

Mammoth Lakes earthquake swarm tied to water pressure, tectonic stress

Veronica Rocha, Los Angeles Times, 9-28-14

The more than 600 earthquakes that have struck the Mammoth Lakes region over the last 24 hours are an indication of tectonic, not volcanic, stress, an expert said Friday.

At least 109 of the earthquakes were magnitude 2.0 or greater, with smaller quakes making up the bulk of the activity, said David Shelly, a seismologist at the U.S. Geological Survey's Volcano Science Center. At least six, however, were greater than magnitude 3.0.

We are not having any eruptions in California ... in the near future.- David Shelly, seismologist at USGS Volcano Science Center

The largest, a 3.8 temblor six miles from Mammoth Lakes, occurred at 9:21 p.m. Thursday.

The swarm of quakes, which began Thursday in the 20-by-10-mile Long Valley caldera east of the central Sierra Nevada Range, isn't uncommon for the region. About 200 small quakes -- the largest a magnitude 2.7 -- shook in Long Valley Caldera in July.

Still, Shelly said, "this one is a bit more energetic than what we have seen in a while."

The earthquakes may have been triggered by water pressure from area hot springs shifting through the ground surface, stressing tectonic plates. Scientists, Shelly said, are closely watching the earthquake swarm, but don't believe it's connected to any magmatic activity.

Shelly said seismic analysts plan to review the swarm and update locations and magnitudes of the quakes, but the activity is not nearly on the size and scale of what was measured in the 1980s and 1990s.

In the 1980s, the area was hit with a swarm of multiple 6.0-magnitude temblors, but they were overshadowed by the Mount St. Helens eruption in Washington, Shelly said.

A decade later, in 1997, the area was rocked with another series of mostly 4.9-magnitude quakes over the course of several months.

The Long Valley caldera is one of the most seismically active regions in the state, and is part of a quiet network of 17 volcanoes throughout California. Many of the older volcanoes haven't been active for thousands of years.

The last time the Long Valley caldera erupted was 50,000 years ago.

Some volcanoes, like the Clear Lake Volcanic Field just 90 miles north of San Francisco, and Salton Buttes, which lies within the Salton Sea Geothermal Field 90 miles east of Palm Springs, experience some seismic activity, but nothing near the shaking in the Long Valley caldera.

"We are not having any eruptions in California ... in the near future," Shelly said.

Scientists rate a volcano's potential threat by assigning one of three different categories -- high to very high, moderate, or low to very low.

The USGS created the measurement to ensure hazardous volcanoes are monitored so scientists can better develop forecasts and warnings for residents.

The Long Valley caldera carries high to very high threat potential, likely because it rests near the community of Mammoth Lake.