



Seismological Society of America

201 Plaza Professional Building
El Cerrito, California 94530
(510) 524-5474 • Fax (510) 525-7204

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Media contact: Nan Broadbent

E-mail: press@seismosoc.org; phone: 408-431-9885

**Karen Felzer honored with Seismological Society of America's
Richter Early Career Award**

USGS researcher recognized for groundbreaking seismological research

In her relatively young career, Karen Felzer has produced transformative and sometimes controversial research by utilizing statistical approaches to tackle tough seismological questions. Her often-cited work has challenged previously held theories and reshaped the way earthquake physics is understood.

For her work, the Seismological Society of America will honor Felzer with its Charles F. Richter Early Career Award, which honors outstanding contributions to the goals of the Society by a member early in her or his career.

While completing her doctoral work at Harvard, Felzer produced three publications that focused on a statistical approach to earthquake clustering and provided a clear view of how earthquake sequences work. She confirmed earlier work by others that foreshock-mainshock pairs are simply cases where an aftershock is larger than the initial event. This led her to conclude that robust calculations can be made of the probability that any given earthquake will be followed by a larger earthquake within a given time and distance, via the use of empirical aftershock statistics.

During her post-doc work, Felzer found that studies of aftershock rates are often confounded by the inclusion of background events, which is a particular problem as one looks for distant aftershocks.

Felzer has also been a key contributor to the Working Group on California Earthquake Probabilities, which developed the first uniform, earthquake rupture forecast models for the state of California and established an internationally-recognized, new rupture forecast for earthquake hazards assessment. This rupture forecast was used for the newest earthquake hazards assessments and will be used to update statewide insurance rates. Felzer created a uniform, long-term seismicity catalog and then used this catalog to estimate expected seismicity rates. That proved difficult because earthquake hazard assessments typically forecast earthquake rates without aftershocks. Felzer developed new techniques to estimate earthquake rates, including uncertainties, and provided the key observational test of the statewide rupture forecast models.



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In addition to her research work, Felzer, who is now on staff as a research scientist at U.S. Geological Survey in Pasadena, has actively educated the public about the dangers posed by earthquakes by her involvement with the Southern California ShakeOut, which in 2008 was the largest earthquake preparedness activity in U.S. history. The drills developed for the project relied on aftershock scenarios that Felzer produced.

SSA is an international scientific society devoted to the advancement of seismology and its applications in understanding and mitigating earthquake hazards and in imaging the structure of the earth. Founded in 1906 in San Francisco, the Society now has members throughout the world representing a variety of technical interests: seismologists and other geophysicists, geologists, engineers, insurers, and policy-makers in preparedness and safety.

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