

James D. Goltz
Branch Chief, Earthquake, Tsunami and Volcanic Hazards Program
California Emergency Management Agency
SCES-NASA Workshop on Evaluating Ground-Based and Space-Based Methods
of Earthquake Forecasting
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Operational Use of Earthquake Forecasts: An Emergency Management Perspective



Objectives

- Overall orientation of Emergency Managers to earthquake forecasts and predictions
- Mechanisms in place to evaluate forecasts and predictions in California
- Potential usefulness of valid forecasts and predictions

Prevailing Orientation

- Attuned to scientific developments
- Open to application of new technologies and scientific capabilities (e.g. earthquake early warning)
- Eager to accept any scientifically valid mechanism to reduce property damage and injury
- Timeliness is more important than certainty

What Cal EMA Does

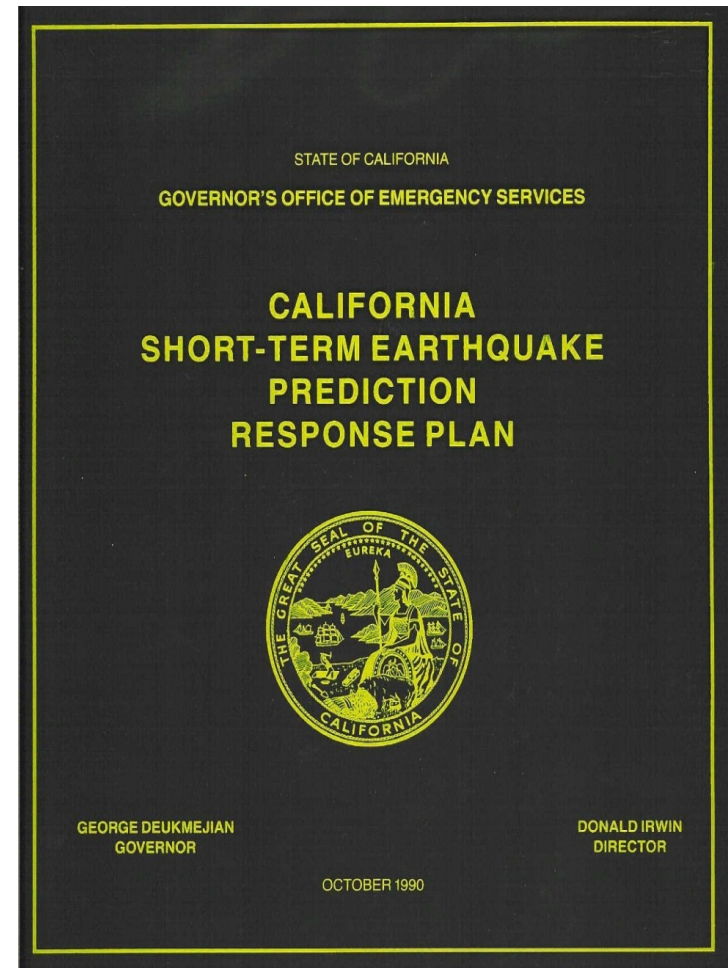
- Convenes CEPEC
- Disseminates Findings and Notifications to Counties and Media
- Developed California Earthquake Prediction Response Plan (Short-Term)
- Developed California Earthquake Advisory Response Plan
- Developed Catastrophic Earthquake Response plans based on scenarios (derived from long-term forecasts)

California Earthquake Prediction Evaluation Council (CEPEC)

- Consists of 9 scientists
- Appointed by the Cal EMA Secretary
- Advise Cal EMA and the Governor on credibility of predictions and possible options
- Chaired by the State Geologist (currently Dr. John Parrish)
- Provides for closed meetings
- Provides immunities
- Meets as necessary

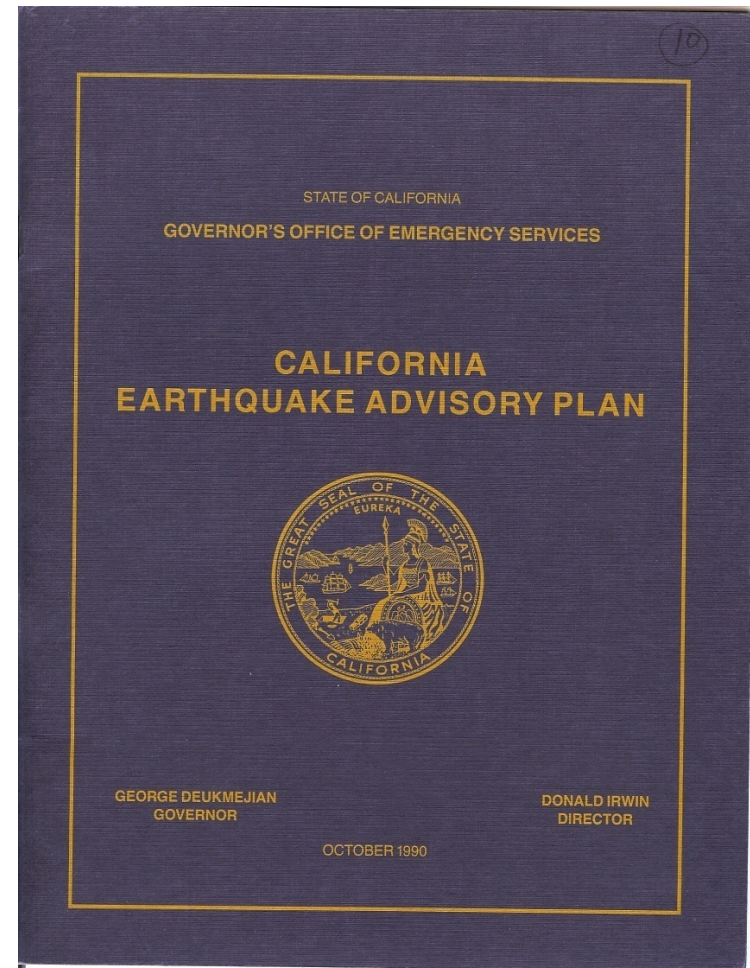
Plans for Dealing With Scientific Earthquake Predictions

- California Earthquake Prediction Evaluation Council (CEPEC)
- Plan calls for graduated levels of response based on:
 - probability -Slight (10% or less); Moderate (11-49%) and high (50-100%)
 - potential impacts- low (Parkfield M6.0); Moderate (Northridge M6.7); High (San Andreas M7.8)
- Three “readiness conditions” based on probability and consequences
- Plan has never been used



Plan to Deal with Anomalous Seismic Activity

- Used many times since 1990
- To address events that might be precursors
- Rule of thumb: a $M \geq 5$ on a fault that has generated large earthquakes in past
- CEPEC rapid assessment procedures activated
- Results in statement to jurisdictions in region of concern



Actual and Potential Utility of Forecasts and Predictions

- **Long-Term** (up to few decades): scenarios developed for most likely and consequential events, become basis for plans, exercises, training
- **Intermediate-Term** (weeks to years): long enough to do focused planning, hazard mitigation, public education in advance of an event.
- **Short-Term** (hours to weeks): notify potentially affected jurisdictions, intensify public information, move/position resources, partial EOC activation.
- **Immanent Alerts** (up to a few hours): real-time alerts and earthquake early warning, response readiness, mobilization of personnel, open EOCs