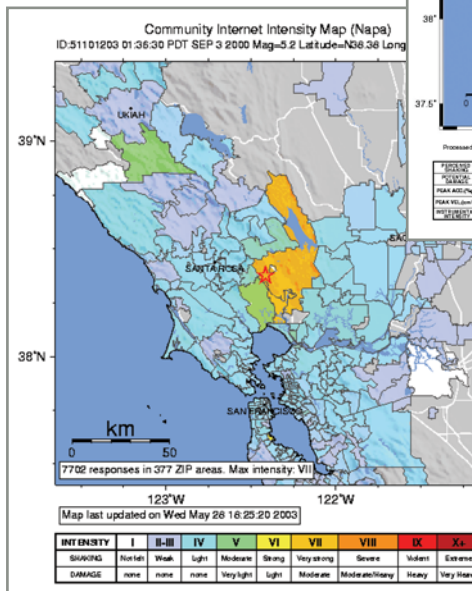
Who monitors California’s earthquakes?

Earthquake monitoring for California is done by the California Integrated Seismic Network (CISN), a partnership among the U.S. Geological Survey (USGS), University of California Berkeley, Caltech, the California Geological Survey, and the Governor’s Office of Emergency Services. CISN is part of a USGS national seismic-monitoring program called the Advanced National Seismic System (ANSS).

For more information go to:
<http://www.cisn.org/>
<http://www.anss.org/>



Map of recent earthquakes in the San Francisco Bay region, just after the September 3, 2000 magnitude 5.2 Yountville (Napa) earthquake.



“ShakeMap” for the 2000 magnitude 5.2 Yountville (Napa) earthquake. The strongest shaking was not centered on the quake, but to the south in the soft soils of the Napa River Valley.



STEP 7—When Safe, Continue to Follow Your Disaster-Preparedness Plan

Once you have met your and your family's immediate needs after the next strong Bay Area earthquake, continue to follow your disaster-preparedness plan (see Step 2, page 22).

The first days after the earthquake...

In the days following a damaging quake, pay special attention to the following:

Safety first

- Do not reenter your home until you know it is safe.
- Be sure there are no gas leaks at your home before using open flames (lighters, matches, candles, or grills) or operating any electrical or mechanical device that could create a spark (light switches, generators, chain saws, or motor vehicles).
- Check for chemical spills, faulty electrical wiring, and broken water lines. Water in contact with faulty wiring is a shock hazard.
- Unplug broken or toppled light fixtures or appliances. These could start fires when electricity is restored.
- Never use the following indoors: camp stoves, kerosene or gas lanterns or heaters, gas or charcoal grills, or gas generators, as these can release deadly carbon monoxide gas or be a fire hazard in aftershocks.

Be in communication

- **Turn on your portable or car radio and listen for information and safety advisories.**
- Place all phones back on their cradles.
- Call your out-of-area contact, tell them your status, and then stay off the phone—emergency responders need the phone lines for life-saving communications.
- Check on your neighbors.

Check your food and water supplies

- If power is off, plan meals so as to use up refrigerated and frozen foods first. If you keep the door closed, food in your freezer may be good for a couple of days.
- If your water is off, you can drink from water heaters, melted ice cubes, or canned vegetables. Avoid drinking the water from swimming pools or hot tubs; use it to fight fires.

The first weeks after the earthquake...

This is a time of transition. Although aftershocks may continue, you will now work toward getting your life, your home and family, and your routines back in order. Emotional care and recovery are just as important as healing physical injuries and rebuilding a home. Make sure your home is safe to occupy and not in danger of collapse in aftershocks. If you were able to remain in your home or return to it after a few days, you will have a variety of tasks to accomplish while reestablishing routines:

Tasks

- If your gas was turned off, you will need to arrange for the gas company to turn it back on.
- If the electricity went off and then came back on, check your appliances or electronic equipment for damage.
- If water lines broke, look for water damage.
- Locate or replace critical documents that may have been misplaced, damaged, or destroyed.
- Contact your insurance agent or company right away to begin your claims process.
- Contact the Federal Emergency Management Agency (FEMA) to find out about financial assistance (see page 17).
- If you cannot live at your home, set up an alternative mailing address with the post office.

If you cannot stay in your home...

The American Red Cross (ARC) offers immediate emergency assistance with housing needs. ARC also supports shelter operations prior to a Presidential declaration of a Federal disaster.

Once a Presidential declaration has been issued, the Federal Emergency Management Agency (FEMA) may activate the "Assistance for Individuals and Households Program." This program includes:

- Home-repair cash grants; the maximum of Federal grant available is \$26,200.
- Housing Assistance in the form of reimbursement for short-term lodging expenses at a hotel or motel.
- Rental assistance for as long as 18 months in the form of cash payment for a temporary rental unit or a manufactured home.
- If no other housing is available, FEMA may provide mobile homes or other temporary housing.



FEMA mobile homes being set up in Port Charlotte, Florida, to provide temporary housing for victims of Hurricane Charley (August 2004). Nearly a year after the storm, these trailers were still being used. (FEMA photo.)

Glossary

Aftershock. Earthquakes that follow the largest shock of an earthquake sequence. They are smaller than the “mainshock” and can occur over a period of weeks, months, or years. In general, the larger the mainshock, the larger and more numerous the aftershocks and the longer they will continue.

Creep. Slow, more or less continuous movement occurring on some faults. Creep does not cause shaking.

Earthquake. Ground shaking caused by a sudden movement on a fault or by volcanic disturbance.

Epicenter. The point on the Earth’s surface above the point at depth in the Earth’s crust where an earthquake begins.

Fault. A fracture or crack along which two blocks of rock slide past one another. This movement may occur rapidly, in the form of an earthquake, or slowly, in the form of creep.

Foreshock. An earthquake that precedes the largest quake (“mainshock”) of an earthquake sequence. Foreshocks may occur seconds to weeks before the mainshock.

Intensity. A measure of ground shaking describing the local severity of an earthquake in terms of its effects on the Earth’s surface and on humans and their structures. The Modified Mercalli Intensity (MMI) scale, which uses Roman numerals, is one way scientists measure intensity.

Landslide. A mass movement of soil, mud, and (or) rock down a slope.

Liquefaction. The process that occurs when an earthquake shakes wet sandy soil until it behaves like a liquid, allowing sand to “boil up” to the surface, buildings to sink, or sloping ground to move.

Magnitude (M). A number that represents the size of an earthquake source, as determined from seismographic observations. The original earthquake magnitude scale was the Richter or “local” scale (M_L), defined by Charles Richter in 1935, but it has limited range and applicability. Modern magnitude scales are based on the area of fault rupture times the amount of slip (seismic moment). The moment magnitude (M_W) is the preferred magnitude scale, as it provides the most reliable estimate of the size of the largest quakes. For smaller quakes, M_L and M_W values are nearly the same. An increase of one unit of moment magnitude (for example, from 4.6 to 5.6) corresponds approximately to a 31.6-fold increase in energy released [by definition, a two-unit increase in magnitude—for example, from 4.7 to 6.7—represents an increase in energy released of 1,000 times (31.6×31.6)]. Quakes below magnitude 2.5 are not generally felt by humans.

Plate tectonics. The scientific theory that the Earth’s outer shell is composed of several large, thin, relatively strong “plates” that move relative to one another. Movements on the faults that define plate boundaries produce most earthquakes.

Retrofit. Strengthening an existing structure to improve its resistance to the effects of earthquakes.

Rupture zone. The area of the Earth through which fault movement occurred during an earthquake. For large quakes, the section of the fault that ruptured may be several hundred miles in length. Ruptures may or may not extend to the ground surface.

Seismic hazard. The potential for damaging effects caused by earthquakes. The level of hazard depends on the magnitude of likely quakes, the distance from the fault that could cause quakes, and the type of ground materials at a site.

Seismic risk. The chance of injury, damage, or loss resulting from seismic hazards. There is no risk, even in a region of high seismic hazard, if there are no people or property that could be injured or damaged by a quake.

Soft story. A building story that has significantly less stiffness than the story above. Some buildings with parking at ground level (and thus fewer walls or columns) or an otherwise open ground story have this condition. The term is sometimes also applied to a story that has less strength than the one above, a condition that is more precisely termed a “weak story.”

Strike-slip fault. A generally vertical fault along which the two sides move horizontally past each other. The most famous example is California’s San Andreas Fault.

Subduction zone. A boundary along which one plate of the Earth’s outer shell descends (subducts) at an angle beneath another. A subduction zone is usually marked by a deep trench on the sea floor. An example is the Cascadia Subduction Zone offshore of Washington, Oregon, and northern California. Most tsunamis are generated by subduction-zone earthquakes.

Tsunami. A sea wave of local or distant origin that results from large sea-floor displacements associated with powerful earthquakes, major submarine landslides, or exploding volcanic islands.