

Seismologists: Earthquake warning systems need better balance of technical and predictive capabilities

November 22 2019, by Bob Yirka



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Two seismologists, one with the U.S. Geological Survey, the other with Instituto de Geofísica, Universidad Nacional Autónoma de México, have published a Policy Forum piece in the journal *Science* discussing the tradeoffs that come with earthquake warning systems. In their paper, Elizabeth Cochran and Allen Husker address the decision by officials in Los Angeles recently to lower the warning level for their earthquake app and possible repercussions of doing so.

Anybody who lives in an area that is prone to earthquakes would most assuredly welcome an advanced [warning](#) system for impending tremors—early warnings would allow them to take action to protect themselves. Unfortunately, such warning systems are still in their infancy. Despite many years of hard work, it is still impossible to determine when a quake will occur or how bad it will be during its initial stages. Such warning systems are based on sensors that detect the signs of an impending quake, or react to quakes that are already in progress, analyze the data available and then make a decision regarding whether the quake will be bad enough to warrant an alert. And there, as Cochran and Husker note, is the real issue. What level of shaking warrants an alert?

Recently, officials in Los Angeles revised the alert level for the earthquake warning system for the greater L.A. area. This came in response to complaints by locals who did not receive an alert during the recent Ridgecrest [earthquake](#), which was so far away that residents in Los Angeles barely felt it. The alert system, which sends alerts to smartphones, worked as designed, the problem was in public

expectations of the alert system. Officials with the city assumed that the only time an alert should be sent is when there is imminent danger—locals, on the other hand, felt they should be notified if a serious quake is happening in the area regardless of threat level.

The problem with issuing alerts for minor or distant events is, of course, that people do not know when to continue with normal activities or take cover under a desk. There is also the fear that people will begin ignoring the alerts altogether if they occur on a regular basis in the absence of a localized [quake](#)—the phenomenon has been found to occur with tornado alerts in parts of the country that get a lot of threatening weather. Cochran and Husker suggest the answer is for those who build and maintain alert systems to balance technical capabilities with societal readiness and impacts—and to add functionality, such as follow-up messaging, so that those who get alerts know what is going on.

More information: "How low should we go when warning for earthquakes?" by E.S. Cochran , *Science* (2019).

[science.sciencemag.org/cgi/doi ... 1126/science.aaz6601](https://science.sciencemag.org/cgi/doi/10.1126/science.aaz6601)

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Citation: Seismologists: Earthquake warning systems need better balance of technical and predictive capabilities (2019, November 22) retrieved 10 April 2024 from <https://phys.org/news/2019-11-seismologists-earthquake-technical-capabilities.html>

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