

# FINAL TECHNICAL REPORT

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## **Rapid Earthquake Data Integration: Collaborative Research between UC Berkeley and USGS Menlo Park**

### **Non-Technical Abstract**

In the minutes and hours following a major earthquake, disaster response planners must make critical decisions about the deployment of their emergency resources. The availability of accurate and detailed information about the location, size, and extent of strong-ground shaking will provide critical input into the formulation of a strategic response, minimizing both the loss of life and the economic impact. In northern California, the UC Berkeley Seismological Laboratory and the USGS Menlo Park collaborate to provide the timely and reliable earthquake information to the federal, state, and local governments, to public and private agencies, and to the general public. This joint earthquake notification system provides enhanced earthquake monitoring by building on the strengths of the Northern California Seismic Network, operated by the USGS Menlo Park, and the Berkeley Digital Seismic Network, operated by the UC Berkeley Seismological Laboratory.

Over the time period of this grant, the BSL has focused its efforts to expand the capability of the Rapid Earthquake Data Integration (REDI) System and enhance its reliability.

## **Rapid Earthquake Data Integration: Collaborative Research between UC Berkeley and USGS Menlo Park**

### **Abstract**

Rapid access to reliable information is critical for any emergency response effort. In the case of a major earthquake, the mobilization of local, state, and federal disaster operations can be greatly enhanced by dependable, near real-time estimates of location, magnitude, mechanism, and extent of strong-ground shaking. This information can be used to identify endangered communities, to evaluate the impact on lifelines, and to provide input for damage and loss estimation programs. Current applications of rapid earthquake information include the emergency services, transportation, utilities, telecommunications, and insurance industries.

In northern California, the UC Berkeley Seismological Laboratory (BSL) and the USGS Menlo Park collaborate to provide the timely and reliable earthquake information to the federal, state, and local governments, to public and private agencies, and to the general public. This joint earthquake notification system provides enhanced earthquake monitoring by building on the strengths of the Northern California Seismic Network, operated by the USGS Menlo Park, and the Berkeley Digital Seismic Network (BDSN), operated by the UC Berkeley Seismological Laboratory.

During the time period of this grant, UC Berkeley undertook efforts to expand and improve the availability of rapid earthquake information. Major accomplishments include: implementation of the moment tensor estimation procedures within REDI processing, establishment of a backup facility in Sacramento, and new developments toward a 3-component real-time picker and rapid estimation of event magnitude.