

SCEC Post-Earthquake Response Plan

**SCEC Annual Meeting
September 13, 2017**

Post-Earthquake Rapid Scientific Response

- SCEC collaborates with state and federal agencies with statutory responsibilities to respond to earthquakes.
- SCEC mission: Guide a more effective rapid scientific response
 - *Intellectual leadership* spanning the breadth of earthquake system science.
 - *Coordination* of the response of the academic science community.
 - *Communication* of knowledge to the world at large.



Earthquake Response: Science Questions

- **How does an earthquake sequence unfold, leading to nucleation of large aftershocks?**
- **How do the path of radiated seismic energy and site conditions affect strong ground motion?**
- **How variable is fault slip, and what is the nature of surface slip deficit?**
- **How are large stress changes dissipated around faults?**
- **What are the depth and time-dependent properties of fault damage and healing?**
- **What is the rheology of the fault zone, its lower crustal root, and the upper mantle?**

Earthquake Response: Coordination of Observations

- **Aftershock and geodetic monitoring:** Quick (~1 day) instrument deployment to capture fault slip, afterslip, and aftershocks.
- **Surface rupture mapping & imaging:** Rapidly document distribution of surface slip, assist planning and coordination of imaging (e.g. Lidar).
- **Post-seismic deformation observations:** Define rupture endpoints, identify afterslip, strategically deploy geodetic instrumentation.
- **Operational earthquake forecasting:** Telemetered aftershock data to capture focal mechanisms, ideally with M0 completeness.
- **Strong ground motion characterization:** Identify damage due to anomalous shaking and deploy instrumentation.
- **Fault-zone drilling:** Observe fault zone at depth within 1 to 2 years.

Response Portal

response.scec.org

- **Event-based forum for coordinating activities among SCEC scientists**
- **Low friction – easy to browse and share text, images, and files**
- **Use existing SCEC login to contribute**
- **Curated summaries of response activities and findings**

Comments

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initial aftershock locations by beroza

Field Response? by oskin

Field Response by weldon

Mexican Hwy 2 offset / I-8 sinkhole and other road closures by benthien

information by beroza

UNAM Contact by cochran

CICESE by oskin

Javier González-García by huynht

update by beroza

Contacting CICESE people by oskin

CISESE by beroza

response by minster

Revised M 7.2 strike-slip by hudnut

Strike-slip by beroza

USGS field response by oskin

Working on it. by hudnut

November Swarm by jmcguire

foreshocks by beroza

mechanism by beroza

Field Response Guidelines

- Gather essential surface rupture data quickly (~1 day). Amounts of slip and length of rupture need to be known as soon as possible.
- Document time that a field measurement is made (afterslip could be significant).
- Be aware of other facets of response: document anomalous damage, lifeline conditions, sites for instruments.
- Openly share data, share plans, combine resources to get better results for everyone.
- Communicate quickly [in real time if possible] to optimize instrument deployment, and better inform the public.
- Explore response.scec.org (post-event coordination) and californiaeqclearinghouse.org (post-event field data collection)