

## **Not My Fault: When earthquakes and COVID collide**

Lori Dengler/For the Times-Standard

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Another deadly earthquake. On Monday at 12:52 PM (Sichuan time), a magnitude 6.6 earthquake struck China's Sichuan Province on the eastern side of the Tibetan Plateau. As I write, the death toll stands at 80 and over 400 injuries have been reported. Thirty people are still missing. It currently ranks as the second deadliest quake of 2022, behind the June M6.0 earthquake in Eastern Afghanistan that claimed nearly 1200 lives.

Sichuan Province is located in Southwest China and includes the fertile Sichuan Basin and the easternmost area of the Tibetan Plateau. Earthquakes occur throughout Central China but many of the deadliest have been concentrated along faults where the Plateau and Basin meet. The faulting is caused by the slow collision of the Indian subcontinent and the Eurasian plate that has produced both the Plateau uplift and the highest mountain range on earth.

Deadly earthquakes are no surprise in Sichuan Province. According to the USGS catalog, nearly 80 earthquakes have struck the Province in the past fifty years with shaking strength large enough to cause damage. The May 2008 M7.9 Sichuan earthquake killed over 87,000 people and is considered the 14th deadliest earthquake of all time.

Sichuan Province is home to more than 83 million people. It's largest city and capitol Chengdu (pop. 21.2 million) was centered about 125 miles away from the M6.6 epicenter. The USGS estimates that the earthquake was felt by at least 34 million people. Luding County in the epicentral area bore the brunt of the shaking where over 13,000 structures were damaged. A number of electrical substations were damaged, and power remains out in many affected areas.

Shaking wasn't the only source of damage. The earthquake triggered numerous landslides in the steep terrain that marks the interface between the Tibetan Plateau and the Sichuan Basin. Landslides buried or removed roads hampering access by relief workers. Landslides also

temporarily dammed a river, producing a lake. Residents downstream were ordered to evacuate.

The impacts and level of damage brought no surprises to people who study earthquake impacts in this part of the world. Relatively few buildings in Luding County are designed to withstand earthquake damage. Many are built of stone that topple at shaking levels far weaker than what would damage an engineered structure. I've seen no reports of major damage to well-designed structures.

Monday's earthquake was also an opportunity for the Chinese earthquake shaking alert system to go into action. Like many countries in earthquake zones, the Chinese have been working on a system to alert residents a few seconds before the strong shaking arrives. The system is based on a network of seismographs throughout the region that can detect the initial stages of earthquake rupture. On Monday, the alert was issued about four seconds after the earthquake. This gave residents of the city of Ya'an fifty miles from the epicenter a 20-second heads up. Chengdu received a 50-second warning. Warnings were disseminated over television, mobile phones, and from loudspeakers.

But here's where colliding plates weren't the only forces in play on September 5th. A COVID lockdown was imposed in Chengdu on September 1 after positive cases were detected. During lockdowns, residents are not allowed to leave their homes. Many received the earthquake alert but were not allowed to leave. There have been many reports of armed security personnel preventing people from leaving buildings (<https://www.smh.com.au/world/asia/covid-upstairs-earthquake-downstairs-china-s-rescue-efforts-hindered-by-lockdowns-20220908-p5bgmy.html>).

Rescue personnel entering the epicentral region in Luding County are required to get daily COVID tests and be approved by local authorities. They need another PCR test to get into the controlled area. Only local responders from Sichuan Province are allowed on search and rescue teams; no outside responders can enter.

Only a few hundred positive cases have been detected in Chengdu, about the same number as found in Humboldt County during the past week. But Chinese authorities are adhering to their no-COVID policy and the lockdown in Chengdu has been extended indefinitely.

COVID-19 has complicated the response and relief environment. The Tonga volcanic explosion and tsunami last January brought not only ash and waves to the Island,

but also its first COVID outbreak. Despite attempts to prevent virus transmission by relief workers, took off in the weeks afterwards, hitting 15,000 this week. Twelve COVID deaths have been reported on the Islands. Only three people died, all due to the tsunami, from the event itself.

Natural disasters aren't the only events impacted by COVID. The World Health Organization's COVID data base for Ukraine shows a significant increase in both the number of cases and deaths since the Russian invasion in February. Studies of the war impact on COVID identify a number of reasons including increased contact with infected individuals, inability to distribute vaccines, and the lowering of prevention priorities in a war zone <https://reliefweb.int/report/ukraine/impact-war-dynamics-covid-19-ukraine>.

The impacts of all disasters are the result of cumulative effects – the event itself, the resilience of the built community, culture, and extenuating circumstances such as war and pandemic. It's a challenging job for emergency professionals who have to juggle a constantly changing environment. The big lesson – never become all consumed by one event because the next one can sneak around and hit you from behind.

Note: there's still time to sign up for my OLLI presentation on the Humboldt Bay Nuclear Power Plant - Monday September 19. Register at <https://extended.humboldt.edu/olli/events/brown-bag-lunch-presentations>.

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Lori Dengler is an emeritus professor of geology at Cal Poly Humboldt and an expert in tsunami and earthquake hazards. The opinions expressed are hers and not the Times-Standard's. All Not My Fault columns are archived online at <https://kamome.humboldt.edu/resources> and may be reused for educational purposes. Leave a message at (707) 826-6019 or email [rctwg@humboldt.edu](mailto:rctwg@humboldt.edu) for questions and comments about this column, or to request a free copy of the North Coast preparedness magazine "Living on Shaky Ground."