



Annemarie Baltay

U.S. Geological Survey

2026 SCEC Community Stress Drop Validation Workshop, Phase II

August 20, 2026
USGS Moffett Field



Focused WORKshop with specific goals

By the numbers:

~40 participants

11 students

11 posters

4 synthetic datasets

18 contributors of synthetic results

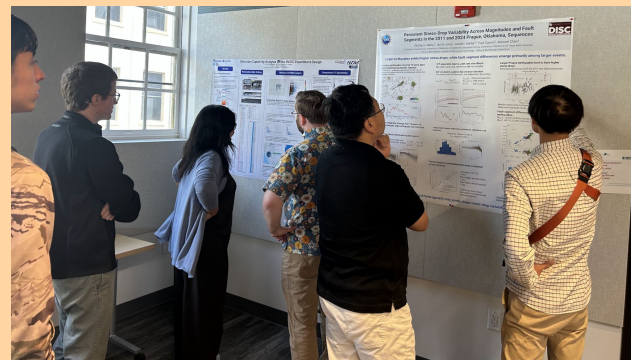
2026 SCEC Community Stress Drop Validation Workshop, Phase II



Motivation:

Phase I: Ridgecrest Community Comparison revealed large uncertainties dominated by ambiguity in separating source from path & site

Phase II: Work together to resolve methodological variability through use of synthetic data, new regional emphasis, and focus on site and magnitude quantification



Community building. Educating newcomers.
Seeking input from broader community.
Lots of discussion.

2026 SCEC Community Stress Drop Validation Workshop, Phase II

Session 1: How to Design Synthetic Experiments to verify Source Modeling

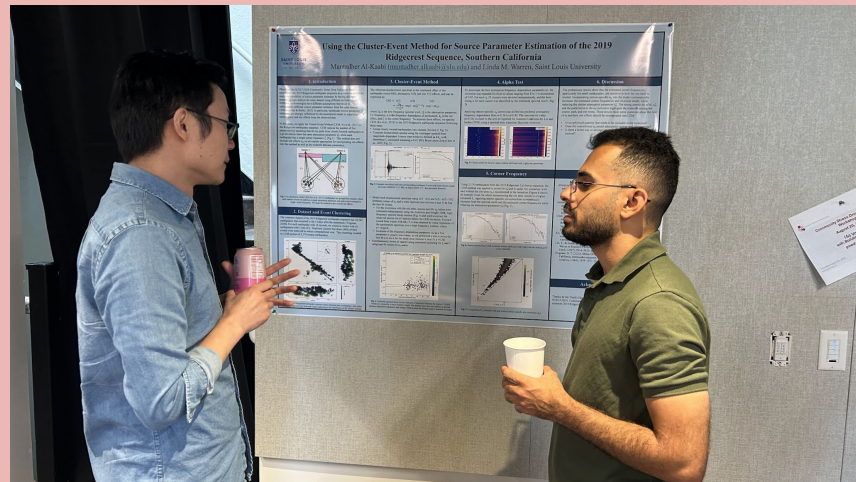
TAG Goal: Verification of methods with realistic simulated datasets which encompass real-world source, path, site variability and complexity in seismograms.

Workshop Goal: Assess results of preliminary simple comparison. Design directions for next synthetic experiments. Educate newcomers.

Session 2: New Bay Area empirical dataset

TAG Goal: Tune methods for isolation of source, path and site information on a new dataset in a well-studied region

Workshop Goal: Decide on extent of Bay Area dataset

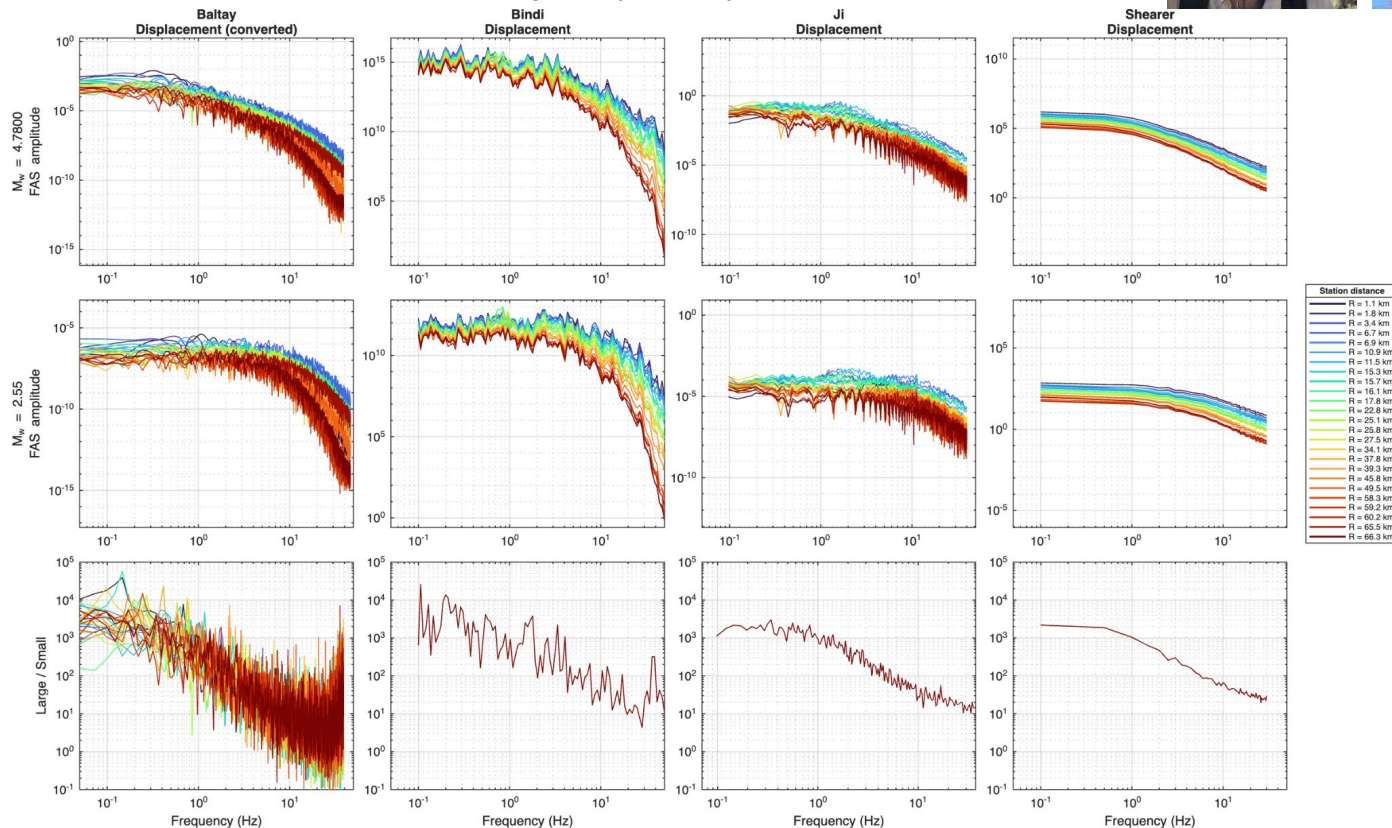




Preliminary Very Simple Experiment



Synthetic Spectra and Spectral Ratios

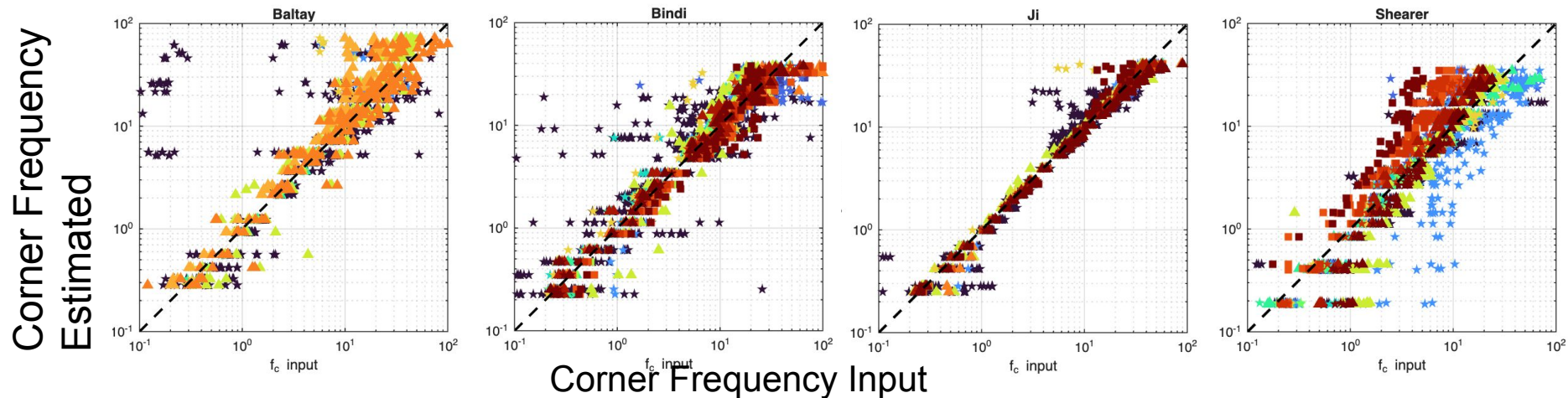


4 independently calculated datasets for same geometry using different point-source, attenuation and site models

Very simple - how well can we do?



18 Researchers submitted models of the synthetic spectra before the workshop



At the workshop we discussed the different results for different events, differently generated synthetics, & also variations on the methods

Then we discussed & planned the next rounds of synthetics.

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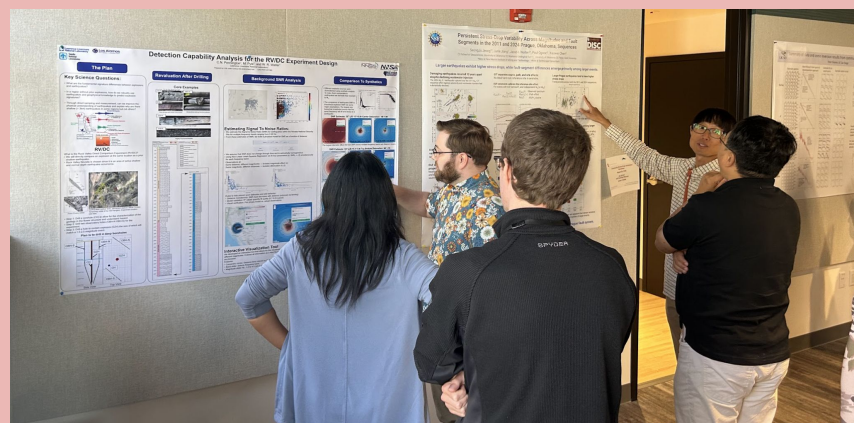
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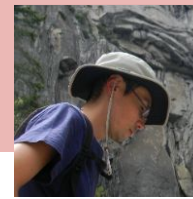
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Hayward-Berkeley and San Ramon region

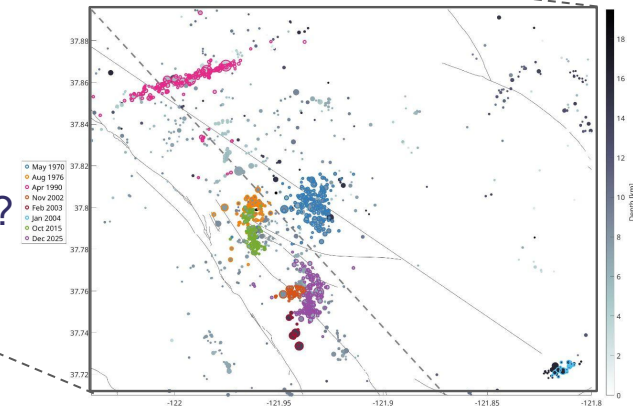
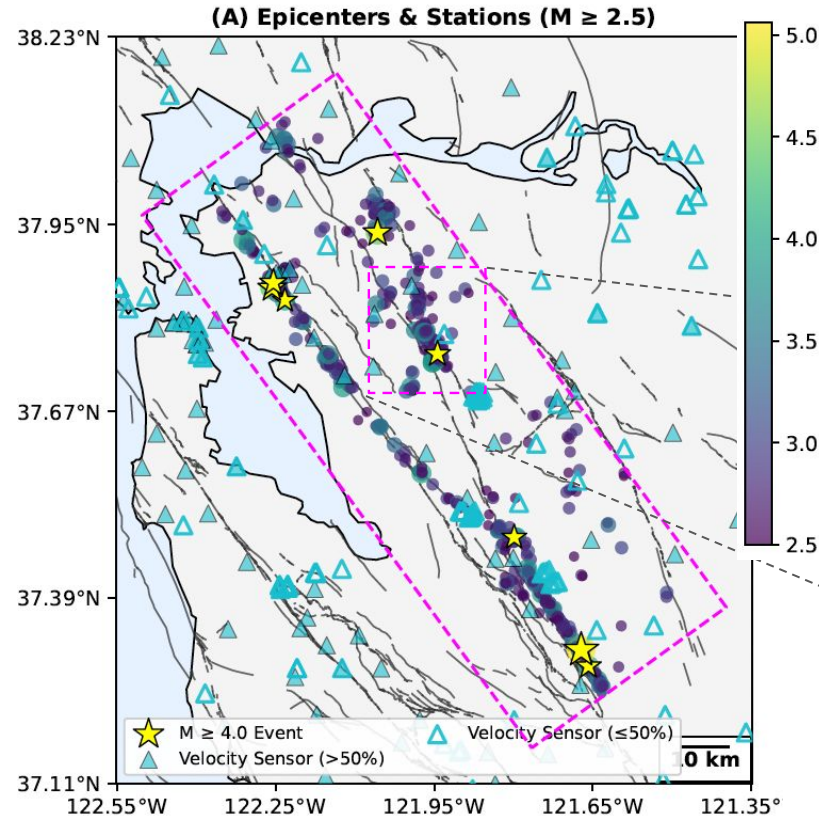


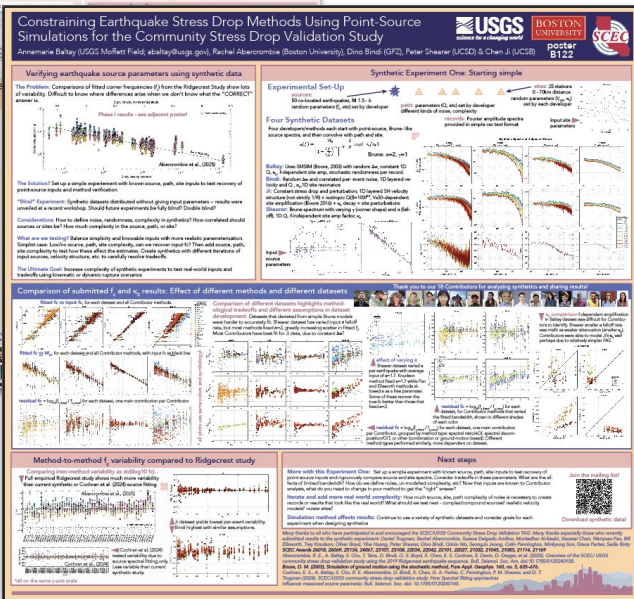
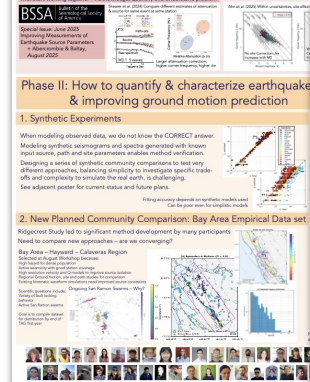
- Hayward and Calaveras Faults
- Excellent station coverage + borehole stations
- SF Bay 3D velocity model
- Many simulated events
- 570 M2.5+, 8 M4.0+, 1 M5.0+ earthquake
- Dense population/high risk
- Includes variety of fault locking behaviors

Includes San Ramon Swarms

What is triggering them?

Do the sources vary?





#118 The Community Stress Drop Validation Study

Rachel E. Abercrombie, Annemarie S.

#120 Constraining earthquake stress drop methods using point-source simulations for the Community Stress Drop Validation Study

#122 Using a Ground-Motion Modeling Framework to Fit Stress Drops for the SCEC Community Stress Drop Validation TAG Synthetic Exercise

Grace A. Parker