

# EDITORS' CHOICE

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Distribution of triggered earthquakes.

## EARTH SCIENCE

### Triggering Earthquakes

All earthquakes are associated with aftershocks, which are usually smaller shocks produced within 100 kilometers or so of the original epicenter that decay with time. But how often does a large earthquake trigger another large earthquake possibly as much as several years later? This question is critical for hazard assessment because it is these large earthquakes (greater than 7.0 on the Richter scale) that produce the most damage.

Parsons analyzed subsequent earthquakes that occurred within  $2^\circ$  of 117 large earthquakes that have occurred since 1977 and could have acted as triggers. These earthquakes may have triggered more than 100 later earthquakes with magnitudes  $>6.5$ , including 13 earthquakes with magnitudes larger than that of the triggering earthquake (three with magnitudes  $>8.0$ ). What's more, the occurrence of triggered earthquakes globally followed a function known as Omori's law, in which the distribution of triggered earthquakes decreased by the reciprocal of time after the triggering earthquake, and the decay time was 7 to 11 years. This function can now be used to assess earthquake hazards on faults that have experienced what might potentially represent a triggering earthquake. -- BH

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