

## What's new and what's next in aftershock forecasting.

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The chaos caused by a major earthquake does not end when the shaking stops. Search and rescue, damage assessment, and lifeline repairs all need to be carried out under the constant threat of damaging aftershocks. In some cases, aftershocks can be even more destructive than the initial event, as was the case in Christchurch, New Zealand. While it may never be possible to predict the exact time, place, and magnitude of an impending earthquake, it is possible to make probabilistic assessments of aftershock hazard based on past behavior and the specifics of an ongoing sequence. Forecasts, and in particular forecast maps, can provide situational awareness, increase public resilience, and help decision makers to prioritize response and recovery operations. The public has increasingly come to expect such information, and information vacuums are likely to be filled by non-authoritative sources.

The USGS is developing several lines of aftershock forecasting products with the goal of providing rapid quantitative aftershock information to emergency responders, lifeline operators, and the general public in the wake of moderate and large earthquakes. These products include automatic aftershock forecasts following M5 and larger earthquakes in the United States, as well as fault-specific forecasts following selected earthquakes in California. The USGS is also developing stand-alone software tools to streamline the process of analyzing and forecasting aftershock sequences within the Epidemic-Type Aftershock Sequence model. This talk will focus on the science of producing reliable aftershock forecasts, and highlight recent efforts to implement these methods at the USGS.

