

Recovery After the 2007 Pisco, Peru Earthquake

What Happened?

On August 15, 2007 the coastal area south of Lima, Peru was struck by a magnitude 8.0 earthquake at 6:40 p.m. local time. Strong ground shaking lasted for approximately 100 seconds, versus 20 seconds for the 1989 Loma Prieta earthquake. Coastal Peru is a known seismic area, resulting from the subduction of the Nazca plate between the South American continental plate.

One of the most spectacular results of the earthquake was widespread liquefaction, causing extensive damage to roads (including the Pan-American Highway), toppling of power poles, and breakage of water and sewer pipelines.

In addition, the earthquake triggered a tsunami which struck the coastline area 10-20 minutes after the earthquake. The height of the tsunami peaked at about seven meters south of the Paracas peninsula, and exceeded three meters in Pisco. The city of Paracas, just north of the Paracas peninsula, was spared, with the wave height only being about one meter. The local population did not self-evacuate, not understanding the risk of tsunami inundation, even though this same area had been impacted by a tsunami in 1974.

The earthquake resulted in the deaths of about 600 people, particularly in the main cathedral in Pisco and in adobe housing. The power substation for the area was largely undamaged, but many power poles were shaken down or toppled by liquefaction. The water and sewer lines were also extensively damaged. The sewage treatment plant was undamaged, but no sewage flowed to the plant due to the damaged pipes.

This issue paper summarizes a short 2-day visit to the Ica-Paracas-Pisco area in July 2008. The visit was brief and consisted of three taxi rides through impacted area and informal interviews with the three drivers, rather than formal interviews with government officials. It does not represent a statistical sampling of the cities or people in the area, but rather a review of the current status of the rebuilding and recovery effort.

Common Themes...

Even though this disaster occurred in Peru, not California, the issues are similar to those of both recent California earthquakes and following Hurricane Katrina. As with these other disasters, people focused on surviving the first hours and days following the earthquake. Search and rescue crews were out in force while utilities and local governments focused on assessing the damage. People were patient. But as days turned to weeks and months, people have become increasingly frustrated by the slow pace of recovery.

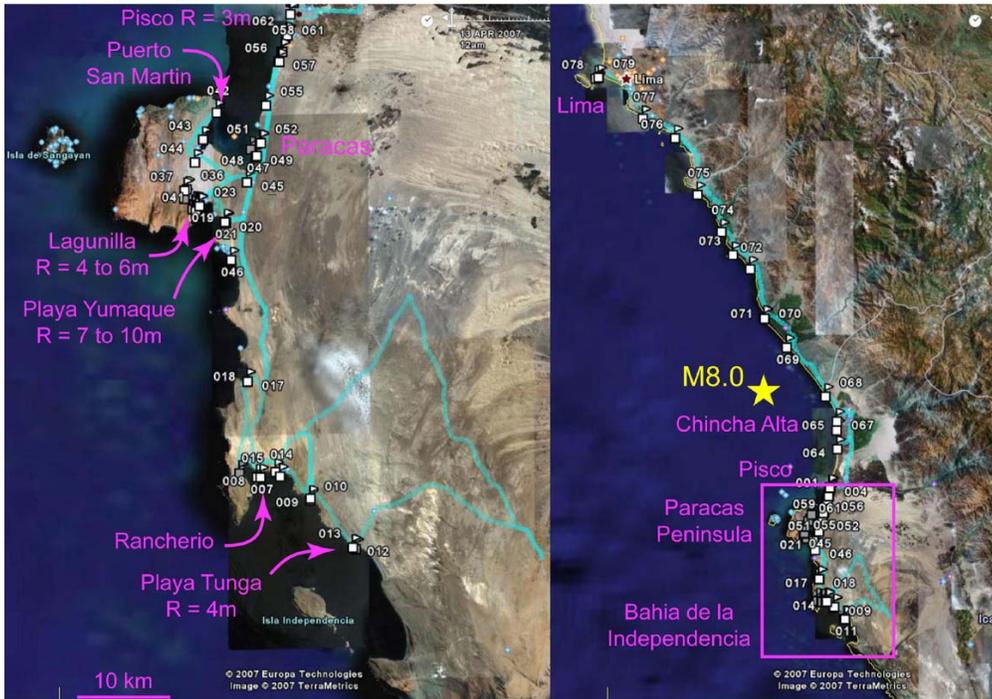


Debris removal - Cathedral in Pisco a year after earthquake

For example, the Cathedral of San Clemente located at the main Plaza de Armas in downtown Pisco was the scene of 148 deaths, many as a result of people racing into the cathedral believing it to be safer than the streets when the shaking started. Finally, while the site is now being cleared, it has not yet been decided if the church will be rebuilt. A resident complained that "We are at the mercy of the Pope in Rome and we don't know what will be done. We need money."

The taxi driver sounded like residents of Santa Cruz after Loma Prieta. When asked about which buildings were being repaired first, he said. "Everything is based on who has the money to rebuild. You can tell the banks have money because they have been the first to rebuild."

The people also want safer communities and more education on hazards. For example, they knew that their adobe homes were unsafe and ran outside to avoid falling walls. They did not understand that the Pisco Cathedral was not safe or that there was a tsunami issue, however.



Detailed map of Paracas peninsula on left and overview map of area showing location of Lima on right. Maps show tsunami survey locations, generalized runup heights, and earthquake epicenter location.

Tsunami heights provided in meters; one meter = 3.3 feet.

(Courtesy of the Earthquake Engineering Research Institute reconnaissance report on the earthquake, Sept. 2007, available on web at http://www.eeri.org/lfe/pdf/peru_pisco_eeri_preliminary_reconnaissance.pdf

Housing Recovery Status...

Due to lack of electricity and numerous aftershocks, the people living in the impacted area were terrified and did not return to their homes for about three months after the quake. Numerous small wooden temporary housing units (the Peruvian equivalent of FEMA trailers) are still in use throughout Pisco.



Rebuilding Requirements...

The Paracas peninsula impacted by the tsunami following this earthquake and one in 1976 has minimal development because it is a national park. However, an area of restaurants where four of seven people working were killed is being rebuilt with no obvious structural changes. The workers in the area were enthusiastic about some sort of siren or other device to warn of future tsunamis.

Similarly, there are no obvious differences in the type of construction used in rebuilding.

The Pisco City Hall is vacant due to extensive damage. Yet the structure remains standing, and a resident taxi driver did not think that any decision had been made about repair or rebuilding.



Infrastructure Recovery Status...

Pisco is currently rebuilding the infrastructure of the City. The electricity system has been functioning for about nine months. The current priority is the replacement of the damaged pipeline network, causing major traffic disruptions as the streets are torn up and water and sewer pipes replaced.



CREDITS – Prepared by Jeanne Perkins.
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